Project name:
V82-1.65MW
1-Speed MK II
690V 50Hz
Standard, Tropical, Tropical -20 deg. C & Arctic

NM72 1-Speed
NM82 1-Speed
EVO II version 2
690V 50Hz
Standard, Tropical, Tropical -20 deg. C & Arctic

Project no:
Electrical Diagrams

1	**5001178 NMCS Documentation Standard** Mat. no.: None
2	**6015559 Plant Outline** Mat. no.: None
3	**6011876 Single Line Diagram** Mat. no.: None
4	**6014867 Emergency Line Diagram** Mat. no.: None
5	**6012514 Main Panel +AT1** Mat. no.: 60096208
6	**6012290 Control Panel +AT2** Mat. no.: 60096681
7	**Options for Control Panel +AT2** Arctic Comp.: 60097145 Service Lift: 60097149 Transformer fan: 60109174
8	**Communication Options for Control Panel +AT2** Modem: 60019676 CSL110: 60092032 Multi Mode ROX: 60019680
9	**Communication Options for Control Panel +AT2** Ethernet Single Mode: 60105817 Ethernet Multi Mode: 60105816
10	**6011999 PFC Panel +AT3, No Load** Mat. no.: 60097570
11	**6012008 PFC Panel +AT3, add on Full Load** Mat. no.: 60097568
12	**6015882 PFC Panel +AT3, add on to 1000 kVAr** Mat. no.: 60108814
13	**6012086 UPS Panel +AT5 (OPTION)** Mat. no.: 60019721
14	**6015876 Connections to PCS converter (OPTION)** 6015865 Terminal Box for Cooling Station item no.: 60108580
15	**6013202 Junction Box +AT6** Mat. no.: 60097529
16	**6015269 Top Panel +AN1** Item no.: 60104194
17	**6010125 Operation Box +AN2** Mat. no.: 60112234
18	**6016010 Box +AN3b f. NRG Wind Sensors IEC** Mat. no.: 60016180
19	**6014856 Motor Box +AN4** Item no.: 60104156
20	**6015212 Transformer Box +AN6, Arctic Option** Item no.: 60099926
21	**6014798 Junction Box +AN11** Item no.: 60101166
22	**6014799 Junction Box +AN12** Item no.: 60101167
23	**6014800 Junction Box +AN13** Item no.: 60101168
24	**6014801 Junction Box +AN14** Item no.: 60101169
25	**6014802 Junction Box +AN15** Item no.: 60101170
26	**6012661 Nacelle Heater 2x10 kW** Mat. no.: 60019632
27	**6010128 Hub Computer Panel +AK4** Mat. no.: 60112243
28	**6010129 Hub Hatch Override Pendant** Mat. no.:
29	**6010130 Control Pendant** Mat. no.: 60019483
30	**1000827 Table of Tightening Torques** Mat. no.: None
31	

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Turbine Type

Main Overview Electrical Diagrams

V82-1.65MW
1- Speed MK II

NM72 1-Speed & NM82 1-Speed
EVO II version 2
690V 50Hz
Standard, Tropical, Tropical-20 deg. C & Arctic

Rev.	Date	Uploaded	Designed/ Changed by	Approved
01	28.01.2004	INI	CHO	CHO
02	24.03.2004	INI	CHO	CHO
03	27.04.2004	INI	CHO	CHO
04	15.07.2004	INI	CHO	CHO
05	22.09.2004	INI	CHO	CHO
06	22.11.2004	INI	CHO	CHO
07	15.03.2005	INI	SLB	SLB
08	14.06.2005	INI	FLT	FLT
09	28.06.2005	INI	SLB	SLB
10	07.10.2005	INI	FLT	FLT
11	01.04.2009	INI	BIVA	FLT

Drawings involved

Document No.:	**Text:**	**Version Date:**	**Version No.:**
5001178	Documentation Standard	13.10.2003	01
6015559	Plant Outline	01.02.2006	04
6011876	Single Line Diagram	26.01.2005	03
6014867	Emergency Line Diagram	06.10.2005	05
6012514	Main Panel +AT1	13.12.2006	08
6012290	Control Panel +AT2	13.12.2006	13
6011999	PFC Panel +AT3 No Load	25.10.2006	04
6012008	PFC Panel +AT3 add on for Full Load	26.10.2006	05
6015882	PFC Panel +AT3, 1000kWAr	26.10.2006	01
6012086	UPS Panel (OPTION)	08.08.2005	05
10000023	Operation Instruction f. UPS Panel	10.02.2004	01
6015876	Connections to Frequency Converter =BA+1S1	01.02.2006	02
6015865	Terminal Box +AT7 for Cooling Station	01.02.2006	02
6013202	Junction Box +AT6	04.10.2004.	01
6015269	Top Panel +AN1	09.06.2005	05
6010125	Operation Box +AN2	13.12.2007	04
6016010	Top Box +AN3b f. NRG Wind Sensors IEC	20.04.2005	01
6014856	Motor Box +AN4	22.11.2004	03
6015212	Transformer Box +AN6	09.07.2004	02
6014798	Junction Box +AN11	22.11.2004	02
6014799	Junction Box +AN12	22.11.2004	06
6014800	Junction Box +AN13	22.11.2004	03
6014801	Junction Box +AN14	22.11.2004	03
6014802	Junction Box +AN15	18.04.2005	03
6012661	Arctic Nacelle Heater	02.06.2005	02
6010128	Hub Computer Panel	28.11.2005	09
6010129	Hub Hatch Override Pendant	22.03.2007	07
6010130	Control Pendant	03.05.2005	03
1000827	Table of Tightening Torques	19.04.2006	04

Parts lists involved (if they are found necessary to have in the book)

Document No.:	**Text:**	**Version Date:**	**Version No.:**
60096208	Main Panel +AT1	03.04.2007	11
60096681	Control Panel +AT2	03.04.2007	11
60097145	Arctic Comp. f. +AT2 Active /Passive Stall	02.10.2003	01
60097149	Kit for Service Lift	04.10.2003	01
60109174	Transformer/Recool Ventilator Kit f. +AT2	18.02.2005	02
60017352	Kit for Modem 600mm Panel	11.10.2007	06
60092032	Kit for CSL110, 600mm Panel	29.06.2006	04
60016972	Comm. for CPU Multimode ROX	08.06.2006	04
60105817	Comm. for CPU Ethernet Single Mode	24.04.2007	06
60105816	Comm. for CPU Ethernet Multi Mode	28.08.2007	04
60096112	PFC Panel +AT3 No Load	26.10.2006	08
60097541	PFC Panel +AT3 add on for Full Load	17.04.2007	09
60016660	PFC Module 50kVAr	23.08.2006	04
60108815	PFC Panel +AT3, 1000kVAr	06.07.2005	02
60017230	UPS Panel (OPTION)	09.08.2005	06
60108580	Terminal Box +AT7 for Cooling Station	02.02.2005	01
60097265	Junction Box +AT6	10.03.2005	03
60104193	Top Panel +AN1	31.05.2006	05
60112234	Operation Box +AN2	18.04.2007	03
60016180	Top Box +AN3b f. NRG Wind Sensors IEC	30.05.2006	06
60104156	Motor Box +AN4	16.08.2005	03
60099926	Transformer Box +AN6	01.07.2005	05
60101166	Junction Box +AN11	09.09.2005	05
60101167	Junction Box +AN12	09.09.2005	07
60101168	Junction Box +AN13	09.09.2005	04
60101169	Junction Box +AN14	09.09.2005	04
60101170	Junction Box +AN15	09.09.2005	05
60016183	Arctic Nacelle Heater	17.11.2006	02
60017297	Hub Computer Panel +AK4	20.05.2005	10
60022842	Cables f. Hub Computer Panel +AK4	27.04.2005	03
60019750	Measuring Kit f. Hub Computer Panel +AK4	27.02.2004	02
60112243	Hub Hatch Override Pendant	03.04.2007	06
60015995	Control Pendant	11.05.2007	06

Documentation standard

Panel system:

The Panel is built according to EN 60204-1, 2 edition (Safety of machinery. Electrical equipment of machines. General requirements)

EN 60439-1 Low-voltage switchgear and control gear assemblies - Part 1: Type-tested and partially type-tested assemblies.

Colour code for internal Wires

Identification of conductors in panels, has been carried out with reference to below definition:

Definition:

The identification is done by means of colour and numbering of the conductors according to EN 60204-1.
The terminal number to which it is connected mark the wire. This means that the wire will not wear the same number in both ends.

Example:

If a component is marked with F1 and have a terminal no. 2, then will the wire, which is mounted in this terminal, be marked with F1.2.
The above definition meets the demands for enabling identification of each conductor at each terminal.

In the table shown below, the two terms "Power Circuit" and "Control Circuit" are to be destinguished.

By "Power Circuits" is meant all wires connected to a control voltage transformer or a Switch Mode Power Supply. On the secondary side of a voltage transformer and a Switch Mode Power Supply, both of which are used for control voltage, the wires going from the secondary outputs to the first protection or terminal are defined as power circuits. Apart from these, all other wires are control circuits. For an illustration of this, please see appendix 1.

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In conclusion, the following wire colours have been utilized:

Power Circuit:

AC	Neutral conductor	Light Blue (Ral 5012)
	Phase conductor	Black
PE	Protective conductor	Green / Yellow

DC	+	Black
	-	Black
PE	Protective conductor	Green / Yellow

Control Circuits:

AC	Phase conductor	Red
	Control conductor	Violet
	Neutral conductor	Light blue

DC	Phase conductor	Dark Blue (Ral 5010)
	Control conductor	White
	Neutral conductor	Rosa (Ral 3015)

PE	Protective conductor	Green / Yellow
Any Cabling which remain live with isolator off		Orange

The colour codes of the conductors in the Diagrams are in accordance with the IEC 757 norm. Please refer to the table below:

Black	BK	Rosa	RA
Brown	BN	Gold	GD
Red	RD	Cyan	TQ
Orange	OG	Silver	SR
Yellow (UL)	YE	Green/Yellow	GNYE
Green (UL)	GN	Beige	BE
Light Blue	LB	Grey	GY
Dark Blue	DB	White	WH
Violet	VT		

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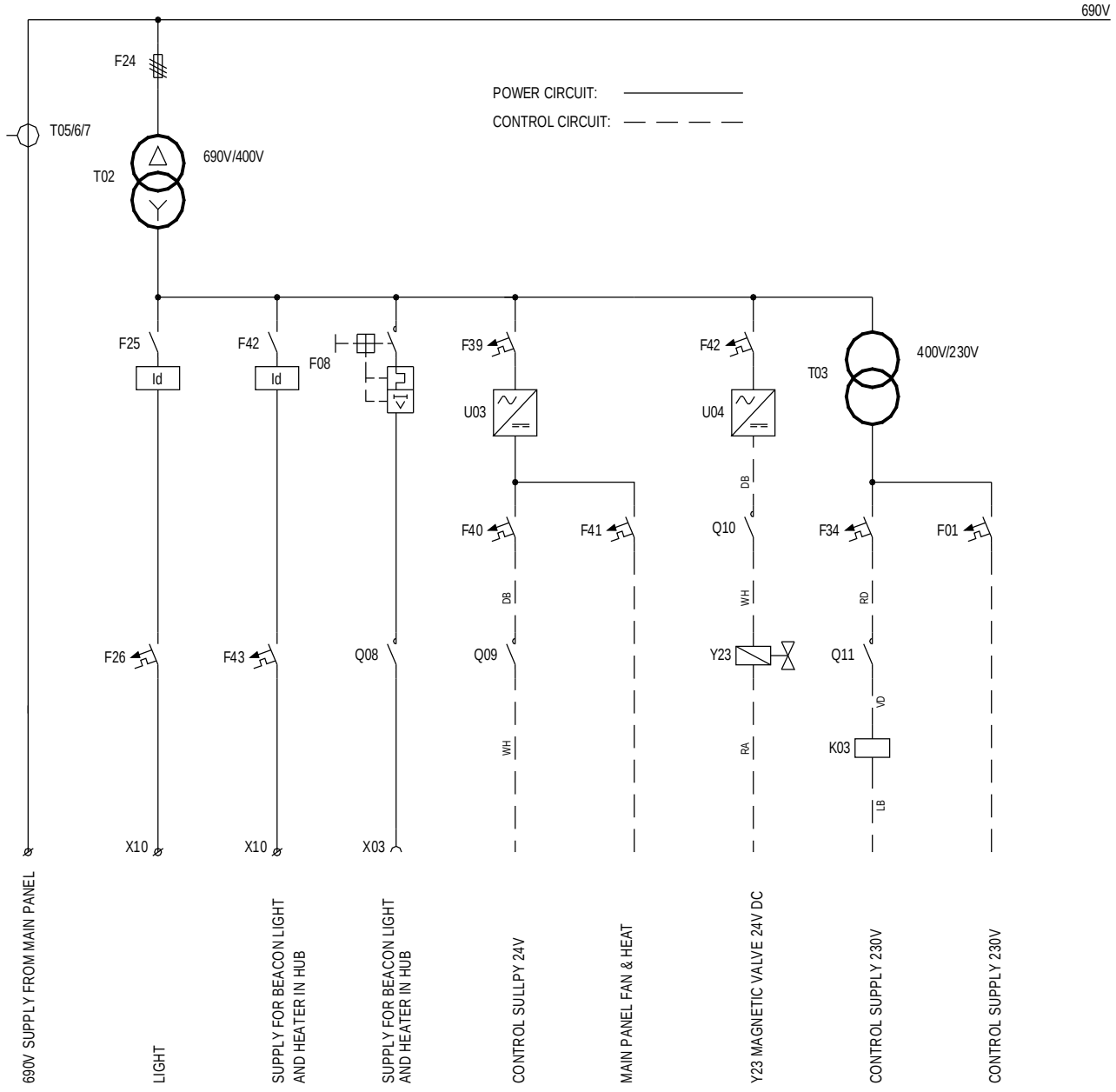
Appendix 1.



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Change Info

Item no.	***Item text:***
None	**Plant Outline, V82-1.65MW 1-Speed 690V 50Hz & NM72-82/1650kw**

Active revision for production

Drawing no.: 6015559

Version	Date	Init./App.	Description of change since last revision
04	01.02.2006	INI/SLB	Correction of PCS Converter to as build on site. Page 001: Updated Page 030: W624 removed. Page 032: W628 connection to +AT7 removed and added to =BA +1S1, W629 text "OPTION" added to Flow Switch. ALSTOM service cable add. W624 Spare for remote monitoring removed.

LST no.: None *Material BOM no.: None*

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

Old revisions for service

Drawing no.: 6015559

Version	Date	Init./App.	Description of change since last revision
03	28.06.2005	INI/SLB	Implementation of PCS Converter Page 001: Updated Page 030: Option cable from PFC Panel added. Page 032: Cable W630 connections to PFC Panel added.
02	12.01.2005	SLB/SLB	Implementation of PCS Converter Page 001: Updated Page 030: References added to W598. and (OPTION) W230-W238 & W136 Cable WA005.1, W624, W355 and W356 added. Page 031: Cable WA005.1added. Page 032: New page added.
01	21.09.2004	INI/CHO	First version

LST number: xxxxxxxx *Material BOM number: xxxxxxxx*

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

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E-mail: vestas@vestas.com • Web: www.vestas.com

1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
001	Table of Contents	060201	04
030	Plant Outline	060201	-
031	Plant Outline	050112	-
032	Plant Outline	060201	-
040	Plant Outline in Nacelle	040921	-
041	+AN1 Plant Outline	040921	-
042	+AN4 Plant Outline	040921	-
043	+AN11 Plant Outline	040921	-
044	+AN12 Plant Outline	040921	-
045	+AN13 Plant Outline	040921	-
046	+AN14 Plant Outline	040921	-
047	+AN15 Plant Outline	040921	-
050	+AK4 Plant Outline	040921	-
060	Light and Service Sockets	040921	-

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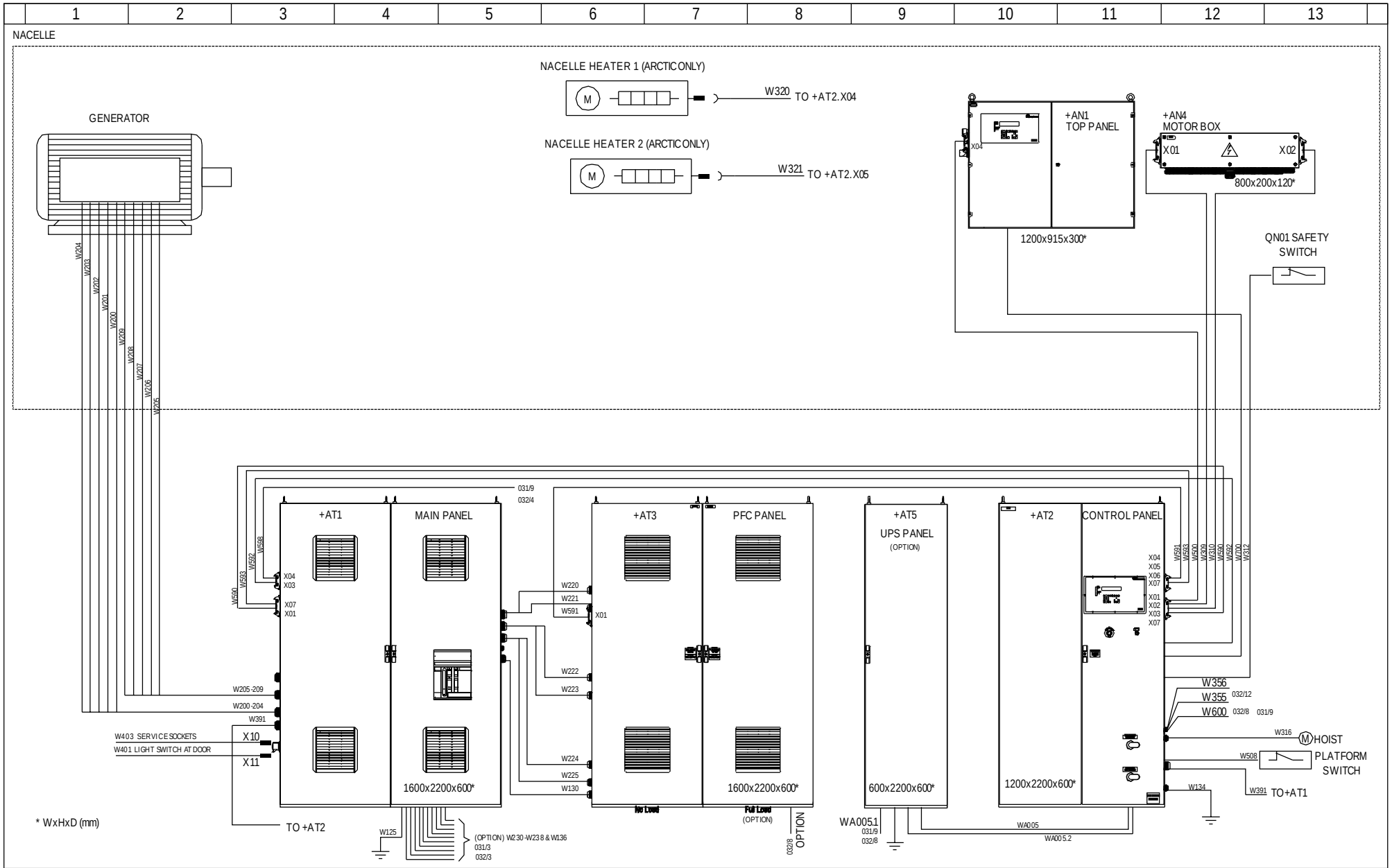
	Date	Initials		
Designed	040921	CHO	Function	Table of Contents
Approved	060201	SLB	Project title	Plant Outline NM72 1-Speed & V82-1-Speed 690V 50Hz
Reviced	060201	INI	Comments	
			Customer	Vestas Wind Systems A/S
			Rev. 04	Drawing no. 6015559
			Cont. sheet 030	Sheet 001

01-02-06 15:28



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Designed	040921	CHO	Project title	Plant Outline NM72 1-Speed & V82-1-Speed 690V 50Hz		
Approved	060201	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	060201	INI	Rev. -	Drawing no. 6015559	Cont. sheet 031	Sheet 030

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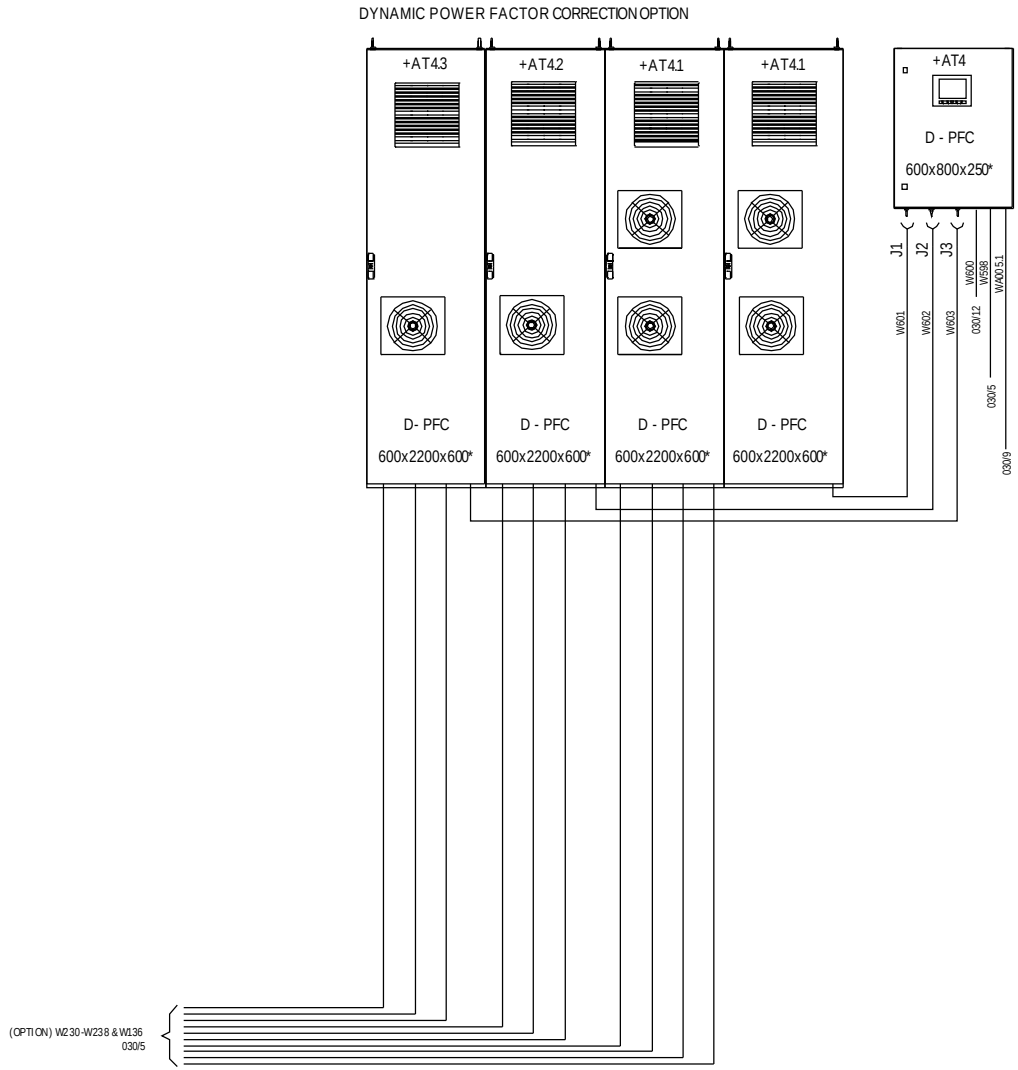

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Approved			Project title	Plant Outline NM72 1-Speed & V82-1-Speed 690V 50Hz	
Reviced	050112	SLB	Comments		Customer: Vestas Wind Systems A/S
			Rev. -	Drawing no. 6015559	Cont. sheet 032 / Sheet 031

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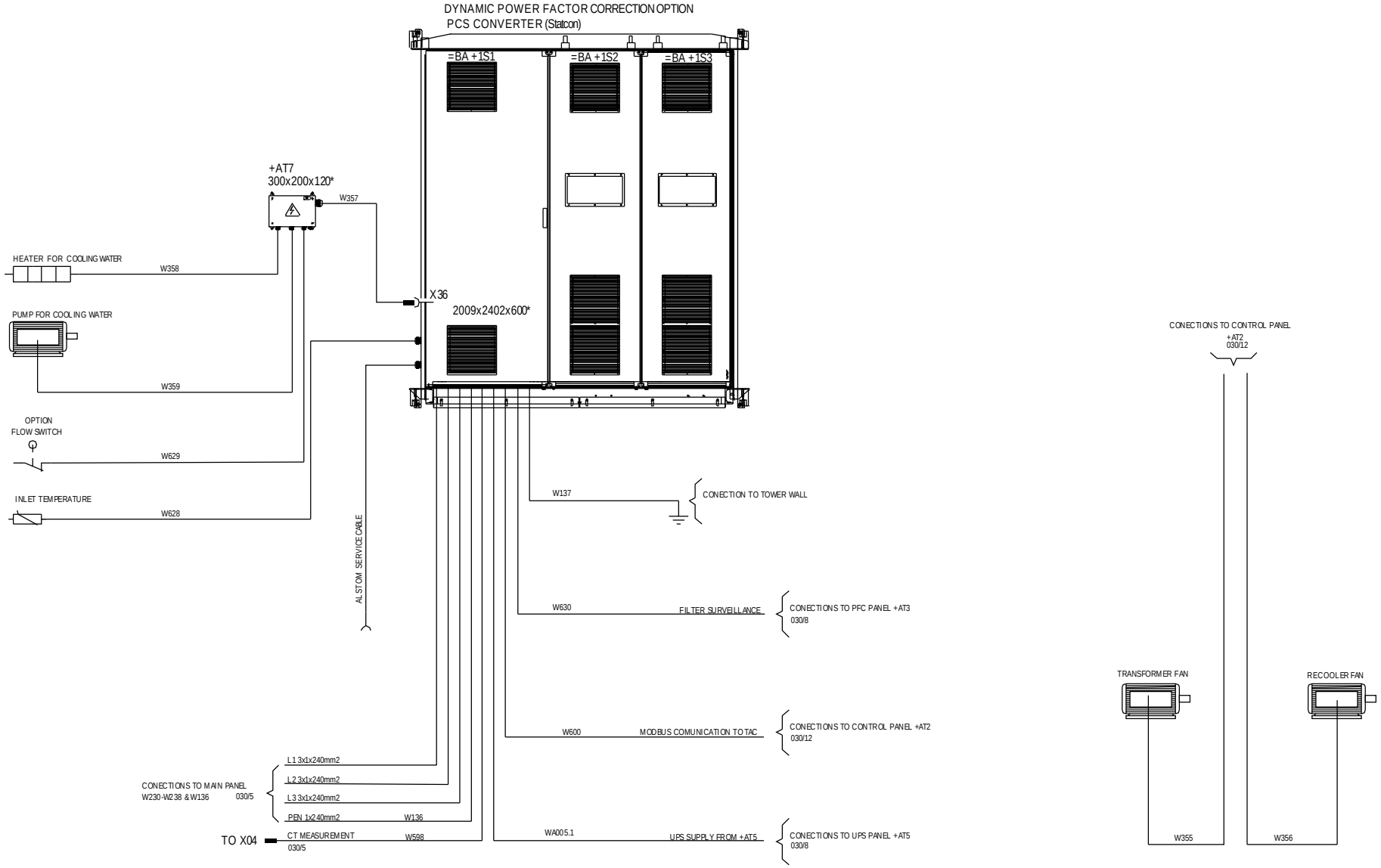

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		Approved	060201	SLB	Comments	Customer: Vestas Wind Systems A/S	
		Reviced	060201	INI	Rev. -	Drawing no. 6015559	Cont. sheet 040 / Sheet 032

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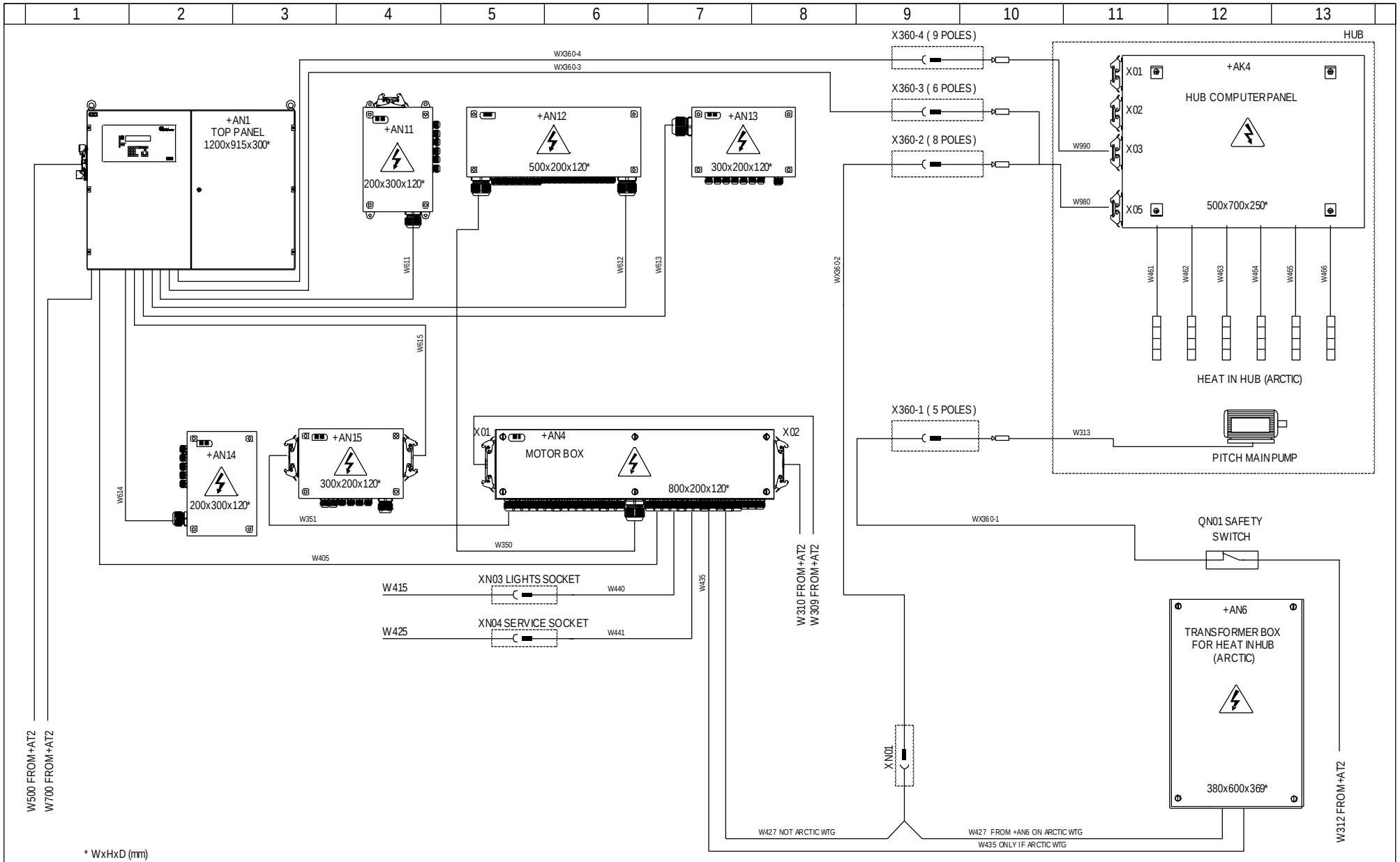

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		Designed	040921	CHO	Project title	Plant Outline NM72 1-Speed & V82-1-Speed 690V 50Hz	
		Approved			Comments	Customer	Vestas Wind Systems A/S
		Reviced	040921	INI	Rev. -	Drawing no. 6015559	Cont. sheet 041 / Sheet 040

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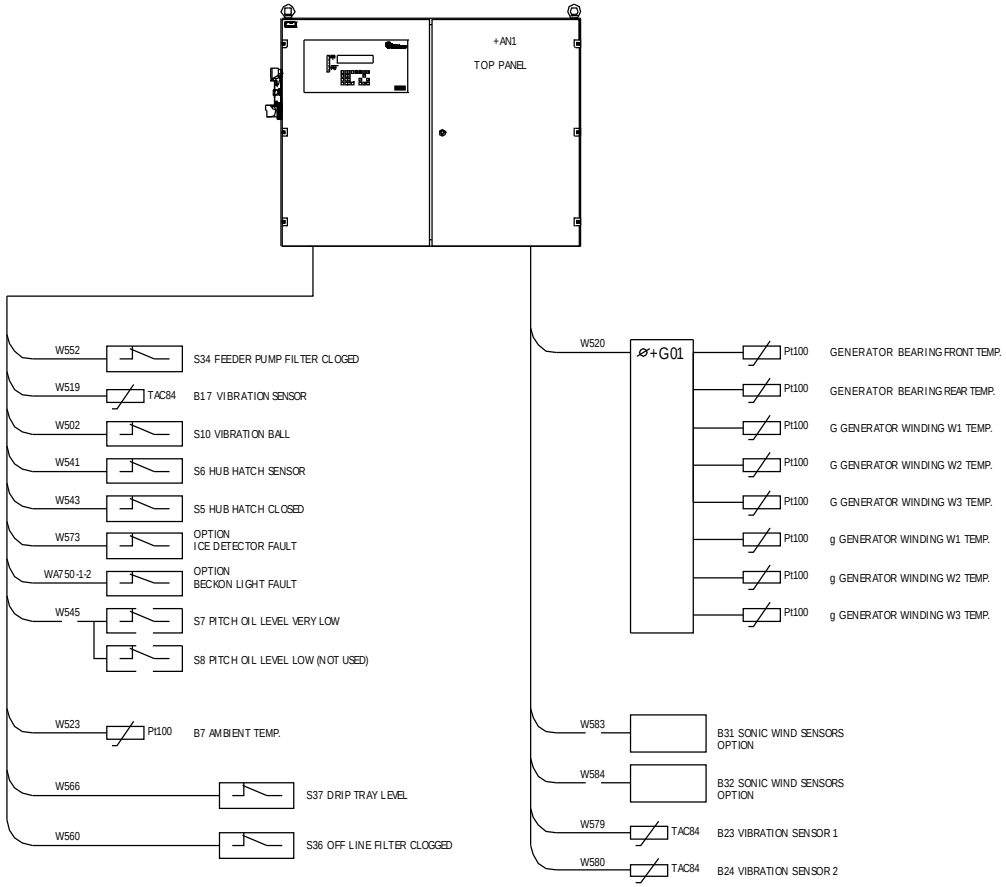

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	Date	Initials		
Designed	040921	CHO	Function	+AN1 Plant Outline
Approved			Project title	Plant Outline NM72 1-Speed & V82-1-Speed 690V 50Hz
Reviced	040921	INI	Comments	
			Customer	Vestas Wind Systems A/S
			Rev. -	Drawing no. 6015559
			Cont. sheet 042	Sheet 041

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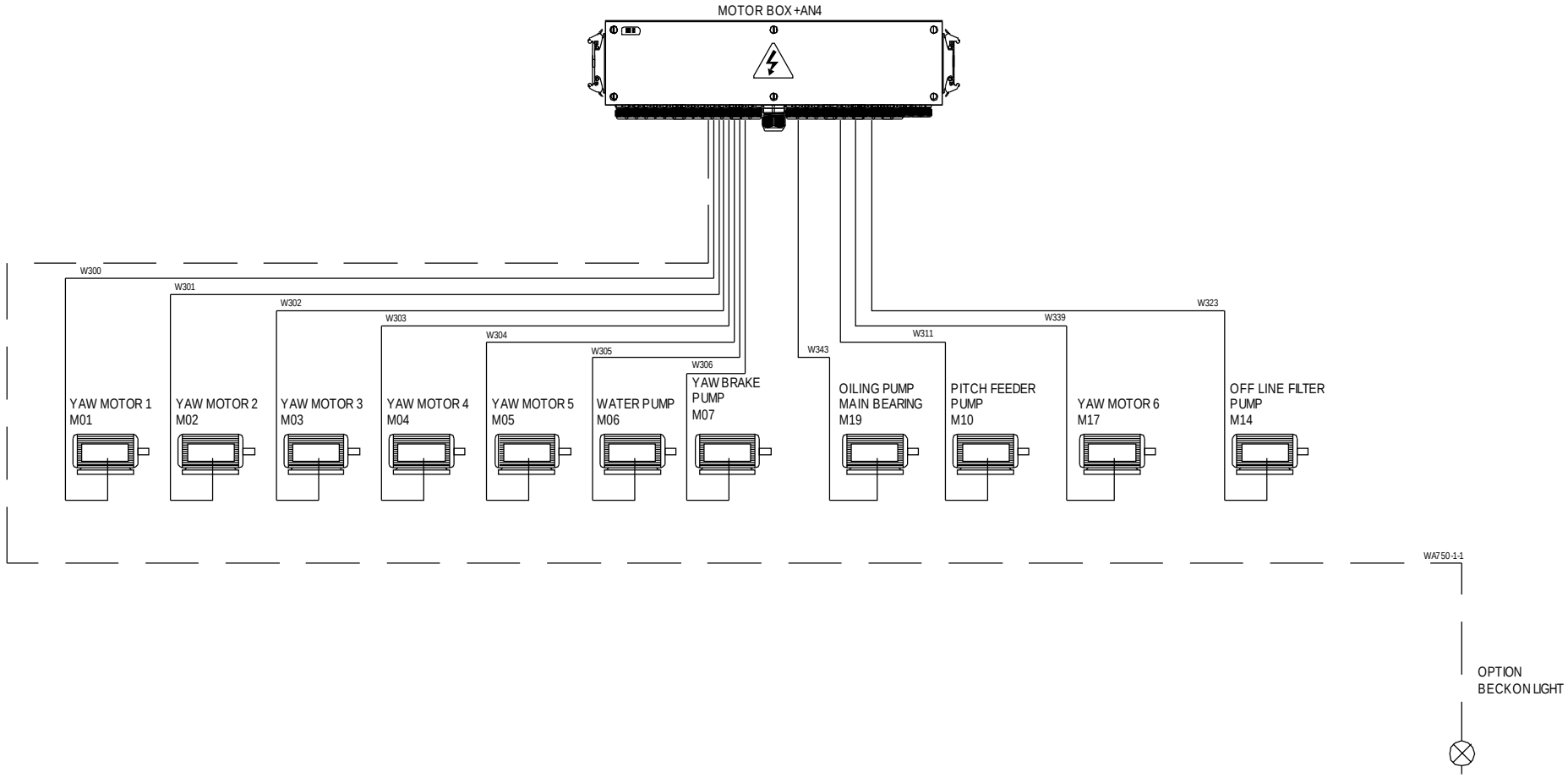

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Designed	040921	CHO	Project title	Plant Outline NM72 1-Speed & V82-1-Speed 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040921	INI	Rev. -	Drawing no. 6015559	Cont. sheet 043	Sheet 042

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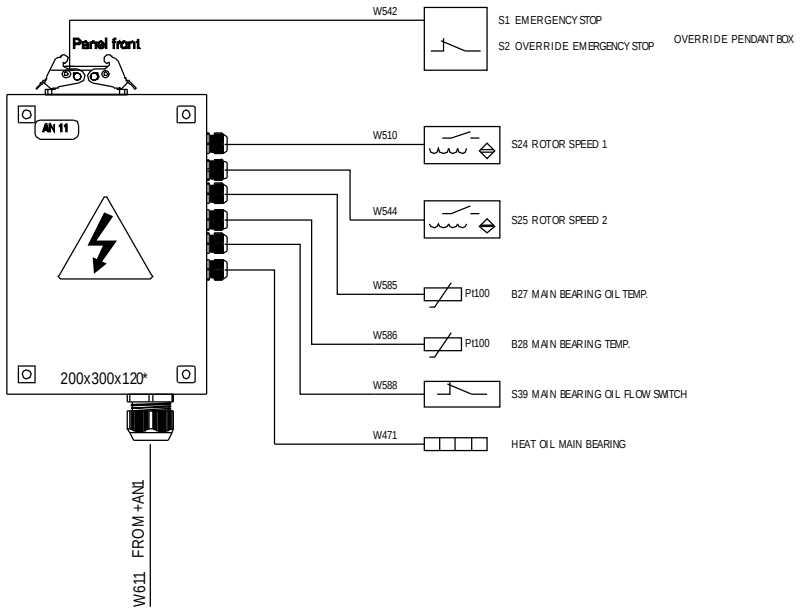

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		Approved			Comments		Customer: Vestas Wind Systems A/S
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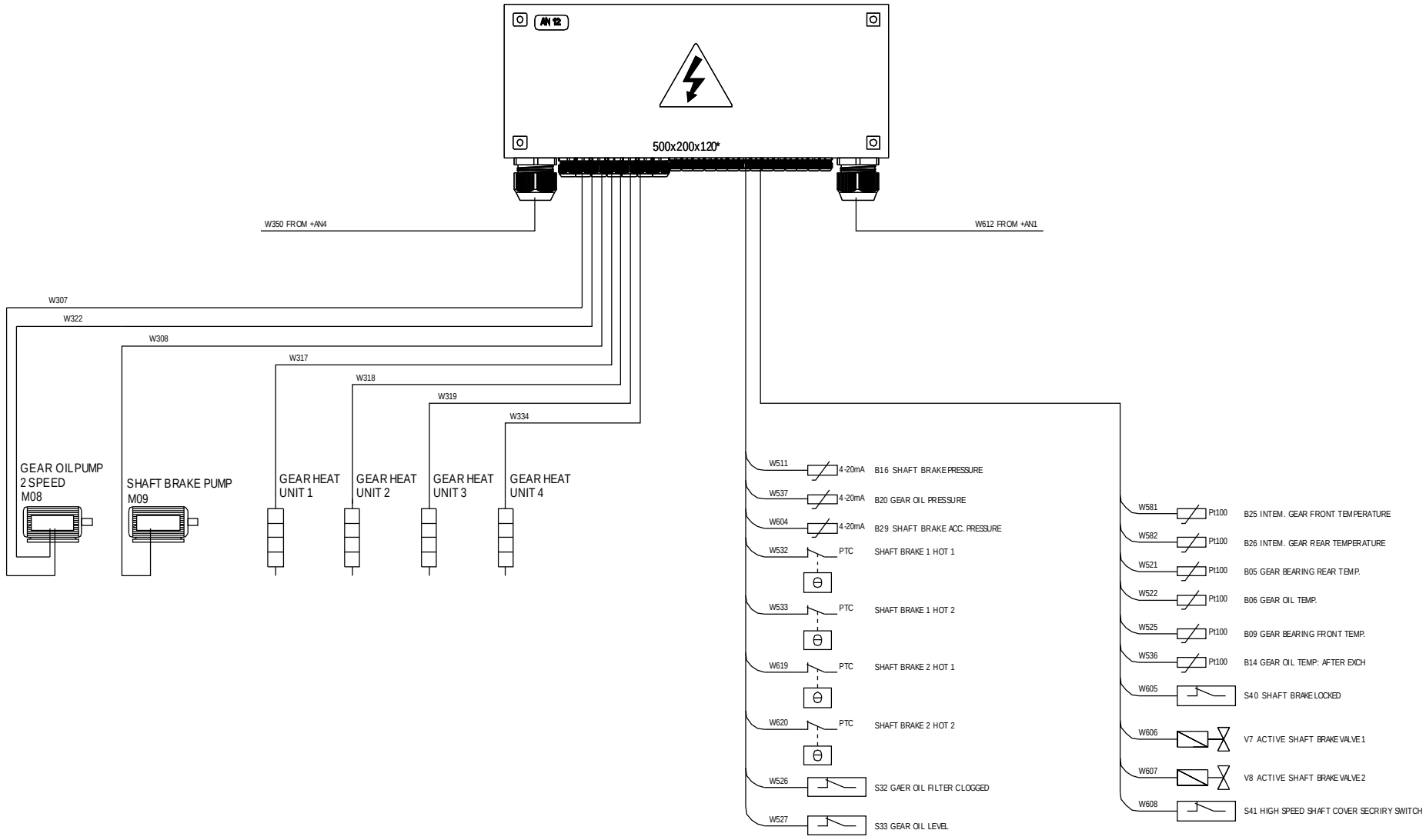

Vestas

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Designed	040921	CHO	Project title	Plant Outline NM72 1-Speed & V82-1-Speed 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040921	INI	Rev. -	Drawing no. 6015559	Cont. sheet 045	Sheet 044

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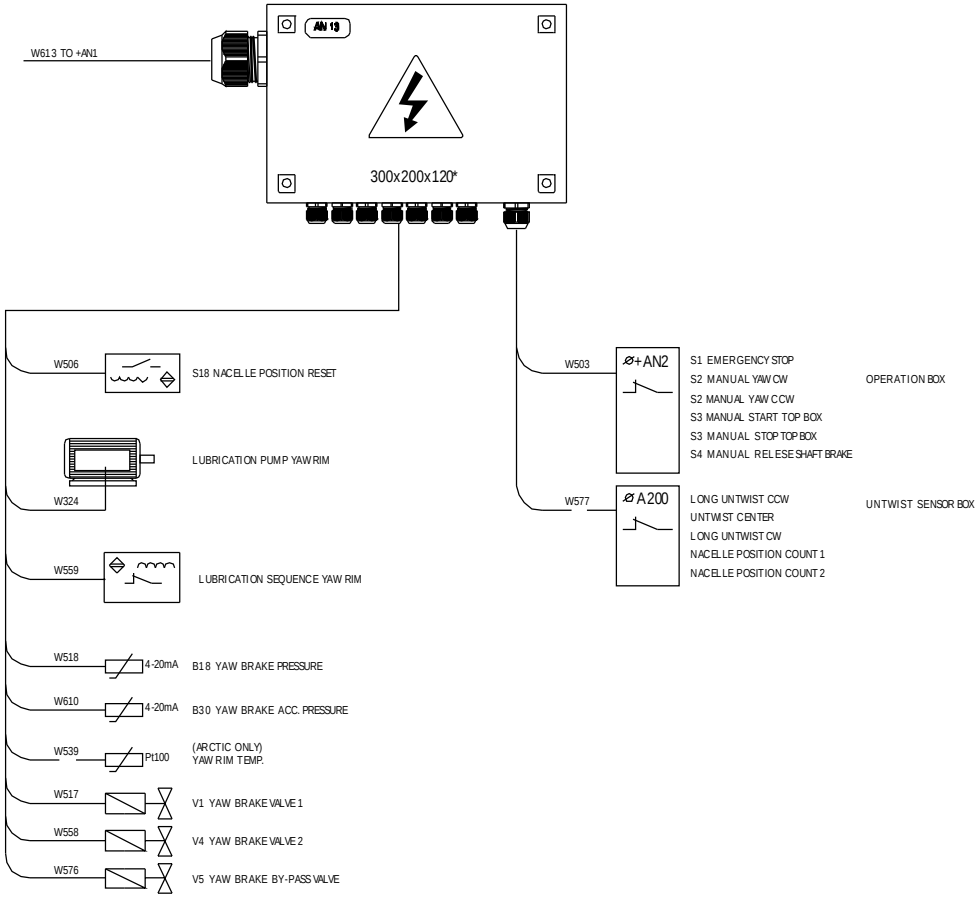

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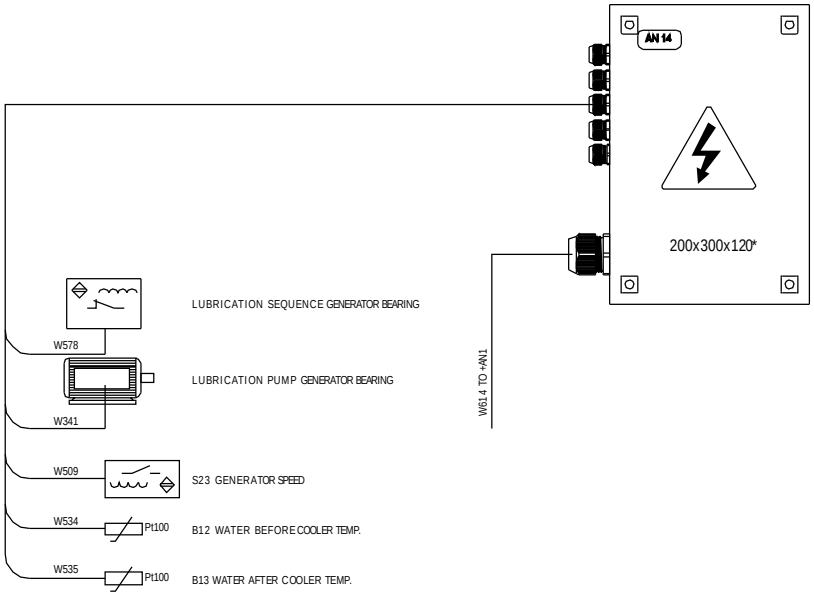

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Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040921	INI	Rev. -	Drawing no. 6015559	Cont. sheet 047	Sheet 046

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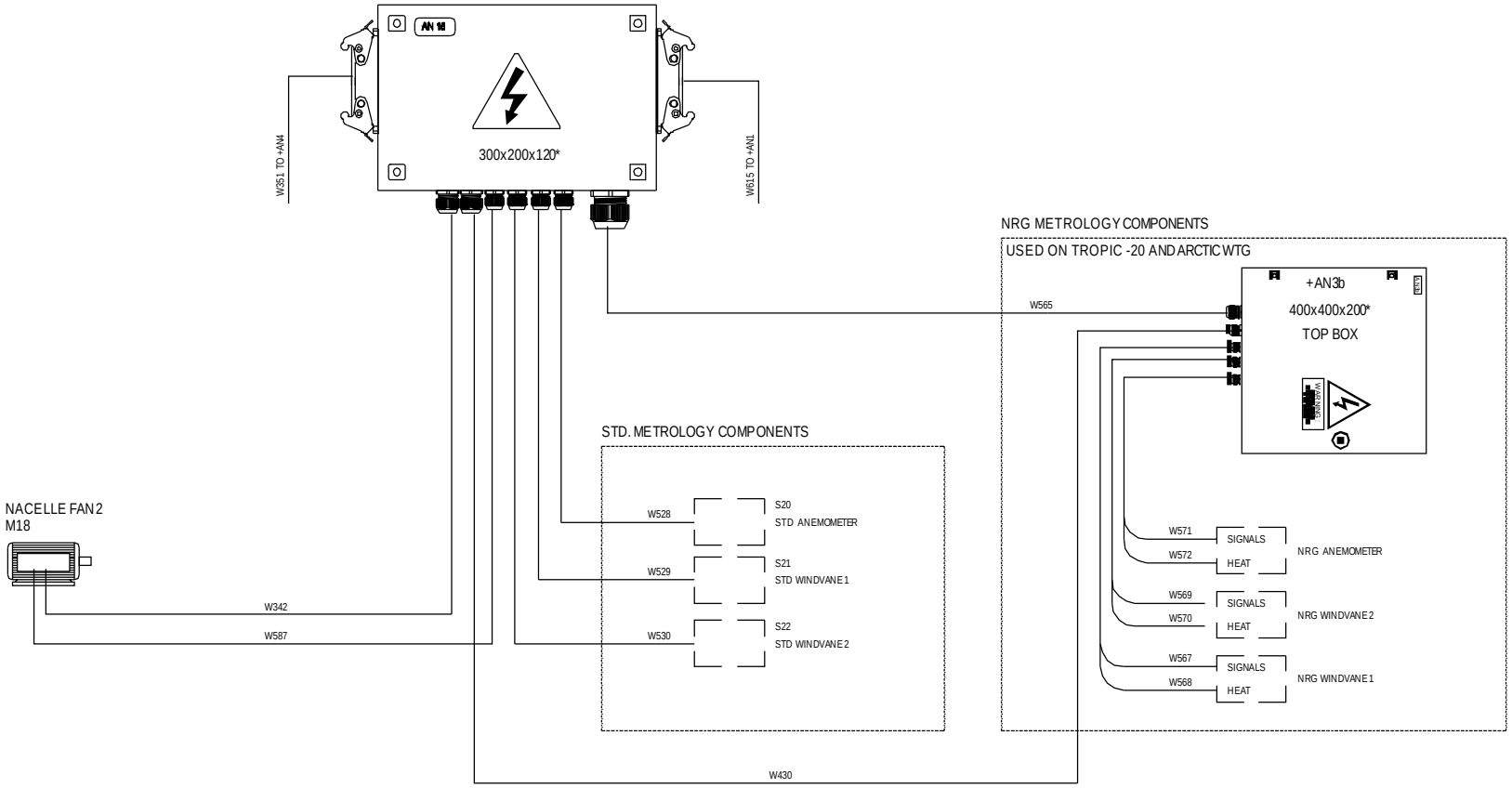

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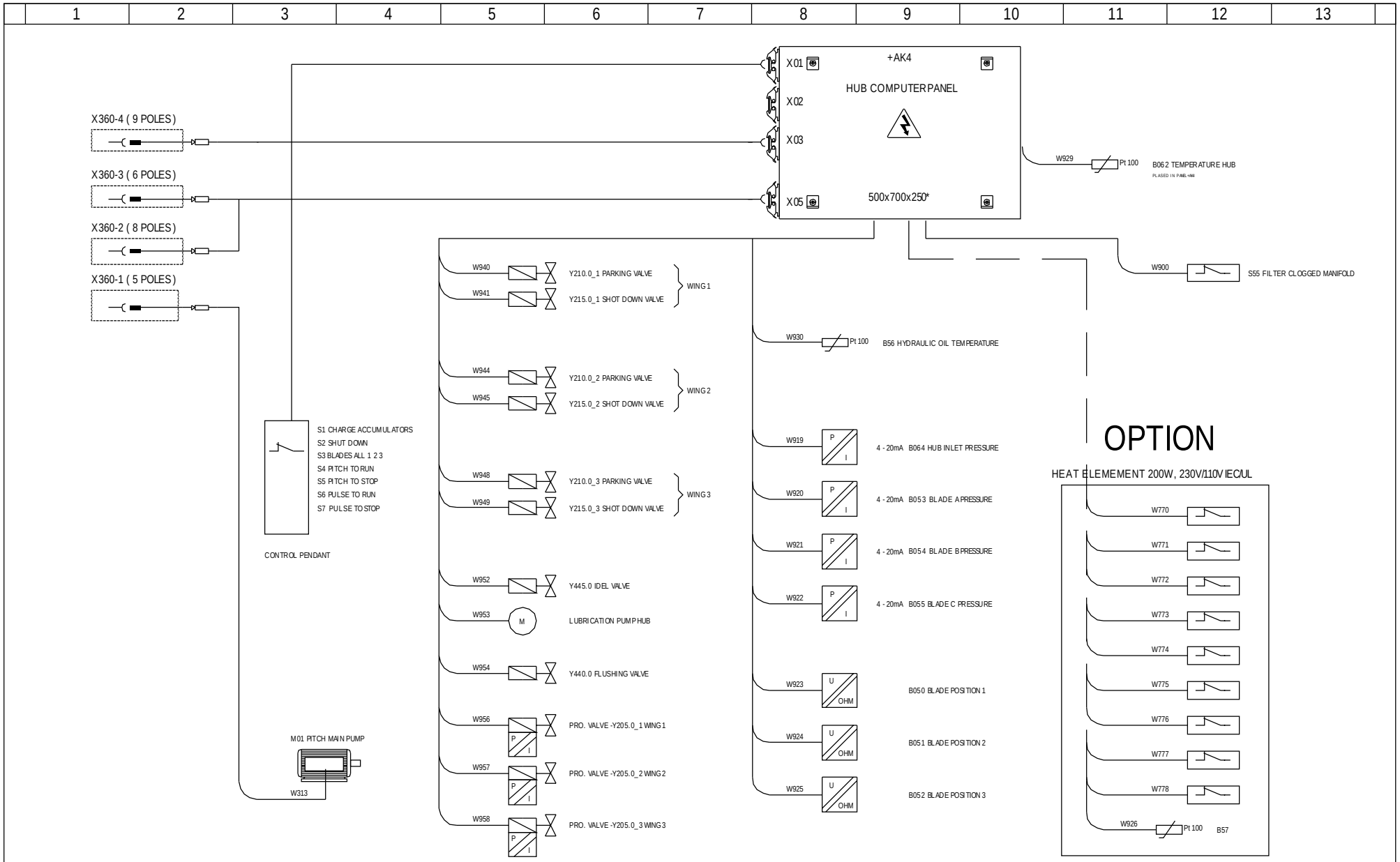
		Designed	040921	CHO	Project title	Plant Outline NM72 1-Speed & V82-1-Speed 690V 50Hz	
		Approved			Comments	Customer	Vestas Wind Systems A/S
		Reviced	040921	INI	Rev. -	Drawing no. 6015559	Cont. sheet 050 / Sheet 047

01-02-06 15:28



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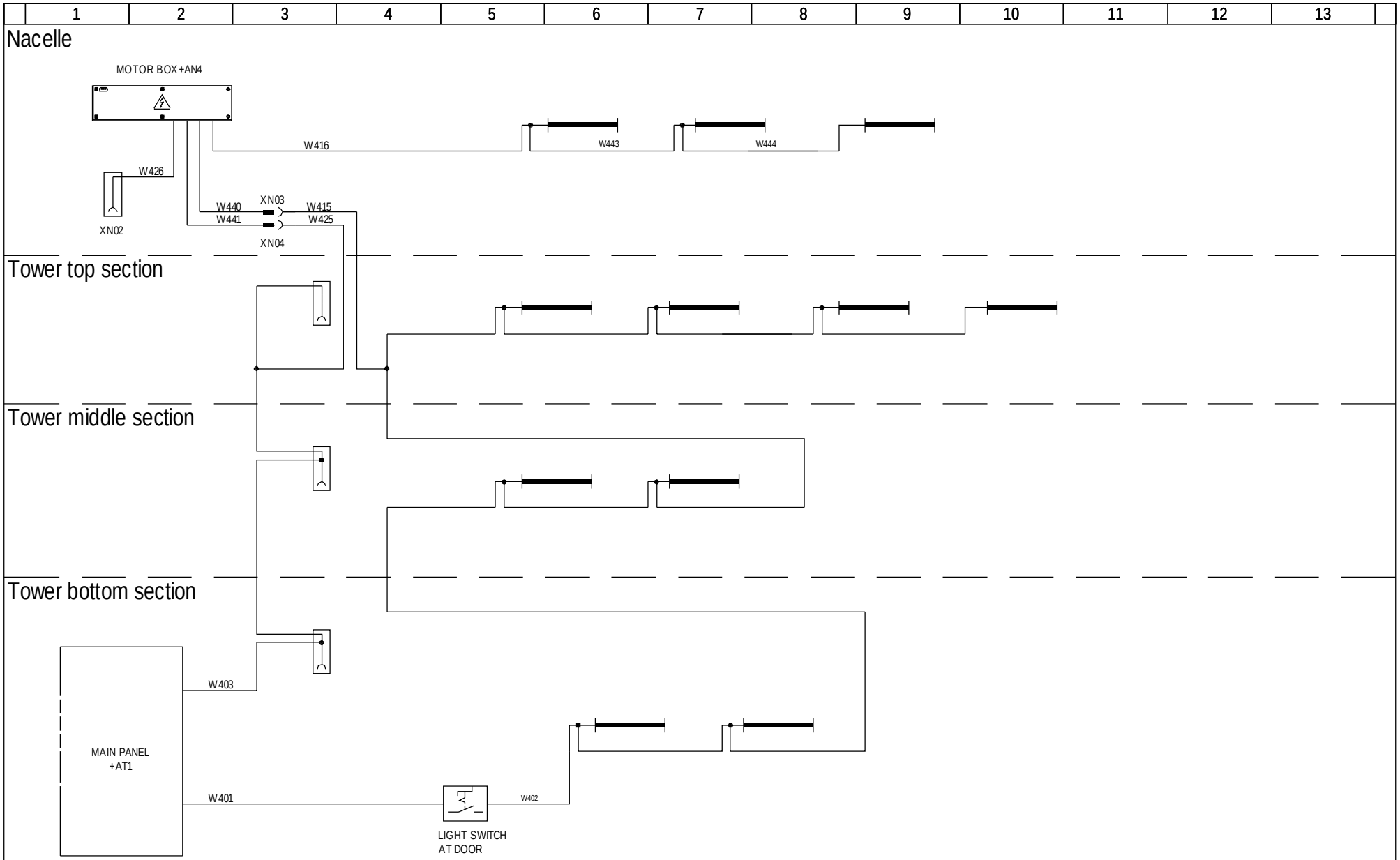
		Approved			Comments	Customer	Vestas Wind Systems A/S
		Reviced	040921	INI	Rev. -	Drawing no. 6015559	Cont. sheet 060 / Sheet 050

01-02-06
15:28



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		Designed	040921	CHO	Project title: Plant Outline NM72 1-Speed & V82-1-Speed 690V 50Hz		
		Approved			Comments	Customer: Vestas Wind Systems A/S	
		Reviced	040921	INI	Rev. -	Drawing no. 6015559	Cont. sheet -	Sheet 060

01-02-06
15:28

Change Info

Item no.	***Item text:***
None	**Single Line Diagram** **V82-1.65MW and NM72/1650KW, 30T 690V 50Hz, 1-Speed EVO II**

Active revision for production

Drawing no.: 6011876

Version	**Date**	**Init./App.**	**Description of change since last revision**
03	26.01.2005	SLB/SLB	Implementation of PCS Converter All pages updated with Vestas logo Page 011: Text +1S1 and OR PCS CONVERTER =BA+1S1 added. Page 022: New page PCS CONVERTER =BA+1S1 added.

LST no.: None *Material BOM no.: None*

Version	**Date**	**Init./App.**	**Description of change since last revision**
xx	dd.mm.yyyy	xxx/	Write the change

Old revisions for service

Drawing no.: 6011876

Version	**Date**	**Init./App.**	**Description of change since last revision**
02	28.10.2003	CHO/CHO	IGC, UPS and dynamic PFC added.
01	28.07.2003	CHO/CHO	First version

LST no.: xxxxxxxx *Material BOM no.: xxxxxxxx*

Version	**Date**	**Init./App.**	**Description of change since last revision**
xx	dd.mm.yyyy	xxx/	Write the change

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1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
001	Table of contents	050126	03
010	IGC System option	031028	-
011	Main Panel +AT1	050126	-
012	Power Factor Correction N	031028	-
013	Power Factor Correction A	031028	-
014	Control Panel +AT2	031028	-
015	Control Panel +AT2	031028	-
016	Control Panel +AT2	031028	-
017	Control Panel +AT2	031028	-
018	Control Panel +AT2	031028	-
019	Top Panel +AN1	031028	-
020	DYN PFC Panel +AT4 Option	031028	-
021	UPS Panel +AT5 Option	031028	-
022	PCS Converter =BA+1S1 Opt	050126	-

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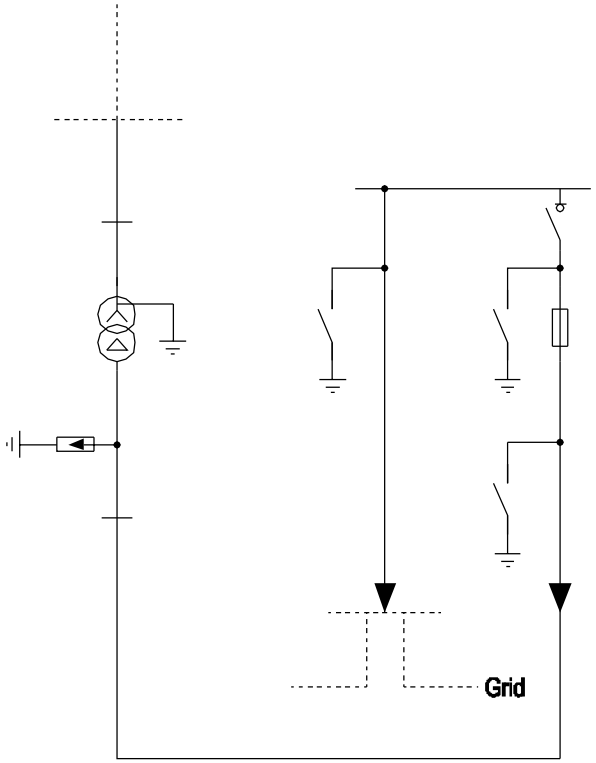
	Date	Initials	Function	Table of contents		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050126	SLB	Rev. 03	Drawing no. 6011876	Cont. sheet 010	Sheet 001

02-03-05 13:56

1	2	3	4	5	6	7	8	9	10	11	12	13

WTG

CONNECTION TO MAIN PANEL



Diagram

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13:56

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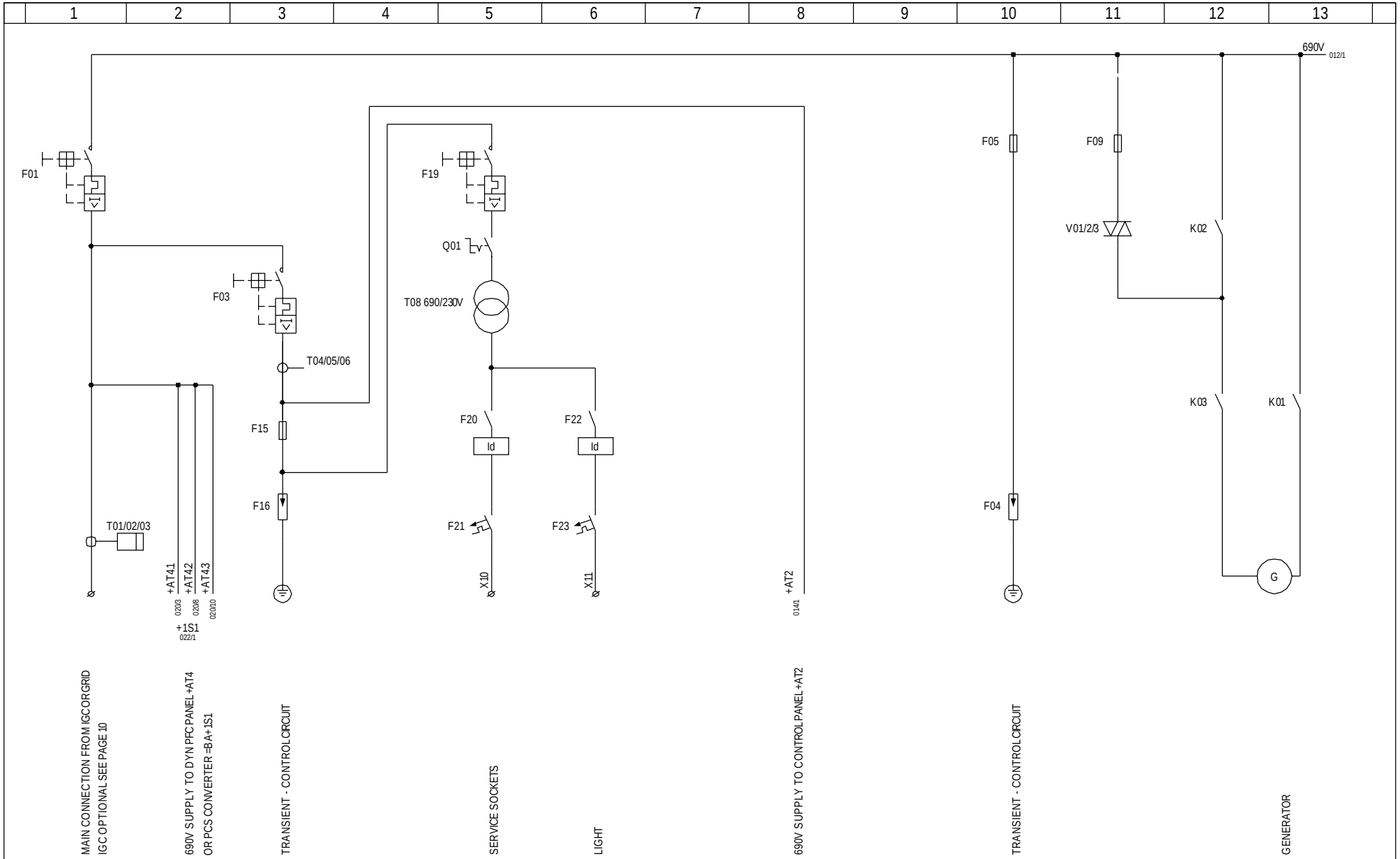
	Date	Initials	Function	IGC System option		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 011	Sheet 010



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	Date	Initials	Function	Main Panel +AT1		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050126	SLB	Rev. -	Drawing no. 6011876	Cont. sheet 012	Sheet 011

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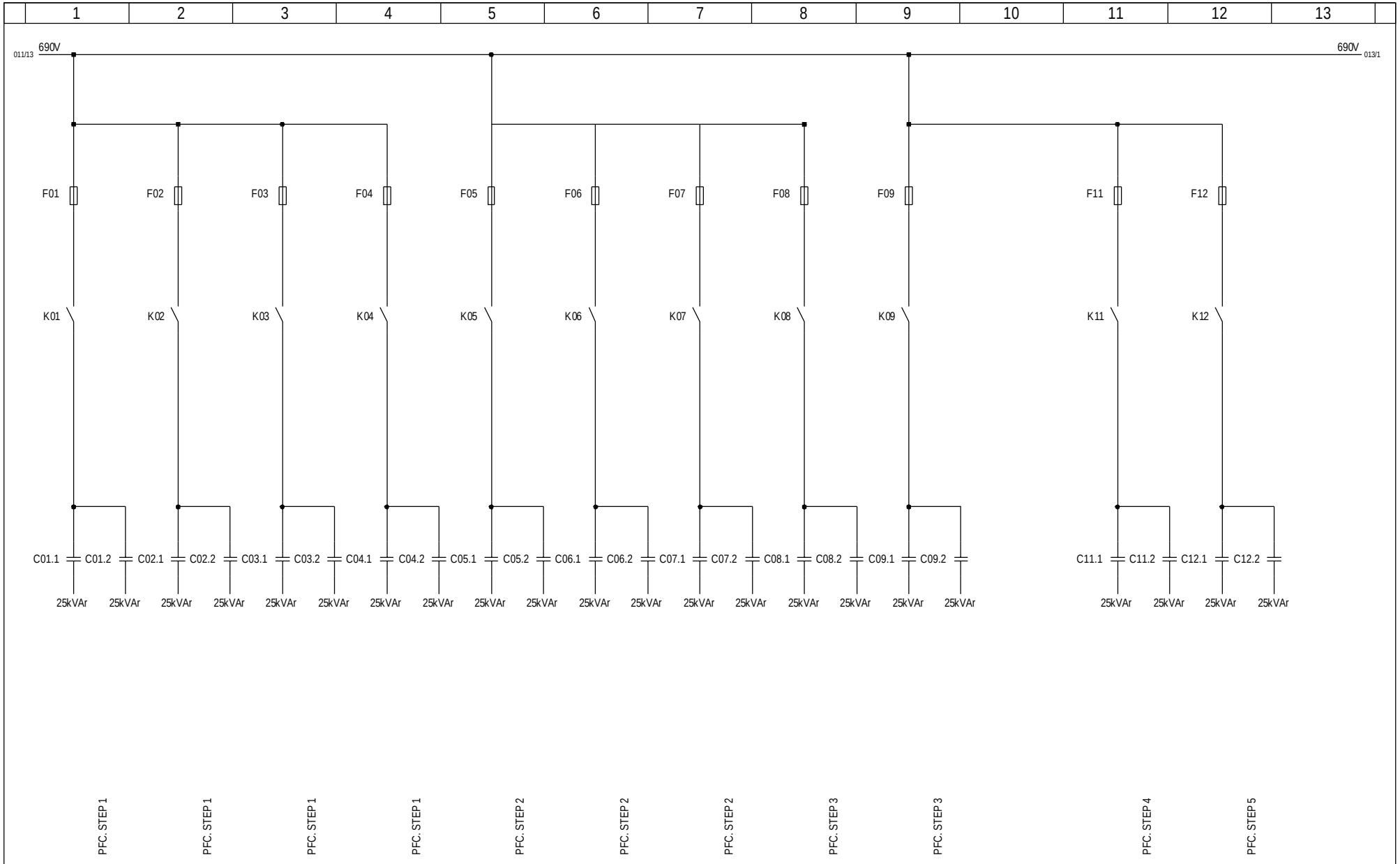
13:56



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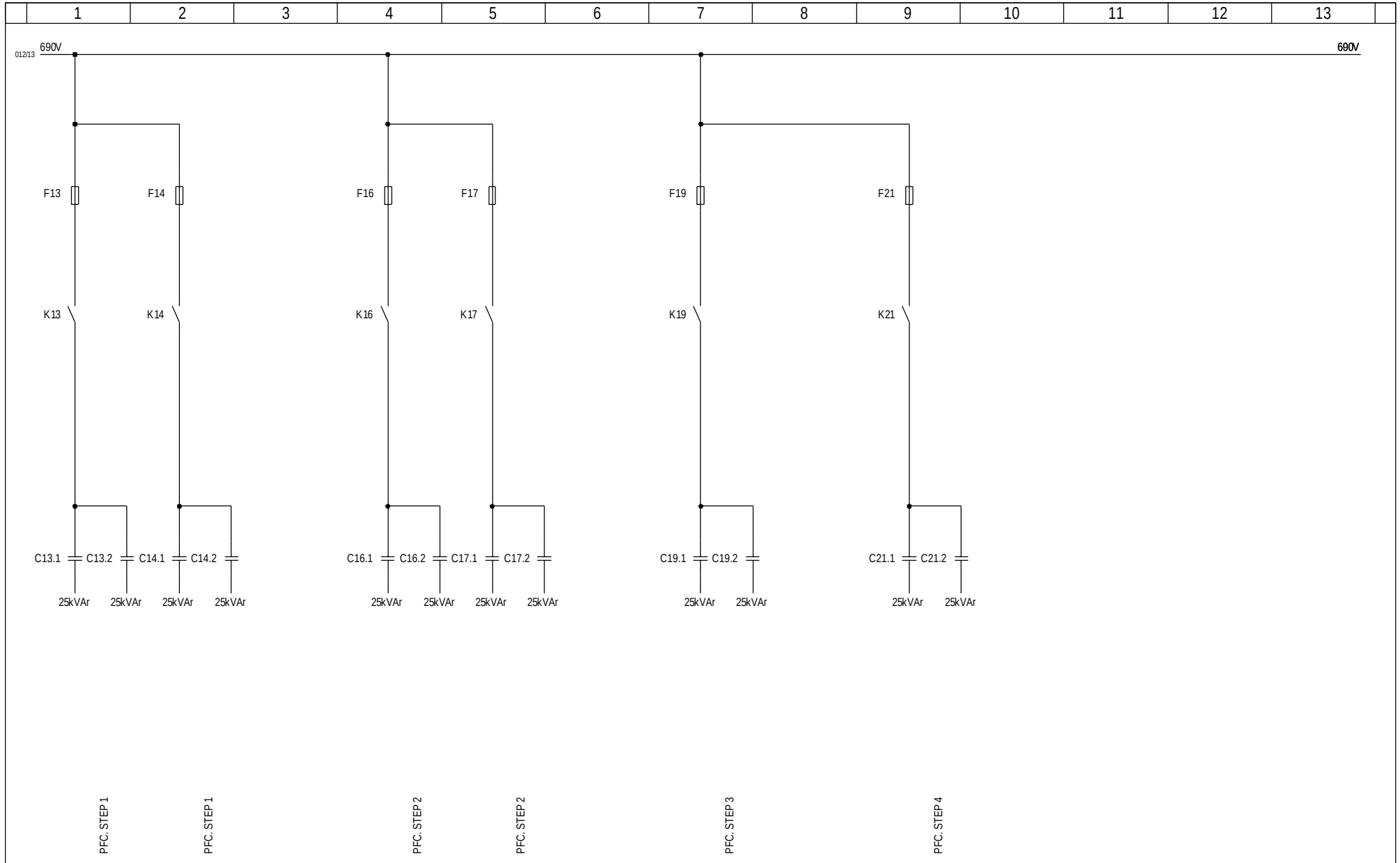
	Date	Initials	Function	Power Factor Correction NL +AT3		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 013	Sheet 012



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	Date	Initials	Function	Power Factor Correction Add on for FL +AT3		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 014	Sheet 013

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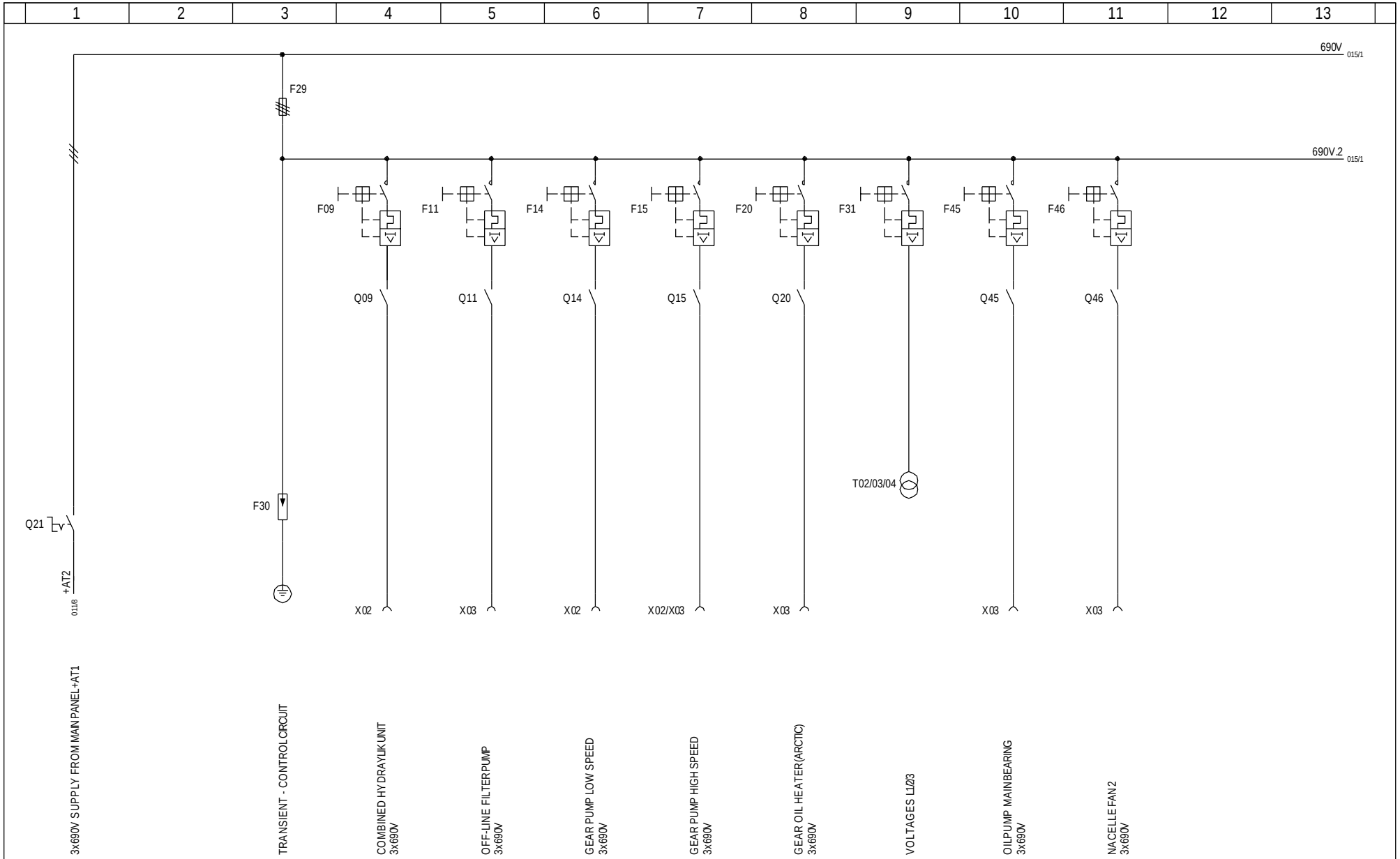
13:56



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	Date	Initials	Function	Control Panel +AT2		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 015	Sheet 014

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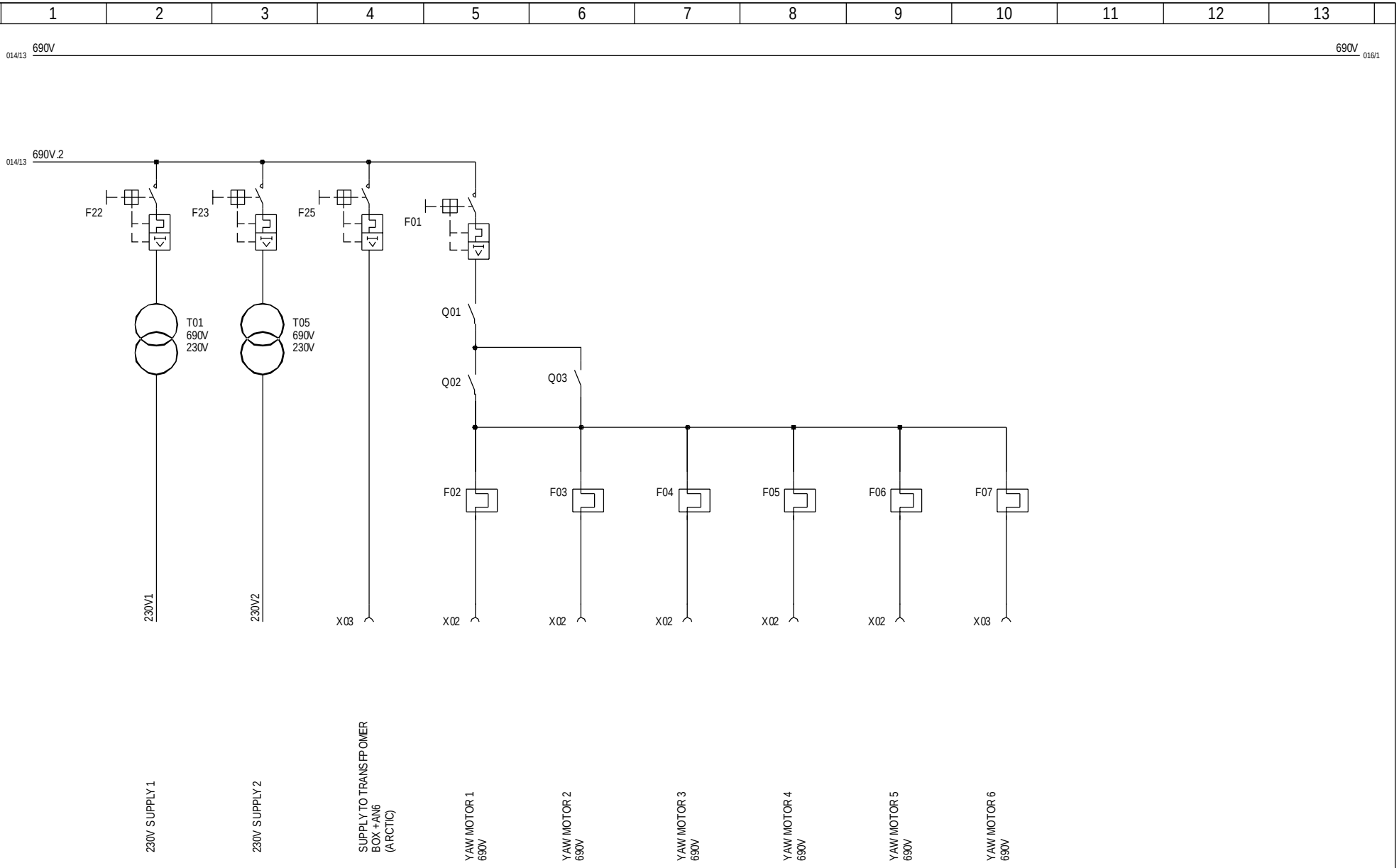
13:56



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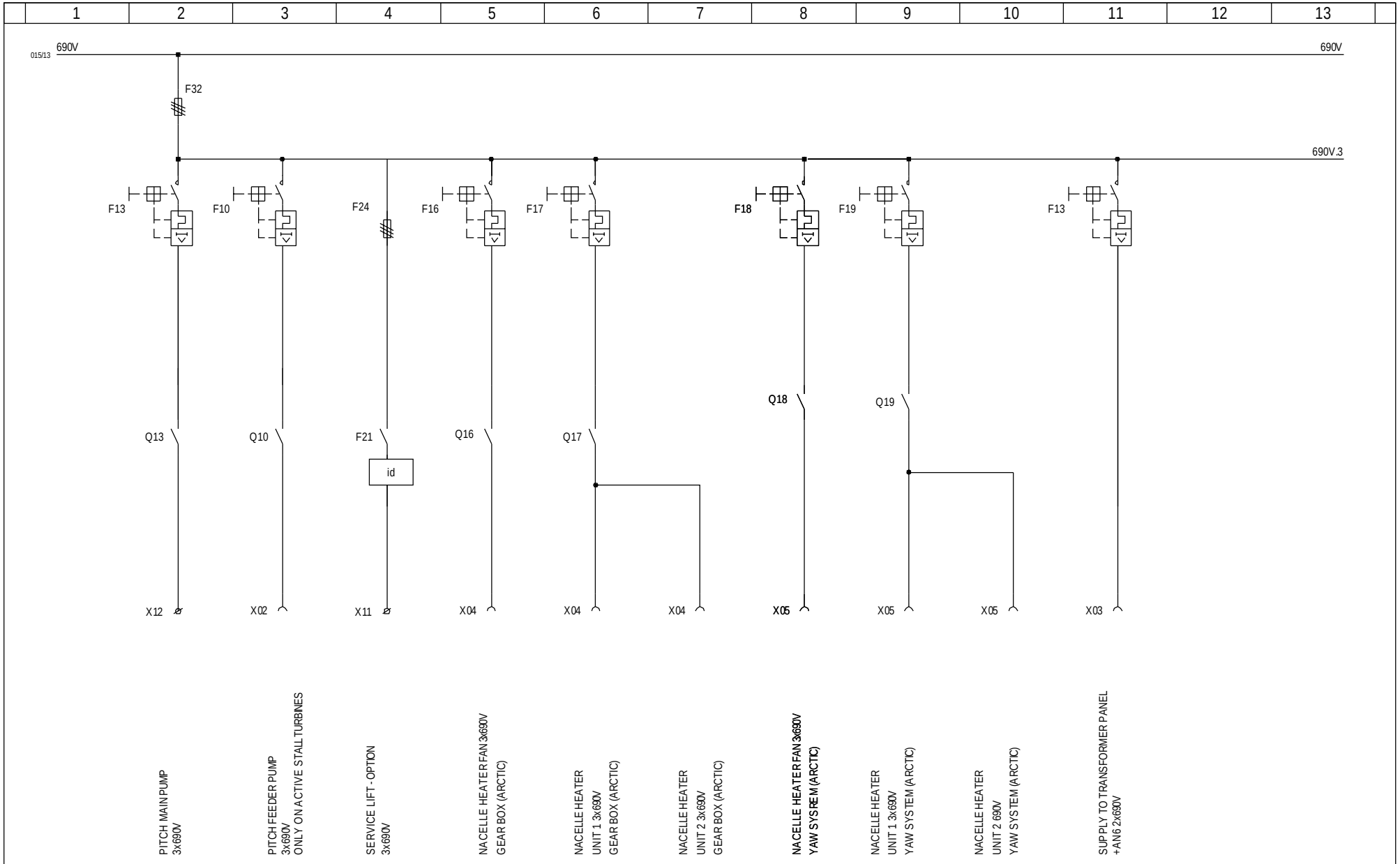
	Date	Initials	Function	Control Panel +AT2		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 016	Sheet 015



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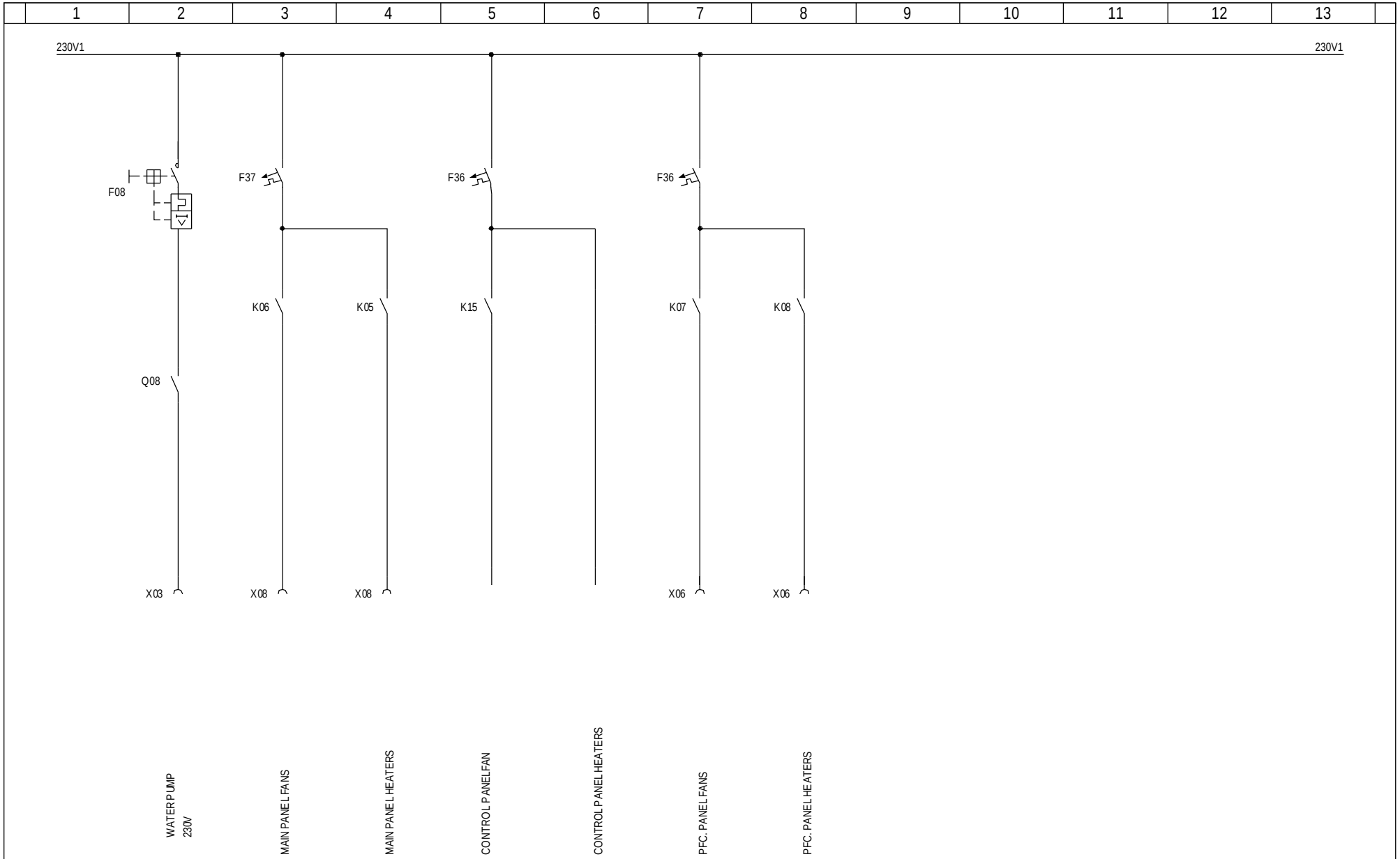
	Date	Initials	Function	Control Panel +AT2		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 017	Sheet 016



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	Date	Initials	Function	Control Panel +AT2		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 018	Sheet 017

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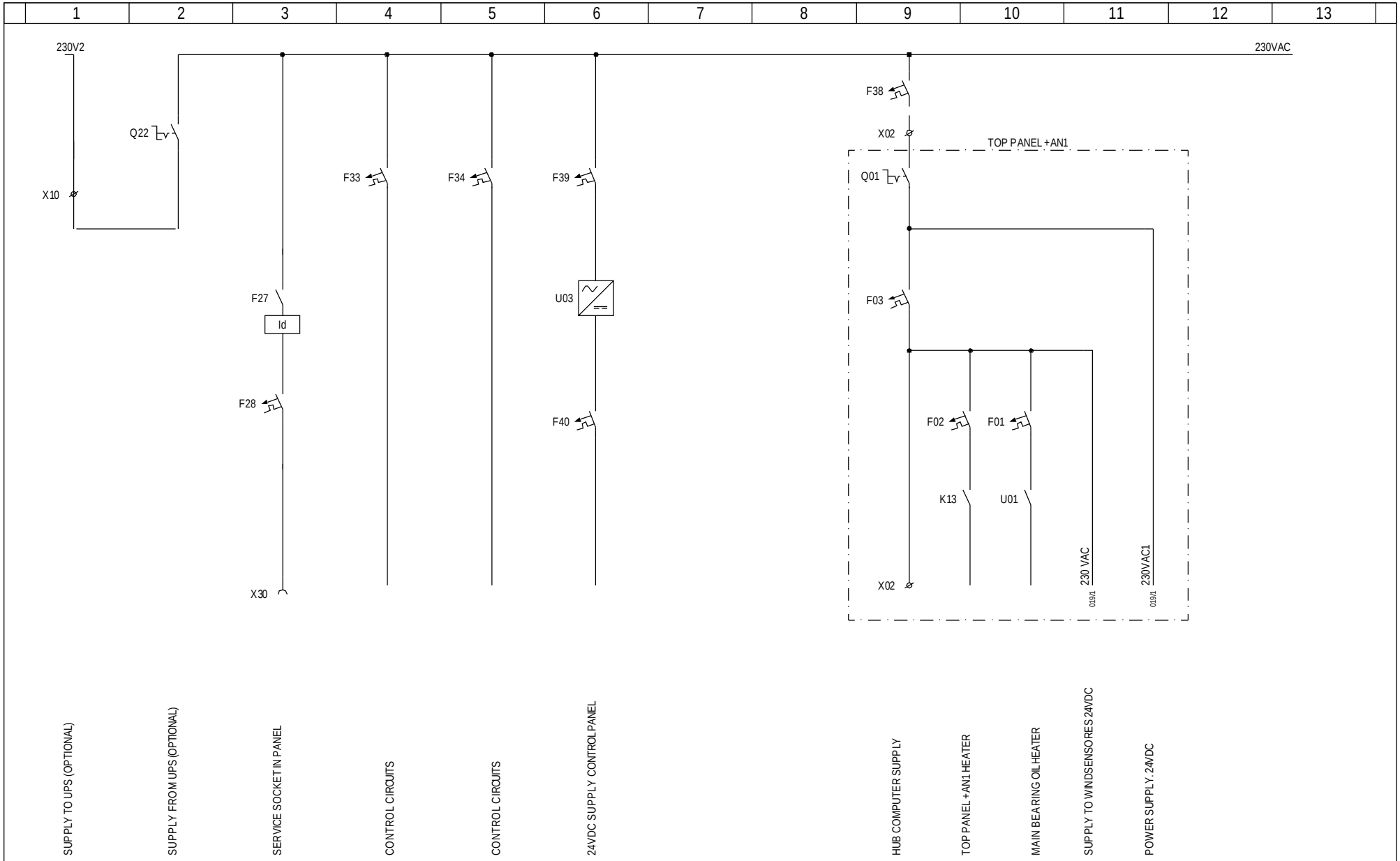

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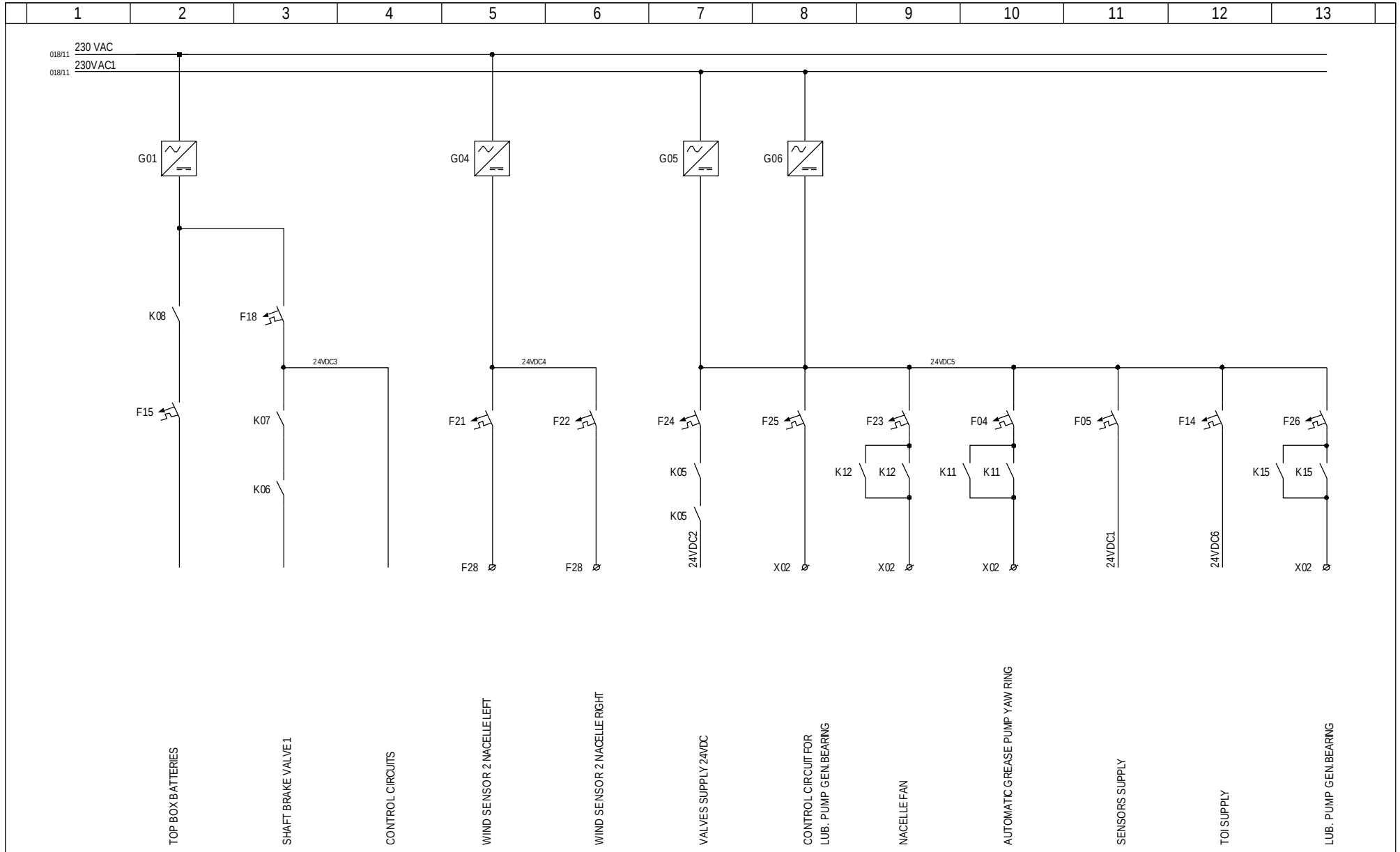
	Date	Initials	Function	Control Panel +AT2		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 019	Sheet 018



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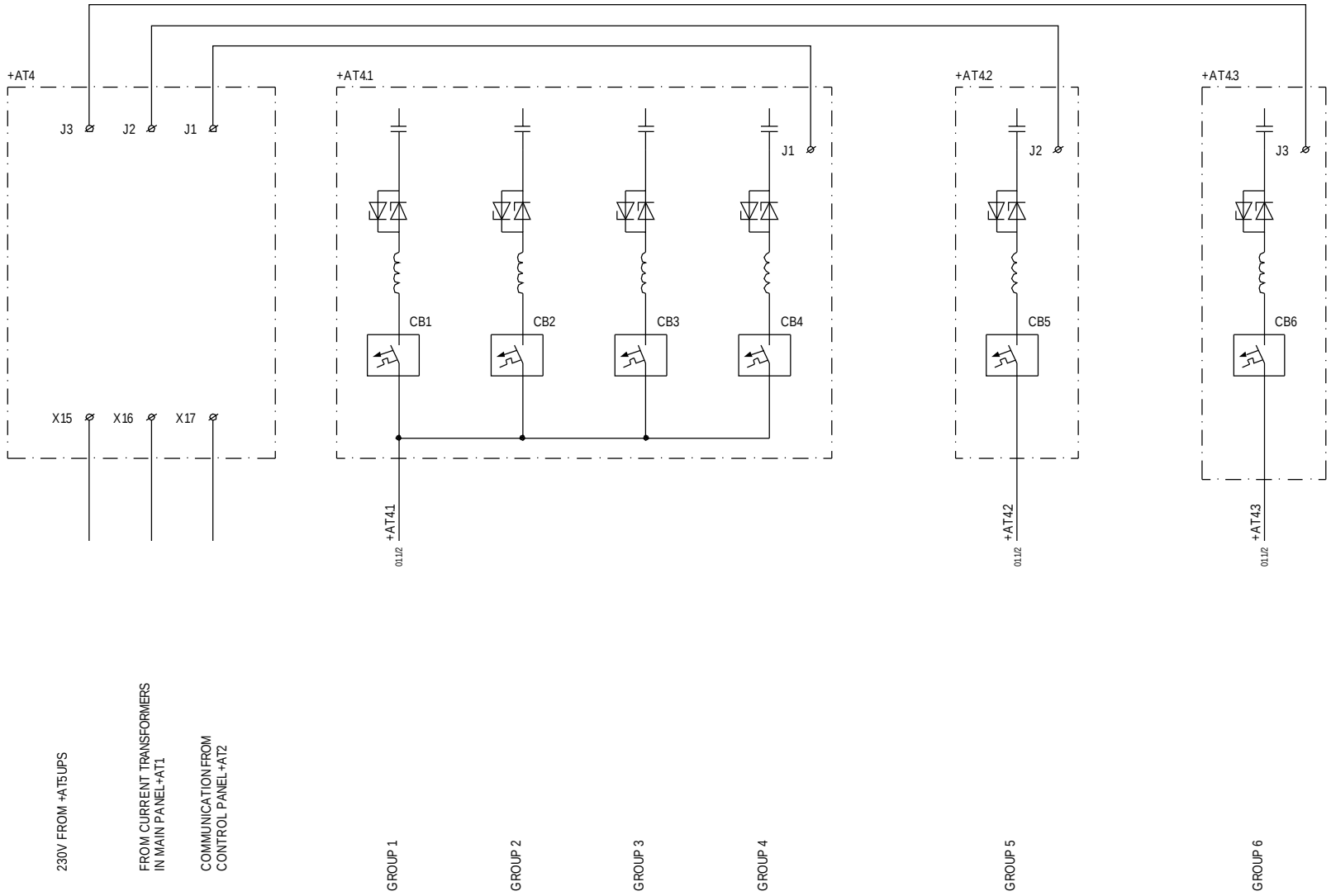
	Date	Initials	Function	Top Panel +AN1		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 020	Sheet 019



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	Date	Initials	Function	DYN PFC Panel +AT4 Option		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 021	Sheet 020

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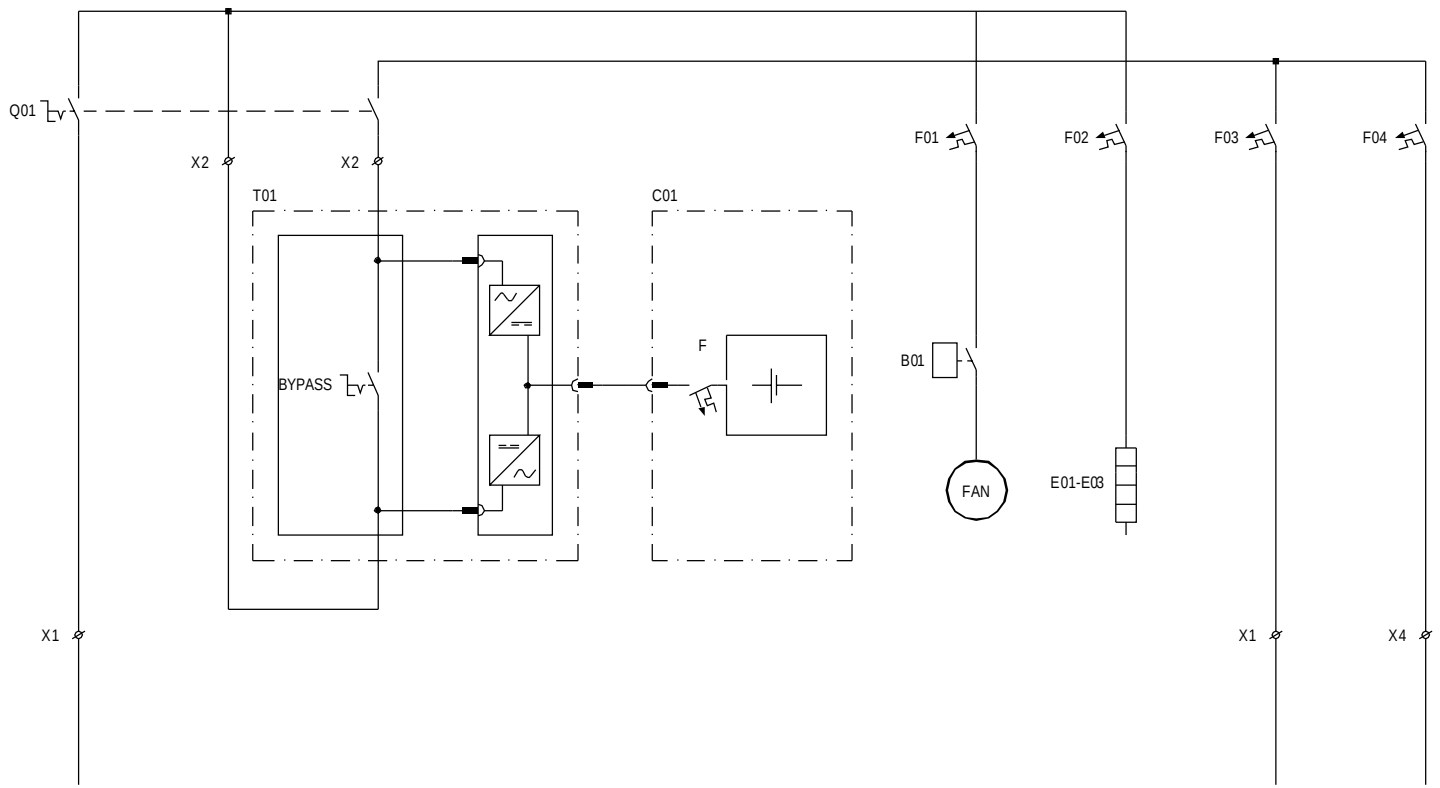
13:56



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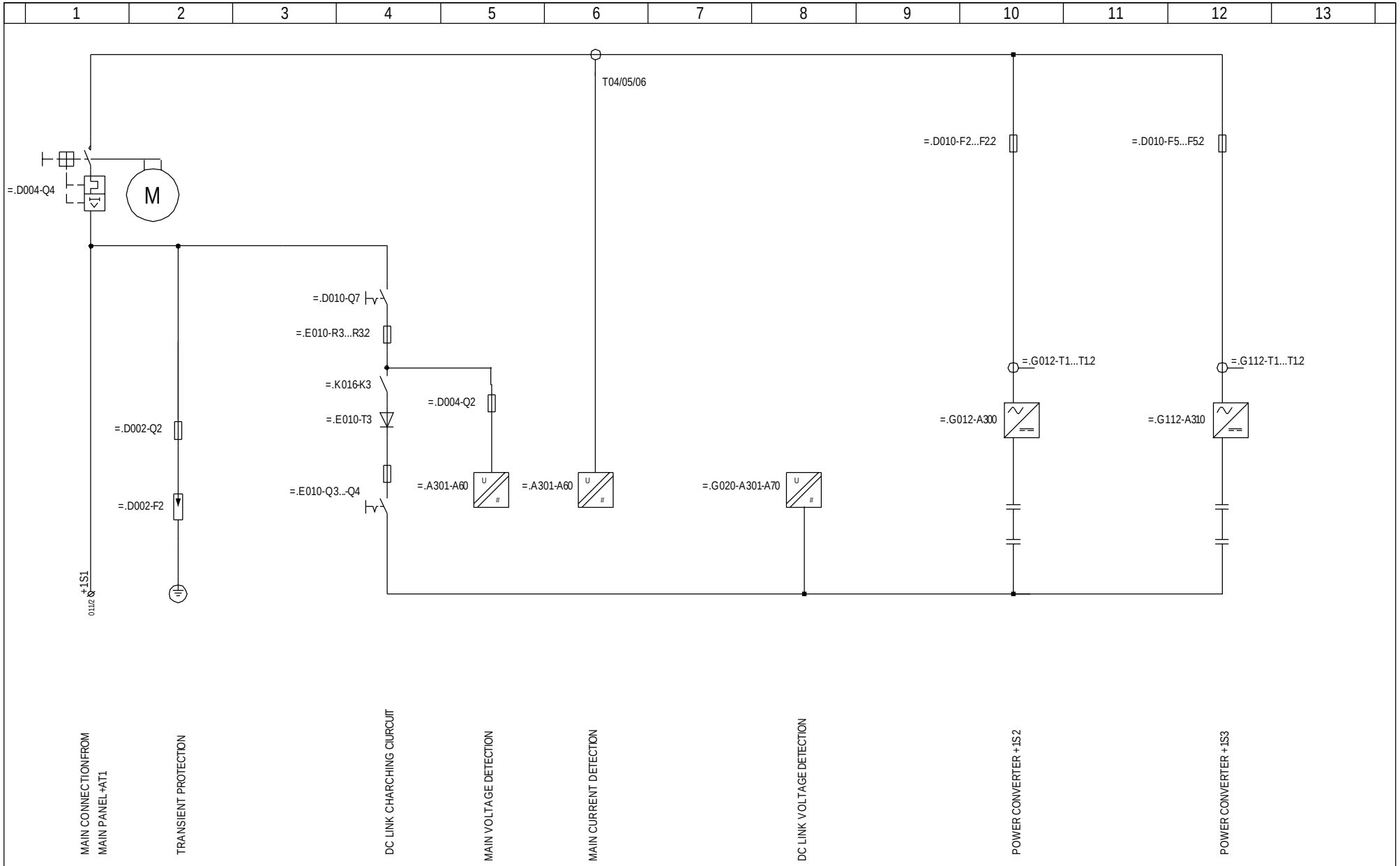
	Date	Initials	Function	UPS Panel +AT5 Option		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031028	CHO	Rev. -	Drawing no. 6011876	Cont. sheet 022	Sheet 021



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	Date	Initials	Function	PCS Converter =BA+1S1 Option		
Designed	030728	CHO	Project title	Single Line Diagram, NM72 & NM82 30T, 690V 50Hz AS, 1-Speed EVO II		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050126	SLB	Rev. -	Drawing no. 6011876	Cont. sheet -	Sheet 022

02-03-05
13:56

Change Info

Item no.	***Item text:***
None	**Emergency Line Diagram, V82-1.65MW MRK II & NM72/NM82 690V 50Hz**

Active revision *for production*

Drawing no.: 6014867

Version	Date	Init./App.	Description of change since last revision
05	06.10.2005	INI/FLT	Updated for simple mistake. References updated. Page 101: Current path 3, TAC84 U04 terminals no.add. TAC85 corrected to 84. Current path 4, S7 corrected to S10.

LST no.: None *BOM no.: None*

Version	Date	Init./App.	Description of change since last revision
xx	xx.xx.xxxx	xxx/	Writhe the change

Old revisions *for service*

Drawing no.: 6014867

Version	Date	Init./App.	Description of change since last revision
04	20.06.2005	INI/FLT	References and text updated. Page 001, page 101, page 103, page 104, page 107 and page 108.
03	02.05.2005	FLT/FLT	References and text updated. Page 107: New page added Page 108: Earlier page 107
02	25.01.2005	INI/FLT	All pages updated with Vestas logo Page 101: K01. corrected to +AT2-K01, terminal 65-66 text corrected and reference updated. Page 102: Contact ID K01. corrected to +AT2-K01 and reference updated. K05 references added. Page 103 Text “BATTERY BACKUP” added. Text X02 (HUB HATCH SHOWN OPEN) added. Text K09 corrected. External +AT2 added. K03 connection corrected. K07 terminal text corrected and references updated. Page 104: K07 terminal 65 and 66 removed. K16 references updated. K01. corrected to +AT2-K01. External “HUB HATCH OVERRIDE PENDANT” added. K16 changed to K07 terminal 65 and 66. K01. corrected to +AT2-K01. K03 and K04 references added. Page 107: Text “BATTERY BACKUP” added. K16 terminals 8,9,11 and K16 terminals 5,6,7 removed. K16 terminals 1,3,4 and K07 terminals 33 and 34 added.
01	22.04.2004	CHO/CHO	First version

LST no.: xxxxxxxx *BOM no.: xxxxxxxx*

Version	Date	Init./App.	Description of change since last revision
xx	xx.xx.xxxx	xxx/	Writhe the change

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E-mail: vestas@vestas.com • Web: www.vestas.com

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PAGE	CONTENT	DATE	REVISION
001	Table of Contents	051006	05
100	+AT2 Safety stop relay	050502	–
101	+AT2 Safety stop relay	051006	–
102	+AT2 Safety stop relay	050502	–
103	+AN1 Emergency stop relay	050620	–
104	+AN1 Emergency stop relay	050620	–
105	+AT2 TOI Inputs Emergency	050502	–
106	+AN1 TOI Inputs Emergency	050502	–
107	+AN1 TOI In/outputs Passi	050620	–
108	+AN1 TOI In/outputs Activ	050620	–

06-10-05

12:04

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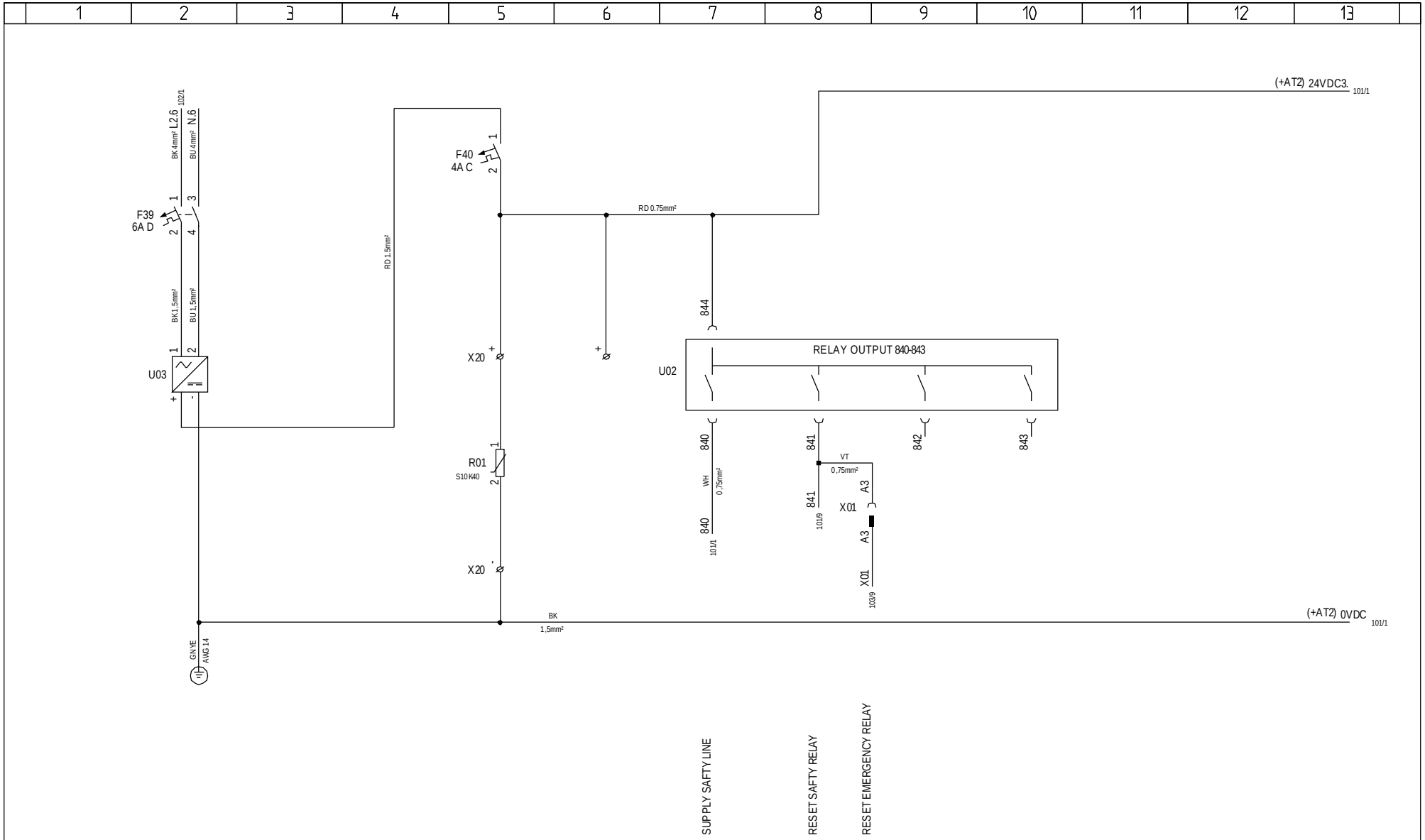
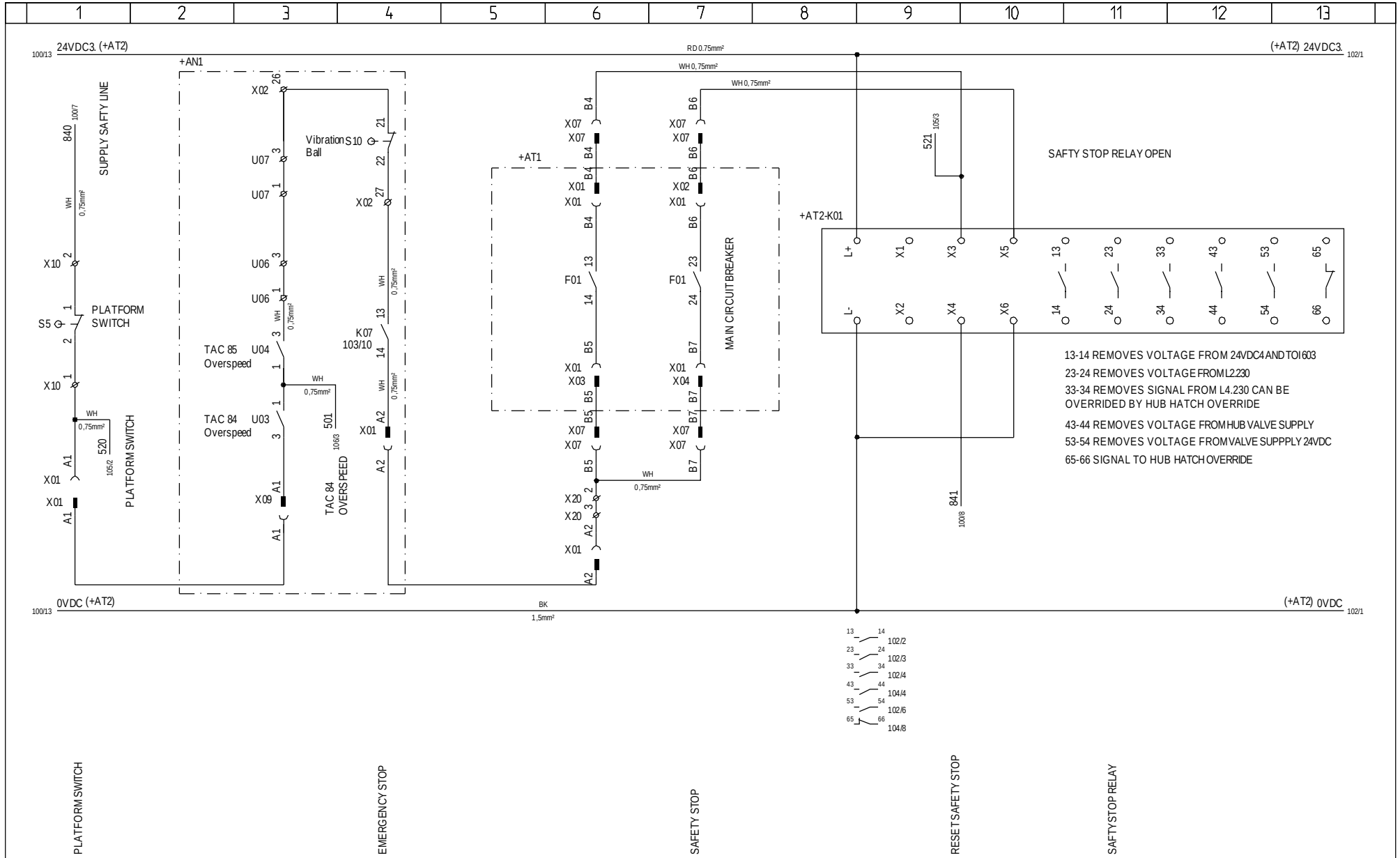
	Date	Initials	Function	Table of Contents		
Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz		
Approved	051006	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	051006	INI	Rev. 05	Drawing no. 6014867	Cont. sheet 100	Sheet 001



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	+AT2 Safety stop relay	
		Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz	
		Approved			Comments	Customer	Vestas Wind Systems A/S
		Reviced	050502	FLT	Rev. -	Drawing no. 6014867	Cont. sheet 101 / Sheet 100

06-10-05
12:04



	Date	Initials	Function	+AT2 Safety stop relay		
Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz		
Approved	051006	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	051006	INI	Rev. -	Drawing no. 6014867	Cont. sheet 102	Sheet 101

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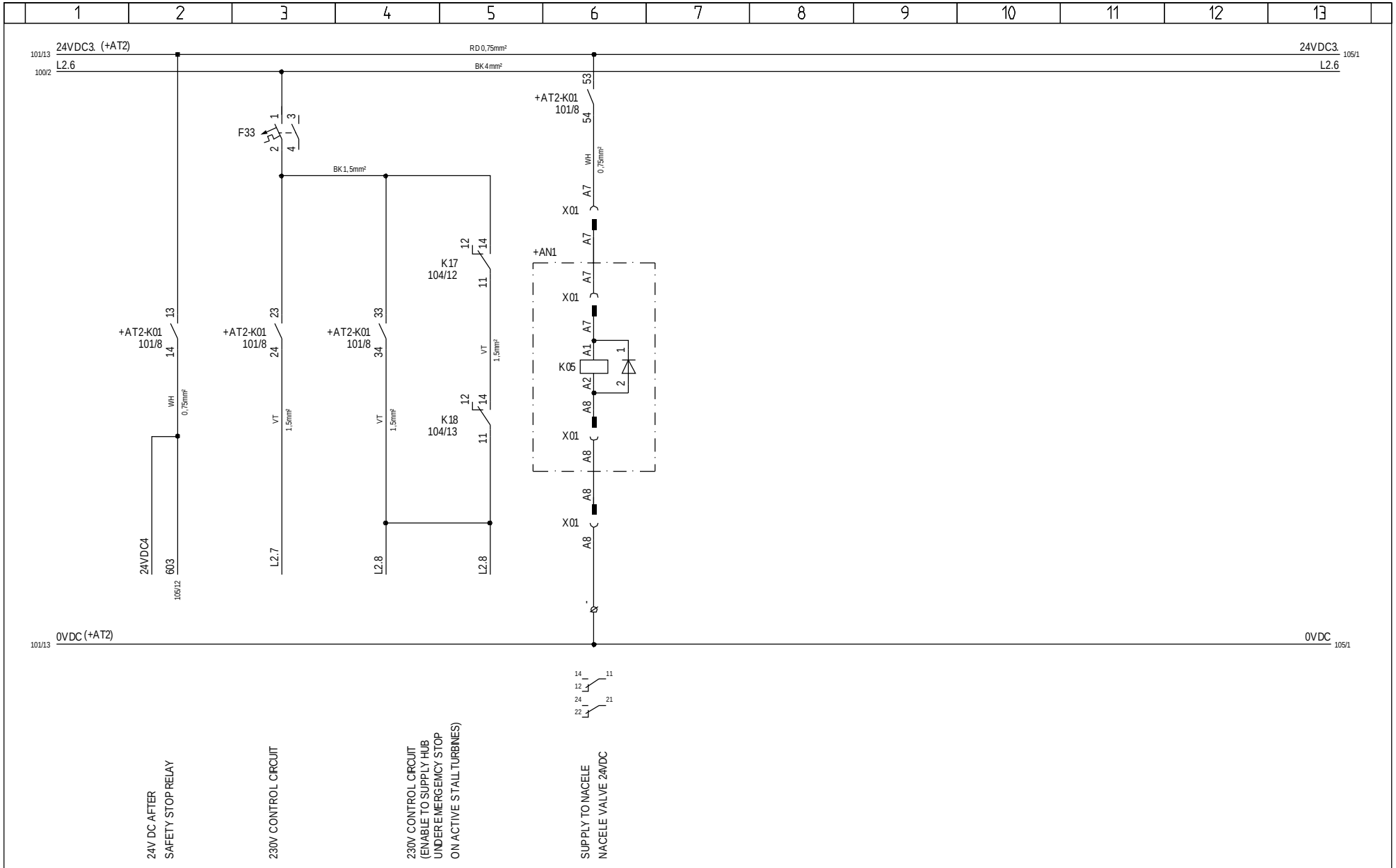
06-10-05 12:04



06-10-05

12:04

Vestas

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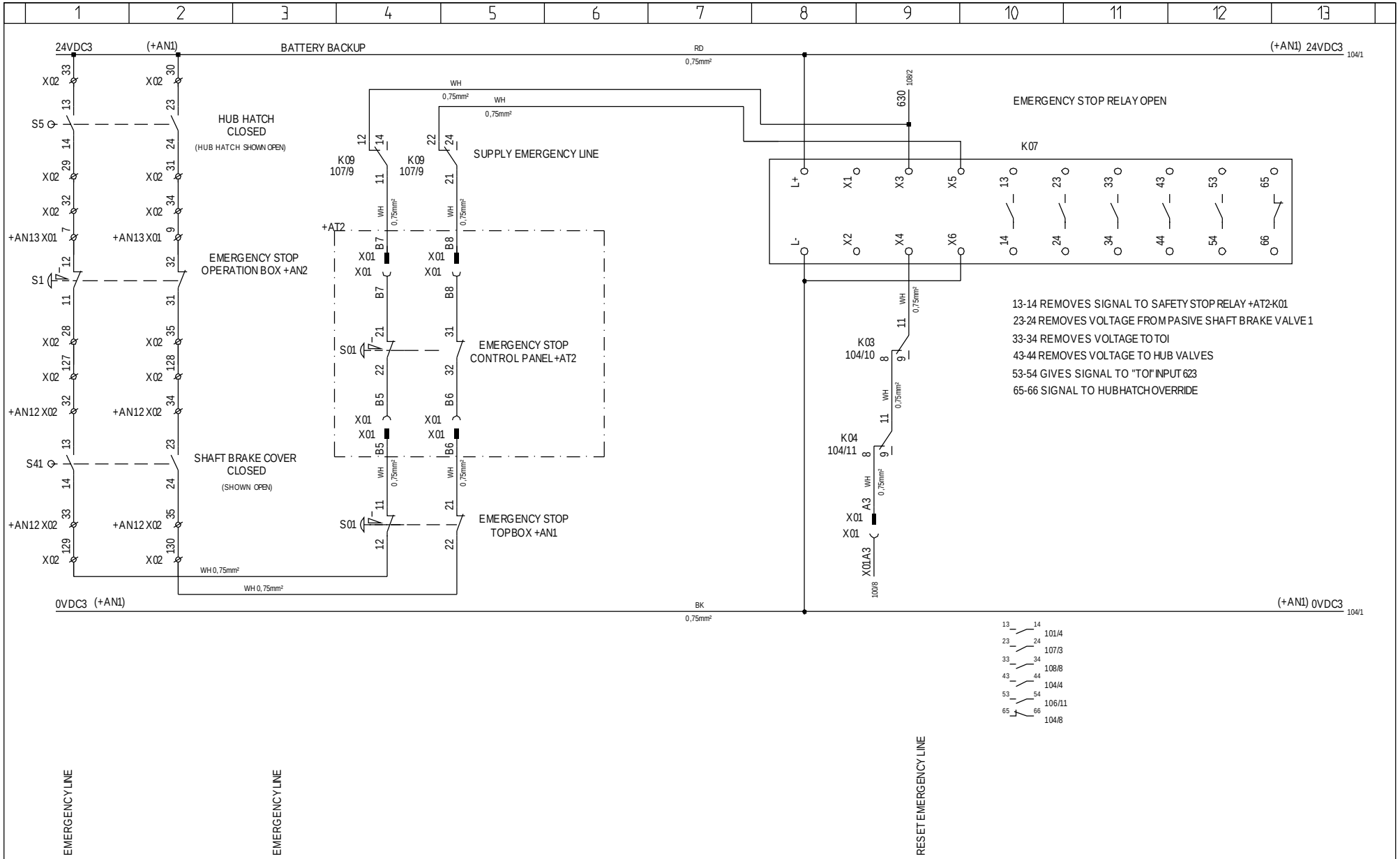
	Date	Initials	Function	+AT2 Safety stop relay		
Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050502	FLT	Rev. -	Drawing no. 6014867	Cont. sheet 103	Sheet 102



	Date	Initials	Function	+AN1 Emergency stop relay		
Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz		
Approved	050620	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	050620	INI	Rev. -	Drawing no. 6014867	Cont. sheet 104	Sheet 103

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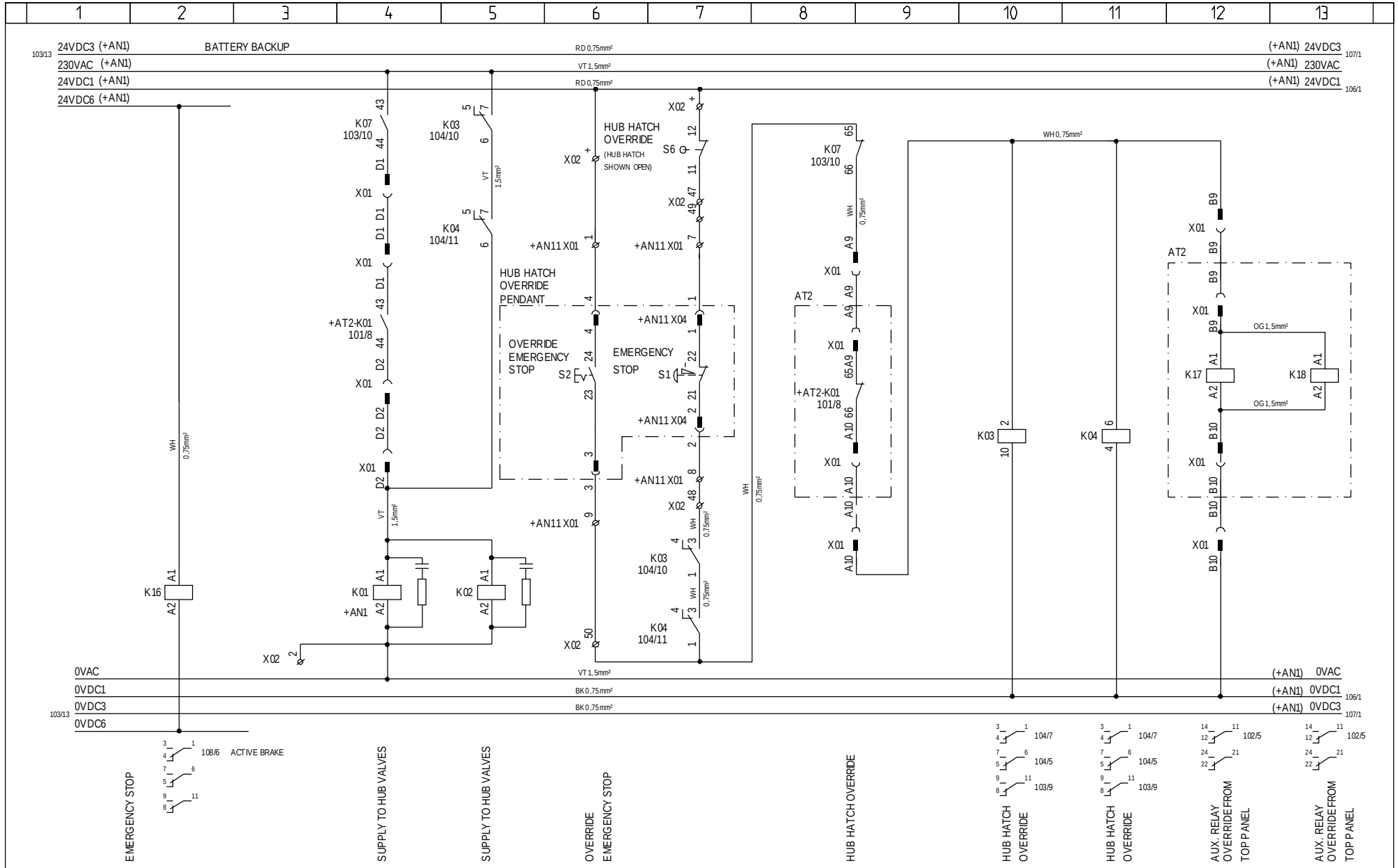
12:04



	Date	Initials	Function	+AN1 Emergency stop relay		
Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz		
Approved	050620	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	050620	INI	Rev. -	Drawing no. 6014867	Cont. sheet 105	Sheet 104

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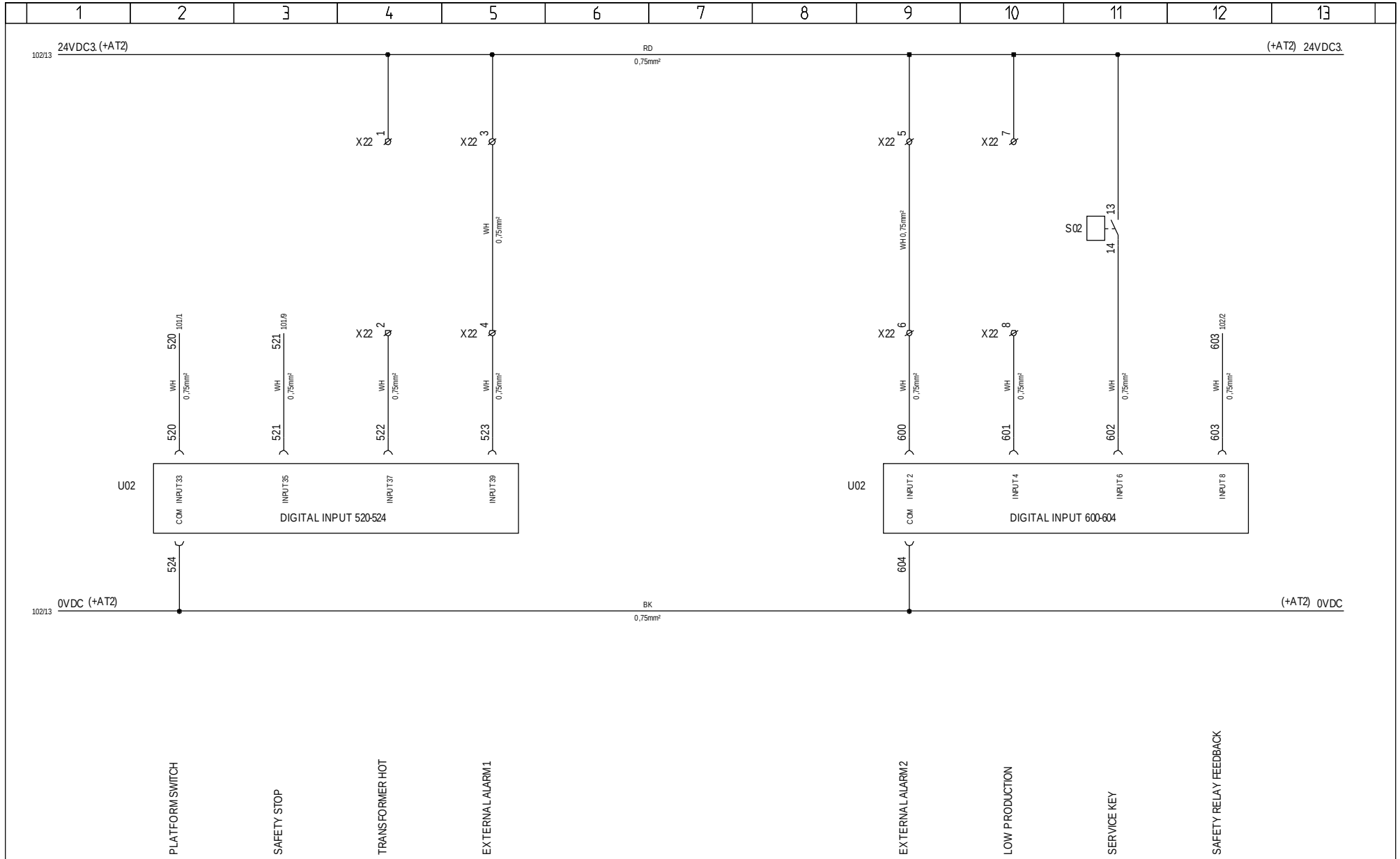
12:04



06-10-05

12:04

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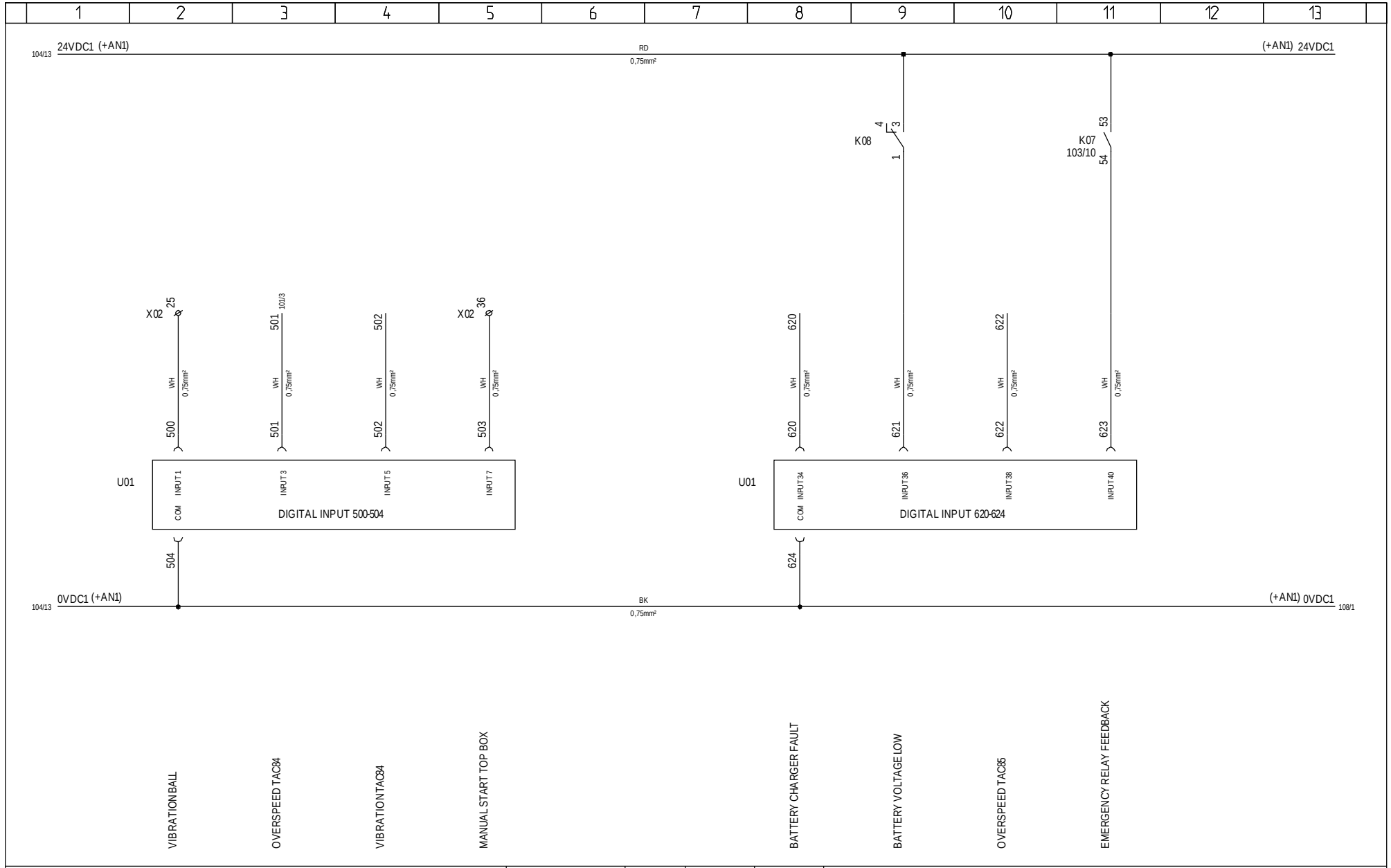
	Date	Initials	Function	+AT2 TOI Inputs Emergency stop relay		
Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050502	FLT	Rev. -	Drawing no. 6014867	Cont. sheet 106	Sheet 105



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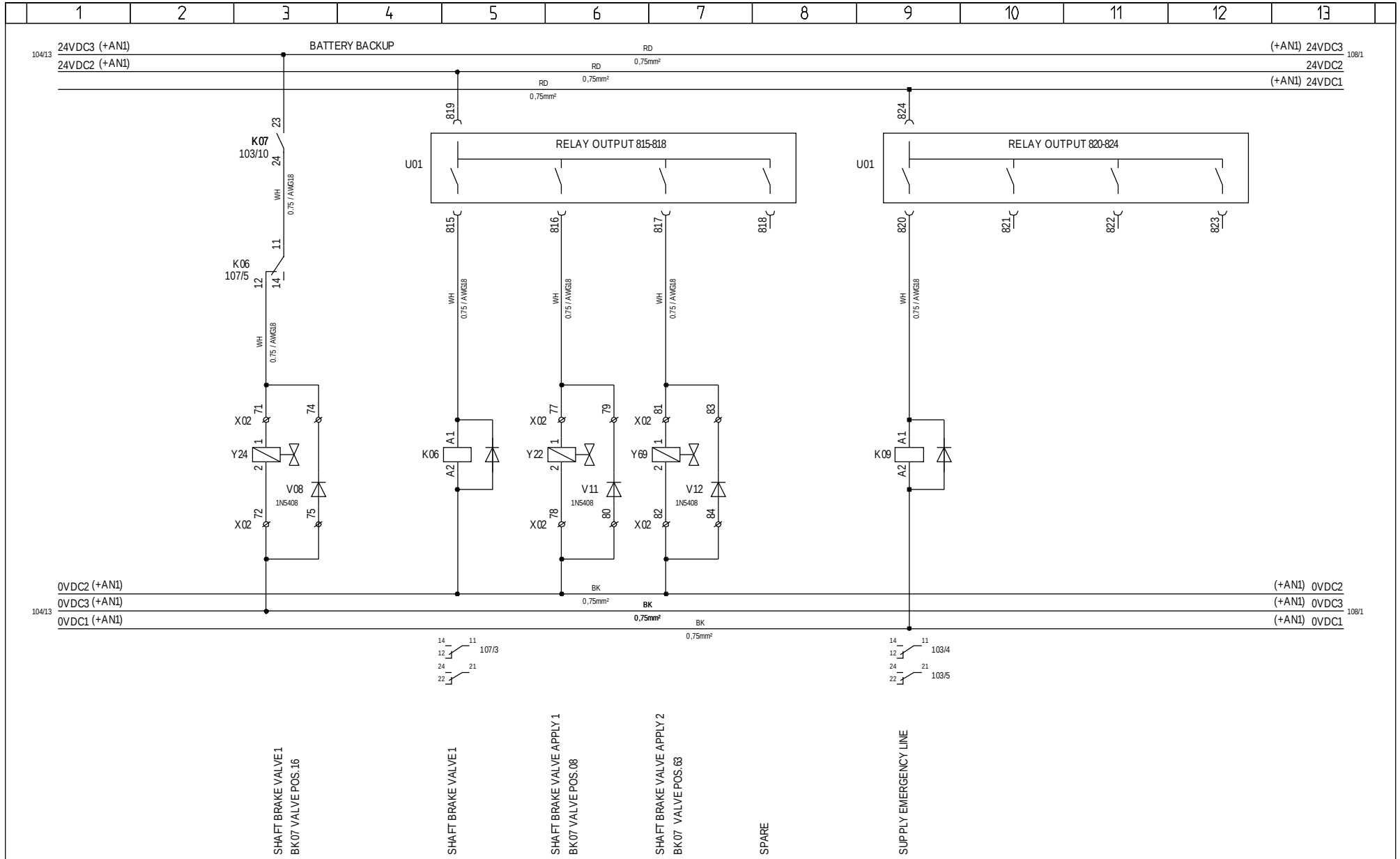
	Date	Initials	Function	+AN1 TOI Inputs Emergency stop relay		
Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050502	FLT	Rev. -	Drawing no. 6014867	Cont. sheet 107	Sheet 106



Vestas

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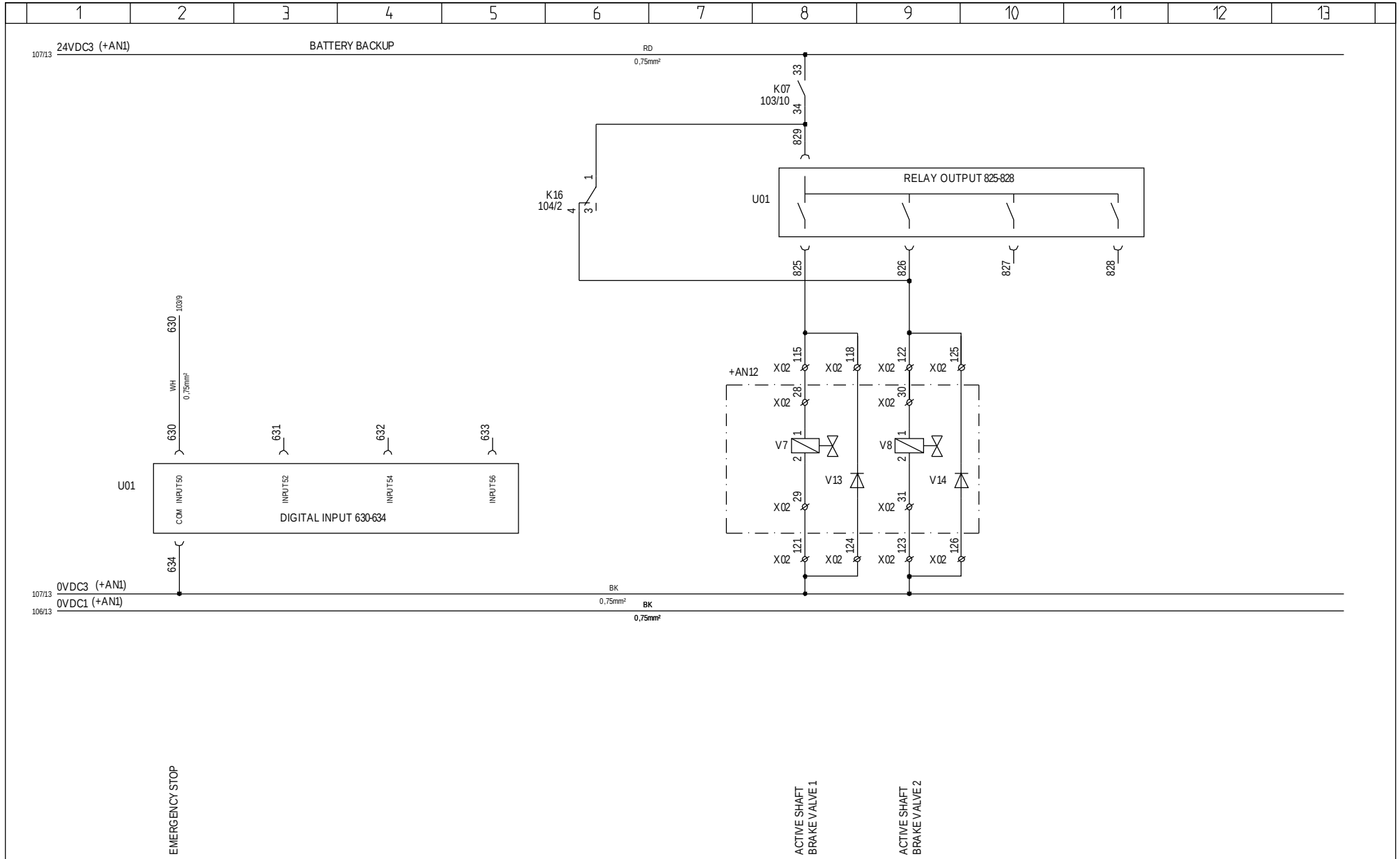
	Date	Initials	Function	+AN1 TOI In/outputs Passive Brake Emergency stop relay		
Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz		
Approved	050620	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	050620	INI	Rev. -	Drawing no. 6014867	Cont. sheet 108	Sheet 107

06-10-05 12:04



Vestas

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	Date	Initials	Function	+AN1 TOI In/outputs Active Brake Emergency stop relay		
Designed	050125	CHO	Project title	Emergency Line, NM72 & NM82 IEC 690V 50Hz		
Approved	050620	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	050620	INI	Rev. -	Drawing no. 6014867	Cont. sheet -	Sheet 108

06-10-05
12:04

Change Info

Item no.	***Item text:***
60096208	**Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III, 690V 50Hz**

Active revision for production

Drawing number: 6012514

Version	Date	Init./App.	Description of change since last revision
08	13.12.2006	INI/SLB	Changed with ECO 219510_ Grid++ and PCS Converter OPTION removed. Page 031: T04, T05 & T06 Current transformers removed. T07 Power converter Removed. F17 Fuse removed. Page 040: X07.C5 Text changed to “Spare for power consumption”. Page 043: W598 connection between +AT1 and PCS converter removed. Page 100: Text “OR=BA+1S1 if present” removed Page 102: T04, T05, T06, T07, F07 & F17 with connections removed. Page 200: Connections L2.230 and L2.N removed.

LST no.: 21000074 Material BOM no.: 60096208

Version	Date	Init./App.	Description of change since last revision
11	03.04.2007	HHU+INI/FLT	Changed with ECO 223393_Updated for production in Spain Please see Change Description in ECO 223493

Old revisions for service

Drawing number: 6012514

Version	Date	Init./App.	Description of change since last revision
07	24.10.2006	INI/FLT	Changed with ECO 217924 + 217924 Implementation of CMS & revised label. Page 030: Panel Front Layout updated with revised labels. Page 039: New page with following text added. ” Use copper conductors only for external wires and cables. Use 60°C cables for currents less than 100Amps and 75°C cables for higher currents”.
06	21.06.2006	INI/FLT	All pages, project title updated. Page 030: Panel Front Layout updated with two new warning labels 118934.
05	24.01.2005	SLB/SLBP	Implementation of PCS Converter Page 001 Updated Page 031: Marking for cable connection 2L1, 2L2 and 2L3 added. Page 043: Connection for X04, W598 and PCS Converter =BA+1S1 added. Page 100: Text to terminals 2L1, 2L2 and 2L3 added. Text changed “TO +AT4 OR =BA+1S1 IF PRESENT”.
04	15.11.2004	INI/CHO	All pages updated with Vestas logo. Page 040: W590 cable ID changed from 37AWG18 to 37G1 mm². Page 100: Text “+AT5 if present” corrected to “ to +AT4 if present”. Page 104: Terminals U, V and W added. Cable color added.
03	14.07.2004	INI/CHO	Page 001: Updated Page 100: F01 text grid + settings added, std. settings updated. Page 202: E01 and E02 settings changed from 10°c to 60°C.
02	15.03.2004	CHO/CHO	Page 001: Updated Page 040: Texts updated Page 044: X11 terminals corrected Page 102: X11 terminals corrected
01	25.10.2003	ATM/ATM	First version

LST no.: 21000074 Material BOM no.: 60096208

Version	Date	Init./App.	Description of change since last revision
10	12.03.2007	INI/FLT	Changed with ECO 222575 Correction, item has not been removed in rev. 09 Removed 1x60004961_POWER CONVERTER WAD 200kW/690V (T07).
09	12.12.2006	INI/SLB	Changed with ECO 219510_ Grid++ and PCS Converter OPTION removed. Removed item: 1x60004961_POWER CONVERTER WAD 200kW/690V (T07). 1x60004648_ CB 3RV1021-0AA10 0.11-0.16A (F17). 1X60007259_ BUSBAR ADP 72mm 32A WIRE (F17) 3x60007140_TRAFO CURRENT 200/1A (T04, T05 & T06)
08	25.10.2006	INI/FLT	Changed with ECO 217924 Added: 60095589_Label, Caution! Risk of…

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E-mail: vestas@vestas.com • Web: www.vestas.com

07	13.06.2006	SHL+INI/FLT	MAPICS implementation, controls DK Århus Phased out 60015667 and replaced with 51700901_TAC 40 690V Phased out 60015824 and replaced with 51700501_ Resistor Shunt 3x2,5 ohm 118934_2pcs. Warning labels added.
06	01.11.2004	MILJE/MILJE	60013341 Grid Connection PEN 30T 2003 removed.
05	09.08.2004	MILJE/MILJE	Material numbers 60007350 Cable conduit 15x25mm, 60007351 Cable conduit 15x40mm, 60007354 Cable conduit 25x40mm, 60007358 Cable conduit 40x40mm, 60007359 Cable conduit 40x60mm, 60007360 Cable conduit 40x80mm, 60007182 DIN rail and 60007201 Earth rail are been removed. Material no. 60104151 Cable conduit, DIN rail & earth rail added.
04	14.06.2004	FLT+CHO/CHO	Replacemet of RC-units. 60006042 and 60006043 added, 60006190 removed. New kit for CU bus bar.
03	12.03.2004	CHO/CHO	Transformer 60091319 changed to 60101986. 60007259 bus bar adaptor F17 added. 60011436 socket X10 added. X02 terminal label added. Sign f. terminal added. Material 60097907 changed from 2 pc. to 4 pc.
02	17.12.2003	ATM/	BOM changed to new items base unit
01	14.10.2003	ATM/ATM	First version

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PAGE	CONTENT	DATE	REVISION
001	Table of Contents	061213	08
030	Panel Front View	061024	-
031	Panel outline	061213	-
032	Terminals X02, X05, X08,	060621	-
039	Cable Connections	061024	-
040	External connections X01	061213	-
041	External connections X07	061213	-
042	External connections trig	060621	-
043	External connections X04	061213	-
044	External connetions light	060621	-
100	Main CB	061213	-
101	AUX Supply	061213	-
102	AUX Supply	060621	-
103	Thyristor connections	060621	-
104	Generator connections	060621	-
200	Internal connections	061213	-
201	Internal connections	060621	-
202	Internal connections	060621	-

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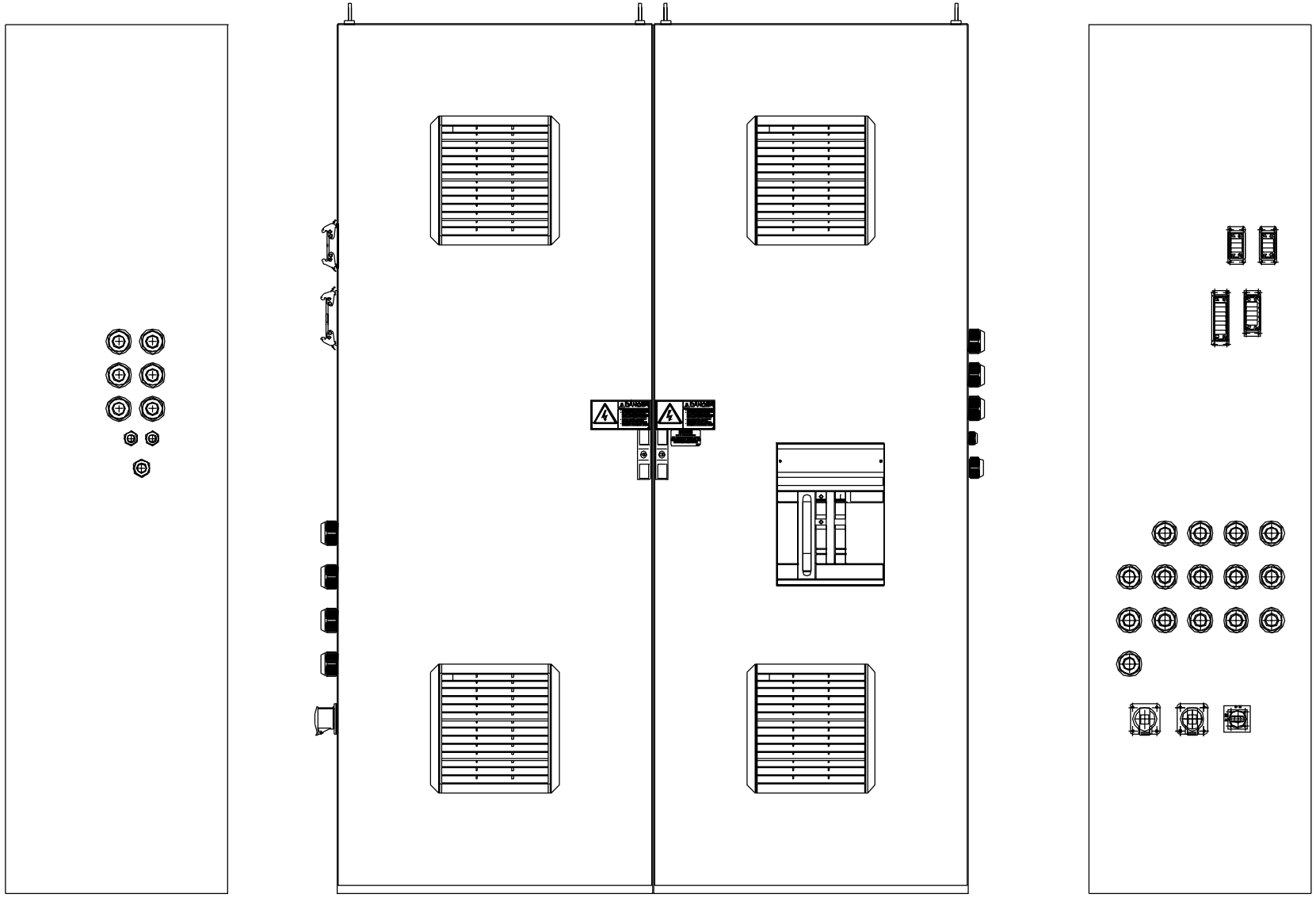
	Date	Initials		
Designed	031025	CHO	Function	Table of Contents
Approved	061213	SLB	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III
Reviced	061213	INI	Comments	
			Customer	Vestas Wind Systems A/S
			Rev. 08	Drawing no. 6012514
			Cont. sheet 030	Sheet 001

13-12-06
16:10



1600*2200*600mm (W*H*D)
Weight 830Kg

13-12-06
16:10

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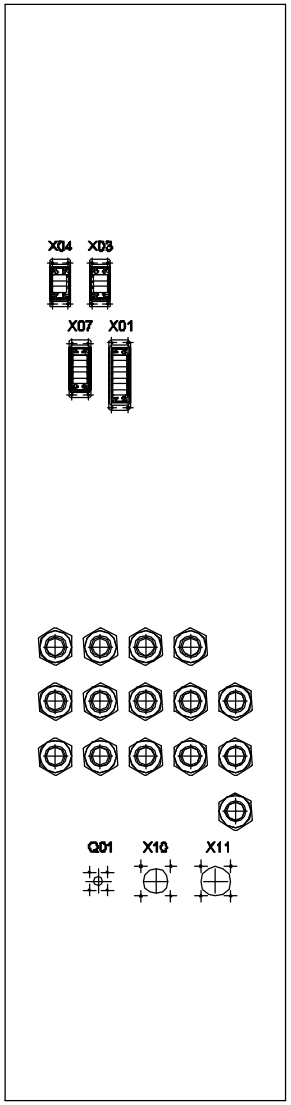
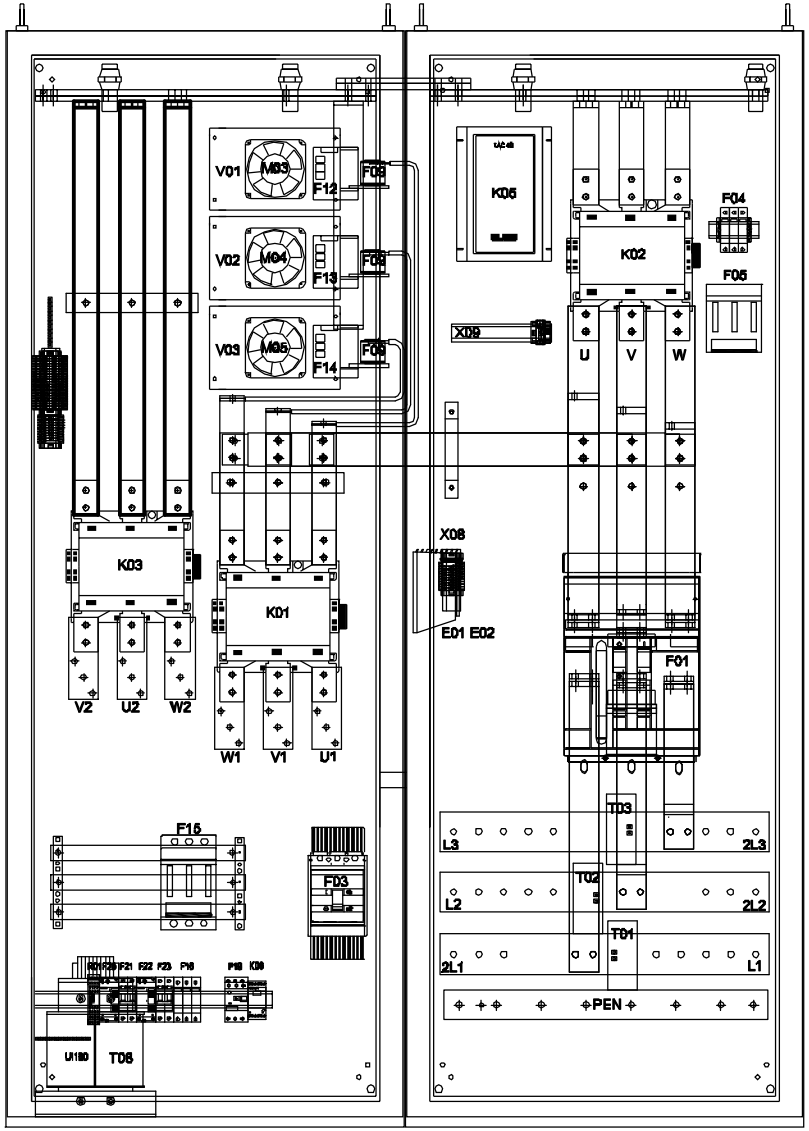
	Date	Initials	Function	Panel Front View		
Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
Approved	061024	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061024	INI	Rev. -	Drawing no. 6012514	Cont. sheet 031	Sheet 030

1	2	3	4	5	6	7	8	9	10	11	12	13

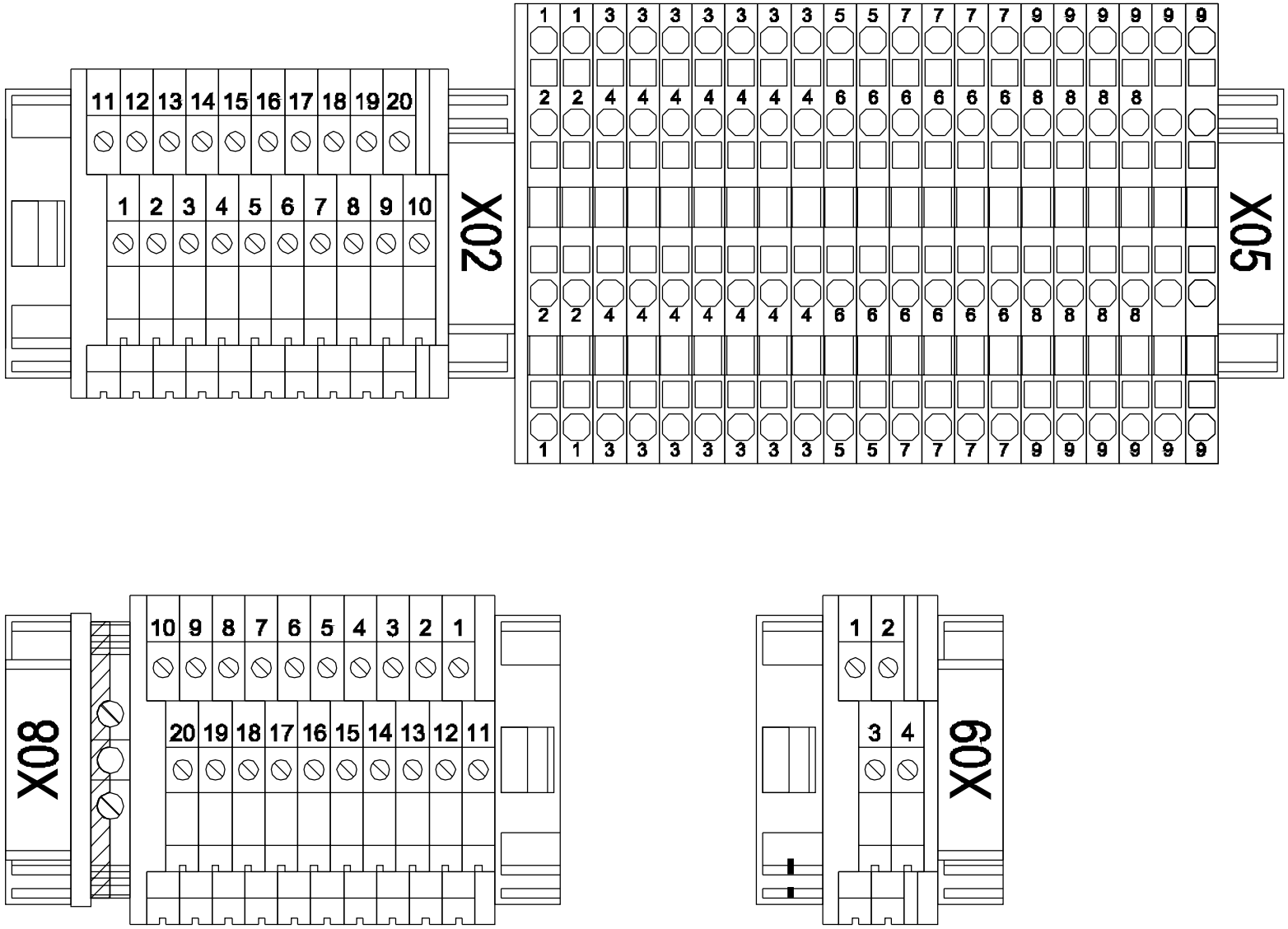
Inside view of left side panel





Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: Panel outline	
		Designed	031025	CHO	Project title: Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III	
		Approved	061213	SLB	Comments	Customer: Vestas Wind Systems A/S
		Reviced	061213	INI	Rev.: - / Drawing no.: 6012514	Cont. sheet: 032 / Sheet: 031

13-12-06
16:10



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Terminals X02, X05, X08, X09
		Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III
		Approved	060621	FLT	Comments	Customer: Vestas Wind Systems A/S
		Reviced	060621	INI	Rev. -	Drawing no. 6012514
					Cont. sheet 039	Sheet 032

13-12-06
16:10

USE COPPER CONDUCTORS ONLY FOR EXTERNAL WIRES AND CABLES.

USE 60°C CABLES FOR CURRENTS LESS THAN 100Amps AND 75°C CABLES FOR HIGHER CURRENTS.

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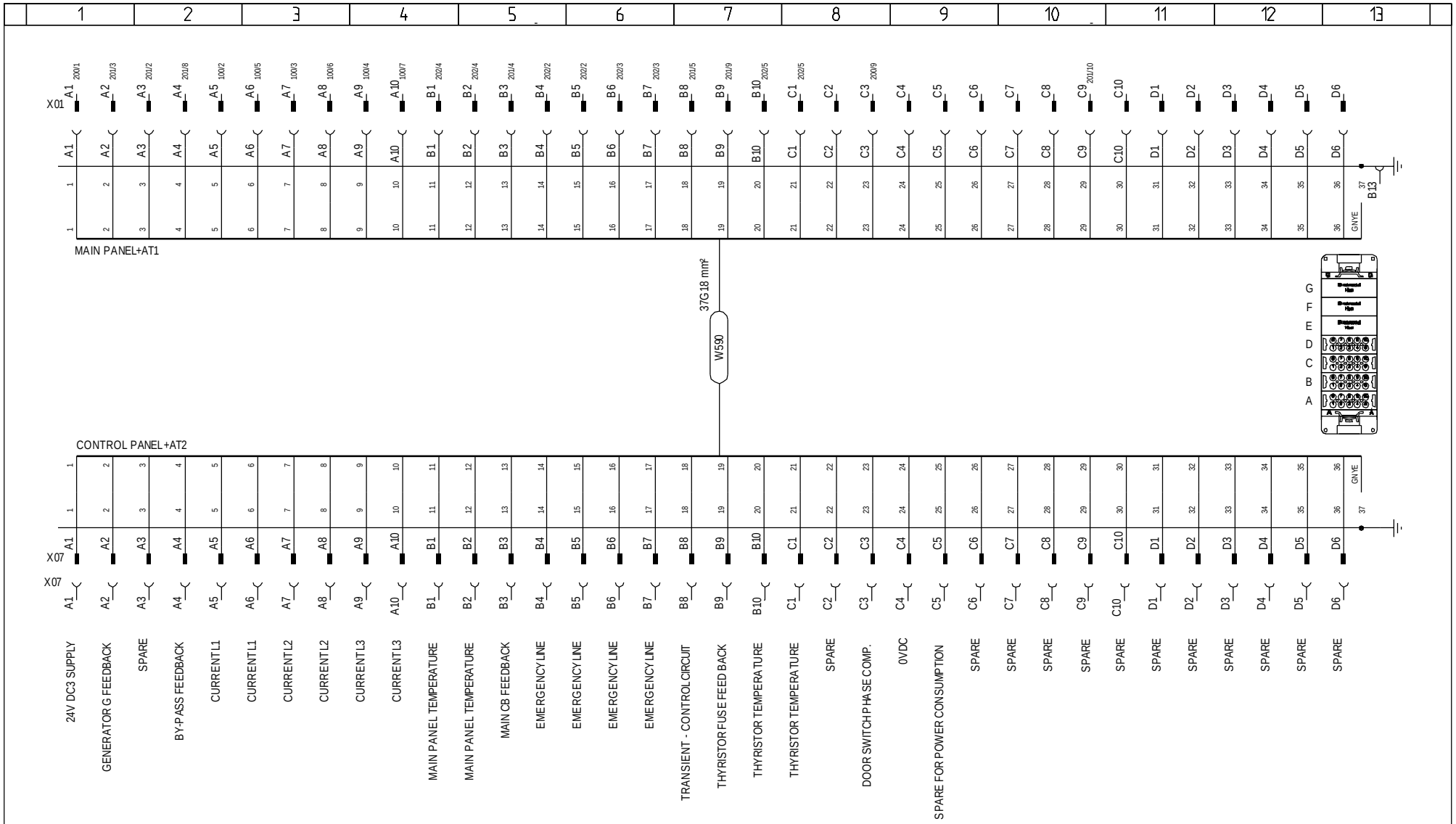
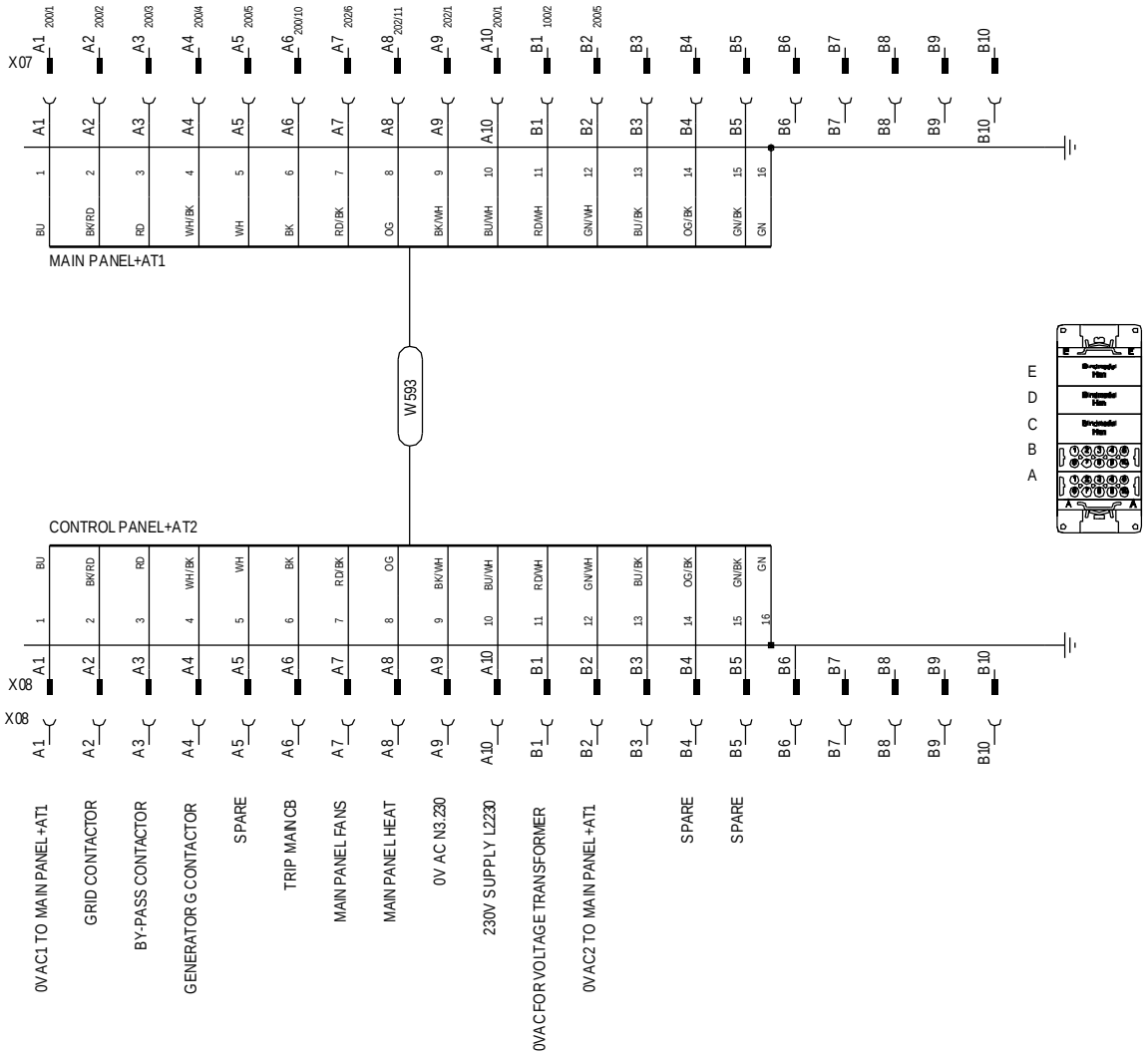
	Date	Initials		
Designed	031025	CHO	Function	Cable Connections
Approved	061024	FLT	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III
Reviced	061024	INI	Comments	
			Customer	Vestas Wind Systems A/S
			Rev. -	Drawing no. 6012514
			Cont. sheet 040	Sheet 039

13-12-06 16:10



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: External connections X01	
		Designed	031025	CHO	Project title: Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III	
		Approved	061213	SLB	Comments	Customer: Vestas Wind Systems A/S
		Reviced	061213	INI	Rev. - / Drawing no. 6012514	Cont. sheet 041 / Sheet 040

13-12-06
16:10



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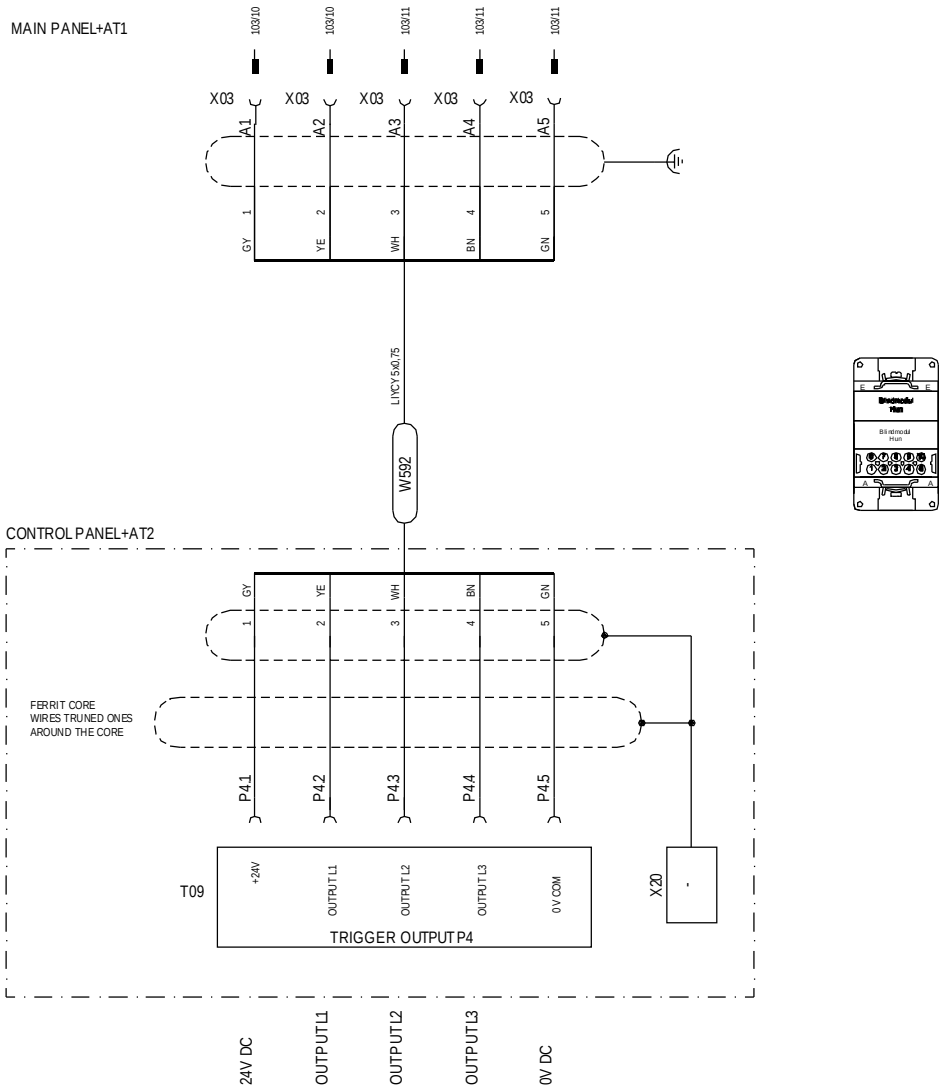
	Date	Initials	Function	External connections X07		
Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. -	Drawing no. 6012514	Cont. sheet 042	Sheet 041

13-12-06
16:10



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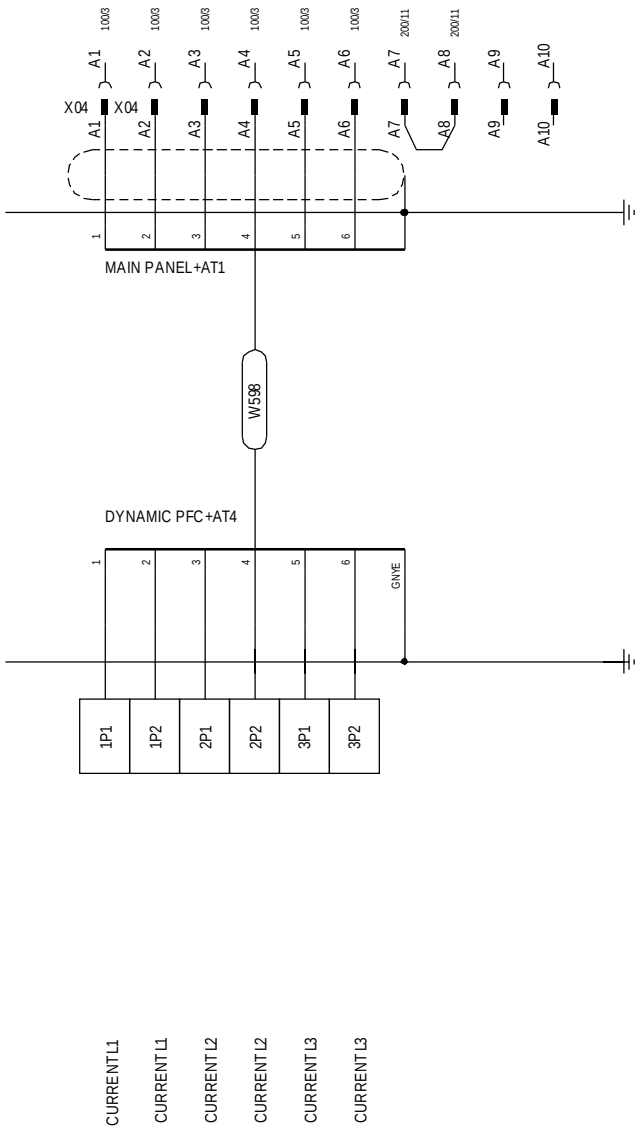
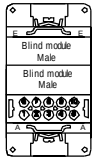
	Date	Initials	Function	External connections trigger		
Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
Approved	060621	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	060621	INI	Rev. -	Drawing no. 6012514	Cont. sheet 043	Sheet 042

13.12.06
16:10





Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connections X04	
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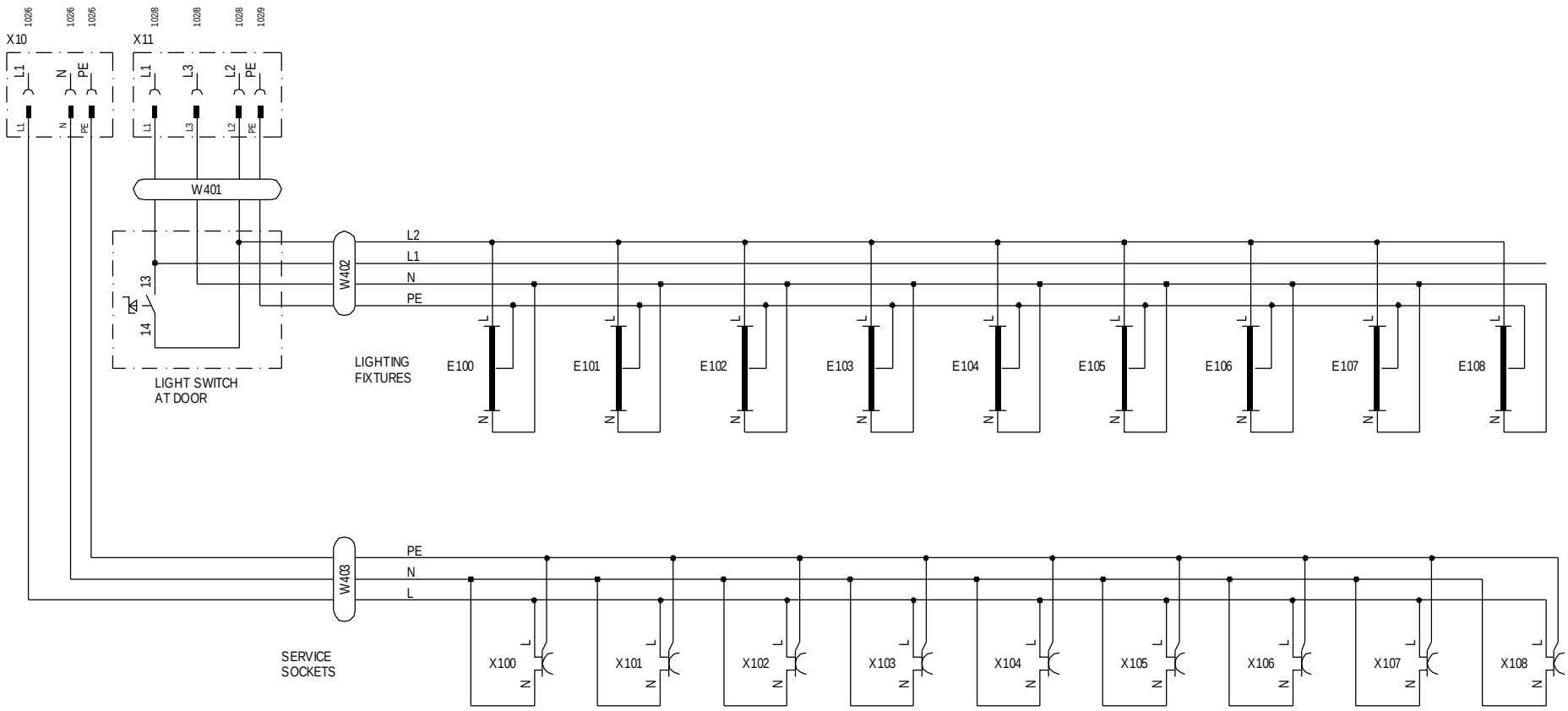
		Approved	061213	SLB	Comments	Customer	Vestas Wind Systems A/S
		Reviced	061213	INI	Rev. -	Drawing no. 6012514	Cont. sheet 044 / Sheet 043

13-12-06
16:10



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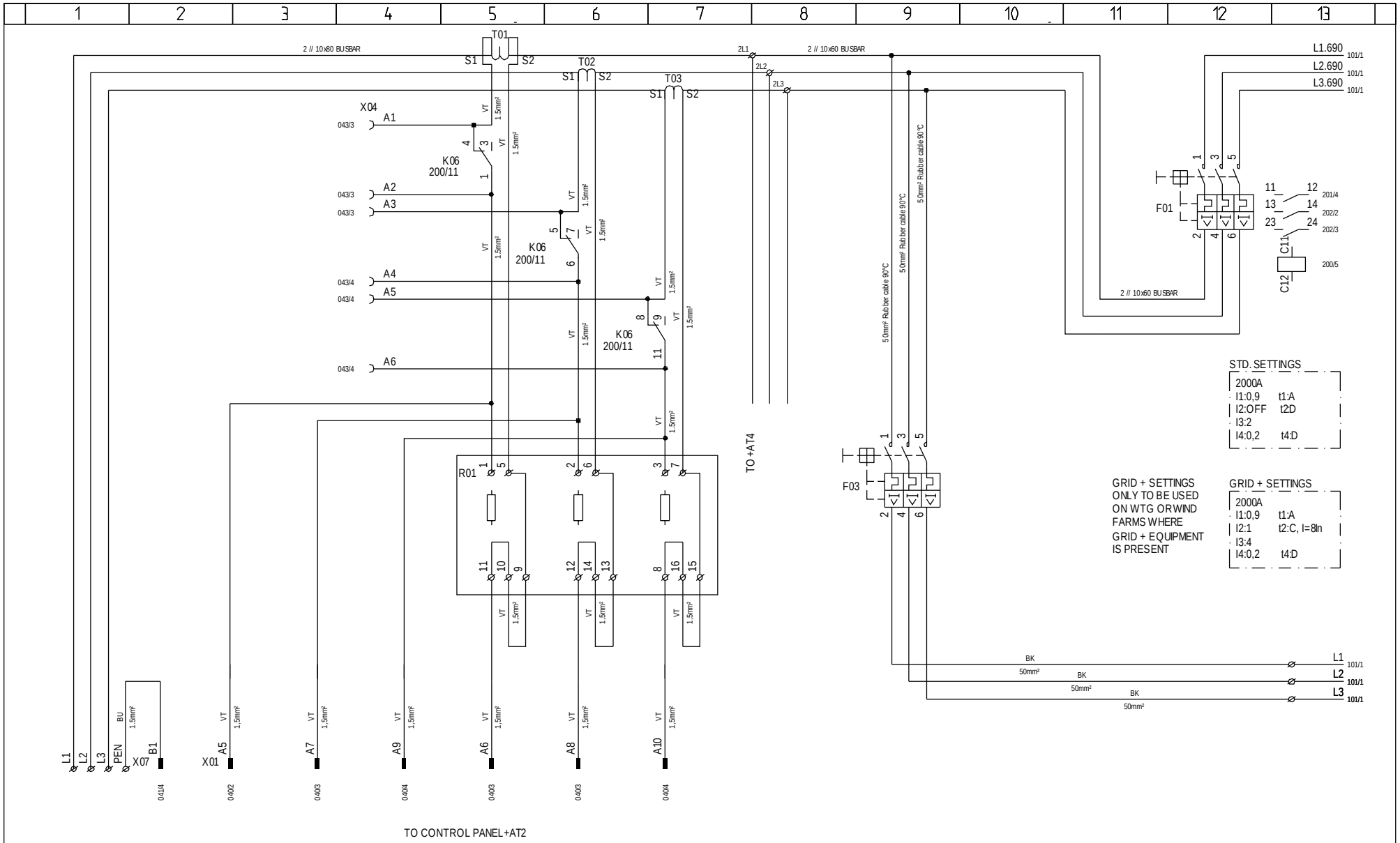
	Date	Initials	Function	External connetions light and service sockets		
Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
Approved	060621	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	060621	INI	Rev. -	Drawing no. 6012514	Cont. sheet 100	Sheet 044

13-12-06
16:10



	Date	Initials	Function	Main CB		
Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. -	Drawing no. 6012514	Cont. sheet 101	Sheet 100

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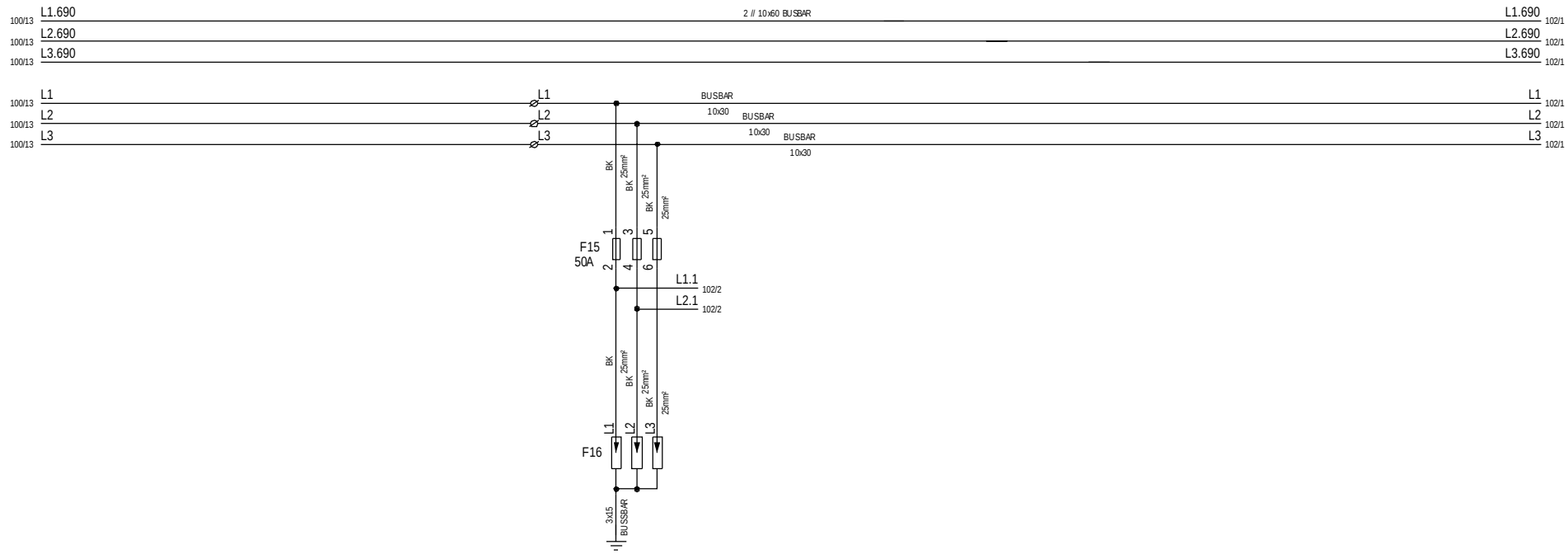
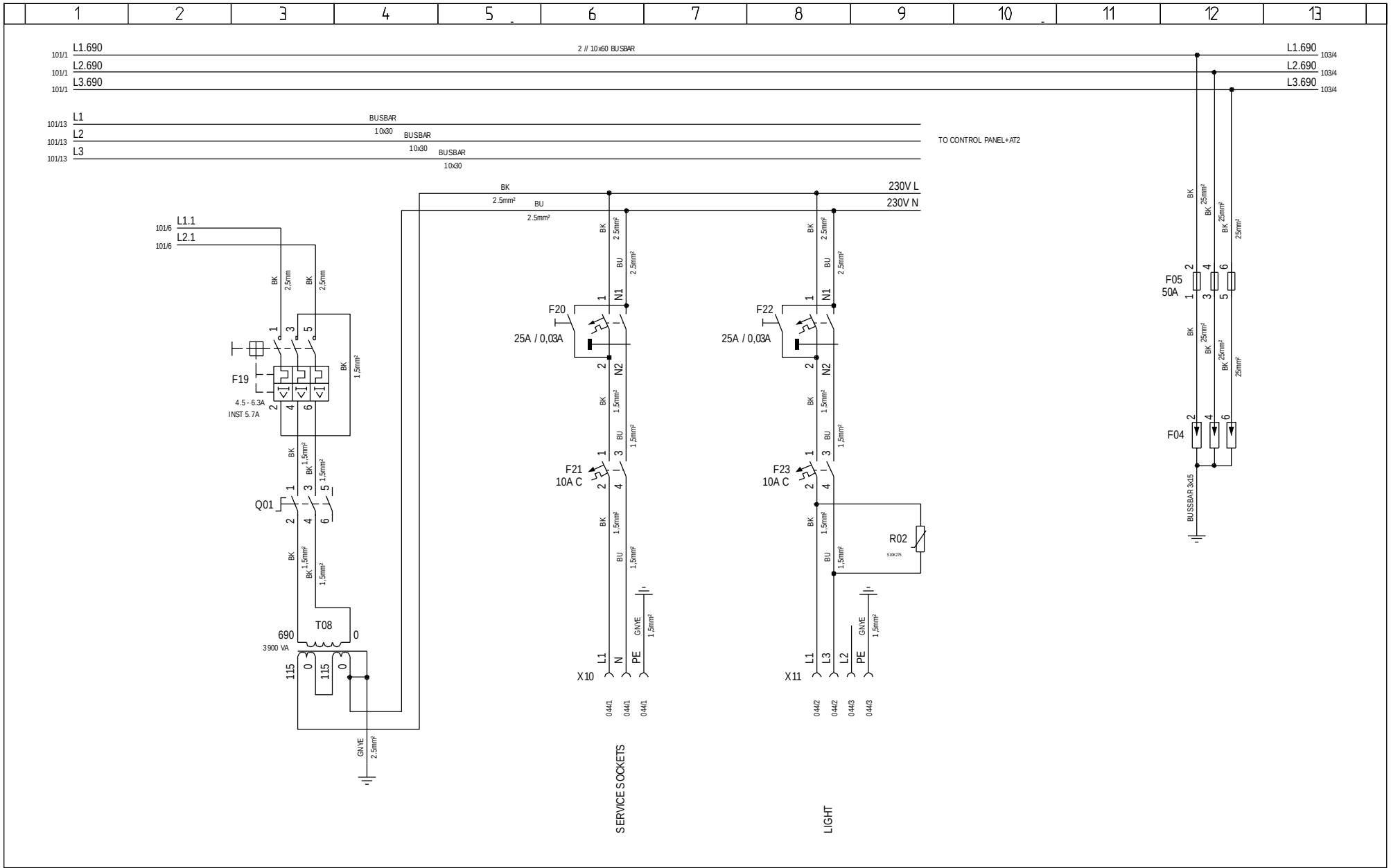
13.12.06
16:10



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	AUX Supply	
		Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III	
		Approved	061213	SLB	Comments	Customer	Vestas Wind Systems A/S
		Reviced	061213	INI	Rev. -	Drawing no. 6012514	Cont. sheet 102 / Sheet 101

13-12-06
16:10



	Date	Initials	Function	AUX Supply		
Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
Approved	060621	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	060621	INI	Rev. -	Drawing no. 6012514	Cont. sheet 103	Sheet 102

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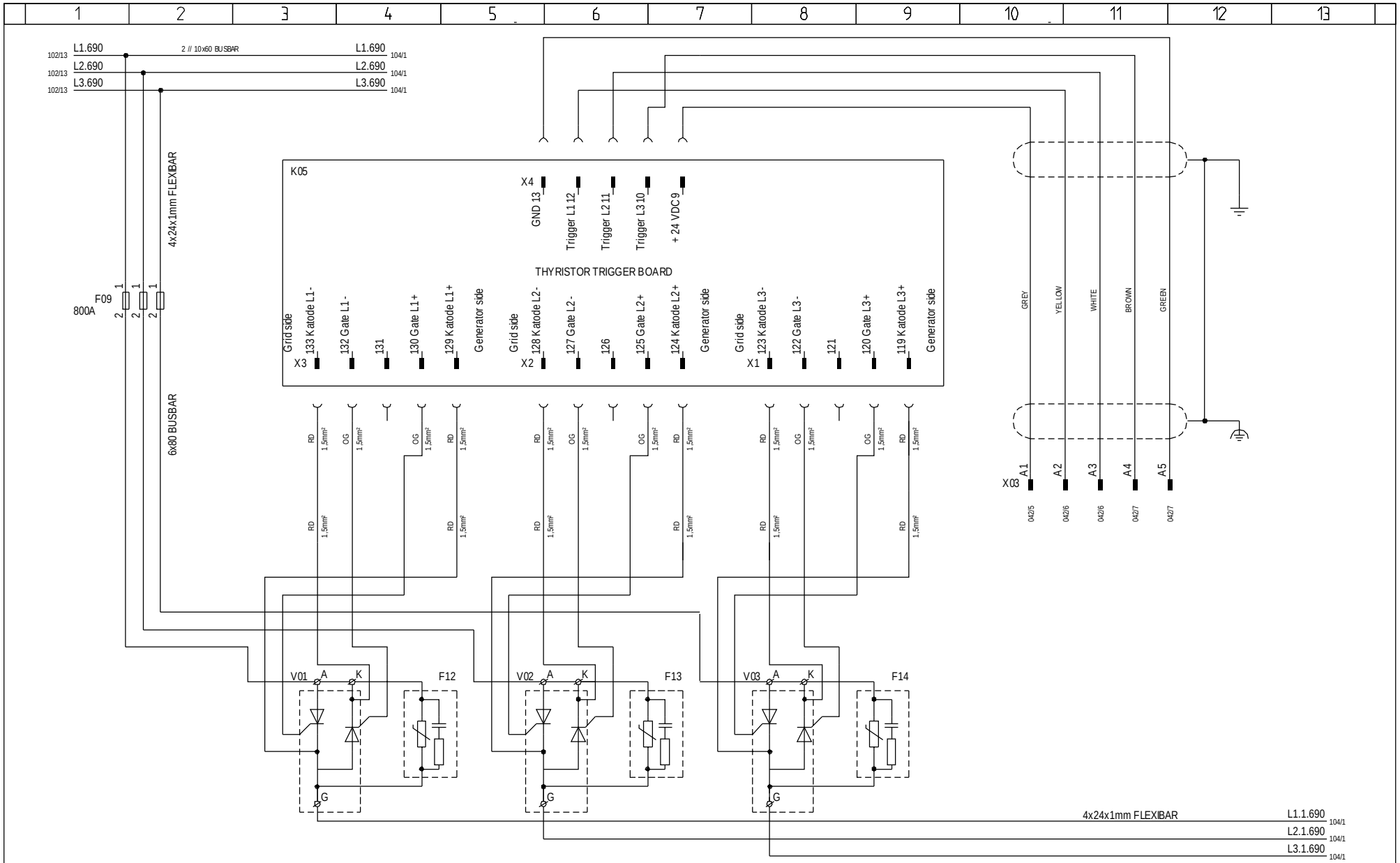
13-12-06
16:10



Vestas

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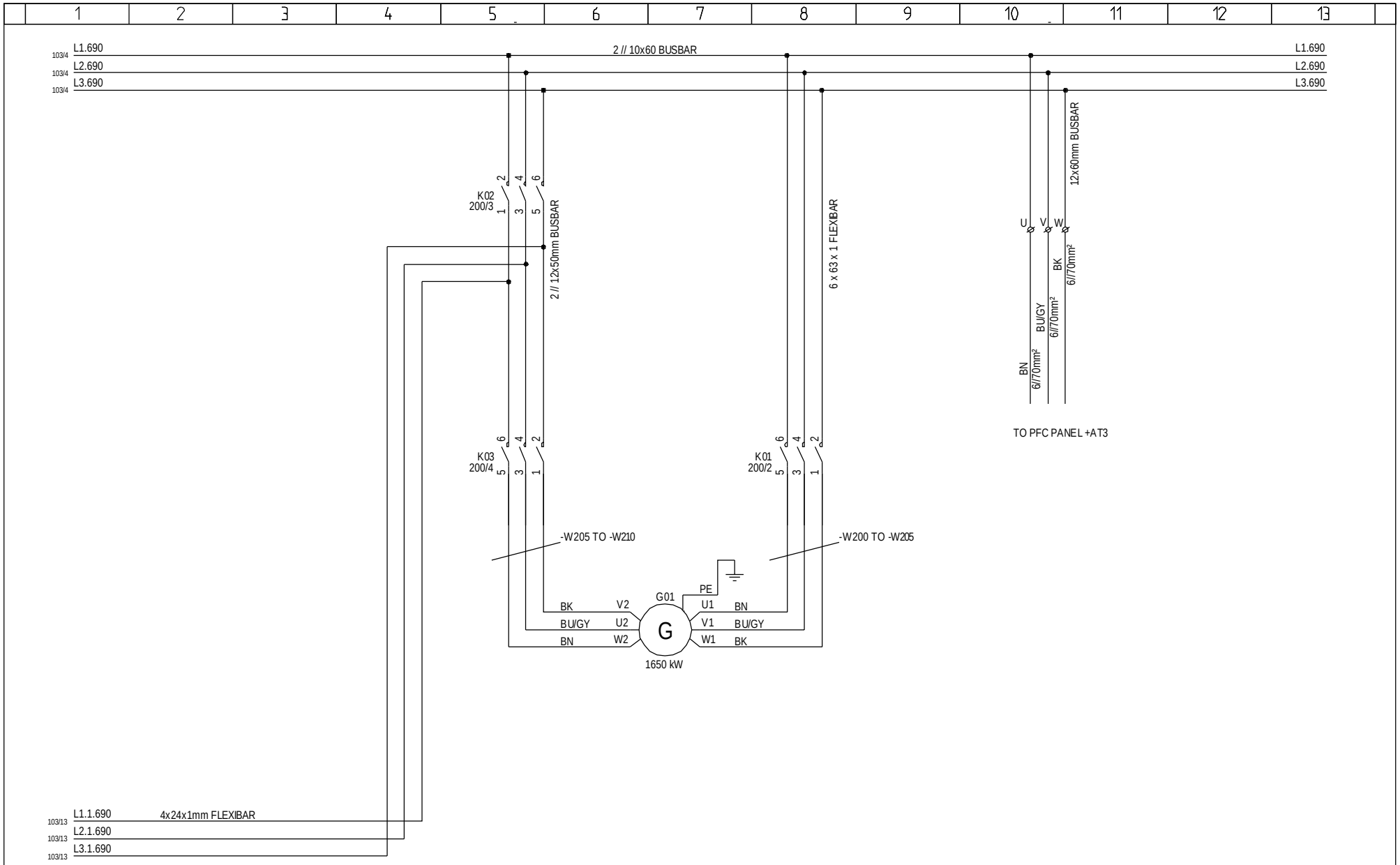
	Date	Initials	Function	Thyristor connections		
Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
Approved	060621	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	060621	INI	Rev. -	Drawing no. 6012514	Cont. sheet 104	Sheet 103

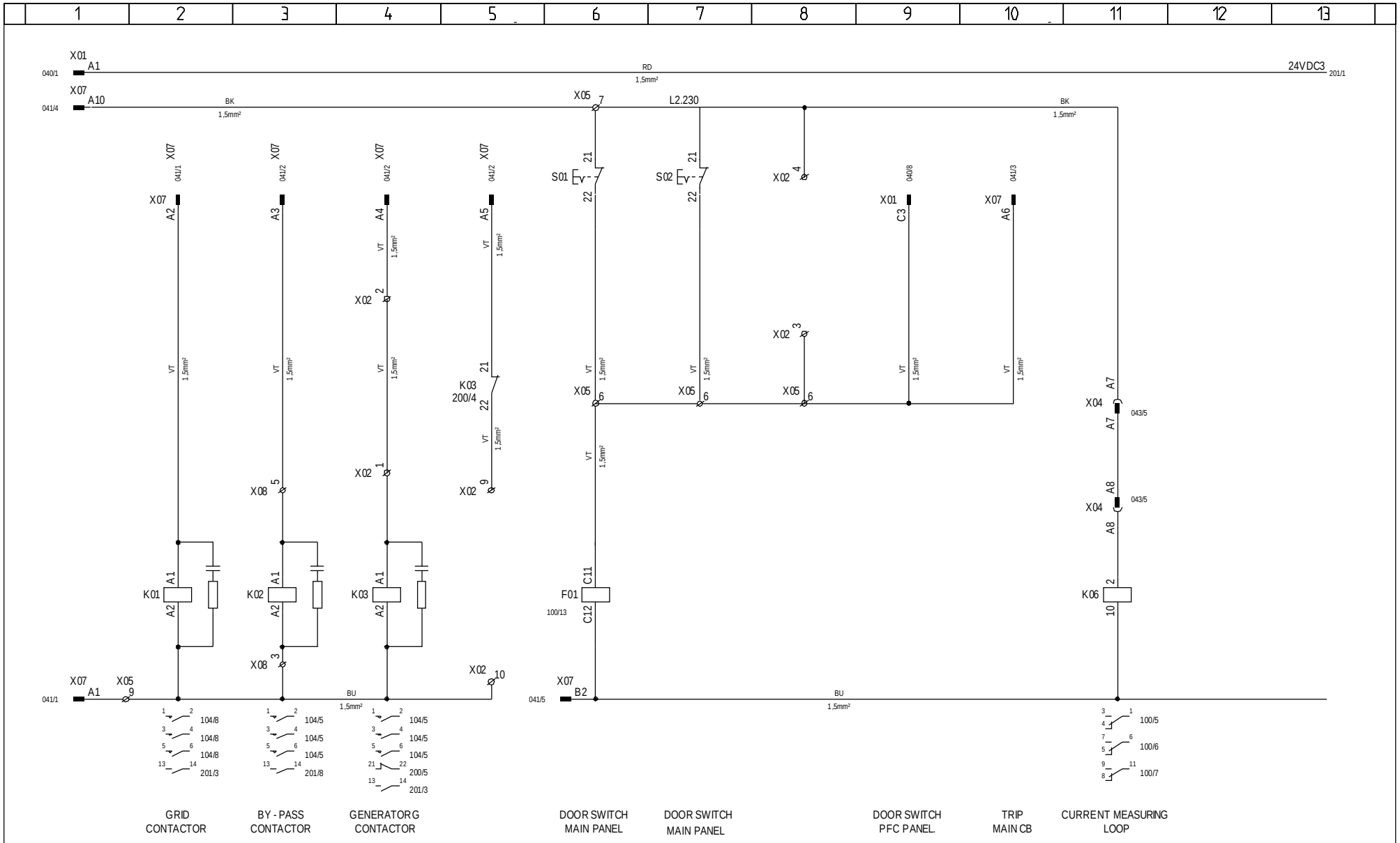
13-12-06
16:10



Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	Generator connections		
Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
Approved	060621	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	060621	INI	Rev. -	Drawing no. 6012514	Cont. sheet 200	Sheet 104

13-12-06
16:10



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Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. -	Drawing no. 6012514	Cont. sheet 201	Sheet 200

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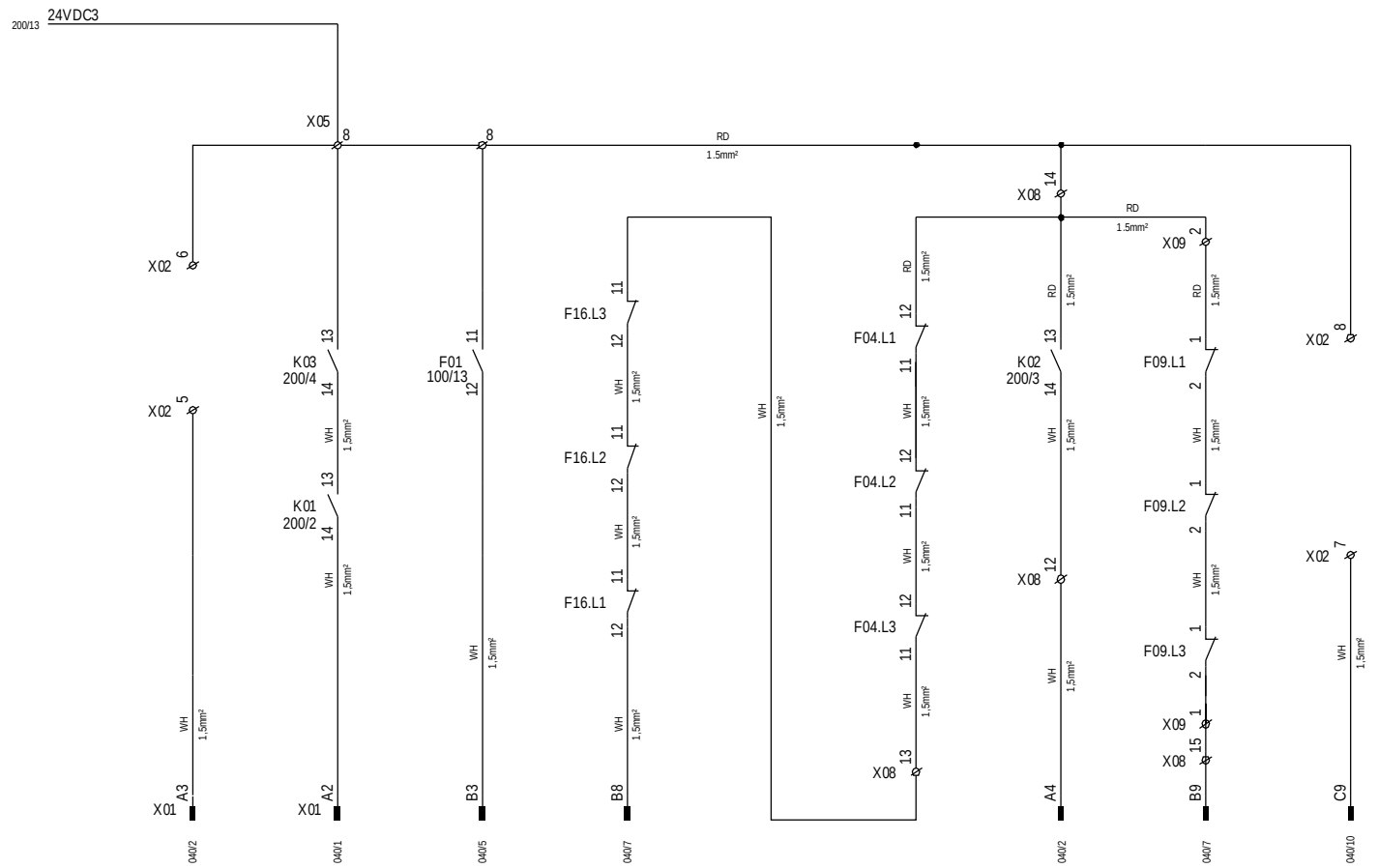
13-12-06 16:10



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: Internal connections		
		Designed	031025	CHO	Project title: Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
		Approved	060621	FLT	Comments	Customer: Vestas Wind Systems A/S	
		Reviced	060621	INI	Rev. -	Drawing no. 6012514	Cont. sheet 202 / Sheet 201

13-12-06
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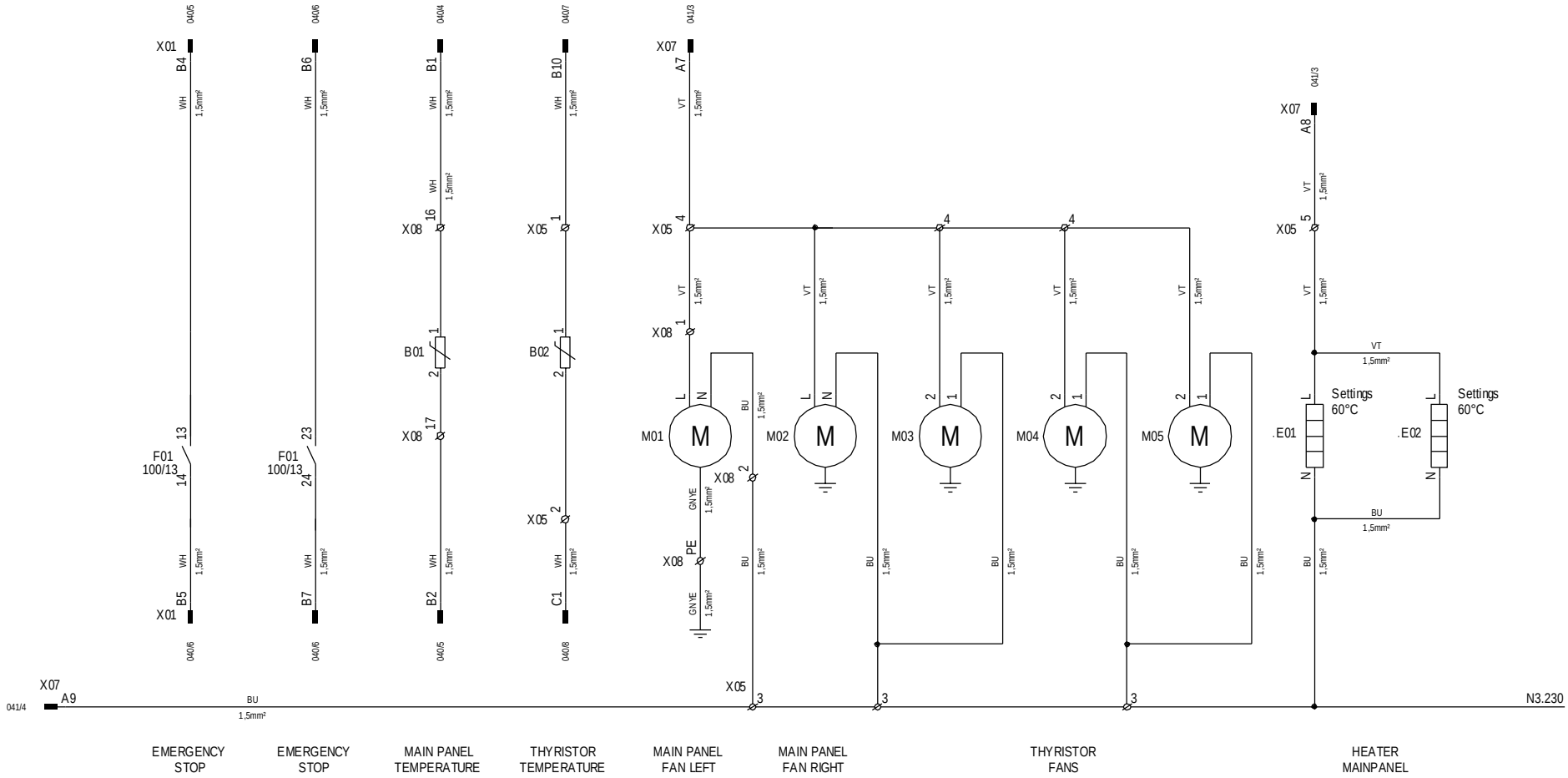

Vestas

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	Date	Initials	Function	Internal connections		
Designed	031025	CHO	Project title	Main Panel +AT1, V82-1.65MW 1-Speed, MK II & MK III		
Approved	060621	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	060621	INI	Rev. -	Drawing no. 6012514	Cont. sheet -	Sheet 202

13-12-06 16:10

60096208 MAIN PANEL +AT1 1500/1650kW 690V 50Hz

Component	Description	Qty per	Stk UM	Position Number
D1001226	Cable conduit, Din rail & eart	0,000	EA	
D1001276	Work instructions for producti	0,000	EA	
D6012514	MAIN PANEL +AT1, PS/AS 30t 50	0,000	EA	
D6012771	Cable conduit, Din rail & eart	0,000	EA	
D6013213	MAIN PANEL +AT1, PS/AS 30t 50	0,000	EA	
60096708	CABINET TS8 1 DOOR W/W	1,000	EA	
60097661	CABINET TS8 1 DOOR W/W	1,000	EA	
60097749	MOUNT PLATE TS8 W/W	1,000	EA	
60097750	MOUNT PLATE TS8 W/W	1,000	EA	
60010316	BASE PL CLAMP TS8 WA4547276	2,000	EA	
60096911	COMBINATION ANGLE 4540.000	2,000	EA	
60010570	COVER BAYING TS 8800.460 600mm	1,000	EA	
60096979	ATTACHMENT MOUNT PLATE TS	4,000	EA	
60096970	PUNCH SECTION 8612.160 OUTER	1,000	EA	
60096968	PUNCH SECTION 8612.060 INNER	10,000	EA	
60096972	PUNCH SECTION 8612.180 OUTER	6,000	EA	
60096993	ANGULAR BAYING BRA TS 8800.430	4,000	EA	
60096995	QUICK FIT BAYING CLAMP TS	6,000	EA	
60096912	BAYING BRA 4582.500	1,000	EA	
60096927	SUPPORT STRIP 4697.000 740mm	1,000	EA	
60010699	CONDENSATION PROT DRY BAG 500G	4,000	EA	
60002320	STICKER GEN USE VCS	1,000	EA	
60097571	LABEL TYPE SIGN I/III +AT1.	1,000	EA	
60002569	LABEL "MAIN PANEL + AT1"	1,000	EA	
60002430	LABEL "48 NM"	5,000	EA	
60002429	LABEL "70 NM"	4,000	EA	
60006822	STICKER "LYN" 25MM	0,300	EA	
60006823	STICKER "LYN" 50MM	0,300	EA	
60006824	STICKER "LIGHTNING" 100MM	0,300	EA	
60007240	BUSBAR HOLDER 12x5-10x30MM	2,000	EA	
60006819	STICKER "EARTH" 14MM	0,500	EA	
60006826	STICKER "1" 14MM	0,100	EA	
60006827	STICKER "2" 14MM	0,100	EA	
60007437	BRAIDED SLEEVE 10-17mm BK	0,900	M	
60007164	TRAFO CURRENT 2000/1A 25VA	3,000	EA	
60007635	CABLE GLAND M63 BRASS BMBC-07	51,000	EA	
60007644	LOCKNUT M63 BRASS BMBL-08	51,000	EA	
60013855	BAND STEEL 3x20mm TS8 800x2200	4,000	EA	
60091480	CABLE ENTRY PLATE	1,000	EA	
60006812	STICKER "U" 14MM	0,100	EA	
60006813	STICKER "V" 14MM	0,100	EA	
60006814	STICKER "W" 14MM	0,100	EA	
60006810	STICKER "P" 14MM	0,030	EA	
60006811	STICKER "E" 14MM	0,030	EA	
60006809	STICKER "N" 14MM	0,030	EA	
60006815	STICKER "L1" 14MM	0,060	EA	
60006816	STICKER "L2" 14MM	0,060	EA	
60006817	STICKER "L3" 14MM	0,060	EA	
60006042	SIGN F TERMINAL ZB-5LGS 1-10	2,000	EA	
60006043	SIGN F TERMINAL ZB-5LGS 11-20	2,000	EA	
60007201	EARTH BAR 01130 9x6.5x1000MM	0,230	M	
60013412	ANGLE BRACKET 2x10x25MM	4,000	EA	
60097880	LABEL +AT1 NM72/82 IEC I/III	0,150	EA	
60013839	BRA 5x40x471mm ISOLATOR	1,000	EA	
60007322	BUSBAR FLEX SPACER 40-63MM	1,250	EA	
60013828	BRA 5x40x472mm ISOLATOR	1,000	EA	
60007320	BUSBAR FLEX SPACER	4,000	EA	
60013733	ANGLE SUPPORT 440MM F ISOLATOR	4,000	EA	
60007332	BUSBAR ISOLATOR 10x40MM	18,000	EA	
60007333	BUSBAR ISOLATOR 10x50MM	9,000	EA	
60007334	BUSBAR ISOLATOR 10x60MM	3,000	EA	
60013827	BRA 5x40x511mm ISOLATOR	1,000	EA	
60013836	COVER PVC 4x700x277mm	1,000	EA	
60013865	COVER PVC NM64/82 30t	1,000	EA	
60013866	COVER PVC NM64/82 30t	1,000	EA	
60013867	COVER PVC NM64/82 30t	1,000	EA	
60013868	COVER PVC NM64/82 30t	1,000	EA	
60013869	COVER PVC NM64/82 30t	1,000	EA	
60014614	PROTECTIVE SCREEN 120*120MM ME	1,000	EA	
60013660	ANGLE BRA 1 F COVER NM80 +AT1	1,000	EA	

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60013661	ANGLE BRA 2 F COVER NM80 +AT1	1,000	EA
60013662	ANGLE BRA BOTTOM F COVER NM80	2,000	EA
60013901	COVER PVC AUX SUPPLY IEC	1,000	EA
60097742	COVER PVC BUSBAR AUX SUPPLY	1,000	EA
60013829	COVER ALU-ZINC 2x540x870mm	1,000	EA
60007834	WIRE TIN 35 200MM Ø10 IEC/UL	2,000	EA
60007829	WIRE TIN 16 150MM Ø8 IEC/UL	2,000	EA
60097628	WIRING F04&F05 MAIN IEC I/III	1,000	EA
60097630	WIRING X08 MAIN IEC I/III	1,000	EA
60097626	WIRING 230VAC MAIN IEC I/III	1,000	EA
60097623	WIRING 24VDC3 MAIN IEC I/III	1,000	EA
60097627	WIRING F03&F15 MAIN IEC I/III	1,000	EA
60097635	WIRING M03-05 MAIN IEC I/III	1,000	EA
60097624	WIRING R01&X04 MAIN IEC I/III	1,000	EA
60097644	WIRING T07 MAIN IEC I/III	1,000	EA
60097645	WIRING T08 MAIN IEC I/III	1,000	EA
60097620	WIRING X01 MAIN IEC I/III	1,000	EA
60097609	WIRING X07 MAIN IEC I/III	1,000	EA
60097909	WIRING F03 MAIN IEC I/III	1,000	EA
60012609	WIRING DOOR EARTH	1,000	EA
60012619	WIRING TRIGB 30T	1,000	EA
60097646	WIRING X10&X11 MAIN IEC I/III	1,000	EA
60097649	WIRING-X03 MAIN IEC I/III	1,000	EA
60094022	BRA F GRID CONNECTION	6,000	EA
60007283	BUSBAR COVER 78 393 12-30x10MM	0,350	M
60007632	CABLE GLAND M32 BRASS BMBC-04	2,000	EA
60007633	CABLE GLAND M40 BRASS BMBC-05	1,000	EA
60007641	LOCKNUT M32 BRASS BMBL-05	2,000	EA
60007642	LOCKNUT M40 BRASS BMBL-06	1,000	EA
60097910	SIGN GRID CONNECTION	2,000	EA
60102296	CU BUSBAR KIT 1 MAIN PAN	1,000	EA
60102315	CU BUSBAR KIT 2 MAIN PAN	1,000	EA
60102316	FLEXIBAR KIT 3 MAIN PAN	1,000	EA
60104151	CABLE CONDUIT DIN RAIL MAIN	1,000	EA
60009771	STUD BOLT M12x30 8.8	4,000	EA
D22000178	MAIN PANEL +AT1, NM72-82/1650	0,000	EA
D22000231	CI-MAIN PANEL +AT1 PS/AS 30t 5	0,000	EA
118934	LABEL ELECTRICAL WARNING UNIV.	2,000	EA
158880	SCR TORX CSK FH M8X20 8.8 TZN	8,000	EA
60007458	CABLE TIE 140x2.5mm WH	120,000	EA
60007459	CABLE TIE WHITE 200x2.5mm	20,000	EA
60007461	CABLE TIE 200x2.5mm BK	3,000	EA
60007465	CABLE TIE 368x4.8mm BK	7,000	EA
60007468	CABLE TIE BLACK 550X8,0MM	8,000	EA
60007472	CABLE TIE HOLDER MB3A-NN3P 20	18,000	EA
60009578	SCR CRS PH M3x8 FZB	10,000	EA
60009580	SCREW ISO 7045 M4X10-FZB-H	17,000	EA
60009600	SCREW ISO 7045 M 4 X 16 - 4.8	32,000	EA
60009604	SCREW ISO 7045 M 5 X 10 - 4.8	8,000	EA
60009606	SCR CRS PH M5x20 4.8 FZB	4,000	EA
60009610	SCR CRS PH M6x14 4.8 FZB	25,000	EA
60009620	SCR M5x16 FZB	24,000	EA
60009638	SCR HEX SET M8x16 8.8 FZB	16,000	EA
60009639	SCR HEX SET M8x20 8.8 FZB	6,000	EA
60009646	SCR HEX SET M8x25 8.8 FZB	6,000	EA
60009647	SCR HEX SET M8x30 8.8 FZB	1,000	EA
60009670	SCR HEX SET M10x16 8.8 FZB	23,000	EA
60009670	SCR HEX SET M10x16 8.8 FZB	4,000	EA
60009671	SCR HEX SET M10x20 8.8 FZB	19,000	EA
60009673	SCR HEX SET M10x25 8.8 FZB	38,000	EA
60009678	SCR HEX SET M10x35 8.8 FZB	30,000	EA
60009679	SCR HEX SET M10x40 8.8 FZB	24,000	EA
60009688	SCR HEX SET M10x45 8.8 FZB	8,000	EA
60009689	SCR HEX SET M10x50 8.8 FZB	52,000	EA
60009690	SCR HEX SET M10x55 8.8 FZB	3,000	EA
60009691	SCR HEX SET M10x60 8.8 FZB	6,000	EA
60009692	SCR HEX SET M10x65 8.8 FZB	9,000	EA
60009693	SCR HEX SET M10x70 8.8 FZB	24,000	EA
60009701	SCR HEX SET M12x35 8.8 FZB	6,000	EA
60009710	SCR HEX SET M12x70 8.8 FZB	40,000	EA
60009712	SCR HEX SET M12x80 8.8 FZB	6,000	EA
60009751	SCREW HFC 208 M 4.8 X 9.5 -FZB	80,000	EA
60009752	SCR M4.8x19 FZB	3,000	EA
60009763	SCR SKT STOP M10x30 14H	6,000	EA

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60009773	SCR M4x8 FZB	3,000	EA	
60009787	WASHER M4 140HV FZB	4,000	EA	
60009795	WASHER SPR 6 FZG	22,000	EA	
60009803	WASHER SPR 8 FZG	13,000	EA	
60009809	WASHER SPR 10 FZG	75,000	EA	
60009817	WASHER SPR 13 FZG	28,000	EA	
60009838	LOCK WASHER DIN 6798 A4 - FZB	41,000	EA	
60009839	WASHER LOCK 5 FZB	12,000	EA	
60009840	LOCK WASHER DIN 6798 A 6 FZB	2,000	EA	
60009841	WASHER LOCK 8 FZB	20,000	EA	
60009842	WASHER LOCK 10 FZB	41,000	EA	
60009861	NUT ISO 4032 M 4 - 6 - FZB	37,000	EA	
60009864	NUT HEX FLANGE M5 8 FZB	12,000	EA	
60009873	NUT HEX M8 8 FZB	9,000	EA	
60009879	NUT HEX M10 8	203,000	EA	
60009883	NUT HEX M12 8 FZB	54,000	EA	
60009895	NUT LIFTING EYE M10 FZB	4,000	EA	
60011516	CABLE CLIP 8-1 W 1 LUG	1,000	EA	
60096851	TORX SCREW 2486.500 5.5X13MM	57,000	EA	
60097543	BOLT HEX M12x120 A4 70	2,000	EA	
092279	FAN AXIAL 230V 97m3 120x120mm	3,000	EA	
098429	SUPPORT RAIL MAIN PANEL V82	12,000	EA	
60009676	SCREW ISO 4017 M10 x 30 - 8.8	16,000	EA	
60009279	PT100 180-4-2M Ø6x60mm	1,000	EA	B01
60007481	CABLE RACK TK 5-7	1,000	EA	B01
60009279	PT100 180-4-2M Ø6x60mm	1,000	EA	B02
60007481	CABLE RACK TK 5-7	1,000	EA	B02
60014729	HEATER FAN CR0 27 230V 350W UL	2,000	EA	E01-E02
60091912	END STOP WAGO 249-117 10MM	4,000	EA	E01-E02
60013841	BRA 5x25x376mm BUSBAR HOLDER	1,000	EA	FLEXIBAR
60005750	ACB E2B 2000A PR111P LSIG 3P	1,000	EA	F01
60013843	FITTINGS UNIVERSAL E-CB	1,000	EA	F01
60005670	MCCB S3X 160A R160 3P	1,000	EA	F03
60096022	TERMINAL COVER S3-S4 3P IP20	1,000	EA	F03
60000674	OVP 600FM	3,000	EA	F04
60000675	BUSBAR 3 OVPS	1,000	EA	F04
60091912	END STOP WAGO 249-117 10MM	2,000	EA	F04
60007399	HEAT SHRINK 12.7mm 3:1 GNYE	0,030	M	F04
60005079	FUSE SWITCH NH00 33199 160A	1,000	EA	F05
60005097	FUSE 690V 50A NH00 GL/GG	3,000	EA	F05
60005355	FUSE SEMI 660V 800A PSC IEC/UL	3,000	EA	F09
60005358	AUX CONT MS3V FUSE SIZE 30-33	3,000	EA	F09
51706501	RC UNIT 2T459 THYR 690V 0.33uF	1,000	EA	F12
51706501	RC UNIT 2T459 THYR 690V 0.33uF	1,000	EA	F13
51706501	RC UNIT 2T459 THYR 690V 0.33uF	1,000	EA	F14
60005071	FUSE SWITCH NH00 33198 3P	1,000	EA	F15
60005097	FUSE 690V 50A NH00 GL/GG	3,000	EA	F15
60000674	OVP 600FM	3,000	EA	F16
60000675	BUSBAR 3 OVPS	1,000	EA	F16
60007399	HEAT SHRINK 12.7mm 3:1 GNYE	0,030	M	F16
60004712	CB 3RV1421-1GA10 4.5-6.3A	1,000	EA	F19
60005759	RCCB 5SM1312-6 25A 2P	2,000	EA	F20,F22
60005160	MCB 5SX2210-7 10.0A C 2P	2,000	EA	F21,F23
60004316	CONT EH1200 240V 50/60Hz	1,000	EA	K01
60007833	WIRE TIN 35 100MM Ø10 IEC/UL	3,000	EA	K01-03
60100566	WIRING RC UNIT 250V EH CONT	3,000	EA	K01-03
60004316	CONT EH1200 240V 50/60Hz	1,000	EA	K02
60004316	CONT EH1200 240V 50/60Hz	1,000	EA	K03
51700901	TRIGGER BOARD TAC 40 690V	1,000	EA	K05
60004535	RELAY MT326230 10A 230V 3P	1,000	EA	K06
60005026	SOCKET MT 78740 11-POLED	1,000	EA	K06
60005028	FASTENING BRACKET F RELAY 3P	1,000	EA	K06
60014655	FAN 500M3/H 230V	2,000	EA	M01/02
60014668	FILTER EXH 232x232x17.5MM	2,000	EA	M01/02
60014608	FAN 230V 18W	3,000	EA	M03/04/05
60014614	PROTECTIVE SCREEN 120*120MM ME	3,000	EA	M03/04/05
60013649	PLATE ALU F FAN 8844	3,000	EA	M03/04/05
60005768	SWI SWDIS 25A 3P OT25ET3	1,000	EA	Q01
60005774	HANDLE OHB 2RJ BK	1,000	EA	Q01
60005776	SWI COVER OTS32T3 3P	2,000	EA	Q01
60002561	LABEL "Q01"	1,000	EA	Q01
60091912	END STOP WAGO 249-117 10MM	1,000	EA	R01
51700501	RESISTOR SHUNT 3x2.5 OHM	1,000	EA	R01
60000608	VDR SIOV-S10K275 275V	1,000	EA	R02

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60010456	DOOR-OPERATED SWITCH	2,000	EA	S01-S02
60101986	TRAFO 600-690/2x115V	1,000	EA	T08
60001041	THYR MODULE 2T699N22TOF-K0	3,000	EA	V01/02/03
60006576	HOUSING C14610F0240001 46P BUL	1,000	EA	X01
60002503	LABEL "-X01"	1,000	EA	X01
60006036	CONN TERM UKK3-MSTB-5.08-2 F 1	10,000	EA	X02
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X02
60091912	END STOP WAGO 249-117 10MM	2,000	EA	X02
60006038	SPACER PLATE DG-UKK3-MSTB-5.08	1,000	EA	X02
60006039	SPACER PLATE DP-UKK3-MSTB-5.08	1,000	EA	X02
60006040	SEPARATION PLATE LEFT	1,000	EA	X02
60001899	CONN MSTB F 10 LEADED	2,000	EA	X02
60006621	LABEL TERMINAL 1-10 5.08 MM	0,300	EA	X02
60006622	LABEL TERMINAL 11-20 5.08 MM	0,200	EA	X02
60006566	HOUSING 42P BULKHEAD	1,000	EA	X03
60002505	LABEL "-X03"	1,000	EA	X03
60006566	HOUSING 42P BULKHEAD	1,000	EA	X04
60002506	LABEL "-X04"	1,000	EA	X04
60006071	TERMINAL WAGO 870-501 2-LEV.0,	21,000	EA	X05
60006083	END SECTION 870-518 2-LEVEL GR	1,000	EA	X05
60091912	END STOP WAGO 249-117 10MM	1,000	EA	X05
60006086	PUSH-IN JUMPER BAR 870-402 2-P	5,000	EA	X05
60006088	PUSH-IN JUMPER BAR 870-404 4-P	6,000	EA	X05
60006089	PUSH-IN JUMPER BAR 870-405	2,000	EA	X05
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X05
60097874	MARK WAGO +AT1 PANEL NM72/82	1,000	EA	X05
60006571	HOUSING 32P BULKHEAD	1,000	EA	X07
60002509	LABEL "-X07"	1,000	EA	X07
60006038	SPACER PLATE DG-UKK3-MSTB-5.08	1,000	EA	X08
60006039	SPACER PLATE DP-UKK3-MSTB-5.08	1,000	EA	X08
60006040	SEPARATION PLATE LEFT	1,000	EA	X08
60006036	CONN TERM UKK3-MSTB-5.08-2 F 1	10,000	EA	X08
60005984	TERMINAL GROUND M4/6P	1,000	EA	X08
60005998	END SEC FEM6 GY 118368.16	1,000	EA	X08
60001899	CONN MSTB F 10 LEADED	2,000	EA	X08
60091912	END STOP WAGO 249-117 10MM	2,000	EA	X08
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X08
60006038	SPACER PLATE DG-UKK3-MSTB-5.08	1,000	EA	X09
60006039	SPACER PLATE DP-UKK3-MSTB-5.08	1,000	EA	X09
60006040	SEPARATION PLATE LEFT	1,000	EA	X09
60006036	CONN TERM UKK3-MSTB-5.08-2 F 1	2,000	EA	X09
60001853	CONN MSTB F 2 LEADED	1,000	EA	X09
60091912	END STOP WAGO 249-117 10MM	2,000	EA	X09
60006042	SIGN F TERMINAL ZB-5LGS 1-10	1,000	EA	X09
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X09
60011436	SKT 216RU6 2P+E 250V 16A CEE	1,000	EA	X10
60002564	LABEL "X10"	1,000	EA	X10
60011441	3P+PE 200-250V 16A 316RU9	1,000	EA	X11
60002565	LABEL "X11"	1,000	EA	X11

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Change Info

Item no.	***Item text:***
60096681	**Control Panel +AT2 Passive Stall/Active Stall 30T 690V 50Hz**

Active revision *for production*

Drawing no.: 6012290

Version	Date	Init./App.	Description of change since last revision
13	13.12.2006	INI/SLB	Changed with ECO 219510_ Grid++ and PCS Converter OPTION removed. Page 031: F51, F52, Q51, Q52, X25 and X26 removed. Page 049: W600 connection between RS422 com. to =BA+1S1 PCS converter removed. Page 051: External connection X25 and X26, page removed. Page 103: Option, connection between F51, F52, Q51, Q52, X25 and X26 removed. Page 304: Q51 and Q52 recooler fan option (PCS converter) removed. Page 411: F51 transformer fan overload and F52 recooler fan overload removed. Page 451: Text to 3COM6 updated to “3COM6 RS communication to +AT4”. Page 460: Text to 838 updated to “Spare for transformer fan”.

LST no.: 21000075 *Material BOM no.: 60096681*

Version	Date	Init./App.	Description of change since last revision
11	03.04.2007	INI/FLT	Changed with ECO 223395_Updated for production in Spain. Please se Change Description in ECO 223395

Old revisions *for service*

Drawing no.: 6012290

Version	Date	Init./App.	Description of change since last revision
12	24.10.2006	INI/FLT	Changed with ECO 217924 6 ECO 217288 Implementation of label 118934 & CMS Page 001, 002, 003, 037 and 508 updated Page 030: Front Panel Layout updated with labels. Page 031: S1201 CMS option added. Page 039: New page with following text added. ” Use copper conductors only for external wires and cables. Use 60°C cables for currents less than 100Amps and 75°C cables for higher currents”. Page 210: Connections 0VDC and 24VDC for CMS added. Page 407: F45.T1 and F45.T2 47 ohm resistor added. Page 509: New page with connection for CMS options.
11	15.08.2006	INI/FLT	Changed with ECO 216036, Connection for Communication Page 001 and 002: Updated Page 031: Panel Outline updated with option components for Ethernet. Page 210: External RS232 connection X11.1 and X11.2 and Ethernet added. Page 505: Ref. to next page updated. Page 506, 507and 508: External Communication added.
10	01.02.2006	INI/SLB	Correction of PCS Converter. Page 001 and 002: Updated Page 049: B04.TX+corrected to B04.TX-, B04.TX- corrected to B04.TX+, B04.RX+corrected to B04.RX- and B04.RX- corrected to B04.RX+.
09	21.01.2005	SLB/SLB	Implementation of PCS Converter. Page 001 and 002: Updated Page 031: Option X25 and X26 added. Option F51, F52 Q51 and Q52 added. Page 049: W600 Cable color added. Connection for RS 422 COM to =BA+1S1PCS converter added. Page 051: New page External connection X25 X26 added. Page 103: Option, Transformer Fan and Recooler Fan added. Page 304: Q51 Transformer Fan and Q52 Recooler Fan Option (PCS Converter) added. Page 411: F51 Transformer Fan overload and F52 Recooler Fan overload added. Page 451: Text changed 3COM6 RS422 communication to +AT4 or BA =1S1. Page 460 Connection 838, text changed from Spare to Transformer /Recooler Fan. Page 462: Connection 615, text changed from Spare to Transformer Fan overload and Connection 616, text changed from Spare to Recooler Fan overload. Page 461: Input 625 text SPARE changed to NACELLE FAN 2 OVERLOAD Page 505: I-7520AR references added.
08	12.11.2004	INI/CHO	Page 001 and 002 Updated. Page 048: W391 cable color to L2 and L3 corrected, and changed from BU to BU/GY Page 405: Text to U02.400 “ UPS panel temperature” added.

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07	04.10.2004	INI/CHO	All pages updated with Vestas logo Page 030: 60103218 Label for Service Key on Panel added.
06	08.07.2004	INI/CHO	Page 001 and 002: Updated. Page 102: F20 “ARCTIC” text and marking removed. Page 111: Text F16 and F17 changed from arctic to arctic option. Page 302: Text Q16 and Q17 changed from arctic to arctic option. Page 407: T1 and T2 jumper and text added. F45 text changed to arctic option.
05	09.06.2004	INI/CHO	Page 001 and 002: Updated. Page 101: F09 text corrected. Page 451: Comm. connection corrected. Page 503: Comm. connection corrected. X01 B/Data- and A/Data- corrected. Page 504 and 505: Comm. connection corrected.
04	04.03.2004	CHO/CHO	Update safety line and temperature sensor in UPS +AT5 panel and other minor changes. Page 001and 002: Updated Page 040: Text for Safety line and Safety stop updated Page 041: Text for 230V Top Panel corrected Page 042: Cable changed to 36 conductors Page 046: Text Emergency stop corrected Page 048: New signals for UPS panel added Page 201: 230V supply for Top Panel supply corrected Page 210: Terminals for Com supply added. Page 211: Connections to K01 43 – 44 added. Page 405: Connections for UPS panel temperature added Page 409: New signals for UPS panel added Page 410: Input 603 Text corrected to safety relay feedback Page 451: TAC communication outline corrected Page 461: New signals for UPS panel added Page 462: New signals for UPS panel added Page 502: Cable mat. no. corrected and TAC communication corrected Page 503: TAC communication corrected Page 504: TAC communication corrected Page 505: TAC communication corrected
03	13.01.2004	FLT/FLT	Update of RS485 communication. Page 001 and 002: Updated. Page 451: References added. U 203, F203, B02, X01, B03 and B04 removed. Page 501: New page add., External RS232 comm. to external modem. Page 502: New page add., RS232 comm. to OP-panel. Page 503: New page add., RS485 comm. to hub. Page 504: New page add., RS485 comm. to nacelle. Page 505: New page add., RS485 comm. to +AT4.
02	10.12.2003	INI/CHO	Page 001 and 002: Updated Page 031: Updated. Page 034: Terminals X22,13- X22,20 removed. Page 035: Terminal row corrected and end stop added. Page 036: Terminal row corrected for NM64 and NM72/NM82. Page 037: Terminal rows corrected w. end stop labels and end sections. F25 added. Page 041: Text corrected to G1, G2, G3 and G4. Page 101: F09 and F11 settings corrected. Page 102: F49 settings corrected. Page 103: F25 corrected w. text and symbol for arctic. Earth symbols updated. Page 110: F10 and F13 settings corrected. F44, Q44 and X02 added. Page 200: Cable ID added from M01 to earth symbol. Page 201: X02.G1 & X02.G2 changed to X02.G3 & X02.G4. X03.D5 & X03.E1 add. Page 202: Earth symbol updated. Page 210: Earth added to U03. U01.PE & U02.PE ID changed f. 1.5mm² to 2.5mm². Page 301: Q44 added. Page 406: F44 added. Page 500: Jumper inst. added.
01	06.10.2003	CHO/CHO	First version

LST no.: 21000075 *Material BOM no.: 60096681*

Version	Date	Init./App.	Description of change since last revision
10	25.10.2006	INI/FLT	Changed with ECO 217571 & ECO 217924 Implementation of label 118934 Added: 118934_Label, electrical warning universal & 60095579_Thermolabel, Caution! Risk of... Replaced: 60002681 with 60092974_Thermo. Warning disconnect –F01…
09	08.06.2006	SHL/FLT	Mapics implementation, Controls DK Århus Phased out 60015639 and replaced with 51707301_TAC-II Phased out 60015642 and replaced with 51701501_ TOI-II Phased out 60015671 and replaced with 51700301_ST-ROX RS232/50Á Converter
08	13.12.2004	MILJE/MILJE	Following items are added to the BOM. 60102523 DIN RAIL for BUSBAR ADAPTOR 72MM WÖHNER 4 pc 60094872 MARKER CARD WAGO Nos 11-20 TYPE WMB 1 pc 60094860 MARKER CARD WAGO Nos 1-10 TYPE WMB 1 pc 60007258 BUSBAR ADAPTOR 45mm 25A WITH TERMIANLS 1 pc Following item are removed from the BOM. 60014164 MARKER CARD RC610 Nos 1-10 VERTICAL 1 pc 60014165 MARKER CARD RC610 Nos 11-20 VERTICAL 1 pc 60014159 MARKER CARD RC610 GEAR OIL HEATER 1 pc 60014157 MARKER CARD RC610 X13 X20 CPU PANEL 30t 1 pc 60097170 SEALING FRAME IP54 for 500-700m³/h FAN 2 pc

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07	22.09.2004	INI/CHO	Added 60103218 Label for Service Key on Panel
06	09.08.2004	CHO+MILJE/CHO	1PC 60004663, 1PC 60004796, 1PC 60004394, 1PC 60004450 added. 60007353 CABLE CONDUIT 25x25mm, 60007358 CABLE CONDUIT 40x40mm, 60007360 CABLE CONDUIT 40x80mm, 60007366 CABLE CONDUIT 60x80mm, 60007182 DIN RAIL removed. 60104150 Cable conduit, DIN rail & earth rail for +AT2. added.
05	01.07.2004	ATM+AMC/CHO	60006476 substituted by 60098976, 60006496 substituted by60099095 and 60100699 replaced with 60015639
04	01.06.2004	AMC+FLT/FLT	TAC with SW 60015639 replaced with 60100699 CU bus bar kit 5 added, all the CU bus bars are divided into kit.
03	12.03.2004	CHO/CHO	Transformer 60091319 changed to 60101986 Changes in busbar adaptores on 50 Hz systems. Small changes in Panels
02	15.01.2004	ATM/ATM	Changes before serial production includes new mounting plate, new component mark and to include the new shaft brake system.
01	16.09.2003	CHO/CHO	First version

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PAGE	CONTENT	DATE	REVISION
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002	Table of Contents	061213	13
003	Table of Contents	061213	13
030	Panel front layout	061024	-
031	Panel Outline	061213	-
032	Spare	031006	-
033	Panel outline doors and s	031006	-
034	Terminal row X10, X22.	031210	-
035	Terminal row X11, X12, B0	031210	-
036	Terminal row X13, X20	031210	-
037	Terminal rows for Options	031210	-
039	Cable Connections	061024	-
040	External connection X01 t	040304	-
041	External connection X02 t	040304	-
042	External connection X03 t	040304	-
043	External connection X04 t	031006	-
044	External connection X05 t	031006	-
045	External connection X06 t	031006	-
046	External connection X07 t	040304	-
047	External connection X08 t	031006	-
048	External connection X10	041112	-
049	External connection X11 X	061213	-
050	External connection for t	031006	-
100	690V circuits	031006	-
101	690V circuits	040609	-
102	690V circuits	040708	-
103	690V circuits	061213	-
104	690V circuits	031006	-
110	690V circuits	031210	-
111	690V circuits nacelle hea	040708	-
200	230V circuits	031210	-
201	230V circuits	040304	-
202	230V circuits	031210	-
210	230V circuits	061024	-
211	230V circuits	040304	-
300	TAC Output P4.1 - P4.5 tr	031006	-

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	Date	Initials		
Designed	030906	CHO	Function	Table of Contents
Approved	061213	SLB	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz
Reviced	061213	INI	Comments	
			Customer	Vestas Wind Systems A/S
			Rev. 13	Drawing no. 6012290
			Cont. sheet 002	Sheet 001

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PAGE	CONTENT	DATE	REVISION
301	TOI Output 800 - 808	031210	-
302	TOI Output 810 - 818	040708	-
303	TOI Output 820 - 828	031006	-
304	TOI Output 830 - 838	061213	-
305	TOI Output 840 - 843	031006	-
400	TAC Input P1.1 - P1.16	031006	-
401	TAC Input P2.1-7 and P5.1	031006	-
402	TAC Input P6.1 - P6.7	031006	-
403	TOI Input 100 - 204	031006	-
404	TOI Input 300 - 319	031006	-
405	TOI Input 400 - 419	041112	-
406	TOI Input 500 - 508	031210	-
407	TOI Input 510 - 518	061024	-
408	TOI Input 520 - 528	031006	-
409	TOI Input 530 - 538	040304	-
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411	TOI Input 610 - 618	061213	-
412	TOI Input 620 - 628	031006	-
413	TOI Input 630 - 638	031006	-
414	TOI Input 700 - 709	031006	-
415	TOI Input 710 - 723	031006	-
416	TOI Input 725 - 738	031006	-
417	TOI Input 740 - 748	031006	-
450	TAC outline	031006	-
451	TAC communication outline	061213	-
460	TOI outline output	061213	-
461	TOI outline input	050121	-
462	TOI outline input	061213	-
500	Fibre optic communication	031210	-
501	External RS232 comm. to e	040113	-
502	RS232 comm. to OP-panel	040304	-
503	RS485 comm. to hub	040609	-
504	RS485 comm. to +AT1 Top P	040609	-
505	RS485 comm. to +AT4	060815	-
506	External RS232 Comm. to M	060815	-
507	External RS232 Comm. to C	060815	-

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	Date	Initials	Function	Table of Contents		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. 13	Drawing no. 6012290	Cont. sheet 003	Sheet 002

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PAGE	CONTENT	DATE	REVISION
508	External RS232 Comm. to E	060815	-
509	CMS - OPTION	061024	-

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	Date	Initials	Function	Table of Contents		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. 13	Drawing no. 6012290	Cont. sheet 030	Sheet 003

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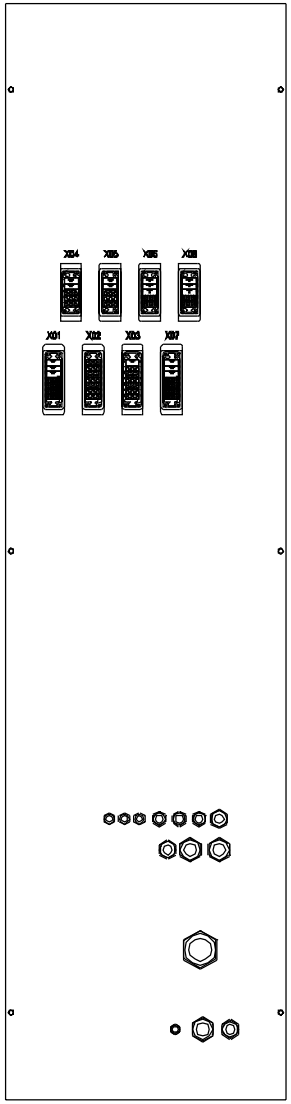

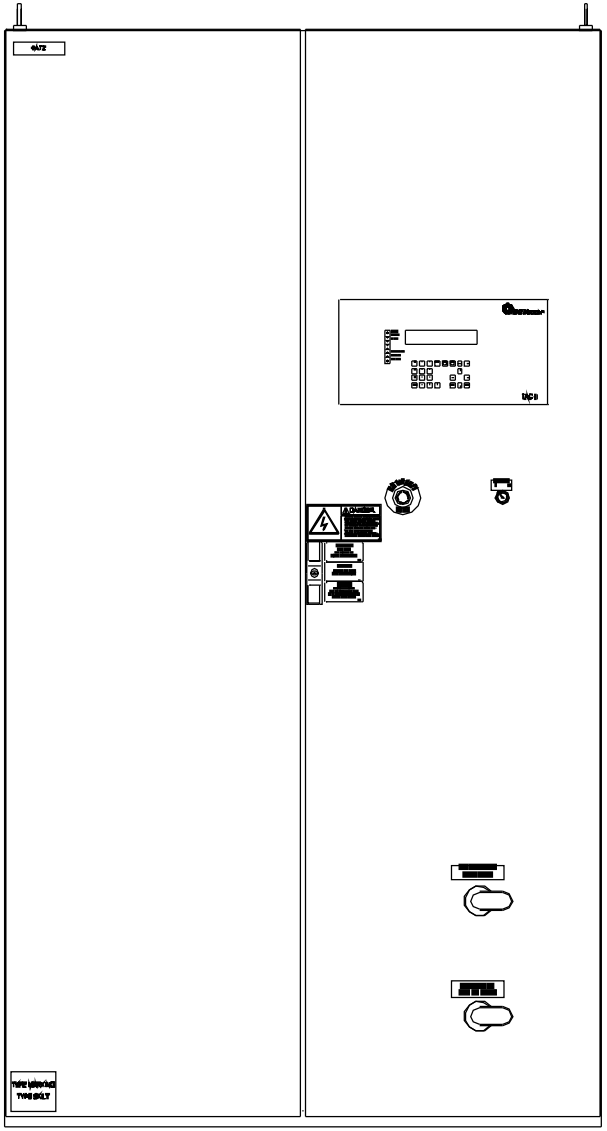

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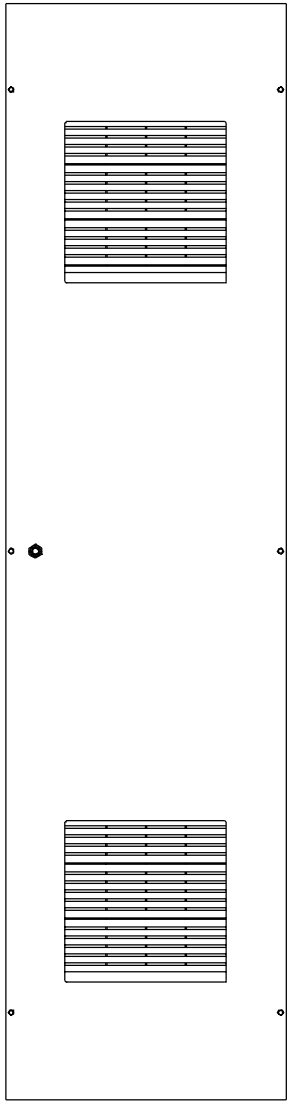

1200*2200*600 (W*H*D)
Weight 425Kg

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Vestas

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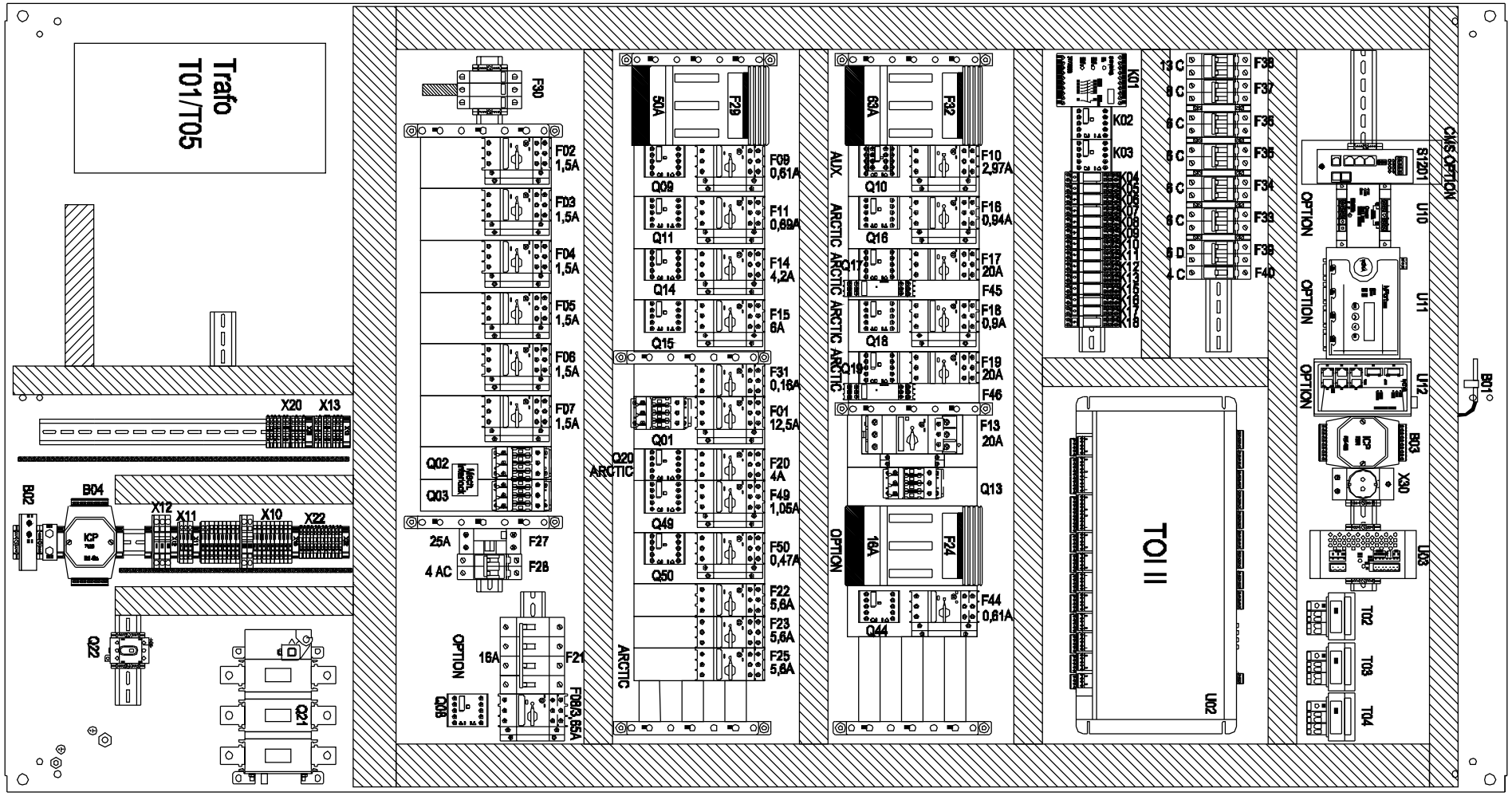
	Date	Initials	Function	Panel front layout		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061024	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061024	INI	Rev. -	Drawing no. 6012290	Cont. sheet 031	Sheet 030



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel Outline	
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved	061213	SLB	Comments	Customer	Vestas Wind Systems A/S
		Reviced	061213	INI	Rev. -	Drawing no. 6012290	Cont. sheet 032 / Sheet 031

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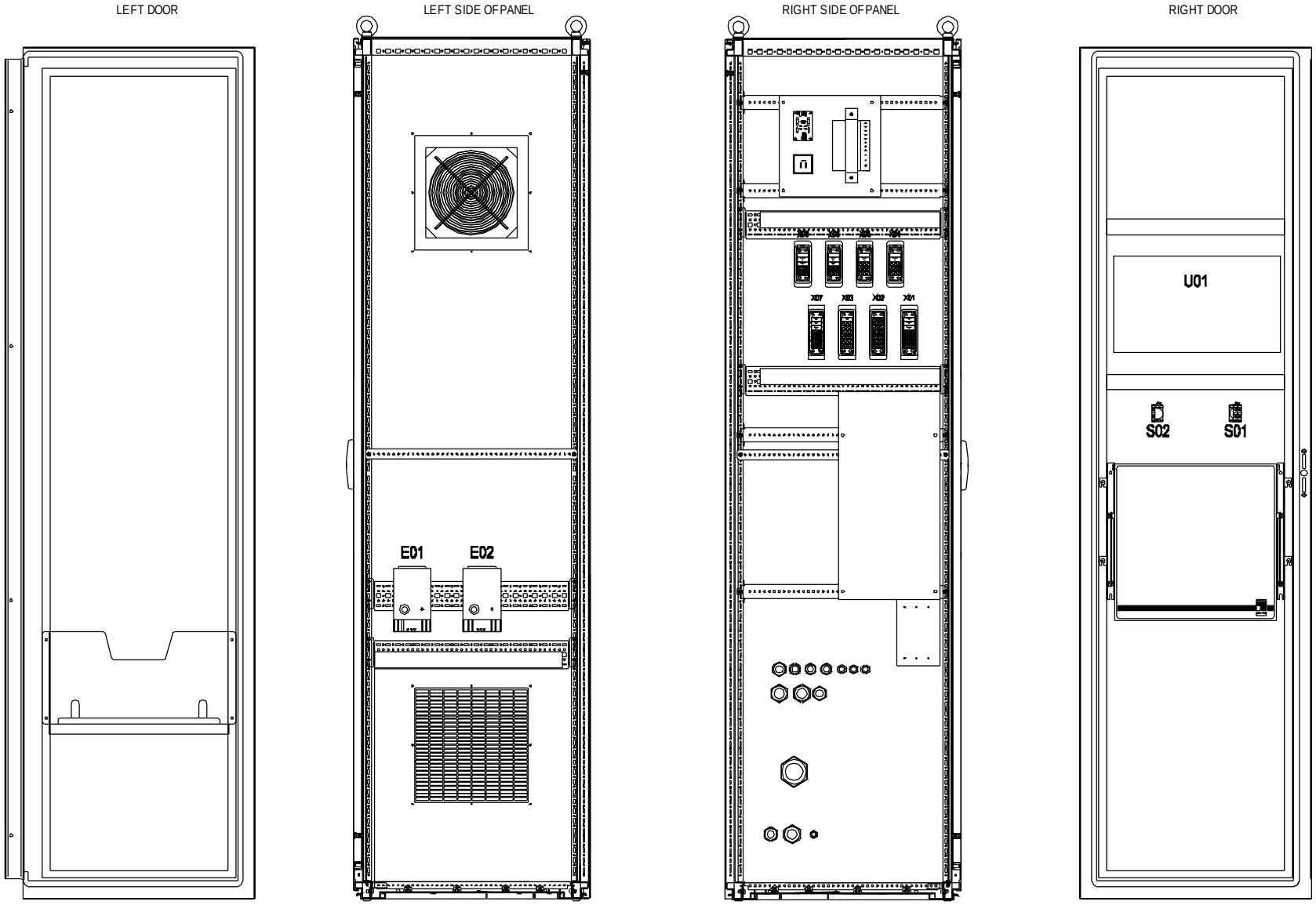
	Date	Initials	Function	Spare			
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz			
Approved			Comments			Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290		Cont. sheet 033	Sheet 032



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	Date	Initials	Function	Panel outline doors and sides		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 034	Sheet 033

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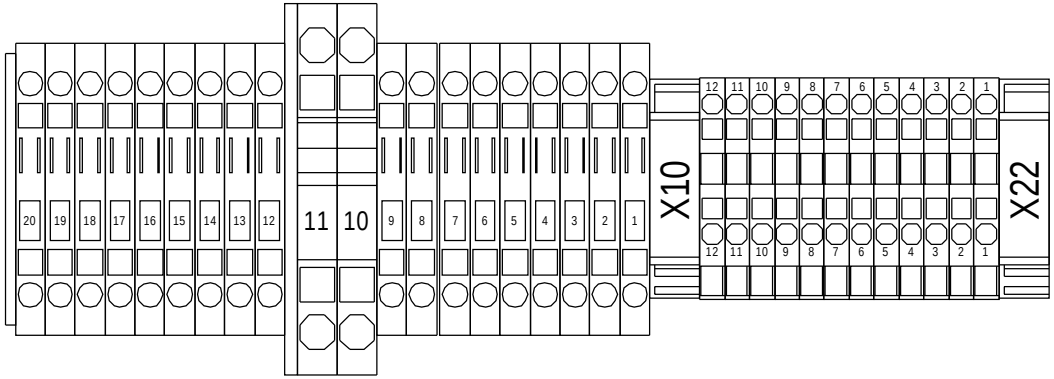

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		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments		Customer: Vestas Wind Systems A/S
		Reviced	031210	INI	Rev. -	Drawing no. 6012290	Cont. sheet 035 / Sheet 034

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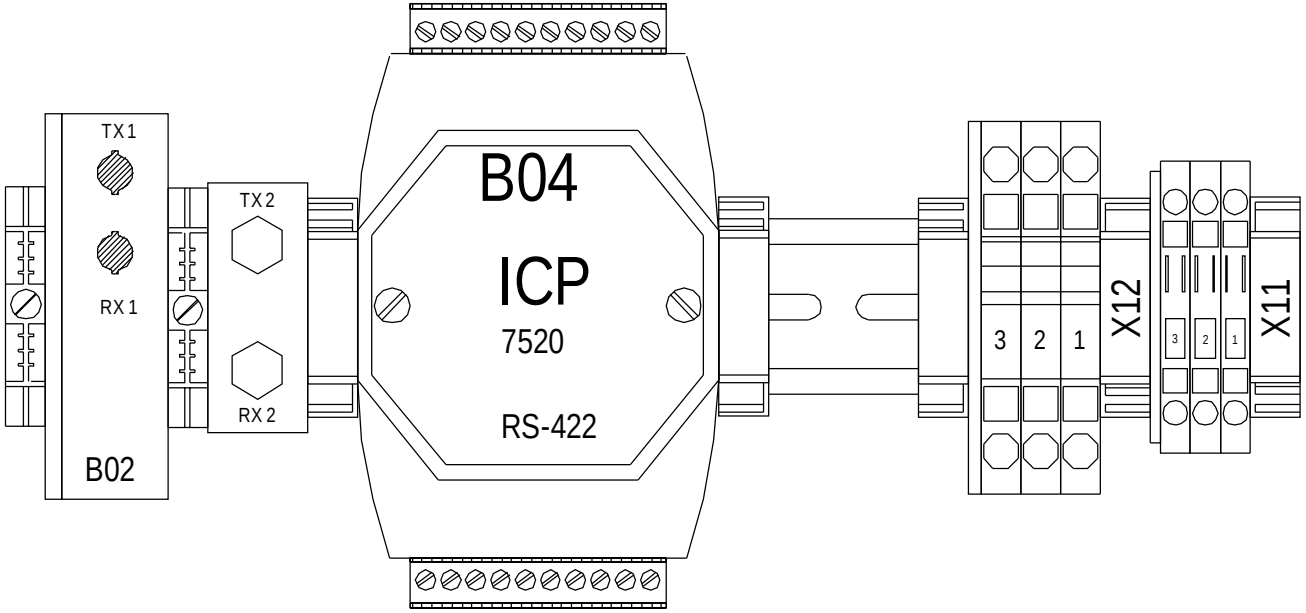

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	Date	Initials	Function	Terminal row X11, X12, B02, B04		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031210	INI	Rev. -	Drawing no. 6012290	Cont. sheet 036	Sheet 035

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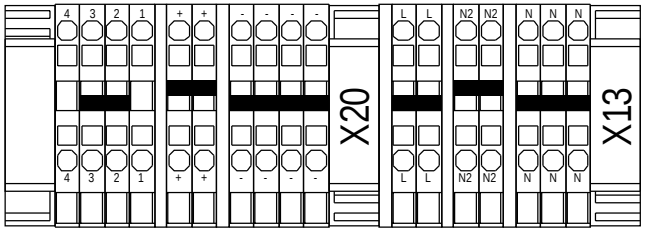
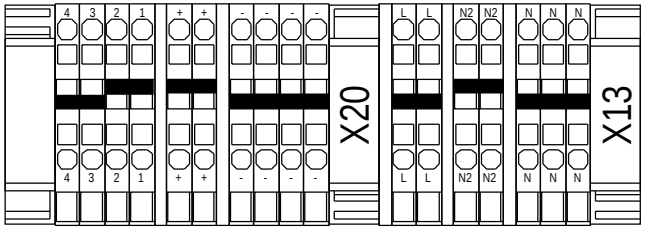


NM72/NM82



NM64

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Terminal row X13, X20	
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments	Customer: Vestas Wind Systems A/S	
		Reviced	031210	INI	Rev. -	Drawing no. 6012290	Cont. sheet 037 / Sheet 036

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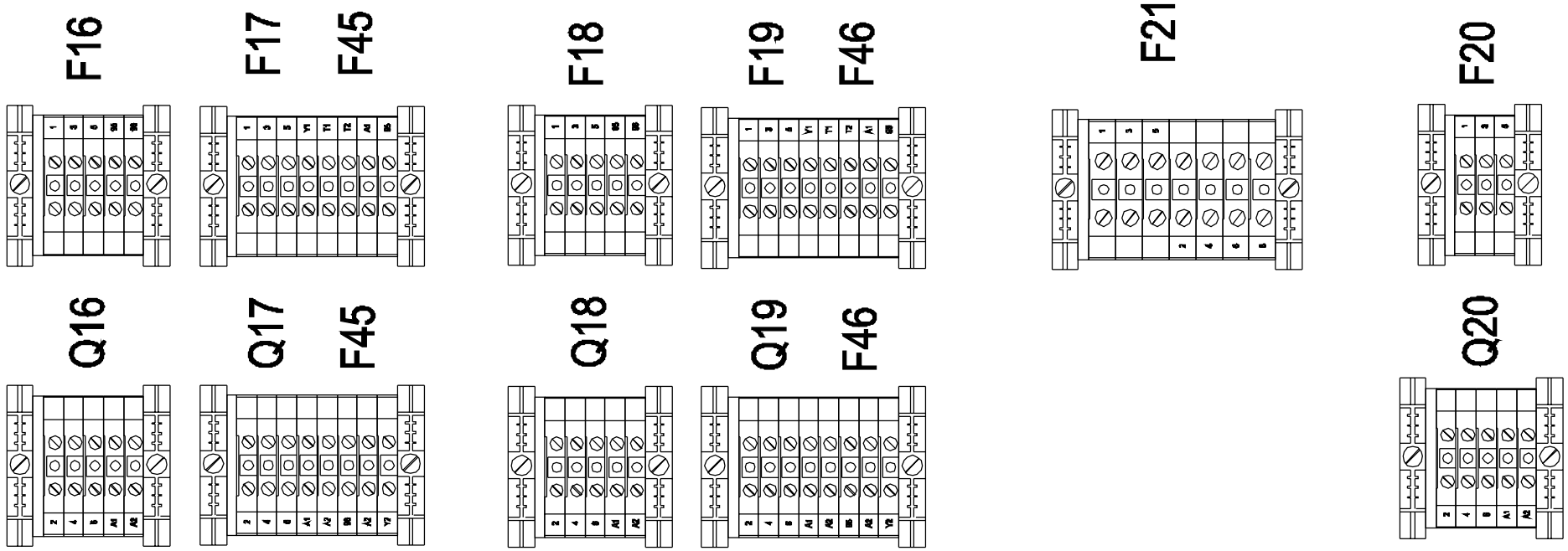

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		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments		Customer: Vestas Wind Systems A/S
		Reviced	031210	INI	Rev. -	Drawing no. 6012290	Cont. sheet 039 / Sheet 037

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USE COPPER CONDUCTORS ONLY FOR EXTERNAL WIRES AND CABLES.

USE 60°C CABLES FOR CURRENTS LESS THAN 100Amps AND 75°C CABLES FOR HIGHER CURRENTS.

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	Date	Initials	Function	Cable Connections		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061024	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061024	INI	Rev. -	Drawing no. 6012290	Cont. sheet 040	Sheet 039

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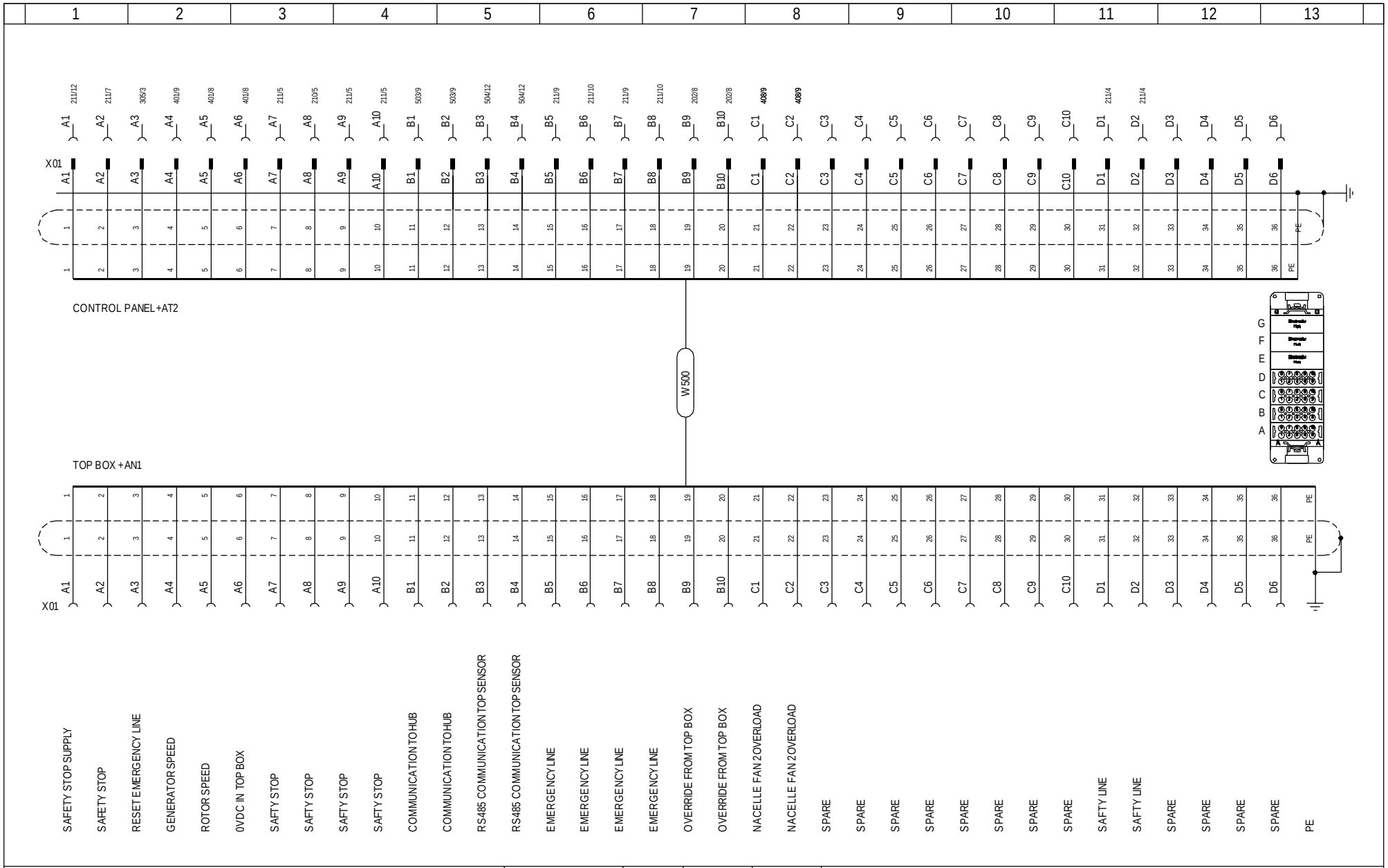

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	Date	Initials	Function	External connection X01 to top box AN1		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040304	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 041	Sheet 040

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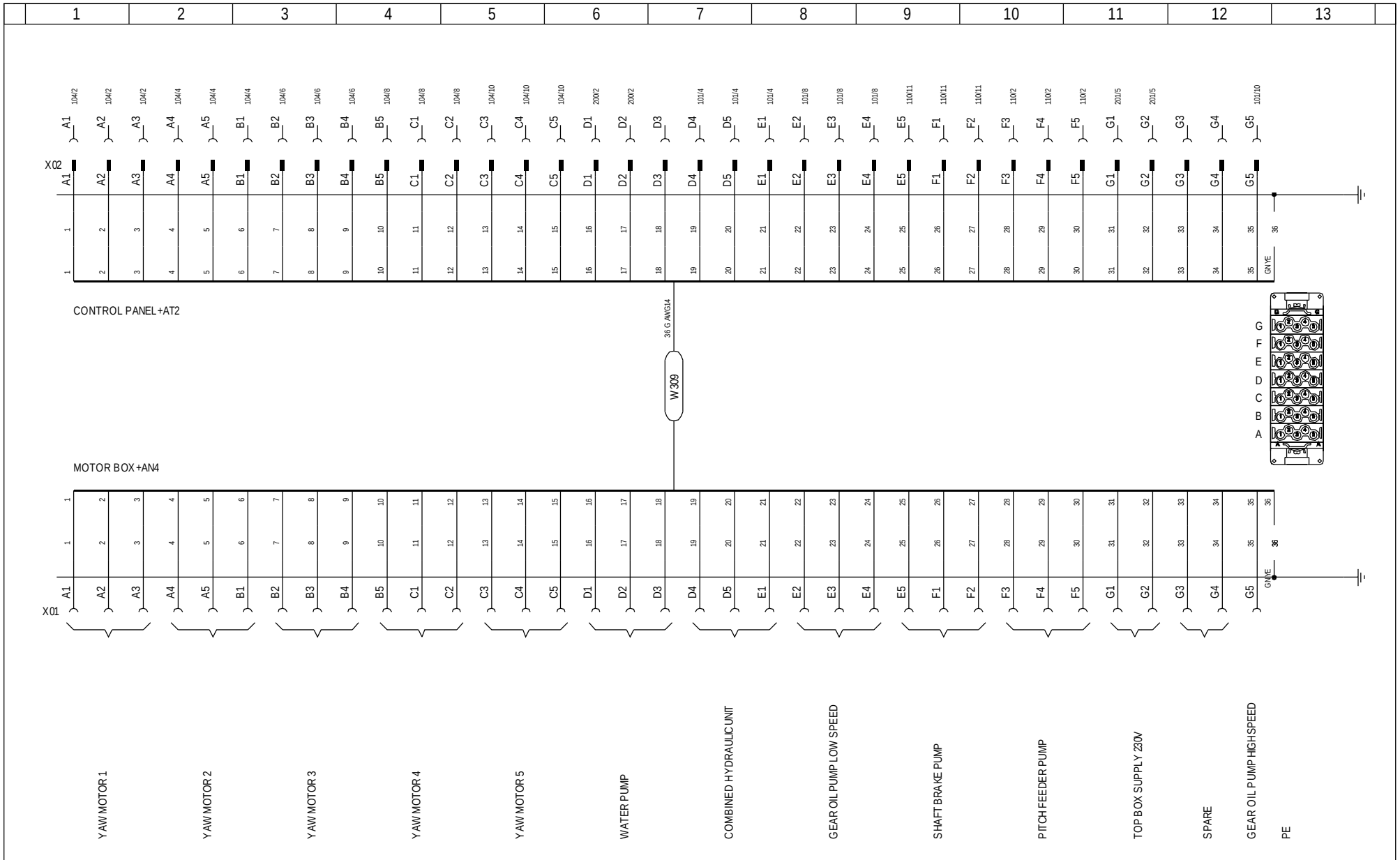

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Vestas

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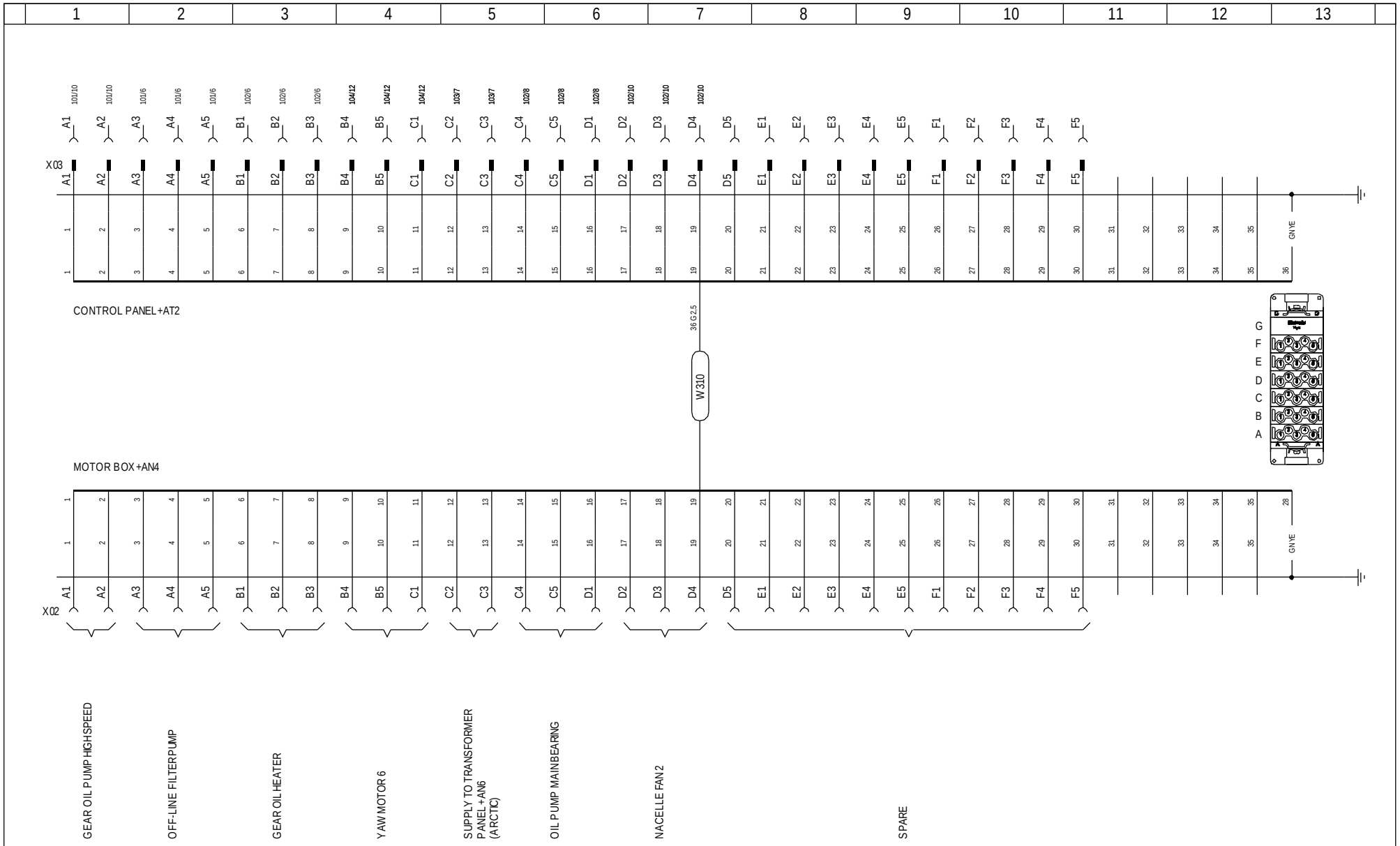
	Date	Initials	Function	External connection X02 to motor box AN4		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040304	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 042	Sheet 041



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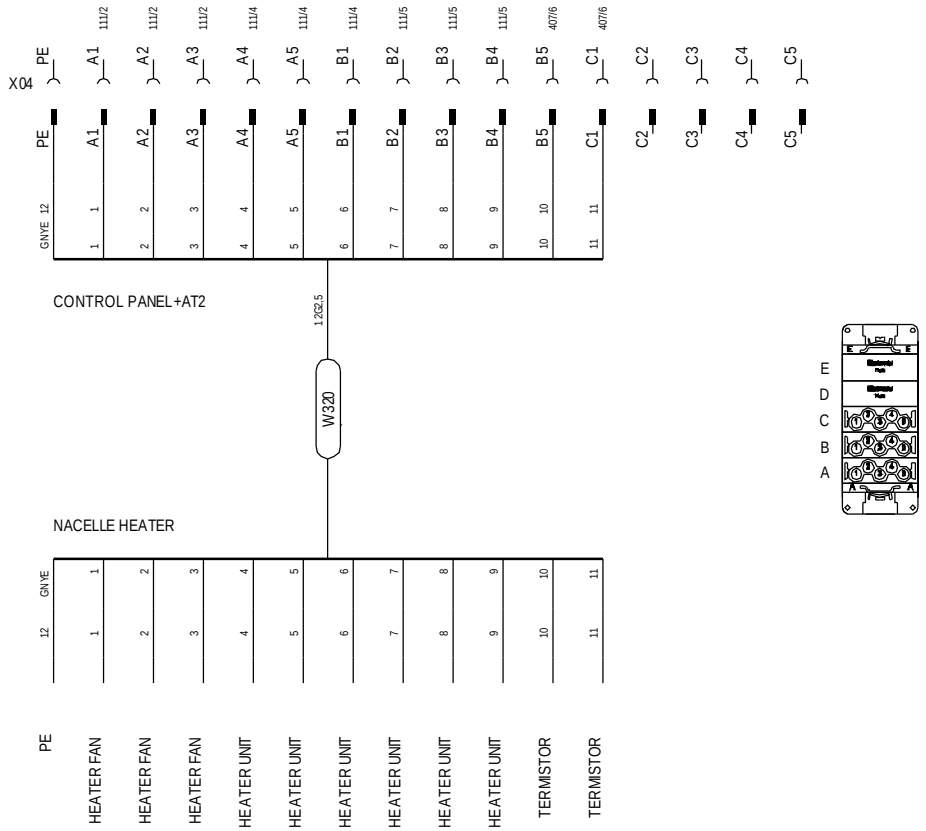
	Date	Initials	Function	External connection X03 to motor box AN4		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040304	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 043	Sheet 042



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	Date	Initials	Function	External connection X04 to nacelle heater 1		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 044	Sheet 043

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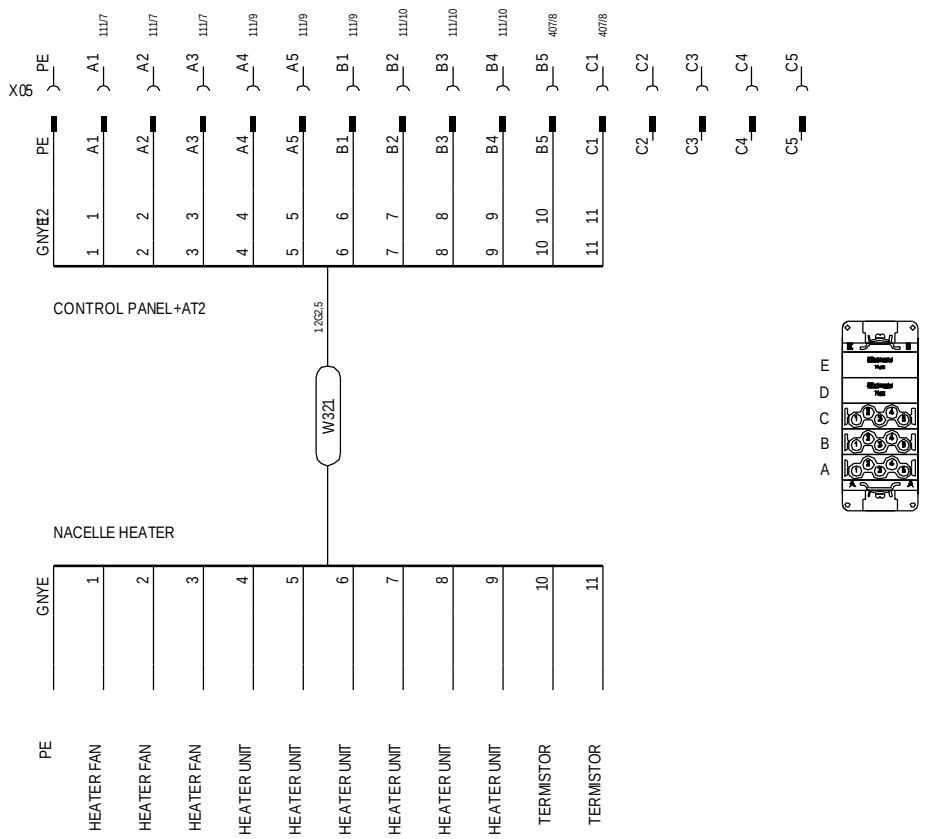

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: External connection X05 to nacelle heater 2	
		Designed	030906	CHO	Project title: Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments	Customer: Vestas Wind Systems A/S
		Reviced	031006	CHO	Rev. - / Drawing no. 6012290	Cont. sheet 045 / Sheet 044

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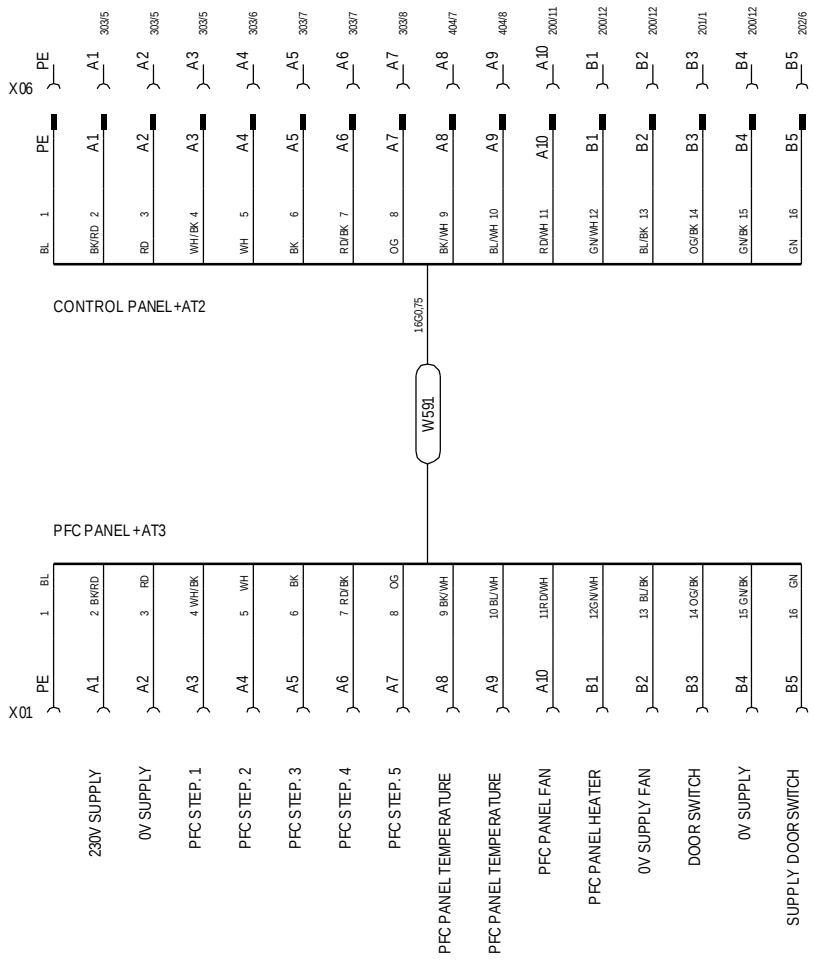
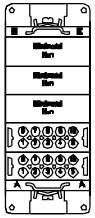
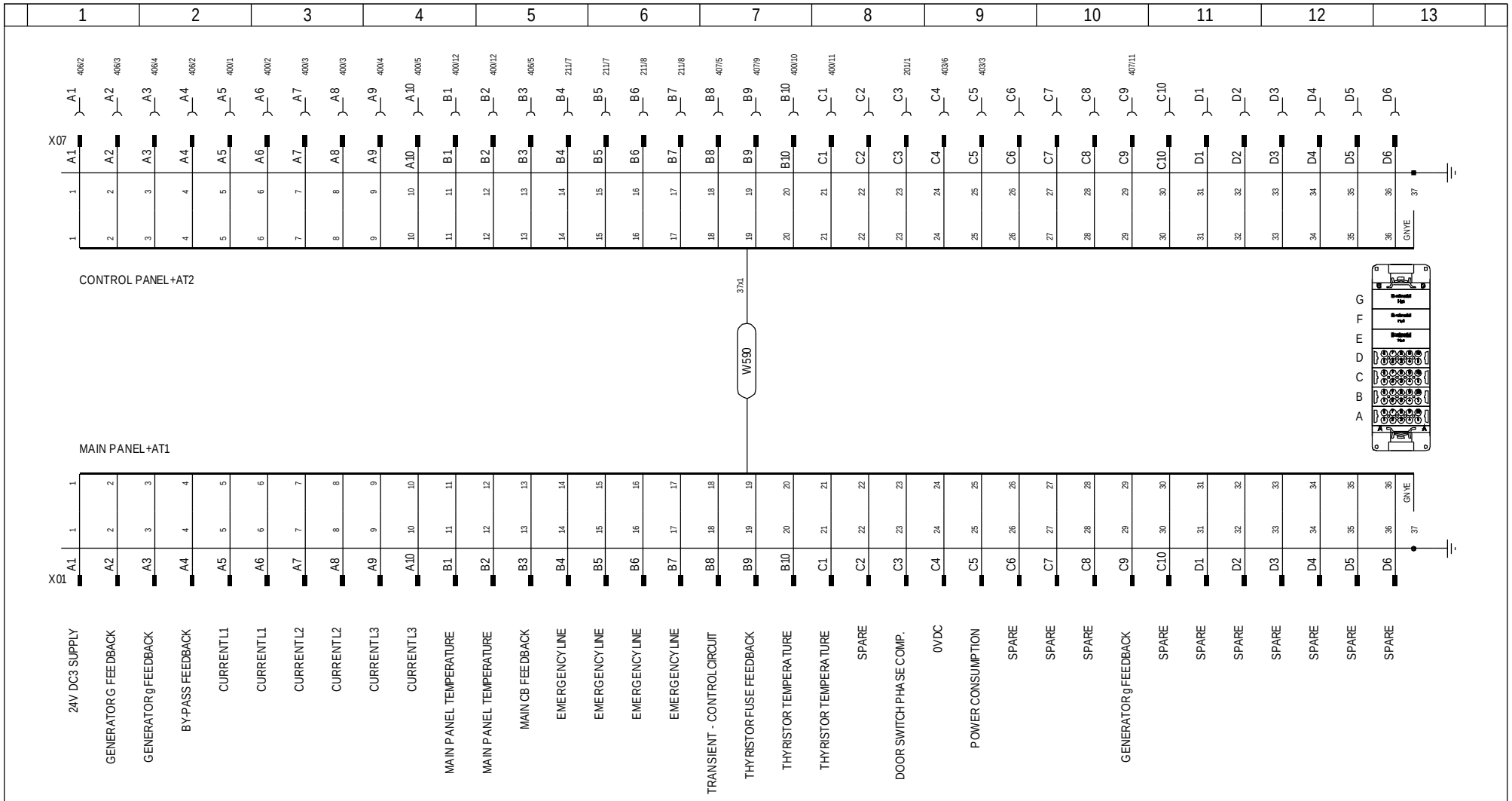




Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

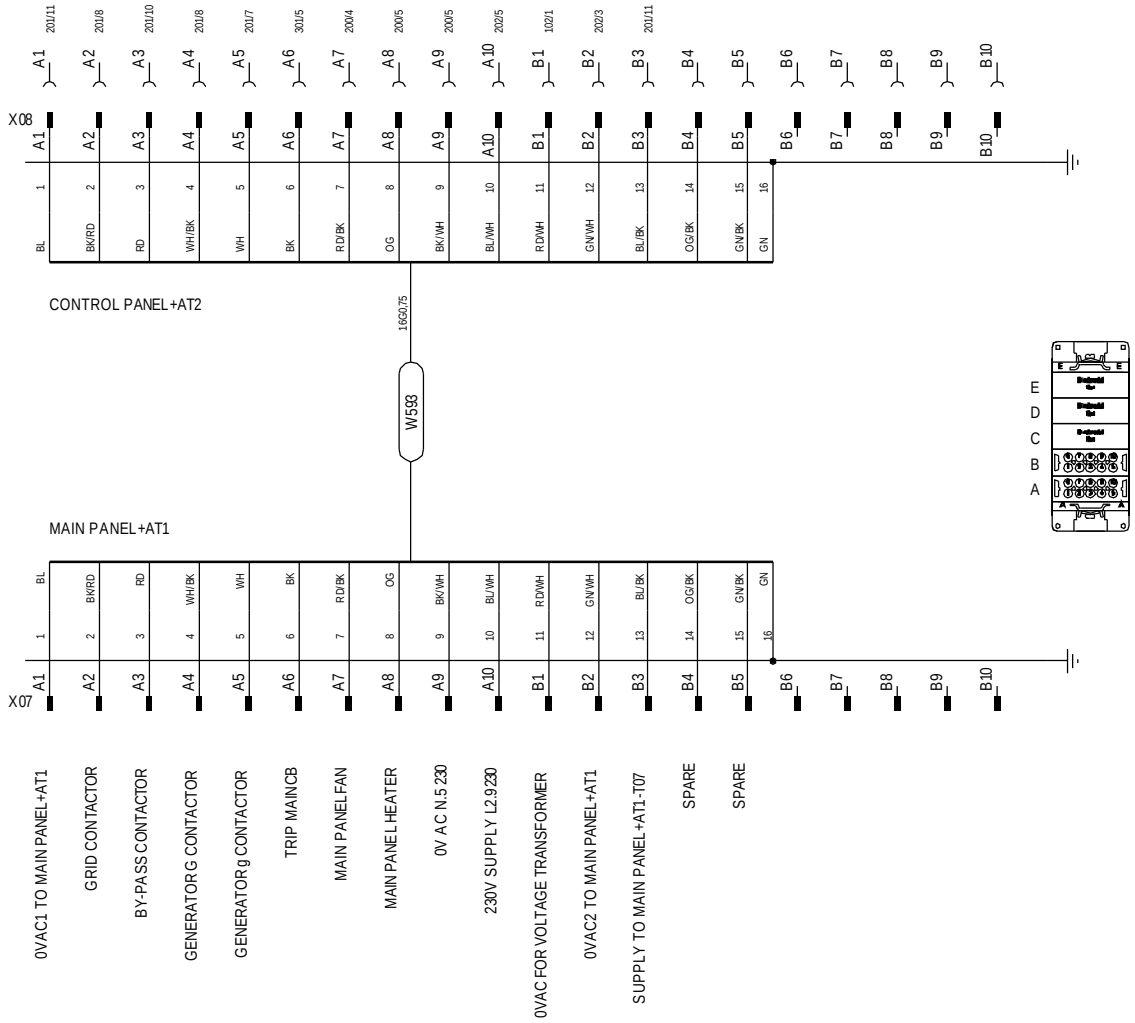
	Date	Initials	Function	External connection X06 to PFC panel AT3		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 046	Sheet 045

13-12-06
17:15



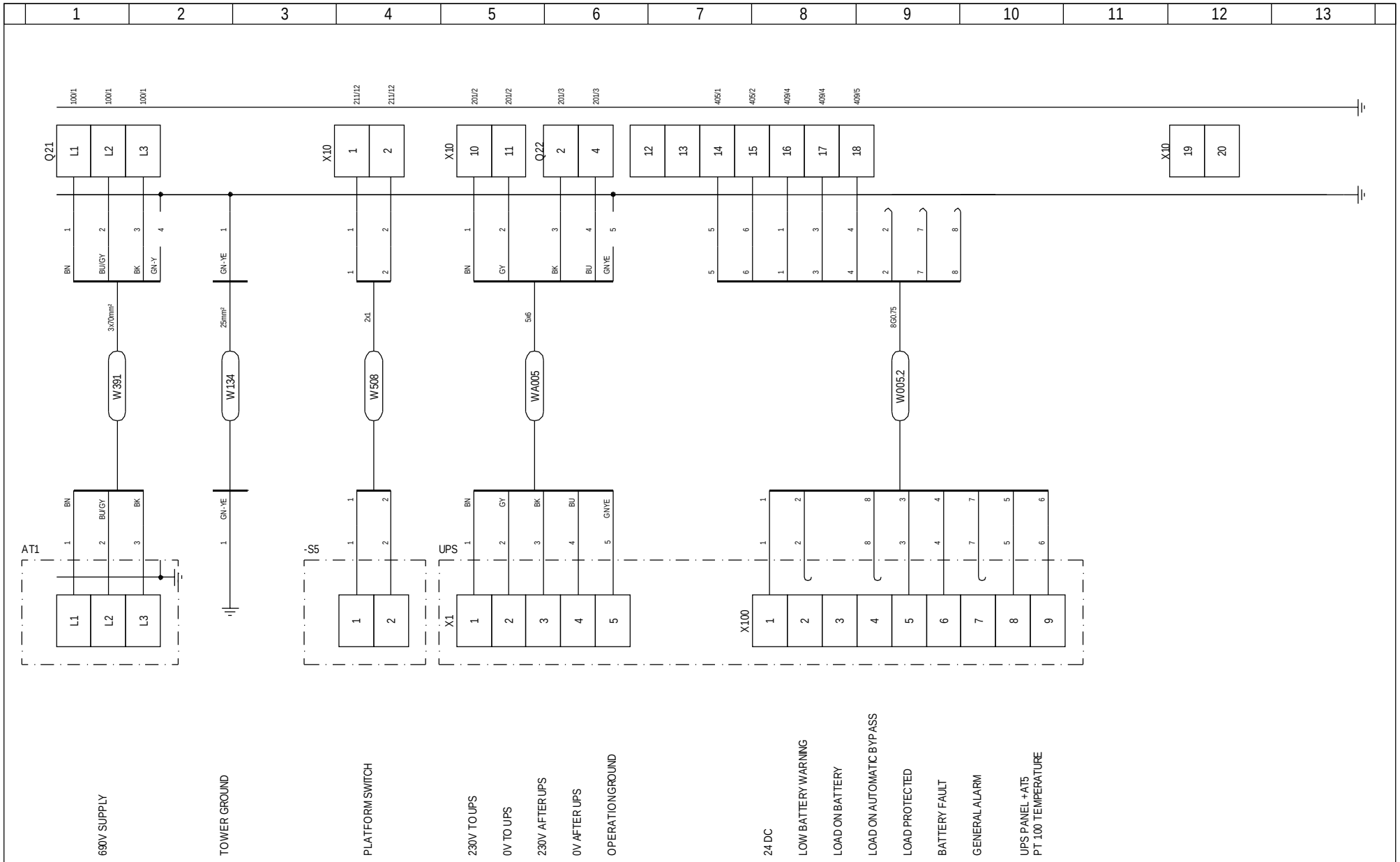
Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connection X07 to main panel AT1	
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments	Customer	Vestas Wind Systems A/S
		Reviced	040304	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 047 / Sheet 046

13-12-06
17:15



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connection X08 to main panel AT1
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz
		Approved			Comments	Customer: Vestas Wind Systems A/S
		Reviced	031006	CHO	Rev. -	Drawing no. 6012290 · Cont. sheet 048 · Sheet 047

13-12-06
17:15



13-12-06
17:15

Vestas

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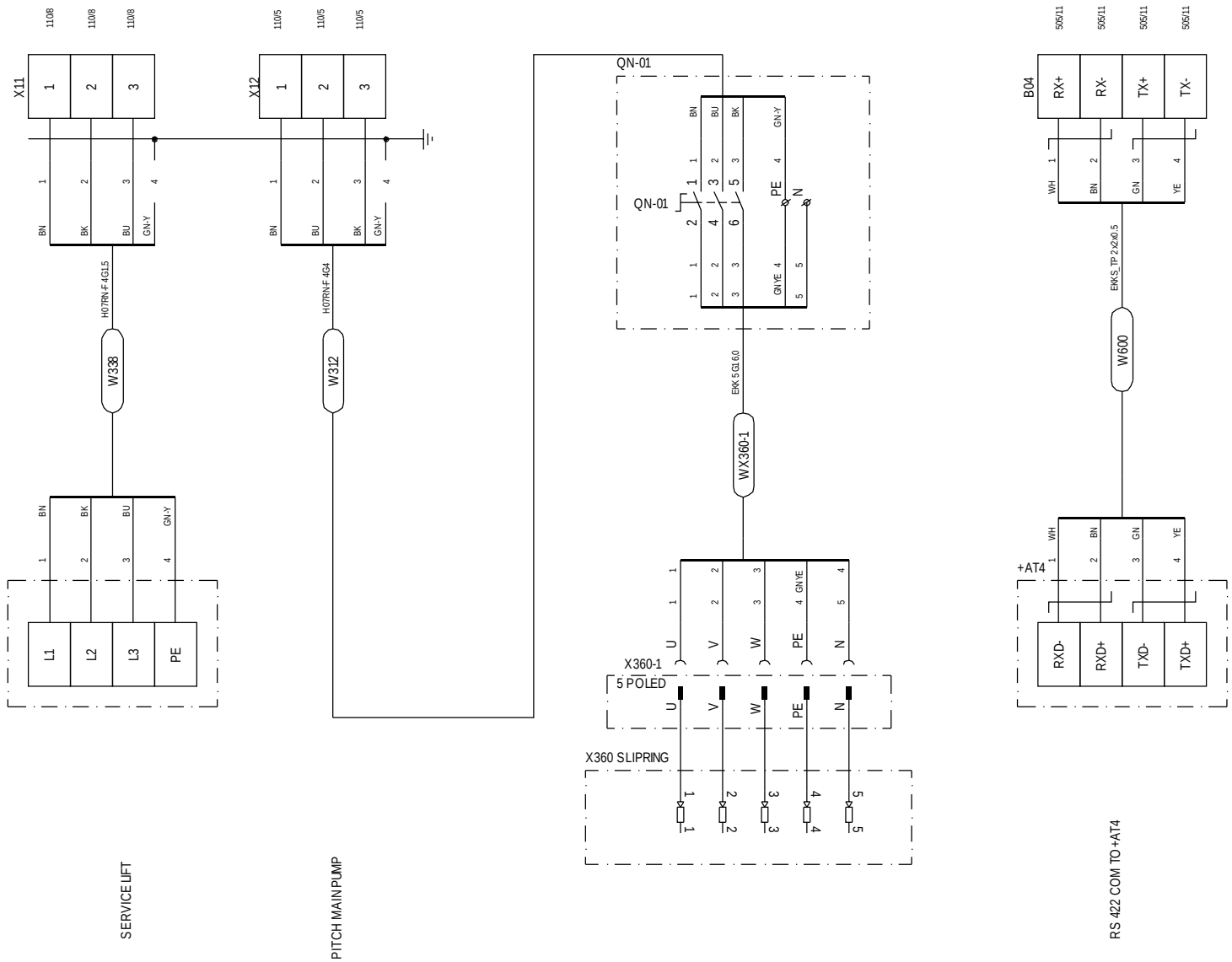
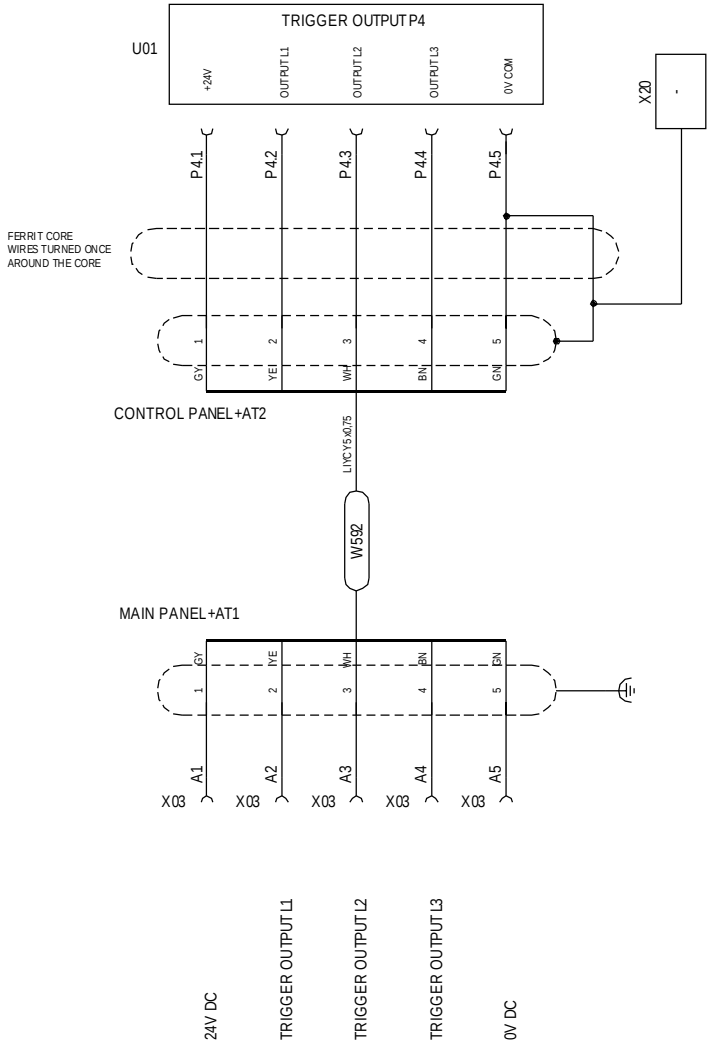
	Date	Initials	Function	External connection X10		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	041112	INI	Rev. -	Drawing no. 6012290	Cont. sheet 049	Sheet 048



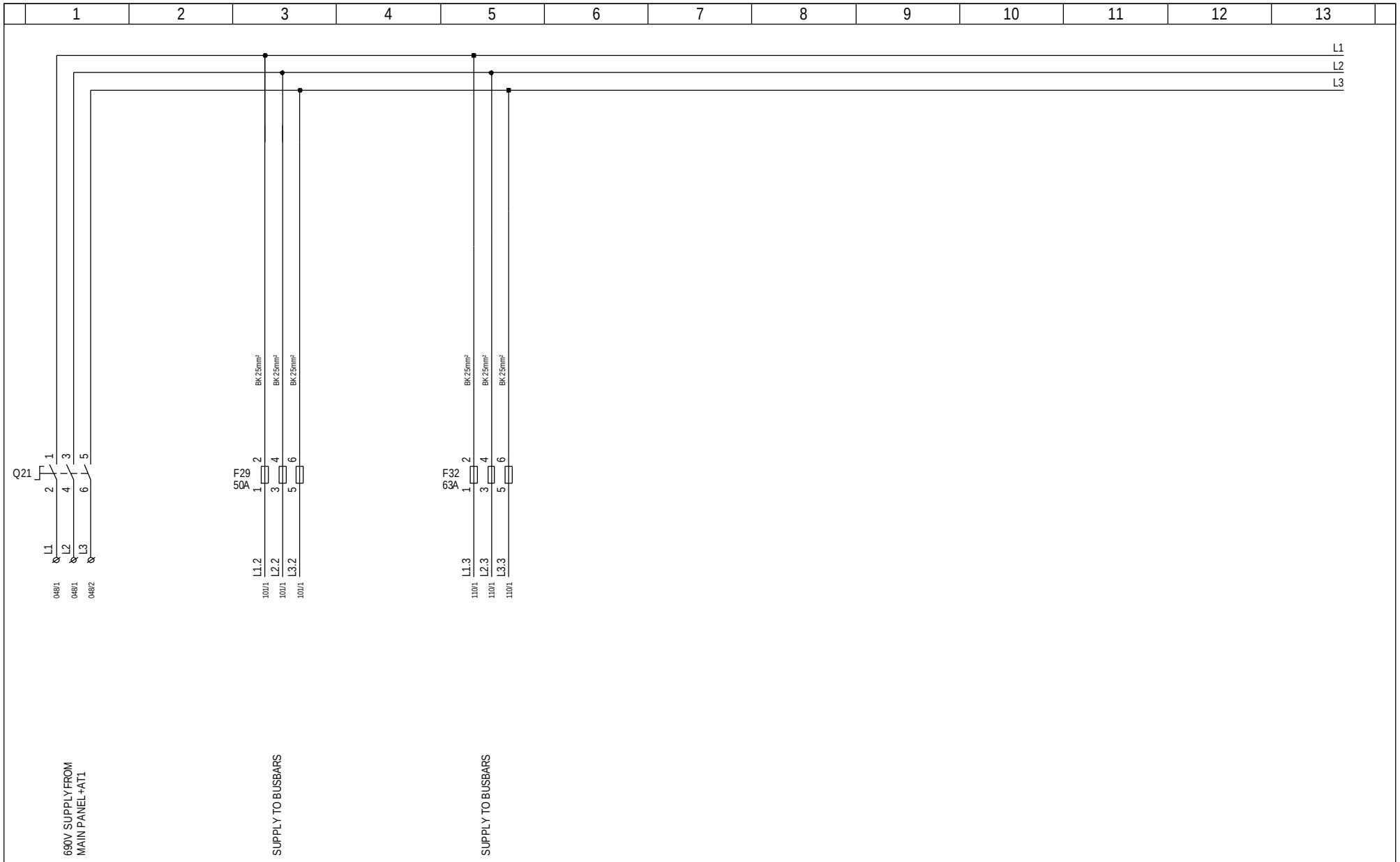
Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connection X11 X12 B04
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz
		Approved	061213	SLB	Comments	Customer: Vestas Wind Systems A/S
		Reviced	061213	INI	Rev. -	Drawing no. 6012290 · Cont. sheet 050 · Sheet 049

13-12-06 17:15



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connection for trigger cable to AT1
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz
		Approved			Comments	Customer: Vestas Wind Systems A/S
		Reviced	031006	CHO	Rev. -	Drawing no. 6012290 / Cont. sheet 100 / Sheet 050

13-12-06
17:15

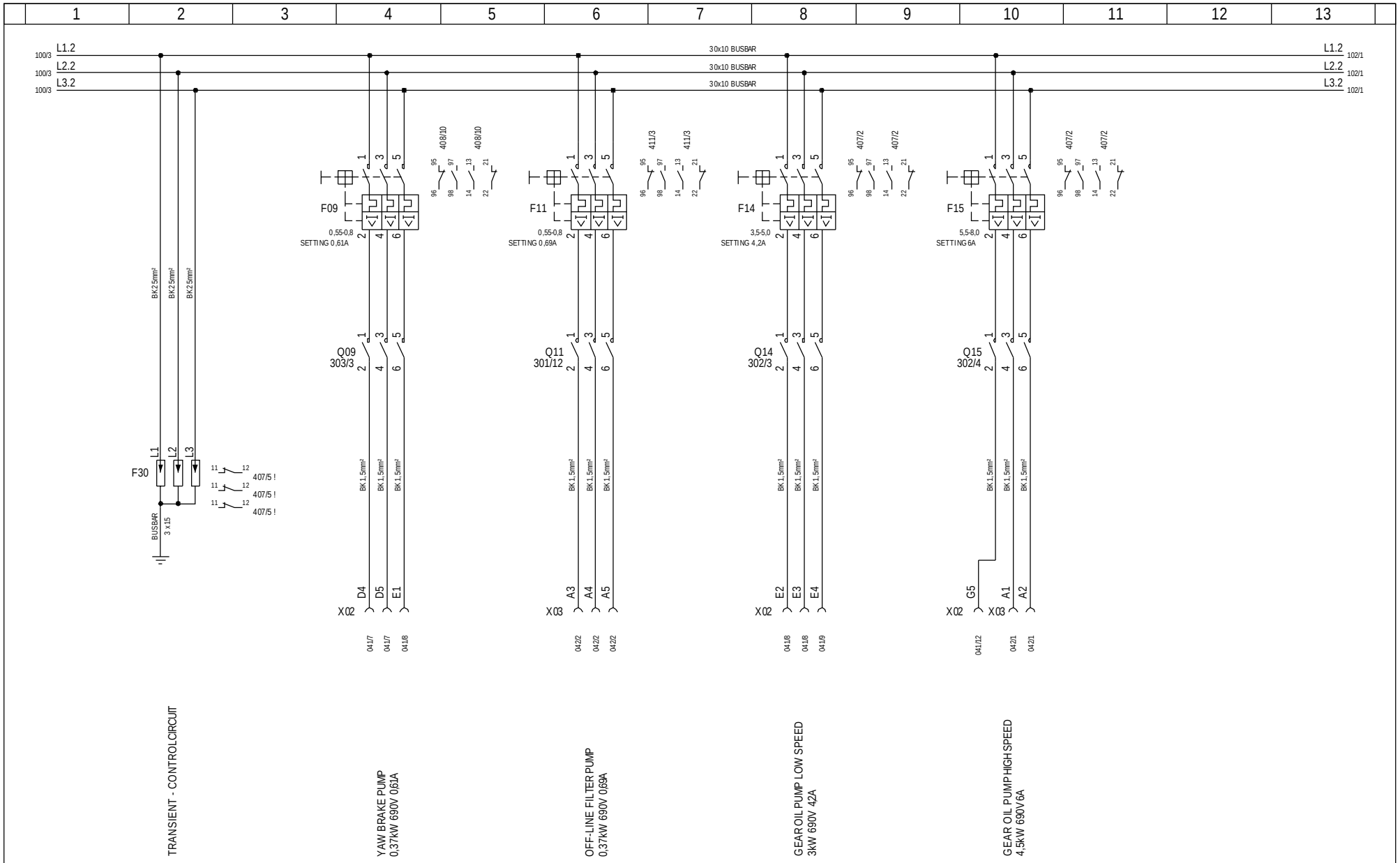


13-12-06
17:15

Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	690V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 101	Sheet 100



Vestas

13-12-06
17:15

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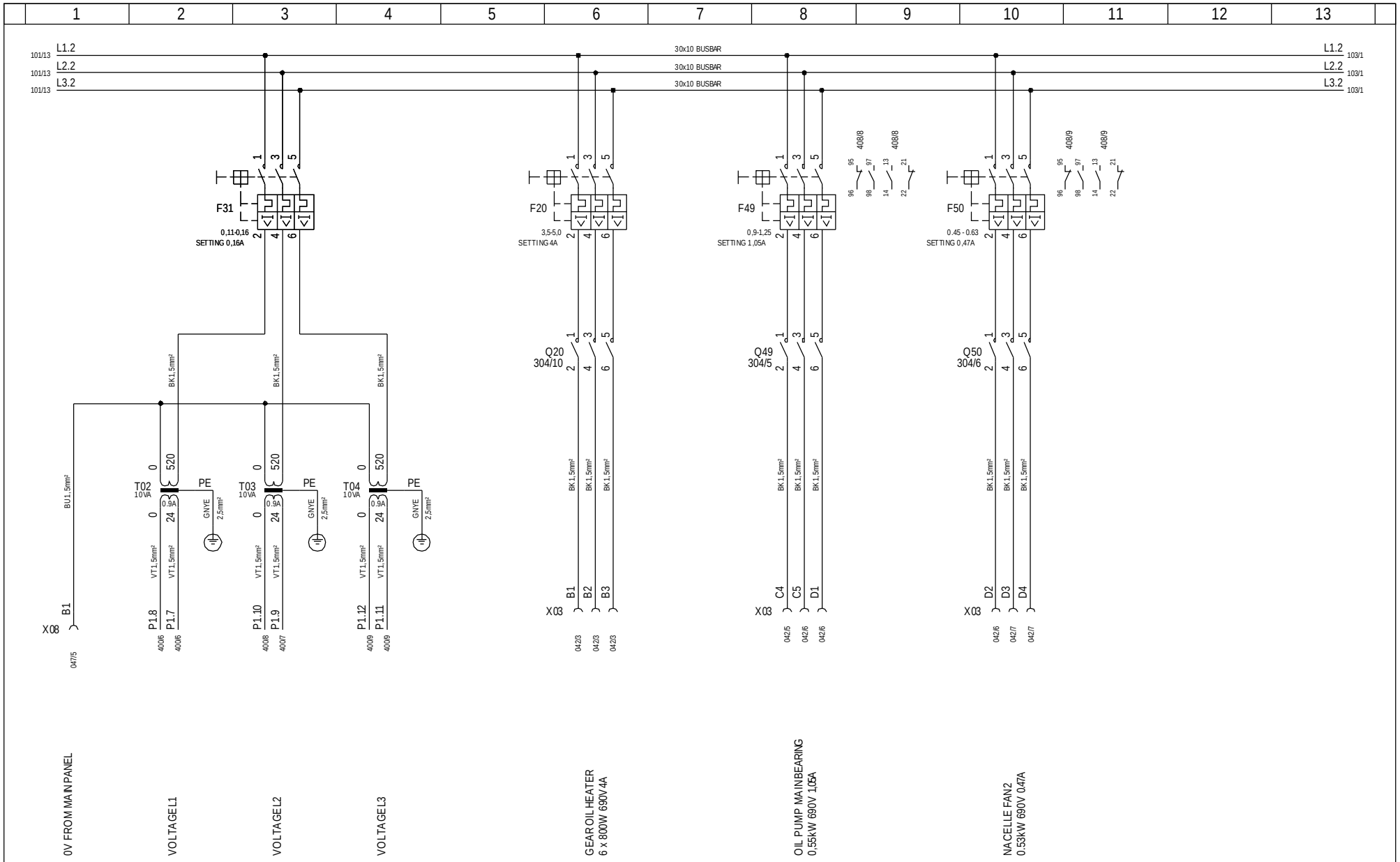
	Date	Initials	Function	690V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040609	INI	Rev. -	Drawing no. 6012290	Cont. sheet 102	Sheet 101

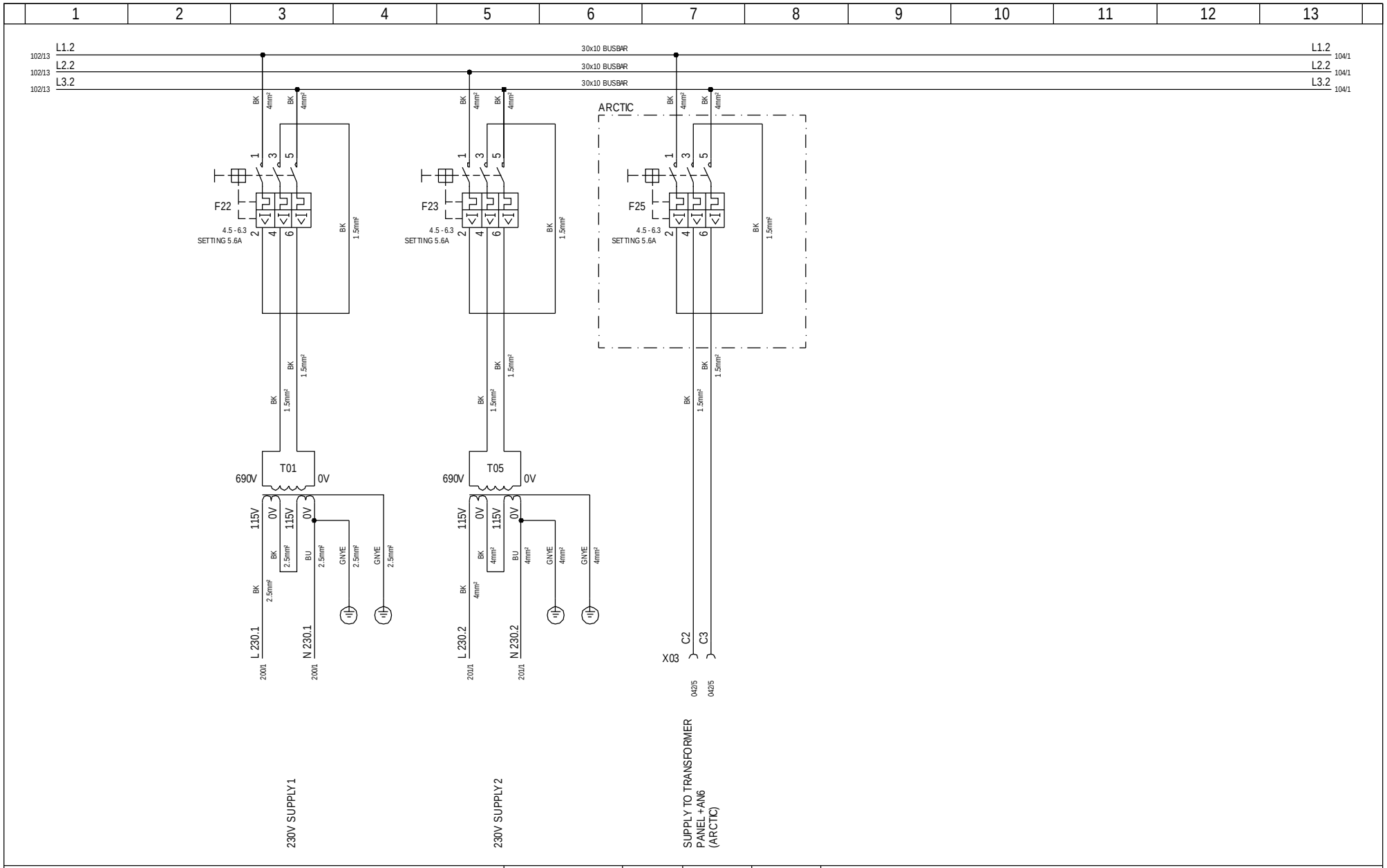


13-12-06
17:15

Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

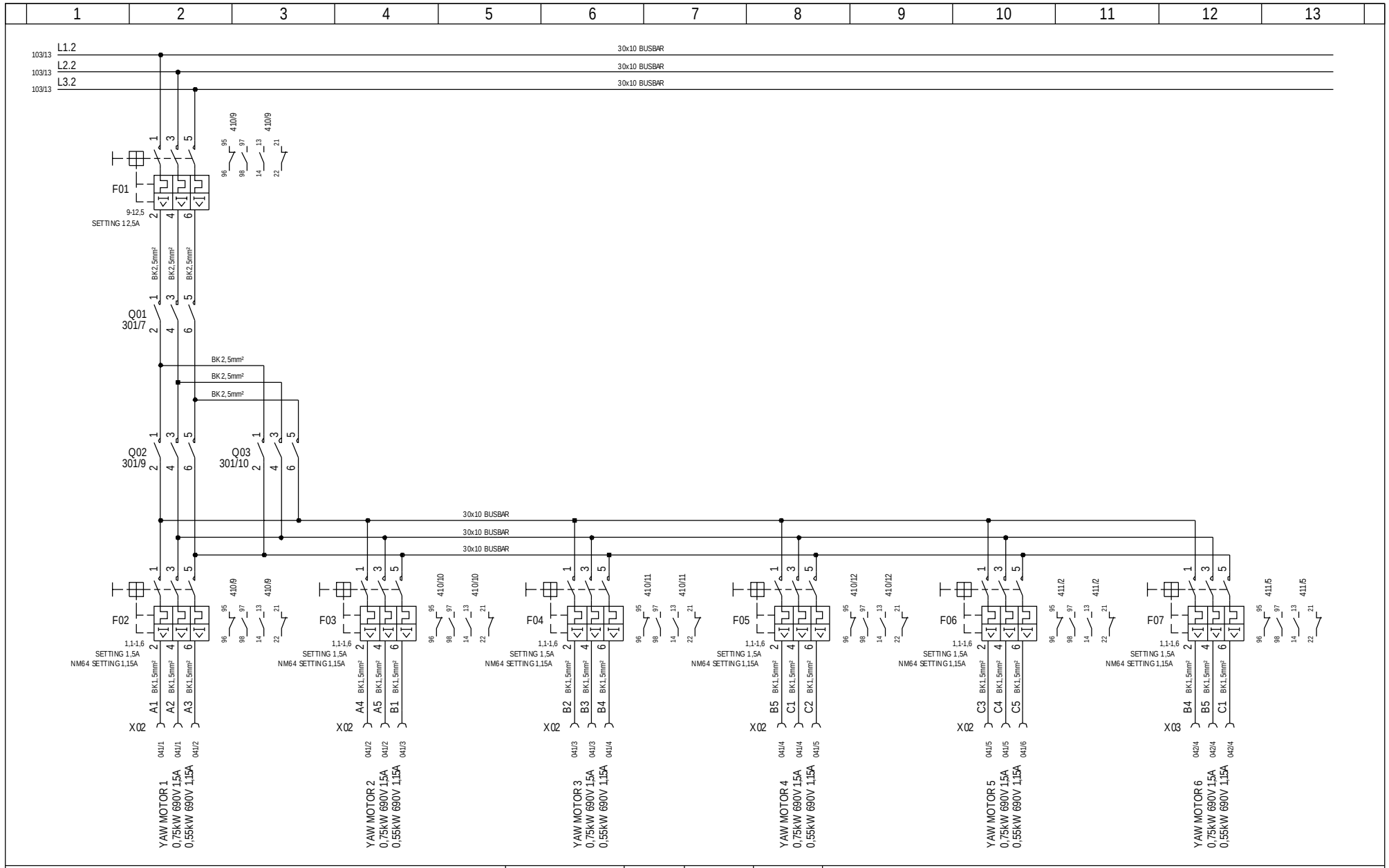
	Date	Initials	Function	690V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040708	INI	Rev. -	Drawing no. 6012290	Cont. sheet 103	Sheet 102



Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	690V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. -	Drawing no. 6012290	Cont. sheet 104	Sheet 103

13-12-06
17:15



13-12-06
17:15

Vestas

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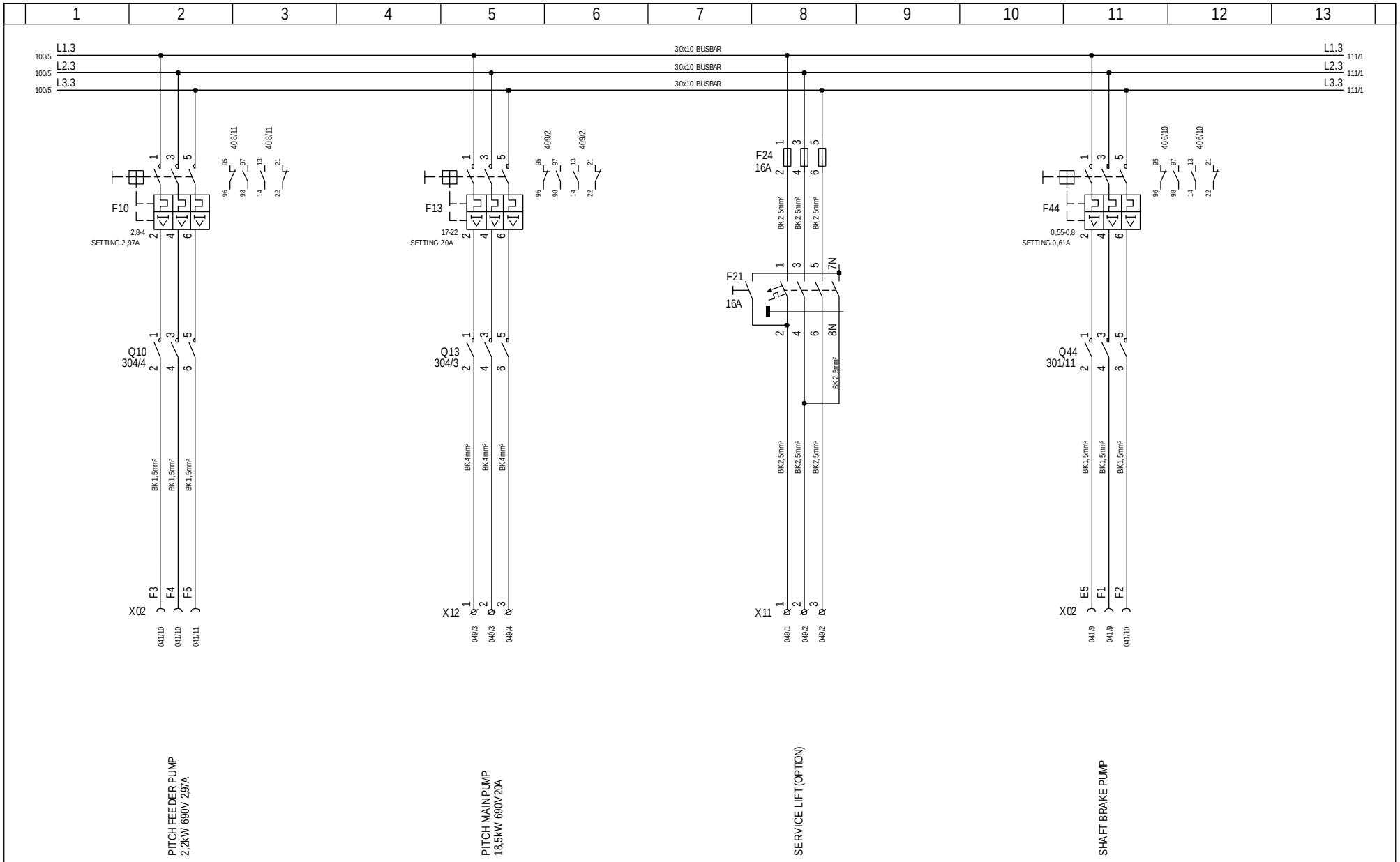
	Date	Initials	Function	690V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 110	Sheet 104

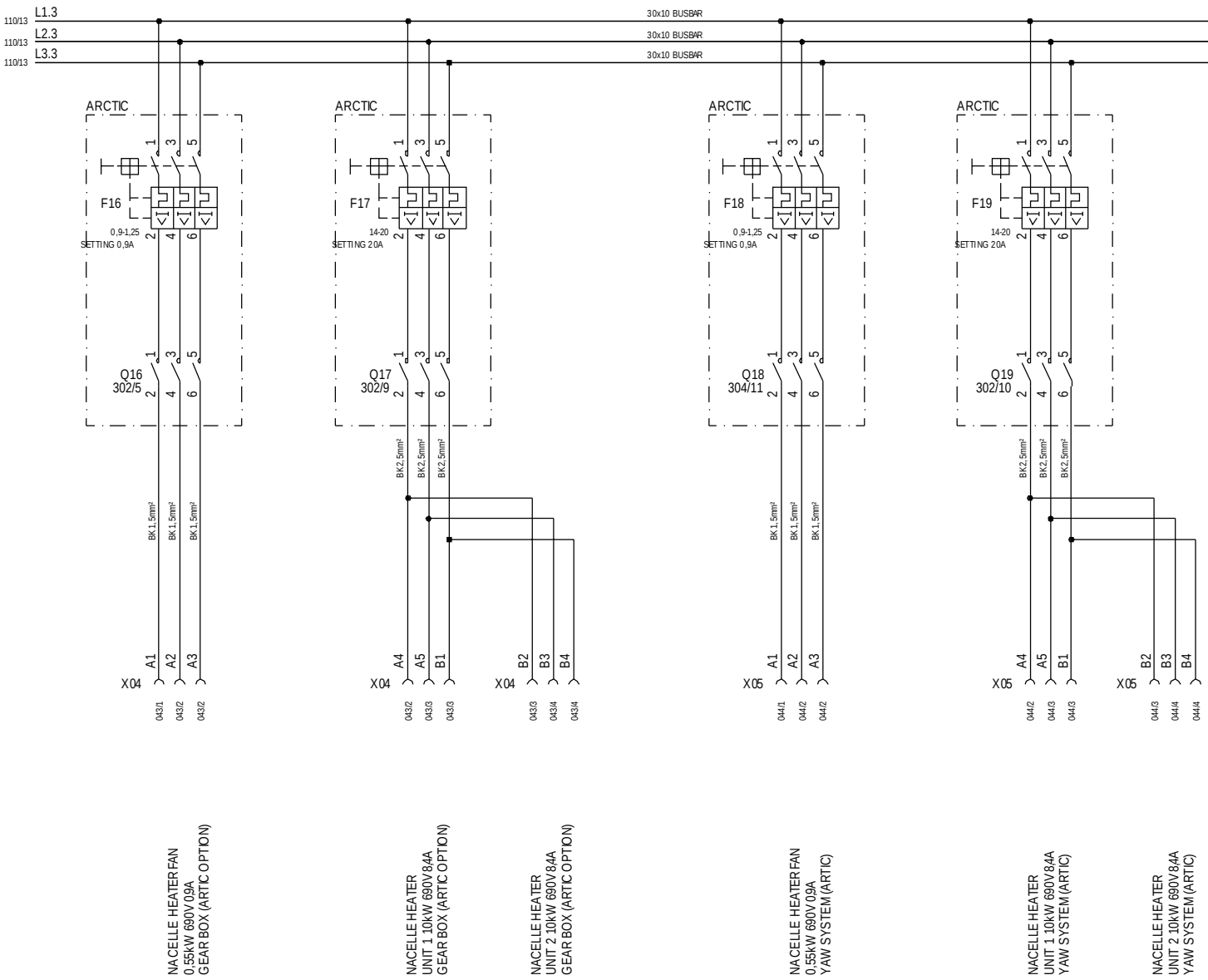


13-12-06
17:15

Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	690V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031210	INI	Rev. -	Drawing no. 6012290	Cont. sheet 111	Sheet 110



13-12-06
17:15

Vestas

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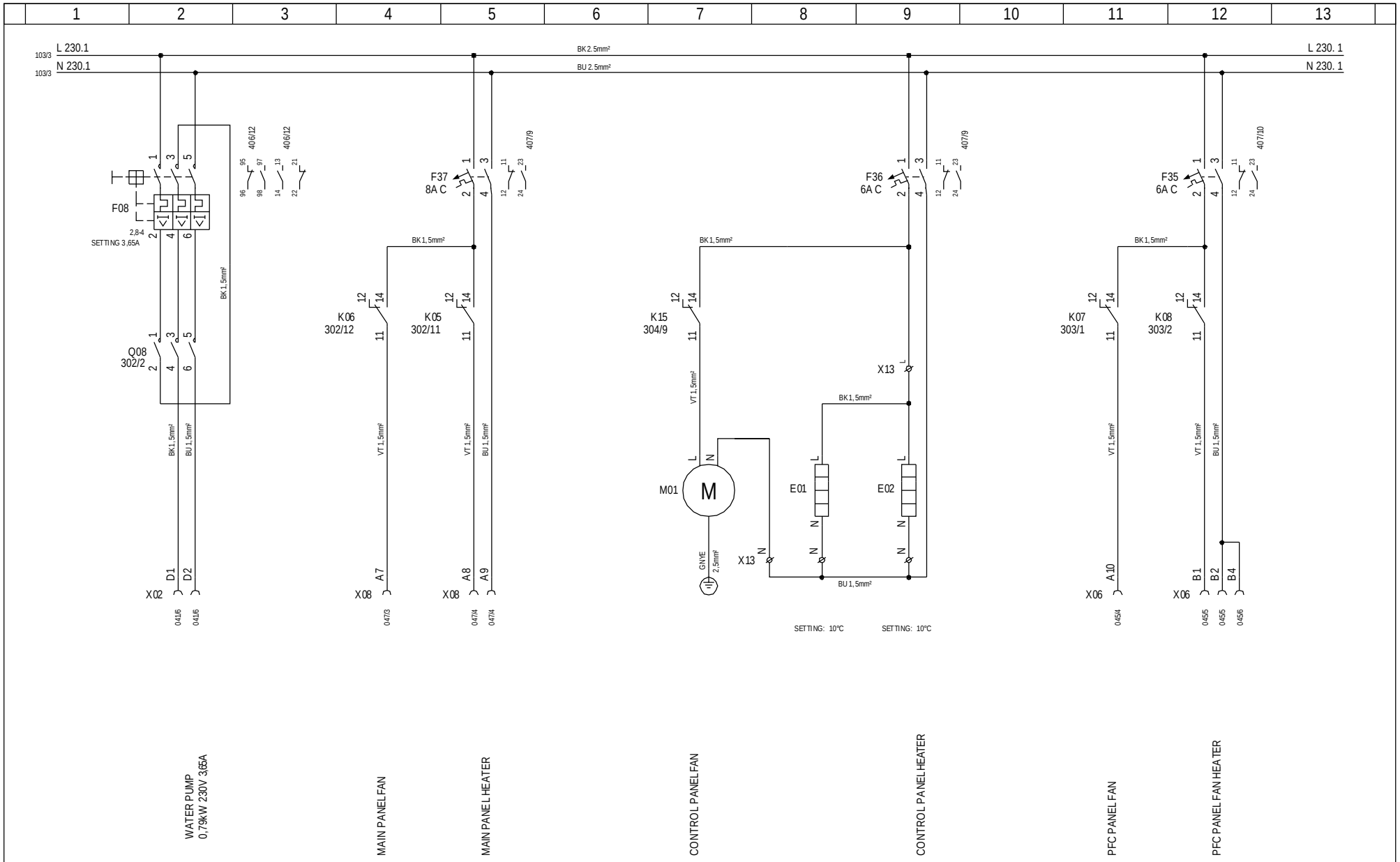
	Date	Initials	Function	690V circuits nacelle heaters (arctic)		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040708	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 200	Sheet 111



	Date	Initials	Function	230V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031210	INI	Rev. -	Drawing no. 6012290	Cont. sheet 201	Sheet 200

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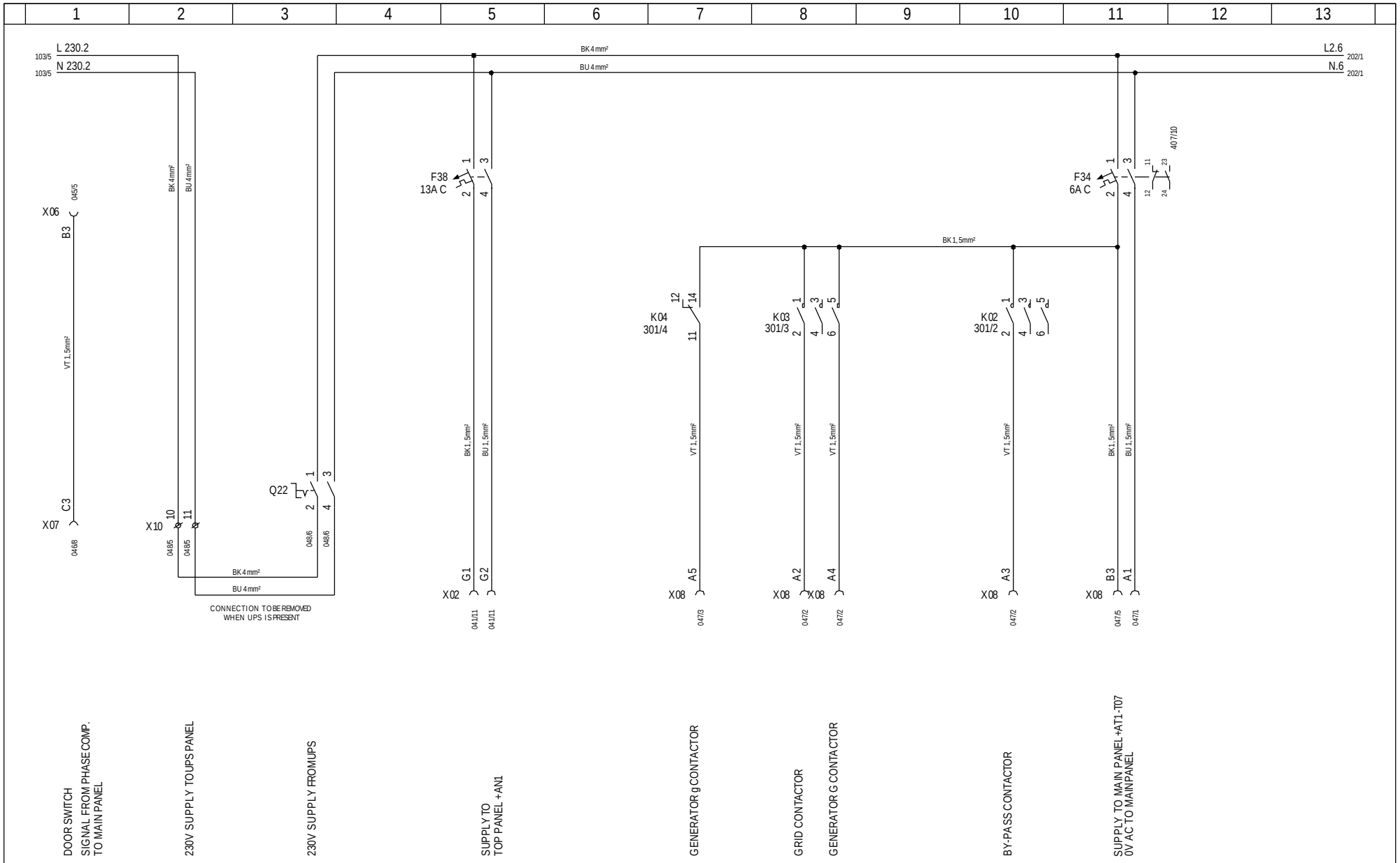
13-12-06
17:15

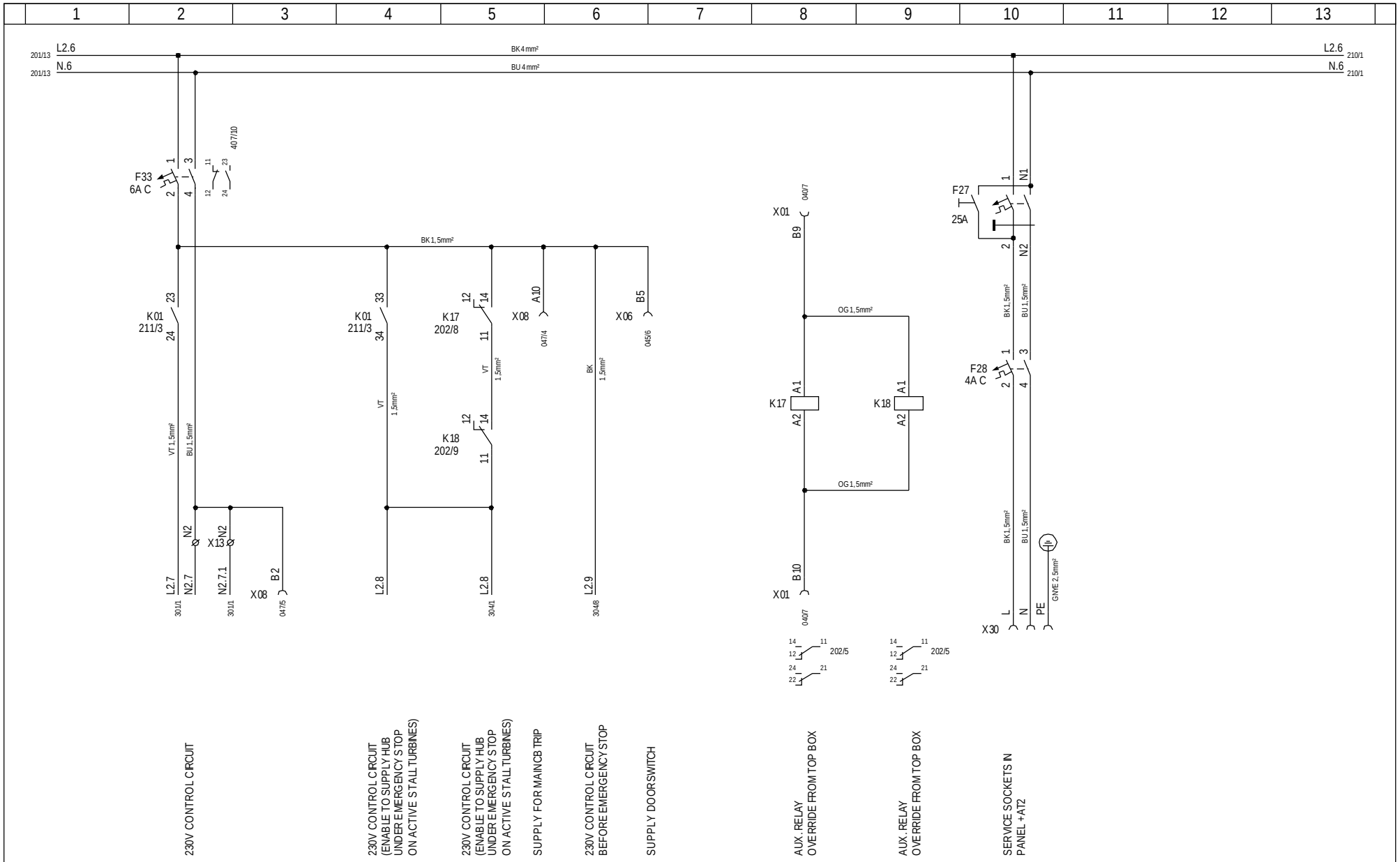


13-12-06
17:15

Vestas

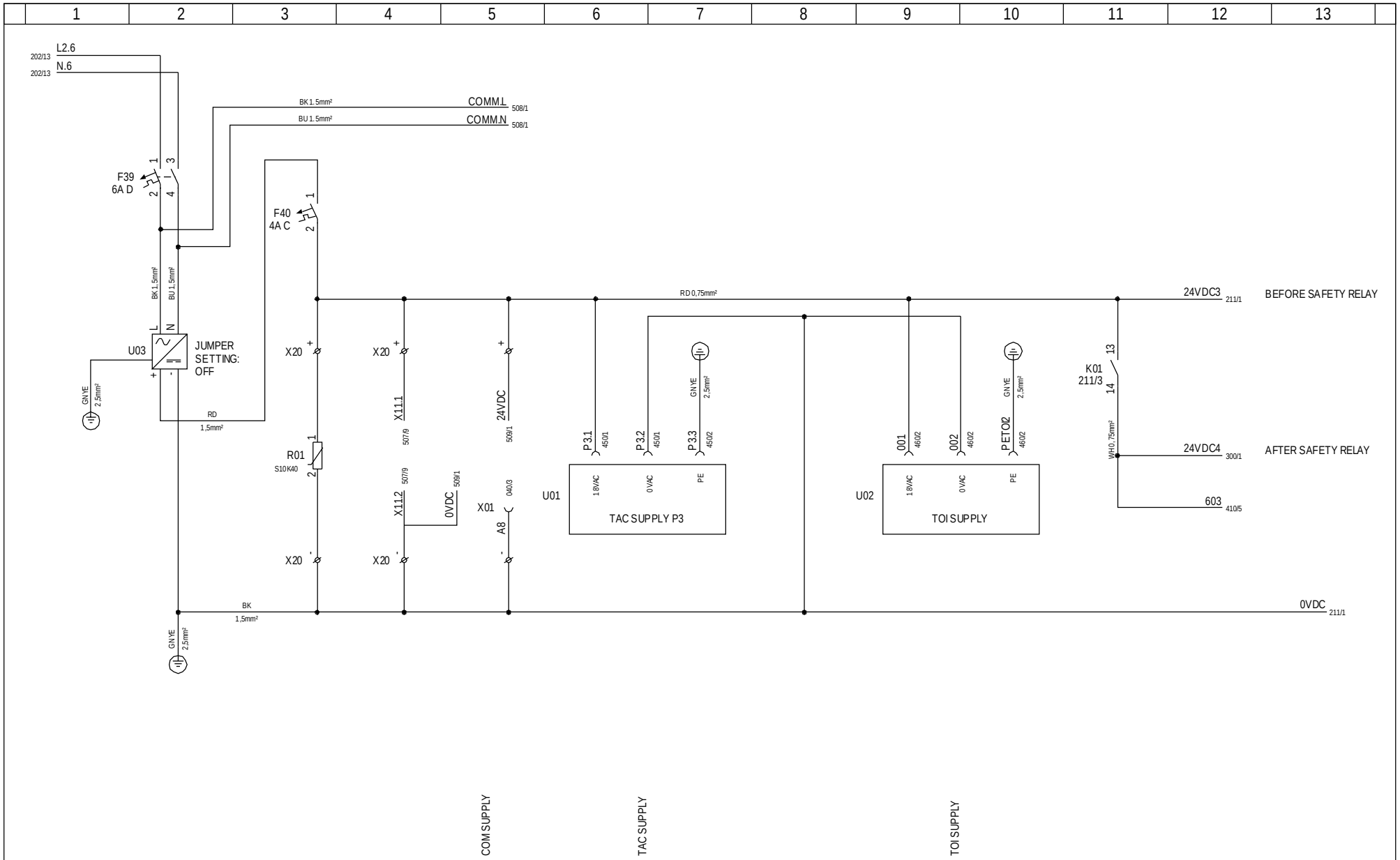
Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	230V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040304	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 202	Sheet 201



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	230V circuits	
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments	Customer	Vestas Wind Systems A/S
		Reviced	031210	INI	Rev. - / Drawing no. 6012290	Cont. sheet 210	Sheet 202

13-12-06
17:15



	Date	Initials	Function	230V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061024	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061024	INI	Rev. -	Drawing no. 6012290	Cont. sheet 211	Sheet 210

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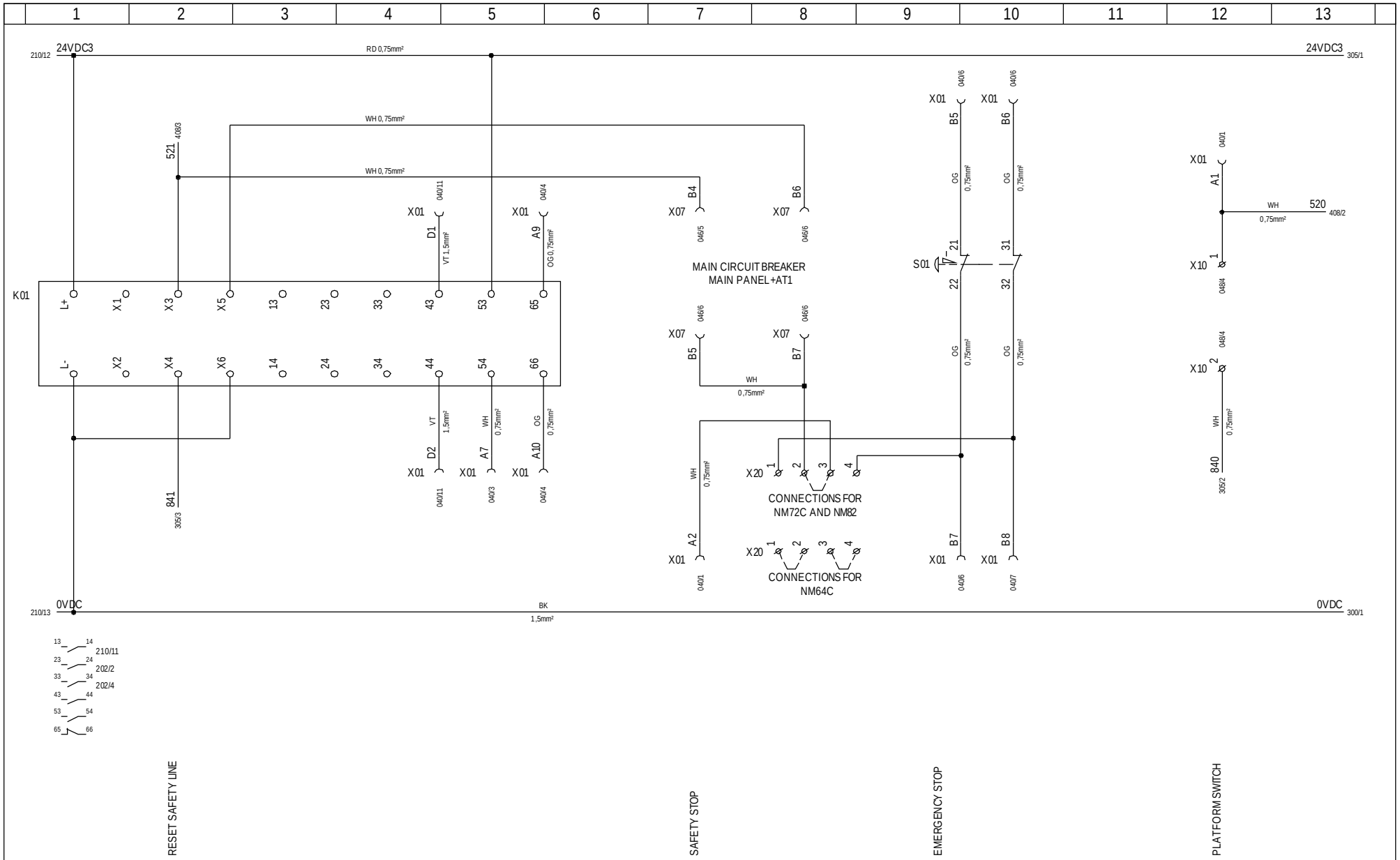
13-12-06
17:15

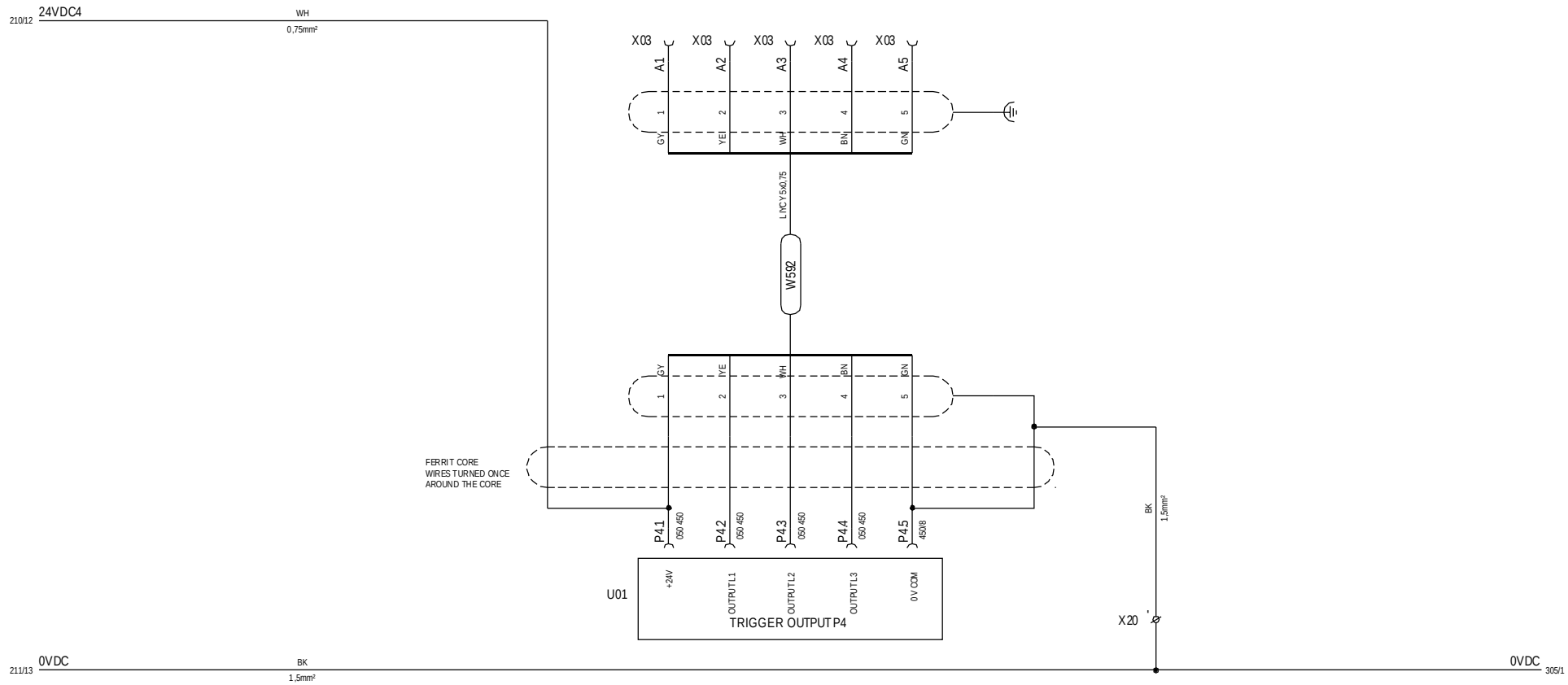


13-12-06
17:15

Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	230V circuits		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040304	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 300	Sheet 211



24V DC

TRIGGER OUTPUT L1

TRIGGER OUTPUT L2

TRIGGER OUTPUT L3

13-12-06

17:13

Vestas

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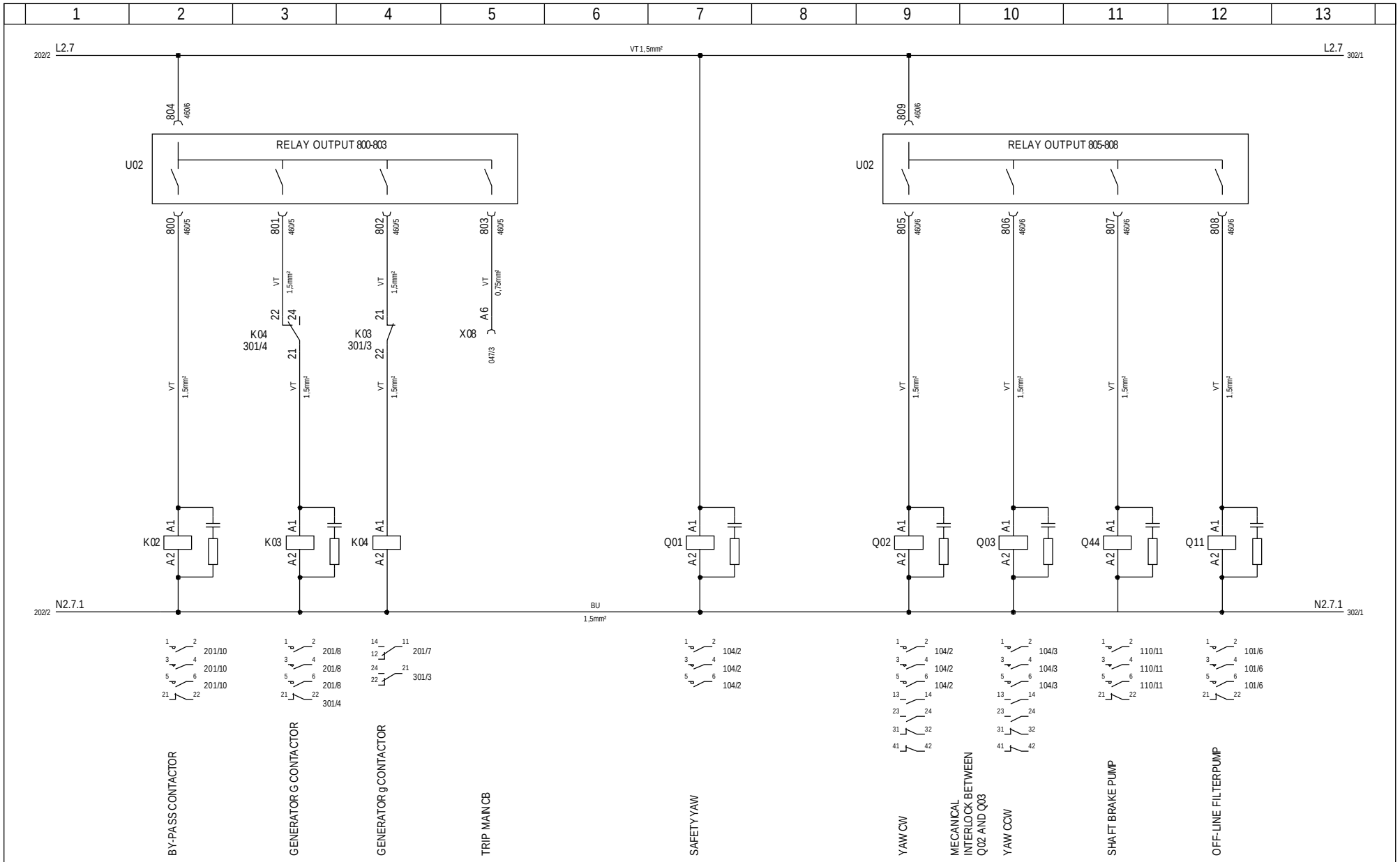
	Date	Initials	Function	TAC Output P4.1 - P4.5 trigger cable		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 301	Sheet 300

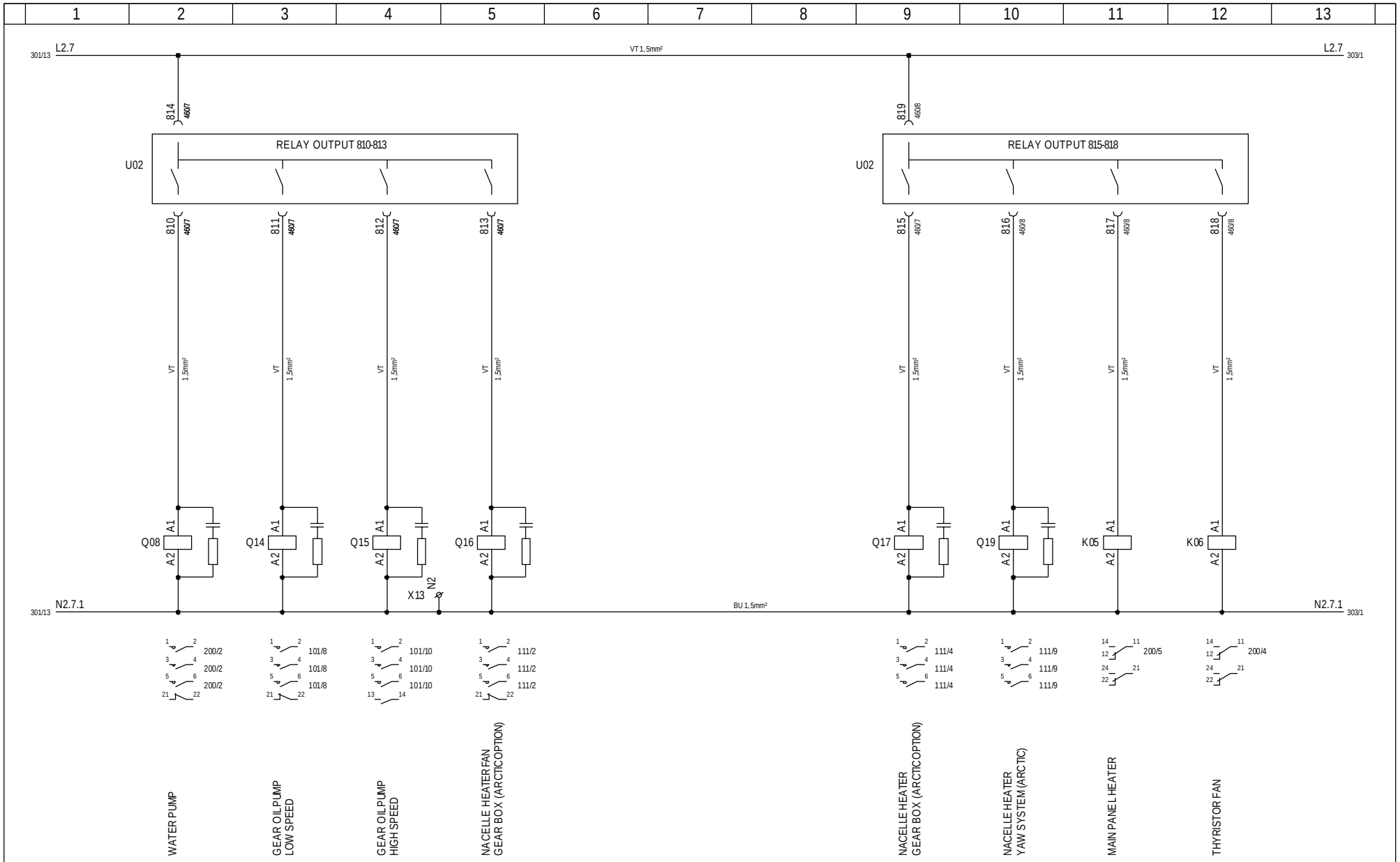


13-12-06
17:13

Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	TOI Output 800 - 808		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031210	INI	Rev. -	Drawing no. 6012290	Cont. sheet 302	Sheet 301



13-12-06
17:13

Vestas

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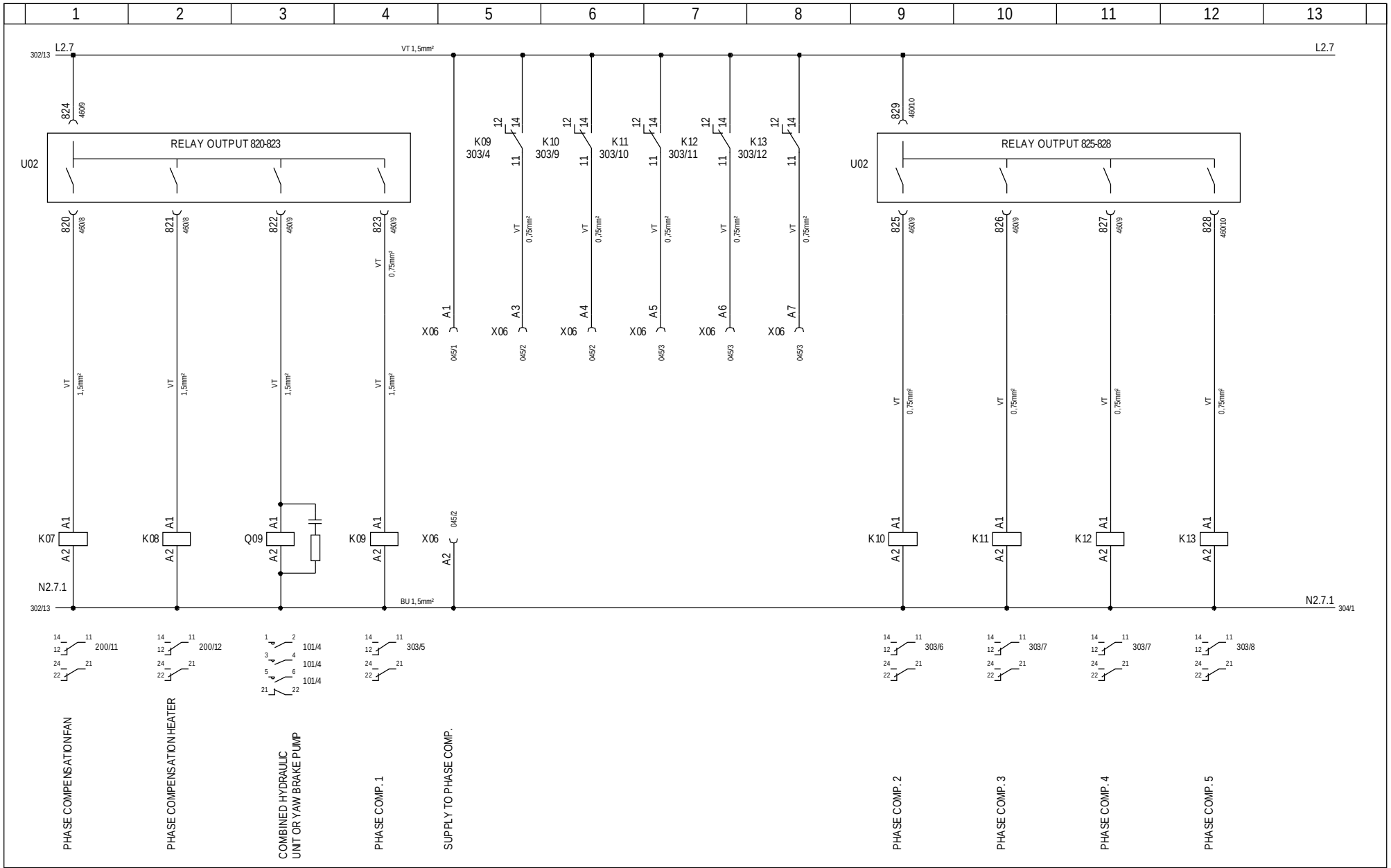
	Date	Initials	Function	TOI Output 810 - 818		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040708	INI	Rev. -	Drawing no. 6012290	Cont. sheet 303	Sheet 302



13-12-06
17:13

Vestas

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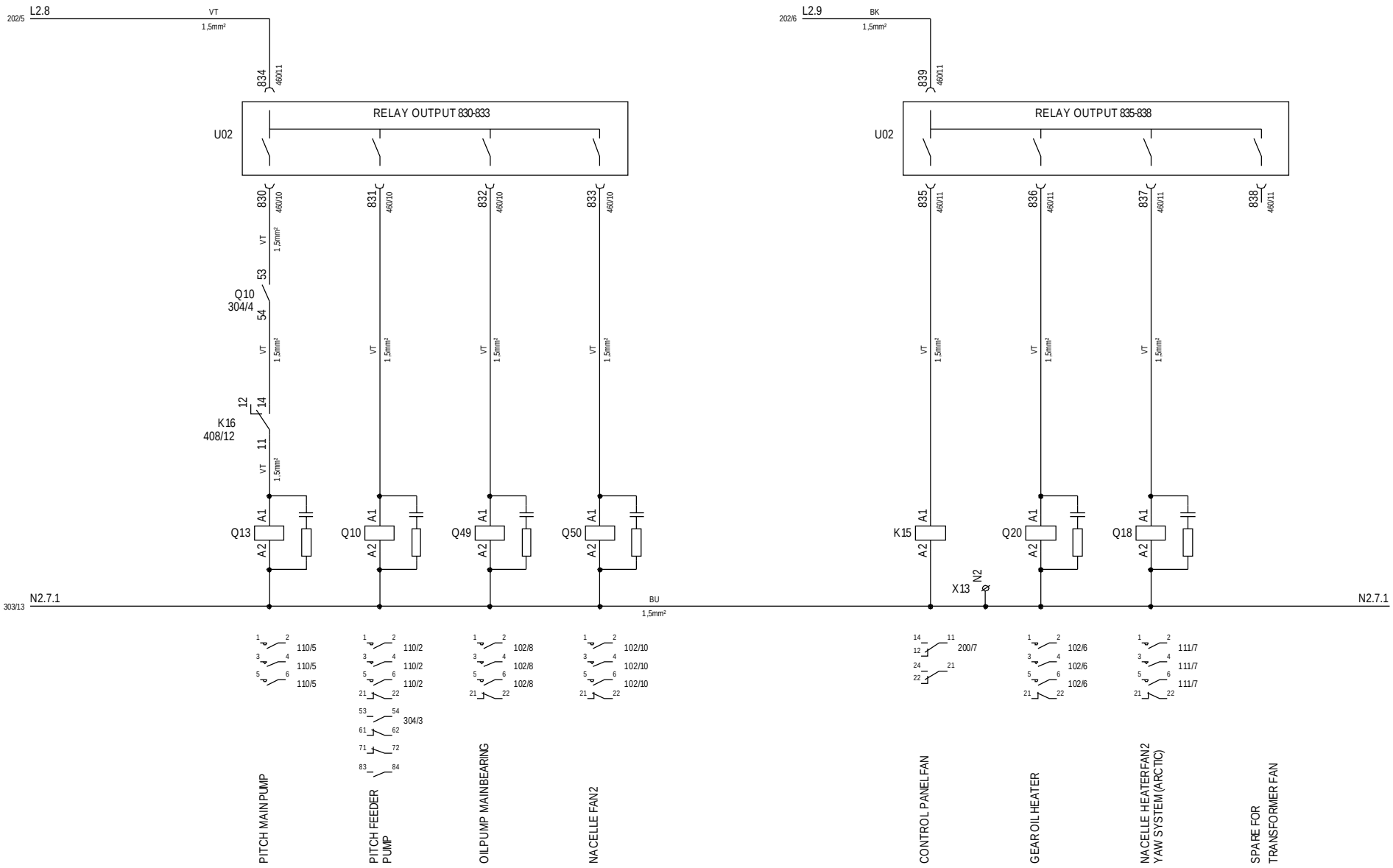
	Date	Initials	Function	TOI Output 820 - 828		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 304	Sheet 303



13-12-06
17:13

Vestas

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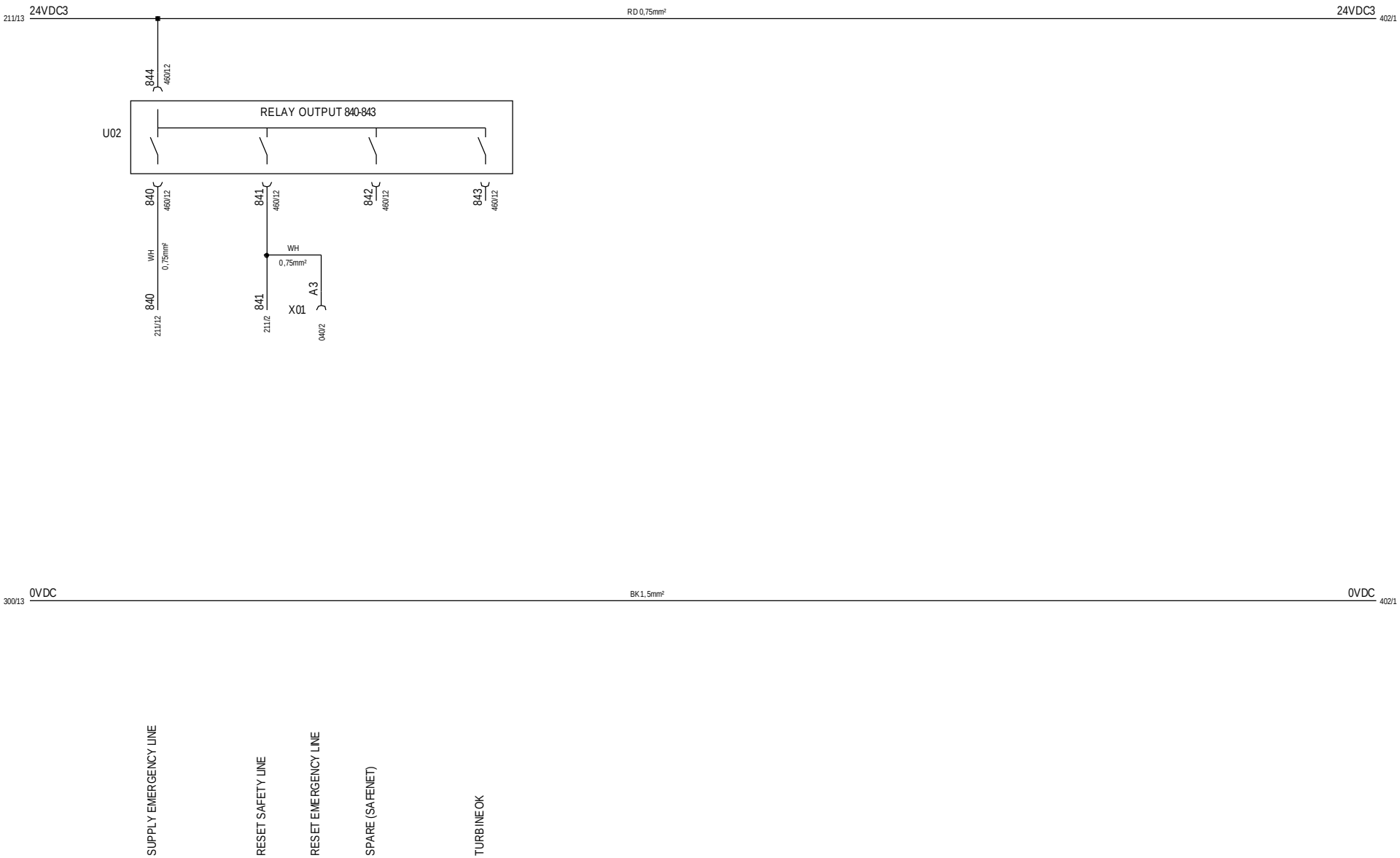
	Date	Initials	Function	TOI Output 830 - 838		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. -	Drawing no. 6012290	Cont. sheet 305	Sheet 304



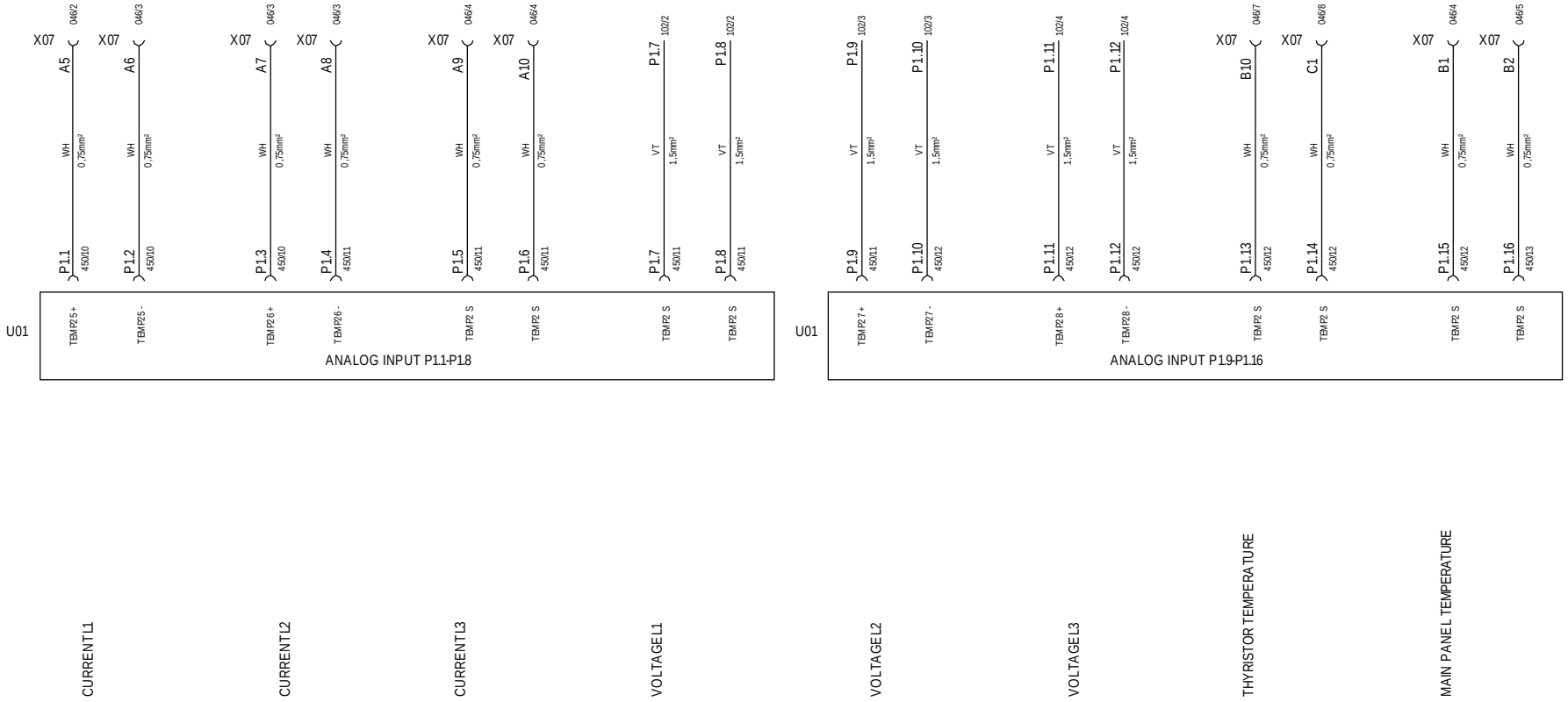
13-12-06

17:13

Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	TOI Output 840 - 843		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 400	Sheet 305



13-12-06

17:13

Vestas

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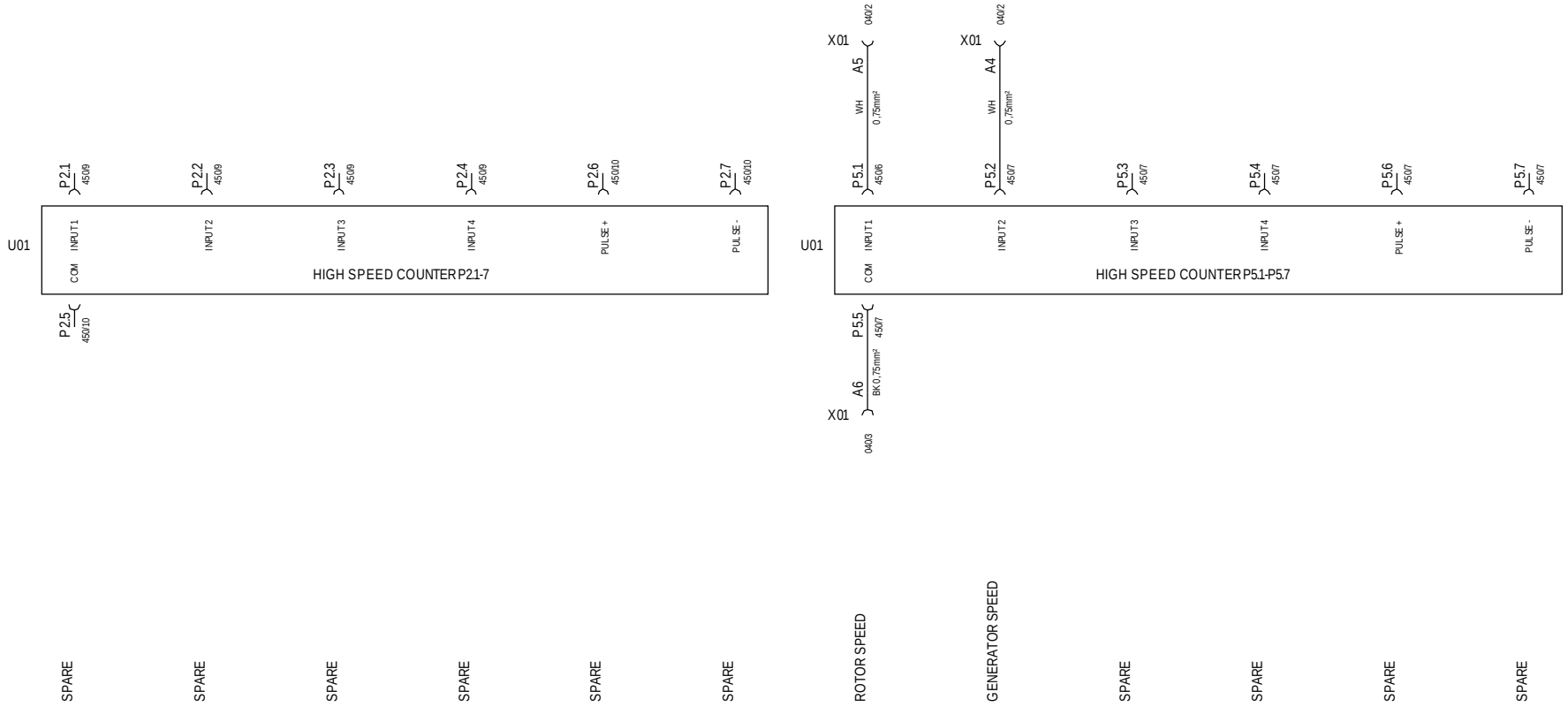
	Date	Initials	Function	TAC Input P1.1 - P1.16		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 401	Sheet 400



Vestas

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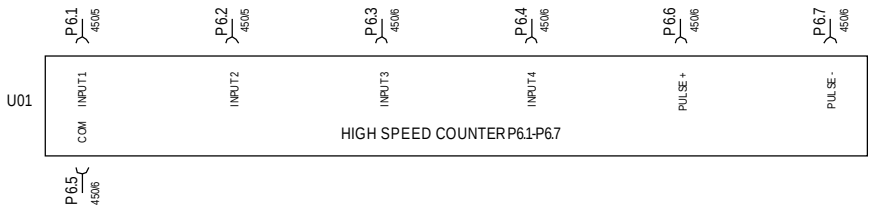
	Date	Initials	Function	TAC Input P2.1-7 and P5.1-7		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 402	Sheet 401

13-12-06
17:13

1	2	3	4	5	6	7	8	9	10	11	12	13

305/13 24VDC3 — RD 0,75mm² — 24VDC3 403/1



305/13 0VDC — BK 1,5mm² — 0VDC 403/1

SPARE SPARE SPARE SPARE SPARE SPARE

13-12-06
17:13

Vestas

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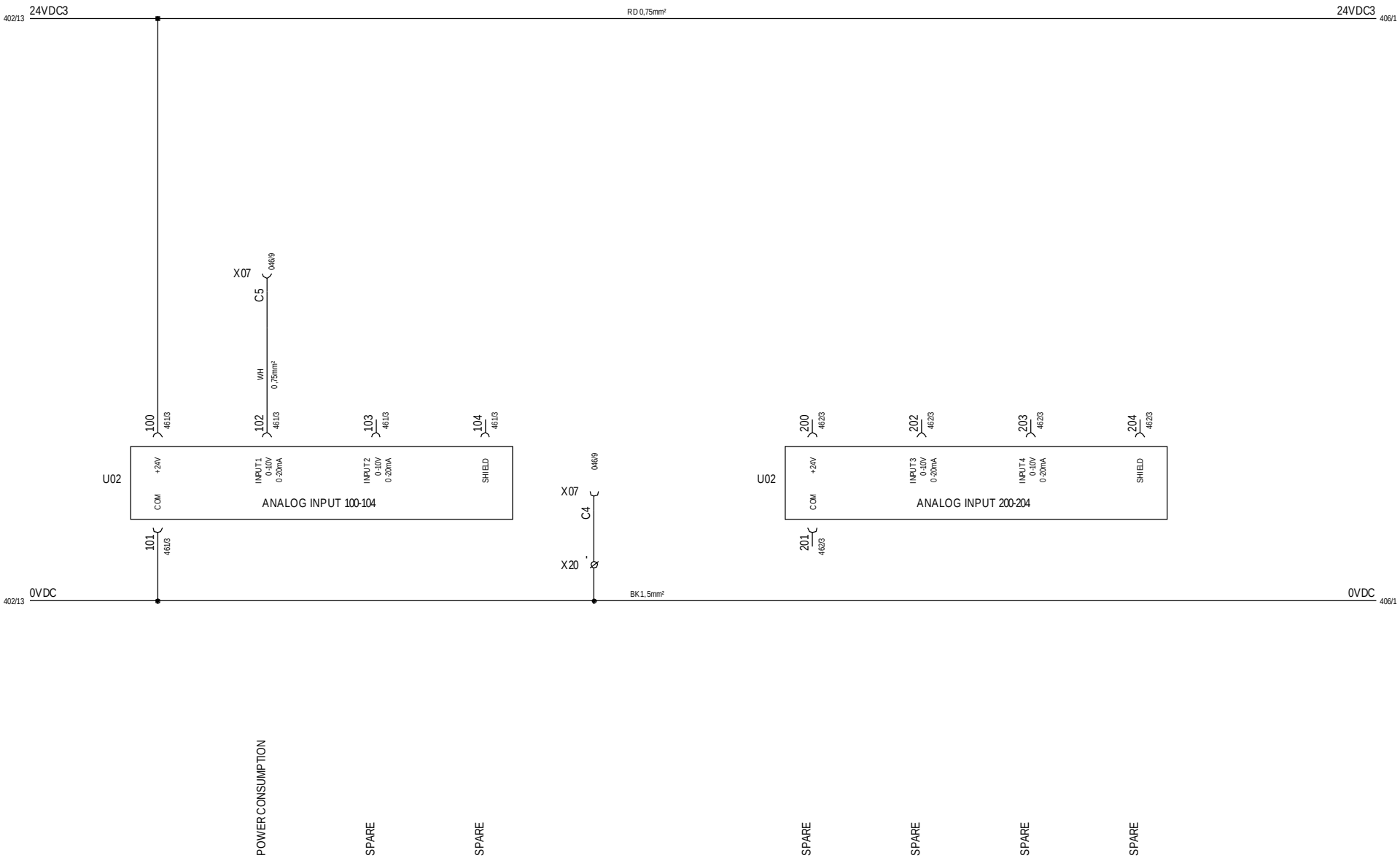
	Date	Initials	Function	TAC Input P6.1 - P6.7		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 403	Sheet 402



13-12-06

17:13

Vestas

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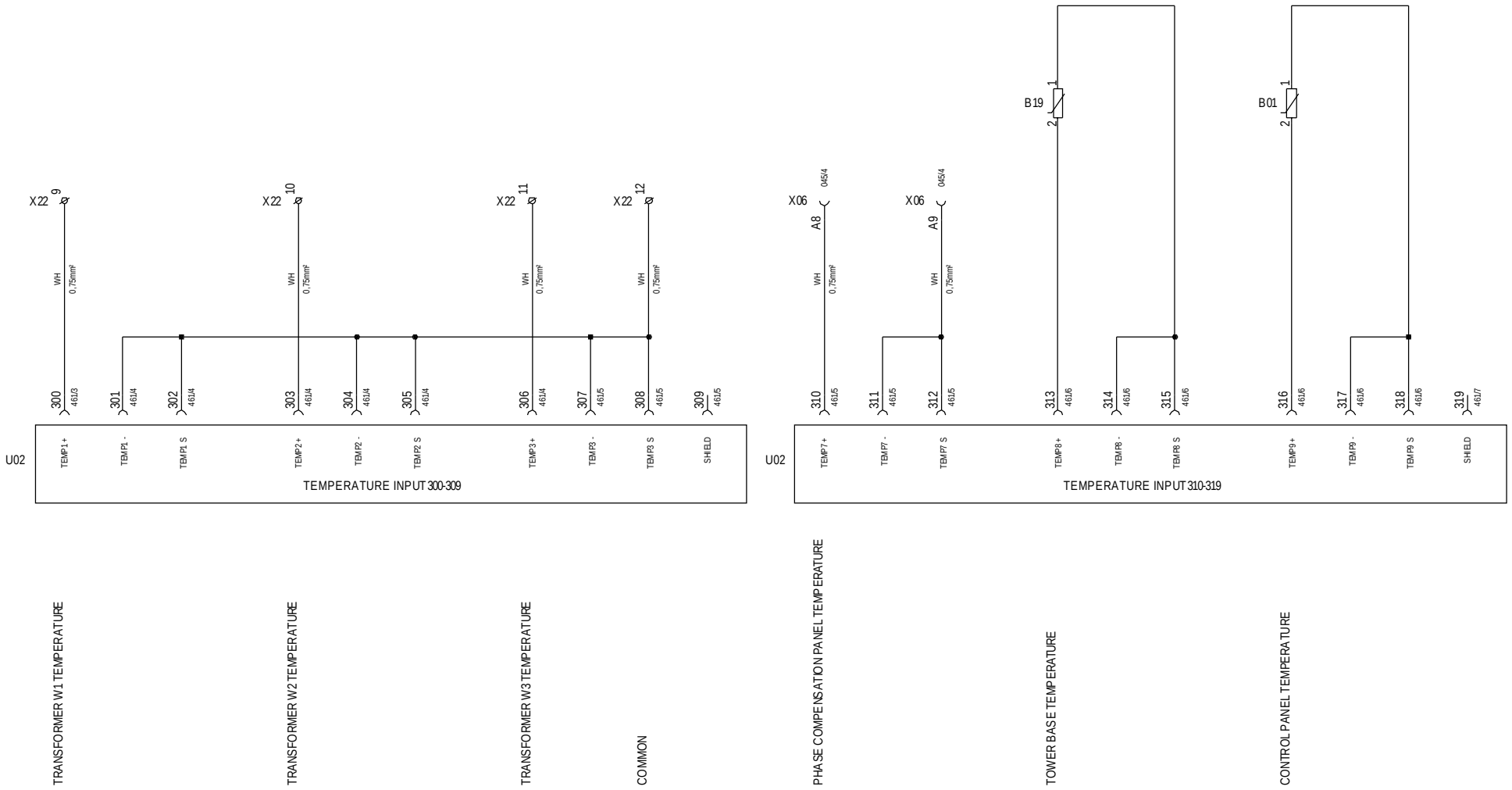
	Date	Initials	Function	TOI Input 100 - 204		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 404	Sheet 403



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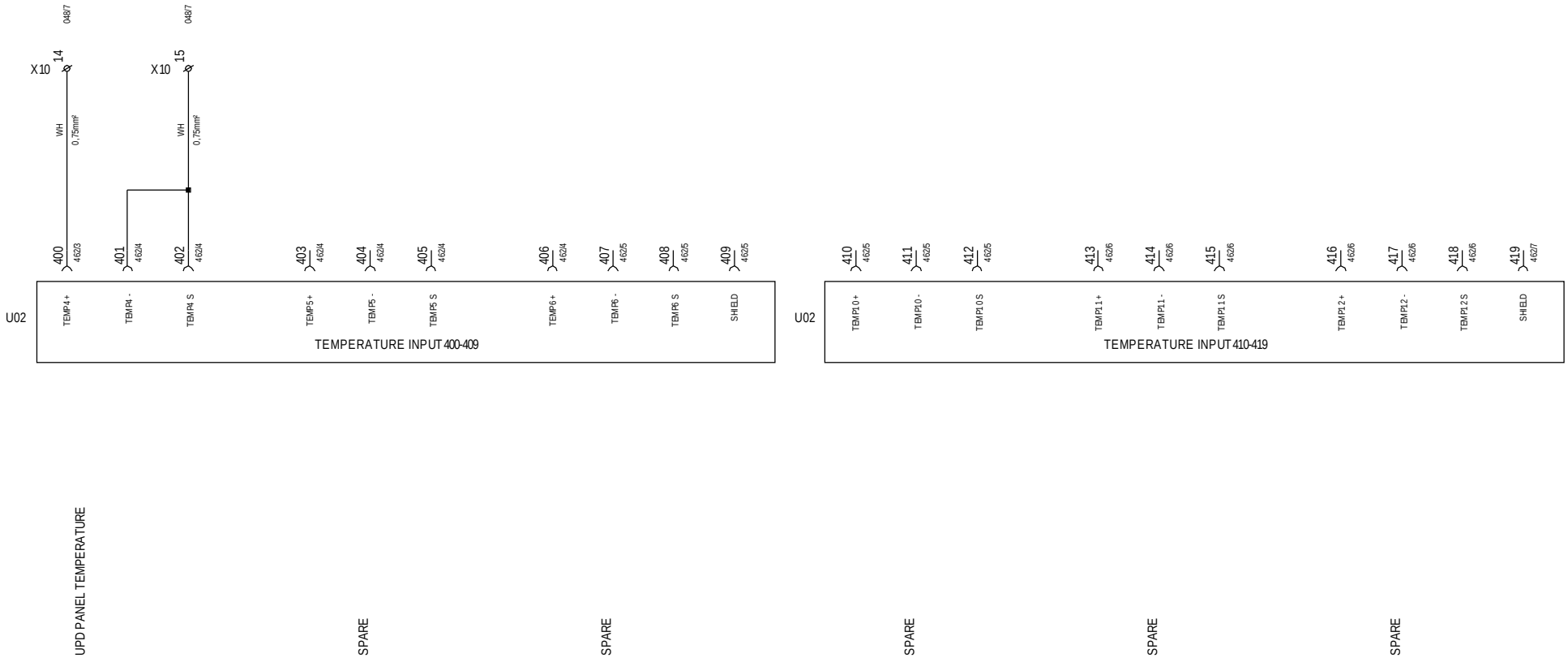
	Date	Initials	Function	TOI Input 300 - 319		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 405	Sheet 404

13-12-06
17:13



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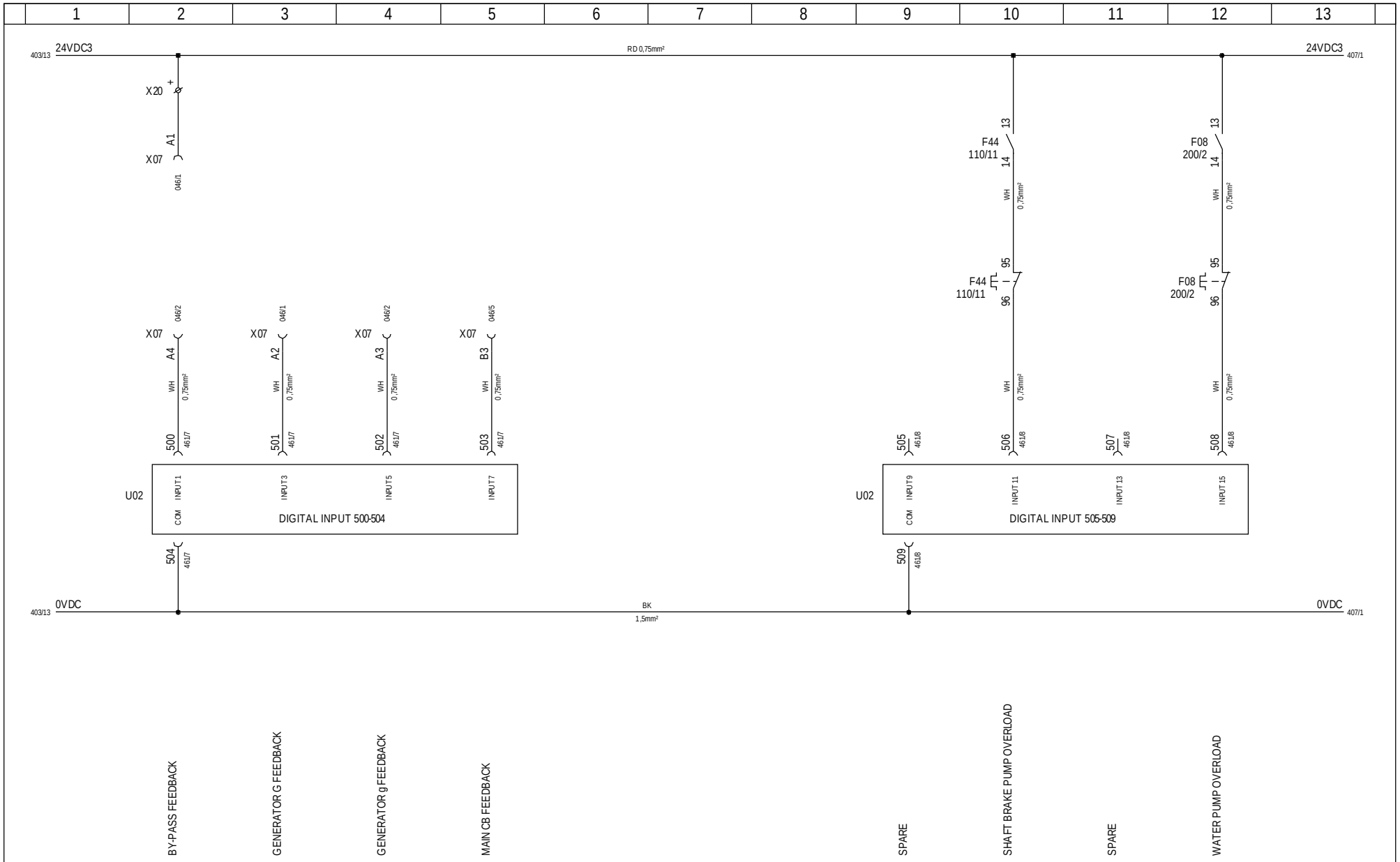
	Date	Initials	Function	TOI Input 400 - 419		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	041112	INI	Rev. -	Drawing no. 6012290	Cont. sheet 406	Sheet 405

13-12-06
17:13



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17:13

Vestas

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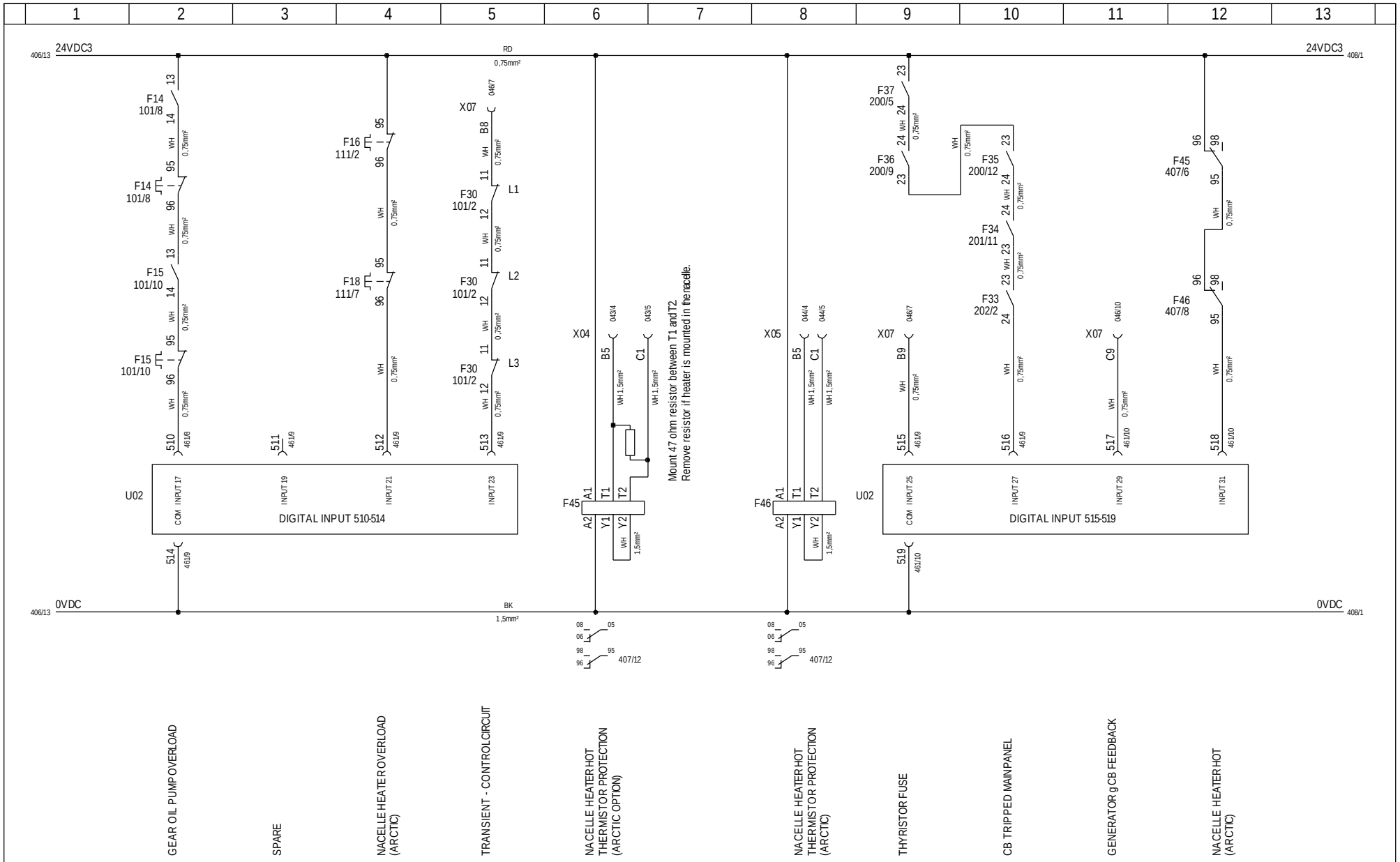
	Date	Initials	Function	TOI Input 500 - 508		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031210	INI	Rev. -	Drawing no. 6012290	Cont. sheet 407	Sheet 406



Vestas

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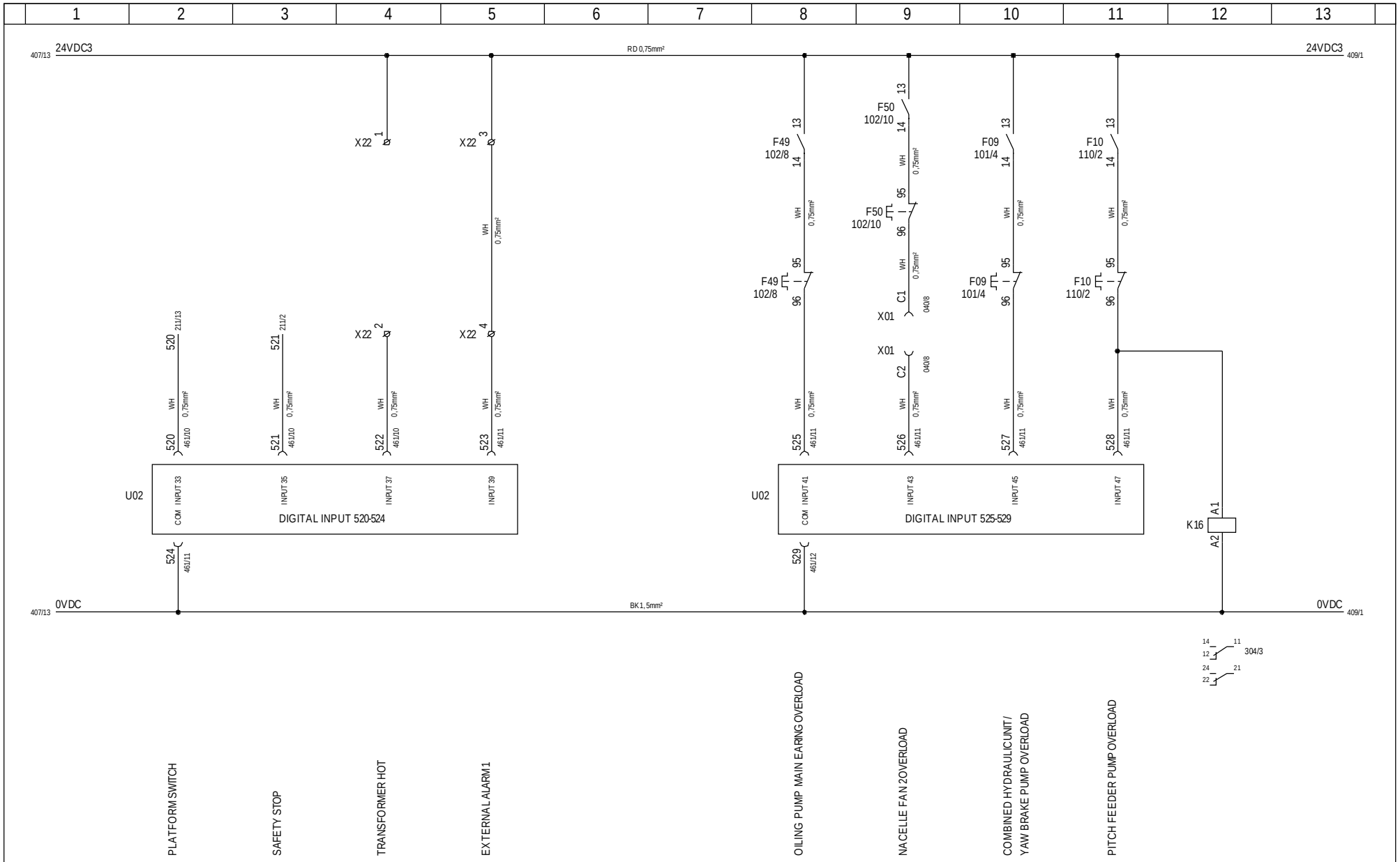
	Date	Initials	Function	TOI Input 510 - 518		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061024	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061024	INI	Rev. -	Drawing no. 6012290	Cont. sheet 408	Sheet 407

13-12-06
17:13



	Date	Initials	Function	TOI Input 520 - 528		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 409	Sheet 408

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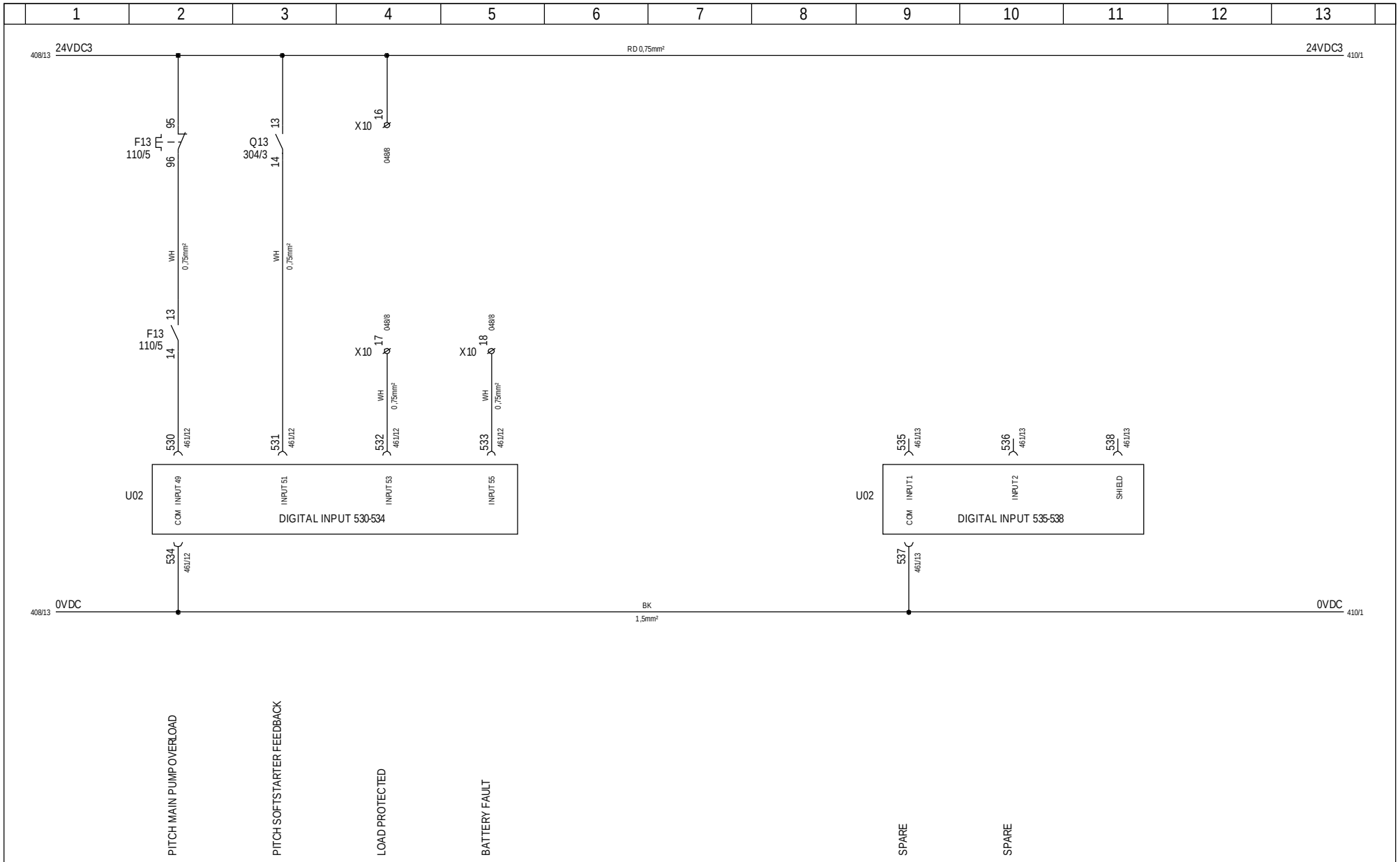

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Vestas

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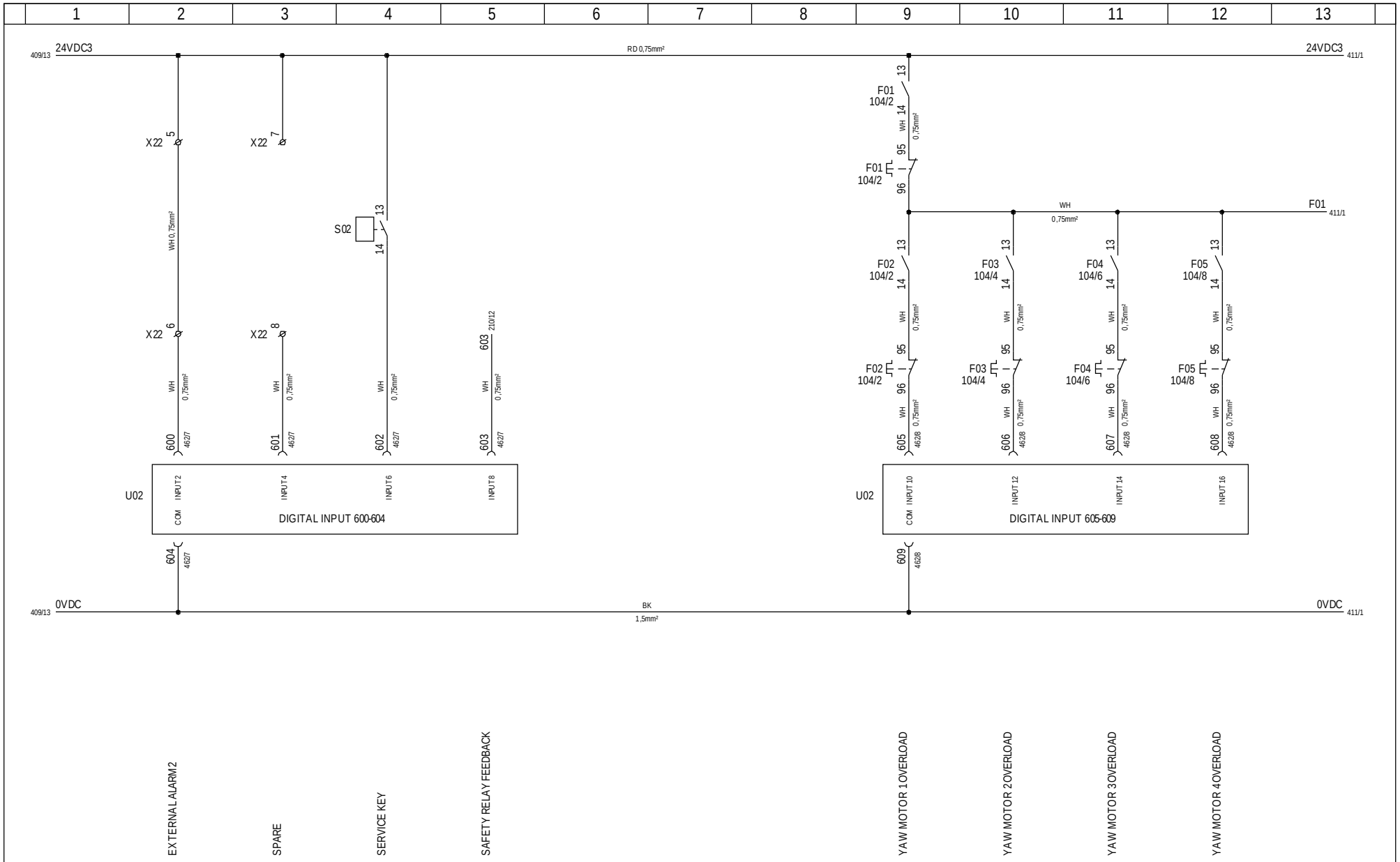
	Date	Initials	Function	TOI Input 530 - 538		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040304	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 410	Sheet 409



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Vestas

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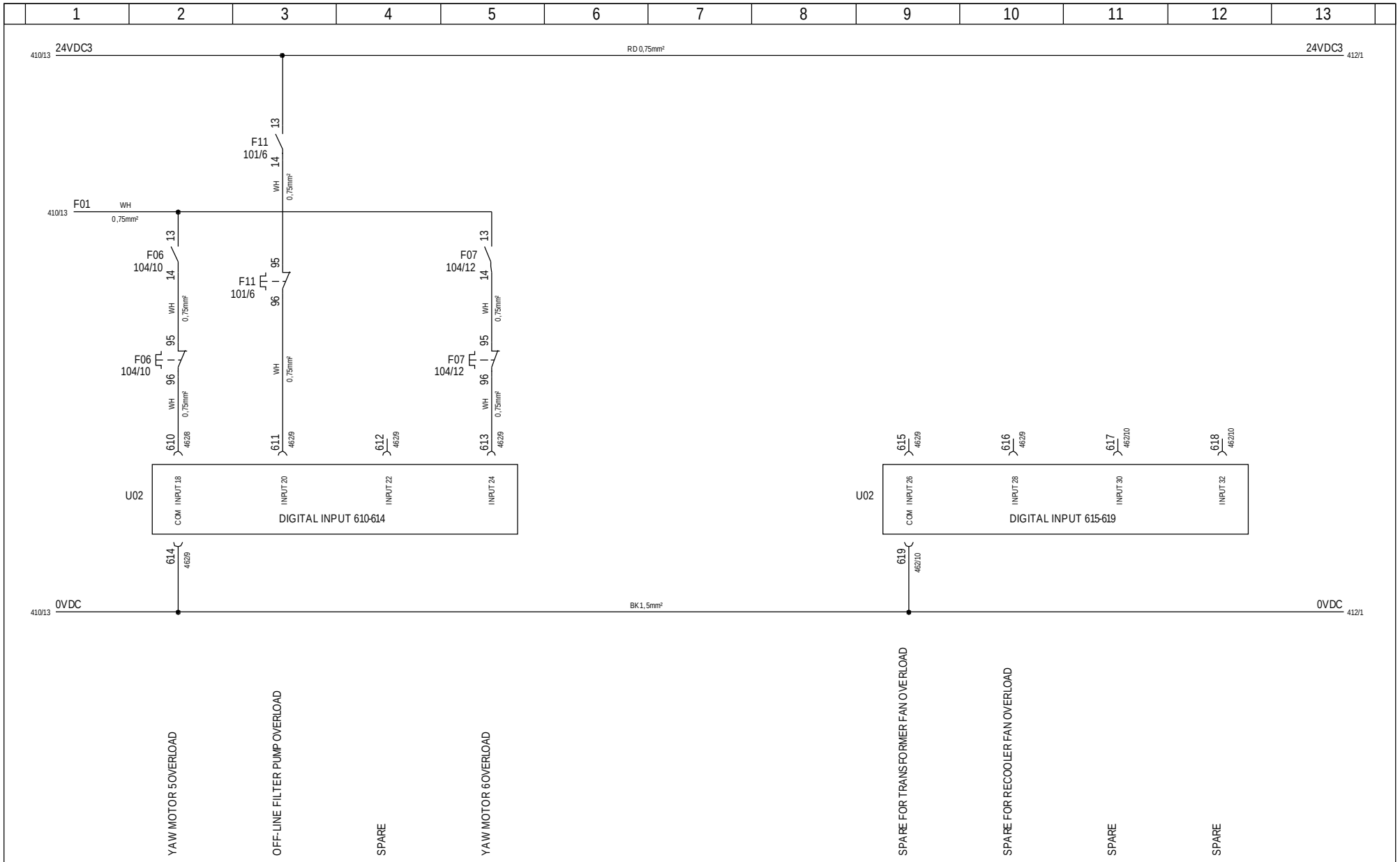
	Date	Initials	Function	TOI Input 600 - 608		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	040304	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 411	Sheet 410



Vestas

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	Date	Initials	Function	TOI Input 610 - 618		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. -	Drawing no. 6012290	Cont. sheet 412	Sheet 411

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1	2	3	4	5	6	7	8	9	10	11	12	13

411/13 24VDC3 — RD 0,75mm² — 24VDC3 413/1

411/13 0VDC — BK 1,5mm² — 0VDC 413/1

SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE

13-12-06
17:13

Vestas

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	Date	Initials	Function	TOI Input 620 - 628		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 413	Sheet 412

1	2	3	4	5	6	7	8	9	10	11	12	13

412/13 24VDC3 — RD 0,75mm² — 24VDC3 414/1

412/13 0VDC — BK 1,5mm² — 0VDC 414/1

SPARE SPARE SPARE SPARE SPARE SPARE SPARE

13-12-06
17:13

Vestas

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	Date	Initials	Function	TOI Input 630 - 638		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 414	Sheet 413

1	2	3	4	5	6	7	8	9	10	11	12	13

413/13 24VDC3 — RD 0,75mm² — 24VDC3

413/13 0VDC — BK 1,5mm² — 0VDC

700 702 703 704 705 707 708 709

13-12-06

17:13

Vestas

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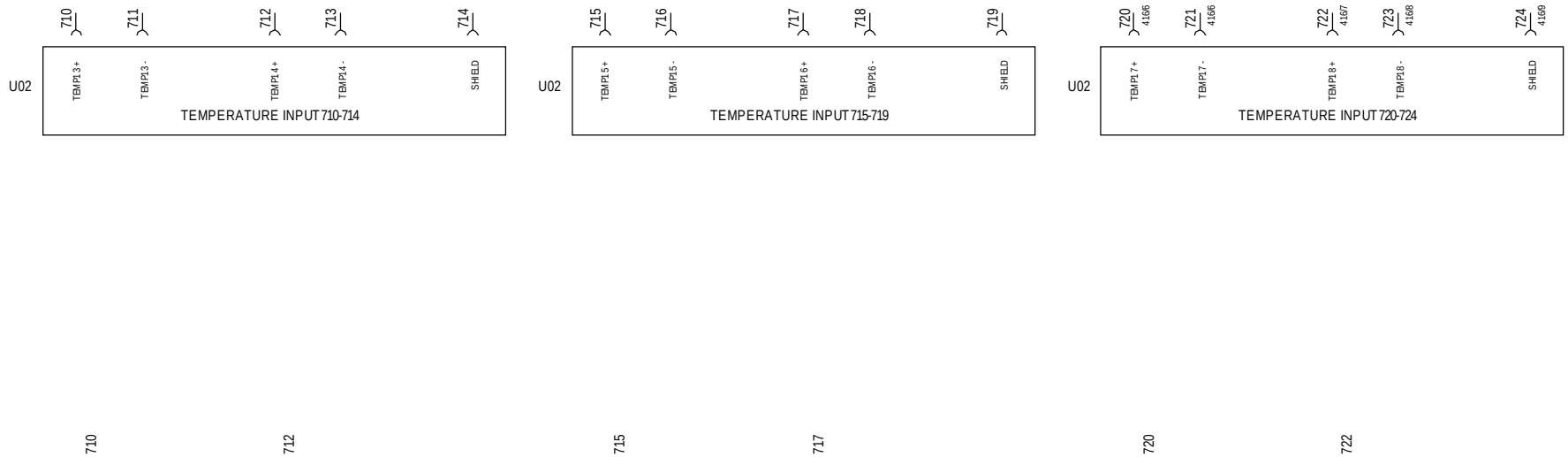
	Date	Initials	Function	TOI Input 700 - 709		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 415	Sheet 414



13-12-06
17:13

Vestas

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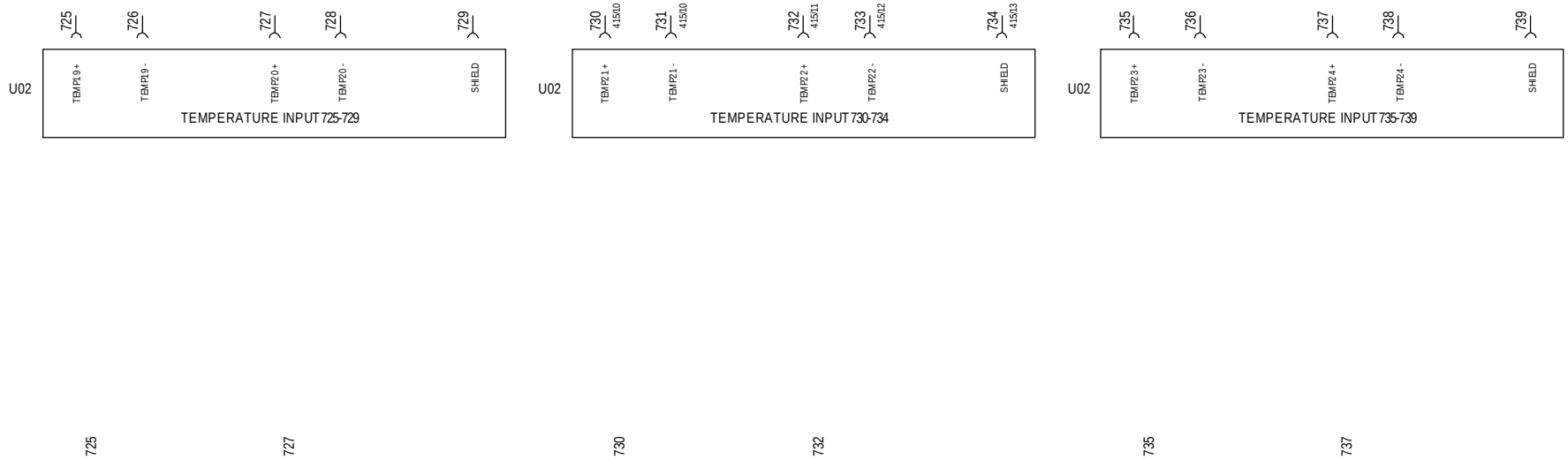
	Date	Initials	Function	TOI Input 710 - 723		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 416	Sheet 415



13-12-06
17:13

Vestas

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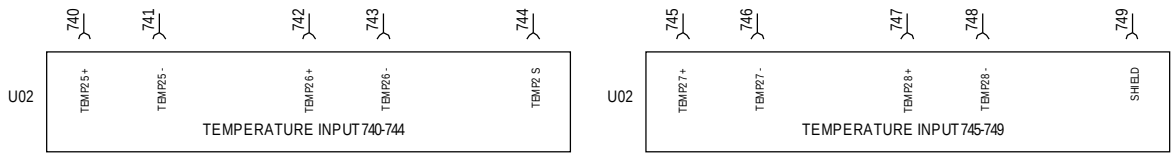
	Date	Initials	Function	TOI Input 725 - 738		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 417	Sheet 416



740 742 745 747

13-12-06
17:13

Vestas

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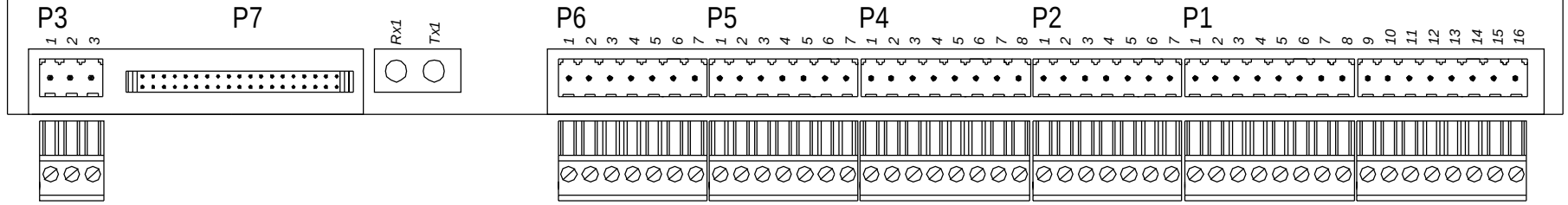
	Date	Initials	Function	TOI Input 740 - 748		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 450	Sheet 417

TAC II
INTERFACE



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	1	2	3					1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PAGE	210/6	210/7	210/7			500/2	500/3	402/2	402/3	402/4	402/5	402/2	402/6	402/7	401/8	401/9	401/10	401/11	401/8	401/12	401/13	300/6	300/7	300/7	300/8	300/8			401/2	401/3	401/4	401/5	401/2	401/6	401/7	400/2	400/2	400/3	400/4	400/5	400/5	400/6	400/7	400/8	400/8	400/9	400/10	400/11	400/11	400/12	400/13
	SUPPLY	SUPPLY	PE			COMMUNICATION TO TOI	COMMUNICATION TO TOI	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	ROTOR SPEED	GENERATOR SPEED	SPARE	SPARE	0V FROM TOPBOX	SPARE	SPARE	24V DC	TRIGGER OUTPUT L1	TRIGGER OUTPUT L2	TRIGGER OUTPUT L3	0V	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	CURRENT L1	CURRENT L1	CURRENT L2	CURRENT L2	CURRENT L3	CURRENT L3	VOLTAGE L1	VOLTAGE L1	VOLTAGE L2	VOLTAGE L2	VOLTAGE L3	VOLTAGE L3	THYRISTOR TEMPERATURE	THYRISTOR TEMPERATURE	MAIN PANEL TEMPERATURE	MAIN PANEL TEMPERATURE

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	Date	Initials	Function	TAC outline		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031006	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 451	Sheet 450

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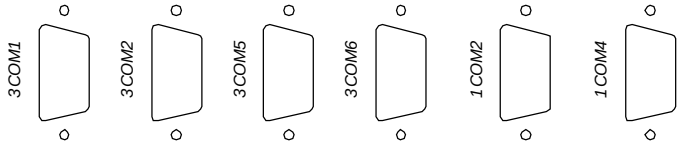
17:13

1	2	3	4	5	6	7	8	9	10	11	12	13

TAC II INTERFACE



PAGE					
	501/2	502/2	505/2	503/2	504/2
	3COM1 COMMUNICATION TO MODEM	3COM2 SPARE	3COM5 COMMUNICATION TO OP-PANEL	3COM6 RS422 COMMUNICATION TO +AT4	1COM2 COMMUNICATION TO HUB (NOT NM64C)	1COM4 RS485 COMMUNICATION TO TOP BOX

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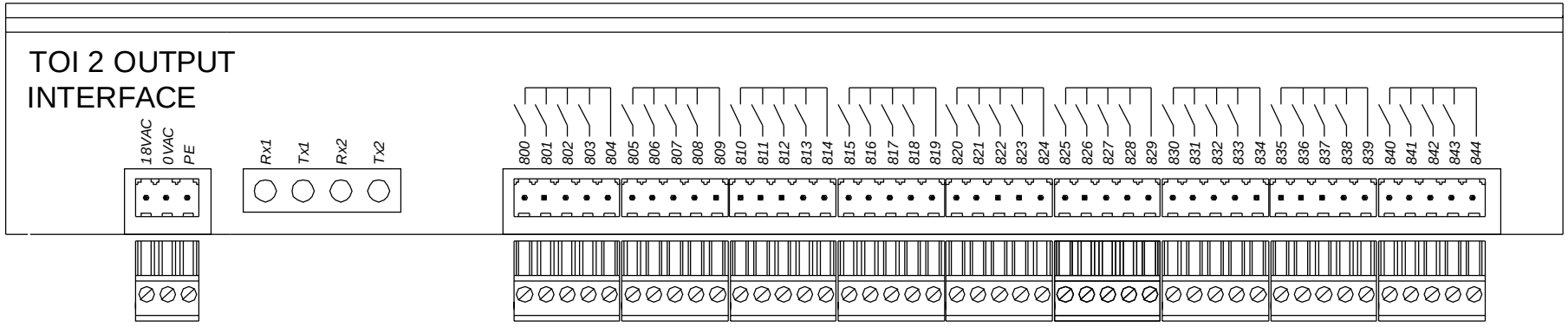
	Date	Initials	Function	TAC communication outline		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. -	Drawing no. 6012290	Cont. sheet 460	Sheet 451

TOI 2 OUTPUT INTERFACE



	PAGE	
18VAC	210/9	SUPPLY
0VAC	210/10	SUPPLY
PE	210/10	PE
Rx1	500/6	COMMUNICATION TO TAC
Tx1	500/7	COMMUNICATION TO TAC
Rx2	500/8	COMMUNICATION TO TO INTOP BOX
Tx2	500/8	COMMUNICATION TO TO INTOP BOX
800	301/2	BY-PASS CONTACTOR
801	301/3	GENERATOR G CONTACTOR
802	301/4	GENERATOR g CONTACTOR
803	301/5	TRIP MAIN CB
804	301/2	230V SUPPLY
805	301/9	YAW CW
806	301/10	YAW CCW
807	301/11	SHAFT BRAKE PUMP
808	301/12	OFF-LINE FILTER PUMP
809	301/9	230V SUPPLY
810	302/2	WATER PUMP
811	302/3	GEAR OIL PUMP LOW SPEED
812	302/4	GEAR OIL PUMP HIGH SPEED
813	302/5	NACELLE HEATER FAN GEAR BOX
814	302/2	230V SUPPLY
815	302/9	NACELLE HEATER GEAR BOX
816	302/10	NACELLE HEATER YAW
817	302/11	MAIN PANEL HEATER
818	302/12	THYRISTOR FAN
819	302/9	230V SUPPLY
820	303/1	PHASE COMPENSATION FAN
821	303/2	PHASE COMPENSATION HEATER
822	303/3	COMBINED HYDRAULIC UNIT OR YAW BRAKE PUMP
823	303/4	PHASE COMP. 1
824	303/1	230V SUPPLY
825	303/9	PHASE COMP. 2
826	303/10	PHASE COMP. 3
827	303/11	PHASE COMP. 4
828	303/12	PHASE COMP. 5
829	303/9	230V SUPPLY
830	304/3	PITCH MAIN PUMP
831	304/4	PITCH FEEDER PUMP
832	304/5	OIL PUMP MAIN BEARING
833	304/6	NACELLE FAN 2
834	304/3	230V SUPPLY
835	304/9	CONTROL PANEL FAN
836	304/12	GEAR OIL HEATER
837	304/11	NACELLE HEATER FAN YAW
838	304/12	SPARE FOR TRANSFORMER FAN
839	304/9	230V SUPPLY
840	305/2	SUPPLY SAFETY LINE
841	305/3	RESET EMERGENCY LINE
842	305/4	SAFE NET
843	305/5	SPARE
844	305/2	24V DC SUPPLY

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	Date	Initials	Function	TOI outline output		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. -	Drawing no. 6012290	Cont. sheet 461	Sheet 460

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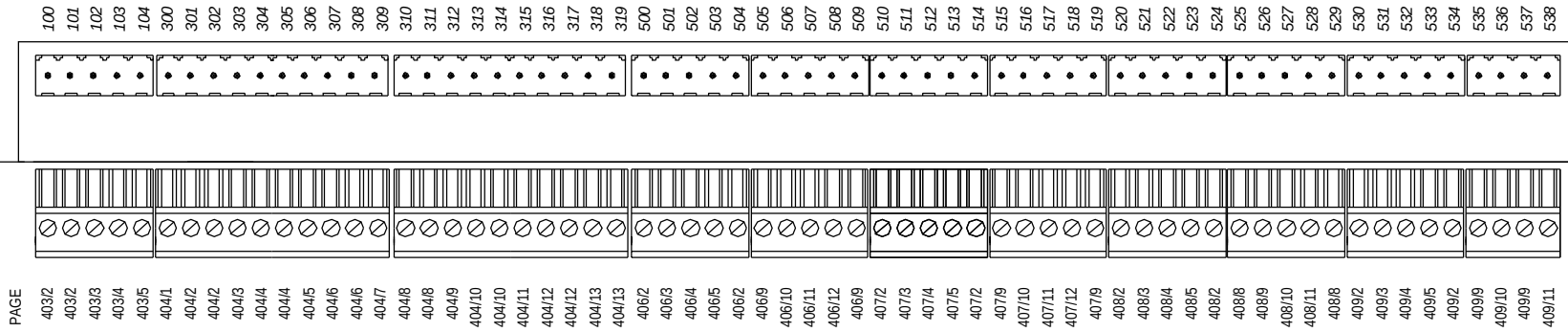
TOI 2 INPUT INTERFACE



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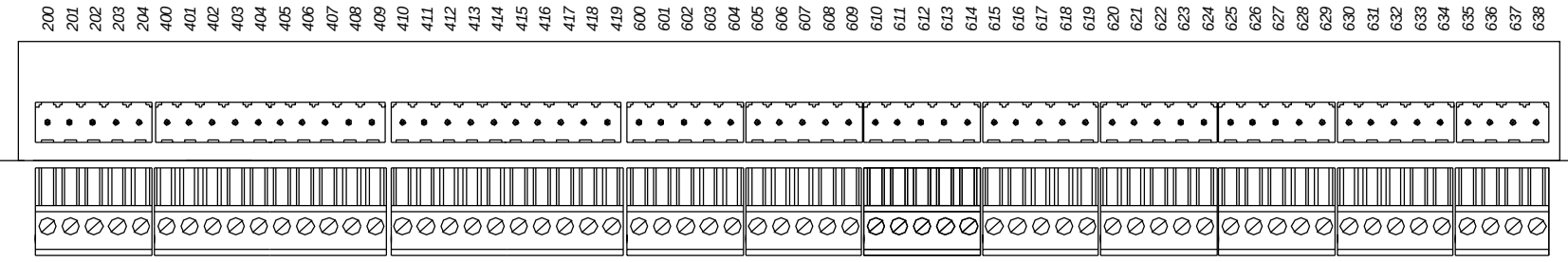
	Date	Initials	Function	TOI outline input		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050121	SLB	Rev. -	Drawing no. 6012290	Cont. sheet 462	Sheet 461

13-12-06
17:13

TOI 2 INPUT INTERFACE



200	PAGE	403/8
201	24VDC	403/8
202	0VDC	403/9
203	SPARE	403/10
204	SPARE	403/11
400	SHIELD	405/1
401	UPS PANEL +AT5 PT 100TEMPERATURE	405/2
402	UPS PANEL +AT5 PT 100TEMPERATURE	405/2
403	UPS PANEL +AT5 PT 100TEMPERATURE	405/3
404	SPARE	405/4
405	SPARE	405/4
406	SPARE	405/5
407	SPARE	405/6
408	SPARE	405/6
409	SHIELD	405/7
410	SPARE	405/8
411	SPARE	405/8
412	SPARE	405/9
413	SPARE	405/10
414	SPARE	405/10
415	SPARE	405/11
416	SPARE	405/12
417	SPARE	405/12
418	SPARE	405/13
419	SHIELD	405/13
600	EXTERNAL ALARM/2	410/2
601	LOW PRODUCTION	410/3
602	SERVICE KEY	410/4
603	SAFETY RELAY FEEDBACK	410/5
604	0VDC	410/2
605	YAW MOTOR 1 OVERLOAD	410/9
606	YAW MOTOR 2 OVERLOAD	410/10
607	YAW MOTOR 3 OVERLOAD	410/11
608	YAW MOTOR 4 OVERLOAD	410/12
609	0VDC	410/9
610	YAW MOTOR 5 OVERLOAD	411/2
611	OFF-LINE FILTER PUMP OVERLOAD	411/3
612	SPARE	411/4
613	YAW MOTOR 6 OVERLOAD	411/5
614	0VDC	411/2
615	SPARE FOR TRANSFORMER FAN OVERLOAD	411/9
616	SPARE FOR RECOOLER FAN OVERLOAD	411/10
617	SPARE	411/11
618	SPARE	411/12
619	0VDC	411/9
620	SPARE	412/2
621	SPARE	412/3
622	SPARE	412/4
623	SPARE	412/5
624	0VDC	412/2
625	SPARE	412/9
626	SPARE	412/10
627	SPARE	412/11
628	SPARE	412/12
629	0VDC	412/9
630	SPARE	413/2
631	SPARE	413/3
632	SPARE	413/4
633	SPARE	413/5
634	0VDC	413/2
635	SPARE	413/9
636	SPARE	413/10
637	SPARE	413/9
638	SPARE	413/11

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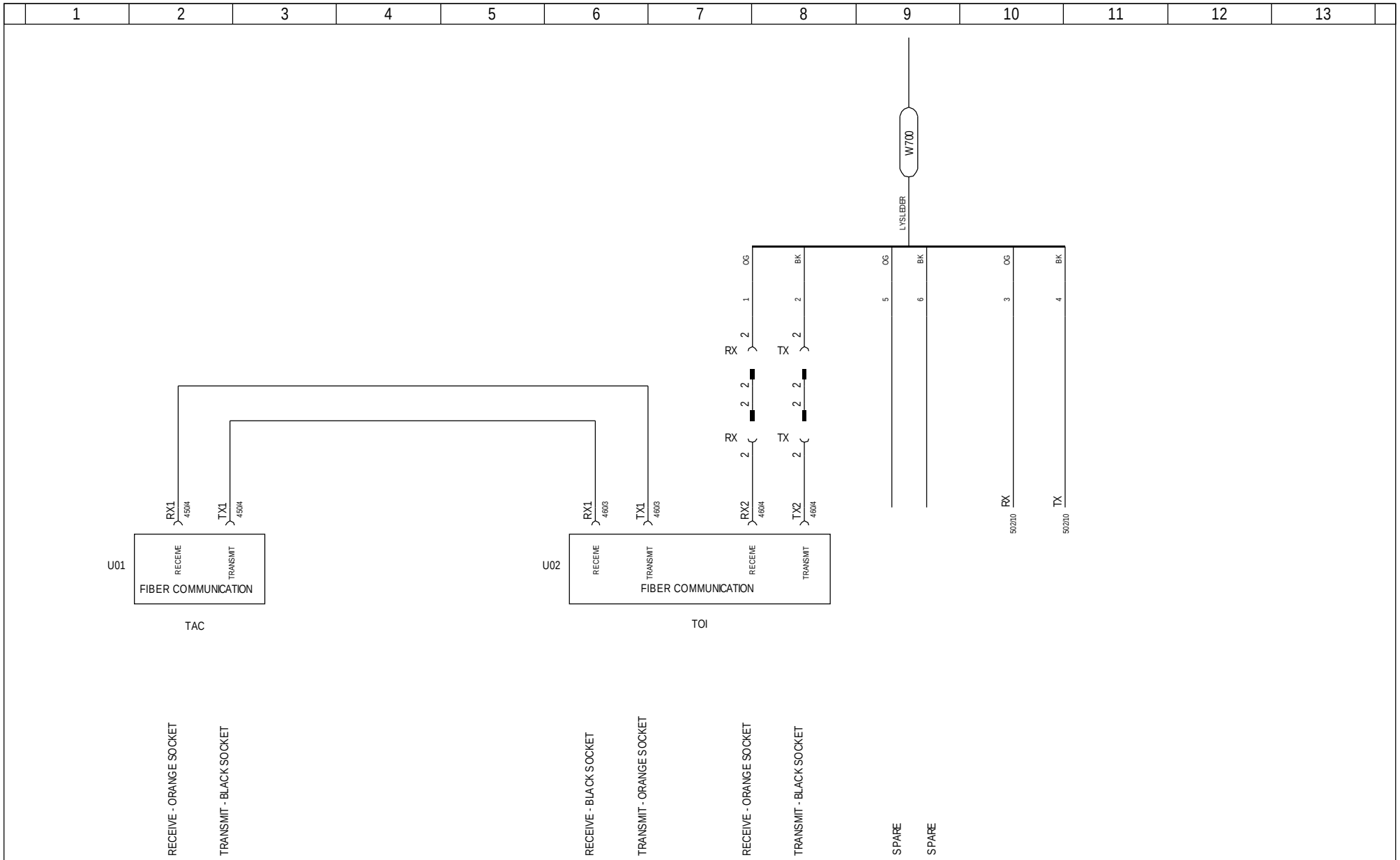
	Date	Initials	Function	TOI outline input		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061213	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	061213	INI	Rev. -	Drawing no. 6012290	Cont. sheet 500	Sheet 462

13-12-06 17:13

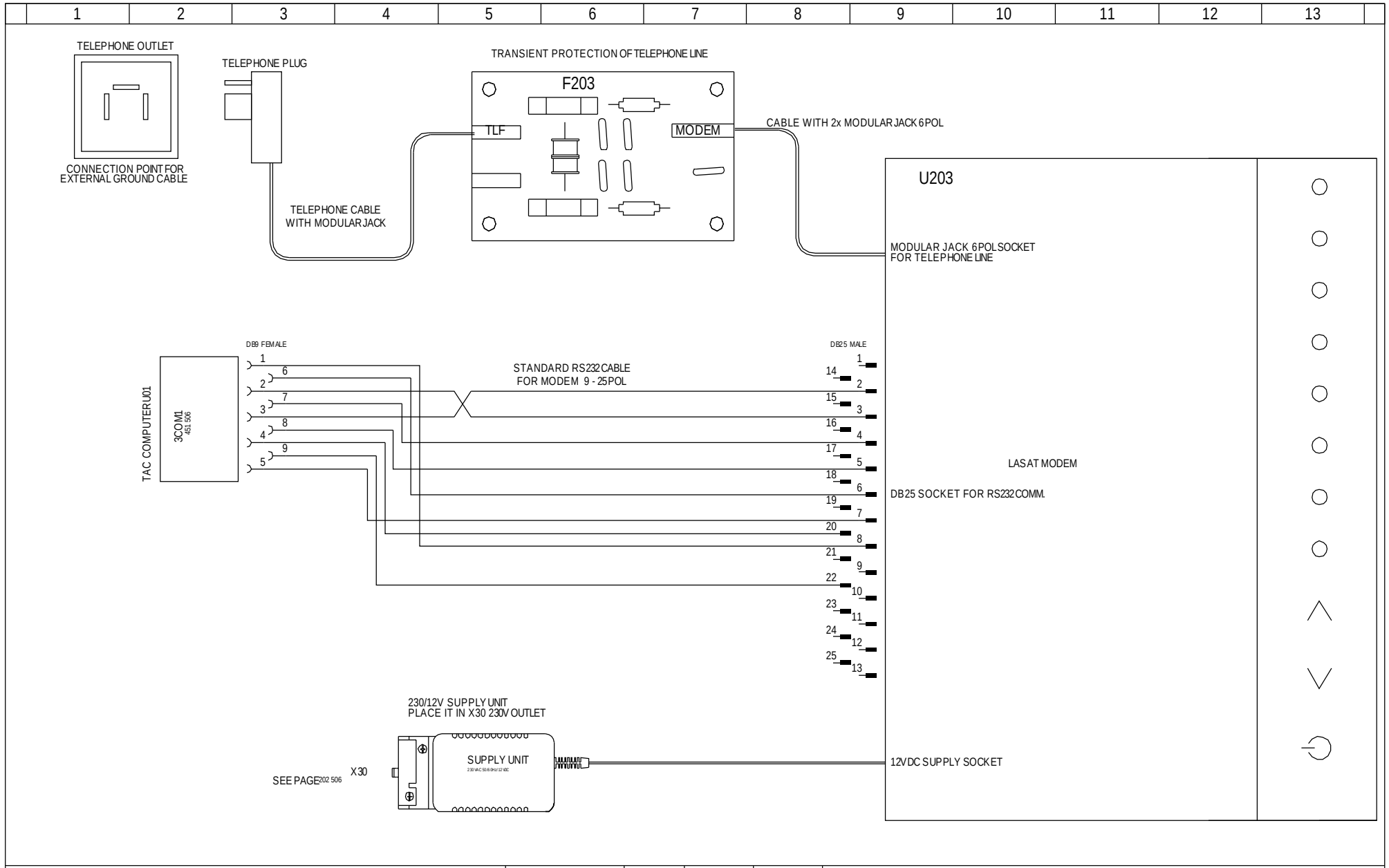


Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

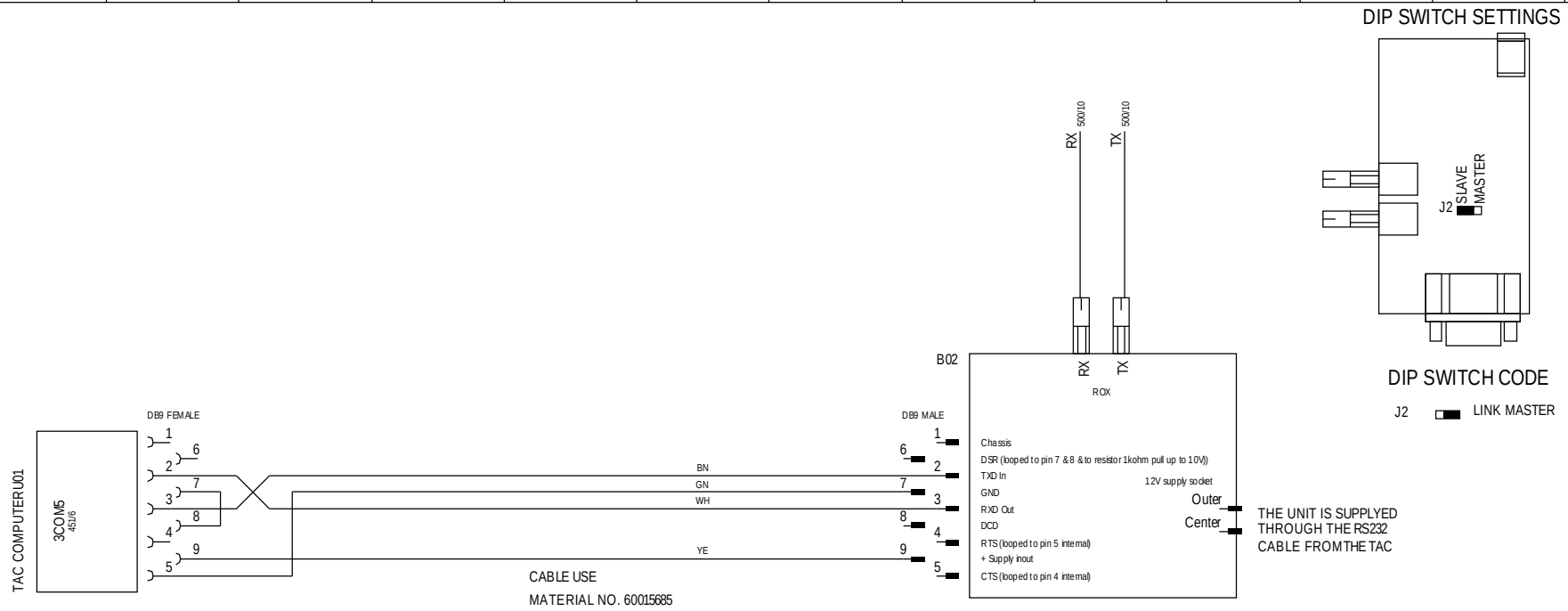
	Date	Initials	Function	Fibre optic communication		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	031210	INI	Rev. -	Drawing no. 6012290	Cont. sheet 501	Sheet 500

13-12-06
17:13



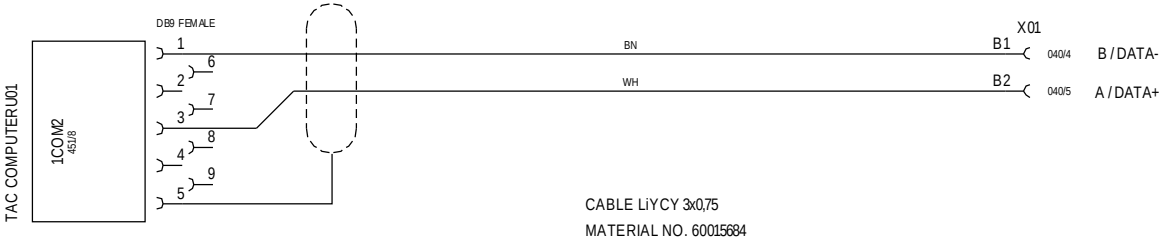
Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External RS232 comm. to external modem	
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments	Customer: Vestas Wind Systems A/S	
		Reviced	040113	FLT	Rev. -	Drawing no. 6012290	Cont. sheet 502 / Sheet 501

13-12-06
17:13



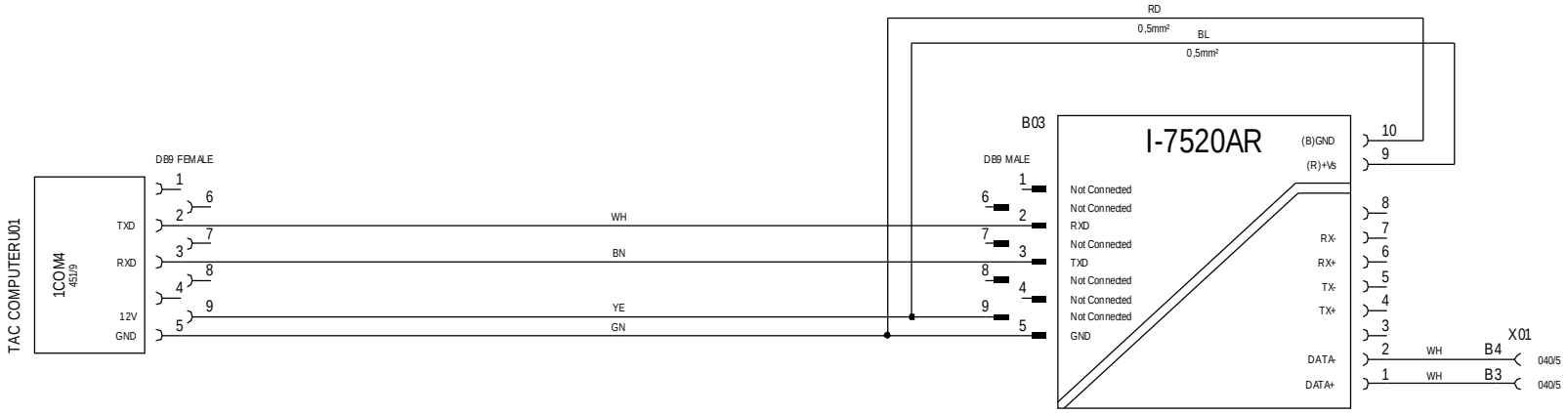
Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	RS232 comm. to OP-panel	
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments	Customer	Vestas Wind Systems A/S
		Reviced	040304	CHO	Rev. -	Drawing no. 6012290	Cont. sheet 503 / Sheet 502

13-12-06
17:13



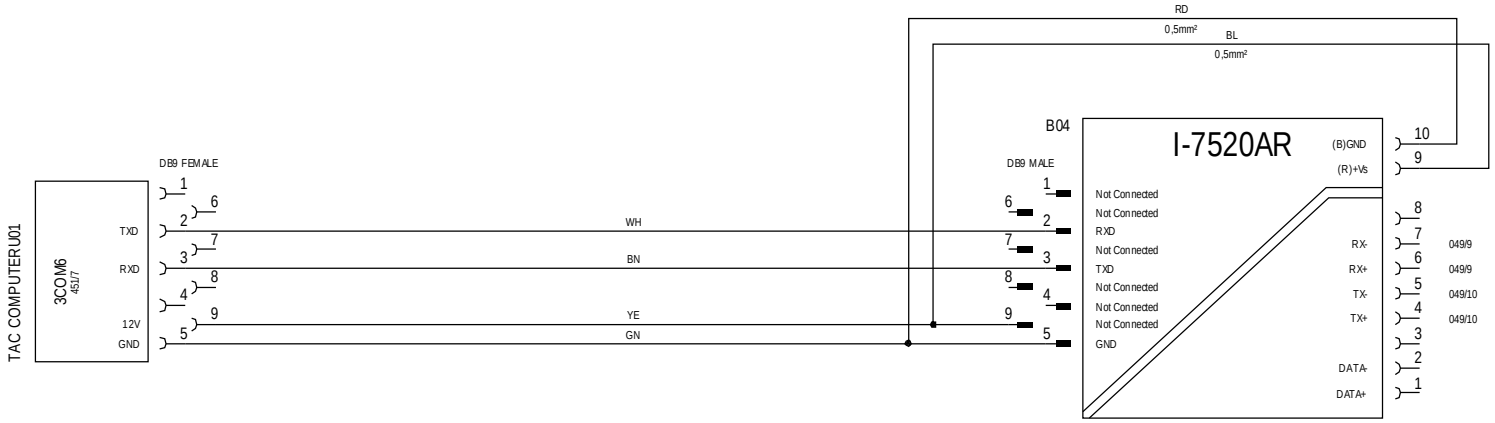
Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	RS485 comm. to hub	
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments		Customer: Vestas Wind Systems A/S
		Reviced	040609	INI	Rev. -	Drawing no. 6012290	Cont. sheet 504 / Sheet 503

13-12-06
17:13



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: RS485 comm. to +AT1 Top Panel	
		Designed	030906	CHO	Project title: Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved			Comments	Customer: Vestas Wind Systems A/S
		Reviced	040609	INI	Rev. - / Drawing no. 6012290	Cont. sheet 505 / Sheet 504

13-12-06
17:13



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	RS485 comm. to +AT4
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz
		Approved	060816	FLT	Comments	Customer: Vestas Wind Systems A/S
		Reviced	060815	INI	Rev. -	Drawing no. 6012290

Cont. sheet 506 | Sheet 505

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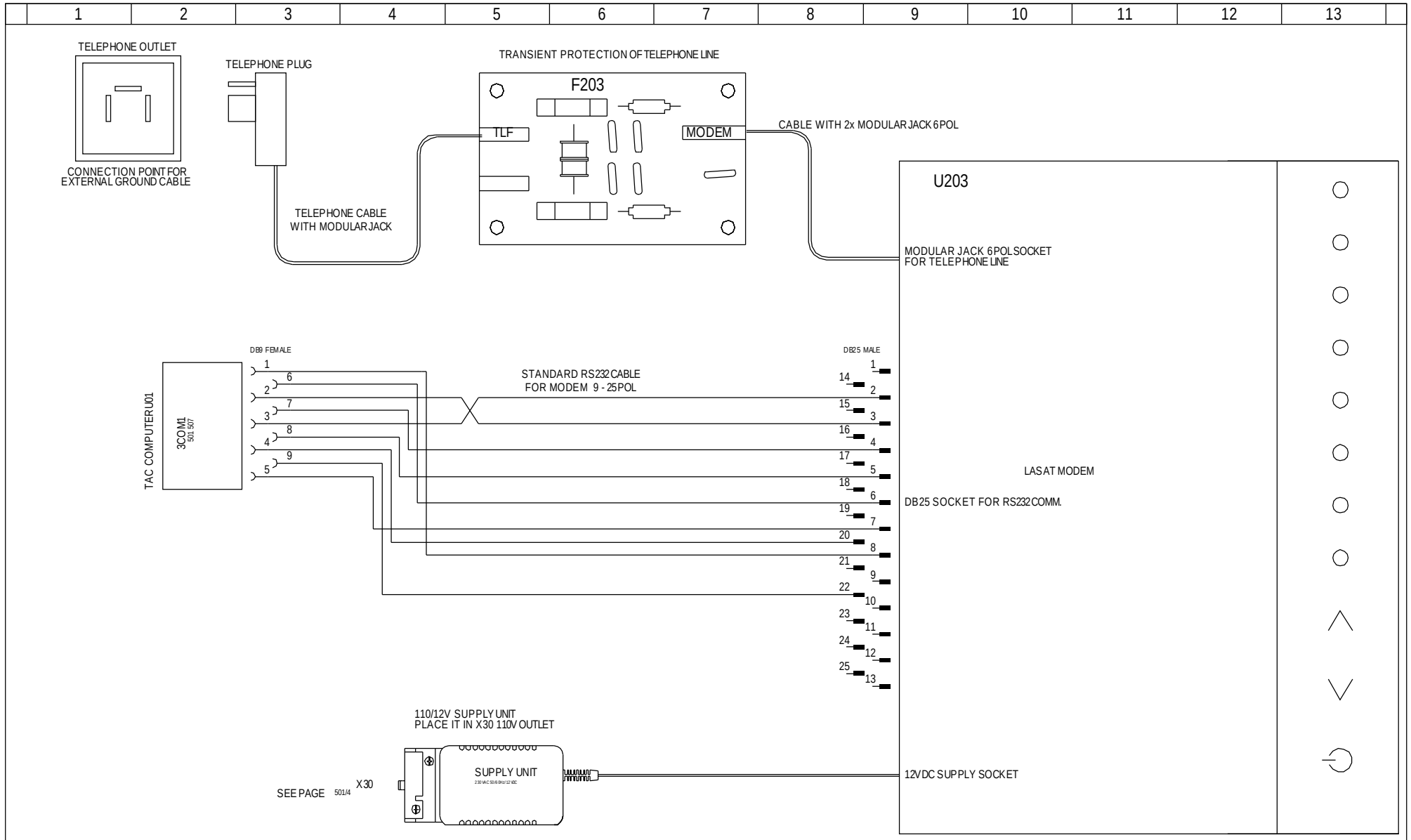
17:13



	Date	Initials	Function	External RS232 Comm. to Modem		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	060816	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	060815	INI	Rev. -	Drawing no. 6012290	Cont. sheet 507	Sheet 506

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1	2	3	4	5	6	7	8	9	10	11	12	13

DIP SWITCH CODE

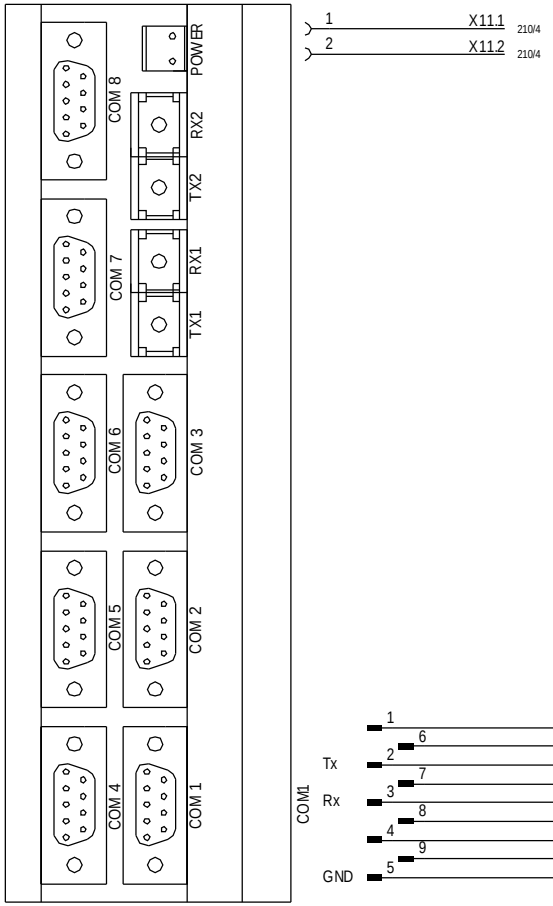
S1 SLAVE MODE

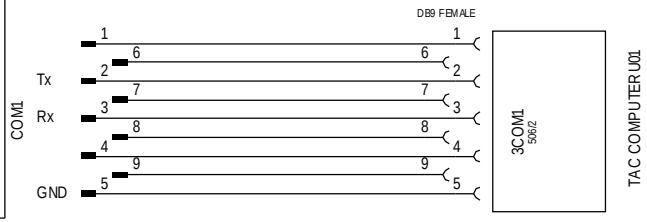
S1 MASTER MODE 1

S1 MASTER MODE 2

S1 CIMS CH 8 ENABLE

POWER:
12 - 24 VAC
18 - 32 VDC





Standard RS232
Extension cord

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External RS232 Comm. to CSL 110
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz
		Approved	060816	FLT	Comments	Customer: Vestas Wind Systems A/S
		Reviced	060815	INI	Rev. -	Drawing no. 6012290

Cont. sheet 508 | Sheet 507

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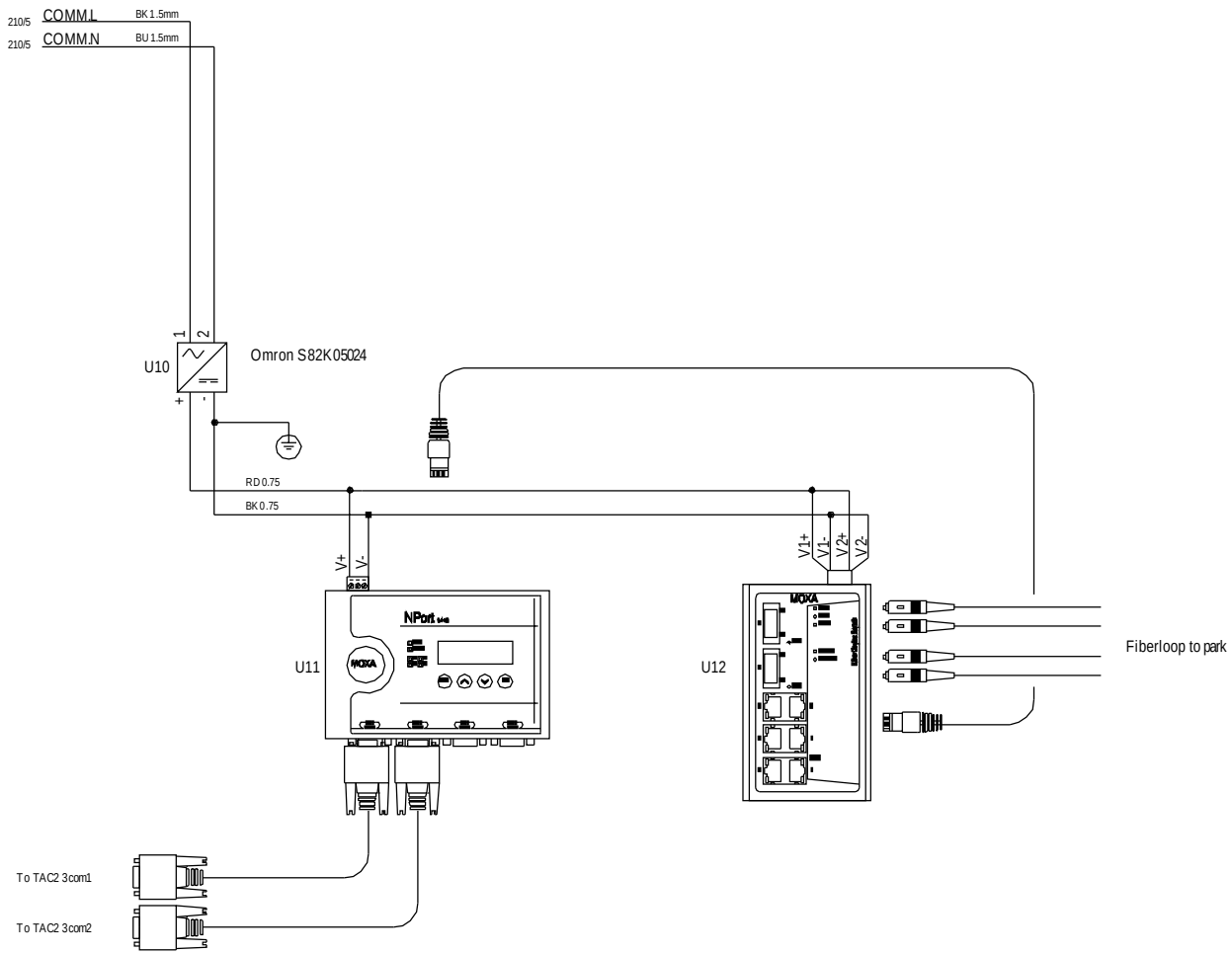
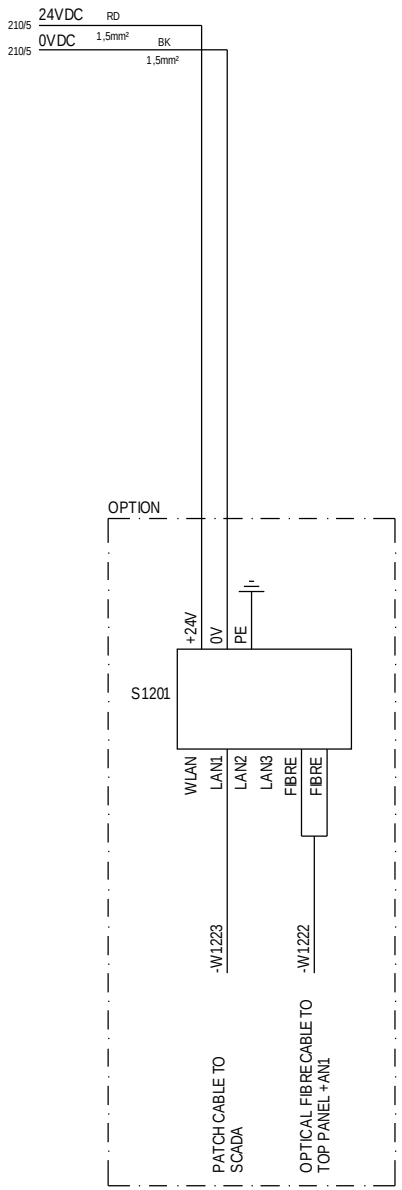
17:13



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External RS232 Comm. to Ethernet	
		Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz	
		Approved	060816	FLT	Comments		Customer: Vestas Wind Systems A/S
		Reviced	060815	INI	Rev. -	Drawing no. 6012290	Cont. sheet 509 / Sheet 508

13-12-06
17:13



Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	CMS - OPTION		
Designed	030906	CHO	Project title	Control Panel +AT2, PS/AS 30T 690V 50Hz		
Approved	061024	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061024	INI	Rev. -	Drawing no. 6012290	Cont. sheet -	Sheet 509

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17:13

60096681 CONTROL PAN+AT2 PS/AS 30T 50HZ

Component	Description	Qty per	Stk UM	Position Number
D21000075	60096681 MATERIAL BOM,CONTROL	0,000	EA	
D22000179	CONTROL PANEL +AT2, NM72-82/16	0,000	EA	
D6012290	CONTROL PANEL +AT2, PS/AS 30t	0,000	EA	
098430	SUPPORT RAIL CONTROL PANEL V82	2,000	EA	
098431	SUPPORT RAIL CONTROL PANEL V82	2,000	EA	
118934	LABEL ELECTRICAL WARNING UNIV.	1,000	EA	
158880	SCR TORX CSK FH M8X20 8.8 TZN	4,000	EA	
60001957	CONN BLA F 8 LEADED	1,000	EA	
60002320	STICKER GEN USE VCS	1,000	EA	
60002421	LABEL "SERVICE 0 1"	1,000	EA	
60002572	LABEL "COMPUTER PANEL +AT2"	1,000	EA	
60002670	LABEL	2,000	EA	
60006335	CRP TERM 0.5 8MM INS SINGLE	8,000	EA	
60007240	BUSBAR HOLDER 12x5-10x30MM	8,000	EA	
60007242	END COVER BUSBAR HOLDER	6,000	EA	
60007258	BUSBAR ADP 45MM 25A TERM	7,000	EA	
60007259	BUSBAR ADP 72MM 32A WIRE	20,000	EA	
60007283	BUSBAR COVER 78 393 12-30x10MM	0,600	M	
60007388	HEAT SHRINK 19mm 2:1 BK	2,300	M	
60007399	HEAT SHRINK 12.7mm 3:1 GNYE	0,030	M	
60007420	WIRE HOSE BLACK 20mm	0,410	M	
60007421	HOSE WIRE 25mm BK	0,410	M	
60007437	BRAIDED SLEEVE 10-17mm BK	1,630	M	
60007458	CABLE TIE 140x2.5mm WH	150,000	EA	
60007459	CABLE TIE WHITE 200x2.5mm	15,000	EA	
60007465	CABLE TIE 368x4.8mm BK	4,000	EA	
60007468	CABLE TIE BLACK 550X8,0MM	4,000	EA	
60007470	CABLE TIE 762x9mm WH	2,000	EA	
60007481	CABLE RACK TK 5-7	1,000	EA	
60007629	CABLE GLAND M16 BRASS BMBC-01	2,000	EA	
60007630	CABLE GLAND M20 BRASS BMBC-02	7,000	EA	
60007631	CABLE GLAND M25 BRASS BMBC-03	4,000	EA	
60007632	CABLE GLAND M32 BRASS BMBC-04	3,000	EA	
60007633	CABLE GLAND M40 BRASS BMBC-05	3,000	EA	
60007635	CABLE GLAND M63 BRASS BMBC-07	1,000	EA	
60007638	LOCKNUT M16 BRASS BMBL-02	2,000	EA	
60007639	LOCKNUT M20 BRASS BMBL-03	7,000	EA	
60007640	LOCKNUT M25 BRASS BMBL-04	4,000	EA	
60007641	LOCKNUT M32 BRASS BMBL-05	3,000	EA	
60007642	LOCKNUT M40 BRASS BMBL-06	3,000	EA	
60007644	LOCKNUT M63 BRASS BMBL-08	1,000	EA	
60007735	WIRE H05V-K 0.75 WH IEC	4,020	M	
60007757	WIRE H07V-K 1.5 BK IEC	2,030	M	
60007829	WIRE TIN 16 150MM Ø8 IEC/UL	1,000	EA	
60009600	SCREW ISO 7045 M 4 X 16 - 4.8	38,000	EA	
60009771	STUD BOLT M12x30 8.8	4,000	EA	
60010453	WIRING PLAN POC STEEL	1,000	EA	
60010481	UTILITY LECTERN 4638.600	1,000	EA	
60012624	WIRING YAW MOTOR +AT2	1,000	EA	
60013412	ANGLE BRACKET 2x10x25MM	6,000	EA	
60013704	CABLE ENTRY PLATE CPU PANEL30t	1,000	EA	
60015684	CABLE SIF-TAC-II RS485	1,000	EA	
60092825	CABINET TS8 2 DOOR W/W	1,000	EA	
60092974	LABEL	1,000	EA	
60094265	CABLE ENTRY RIGHT CPU PAN UL	1,000	EA	
60094860	MARKER CARD WAGO NOS 1-10	0,300	EA	
60094872	MARKER CARD WAGO NOS 11-20	0,100	EA	
60095579	LABEL " CAUTION! RISK OF. "	1,000	EA	
60096851	TORX SCREW 2486.500 5.5X13MM	26,000	EA	
60096875	CAPTIVE NUT 4165.000 M8	11,000	EA	
60096970	PUNCH SECTION 8612.160 OUTER	5,000	EA	
60096979	ATTACHMENT MOUNT PLATE TS	2,000	EA	
60097575	LABEL TYPE SIGN +AT2 PS/AS	1,000	EA	
60098043	MARK WAGO 1 +AT2 PS/AS WMB	1,000	EA	
60098050	PB PS/AS 30T (1650) IEC	1,000	EA	
60098112	BUSBAR ADP 54MM 80A TERM	1,000	EA	
60098349	WIRING F31,F25 +AT2 IEC I/III	1,000	EA	
60098356	WIRING 0VDC +AT2 IEC I/III	1,000	EA	
60098359	WIRING 230VAC +AT2 IEC I/III	1,000	EA	
60098360	WIRING EARTH +AT2 IEC I/III	1,000	EA	
60098361	WIRING T01,T05 +AT2 IEC I/III	1,000	EA	

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60098362	WIRING U02.300 +AT2 IEC I/III	1,000	EA	
60098364	WIRING U02.600 +AT2 IEC I/III	1,000	EA	
60098366	WIRING U02.800 +AT2 IEC I/III	1,000	EA	
60098367	WIRING U02.500 +AT2 IEC I/III	1,000	EA	
60098368	WIRING X03 +AT2 IEC I/III	1,000	EA	
60098369	WIRING X04 +AT2 IEC I/III	1,000	EA	
60098370	WIRING X05 +AT2 IEC I/III	1,000	EA	
60098371	WIRING X08 +AT2 IEC I/III	1,000	EA	
60098372	WIRING X07 +AT2 IEC I/III	1,000	EA	
60098373	WIRING 24VDC3 +AT2 IEC I/III	1,000	EA	
60098374	WIRING 690VAC +AT2 IEC I/III	1,000	EA	
60098375	WIRING X01 +AT2 IEC I/III	1,000	EA	
60098376	WIRING X02 +AT2 IEC I/III	1,000	EA	
60099010	LABEL TYPE SIGN CTRL PANEL	1,000	EA	
60099030	MOUNT PLATE TS8 W/W	1,000	EA	
60099169	WIRING X06 +AT2 IEC I/III	1,000	EA	
60099174	WIRING 24V CIRC+AT2 IEC I/III	1,000	EA	
60102318	CU BUSBAR KIT 5 CONTROL PAN	1,000	EA	
60102523	DIN RAIL BUSBAR ADP 72MM	4,000	EA	
60103218	LABEL SERVICE KEY ON PANELS	1,000	EA	
60104150	CABLE CONDUIT DIN RAIL CTRL	1,000	EA	
60006484	CONN MODULE BLIND FEMALE	2,000	EA	-W592
60006565	HOUSING 3-MODULES TOP ENTRY	1,000	EA	-W592
60007657	REDUCTION ADAPTOR PG21-PG16	1,000	EA	-W592
60007676	CABLE GLAND PG16 EMC BRASS	1,000	EA	-W592
60098140	CABLE W592 FOR PS/AS 30T	1,000	EA	-W592
60098976	FRAME F 3 MOD FEM.2+PE	1,000	EA	-W592
60099095	CONN ADAPTER F STAMP F 10	1,000	EA	-W592
60009279	PT100 180-4-2M Ø6x60mm	1,000	EA	B01
51700301	ST-ROX RS232/50A CONVERTER	1,000	EA	B02
60006058	END STOP 105900 TERMS WEW35/1	1,000	EA	B02
60007767	WIRE H07V-K 1.5 BU IEC S300	2,030	M	B02
60009605	SCR CRS PH M5x12 4.8 FZB	4,000	EA	B02
60013722	PLATE ALU 2x76x76MM F ST-ROX	1,000	EA	B02
60015685	CABLE ROX-TAC-II RS232 3M	1,000	EA	B02
60009606	SCR CRS PH M5x20 4.8 FZB	16,000	EA	B03
60091912	END STOP WAGO 249-117 10MM	1,000	EA	B03
60099303	RS232/485/22 CONV I-7520AR ICP	1,000	EA	B03
60099963	CABLE RS232 TAC-2/ICP-7520	1,000	EA	B03
60009610	SCR CRS PH M6x14 4.8 FZB	1,000	EA	B04
60091912	END STOP WAGO 249-117 10MM	2,000	EA	B04
60099303	RS232/485/22 CONV I-7520AR ICP	1,000	EA	B04 EON
60099963	CABLE RS232 TAC-2/ICP-7520	1,000	EA	B04 EON
60009279	PT100 180-4-2M Ø6x60mm	1,000	EA	B19
60014729	HEATER FAN CR0 27 230V 350W UL	1,000	EA	E01
60009578	SCR CRS PH M3x8 FZB	27,000	EA	E02
60014729	HEATER FAN CR0 27 230V 350W UL	1,000	EA	E02
60004755	CB 3RV1121-1KA10 9.0-12.5A	1,000	EA	F01
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F01
60004797	LINK MODULE 3RA1921-1AA00	1,000	EA	F01
60004746	CB 3RV1121-1AA10 1.1-1.6A	1,000	EA	F02
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F02
60004746	CB 3RV1121-1AA10 1.1-1.6A	1,000	EA	F03
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F03
60004746	CB 3RV1121-1AA10 1.1-1.6A	1,000	EA	F04
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F04
60004746	CB 3RV1121-1AA10 1.1-1.6A	1,000	EA	F05
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F05
60004746	CB 3RV1121-1AA10 1.1-1.6A	1,000	EA	F06
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F06
60004746	CB 3RV1121-1AA10 1.1-1.6A	1,000	EA	F07
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F07
60004750	CB 3RV1121-1EA10 2.8-4.0A	1,000	EA	F08
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F08
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F08
60004743	CB 3RV1121-0HA10 0.55-0.8A	1,000	EA	F09
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F09
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F09
60004750	CB 3RV1121-1EA10 2.8-4.0A	1,000	EA	F10
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F10
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F10
60004743	CB 3RV1121-0HA10 0.55-0.8A	1,000	EA	F11
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F11
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F11
60004762	CB 3RV1131-4DA10 18.0-25.0A	1,000	EA	F13

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60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F13
60004751	CB 3RV1121-1FA10 3.5-5.0A	1,000	EA	F14
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F14
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F14
60004753	CB 3RV1121-1HA10 5.5-8.0A	1,000	EA	F15
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F15
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F15
60005983	TERMINAL STD M4/6	5,000	EA	F16
60005998	END SEC FEM6 GY 118368.16	1,000	EA	F16
60009638	SCR HEX SET M8x16 8.8 FZB	5,000	EA	F16
60010316	BASE PL CLAMP TS8 WA4547276	1,000	EA	F16
60091912	END STOP WAGO 249-117 10MM	2,000	EA	F16
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	F16
60014160	MARK CARD RC610 NACELLE	1,000	EA	F16-F19
60005983	TERMINAL STD M4/6	8,000	EA	F17
60005998	END SEC FEM6 GY 118368.16	2,000	EA	F17
60009639	SCR HEX SET M8x20 8.8 FZB	1,000	EA	F17
60091912	END STOP WAGO 249-117 10MM	2,000	EA	F17
60091915	END STOP LABEL HOLDER WAGO 249	2,000	EA	F17
60005983	TERMINAL STD M4/6	5,000	EA	F18
60005998	END SEC FEM6 GY 118368.16	1,000	EA	F18
60009646	SCR HEX SET M8x25 8.8 FZB	14,000	EA	F18
60091912	END STOP WAGO 249-117 10MM	2,000	EA	F18
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	F18
60005983	TERMINAL STD M4/6	8,000	EA	F19
60005998	END SEC FEM6 GY 118368.16	2,000	EA	F19
60009670	SCR HEX SET M10x16 8.8 FZB	2,000	EA	F19
60010699	CONDENSATION PROT DRY BAG 500G	4,000	EA	F19
60091912	END STOP WAGO 249-117 10MM	2,000	EA	F19
60091915	END STOP LABEL HOLDER WAGO 249	2,000	EA	F19
60004663	CB 3RV1021-1FA10 3.5-5.0A	1,000	EA	F20
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F20
60005996	TERMINAL STD M6/8 GY 115118.11	7,000	EA	F21
60005998	END SEC FEM6 GY 118368.16	1,000	EA	F21
60009673	SCR HEX SET M10x25 8.8 FZB	1,000	EA	F21
60014161	MARK CARD RC610 SERVICE LIFT	0,200	EA	F21
60091912	END STOP WAGO 249-117 10MM	2,000	EA	F21
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	F21
60008824	CABLE PATCH DUPLEX MM 62.5/125	2,000	EA	F21, M01
60004712	CB 3RV1421-1GA10 4.5-6.3A	1,000	EA	F22
60004712	CB 3RV1421-1GA10 4.5-6.3A	1,000	EA	F23
60005071	FUSE SWITCH NH00 33198 3P	1,000	EA	F24
60005092	FUSE 690V 16A NH00 GL/GG	3,000	EA	F24
60005983	TERMINAL STD M4/6	6,000	EA	F25
60005998	END SEC FEM6 GY 118368.16	2,000	EA	F25
60009747	SCR CRS FH ST2.9x9.5 FZB	2,000	EA	F25
60091912	END STOP WAGO 249-117 10MM	4,000	EA	F25
60091915	END STOP LABEL HOLDER WAGO 249	2,000	EA	F25
60005759	RCCB 5SM1312-6 25A 2P	1,000	EA	F27
60005154	MCB 5SX2204-7 4.0A C 2P	1,000	EA	F28
60009751	SCREW HFC 208 M 4.8 X 9.5 -FZB	95,000	EA	F28
60091912	END STOP WAGO 249-117 10MM	1,000	EA	F28
60005071	FUSE SWITCH NH00 33198 3P	1,000	EA	F29
60005097	FUSE 690V 50A NH00 GL/GG	3,000	EA	F29
60000674	OVP 600FM	3,000	EA	F30
60000675	BUSBAR 3 OVPS	1,000	EA	F30
60004648	CB 3RV1021-0AA10 0.11-0.16A	1,000	EA	F31
60005071	FUSE SWITCH NH00 33198 3P	1,000	EA	F32
60005098	FUSE 690V 63A NH00 GL/GG	3,000	EA	F32
60005157	MCB 5SX2206-7 6.0A C 2P	1,000	EA	F33
60005193	AUX CONTACT 5SX9100	1,000	EA	F33
60005157	MCB 5SX2206-7 6.0A C 2P	1,000	EA	F34
60005193	AUX CONTACT 5SX9100	1,000	EA	F34
60005157	MCB 5SX2206-7 6.0A C 2P	1,000	EA	F35
60005193	AUX CONTACT 5SX9100	1,000	EA	F35
60005157	MCB 5SX2206-7 6.0A C 2P	1,000	EA	F36
60005193	AUX CONTACT 5SX9100	1,000	EA	F36
60005159	MCB 5SX2208-7 8.0A C 2P	1,000	EA	F37
60005193	AUX CONTACT 5SX9100	1,000	EA	F37
60005162	MCB 5SX2213-7 13.0A C 2P	1,000	EA	F38
60005158	MCB 5SX2206-8 6.0A D 2P	1,000	EA	F39
60005136	MCB 5SX2104-7 4.0A C 1P	1,000	EA	F40
60004743	CB 3RV1121-0HA10 0.55-0.8A	1,000	EA	F44
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F44
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F44

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60004745	CB 3RV1121-0KA10 0.9-1.25A	1,000	EA	F49
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F49
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F49
60004742	CB 3RV1121-0GA10 0.45-0.63A	1,000	EA	F50
60004778	AUX CONTACT 3RV1901-1E	1,000	EA	F50
60004796	LINK MODULE 3RA1921-1DA00	1,000	EA	F50
60004996	RELAY EMER 3TK2806OBB4 400V	1,000	EA	K01
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	K02
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	K02
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	K03
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	K03
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K04
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K04
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K04
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K04
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K05
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K05
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K05
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K05
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K06
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K06
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K06
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K06
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K07
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K07
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K07
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K07
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K08
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K08
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K08
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K08
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K09
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K09
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K09
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K09
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K10
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K10
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K10
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K10
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K11
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K11
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K11
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K11
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K12
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K12
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K12
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K12
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K13
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K13
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K13
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K13
60004512	RELAY RT424730 8A 230V 2P	1,000	EA	K15
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K15
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K15
60004519	DIODE MODULE RPMG0730 110-230V	1,000	EA	K15
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K16
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K16
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K16
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K16
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K17
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K17
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K17
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K17
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K18
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K18
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K18
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K18
60014655	FAN 500M3/H 230V	1,000	EA	M01
60014668	FILTER EXH 232x232x17.5MM	1,000	EA	M01
60004407	CONT 3RT1026-1AP00 230V 50Hz	1,000	EA	Q01
60004451	RCUNIT 3RT19261CD00 127-240VAC	1,000	EA	Q01
60004407	CONT 3RT1026-1AP00 230V 50Hz	1,000	EA	Q02
60004451	RCUNIT 3RT19261CD00 127-240VAC	1,000	EA	Q02
60004439	MECH INTERLOCK SIRIUS 3R	1,000	EA	Q02/Q03
60004407	CONT 3RT1026-1AP00 230V 50Hz	1,000	EA	Q03

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60004451	RCUNIT 3RT19261CD00 127-240VAC	1,000	EA	Q03
60096011	REVERSING ASSEMBLIES 3RA19232A	1,000	EA	Q03
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q08
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q08
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q09
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q09
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q10
60004433	AUX CONTACT 3RH1911-1FA22	1,000	EA	Q10
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q10
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q11
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q11
60004413	CONT 3RT10341AL20 230V 50/60Hz	1,000	EA	Q13
60004444	AUX CONTACT 3RH1921-1FA22	1,000	EA	Q13
60004456	RCUNIT 3RT19361CD00 127-240VAC	1,000	EA	Q13
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q14
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q14
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q15
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q15
60005983	TERMINAL STD M4/6	5,000	EA	Q16
60005998	END SEC FEM6 GY 118368.16	1,000	EA	Q16
60091912	END STOP WAGO 249-117 10MM	2,000	EA	Q16
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	Q16
60005983	TERMINAL STD M4/6	8,000	EA	Q17
60005998	END SEC FEM6 GY 118368.16	2,000	EA	Q17
60009792	WASHER SPR 5 FZG	4,000	EA	Q17
60091912	END STOP WAGO 249-117 10MM	2,000	EA	Q17
60091915	END STOP LABEL HOLDER WAGO 249	2,000	EA	Q17
60005983	TERMINAL STD M4/6	5,000	EA	Q18
60005998	END SEC FEM6 GY 118368.16	1,000	EA	Q18
60009795	WASHER SPR 6 FZG	1,000	EA	Q18
60091912	END STOP WAGO 249-117 10MM	2,000	EA	Q18
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	Q18
60005983	TERMINAL STD M4/6	8,000	EA	Q19
60005998	END SEC FEM6 GY 118368.16	2,000	EA	Q19
60009803	WASHER SPR 8 FZG	14,000	EA	Q19
60091912	END STOP WAGO 249-117 10MM	2,000	EA	Q19
60091915	END STOP LABEL HOLDER WAGO 249	2,000	EA	Q19
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q20
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q20
60002430	LABEL "48 NM"	1,000	EA	Q21
60002431	LABEL "24 NM"	1,000	EA	Q21
60005608	SWI LB 160A 3P OETL200K3	1,000	EA	Q21
60005614	SHAFT OETL ZA86 8x500mm	1,000	EA	Q21
60006815	STICKER "L1" 14MM	0,032	EA	Q21
60006816	STICKER "L2" 14MM	0,032	EA	Q21
60006817	STICKER "L3" 14MM	0,032	EA	Q21
60006819	STICKER "EARTH" 14MM	0,300	EA	Q21
60093008	LABEL"Q21 MAIN DISC FOR MAIN"	1,000	EA	Q21
60095653	TERMINAL SHROUD OETLZX 128	3,000	EA	Q21
60005604	SWI SWDIS 32A 4P OT32E4	1,000	EA	Q22
60005612	ROTARY HANDLE OHB65J6	1,000	EA	Q22
60005617	SHAFT OXP5X400 400mm	0,750	EA	Q22
60005622	SHAFT EXTENSION OETLZX31	1,000	EA	Q22
60009809	WASHER SPR 10 FZG	1,000	EA	Q22
60091912	END STOP WAGO 249-117 10MM	2,000	EA	Q22
60093009	LABEL"Q22 DISC FOR 230V UPS"	1,000	EA	Q22
60094268	ALU BRA SHAFT MAIN SWITCH CPU	1,000	EA	Q22
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q44
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q44
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q49
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q49
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	Q50
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	Q50
60006058	END STOP 105900 TERMS WEW35/1	1,000	EA	RX/TX
60008794	FIBRE PLUG ST-COUPLER AMP 05-5	2,000	EA	RX/TX
60013723	ANGLE ALU 2x50x80MM F 2xST	1,000	EA	RX/TX
60005824	MUSHROOM BUTTON ISAF616510R100	1,000	EA	S01
60005846	CONTACT ELEMENT SK616 001-B 1N	2,000	EA	S01
60005849	HO 3 ELEMEN 1SFA616605R1100	1,000	EA	S01
60005871	SIGN SK615546-2 "EMERGENCY STO	1,000	EA	S01
60005836	SELECT SWITCH ISFA616280R100 2	1,000	EA	S02
60005844	CONTACT ELEMENT SK616 001-A 1N	1,000	EA	S02
60101986	TRAFO 600-690/2x115V	1,000	EA	T01
60006925	TRAFO VOLT 520/24VAC 30VA	1,000	EA	T02
60006925	TRAFO VOLT 520/24VAC 30VA	1,000	EA	T03

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60006925	TRAFO VOLT 520/24VAC 30VA	1,000	EA	T04
60101986	TRAFO 600-690/2x115V	1,000	EA	T05
51707301	TAC-II/F NEGM NM1500C/72/82	1,000	EA	U01
60001918	CONN BLA F 3 LEADED	1,000	EA	U01
60001950	CONN BLA F 7 LEADED	3,000	EA	U01
51701501	TOI-II INTERF NM1500 TOWER	1,000	EA	U02
60001918	CONN BLA F 3 LEADED	1,000	EA	U02
60001927	CONN BLA F 4 LEADED	2,000	EA	U02
60001934	CONN BLA F 5 LEADED	6,000	EA	U02
60001965	CONN BLA F 10 LEADED	2,000	EA	U02
60000717	BAT 115-230/24V 5A ADC5183	1,000	EA	U03
60009838	LOCK WASHER DIN 6798 A4 - FZB	50,000	EA	U03
60091912	END STOP WAGO 249-117 10MM	2,000	EA	U03
60000604	VDR SIOV-S10K40 40V	1,000	EA	V01
60002503	LABEL "-X01"	1,000	EA	X01
60006576	HOUSING C14610F0240001 46P BUL	1,000	EA	X01
60002504	LABEL "-X02"	1,000	EA	X02
60006576	HOUSING C14610F0240001 46P BUL	1,000	EA	X02
60002505	LABEL "-X03"	1,000	EA	X03
60006576	HOUSING C14610F0240001 46P BUL	1,000	EA	X03
60002506	LABEL "-X04"	1,000	EA	X04
60006336	CRP TERM 0.75 8MM INS SINGLE	2,000	EA	X04
60006571	HOUSING 32P BULKHEAD	1,000	EA	X04
60002507	LABEL "-X05"	1,000	EA	X05
60006354	CRP TERM TW 0.75 8MM INS	1,000	EA	X05
60006571	HOUSING 32P BULKHEAD	1,000	EA	X05
60002508	LABEL "-X06"	1,000	EA	X06
60006571	HOUSING 32P BULKHEAD	1,000	EA	X06
60002509	LABEL "-X07"	1,000	EA	X07
60006576	HOUSING C14610F0240001 46P BUL	1,000	EA	X07
60002525	LABEL "-X08"	1,000	EA	X08
60006571	HOUSING 32P BULKHEAD	1,000	EA	X08
60006073	TERMINAL WAGO 0.2-6.0MM2	2,000	EA	X10
60006085	END SEC 282-325 1-LEVEL GY	1,000	EA	X10
60009841	WASHER LOCK 8 FZB	12,000	EA	X10
60091912	END STOP WAGO 249-117 10MM	1,000	EA	X10
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X10
60096685	TERMINAL WAGO1-LEV 0.08-4.0MM2	18,000	EA	X10
60097064	END SEC 281-328 GY	1,000	EA	X10
60009842	WASHER LOCK 10 FZB	3,000	EA	X11
60091912	END STOP WAGO 249-117 10MM	1,000	EA	X11
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X11
60096685	TERMINAL WAGO1-LEV 0.08-4.0MM2	3,000	EA	X11
60097064	END SEC 281-328 GY	1,000	EA	X11
60006073	TERMINAL WAGO 0.2-6.0MM2	3,000	EA	X12
60006085	END SEC 282-325 1-LEVEL GY	1,000	EA	X12
60009861	NUT ISO 4032 M 4 - 6 - FZB	46,000	EA	X12
60091912	END STOP WAGO 249-117 10MM	2,000	EA	X12
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X12
60006075	TERMINAL WAGO 0.08-2.5MM2	7,000	EA	X13
60006080	END SEC 870-933 1-LEVEL GY	3,000	EA	X13
60006086	PUSH-IN JUMPER BAR 870-402 2-P	2,000	EA	X13
60006087	PUSH-IN JUMPER BAR 870-403	1,000	EA	X13
60009873	NUT HEX M8 8 FZB	7,000	EA	X13
60091912	END STOP WAGO 249-117 10MM	1,000	EA	X13
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X13
60006075	TERMINAL WAGO 0.08-2.5MM2	10,000	EA	X20
60006080	END SEC 870-933 1-LEVEL GY	3,000	EA	X20
60006086	PUSH-IN JUMPER BAR 870-402 2-P	3,000	EA	X20
60006088	PUSH-IN JUMPER BAR 870-404 4-P	1,000	EA	X20
60009879	NUT HEX M10 8	1,000	EA	X20
60091912	END STOP WAGO 249-117 10MM	2,000	EA	X20
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X20
60006075	TERMINAL WAGO 0.08-2.5MM2	12,000	EA	X22
60009895	NUT LIFTING EYE M10 FZB	2,000	EA	X22
60091912	END STOP WAGO 249-117 10MM	1,000	EA	X22
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X22
60009839	WASHER LOCK 5 FZB	16,000	EA	X30
60011324	SKT ABB E1175 DIN RAIL 16A	1,000	EA	X30
60091912	END STOP WAGO 249-117 10MM	1,000	EA	X30

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Change Info

Item no.	***Item text:***
None	**Arctic Comp. for Control Panel +AT2 Passive Stall/Active Stall 30T 50Hz**

Active revision for production

Drawing number: xxxxxxx

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

LST number: 21000076 *Material BOM number: 60097145*

Version	Date	Init./App.	Description of change since last revision
01	02.10.2003	CHO/CHO	First version

Old revisions for service

Drawing number:: xxxxxxx

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

LST number: xxxxxxxx *Material BOM number: xxxxxxxx*

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

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LST: 21000076
Version: 01

Material 60097145
Description ARCTIC COMPONENTS for +AT2 30t AS/PS

Obj	Object description	Quantity	Un	SortStrng Item text
60004745	CIRCUIT BREAKER 3RV1121-0KA10 0.9-1.25A	2	PC	F16/F18
60004796	LINK MODULE 3RA1921-1DA00 S00-S0	2	PC	F16/F18
60004394	CONTACTOR 3RT1016-1AP02 230V 50/60Hz	2	PC	Q16/Q18
60004450	RC UNIT 3RT1916-1CD00 127-240VAC	2	PC	Q16/Q18
60004717	CIRCUIT BREAKER 3RV1421-4BA10 14.0-20.0A	2	PC	F17/F19
60004797	LINK MODULE 3RA1921-1AA00 S0-S0	2	PC	F17/F19
60004407	CONTACTOR 3RT1026-1AP00 230V 50Hz	2	PC	Q17/Q19
60004451	RC UNIT 3RT1926-1CD00 127-240VAC	2	PC	Q17/Q19
60004663	CIRCUIT BREAKER 3RV1021-1FA10 3.5-5.0A	1	PC	F20
60004796	LINK MODULE 3RA1921-1DA00 S00-S0	1	PC	F20
60004394	CONTACTOR 3RT1016-1AP02 230V 50/60Hz	1	PC	Q20
60004450	RC UNIT 3RT1916-1CD00 127-240VAC	1	PC	Q20
60004712	CIRCUIT BREAKER 3RV1421-1GA10 4.5-6.3A	1	PC	F25
60005001	THERMISTOR RELAY 3RN10131BWO1 2CO 24V	2	PC	F45/F46

Change Info

Item no.	***Item text:***
None	**Kit for Service Lift Active Stall 30T**

Active revision *for production*

Drawing number: xxxxxxx

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

LST number: 21000077 *Material BOM number: 60097149*

Version	Date	Init./App.	Description of change since last revision
01	04.10.2003	CHO/CHO	First version

Old revisions *for service*

Drawing number:: xxxxxxx

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

LST number: xxxxxxxx *Material BOM number: xxxxxxxx*

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

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LST: 21000077
Version: 01

Material 60097149
Description KIT f. Service Lift AS 30t

Obj	Object description	Quantity	Un	SortStrng	Item text
60005764	RCCB F504C-16/0.03 4-POLED 16A 440VAC	1	PC		
60005092	FUSE NH00 3NA3805-6 gL/gG 16A 690V	3	PC		

Change Info

Item no.	***Item text:***
60109174	**Transformer/Recool Ventilator Kit for +AT2 30t Active Stall /Passive Stall**

Active revision *for production*

Drawing no.: None

Version	**Date**	**Init./App.**	**Description of change since last revision**
xx	xx.xx.xxxx	xxx/	Writhe the change

LST no.: 21000195 *Material BOM no.: 60109174*

Version	**Date**	**Init./App.**	**Description of change since last revision**
02	18.02.2005	MILJE/SLB	Item added required for production.

Old revisions *for service*

Drawing no.: xxxxxxx

Version	**Date**	**Init./App.**	**Description of change since last revision**
xx	xx.xx.xxxx	xxx/	Writhe the change

LST no.: 21000195 *Material BOM no.: 60109174*

Version	**Date**	**Init./App.**	**Description of change since last revision**
01	27.01.2005	SLB/SLB	First version

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Material 60109174
Description TRAFO/RECOOL VENT KIT for +AT2 30t AS/PS

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60007259	BUSBAR ADAPTOR 72mm 32A WITH WIRE	1	PC	F51
1	60004742	CIRCUIT BREAKER 3RV1121-0GA10 0.45-0.63A	1	PC	F51
1	60004796	LINK MODULE 3RA1921-1DA00 S00-S0	1	PC	F51
1	60004778	AUX. CONTACT 3RV1901-1E 1NO+1NC 0.5A	1	PC	Q51
1	60004394	CONTACTOR 3RT1016-1AP02 230V 50/60Hz	1	PC	Q51
1	60004450	RC UNIT 3RT1916-1CD00 127-240VAC	1	PC	F52
1	60007258	BUSBAR ADAPTOR 45mm 25A WITH TERMIANLS	1	PC	F52
1	60004746	CIRCUIT BREAKER 3RV1121-1AA10 1.1-1.6A	1	PC	F52
1	60004796	LINK MODULE 3RA1921-1DA00 S00-S0	1	PC	F52
1	60004778	AUX. CONTACT 3RV1901-1E 1NO+1NC 0.5A	1	PC	F52
1	60004394	CONTACTOR 3RT1016-1AP02 230V 50/60Hz	1	PC	Q52
1	60004450	RC UNIT 3RT1916-1CD00 127-240VAC	1	PC	Q52
1	60006075	TERMINAL WAGO 870-681 0.08-2.5mm²	3	PC	X25
1	60006080	END SECTION 870-933 1-LEVEL GREY	1	PC	X25
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	X25
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	X25
1	60006075	TERMINAL WAGO 870-681 0.08-2.5mm²	3	PC	X26
1	60006080	END SECTION 870-933 1-LEVEL GREY	1	PC	X26
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	X26
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	X26
1	60109654	WIRING TRAFO/RECOOL VENT. KIT f. +AT2	1	PC	WIRE KIT
1	60109655	COMP. MARKING TRAFO/RECOOL KIT +AT2	1	PC	LASSER LAB
1	60006075	TERMINAL WAGO 870-681 0.08-2.5mm²	1	PC	X20.+
1	60006087	PUSH-IN JUMPER BAR 870-403 3-POLED	1	PC	X20.+
1	60014286	MARKER CARD WAGO Nos 1-10 TYPE 870-	1,000	SH	

Change Info

Item no.	***Item text:***
60019676	**Kit for Modem 600mm Panel**
60019755	**Comm. for CPU Modem NM92/2750 IEC**

Active revision for production

Drawing number: None

Version	**Date**	**Init./App.**	**Description of change since last revision**
xx	dd.mm.yyyy	xxx	Write the change

BoM no.: 60017352 *Document no.: 21000012*

Version	**Date**	**Init./App.**	**Description of change since last revision**
06	11.10.2007	MEKNU/BIVA	Changed with ECO 229864_Introduction of new type of modem. 60014805 MODEM Zyxel Omni repl. w. 181097 MODEM INSYS 56K SMALL INT 2.0

Old revisions for service

Drawing number: None

Version	**Date**	**Init./App.**	**Description of change since last revision**
xx	yymmdd	xxx	Write the change

BoM no.: 60017352 *Document no.: 21000012*

Version	**Date**	**Init./App.**	**Description of change since last revision**
05	07.09.2004	INI/INI	Version 04 was printed with level 2, it shall just bee in level 1. Therefore material no 60013685, 60015210 and 100050 are removed.
04	07.09.2004	ABJ/	All used mat. no. w. Lasat modem changed. Mat. no. 60015719 modem, discontinued. Material numbers 60015719, 60013682, 60009627 and 60009795 removed. Material numbers 60014805, 60106136, 60106137 60009589 and 60009578 added.
03	16.12.2003	ATM/ATM	Base unit changed from pack to pc.
02	30.10.2003	INI / FLT	Description text changed.
01	26.08.2002	FLT/ FLT	First version in SAP no. system

Earlier Drawings and Part Lists no Longer Active for Serial Production

Change Info: 00020861

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Document no.: 21000012
Version: 06
Date: 09/01/2008
Init: Inge Nielsen

60017352 COM F CPU 30T ANALOG MODEM

Component	Description	Qty per	Stk UM	Position Number
D21000012	BOM 60017352, KIT for MODEM, 6	0,000	EA	
D22000026	CI, KIT for MODEM 600mm PANEL	0,000	EA	
181097	MODEM INSYS 56K SMALL INT 2.0	1,000	EA	
51710901	TRANSIENT PROT PHONE CONN	1,000	EA	-F5
60009578	SCR CRS PH M3x8 FZB	4,000	EA	
60009578	SCR CRS PH M3x8 FZB	2,000	EA	
60009580	SCREW ISO 7045 M4X10-FZB-H	2,000	EA	
60009589	SCR ISO7046 M 6 X 20 4.8 FZB Z	2,000	EA	
60009793	WASHER ISO 7092 6 - FZB	4,000	EA	
60009837	WASHER LOCK 3 FZB	4,000	EA	
60009933	SPACER IN/OUT Ø5.5MM 3x15MM	4,000	EA	
60009939	SPACER IN/OUT Ø10MM 6x10MM	4,000	EA	
60011417	BASE BOX 503D5610 FUGA 1m GREY	1,000	EA	
60011418	FRAME 500D5810 FUGA 50 1m GREY	1,000	EA	
60011419	TELEPHONE OUTLET MD82B	1,000	EA	
60013684	PLATE ALU W RAL 7032 MOD	1,000	EA	
60014787	TELEPHONE CABLE RJ11/RJ11 2M	1,000	EA	
60096978	PUNCHED RAIL 8612.260	2,000	EA	
60106136	BRA F EXT ZYXELMOD	1,000	EA	
60106137	BRA SUPPORT F EXT ZYXEL MOD	1,000	EA	

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Change Info

Item no.	***Item text:***
60092032	**Kit for CSL110, 600mm Panel**

Active revision *for production*

Drawing no.: xxxxxxx

Revision	Date	Init./App.	Description of change since last revision
xx	yyyy-mm-dd		Write the change

BoM no.: 60092032 *Document no.: 21000020*

Revision	Date	Init./App.	Description of change since last revision
04	2006-06-29	SHL/FLT	Changed with ECO 214388 Mapics implementation, Controls DK, Århus Replaced: 60015721 with 51700701 CSL-10 FIBRE MODULE 2xMM

Old revisions *for service*

Drawing no.: xxxxxxx

Revision	Date	Init./App.	Description of change since last revision
xx	yyyy-mm-dd	xxx	Write the change

BoM no.: 60092032 *Document no.: 21000020*

Revision	Valid from	Init./App.	Description of change since last revision
03	2006-05-23	SHL/FLT	Changed with ECO 212505_Mapics implementation, controls DK Århus
02	2003-09-17	ABJ /	Punched rail & fiber plug added.
01	2003-06-20	ABJ /	First version

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Document no.: D21000020
Version: 04
Date: 04/03/2009
Init: Inge Nielsen

60092032 CSL110 MM SERIAL COM WTG-KIT

Component	Description	Qty per	Stk UM	Position Number
51700701	CSL-110 FIBRE MODULE 2xMM	1,000	EA	
60002649	LABEL	1,000	EA	
60007476	FLAT CABLE CLIP W ADHES FOOT	18,000	EA	
60007482	CABLE RACK TK 10-14	6,000	EA	
60008795	FIBRE PLUG SC-COUPLER DUP AMP	1,000	EA	
60009578	SCREW ISO 7045 M 3 x 8 - FZB	3,000	EA	
60009580	SCREW ISO 7045 M4X10-FZB-H	6,000	EA	
60009580	SCREW ISO 7045 M4X10-FZB-H	6,000	EA	
60009609	SCREW M 6 X 10 - 4.8 FZB Z	4,000	EA	
60009747	SCR CRS FH ST2.9x9.5 FZB	18,000	EA	
60009751	SCREW HFC 208 M 4.8 X 9.5 -FZB	2,000	EA	
60009793	WASHER ISO 7092 6 - FZB	8,000	EA	
60009944	SPACER IN/OUT Ø10MM 6x20MM	4,000	EA	
60009946	SPACER IN/OUT Ø10MM 6x40MM	4,000	EA	
60012766	DIN RAIL W HOLES 180x7x35mm	1,000	EA	
60013679	FIBRE PLATE COVER FSWING FRAME	1,000	EA	
60013681	BRA F 2 SC/SC DUPLEX COUPLERS	1,000	EA	
60014784	RS232 CABLE EXTEN 9-9-POLED 3M	1,000	EA	
60092988	FIBRE PLATE PAINTED F. CSL/ROX	1,000	EA	
60096978	PUNCHED RAIL 8612.260	2,000	EA	

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Change Info

Item no.	***Item text:***
60019680	**Comm. for CPU Multimode ROX, NM64C/72C/82**

Active revision for production

Drawing number: None

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

LST no.: 21000088 *Material BOM no.: 60016972*

Version	Date	Init./App.	Description of change since last revision
04	08.06.2006	SHL/FLT	MAPICS implementation, Controls DK Århus 60015671 replaced with 51700301 ST-ROX RS 232/50A Converter

Old revisions for service

Drawing number: xxxxxxx

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

LST no.: 21000088 *Material BOM no.: 60016972*

Version	Date	Init./App.	Description of change since last revision
03	25.05.2005	HRN/FLT	60013677 changed to 60092988_Fibre Plate Painted f. CSL/ROX
02	16.12.2003	ATM/ ATM	Base unit changed from pack to pc.
01	01.01.2000	ABJ/	First version in SAP no. system.

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Document no.: 21000088
Version: 04
Date: 19/06/2006
Init: Inge Nielsen

Bill of Material - 60016972 COM CPU MM ROX NM64C/72C/82

Component	Description	Qty per	Stk UM	Position Number
D21000088	BOM 60016972 COMM. for CPU MUL	0,000	EA	
D22000215	CI COMM. for CPU MULTIMODE ROX	0,000	EA	
51700301	ST-ROX RS232/50Á Converter	1,000	EA	ROX
60002649	LABEL	1,000	EA	ROX COVER
60007476	FLAT CABLE CLIP W ADHES FOOT	18,000	EA	ROX PLATE
60007482	CABLE RACK TK 10-14	6,000	EA	ROX PLATE
60008794	FIBRE PLUG ST-COUPLER AMP	1,000	EA	ROX PLATE
60009578	SCR CRS PH M3x8 FZB	4,000	EA	ROX
60009580	SCREW ISO 7045 M4X10-FZB-H	6,000	EA	ROX PLATE
60009609	SCREW M 6 X 10 - 4.8 FZB Z	4,000	EA	ROX COVER
60009747	SCR CRS FH ST2.9x9.5 FZB	18,000	EA	ROX PLATE
60009793	WASHER ISO 7092 6 - FZB	8,000	EA	ROX PLATE
60009840	LOCK WASHER DIN 6798 A 6 FZB	4,000	EA	ROX PLATE
60009853	WASHER 21100016 6MM	4,000	EA	ROX PLATE
60009871	NUT HEX LOCK M6 FZB	4,000	EA	ROX PLATE
60009945	SPACER IN/OUT Ø10MM 6x30MM	4,000	EA	ROX PLATE
60013678	FIBRE PLATE COVER FSWING FRAME	1,000	EA	ROX PLATE
60013680	FIBRE ANGLE F SWING FRAME	1,000	EA	
60015680	CABLE ROX-TAC-II RS232 2,5M	1,000	EA	ROX
60092988	FIBRE PLATE PAINTED F. CSL/ROX	1,000	EA	ROX PLATE
60096851	TORX SCREW 2486.500 5.5X13MM	2,000	EA	
60096978	PUNCHED RAIL 8612.260	2,000	EA	

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Change Info

Item no.	***Item text:***
60105817	**Moxa-Single Mode, Ethernet Kit w. Man. w. N-Port, WTG**

Active revision for production

Drawing no.: None

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xx/xx	Writhe the change.

LST no.: 21000168 *Material BOM no.: 60105817*

Version	Date	Init./App.	Description of change since last revision
05	24.04.2007	MEKNU/BIVA	Changed with ECO 224070 Replacement of MOXA switches Replacement: 60093640 repl. by 092688 MOXA ETHE SWI EDS-408A-SS-SC-T

Old revisions for service

Drawing no.: None

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xx/xx	Writhe the change.

LST no.: 21000168 *Material BOM no.: 60105817*

Version	Date	Init./App.	Description of change since last revision
04	22.08.2006	INI/FLT	Changed with ECO 216036 Position numbers U10, U11 and U12 added.
03	02.06.2005	ABJ/	60002649_THERMO."CAUTION! Fibre optic cable..." 1 pc. added.
02	02.12.2004	ABJ/	60005006 POWER SUPPLY S82K-05024 110-230/24 added
01	05.08.2004	ABJ/	First version

Part List no Longer Active for Serial Production

Change Info: 22000239

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Document no.: 21000168
Version: 05
Date: 20/12/2007
Init: Inge Nielsen

60105817 MOXA-SM ETHE KIT

Component	Description	Qty per	Stk UM	Position Number
60099723	FIBER ENCL 6 GROUND CABELS	1,000	EA	
60099724	COVER FIBER ENCL 6 GROUND CAB	1,000	EA	
60009946	SPACER IN/OUT Ø10MM 6x40MM	4,000	EA	
60009793	WASHER ISO 7092 6 - FZB	4,000	EA	
60096978	PUNCHED RAIL 8612.260	2,000	EA	
60009609	SCREW M 6 X 10 - 4.8 FZB Z	4,000	EA	
60009793	WASHER ISO 7092 6 - FZB	4,000	EA	
60099727	FIBRE NETWORK SADDLE	8,000	EA	
60099729	FIBRE SUPPORT F NETWORK SADDLE	2,000	EA	
60009580	SCREW ISO 7045 M4X10-FZB-H	2,000	EA	
60099730	FIBRE MICRO WIRE SADDLE	8,000	EA	
60007478	CABLE HOLDER F/3 MTP3H-E6	2,000	EA	
60009579	SCR CRS PH M3x10 FZB	8,000	EA	
60007462	CABLE TIE BLACK 203X4.6	6,000	EA	
60008819	CABLE PATCH DUPLEX 9/125A	2,000	EA	
60008795	FIBRE PLUG SC-COUPLER DUP AMP	3,000	EA	
60013681	BRA F 2 SC/SC DUPLEX COUPLERS	1,000	EA	
60009579	SCR CRS PH M3x10 FZB	3,000	EA	
60009505	SCR SLOT CH M2.5x10 4.8 FZB	4,000	EA	
60014837	ETHE CABLE STRAIGHT 3M	1,000	EA	
60105815	RS232 CABLE PC-PC 9/9 POLE	2,000	EA	
60105940	WIREKIT F ETHERNET COMM F 30T	1,000	EA	
60002649	LABEL	1,000	EA	
60005006	PWR SUP S82K-05024 110-230/24	1,000	EA	U10
60097629	MOXA N-PORT 5410-4 100Mb	1,000	EA	U11
60097631	DIN RAIL BRA MOXA MODUL DK-35A	1,000	EA	U11
092688	MOXA ETHE SWI EDS-408A-SS-SC-T	1,000	EA	U12

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Change Info

Item no.	***Item text:***
60105816	**Moxa-Multi Mode, Ethernet Kit w. Man. w. N-Port, WTG**

Active revision *for production*

Drawing number: None

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xx/xx	Writhe the change.

LST no.: 21000167 *Material BOM no.: 60105816*

Version	Date	Init./App.	Description of change since last revision
04	28.08.2007	MEKNU/BIVA	Changed with ECO 224070 & 227978 Replacement: 1 x 60093639 repl by 1 x 092687 MOXA ETHE SWI EDS-408A-MM-SC-T Added: 1 x 60002649 THERM. “CAUTION! Fibre optic.

Old revisions *for service*

Drawing number: None

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xx/xx	Writhe the change.

LST no.: 21000167 *Material BOM no.: 60105816*

Version	Date	Init./App.	Description of change since last revision
03	22.08.2006	INI/FLT	Changed with ECO 216036 Position numbers U10, U11 and U12 added.
02	02.12.2004	ABJ/	60005006 POWER SUPPLY S82K-05024 110-230/24 added
01	05.08.2004	ABJ/	First version

Part List no Longer Active for Serial Production

Change Info: 22000239

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Document no.: 21000167
Version: 04
Date: 20/12/2007
Init: Inge Nielsen

60105816 MOXA-MM ETHE KIT

Component	Description	Qty per	Stk UM	Position Number
60007462	CABLE TIE BLACK 203X4.6	6,000	EA	
60007478	CABLE HOLDER F/3 MTP3H-E6	2,000	EA	
60008795	FIBRE PLUG SC-COUPLER DUP AMP	3,000	EA	
60008820	CABLE PATCH DUPLEX 50/125A	2,000	EA	
60009505	SCR SLOT CH M2.5x10 4.8 FZB	4,000	EA	
60009579	SCR CRS PH M3x10 FZB	11,000	EA	
60009580	SCREW ISO 7045 M4X10-FZB-H	2,000	EA	
60009609	SCREW M 6 X 10 - 4.8 FZB Z	4,000	EA	
60009793	WASHER ISO 7092 6 - FZB	8,000	EA	
60009946	SPACER IN/OUT Ø10MM 6x40MM	4,000	EA	
60013681	BRA F 2 SC/SC DUPLEX COUPLERS	1,000	EA	
60014837	ETHE CABLE STRAIGHT 3M	1,000	EA	
60096978	PUNCHED RAIL 8612.260	2,000	EA	
60099723	FIBER ENCL 6 GROUND CABELS	1,000	EA	
60099724	COVER FIBER ENCL 6 GROUND CAB	1,000	EA	
60099727	FIBRE NETWORK SADDLE	8,000	EA	
60099729	FIBRE SUPPORT F NETWORK SADDLE	2,000	EA	
60099730	FIBRE MICRO WIRE SADDLE	8,000	EA	
60105815	RS232 CABLE PC-PC 9/9 POLE	2,000	EA	
60105940	WIREKIT F ETHERNET COMM F 30T	1,000	EA	
60002649	LABEL	1,000	EA	
60005006	PWR SUP S82K-05024 110-230/24	1,000	EA	U10
60097629	MOXA N-PORT 5410-4 100Mb	1,000	EA	U11
60097631	DIN RAIL BRA MOXA MODUL DK-35A	1,000	EA	U11
092687	MOXA ETHE SWI EDS-408A-MM-SC-T	1,000	EA	U12

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Change Info

Item no.	***Item text:***
60097570	**PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz**

Active revision *for production*

Drawing number: 6011999

Version	Date	Init./App.	Description of change since last revision
04	25.10.2006	INI/FLT	Changed with ECO 217924_Implementation of CMS & warning label Page 030: Updated with 118934 label, electrical warning universal. Page 039: New page with following text added. " Use copper conductors only for external wires and cables. Use 60°C cables for currents less than 100Amps and 75°C cables for higher currents".

LST number: 21000078 *Material BOM number: 60096112*

Version	Date	Init./App.	Description of change since last revision
08	26.10.2006	INI/FLT	Changed with ECO 217571 & 217924 Implementation of warning label. 60002621 replaced with 118934_label, electrical warning universal.

LST number: 21000080 *Material BOM number: 60016660*

Version	Date	Init./App.	Description of change since last revision
04	23.08.2006	INI/FLT	Changed with ECO 214516_ Added 60009530 x 8 pc. SCR CRS PH M5x12 4.8 FZB Added 60009617 x 2 pc. SCR M4x16 4.8 FZB Added 60007458 x 4 pc. CABLE TIE 140x2.5mm WH.

Old revisions *for service*

Drawing number: 6011999

Version	Date	Init./App.	Description of change since last revision
03	15.11.2004	INI/CHO	All pages updated with Vestas logo. Page 100, 101 and 102: Cable color changed from BU to BU/GY.
02	11.06.2004	INI/CHO	Page 001: Updated. Page 202: E01 settings changed.
01	15.09.2003	CHO/CHO	First version

LST number: 21000078 *Material BOM number: 60096112*

Version	Date	Init./App.	Description of change since last revision
07	08.09.2004	MILJE/MILJE	60007354 Cable conduit 25x40mm, 60007355 cable conduit 25x60mm and 60007182 DIN rail removed. New BOM 60104152 cable conduit, DIN rail & earth rail added.
06	17.06.2004	CHO/CHO	60096979 quantity changed to 2 pc. 60007437-M01 changed to 1,720, S01 changed to 0,850. E01 changed to 2,080
05	01.06.2004	FLT/FLT	60102317 added, all the CU bus bars are divided into kit.
04	02.02.2004	CHO/	60007354 and 60007355 length changed.
03	21.01.2004	ATM/ATM	6 pc. isolators 15850201 8x40 added. Base unit changed.
02	06.11.2003	CHO/CHO	+AT3 label and separation plate added.
01	30.09.2003	CHO/CHO	First version

LST number: 21000080 *Material BOM number: 60016660*

Version	Date	Init./App.	Description of change since last revision
03	22.03.2004	FLT/FLT	Material 60012530 update of wiring for PFC module
02	02.10.2003	CHO/CHO	Capacitor contact added.
01	13.05.2002	CHO/CHO	First version in SAP no. system.

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PAGE	CONTENT	DATE	REVISION
001	Table of Contents	061025	04
030	Panel Front	061025	–
031	Panel Outline	041115	–
032	Terminal Rows	041115	–
039	Cable Connections	061025	–
040	Terminal X01	041115	–
100	Main Curcuits Step 1	041115	–
101	Main Curcuits Step 2	041115	–
102	Main Curcuits Step 3 – 5	041115	–
200	Relays	041115	–
201	Relays	041115	–
202	Ventilation / Heating	041115	–

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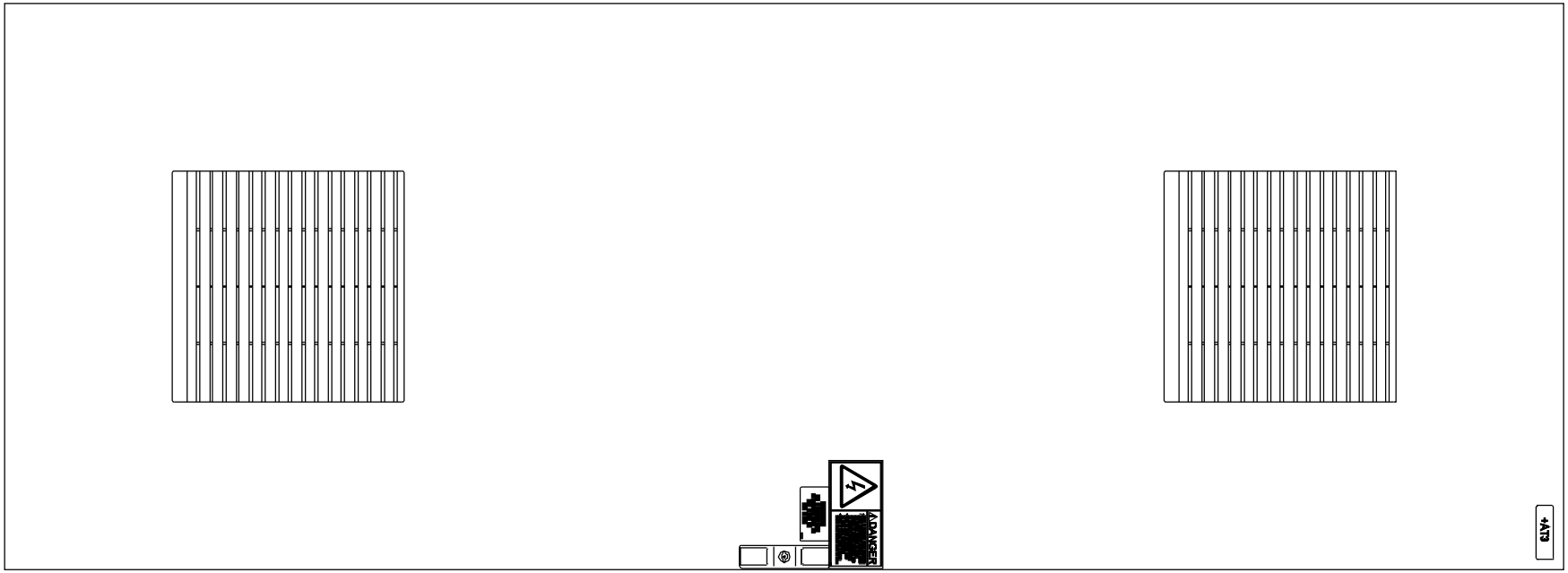
	Date	Initials		
Designed	030915	CHO	Function	Table of Contents
Approved	061025	FLT	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz
Reviced	061025	INI	Comments	
			Customer	Vestas Wind Systems A/S
			Rev. 04	Drawing no. 6011999
			Cont. sheet 030	Sheet 001

26-10-06 10:53



Panel Dimension: 800 x 2200 x 600 mm (WxHxD)
Panel Weight: 285kg.

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel Front	
		Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz	
		Approved	061025	FLT	Comments		Customer: Vestas Wind Systems A/S
		Reviced	061025	INI	Rev. -	Drawing no. 6011999	Cont. sheet 031 / Sheet 030

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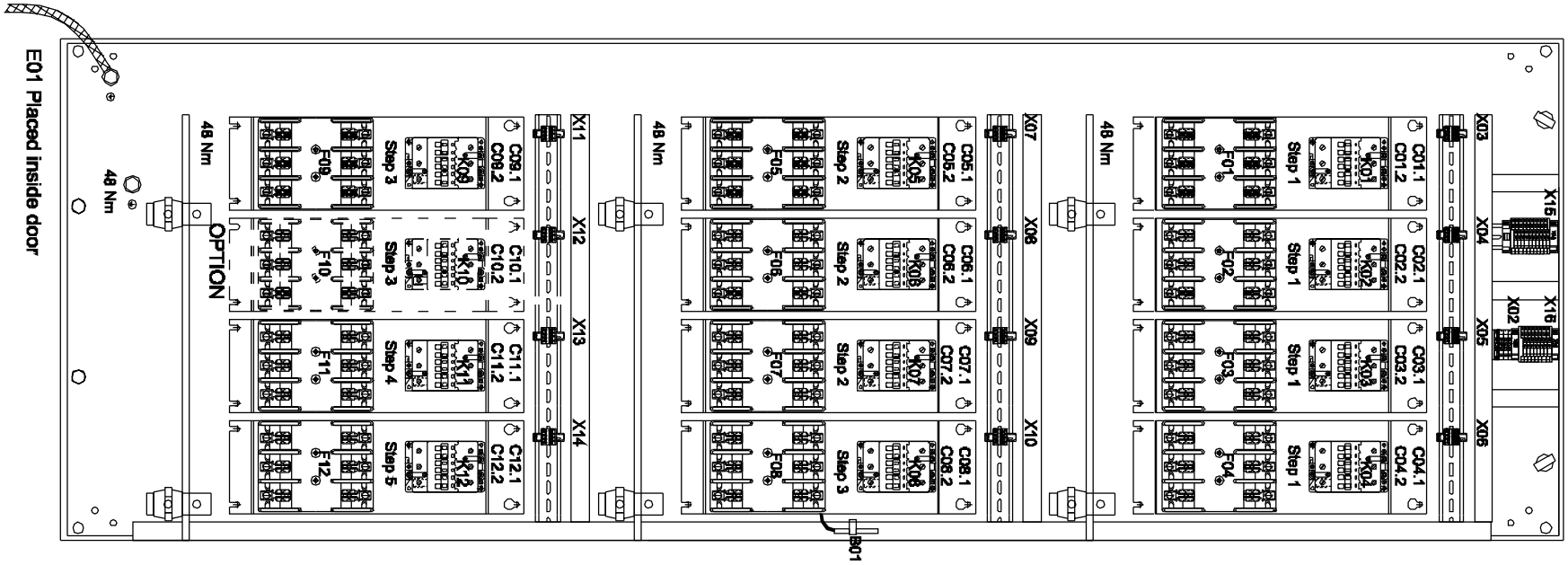
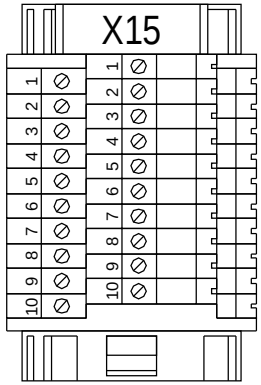
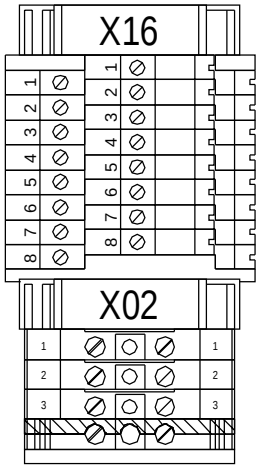
10:53



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel Outline
		Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz
		Approved			Comments	Customer: Vestas Wind Systems A/S
		Reviced	041115	INI	Rev. -	Drawing no. 6011999
					Cont. sheet 032	Sheet 031

26-10-06
10:53





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	Date	Initials	Function	Terminal Rows		
Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	041115	INI	Rev. -	Drawing no. 6011999	Cont. sheet 039	Sheet 032

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10:53

USE COPPER CONDUCTORS ONLY FOR EXTERNAL WIRES AND CABLES.

USE 60°C CABLES FOR CURRENTS LESS THAN 100Amps AND 75°C CABLES FOR HIGHER CURRENTS.

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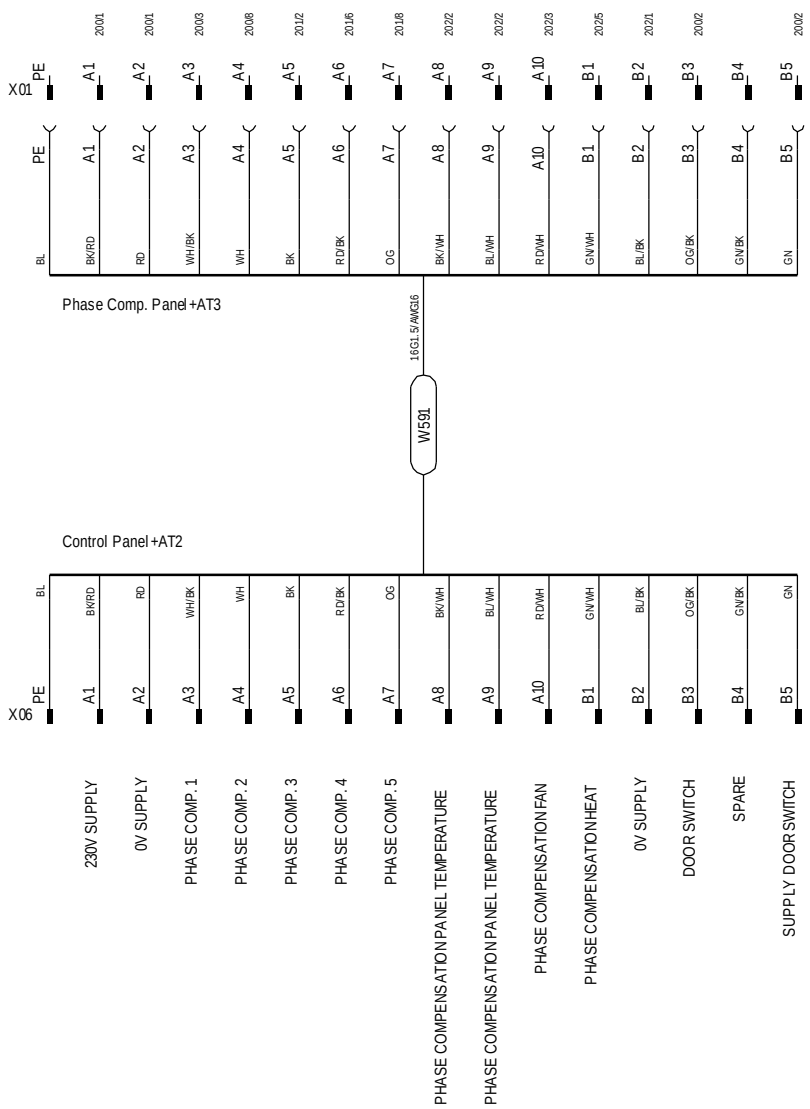
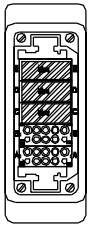
	Date	Initials	Function	Cable Connections		
Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz		
Approved	061025	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061025	INI	Rev. -	Drawing no. 6011999	Cont. sheet 040	Sheet 039

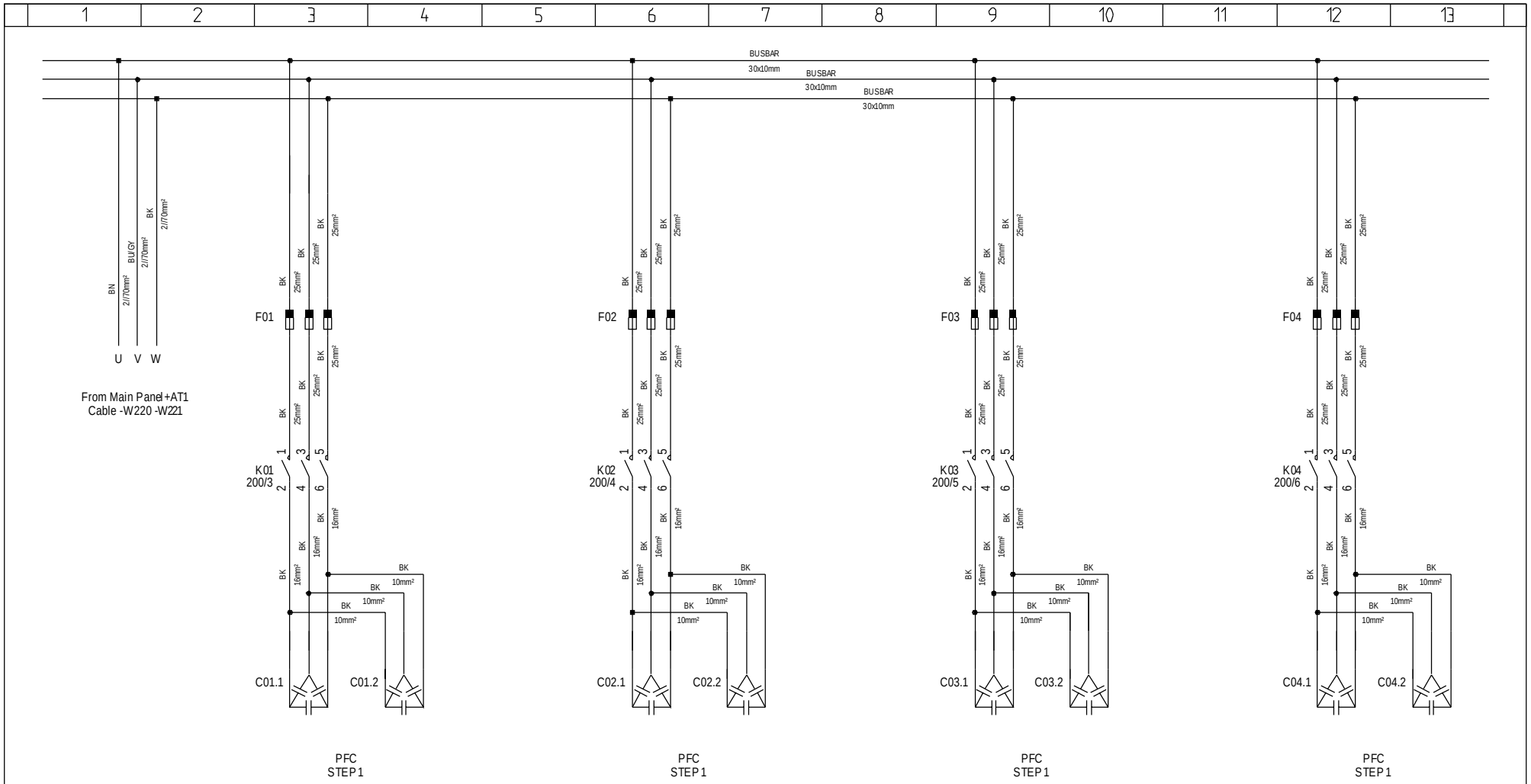
26-10-06 10:53





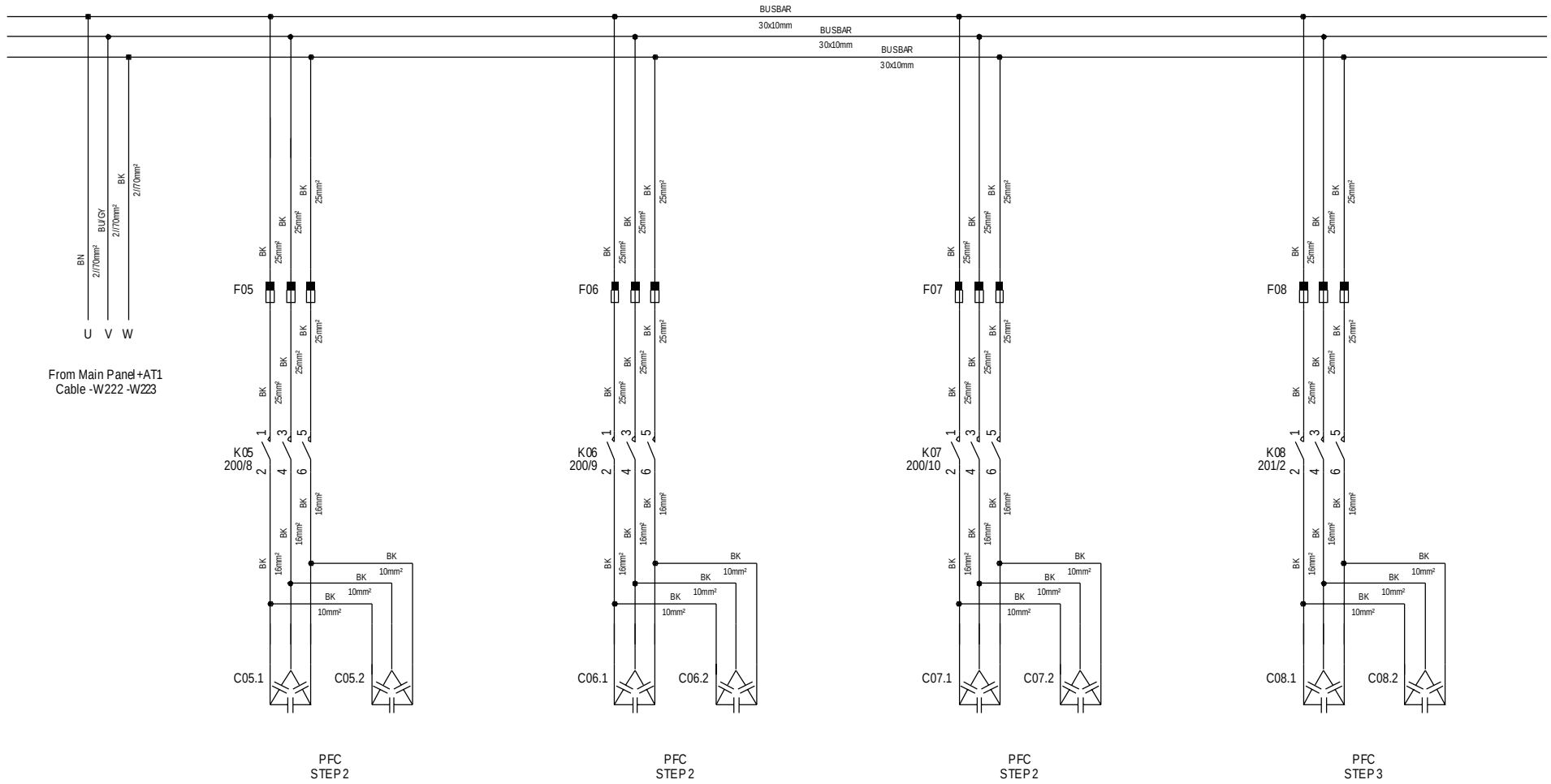
Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: Terminal X01	
		Designed	030915	CHO	Project title: PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz	
		Approved			Comments	Customer: Vestas Wind Systems A/S
		Reviced	041115	INI	Rev. - / Drawing no. 6011999	Cont. sheet 100 / Sheet 040

26-10-06
10:53



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Main Curcuits Step 1	
		Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz	
		Approved			Comments		Customer: Vestas Wind Systems A/S
		Reviced	041115	INI	Rev. -	Drawing no. 6011999	Cont. sheet 101 / Sheet 100

26-10-06
10:53



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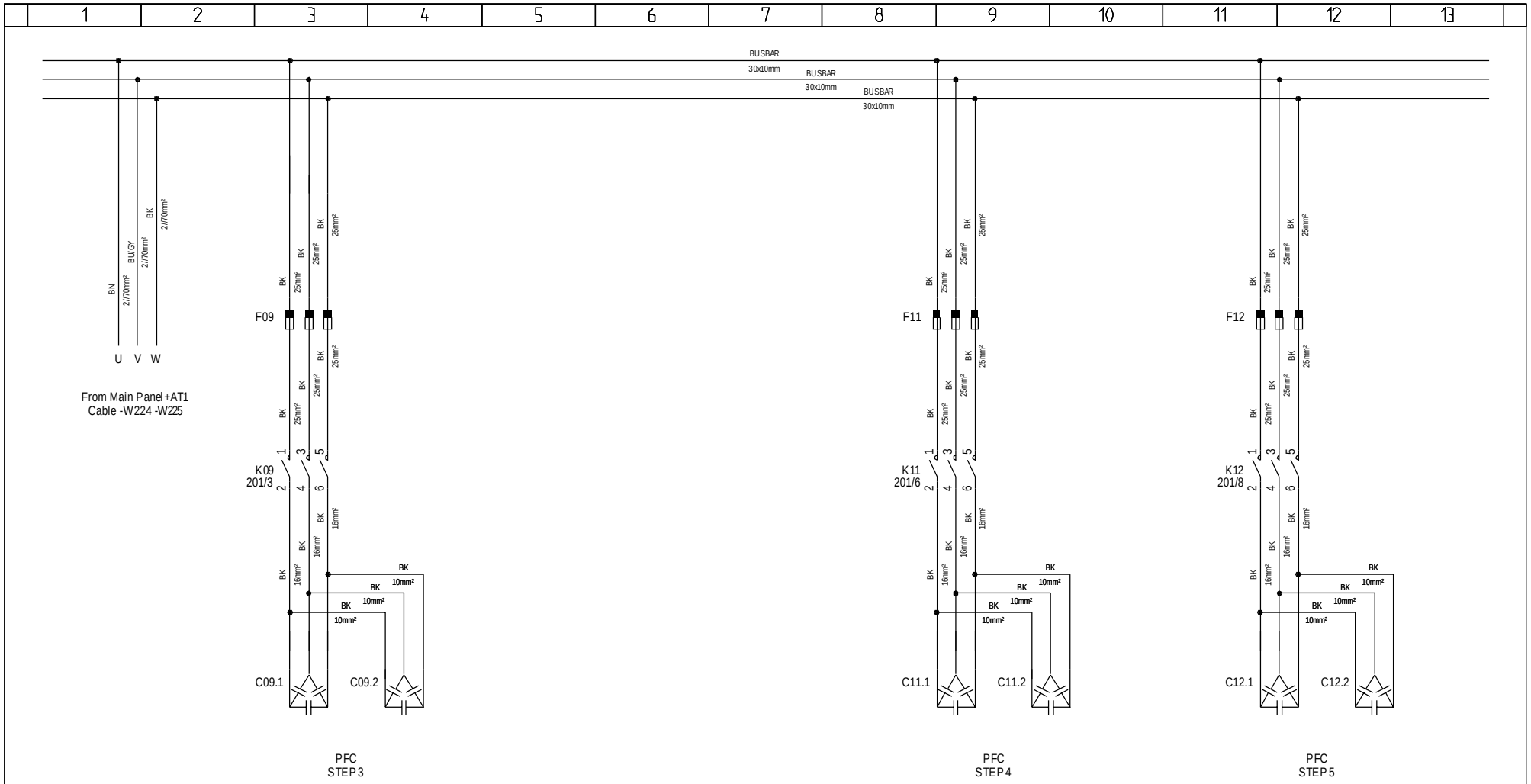
	Date	Initials	Function	Main Curcuits Step 2		
Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	041115	INI	Rev. -	Drawing no. 6011999	Cont. sheet 102	Sheet 101



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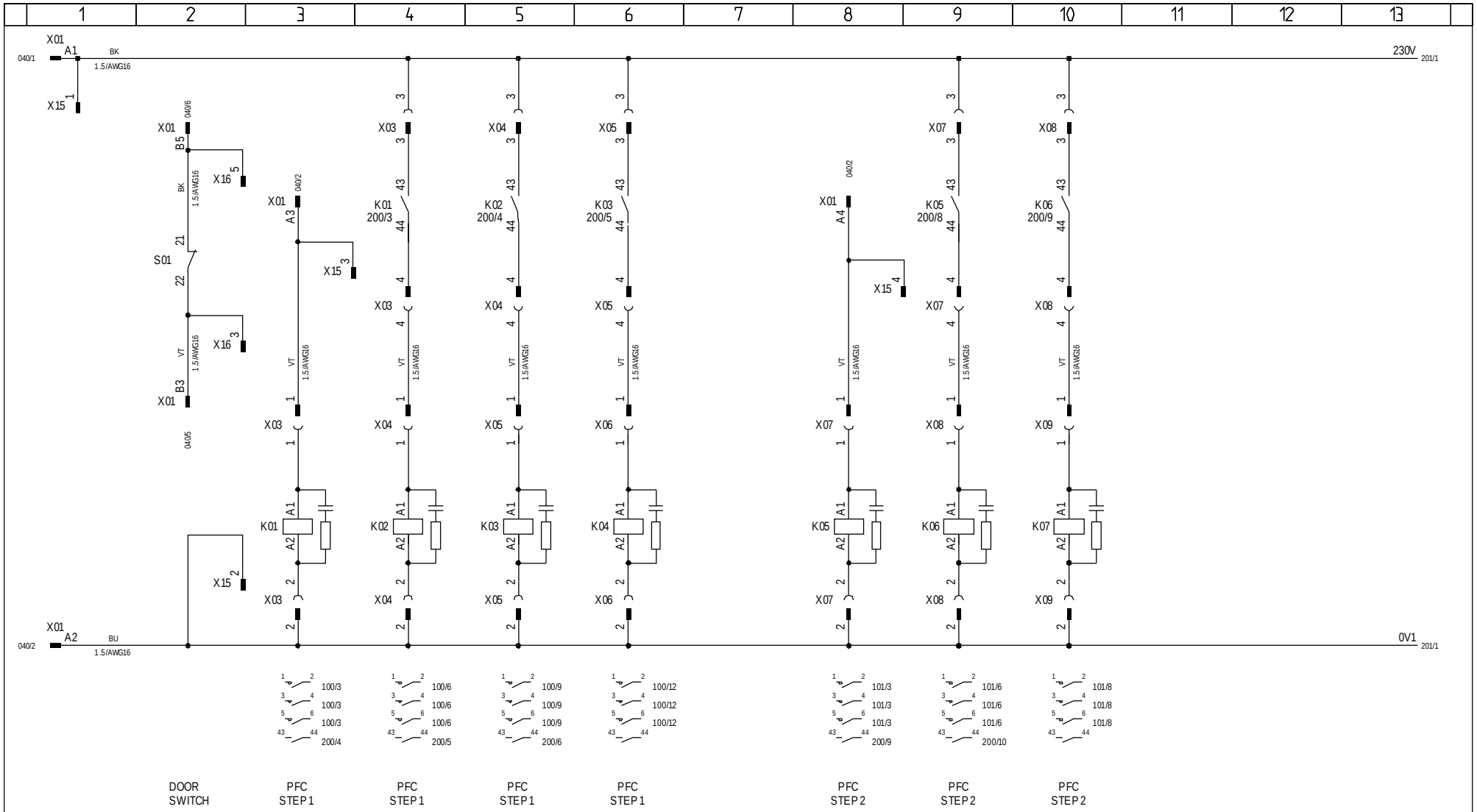
	Date	Initials	Function	Main Curcuits Step 3 - 5		
Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	041115	INI	Rev. -	Drawing no. 6011999	Cont. sheet 200	Sheet 102



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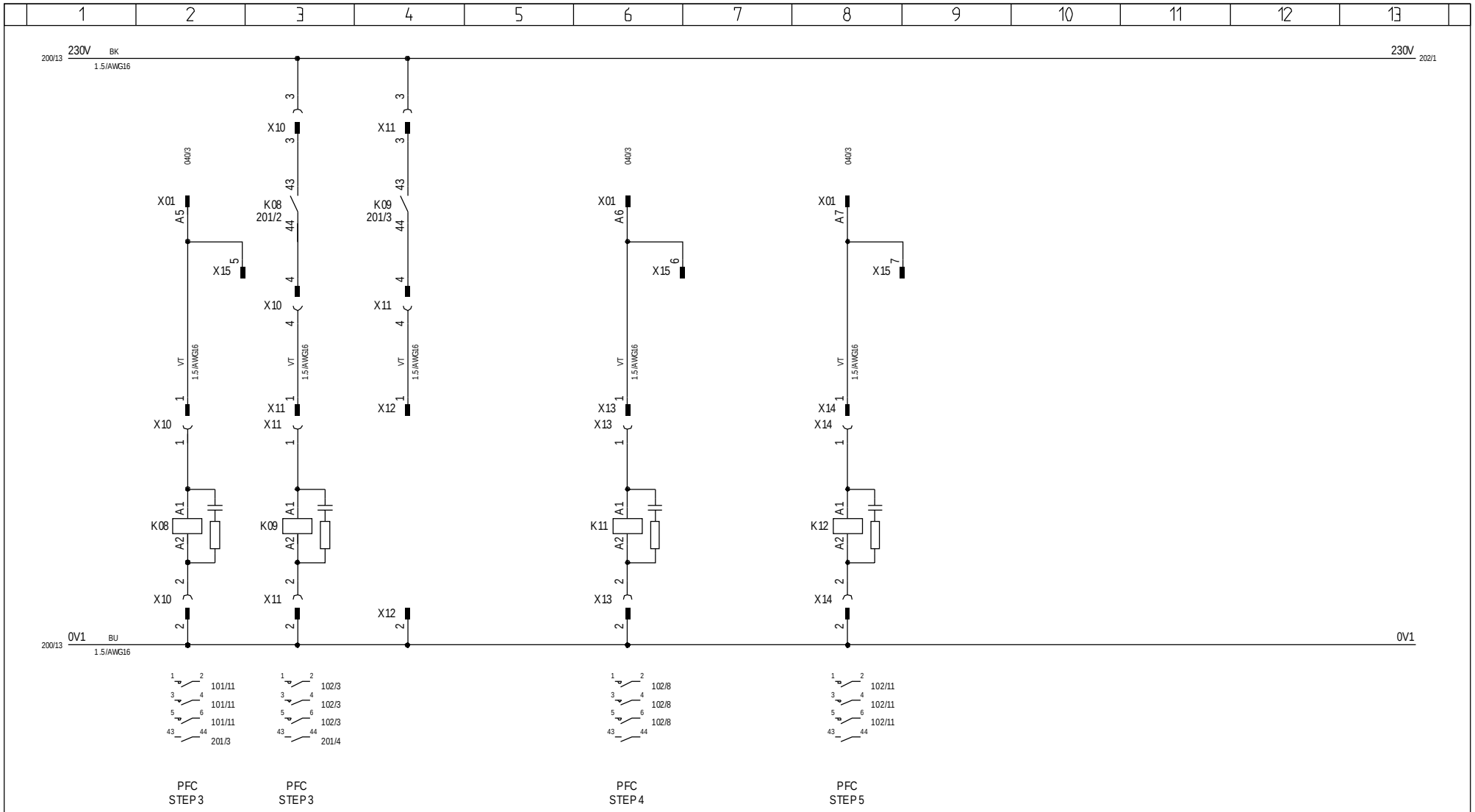
	Date	Initials	Function	Relays		
Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	041115	INI	Rev. -	Drawing no. 6011999	Cont. sheet 201	Sheet 200



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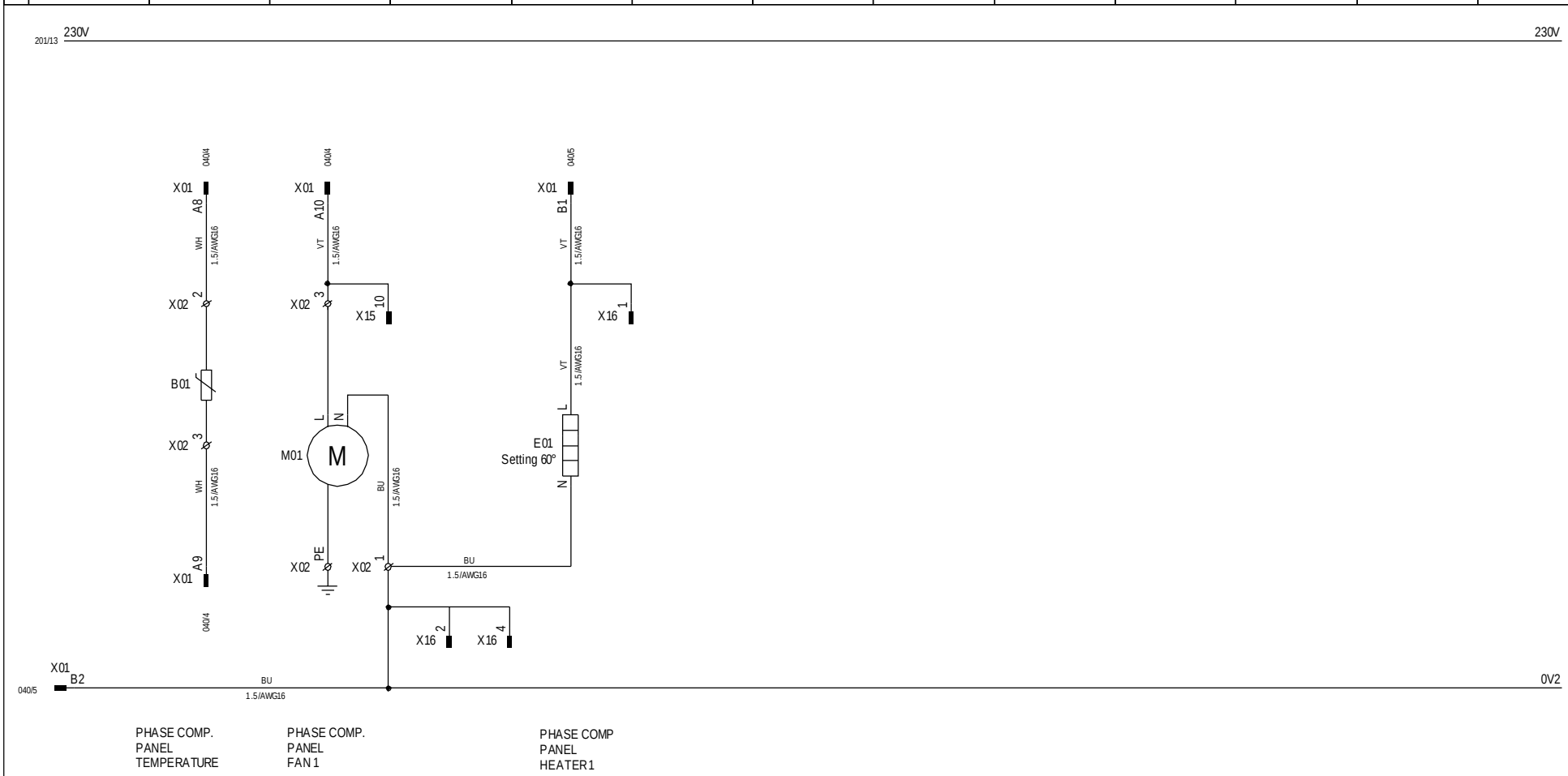
	Date	Initials	Function	Relays		
Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	041115	INI	Rev. -	Drawing no. 6011999	Cont. sheet 202	Sheet 201



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	Date	Initials	Function	Ventilation / Heating		
Designed	030915	CHO	Project title	PFC Panel +AT3 No Load, V82-1.65MW 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	041115	INI	Rev. -	Drawing no. 6011999	Cont. sheet -	Sheet 202

Document no.: 21000078
Version: 08
Date: 26/10/2006
Init: Inge Nielsen

60096112 PFC PANEL +AT3 No Load 50Hz NM72/82 IECI/III

Component	Description	Qty per	Stk UM	Position Number
D1001294	instructions for production of	0,000	EA	
D1001296	instructions for production +A	0,000	EA	
D6011999	PFC PANEL +AT3 NM72/82 IECI/II	0,000	EA	
60096260	CABINET TS8 1 DOOR W/W	1,000	EA	
60010593	MOUNT PLATE TS8 W/W	1,000	EA	
60096979	ATTACHMENT MOUNT PLATE TS	2,000	EA	
60010316	BASE PL CLAMP TS8 WA4547276	1,000	EA	
60013925	PFC MODULE 50kvar 690V	11,000	EA	
60007330	BUSBAR ISOLATOR 8x40MM	18,000	EA	
60013713	FTGS F BUSBAR HOLDER	6,000	EA	
60014668	FILTER EXH 232x232x17.5MM	1,000	EA	
60097170	SEAL.FRAME IP54 F.5-700M3 FAN	2,000	EA	
60104152	CABLE CONDUIT DIN RAIL PFC PAN	1,000	EA	
60001870	CONN UMSTBVK F/M 4 LEADED	12,000	EA	
60006036	CONN TERM UKK3-MSTB-5.08-2 F 1	18,000	EA	
60006038	SPACER PLATE DG-UKK3-MSTB-5.08	2,000	EA	
60006040	SEPARATION PLATE LEFT	2,000	EA	
60006039	SPACER PLATE DP-UKK3-MSTB-5.08	2,000	EA	
60006042	SIGN F TERMINAL ZB-5LGS 1-10	2,000	EA	
60007829	WIRE TIN 16 150MM Ø8 IEC/UL	1,000	EA	
60007481	CABLE RACK TK 5-7	1,000	EA	
60097576	LABEL TYPE SIGN +AT3 NL 50 HZ	1,000	EA	
60002667	LABEL CAUTION Risk of el shock	1,000	EA	
60002576	LABEL "+AT3"	1,000	EA	
60002430	LABEL "48 NM"	4,000	EA	
60006571	HOUSING 32P BULKHEAD	1,000	EA	
60007635	CABLE GLAND M63 BRASS BMBC-07	6,000	EA	
60007644	LOCKNUT M63 BRASS BMBL-08	6,000	EA	
60007633	CABLE GLAND M40 BRASS BMBC-05	1,000	EA	
60007642	LOCKNUT M40 BRASS BMBL-06	1,000	EA	
60002503	LABEL "-X01"	1,000	EA	
60005983	TERMINAL STD M4/6	3,000	EA	
60005984	TERMINAL GROUND M4/6P	1,000	EA	
60005998	END SEC FEM6 GY 118368.16	1,000	EA	
60091902	END STOP WAGO 249-116 6MM TS35	4,000	EA	
60091915	END STOP LABEL HOLDER WAGO 249	3,000	EA	
60006621	LABEL TERMINAL 1-10 5.08 MM	1,000	EA	
60007194	DIN RAIL PP0153H-Z 15X35MM	0,700	M	
60002320	STICKER GEN USE VCS	1,000	EA	
60097503	WIRING PFC NL IEC I/III	1,000	EA	
60098494	LABEL TYPE SIGN +AT3 NL	1,000	EA	
60102317	CU BUSBAR KIT 4 PFC PAN	1,000	EA	
60009771	STUD BOLT M12x30 8.8	4,000	EA	
D21000078	60096112 BOM, PFC PANEL +AT3 N	0,000	EA	
D22000182	PFC PANEL +AT3 NO LOAD, NM72IE	0,000	EA	
118934	LABEL ELECTRICAL WARNING UNIV.	1,000	EA	
60009279	PT100 180-4-2M Ø6x60mm	1,000	EA	B01
60007437	BRAIDED SLEEVE 10-17mm BK	2,080	M	E01
60014729	HEATER FAN CR0 27 230V 350W UL	1,000	EA	E01
60007437	BRAIDED SLEEVE 10-17mm BK	1,720	M	M01
60014655	FAN 500M3/H 230V	1,000	EA	M01
60014138	MARK CARD RC610 NOS 1-10	0,200	EA	SH=10
60014148	MARK CARD RC610 GROUND	0,200	EA	SH=10
60006812	STICKER "U" 14MM	0,100	EA	SH=32
60006813	STICKER "V" 14MM	0,100	EA	SH=32
60006814	STICKER "W" 14MM	0,100	EA	SH=32
60006819	STICKER "EARTH" 14MM	0,060	EA	SH=54
60007437	BRAIDED SLEEVE 10-17mm BK	0,850	M	S01
60010456	DOOR-OPERATED SWITCH	1,000	EA	S01
60007420	HOSE WIRE 20mm BK	0,280	M	X01

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Document no.: 21000034
Version: 04
Date: 22/11/2007
Init: Inge Nielsen

60016654 PFC MODULE 45.4kvar 600V

Component	Description	Qty per	Stk UM	Position Number
D21000034	60016654 PART LIST PFC MODULE	0,000	EA	
D22000027	60091115 CHANGE INFO, PFC PANE	0,000	EA	
D22000028	CHANGE INFO, PFC PANEL +AT3 FU	0,000	EA	
D22000084	CHANGE INFO PHASE COMP. PANEL	0,000	EA	
D22000335	CI-PFC PANEL +AT3, N.L. 1650 6	0,000	EA	
D22000336	CI-PFC PANEL +AT3 FL ADD ON 16	0,000	EA	
D6000931	Phase comp. unit 45,4kVAr 600V	0,000	EA	
D6013792	PFC PANEL +AT3 NL, V82-1.65MW	0,000	EA	
D6013974	PFC PANEL +AT3 F.L. ADD ON V82	0,000	EA	
094243	FUSE. HOLD. INCL. 100AJ. FUSE	1,000	EA	
118981	LABEL USE 600V TYPE J 100A FU	1,000	PK	
151099	M5x12 4,8 CROSS PH MASH SCREW	8,000	EA	
60000931	CAP 25kVAr 690V 50Hz VISHAY	2,000	EA	
60002595	LABEL	1,000	EA	
60007458	CABLE TIE 140x2.5mm WH	4,000	EA	
60007471	CABLE TIE 5x150mm with PLUG	2,000	EA	
60009617	SCREW HFC 9046 M 4 x 16 - 4.8	4,000	EA	
60009620	SCR M5x16 FZB	2,000	EA	
60009974	TOP CLAMP FOR CAP 25kVAr	2,000	EA	
60012529	WIRING PFCION MODULE UL	1,000	EA	
60012530	WIRING BRID PFC MODULE UL	3,000	EA	
60013647	BRA F CAP 2x25kvar	1,000	EA	
60099292	CONT K350K10200 W/RCUNIT 240V	1,000	EA	

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Change Info

Item no.	***Item text:***
60097568	**PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz**

Active revision *for production*

Drawing no.: 6012008

Version	Date	Init./App.	Description of change since last revision
05	26.10.2006	INI/FLT	Changed with ECO 217924_Implementation of CMS & warning label Page 030: Updated with 118934 label, electrical warning universal. Page 039: New page with following text added. " Use copper conductors only for external wires and cables. Use 60°C cables for currents less than 100Amps and 75°C cables for higher currents".

LST no.: 21000079 *Material BOM no.: 60097541*

Version	Date	Init./App.	Description of change since last revision
09	17.04.2007	INI/FLT	Changed with ECO 223397_Updated for production in Spain. Please se Change Description in ECO 223397

LST number: 21000080 *Material BOM number: 60016660*

Version	Date	Init./App.	Description of change since last revision
04	23.08.2006	INI/FLT	Changed with ECO 214516_ Added 60009530 x 8 pc. SCR CRS PH M5x12 4.8 FZB Added 60009617 x 2 pc. SCR M4x16 4.8 FZB Added 60007458 x 4 pc. CABLE TIE 140x2.5mm WH.

Old revisions *for service*

Drawing no.: 6012008

Version	Date	Init./App.	Description of change since last revision
04	02.06.2005	INI/FLT	All pages updated with Vestas logo
03	15.06.2004	INI/CHO	Page 001: Updated Page 201: E02 settings changed.
02	16.03.2004	CHO/CHO	Page 001: Updated Page 101: Components no. and PFC step no. corrected. References updated. Page 200: References updated.
01	21.09.2003	CHO/CHO	First version

LST no.: 21000079 *Material BOM no.: 60097541*

Version	Date	Init./App.	Description of change since last revision
08	26.10.2006	INI/FLT	Changed with ECO 217571 & 217924 Implementation of warning label. 60002621 replaced with 118934_label, electrical warning universal.
07	09.08.2004	MILJE/MILJE	60007354 Cable conduit 25x40mm, 60007355 cable conduit 25x60mm and 60007182 DIN rail removed. New BOM 60104152 cable conduit, DIN rail & earth rail added.
06	17.06.2004	CHO/CHO	60096979 quantity changed to 2 pc. 600007437-M02 changed to 1,250, -S02 changed to 0,850, -E02 changed to 1,450.
05	01.06.2004	FLT/FLT	60102322 added, all the CU bus bars are divided into kit.
04	02.02.2004	ATM/CHO	Use of Decimal no. for Sheet in the BOM. Small changes in Panels
03	17.12.2003	ATM/ATM	Base unit changed.
02	12.11.2003	CHO/CHO	Type sign label, +AT3 label and CU-busbar added.
01	01.10.2003	CHO/CHO	First version

LST no.: 21000080 *Material BOM no.: 60016660*

Version	Date	Init./App.	Description of change since last revision
03	22.03.2004	FLT/CHO	Material 60012530, update of wiring for PFC module
02	02.10.2003	CHO/CHO	Capacitor contact changed.
01	16.05.2002	CHO/CHO	First version in SAP no. system.

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PAGE	CONTENT	DATE	REVISION
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030	Panel Front	061026	–
031	Panel Outline	050602	–
032	Terminal Rows	050602	–
039	Cable Connections	061026	–
040	Terminal X15 – X16	050602	–
100	Main Circuits step 1–2	050602	–
101	Main Circuits step 3–5	050602	–
102	Main Circuits step 3–4	050602	–
200	Control Circuits	050602	–
201	Ventilation / Heating	050602	–

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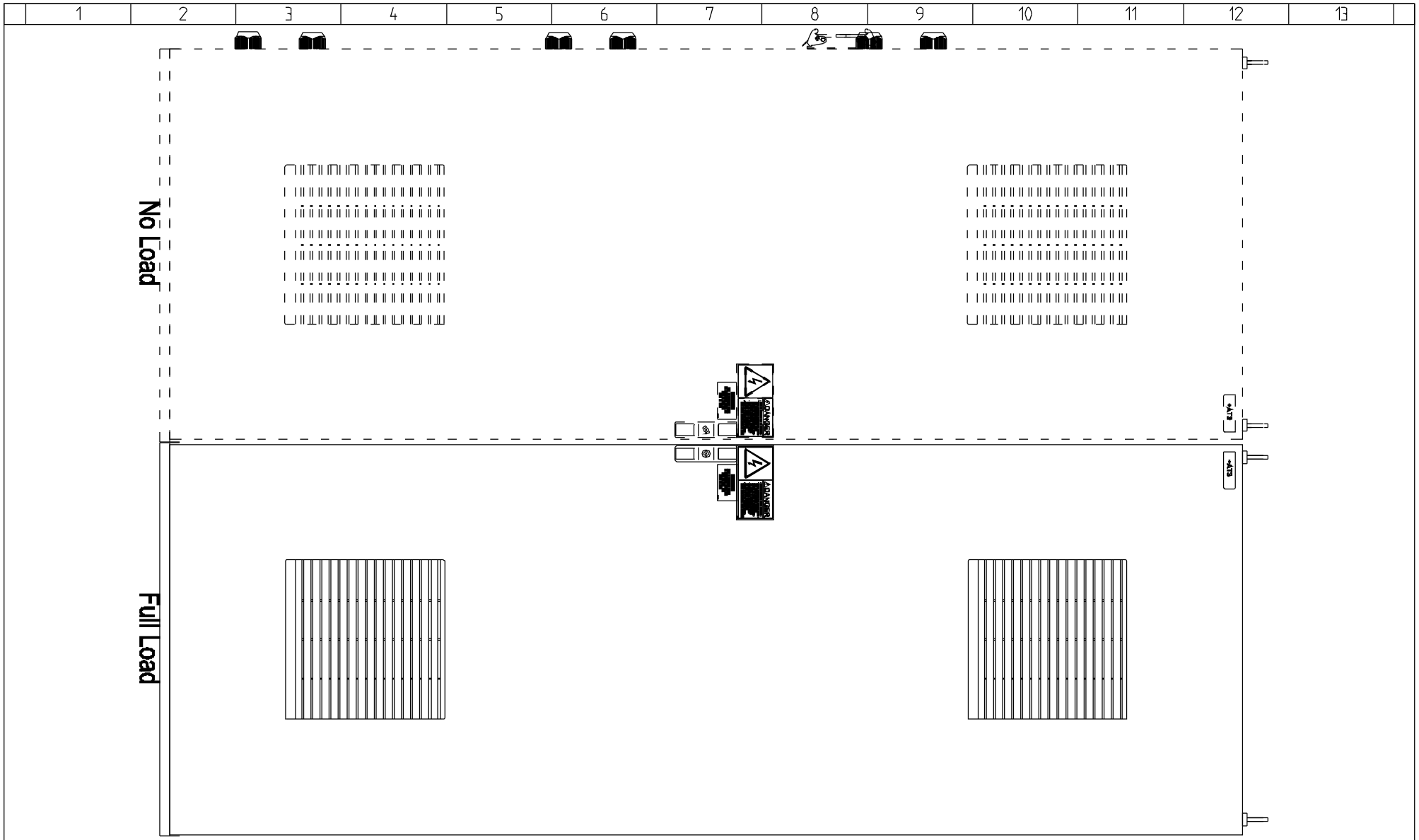
	Date	Initials		
Designed	030921	CHO	Function	Table of Contents
Approved	061026	FLT	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz
Reviced	061026	INI	Comments	
			Customer	Vestas Wind Systems A/S
			Rev. 05	Drawing no. 6012008
			Cont. sheet 030	Sheet 001

26-10-06 13:21



Panel Dimension: 1600 x 2200 x 600 mm(WxHxD)
Panel Weight: 513kg.

26-10-06
13:21

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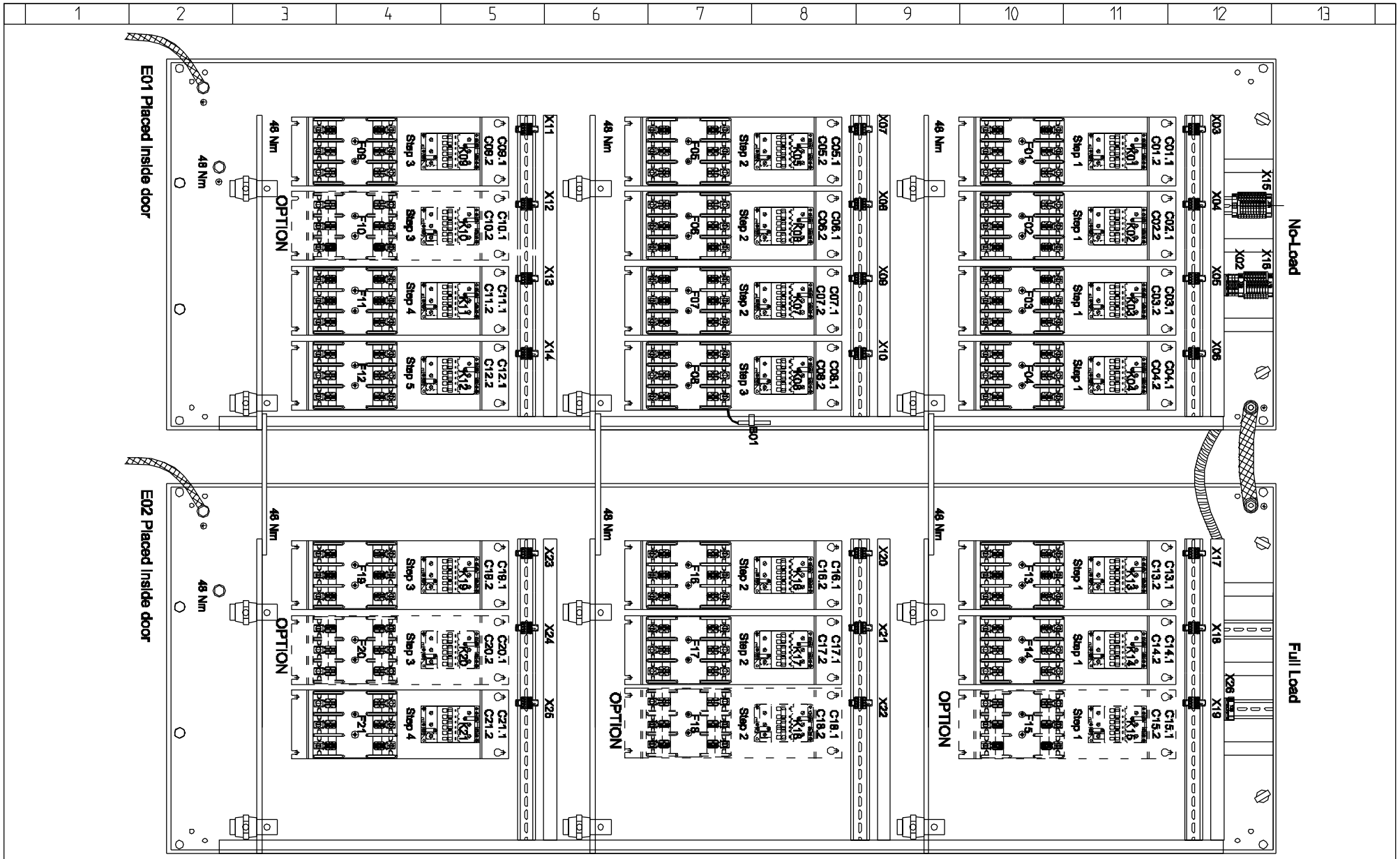
	Date	Initials	Function	Panel Front		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved	061026	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061026	INI	Rev. -	Drawing no. 6012008	Cont. sheet 031	Sheet 030



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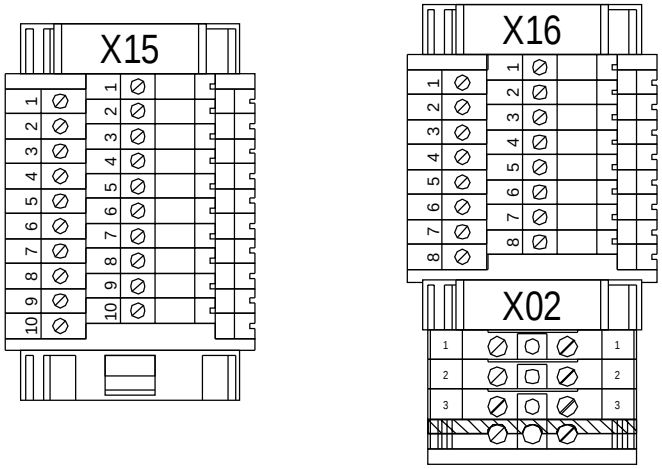
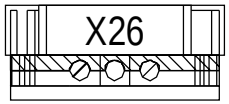
	Date	Initials	Function	Panel Outline		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. -	Drawing no. 6012008	Cont. sheet 032	Sheet 031



Terminal Rows X15, X16 and X02 are placed in No Load Panel



Terminal Row X26 is placed in Full Load Panel

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	Date	Initials	Function	Terminal Rows		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. -	Drawing no. 6012008	Cont. sheet 039	Sheet 032

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USE COPPER CONDUCTORS ONLY FOR EXTERNAL WIRES AND CABLES.

USE 60°C CABLES FOR CURRENTS LESS THAN 100Amps AND 75°C CABLES FOR HIGHER CURRENTS.

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	Date	Initials	Function	Cable Connections		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved	061026	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061026	INI	Rev. -	Drawing no. 6012008	Cont. sheet 040	Sheet 039

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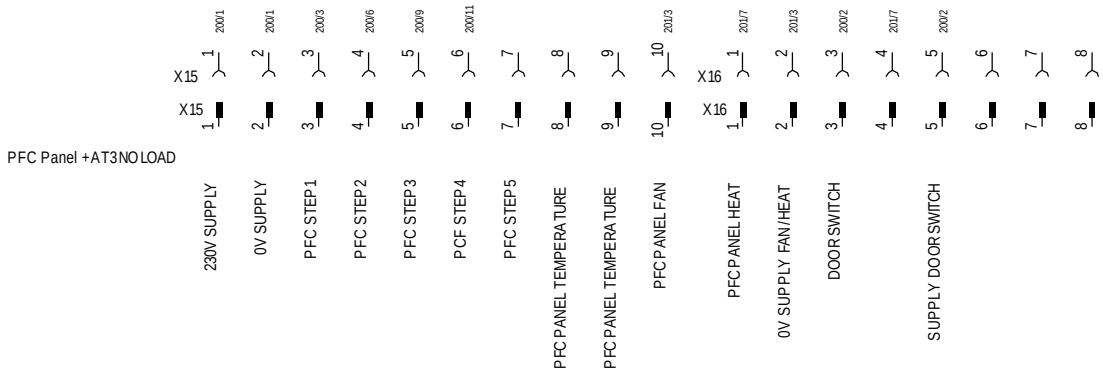

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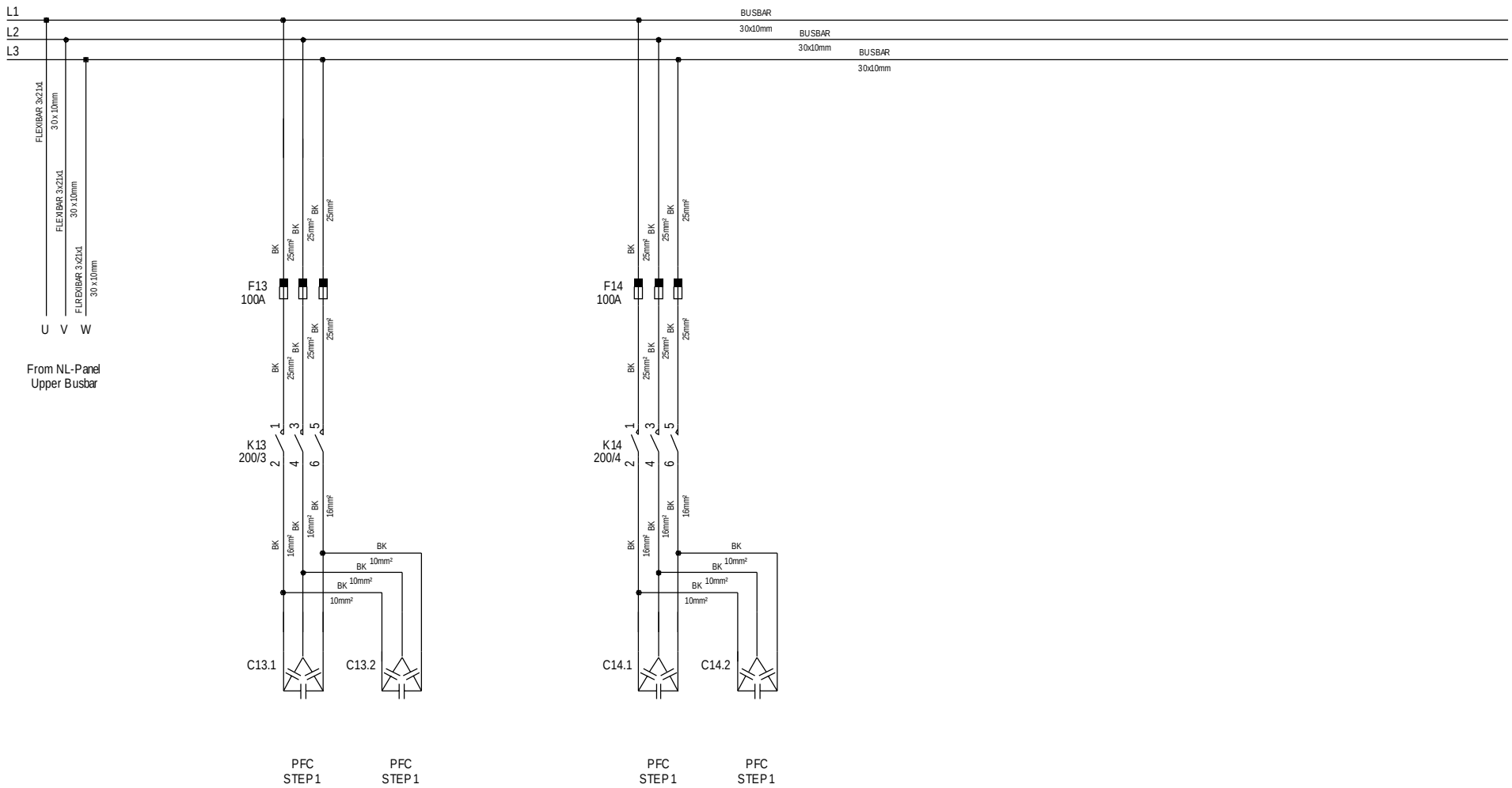
	Date	Initials	Function	Terminal X15 - X16		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. -	Drawing no. 6012008	Cont. sheet 100	Sheet 040



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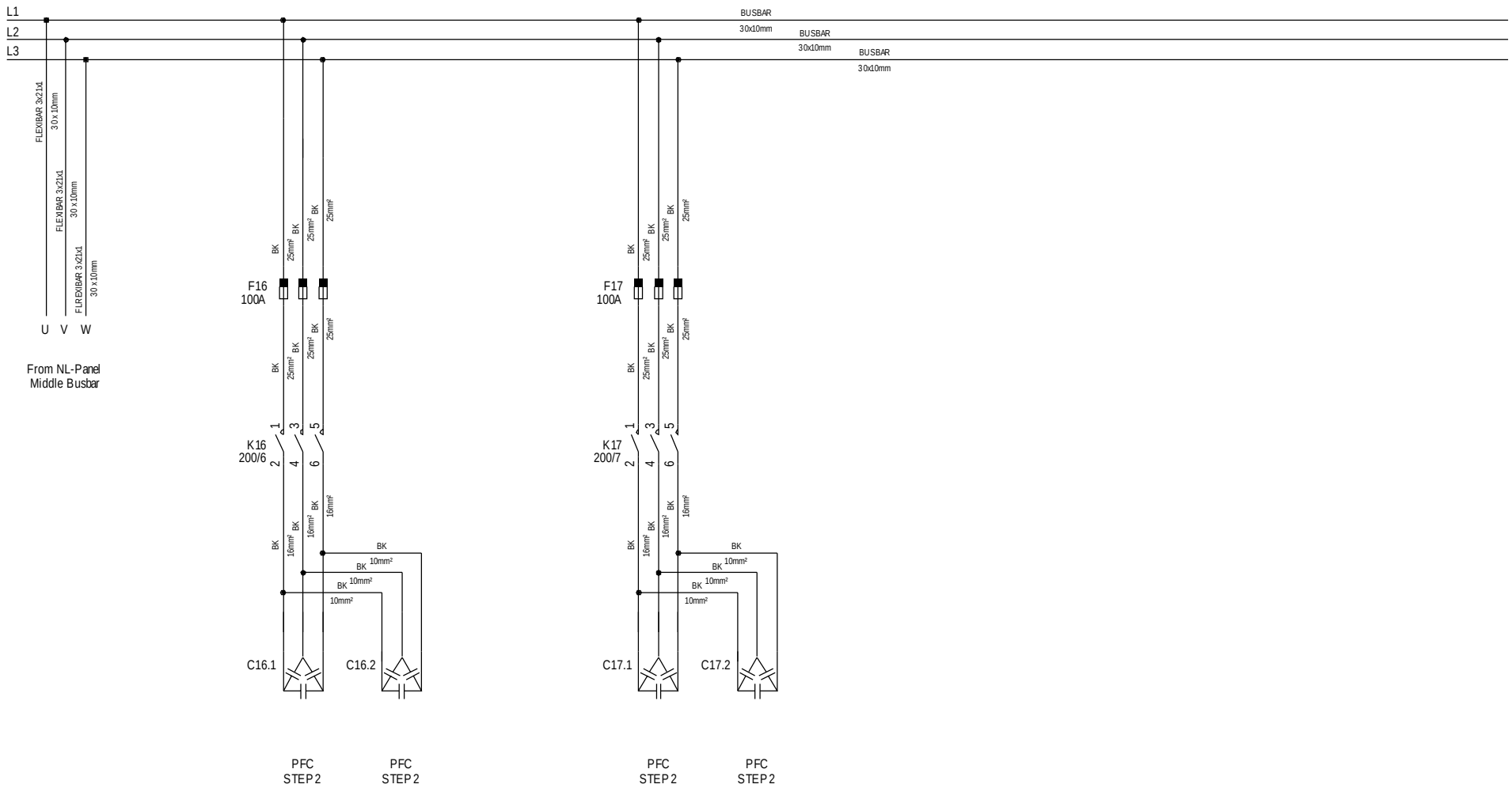
	Date	Initials	Function	Main Circuits step 1-2		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. -	Drawing no. 6012008	Cont. sheet 101	Sheet 100



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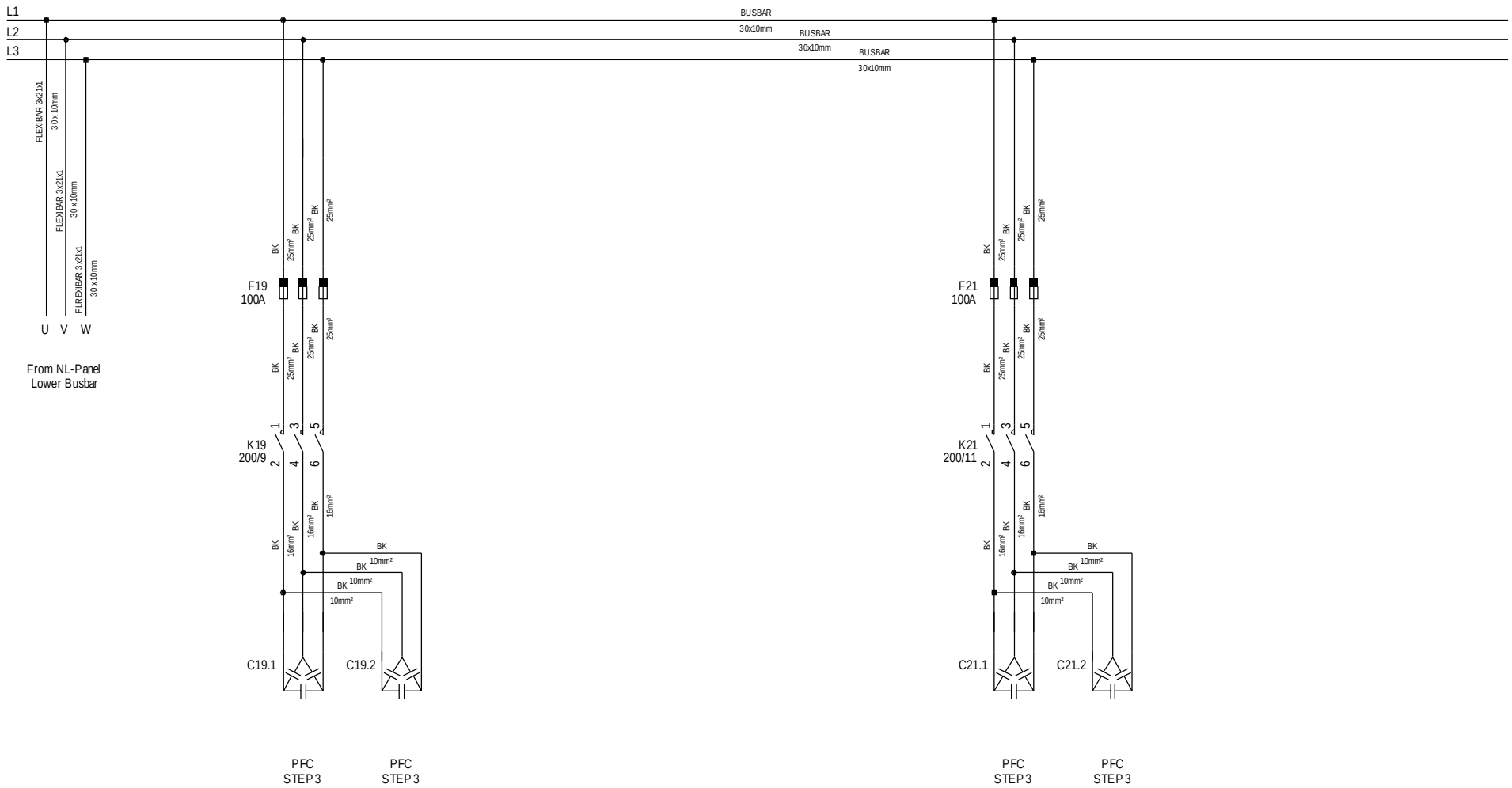
	Date	Initials	Function	Main Circuits step 3-5		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. -	Drawing no. 6012008	Cont. sheet 102	Sheet 101



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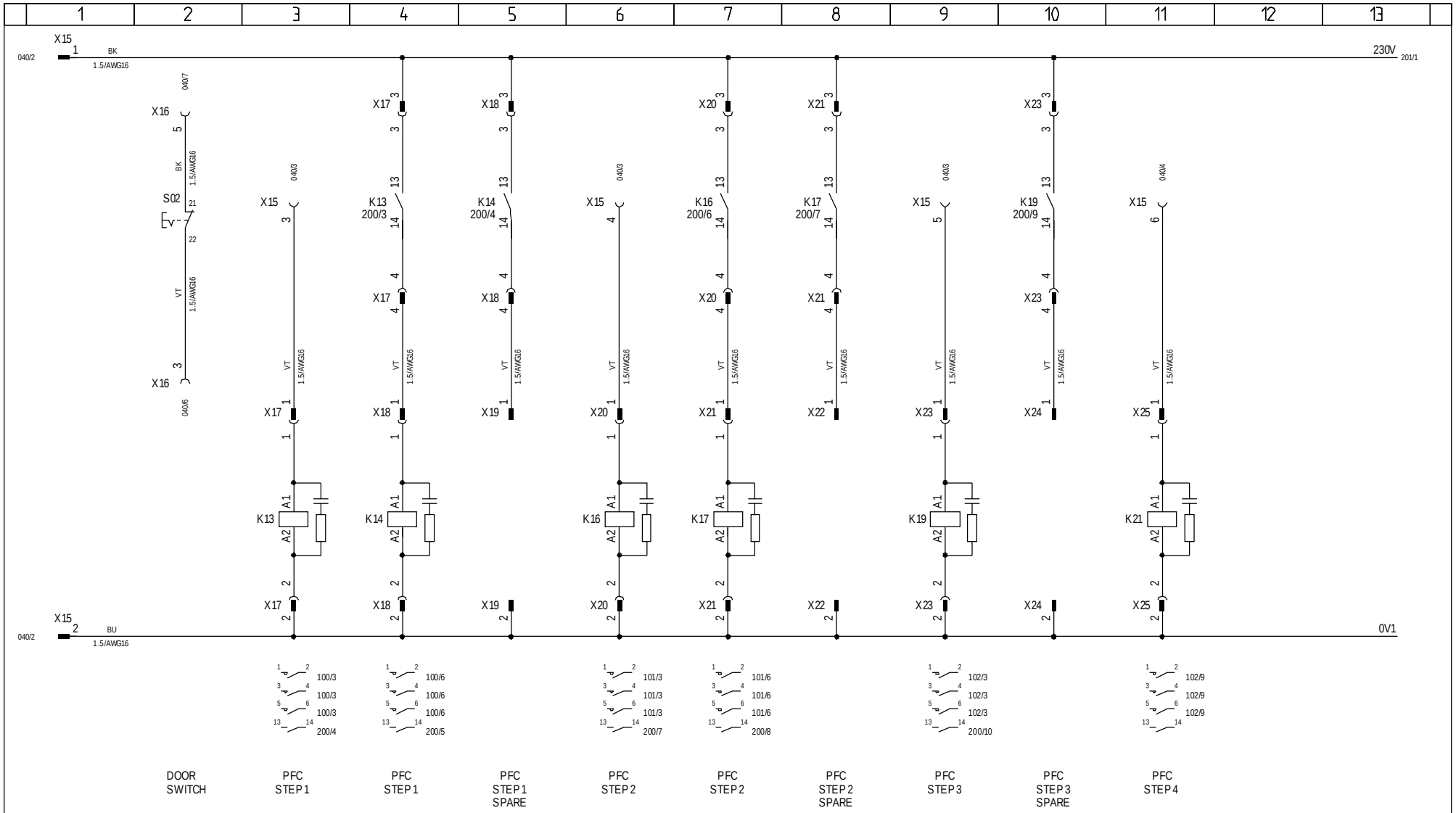
	Date	Initials	Function	Main Circuits step 3-4		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. -	Drawing no. 6012008	Cont. sheet 200	Sheet 102



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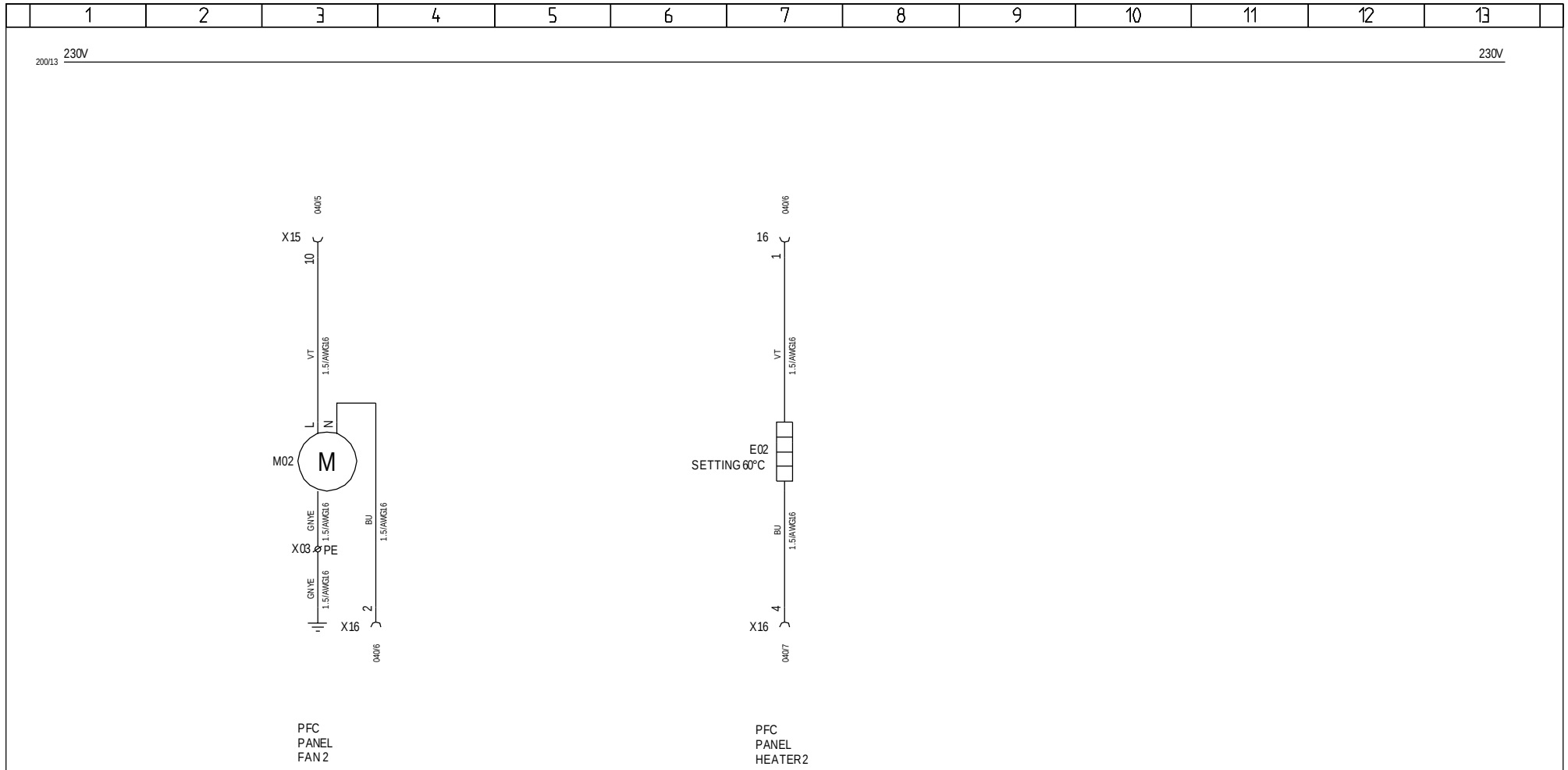
	Date	Initials	Function	Control Circuits		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. -	Drawing no. 6012008	Cont. sheet 201	Sheet 200



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	Date	Initials	Function	Ventilation / Heating		
Designed	030921	CHO	Project title	PFC Panel +AT3 Full Load, V82-1.65MW & NM72-82/1650 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. -	Drawing no. 6012008	Cont. sheet -	Sheet 201

Document no.: 21000079
Version: 09
Date: 17/04/2007
Init: Inge Nielsen

60097541 PFC PAN FL ADD ON NM72/82 50Hz

Component	Description	Qty per	Stk UM	Position Number
D1001296	instructions for production +A	0,000	EA	
D1001702	Mounting Instruction f. Compen	0,000	EA	
D6012008	PFC PANEL +AT3 NM72/82 IECl/II	0,000	EA	
60096430	CABINET TS8 1 DOOR W/W	1,000	EA	
60096979	ATTACHMENT MOUNT PLATE TS	2,000	EA	
60010593	MOUNT PLATE TS8 W/W	1,000	EA	
60096993	ANGULAR BAYING BRA TS 8800.430	4,000	EA	
60096995	QUICK FIT BAYING CLAMP TS	6,000	EA	
60096912	BAYING BRA 4582.500	2,000	EA	
60010570	COVER BAYING TS 8800.460 600mm	1,000	EA	
60010316	BASE PL CLAMP TS8 WA4547276	1,000	EA	
60013925	PFC MODULE 50kvar 690V	6,000	EA	
60013713	FTGS F BUSBAR HOLDER	6,000	EA	
60014668	FILTER EXH 232x232x17.5MM	1,000	EA	
60001870	CONN UMSTBVK F/M 4 LEADED	9,000	EA	
60007829	WIRE TIN 16 150MM Ø8 IEC/UL	1,000	EA	
60002667	LABEL CAUTION Risk of el shock	1,000	EA	
60002576	LABEL "+AT3"	1,000	EA	
60002430	LABEL "48 NM"	3,000	EA	
60007838	WIRE TIN 50 200MM Ø10 IEC/UL	1,000	EA	
60006621	LABEL TERMINAL 1-10 5.08 MM	1,000	EA	
60005984	TERMINAL GROUND M4/6P	1,000	EA	
60005998	END SEC FEM6 GY 118368.16	1,000	EA	
60091902	END STOP WAGO 249-116 6MM TS35	1,000	EA	
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	
60014148	MARK CARD RC610 GROUND	0,020	EA	
60097504	WIRING PFC FL IEC I/III	1,000	EA	
60097577	LABEL TYPE SIGN +AT3 FL 50 HZ	1,000	EA	
60098493	LABEL TYPE SIGN +AT3 FL	1,000	EA	
60102322	CU BUSBAR KIT 8 PFC FULL LOAD	1,000	EA	
60104152	CABLE CONDUIT DIN RAIL PFC PAN	1,000	EA	
60009771	STUD BOLT M12x30 8.8	4,000	EA	
D21000079	60097541 BOM, PFC PANEL +AT3 F	0,000	EA	
D22000183	PFC PANEL +AT3 FULL LOAD, V82-	0,000	EA	
118934	LABEL ELECTRICAL WARNING UNIV.	1,000	EA	
60007458	CABLE TIE 140x2.5mm WH	33,000	EA	
60007459	CABLE TIE WHITE 200x2.5mm	3,000	EA	
60007465	CABLE TIE 368x4.8mm BK	3,000	EA	
60007468	CABLE TIE BLACK 550X8,0MM	2,000	EA	
60009620	SCR M5x16 FZB	48,000	EA	
60009639	SCR HEX SET M8x20 8.8 FZB	43,000	EA	
60009670	SCR HEX SET M10x16 8.8 FZB	14,000	EA	
60009676	SCREW ISO 4017 M10 x 30 - 8.8	57,000	EA	
60009803	WASHER SPR 8 FZG	37,000	EA	
60009809	WASHER SPR 10 FZG	116,000	EA	
60009841	WASHER LOCK 8 FZB	1,000	EA	
60009842	WASHER LOCK 10 FZB	16,000	EA	
60009873	NUT HEX M8 8 FZB	1,000	EA	
60009879	NUT HEX M10 8	59,000	EA	
60009895	NUT LIFTING EYE M10 FZB	2,000	EA	
60010699	CONDENSATION PROT DRY BAG 500G	2,000	EA	
60014138	MARK CARD RC610 NOS 1-10	0,400	EA	
60096851	TORX SCREW 2486.500 5.5X13MM	12,000	EA	
60096978	PUNCHED RAIL 8612.260	1,000	EA	
60006819	STICKER "EARTH" 14MM	0,140	EA	
60007182	DIN RAIL PP0735H 7x35MM	2,520	M	
60007330	BUSBAR ISOLATOR 8x40MM	18,000	EA	
60007437	BRAIDED SLEEVE 10-17mm BK	1,450	M	E02
60014729	HEATER FAN CR0 27 230V 350W UL	1,000	EA	E02
60009751	SCREW HFC 208 M 4.8 X 9.5 -FZB	54,000	EA	E02
60007437	BRAIDED SLEEVE 10-17mm BK	1,250	M	M02
60014655	FAN 500M3/H 230V	1,000	EA	M02
60009673	SCR HEX SET M10x25 8.8 FZB	2,000	EA	M02
60007437	BRAIDED SLEEVE 10-17mm BK	0,850	M	S02
60010456	DOOR-OPERATED SWITCH	1,000	EA	S02
60007472	CABLE TIE HOLDER MB3A-NN3P 20	5,000	EA	S02
60007420	WIRE HOSE BLACK 20mm	0,280	M	X15-X16

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Document no.: 21000034
Version: 04
Date: 22/11/2007
Init: Inge Nielsen

60016654 PFC MODULE 45.4kvar 600V

Component	Description	Qty per	Stk UM	Position Number
D21000034	60016654 PART LIST PFC MODULE	0,000	EA	
D22000027	60091115 CHANGE INFO, PFC PANE	0,000	EA	
D22000028	CHANGE INFO, PFC PANEL +AT3 FU	0,000	EA	
D22000084	CHANGE INFO PHASE COMP. PANEL	0,000	EA	
D22000335	CI-PFC PANEL +AT3, N.L. 1650 6	0,000	EA	
D22000336	CI-PFC PANEL +AT3 FL ADD ON 16	0,000	EA	
D6000931	Phase comp. unit 45,4kVAr 600V	0,000	EA	
D6013792	PFC PANEL +AT3 NL, V82-1.65MW	0,000	EA	
D6013974	PFC PANEL +AT3 F.L. ADD ON V82	0,000	EA	
094243	FUSE. HOLD. INCL. 100AJ. FUSE	1,000	EA	
118981	LABEL USE 600V TYPE J 100A FU	1,000	PK	
151099	M5x12 4,8 CROSS PH MASH SCREW	8,000	EA	
60000931	CAP 25kVAr 690V 50Hz VISHAY	2,000	EA	
60002595	LABEL	1,000	EA	
60007458	CABLE TIE 140x2.5mm WH	4,000	EA	
60007471	CABLE TIE 5x150mm with PLUG	2,000	EA	
60009617	SCREW HFC 9046 M 4 x 16 - 4.8	4,000	EA	
60009620	SCR M5x16 FZB	2,000	EA	
60009974	TOP CLAMP FOR CAP 25kVAr	2,000	EA	
60012529	WIRING PFCION MODULE UL	1,000	EA	
60012530	WIRING BRID PFC MODULE UL	3,000	EA	
60013647	BRA F CAP 2x25kvar	1,000	EA	
60099292	CONT K350K10200 W/RCUNIT 240V	1,000	EA	

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E-mail: vestas@vestas.com • Web: www.vestas.com

Change Info

Item no.	***Item text:***
60108814	**PFC Panel +AT3, 1000kVAr NM72/1650 & V82-1.65MW 50Hz**

Active revision *for production*

Drawing no.: 6015882

Version	Date	Init./App.	Description of change since last revision
01	26.10.2006	INI/FLT	Changed with 217924_Implementation of warning label. Page 030: Updated with 118934 label, electrical warning universal.

LST no.: 21000196 *Material BOM no.: 60108815*

Version	Date	Init./App.	Description of change since last revision
02	06.07.2005	INI/SLB	Upgrade to 1000 kVAr and Filter Surveillance Kit in +AT3 360111495_Upgrade Kit Label 60007630_M20 Cable Gland and 60007639_M20 Locknut added.

Old revisions *for service*

Drawing no.: 6015882

Version	Date	Init./App.	Description of change since last revision
00	11.01.2005	SLB/SLB	First version

LST no.: 21000196 *Material BOM no.: 60108815*

Version	Date	Init./App.	Description of change since last revision
01	11.02.2005	MILJE+INI/SLB	First version

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PAGE	CONTENT	DATE	REVISION
001	Table of Contents	061026	01
030	Panel Front	061026	–
031	Panel Outline	050111	–
032	Terminal Rows	050111	–
040	Terminal X15 – X16	050111	–
100	Main Circuits step 1	050111	–
101	Main Circuits step 2	050111	–
102	Main Circuits step 3 – 4	050111	–
200	Control Circuits	050111	–
201	Ventilation / Heating	050111	

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	Date	Initials
Designed	050111	SLB
Approved	061026	FLT
Reviced	061026	INI

Function: Table of Contents

Project title: PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW

Comments:

Customer: Vestas Wind Systems A/S

Rev. 01 | Drawing no. 6015882 | Cont. sheet 030 | Sheet 001

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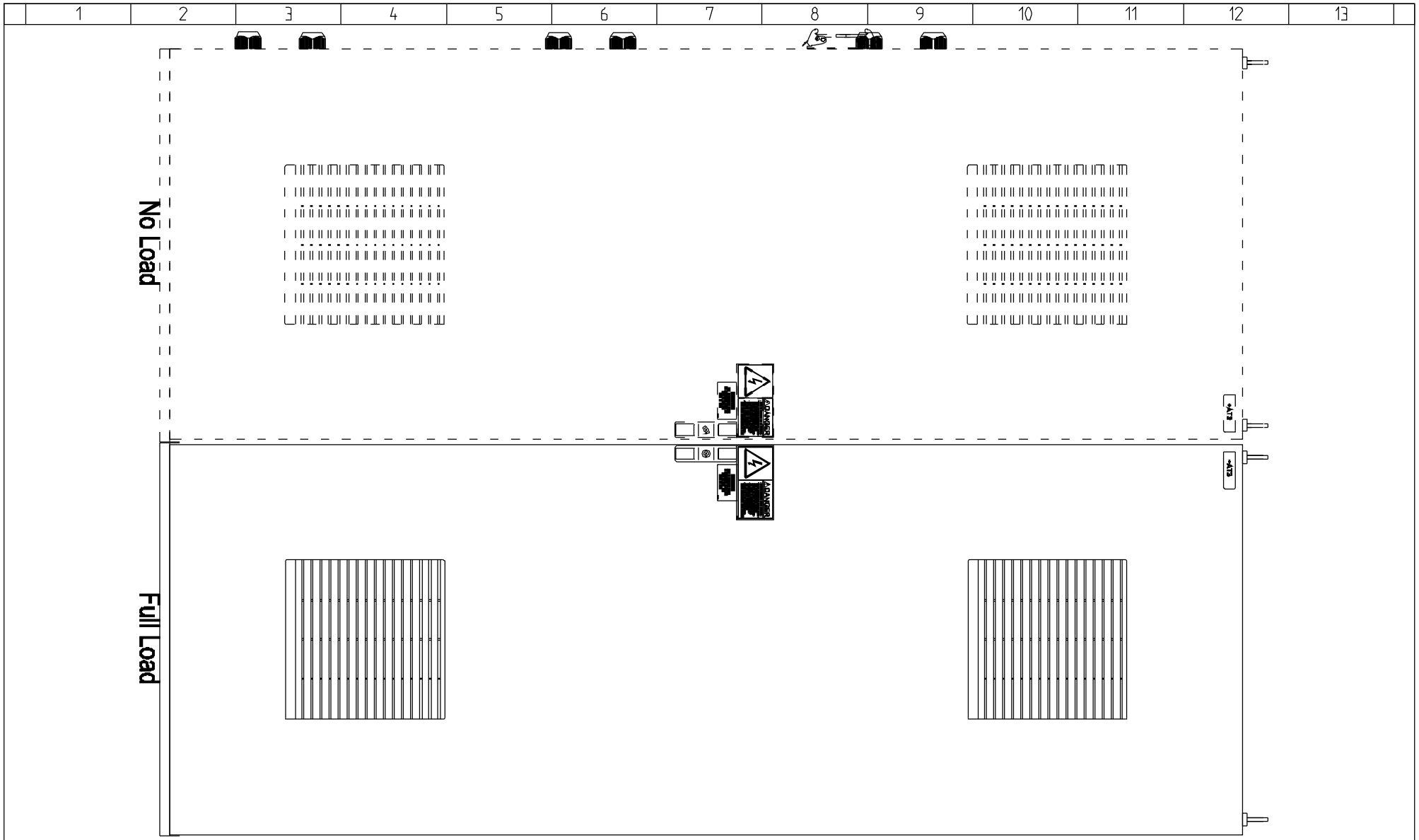

Panel Dimension: 1600 x 2200 x 600 mm(WxHxD)
Panel Weight: 517kg.

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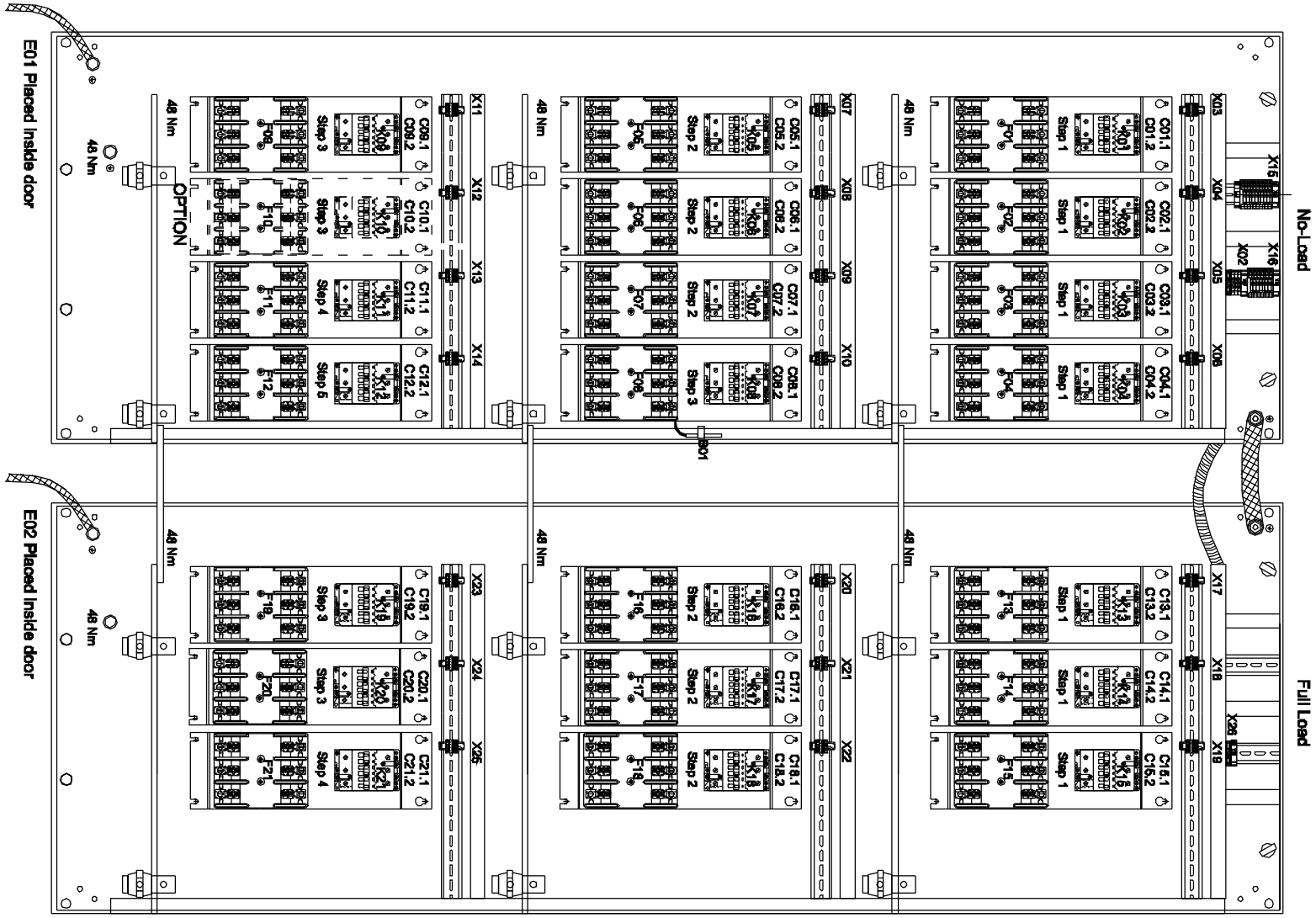
	Date	Initials	Function	Panel Front		
Designed	050111	SLB	Project title	PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW		
Approved	061026	FLT	Comments		Customer	Vestas Wind Systems A/S
Reviced	061026	INI	Rev. -	Drawing no. 6015882	Cont. sheet 031	Sheet 030



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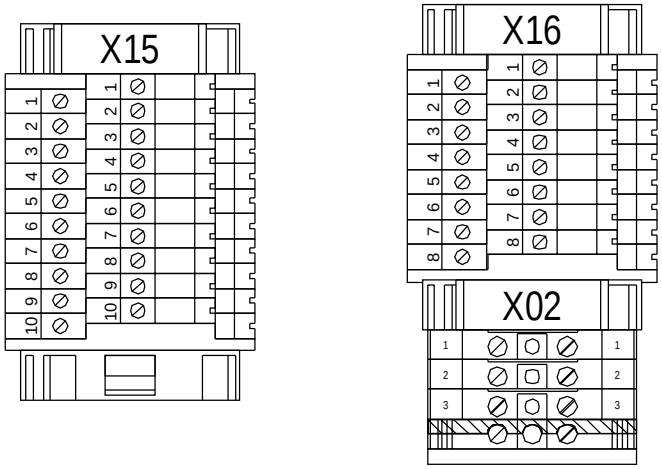
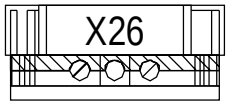
	Date	Initials	Function	Panel Outline		
Designed	050111	SLB	Project title	PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050111	SLB	Rev. -	Drawing no. 6015882	Cont. sheet 032	Sheet 031



Terminal Rows X15, X16 and X02 are placed in No Load Panel



Terminal Row X26 is placed in Full Load Panel

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	Date	Initials		
Designed	050111	SLB	Function	Terminal Rows
Approved			Project title	PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW
Reviced	050111	SLB	Comments	
			Customer	Vestas Wind Systems A/S
			Rev.	-
			Drawing no.	6015882
			Cont. sheet	040
			Sheet	032

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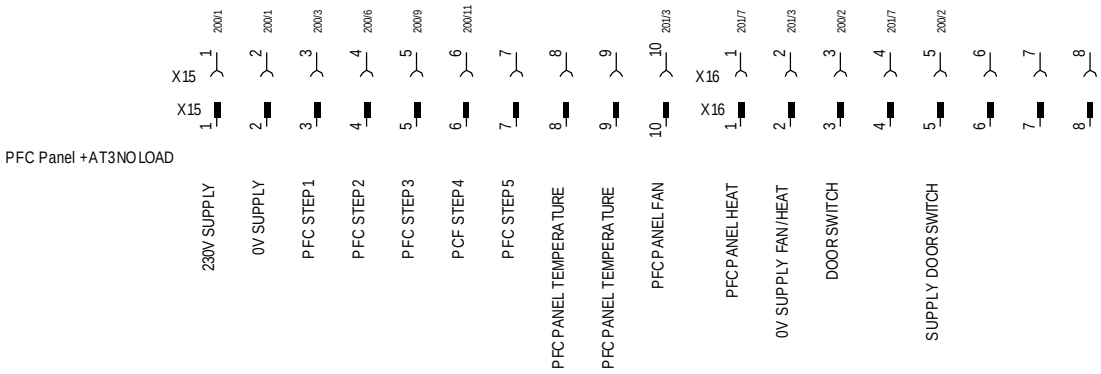

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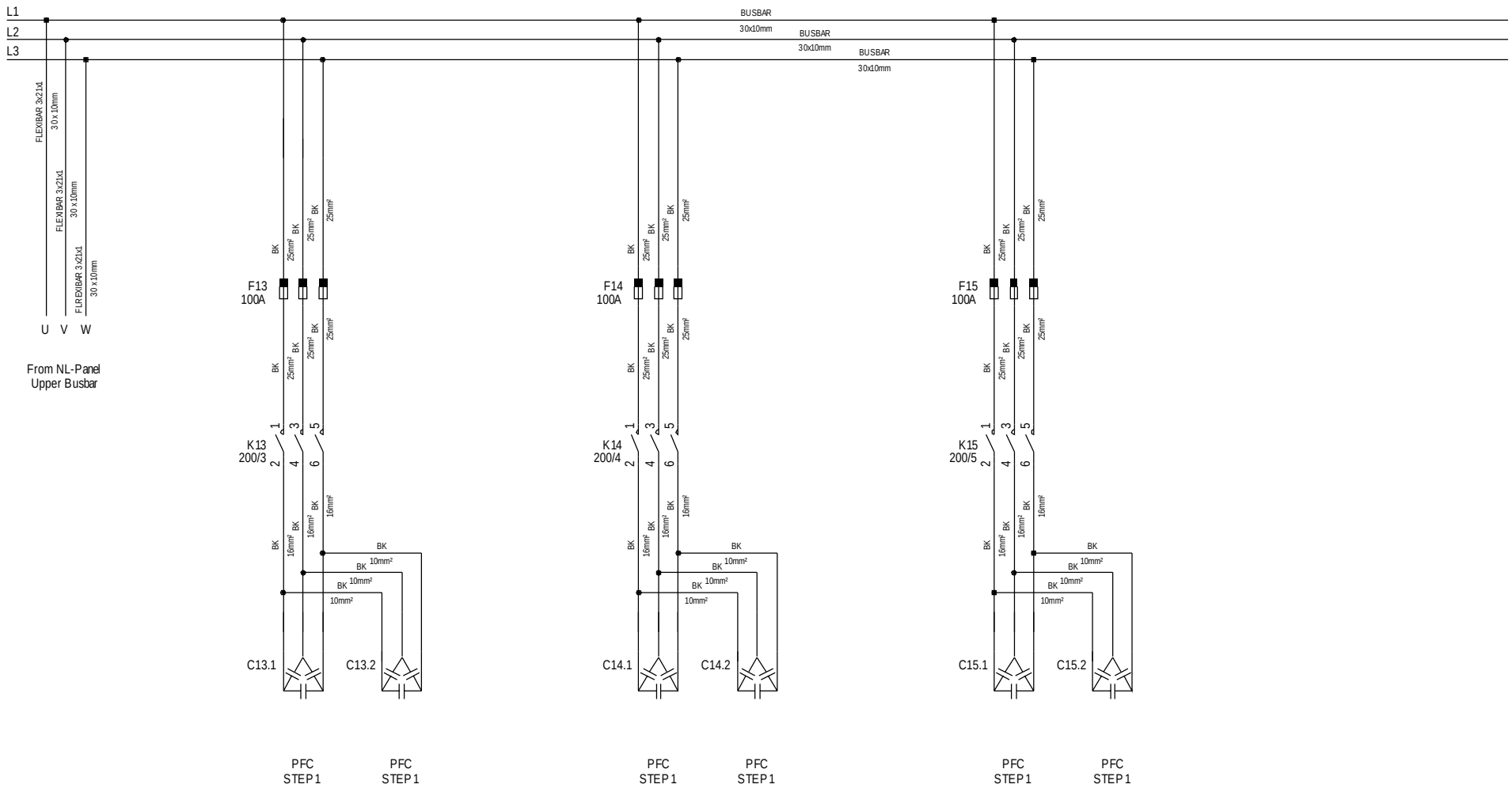
	Date	Initials	Function	Terminal X15 - X16		
Designed	050111	SLB	Project title	PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050111	SLB	Rev. -	Drawing no. 6015882	Cont. sheet 100	Sheet 040



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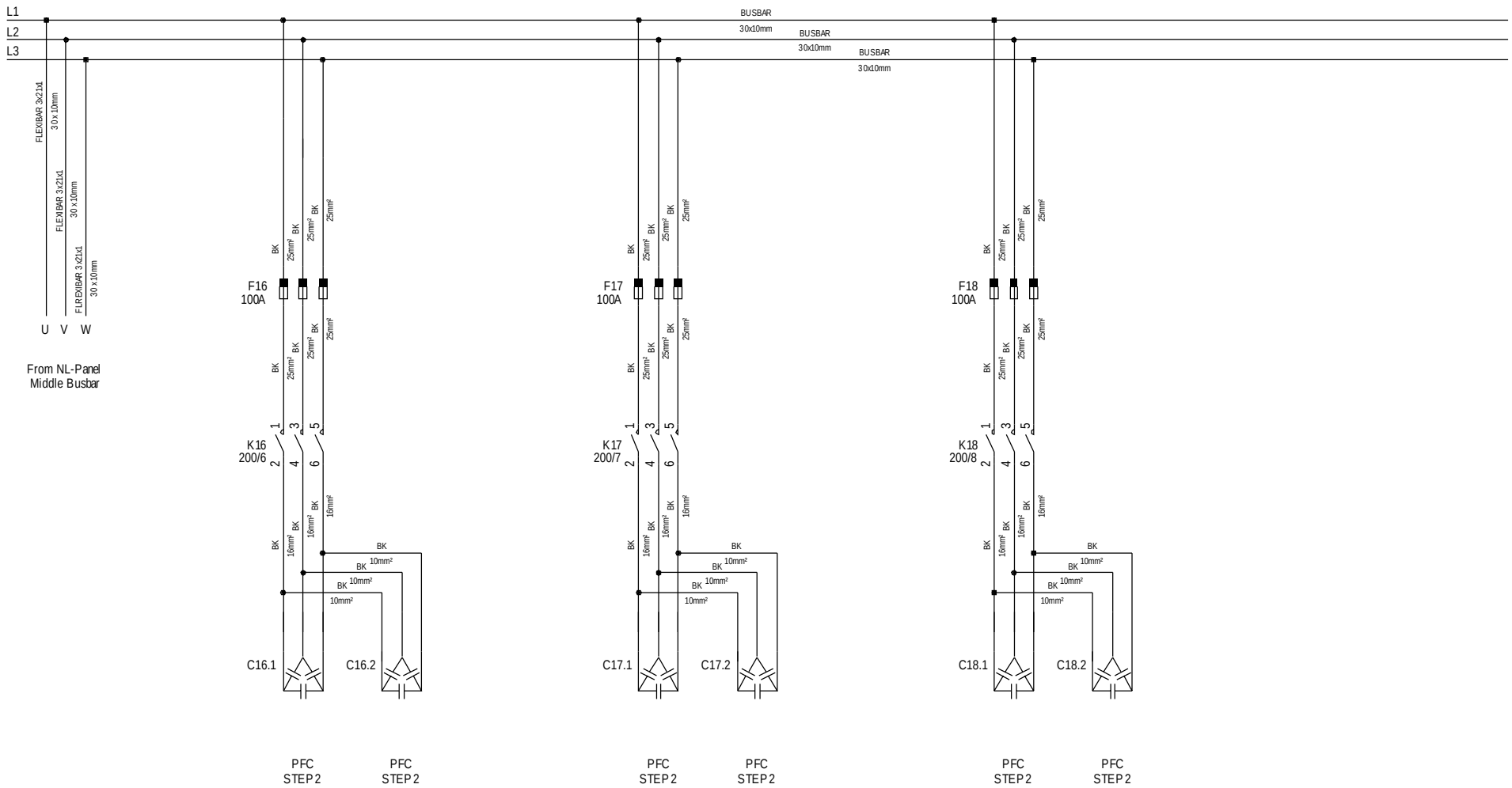
	Date	Initials	Function	Main Circuits step 1		
Designed	050111	SLB	Project title	PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050111	SLB	Rev. -	Drawing no. 6015882	Cont. sheet 101	Sheet 100



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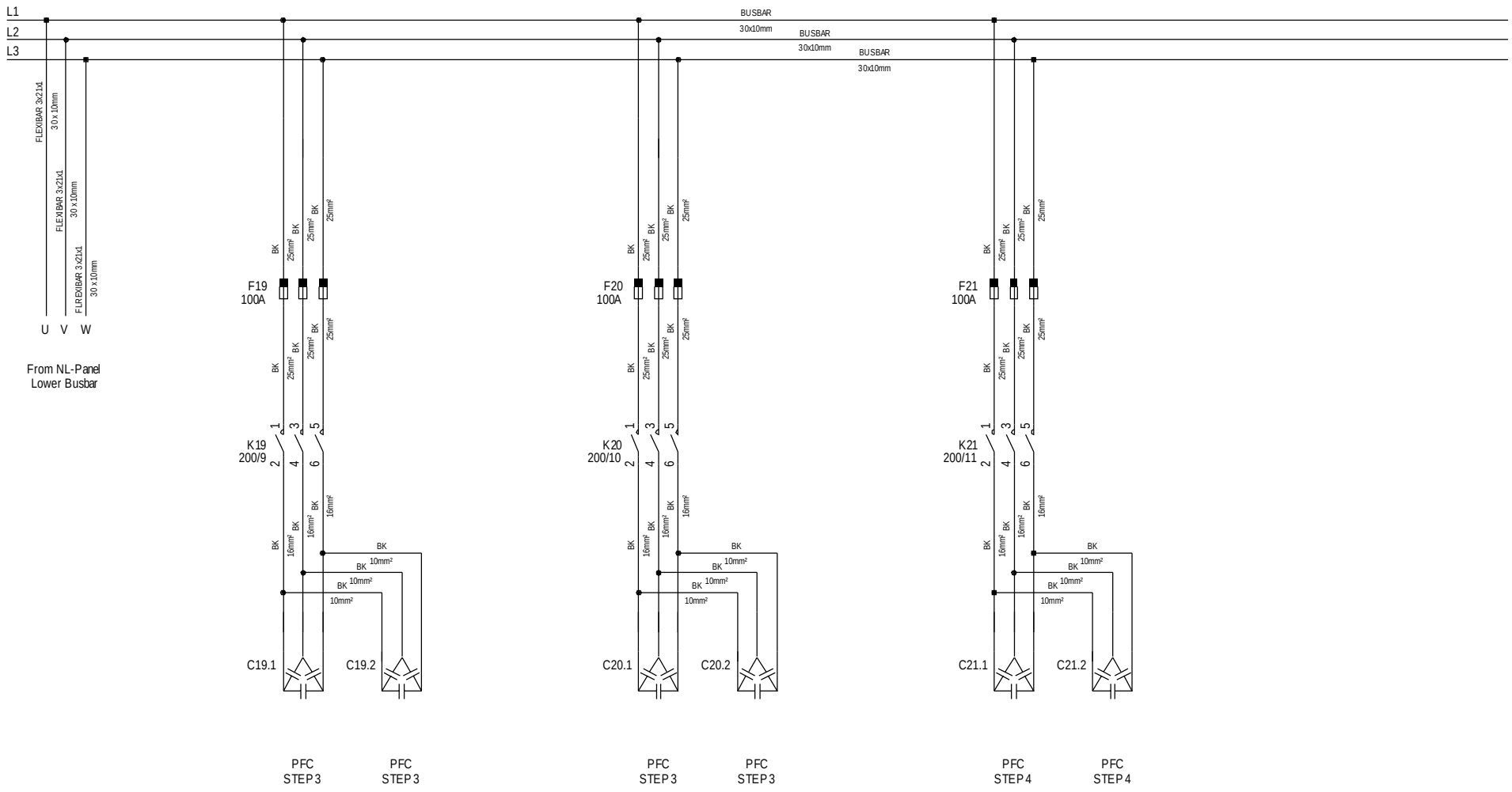
	Date	Initials	Function	Main Circuits step 2		
Designed	050111	SLB	Project title	PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050111	SLB	Rev. -	Drawing no. 6015882	Cont. sheet 102	Sheet 101



26-10-06
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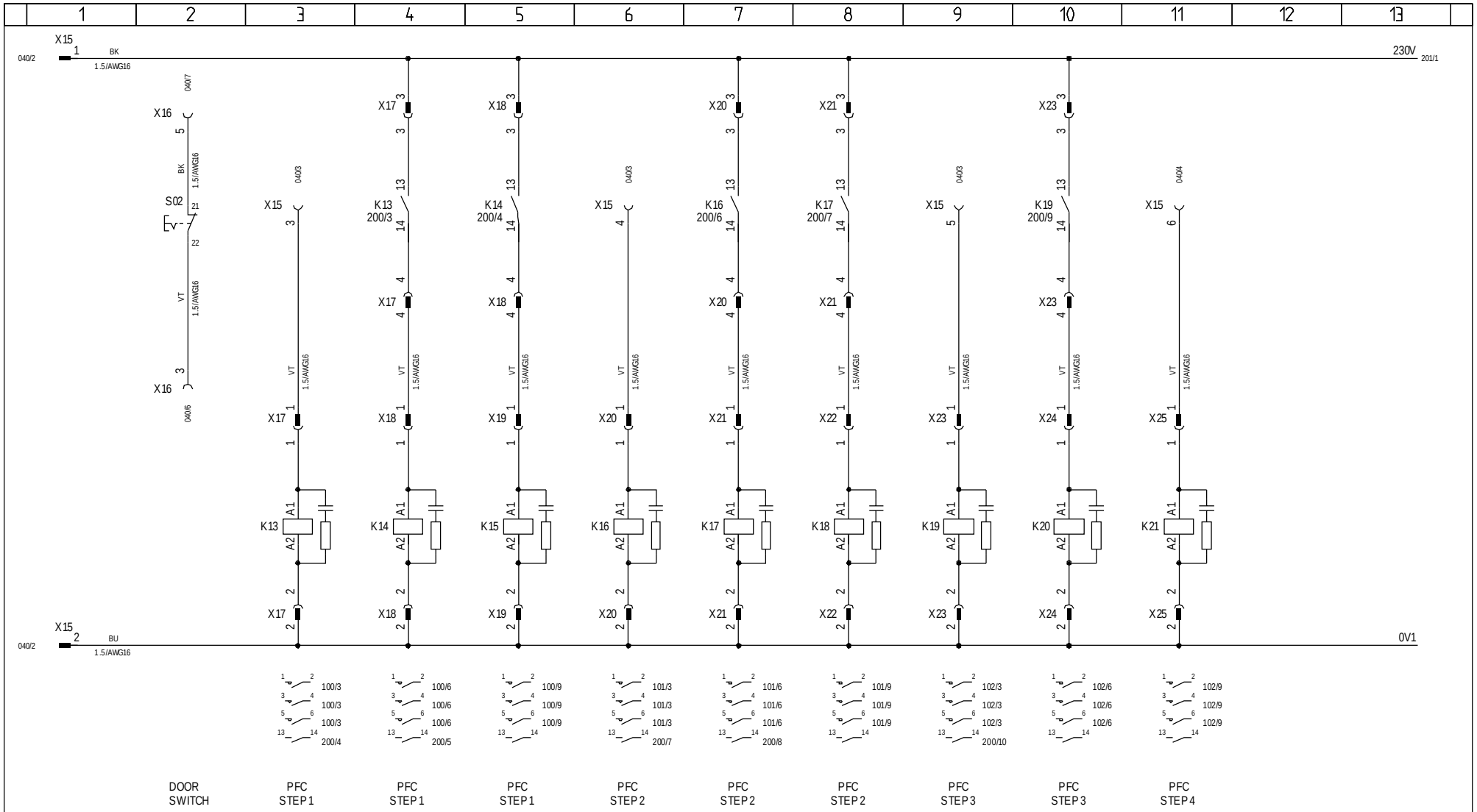
	Date	Initials	Function	Main Circuits step 3 - 4		
Designed	050111	SLB	Project title	PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050111	SLB	Rev. -	Drawing no. 6015882	Cont. sheet 200	Sheet 102



26-10-06
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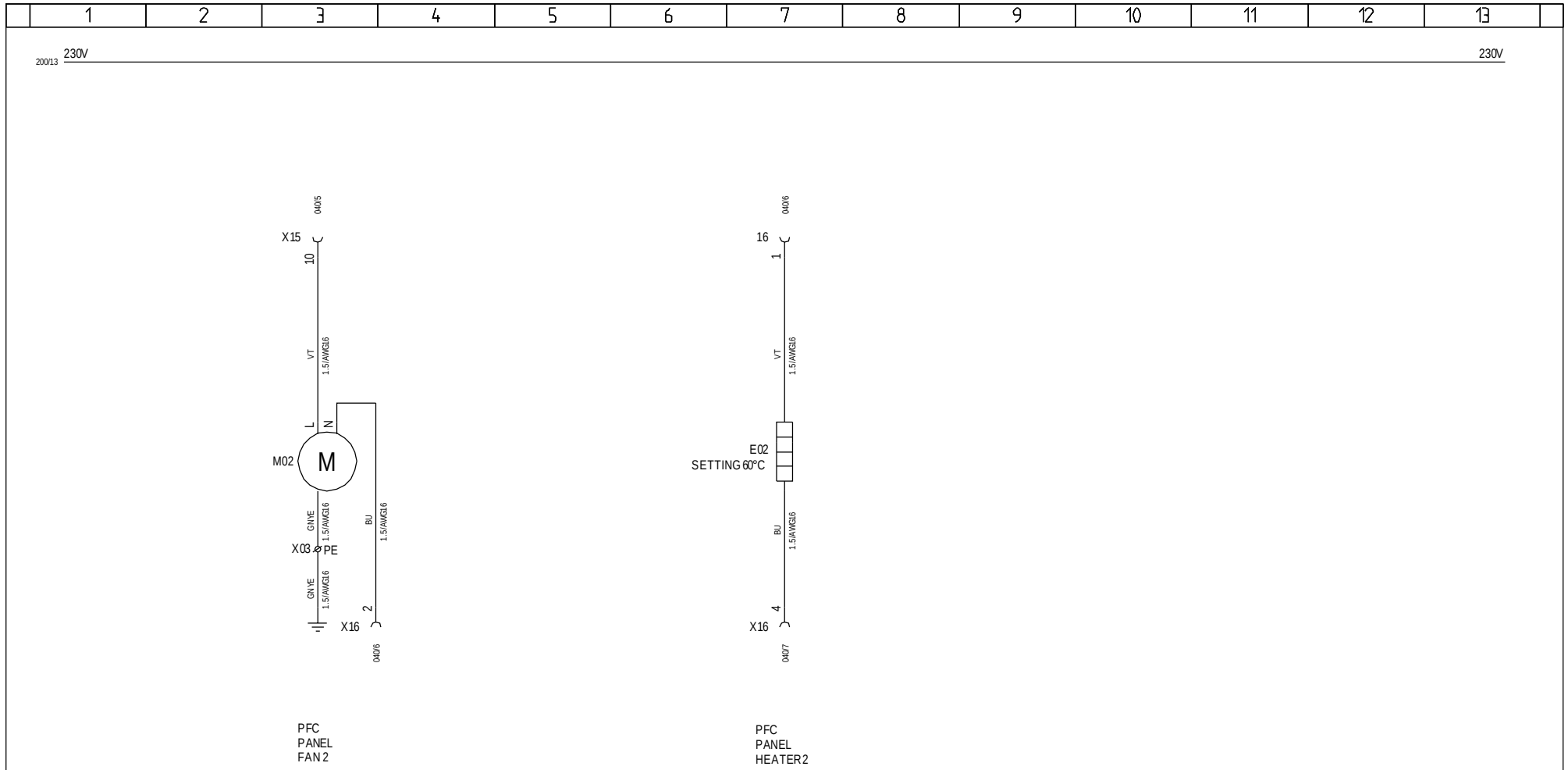
	Date	Initials	Function	Control Circuits		
Designed	050111	SLB	Project title	PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050111	SLB	Rev. -	Drawing no. 6015882	Cont. sheet 201	Sheet 200



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	Date	Initials	Function	Ventilation / Heating		
Designed	050111	SLB	Project title	PFC Panel +AT3 1000kWAr, NM72/1650 - V82-1.65KW		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050111	SLB	Rev.	Drawing no. 6015882	Cont. sheet -	Sheet 201

LST: 21000196
Version: 02

Material 60108815
Description PFC KITSET 150kVAr ADDON NM72/V82 50 Hz

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60016660	PFC MODULE 50kvar 690V	3	PC	1
1	60002815	Label "Type sign f. NM82/1500C"	1	PC	LABEL
1	60098493	LASER LABEL +AT3 FL NM72 IEC I & NM82	1	PC	LABEL
1	60111495	UPGRADE KIT LABEL for +AT3 1000 kVAr	1	PC	LABEL
1	60007630	CABLE GLAND BMBC-02 M20 BRASS	1	PC	1
1	60007639	LOCKNUT BMBL-03 M20 BRASS	1	PC	1

Change Info

Item no.	***Item text:***
60019721	**UPS Panel 4.5kVA 230V 50/60Hz 30T**
60019772	**UPS Panel 230V/50Hz 4.5kva NM92/2750**

Active revision *for production*

Drawing number: 6012086

Version	Date	Init./App.	Description of change since last revision
05	08.08.2005	INI/SL	Wiring to battery contactor changed. Revision according to UL inspection Page 032: Terminal row X1 and X2 changed from 6 mm² to 10 mm²' Text " MINIMUM CABLE TEMPERATURE RATING 60°C(140F)"added. Text "USE COPPER CONDUCTORS ONLY" added. Page 040: Text " MINIMUM CABLE TEMPERATURE RATING 60°C(140F)"added. Text "USE COPPER CONDUCTORS ONLY" added. Cable ID and reference text added. Page 041:Cable ID and reference text added. Page 100: F02 changed from 6A C to 10A C Page 101: K01 connections changed.

LST no.: 21000040 *Material BOM no.: 60017230*

Version	Date	Init./App.	Description of change since last revision
06	09.08.2005	INI/SLB	Revision according to UL inspection. X1: Terminals changed from 6 mm² to 10 mm². X2: Terminals changed from 6 mm² to 10 mm² Push-in jumper bar changed from 282-402 to 284-402 F02: MCB changed from 6A C to 10A C

Operation Instruction: 10000023

Version	Date	Init./App.	Description of change since last revision
01	10.02.2004	SLB/SLB	First version

Old revisions *for service*

Drawing number: 6012086

Version	Date	Init./App.	Description of change since last revision
04	02.08.2004	SLB/SLB	Page 001: Updated. Page 030 and 031: Labels added. Page 101: X101 terminals 11, 12, 13, 14, 15 and 16 added. In general update is to insure problem free commissioning and update to UL
03	25.03.2004	SLB/SLB	Page 001: Updated. Page 031: New outline drawing has been applied. Page 032: New outline drawing of backplane has been applied. Page 035: F05 and F06 has been added. Page 040: Page changed to outer connections to NM 1500/1650. Page 041: Page changed to outer connections to NM 80/92/100. Page 042: Page changed to outer connections to NM 110/4200. Page 043: Page changed to optional for outer connections. Page 100: Changes on PE Conductor and fan circuit Q01 changed to MMS Page 101: K01 Added (Contactor in battery circuit) Plug X101 added on connections to UPS and battery. Page 102: Fuse F06 Added and PT 100 sensor added.
02	24.02.2004	SLB	MAY NOT BE USED TERMINATED IN SAP SYSTEM
01	25.08.2003	INI/SLB	First version in SAP system.

LST no.: 21000040 *Material BOM no.: 60017230*

Version	Date	Init./App.	Description of change since last revision
05	18.03.2005	MILJE/SLB	Change required for production 60097170 removed. 60110079 covering for din-front plate grey added 60109904 mounting plate TS8 499x2096mm w. work added.

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E-mail: vestas@vestas.com • Web: www.vestas.com

04	02.08.2004	MILJE/SLB	60002619, 60100642 add., 60097176 to M01 add., 60006038, 60006039 and 60001853 to X101 add. 600100600 added. 60014668 to M01 changed from 3 to 1 pc. 9 item no. to X50, 60006041, 60001868 to X101 removed.
03	29.03.2004	SLB/ SLB	Major Changes in materials and sequence.
02	18.12.2003	ATM/ ATM	Base unit changed from pack to pc.
01	14.10.2002	SLB / SLB	First version in SAP system.

Earlier Drawings and Part Lists no Longer Active for Serial Production

Change Info: 00020452

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1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
001	Table of content	050808	05
030	Panel front layout	040802	-
031	Panel outline	040802	-
032	Panel outline	050808	-
035	Single Line Diagram	040325	-
040	Connection to NM 1500 / 1	050808	-
041	Connection to NM80-92-100	050808	-
042	Connection to NM 110	040325	-
043	Optional connections	040325	-
100	230V circuits without UPS	050808	-
101	UPS Connections	050808	-
102	230V UPS circuits	040325	-

10-08-05

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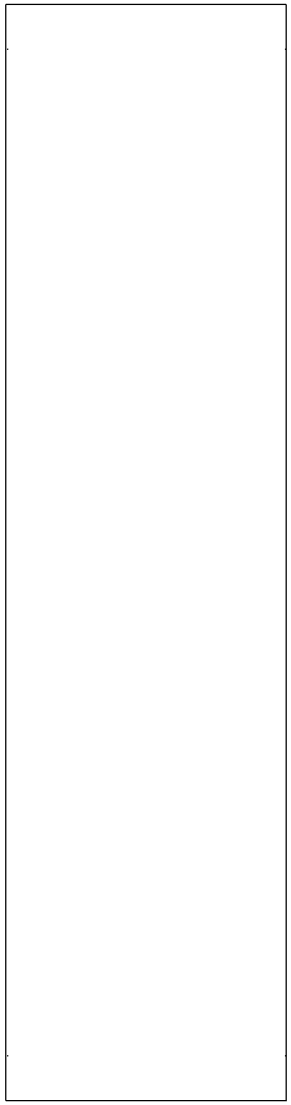
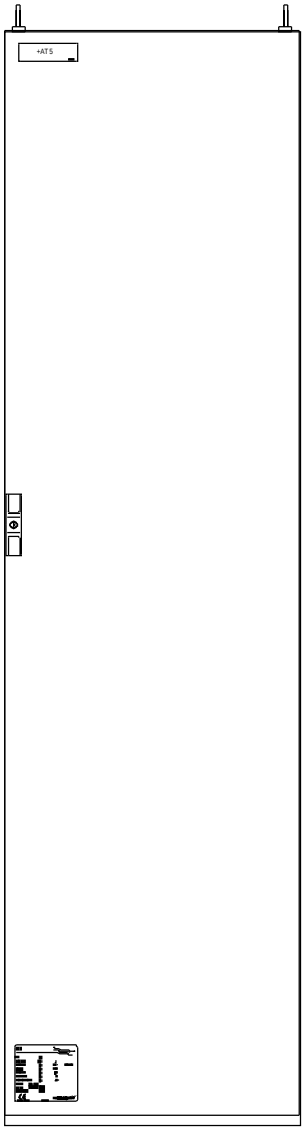
	Date	Initials				
Designed	020905	SLB	Function	Table of Content		
Approved	050808	SLB	Project title	UPS Panel +AT5 4,5 kVA		
Reviced	050808	INI	Comments		Customer	Vestas Wind System A/S
			Rev. 05	Drawing no. 6012086	Cont. sheet 030	Sheet 001

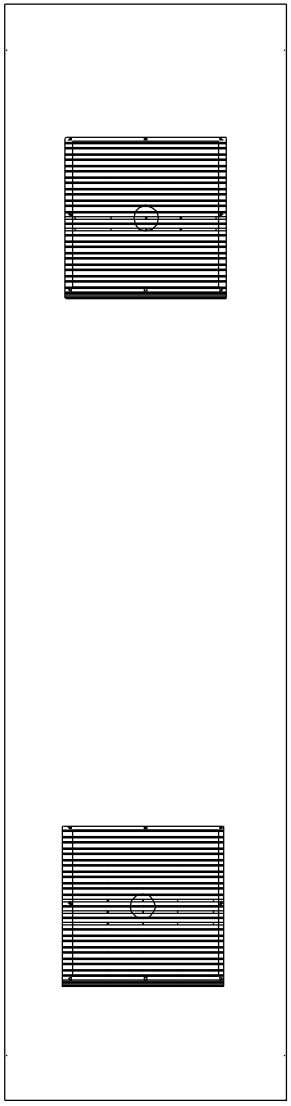
1	2	3	4	5	6	7	8	9	10	11	12	13

Right hand side





Left hand side



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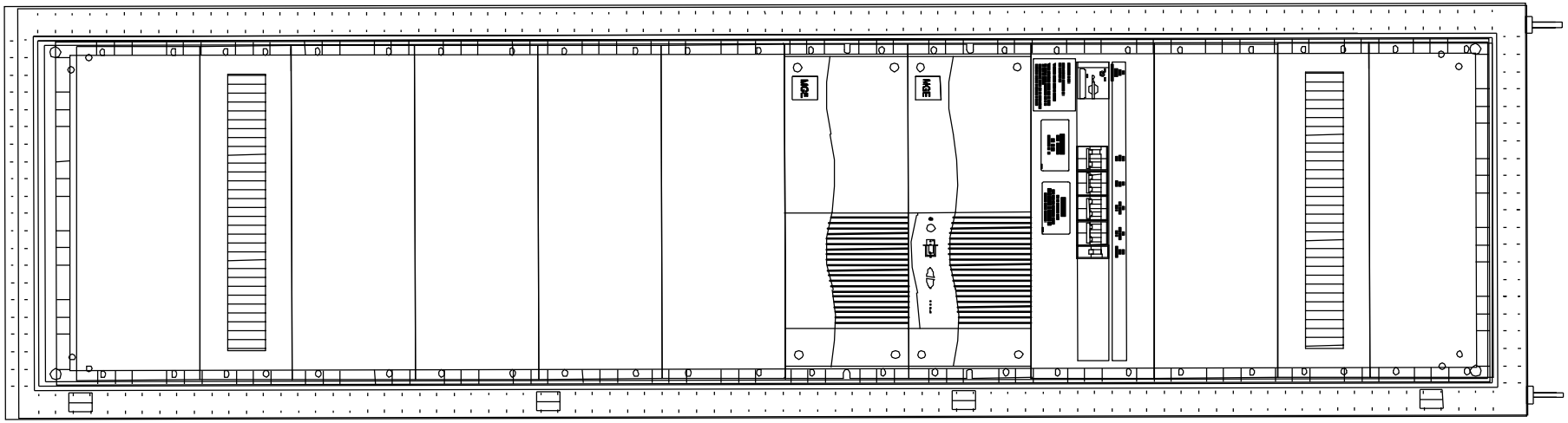
	Date	Initials	Function	Panel front layout		
Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA		
Approved			Comments		Customer	Vestas Wind System A/S
Reviced	040802	SLB	Rev. -	Drawing no. 6012086	Cont. sheet 031	Sheet 030

1	2	3	4	5	6	7	8	9	10	11	12	13

Front with blanking plates



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	Date	Initials	Function	Panel outline			
Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA			
Approved			Comments			Customer	Vestas Wind System A/S
Reviced	040802	SLB	Rev. -	Drawing no. 6012086		Cont. sheet 032	Sheet 031

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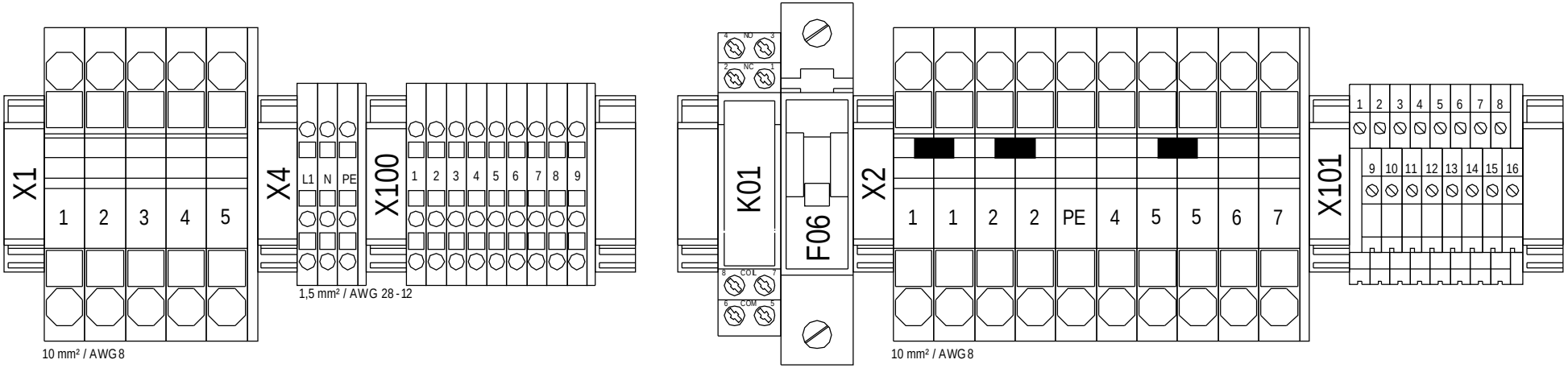
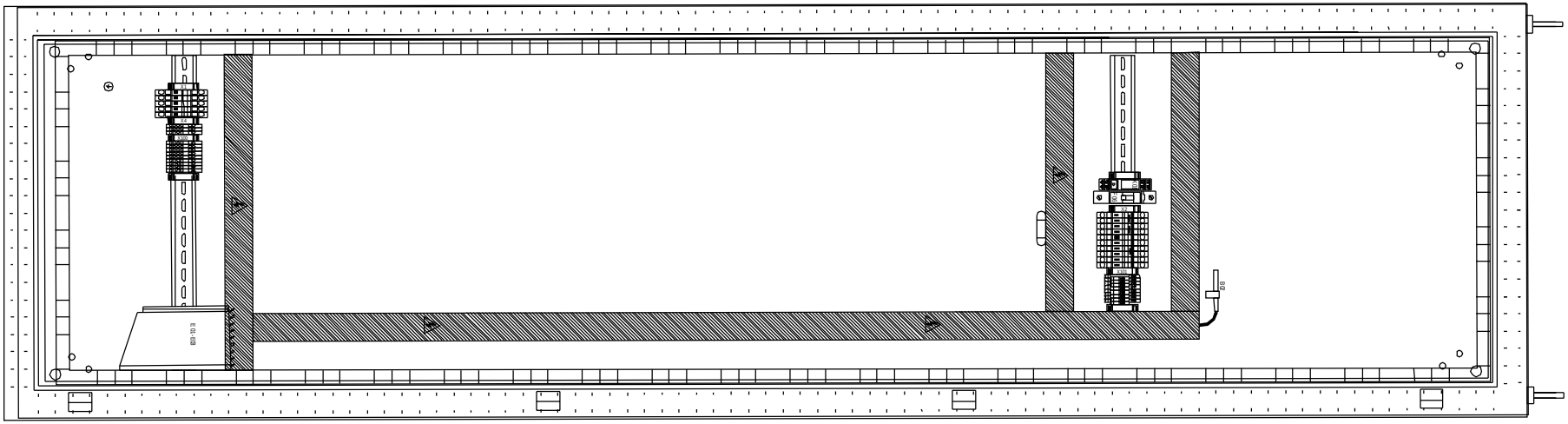


MINIMUM CABLE TEMPERATURE RATING 60°C (140F)

USE COPPER CONDUCTORS ONLY



Front behind blanking plates

Vestas	Property of Vestas Wind Systems A/S This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval		Date	Initials	Function	Panel outline	
		Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA	
		Approved	050808	SLB	Comments		Customer: Vestas Wind System A/S
		Reviced	050808	INI	Rev. -	Drawing no. 6012086	Cont. sheet 035 / Sheet 032

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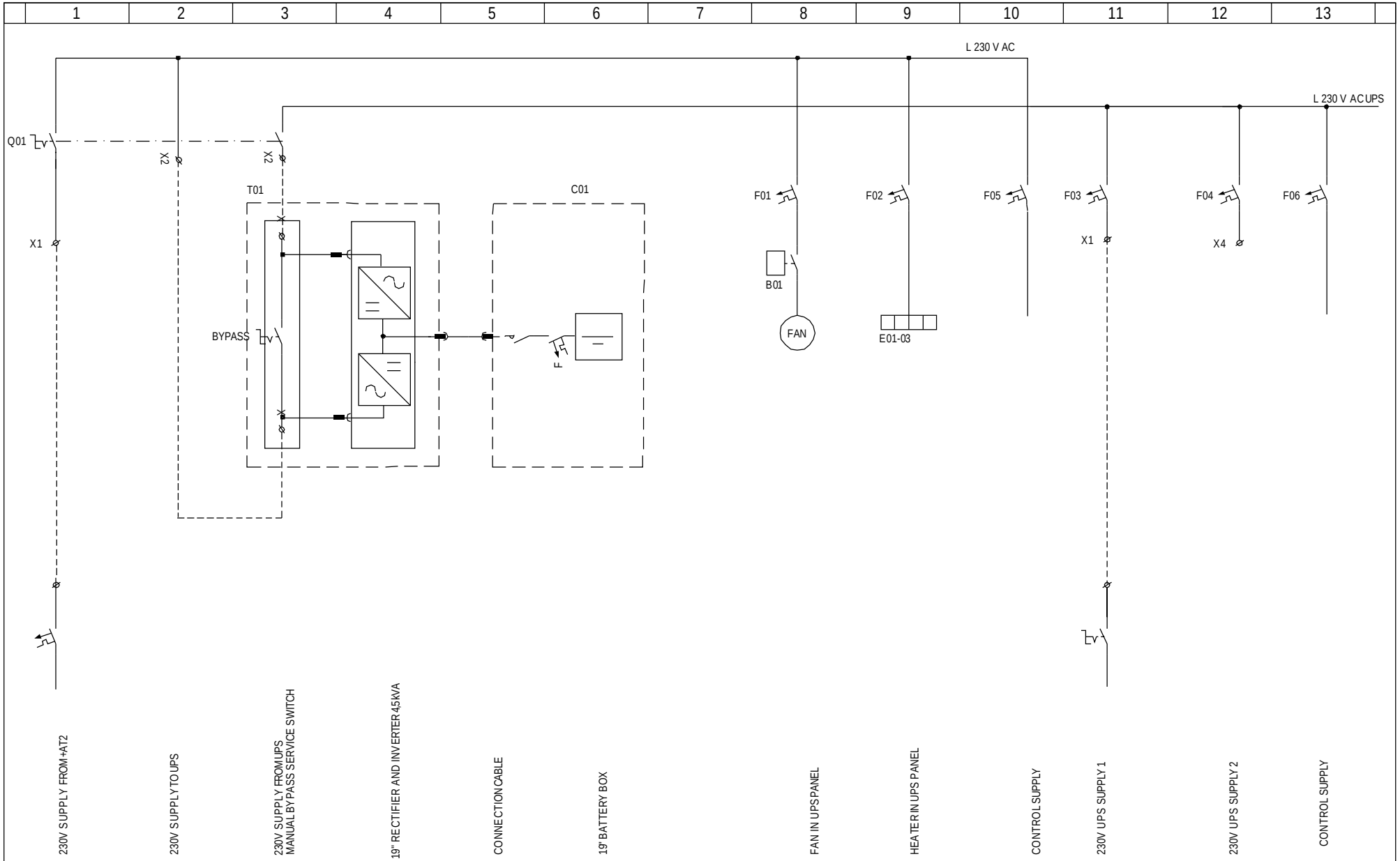

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	Date	Initials	Function	Single Line Diagram		
Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA		
Approved			Comments		Customer	Vestas Wind System A/S
Reviced	040325	SLB	Rev. -	Drawing no. 6012086	Cont. sheet 040	Sheet 035

MINIMUM CABLE TEMPERATURE RATING 60°C (140F)

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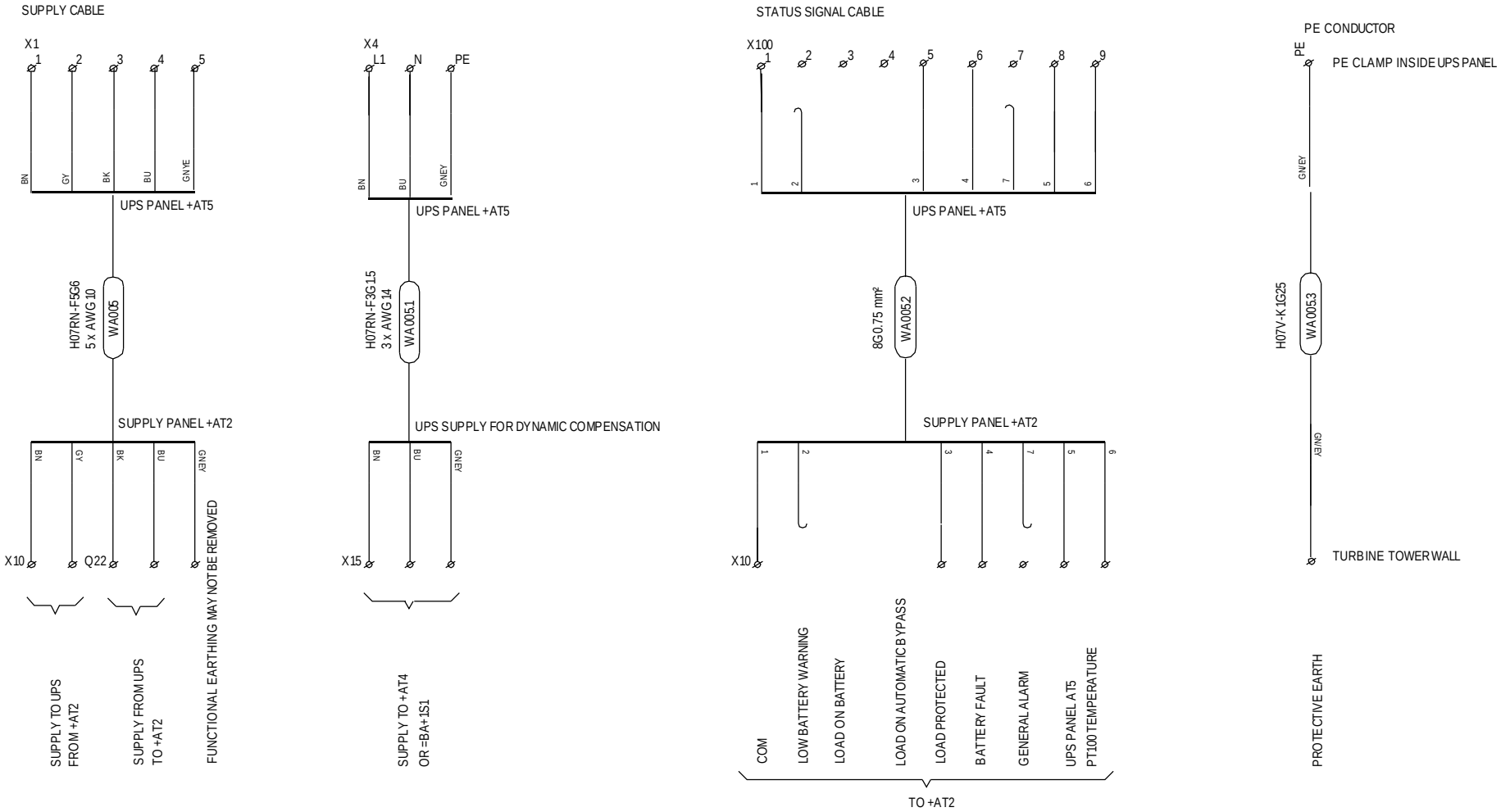

	Date	Initials	Function	Connection to NM 1500 / 1650		
Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA		
Approved	050808	SLB	Comments		Customer	Vestas Wind System A/S
Reviced	050808	INI	Rev. -	Drawing no. 6012086	Cont. sheet 041	Sheet 040

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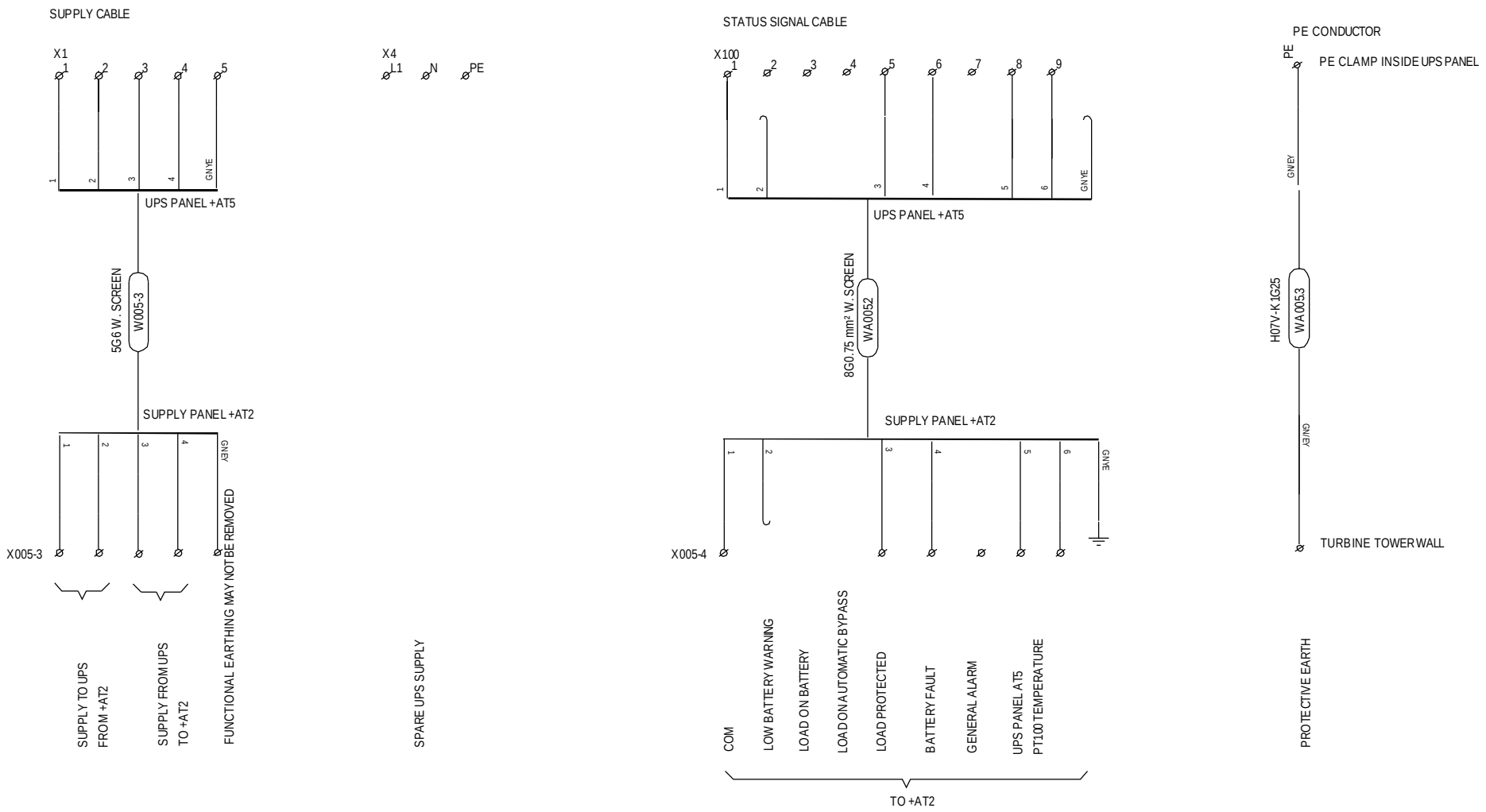

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	Date	Initials	Function	Connection to NM80-92-100		
Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA		
Approved	050808	SLB	Comments		Customer	Vestas Wind System A/S
Reviced	050808	INI	Rev. -	Drawing no. 6012086	Cont. sheet 042	Sheet 041

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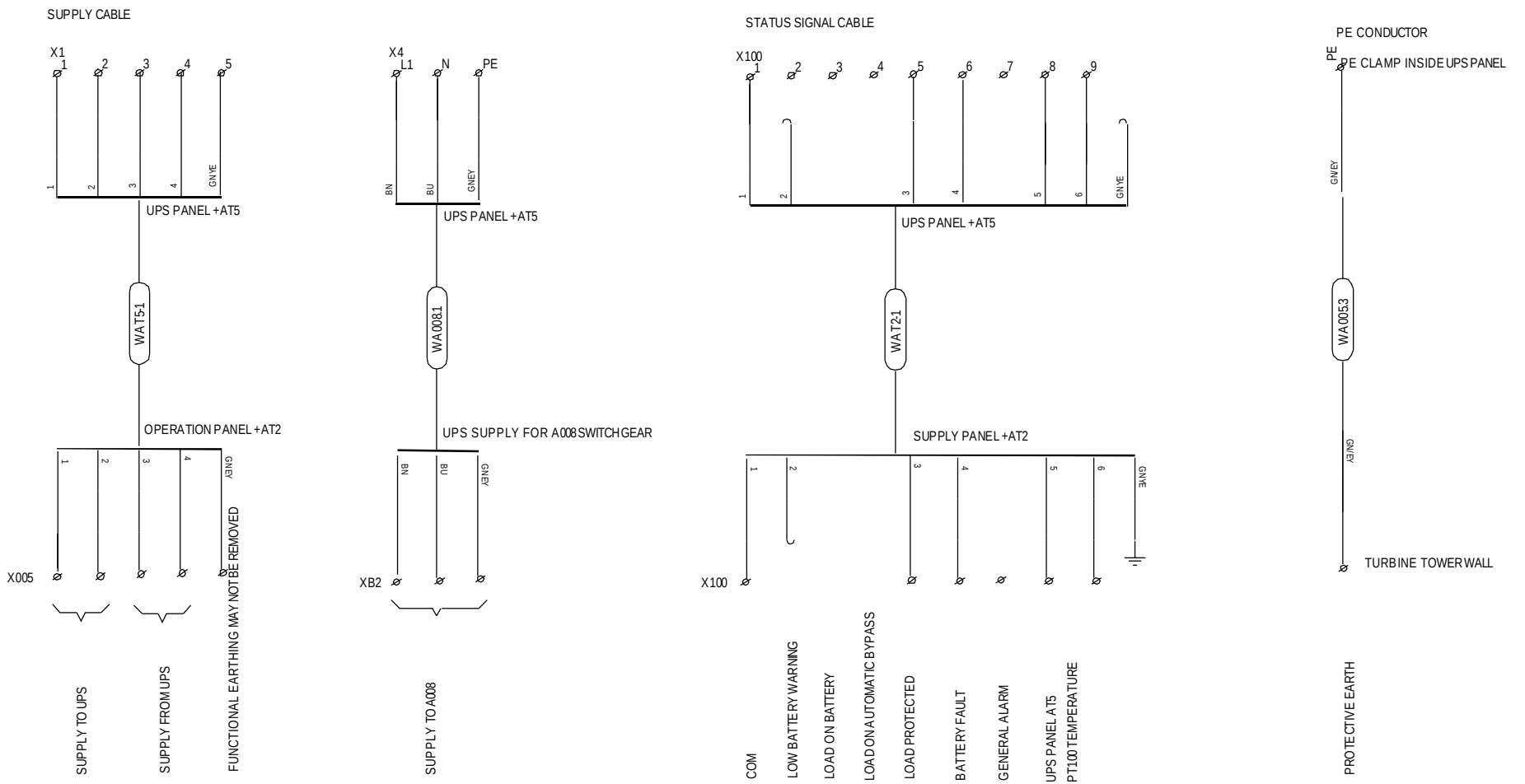

Vestas	Property of Vestas Wind Systems A/S This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval		Date	Initials	Function	Connection to NM 110	
		Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA	
		Approved			Comments	Customer: Vestas Wind System A/S	
		Reviced	040325	SLB	Rev. -	Drawing no. 6012086	Cont. sheet 043 / Sheet 042

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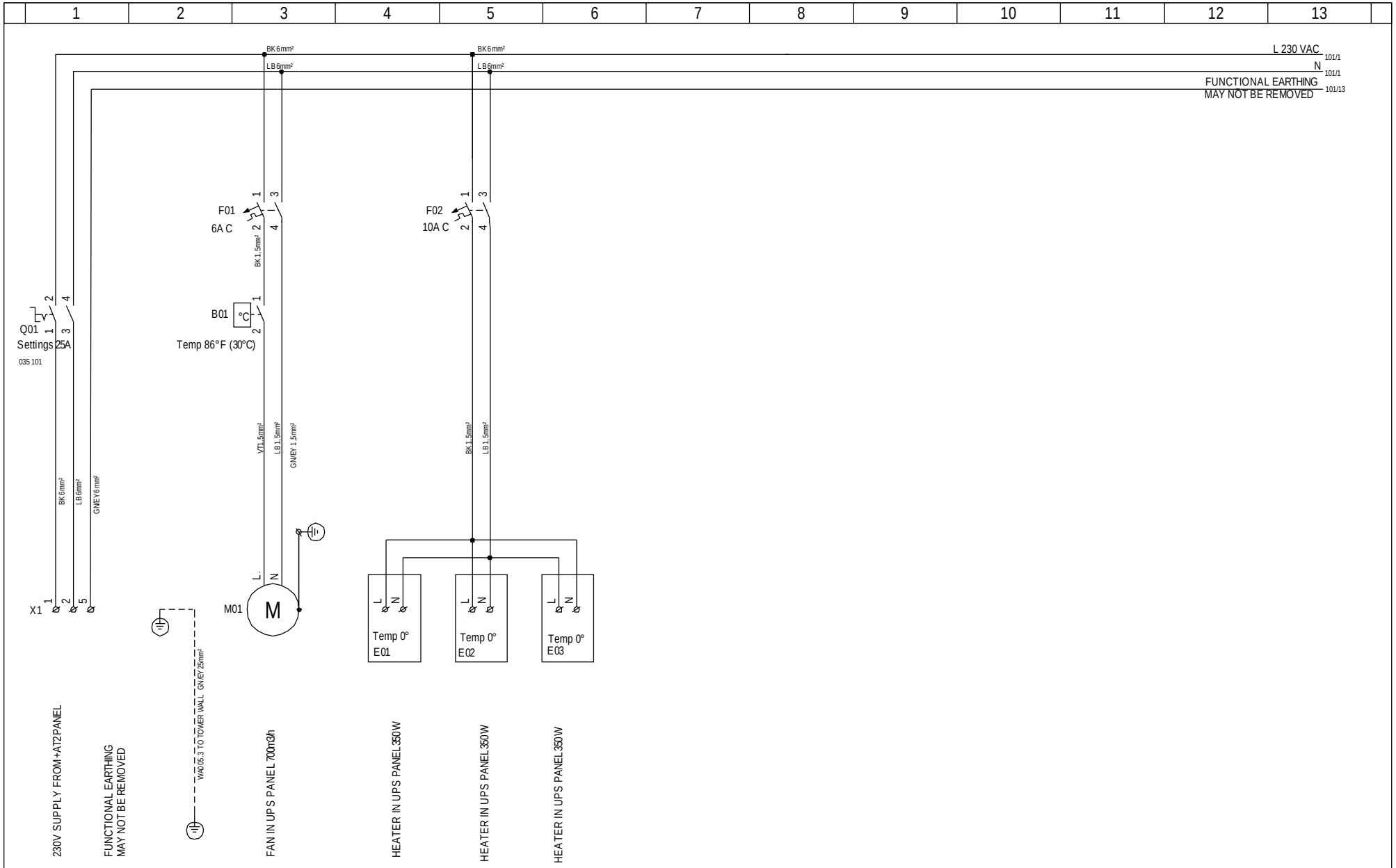
	Date	Initials	Function	Optional connections		
Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA		
Approved			Comments		Customer	Vestas Wind System A/S
Reviced	040325	SLB	Rev. -	Drawing no. 6012086	Cont. sheet 100	Sheet 043



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	Date	Initials	Function	230V circuits without UPS		
Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA		
Approved	050808	SLB	Comments		Customer	Vestas Wind System A/S
Reviced	050808	INI	Rev. -	Drawing no. 6012086	Cont. sheet 101	Sheet 100

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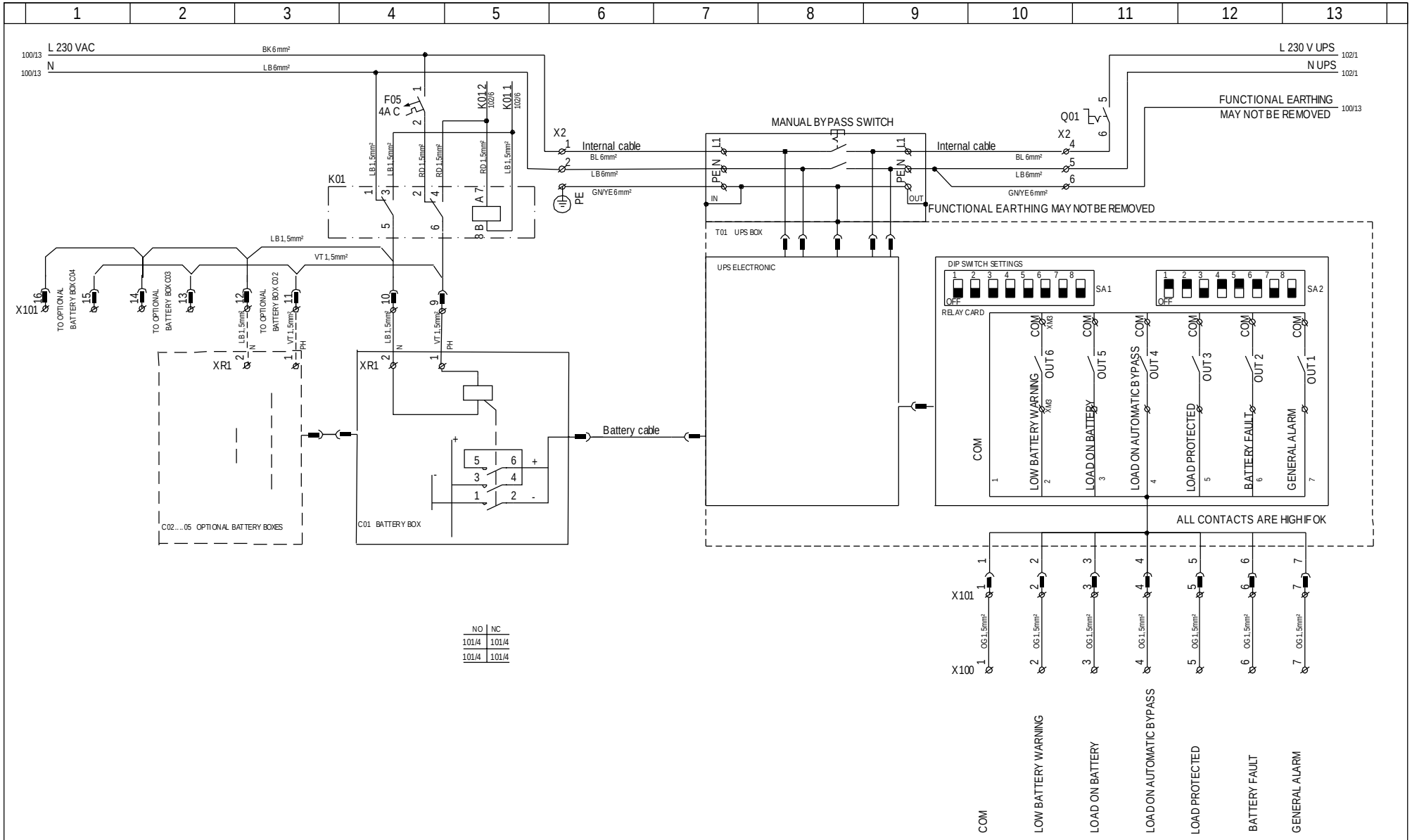

	Date	Initials	Function	UPS Connections		
Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA		
Approved	050808	SLB	Comments		Customer	Vestas Wind System A/S
Reviced	050808	INI	Rev. -	Drawing no. 6012086	Cont. sheet 102	Sheet 101

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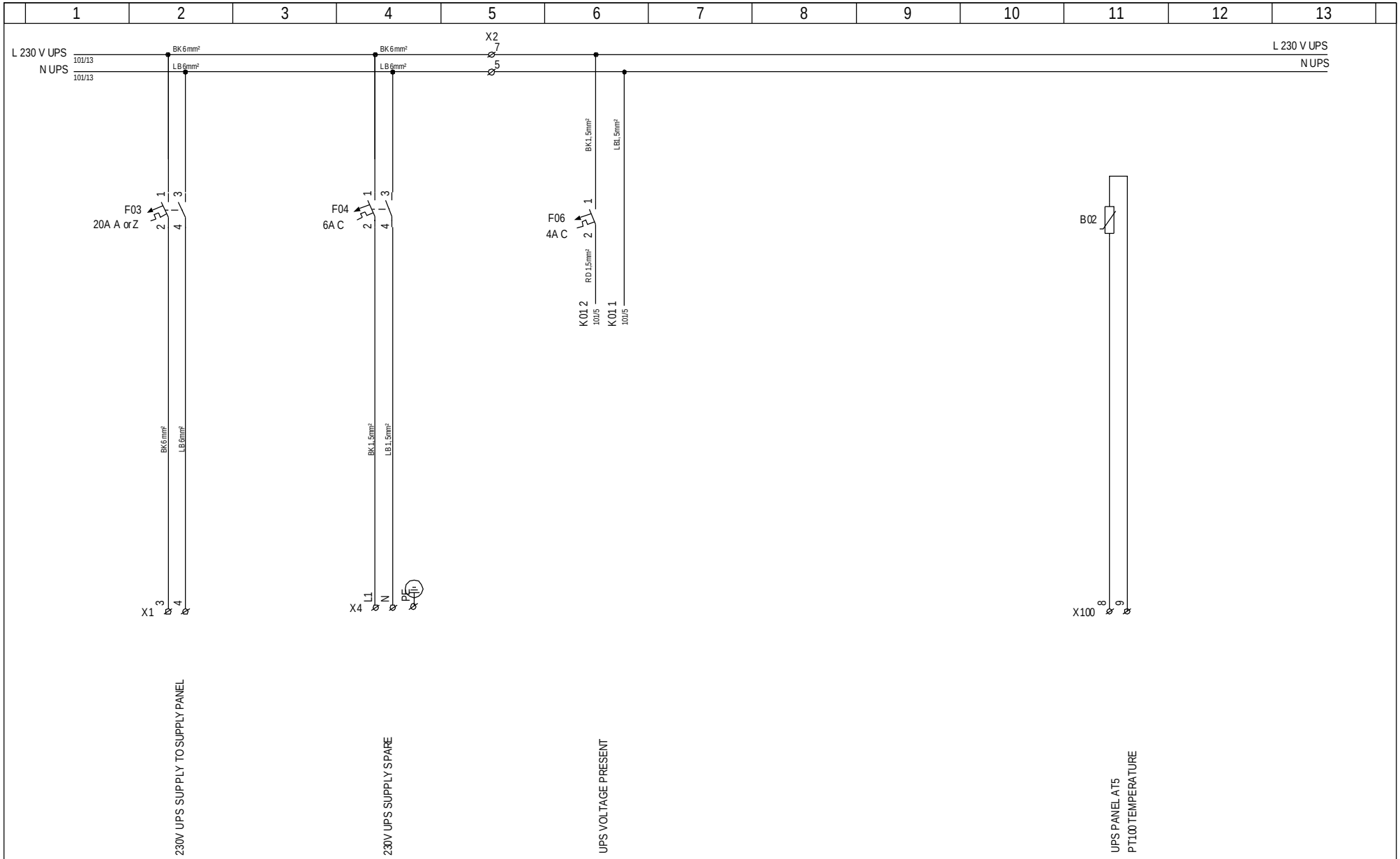

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	Date	Initials	Function	230V UPS circuits		
Designed	020905	SLB	Project title	UPS Panel +AT5 4,5 kVA		
Approved			Comments		Customer	Vestas Wind System A/S
Reviced	040325	SLB	Rev. -	Drawing no. 6012086	Cont. sheet -	Sheet 102

Material 60017230
Description UPS PANEL 4.5kVA 230V 50/60Hz

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60010330	CABINET TS8 600x2200x600mm	1	PC	
1	60109904	MOUNTING PLATE TS8 499x2096mm w. WORK	1	PC	
1	60096965	SIDE PANEL TS8 562x2197mm	1	PC	
1	60010515	SIDE PANEL TS8 562x2197mm w. WORK	1	PC	
1	60096970	PUNCH SECTION 8612.160 600x73mm OUTER	1	PC	
1	60096968	PUNCH SECTION 8612.060 600x73mm INNER	8	PC	
1	60096957	CORNER BRACKET 7827.220 for TS8 2200mm	4	PC	
1	60009900	CLIP NUT BN3307 for 19" RACK M 6	52	PC	
1	60009853	WASHER 21100016 6mm PLASTIC BLACK	52	PC	
1	60096933	BLANKING PLATE 7151.000 1U 482.6mm	1	PC	
1	60013882	COVER for 19" 4U ENCLOSURE	7	PC	
1	60013814	BLIND PLATE f. 19" 4U ENCL. 12xM36 FUSE	1	PC	
1	60110079	COVERING for DIN-FRONTPLATE GREY	0,300	M	
1	60013816	BLIND PLATE f. 19" 3U ENCLOSURE VENTED	2	PC	
1	60096938	SLIDE RAIL 7492.500 HEAVY DUTY	8	PC	
1	60096979	ATTACHMENT f.MOUNTING PLATE TS 8800.050	2	PC	
1	60007829	TINNED CU WIRE 1x16mm² 150mm Ø8 IEC/UL	1	PC	
1	60007633	CABLE GLAND BMBC-05 M40 BRASS	1	PC	
1	60007630	CABLE GLAND BMBC-02 M20 BRASS	3	PC	
1	60007642	LOCKNUT BMBL-06 M40 BRASS	1	PC	
1	60007639	LOCKNUT BMBL-03 M20 BRASS	3	PC	
1	60010699	CONDENSATION PROTECTION DRY BAG 500g	1	PC	
1	60100735	THERMO. TYPE SIGN UPS PANEL 4.5kVA IEC/U	1	PC	
1	60006822	STICKER "LYN" 25mm	6	PC	
1	60002619	THERMOLABEL "UPS panel +AT5"	1	PC	
1	60002343	LASER LABEL POWER PANEL UL LISTED cUL	1	PC	
1	60095579	Thermolabel: " Caution! Risk of ... "	1	PC	
1	60006819	STICKER "JORD" 14mm	5	PC	
1	60100737	THERMOLABEL 25x432mm row 1.1 AT5 UPS	1	PC	
1	60100642	THERMOLABEL "UPS Commisoning"	1	PC	
1	60002670	THERMO."Rotate cable plate..during inst"	1	PC	
1	60002320	STICKER GEN. USE VESTAS CONTROL SYSTEMS	1	PC	
1	60100580	MARK WAGO +AT5 UPS PANEL	1,000	SH	
1	60093538	THERMOLABEL "HEAVY EQUIPMENT"	1	PC	
1	60007533	PLASTIC PROTECTION HOSE PG16	1	M	
1	60100170	CABLE CLIP 20 w. 2 LUGS	2	PC	
1	60007359	CABLE CONDUIT 21160 40x60mm	3,500	M	
1	60007194	DIN RAIL PP0153H-Z 15x35mm	0,300	M	
1	60007182	DIN RAIL PP0735H 7x35mm	1,750	M	
1	60013894	BLOCK ALU for DIN-RAIL 19"	2	PC	
1	60013820	PROFILE ALU for 19" SWING FRAME	1	PC	
1	60011482	CAP 169D0684 for LK F/2 36*72mm	4	PC	
1	60014661	FAN 1PHASE 230V 700m³/h 155W 323x323x145	1	PC	M01
1	60014668	EXHAUST FILT. 3326.200 f.500-700m³/h FAN	1	PC	M01
1	60097176	FILTER PAD 3183.100 FINE f.500-700m³/h F	2	PC	M01
1	60009289	THERMOSTAT 33410915 140°-30°F COOLING UL	1	PC	B01
1	60091912	END STOP WAGO 249-117 10mm TS35	2	PC	B01
1	60014729	HEATER FAN CR0 27 230V 350W UL	3	PC	E01-E03
1	60100556	UPS UL MGE COMET EXTREME 230V 4500VA	1	PC	T01
1	60100757	UPS UL MGE COMET EXTREME I/O BOX	1	PC	T01
1	60000723	ALARM/RELAY PCB for UPS MGE 4.5kVA	1	PC	T01
1	60100558	Battery box for MGE Comet Extr UL	1	PC	C01
1	60100578	WIRING +AT5 UPS Panel Alarm card IEC/UL	1	PC	
1	60100574	WIRING +AT5 UPS Panel 1,5mm2 IEC/UL	1	PC	
1	60100576	WIRING +AT5 UPS Panel 6mm2 IEC/UL	1	PC	
1	60100577	WIRING +AT5 UPS Panel 25mm2	1	PC	
1	60007437	BRAIDED SLEEVE BLACK 10-17mm	1,600	M	
1	60009279	PT100 180-4-2M Ø6x60mm 2m CABLE	1	PC	B02
1	60007481	CABLE RACK TK 5-7	1	PC	B02
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	K01
1	60094116	TERMINAL WAGO 284-901 1-LEVEL 0.2-10mm²	5	PC	X1
1	60095028	END SECTION 284-325 1-LEVEL GREY	1	PC	X1
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	X1
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	X1
1	60094116	TERMINAL WAGO 284-901 1-LEVEL 0.2-10mm²	9	PC	X2
1	60094117	TERMINAL WAGO GROUND 284-907 0.2-10mm²	1	PC	X2
1	60095028	END SECTION 284-325 1-LEVEL GREY	1	PC	X2
1	60111699	PUSH-IN JUMPER BAR 284-402 2-POLED	3	PC	X2

Material 60017230
Description UPS PANEL 4.5kVA 230V 50/60Hz

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	X2
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	X2
1	60006075	TERMINAL WAGO 870-681 0.08-2.5mm²	1	PC	X4
1	60006076	TERMINAL WAGO 870-684 0.08-2.5mm², Blue	1	PC	X4
1	60006077	TERMINAL WAGO GROUND 870-687 0.08-2.5mm²	1	PC	X4
1	60006080	END SECTION 870-933 1-LEVEL GREY	1	PC	X4
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	X4
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	X4
1	60006075	TERMINAL WAGO 870-681 0.08-2.5mm²	9	PC	X100
1	60006080	END SECTION 870-933 1-LEVEL GREY	1	PC	X100
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	X100
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	X100
1	60006036	TERMINAL UKK3-MSTB-5.08-2	8	PC	X101
1	60006040	SEPARATION PLATE D-UKK3-MSTB-5.08 LEFT	1	PC	X101
1	60006038	SPACER PLATE DG-UKK3-MSTB-5.08 RIGHT	1	PC	X101
1	60006039	SPACER PLATE DP-UKK3-MSTB-5.08 LEFT	1	PC	X101
1	60006042	SIGN for TERMINAL ZB-5LGS 1-10	1	PC	X101
1	60006043	SIGN for TERMINAL ZB-5LGS 11-20	1	PC	X101
1	60091912	END STOP WAGO 249-117 10mm TS35	2	PC	X101
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	X101
1	60001853	MSTB 2.5/2-ST-5.08 FEM. SCREW ANGLE	3	PC	X101
1	60004671	CIRCUIT BREAKER 3RV1021-4DA10 20.0-25.0A	1	PC	Q01
1	60091912	END STOP WAGO 249-117 10mm TS35	2	PC	Q01
1	60005157	MCB 5SX2206-7 C 2-POL. 6.0A 440VAC-60VDC	1	PC	F01
1	60005160	MCB 5SX2210-7 C 2-POL.10.0A 440VAC-60VDC	1	PC	F02
1	60005167	MCB 5SX2220-5 A 2-POL.20.0A 440VAC-60VDC	1	PC	F03
1	60005157	MCB 5SX2206-7 C 2-POL. 6.0A 440VAC-60VDC	1	PC	F04
1	60005136	MCB 5SX2104-7 C 1-POL. 4.0A 440VAC-60VDC	1	PC	F05
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	F05
1	60005136	MCB 5SX2104-7 C 1-POL. 4.0A 440VAC-60VDC	1	PC	F06
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	F06
1	60010211	DIAGRAM POCKETS A4	1	PC	
1	60100600	LASER LABEL UPS Panel 4,5kVA	1	PC	
1	60009771	STUD BOLT DIN 939 M12 x 30 - 8.8	4	PC	

Initials: SLB
Date: 040210

N·E·G MICON®
CONTROL SYSTEMS

Operating Instructions
For UPS Panel 4,5 kVA

UPS Panel 4,5 kVA

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CONTENT

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5. START-UP: 5

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7. MAINTENANCE: 7

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9. REPLACEMENT OF THE BATTERY MODULE: 9

N·E·G MICON®
CONTROL SYSTEMS

Operating Instructions **STANDBYE SUPPLY SYSTEM, UPS**

UPS Procedure

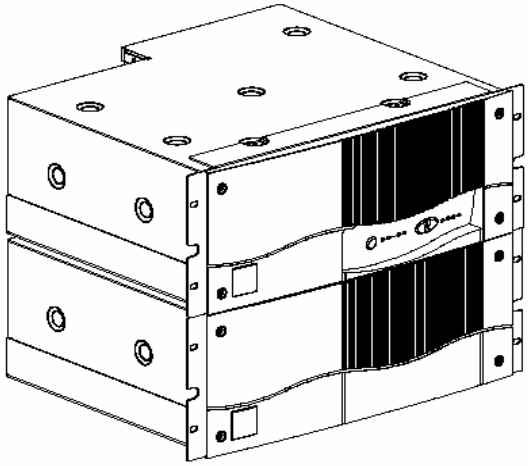
1. Safety rules:

1.1. Safety of persons

A UPS has its own internal power source (the battery). Consequently, the output terminals may be energized even if the UPS is disconnected from the AC-power source !!!!.

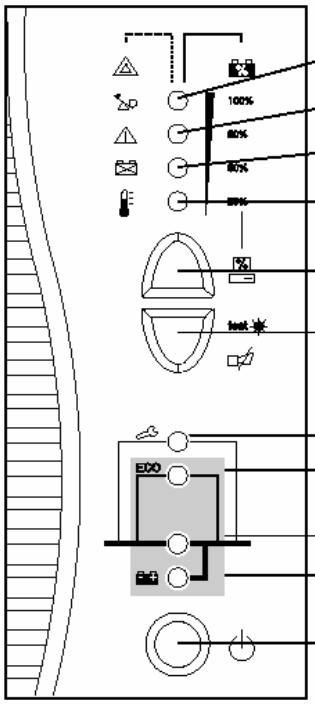
2. UPS seen from front:

4,5 and 6 kVA rack models:



	Dimensions in mm (H x W x D)
Electronic module	177 (4U) x 483 x 462
Battery module	177 (4U) x 483 x 462

	Weight in kg
Electronic module	18
Battery module	51



	If LED´s flashing	normal indicated value	value indicated if bottom 15 is pressed
	Alarms	**% battery remaining**	**% load**
11	UPS overload	100%	100%
12	electronics fault	80%	80%
13	battery fault	50%	50%
14	ambient temp. > 40°C	20%	20%

15 hold down to display percent load.

16 lamp test or buzzer OFF.

17 operation on manual bypass.

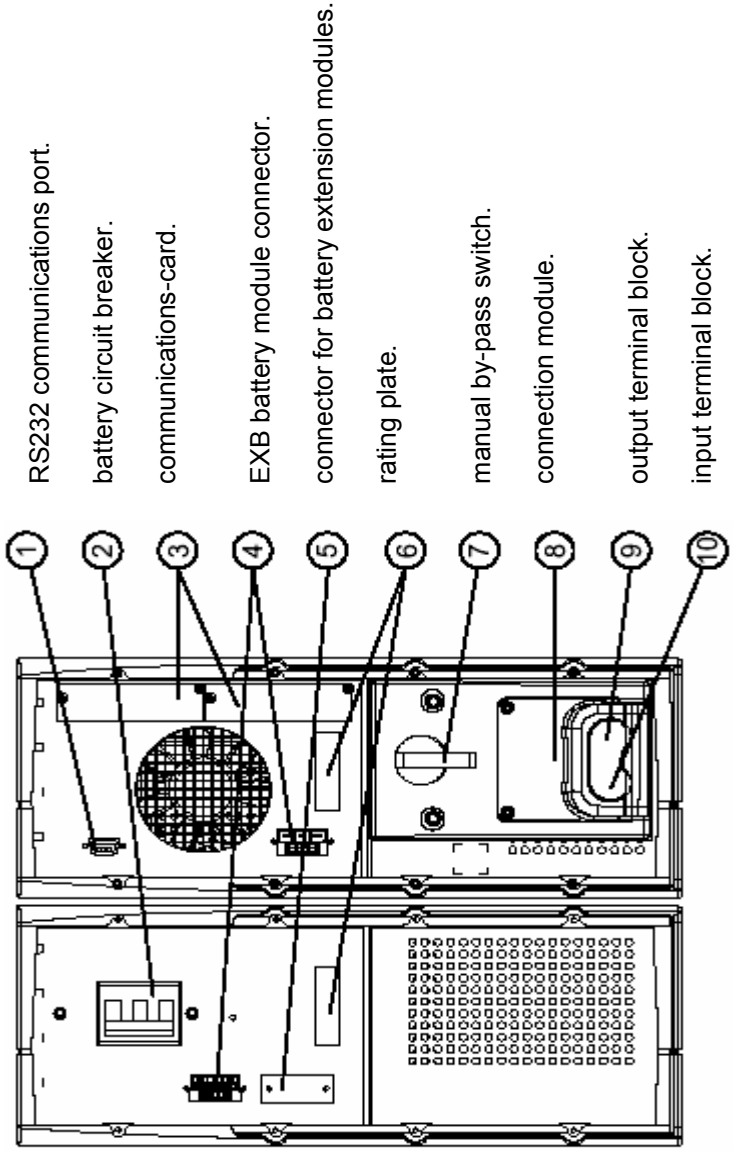
18 operation in ECO mode.

19 operation in ON-LINE mode.

20 operation on battery power.

21 ON/OFF.

3. UPS seen from back:



4. Installation:

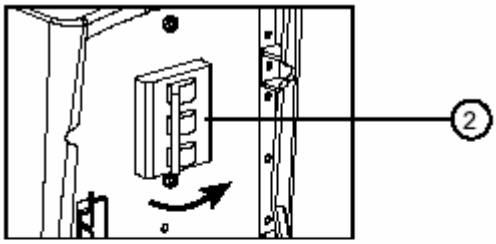
Before carrying out any connections, check upstream protection in panel +AT2 is (OFF).
Connect outgoing cables in panel +AT2 and +AT5 (UPS Panel)

5. Start-up:

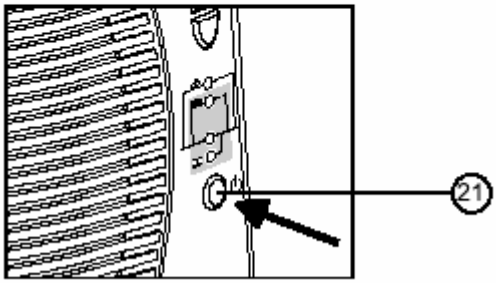
Switch off supply disconnector Q01
and control fuse F05.
Turn on supply from +AT2 upstream device.

To minimize problems caused by moisture:

-Switch on Q01. Start heaters placed in bottom
of cabinet by turning thermostate to e.g. 40 °C.
-Let it run for 24 hours.
Check that voltage on –X1 terminal 1 and 2 is 230 VAC
-Turn thermostate back to 0 °C and switch on F05.



1. Insure battery circuit breaker(s) is ON. (2)
(placed on back of battery module)



2. Press the ON / OFF button (21).

The buzzer beeps three times.
After 30 seconds the UPS is fully operational.
and LED 19 goes ON.

If LED 19 or 20, not goes ON,
or if LED 11, 12, 13 or 14 flash, there is a fault

6. Diagnostics:

Generally if a fault is detected switch off Q1 wait 30 sec. then switch on again.

Step	UPS status	Check list
1	UPS starting up: Connect UPS to mains Switch battery circuit breaker to **ON**. Push N°*21* **ON** button. Leds status in normal running: Leds *11* to *14* (battery charge) may be **ON** If it's not the case, go to step **2**. Led 19 should be **ON**, if not see check list	Check mains voltage presence Check mains connection Check Battery circuit breaker position and battery connection Keep the UPS connected to the mains 8H Check the starting procedure in the user manual
2	If led ***11*** is blinking and buzzer is beeping: UPS has detected an overload. If it's not the case, go to step **3**.	Try to remove some load from the UPS Check the type of load (PC, automation device, motor etc.)
3	If led ***12*** is blinking and buzzer is beeping : UPS has detected an internal fault. The load may or may not be provided anymore. If it's not the case, go to step **4**	Turn the bypass switch to manual position
4	If led *13* is blinking and buzzer is beeping : UPS has detected a battery fault. If it's not the case, go to step **5**	Keep the UPS connected to the mains 8H
5	If led *14* is blinking,: UPS has detected a temperature fault. If it's not the case, go to step **6**	The room temperature is over 40°C Check the clearance behind the fan and in front of the UPS Check the fan is running
6	If led ***20*** is lit solid : UPS is running on batteries If it's not the case,go to step **7**	Check mains voltage presence Check mains connection
7	If led 18 is **ON** : the load is provided directly by the mains. If it's not the case, go to step **8**.	Check leds *11*, *12*, *13* and *14* to know which fault transferred the UPS to automatic bypass Check the ECO mode is not personnalised Check the bypass rotary switch is not in its intermediate position
8	If led 17 is **ON**: UPS is running on manual bypass.	Check if UPS is really in bypass position and why
9	The UPS does not transfer the load on battery when mains is not present anymore.	Check the manual by-pass position is in **NORMAL** Follow step **4**

7. Maintenance:

Troubleshooting requiring NEG Micon after-sales support

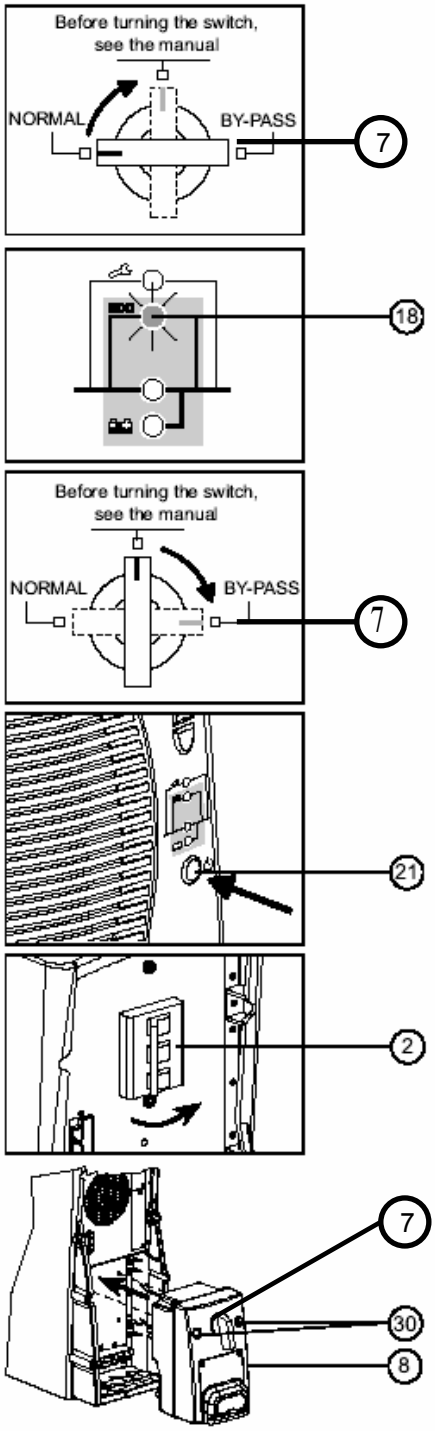
Indication	Signification	Correction
LED 12 flashes and the buzzer beeps.	UPS electronics have detected a UPS fault. There are two possibilities: ▸ the equipment connected to the UPS continues to be supplied, but directly from the AC-power source (via the automatic bypass (LED 18 ON); ▸ the connected equipment is no longer supplied. ? The equipment connected to the UPS is no longer protected.	Follow the UPS replacement procedure
LED 13 flashes.	A battery fault was detected during the battery test.	Make sure that the battery circuit breaker(s) is closed.If that is the case, call the after-sales support because the battery is not OK,and needs replacement

Maintenance of battery when not in operation:

If the UPS remain de-energised for a long period, The batteries must be charged for 24 hours once every 3-month. Thus avoiding possible irreversible damage.

Be sure that all MCB are disconnected in the panel
Connect 230 VAC 10A to terminal X1 L to terminal 1 and N to terminal 2 PE to terminal PE
Turn on supply disconnecter Q01 and turn on 230 VAC from supply.
Turn on UPS se page 3 position 21

8. Replacement of the electronic module:



Disconnecting the connection module:
1. Turn the manual bypass switch (7) from the NORMAL to the intermediate position.
2. Check that LED (18) is ON before continuing to the BYPASS position.

If LED (18) is not ON, do not switch to the BYPASS position and call the after-sales support department.

3. Turn the manual bypass switch (7) from the intermediate position to the BYPASS position.
The connected equipment is supplied by the AC-power source, via the manual bypass.
4. Shut down the UPS by pressing button (21) (return to the OFF position).
5. Switch the battery circuit breaker(s) (2) to the OFF position.
6. Remove the two fixing screws (30) to free the connection module (8).
7. Remove the connection cable(s) from the battery module(s).
The UPS can be replaced. The connected equipment is supplied by the AC-power source.

Reconnecting the connection module:
1. Secure the connection module (8) using the two screws (30).
3. Reconnect the connection cable(s) to the battery module(s).
3. Switch the battery circuit breaker(s) (2) to the ON position.

Check that UPS personalization settings still correspond to the equipment to be supplied (see section 3.5).

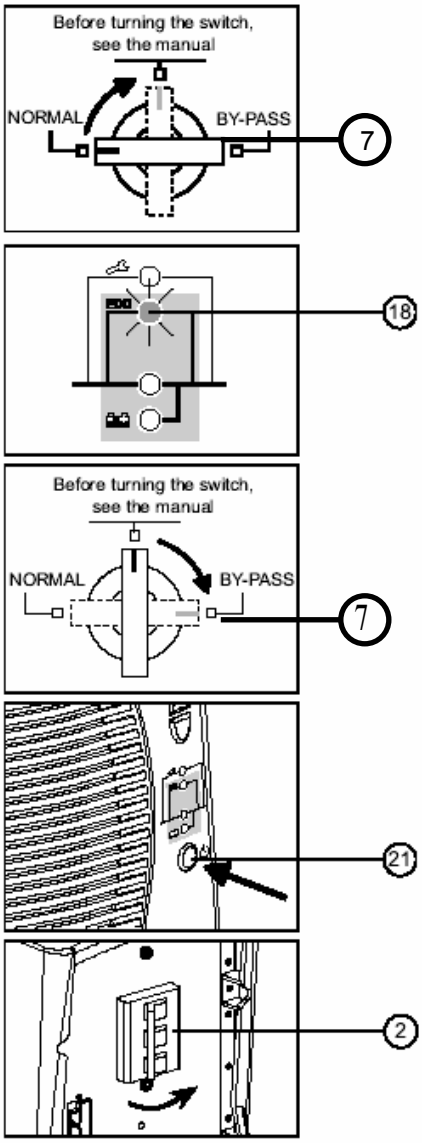
4. Start the UPS by pressing button (21).
5. Check that LED (18) is ON before turning the manual bypass switch (7) to the intermediate position.

If LED (18) is not ON, do not switch to the intermediate position and call the after-sales support department.

6. Turn the manual bypass switch (7) from the BYPASS position to the intermediate position and check that LED (18) is ON.
7. Turn the manual bypass switch (7) from the intermediate position to the NORMAL position.

The connected equipment is again protected by the UPS.

9. Replacement of the battery module:



.
1. Turn the manual bypass switch (7) from the NORMAL to the intermediate position. placed on back of electronic module
2. Check that LED (18) is ON before continuing to the BYPASS position.

If LED (18) is not ON, do not switch to the BYPASS position and call the after-sales support department.

3. Turn the manual bypass switch (7) from the intermediate position to the BYPASS position.
The connected equipment is supplied by the AC-power source, via the manual bypass.
4. Shut down the UPS by pressing button (21) (return to the OFF position).
5. Switch the battery circuit breaker(s) (2) to the OFF position.
6. Remove the connection cable(S) from battery module(S)
The battery can now be replaced. The connected equipment is supplied by the AC-power source.

CAUTION!!! the battery box is very heavy 51 kg

Reconnecting the battery module:
7. Reconnect the connection cable(s) to the battery module(s).
8. Switch the battery circuit breaker(s) (2) to the ON position.

9. Start the UPS by pressing button (21).
10. Check that LED (18) is ON before turning the manual bypass switch (7) to the intermediate position.

If LED (18) is not ON, do not switch to the intermediate position and call the after-sales support department.

11. Turn the manual bypass switch (7) from the BYPASS position to the intermediate position and check that LED (18) is ON.
12. Turn the manual bypass switch (7) from the intermediate position to the NORMAL position.

The connected equipment is again protected by the UPS.

Change Info

Item no.	***Item text:***
None	**Connections to Frequency Converter =BA+1S1 V82-1.65mw 690V 50Hz and Cooling Station +AT7 f. Converter**

Active revision *for production*

Connections to Frequency Converter =BA+1S1

Drawing no.: 6015876

Version	Date	Init./App.	Description of change since last revision
02	01.02.2006	INI/SLB	Correction of PCS Converter All pages updated, simple correction of text in head of the drawing. Page 040: Linetype of cables corrected to full-line. Page 041: W600 cable ID to B04.Rx+, B04.Rx-, B04.Tx+ and B04.Tx+ corrected and cable ID to +1S1-X32.7, +1S1-X32.8, +1S1-X32.9 and +1S1-X32.10 corrected. Text moved closer to terminal row +1S1-X32. W624_remote monitoring removed. External in PFC Panel +AT3, terminals X22 and X24 removed, plug X22 and X24 removed, contactor K18, make contact K18 and contactor K20 removed.

Terminal Box +AT7 for Cooling Station

Drawing no.: 6015865

Version	Date	Init./App.	Description of change since last revision
02	01.02.2006	INI/SLB	Correction of PCS Converter Page 001: Updated Page 030: W628_PT100 sensor with screen removed.

LST no.: 21000197 ***Material BOM no.: 60108580***

Version	Date	Init./App.	Description of change since last revision
01	02.02.2005	FLT+INI/FLT	First version

Old revisions *for service*

Connections to Frequency Converter =BA+1S1

Drawing no.: 6015876

Version	Date	Init./App.	Description of change since last revision
01	21.06.2005	INI/SLB	Implementation of Filter Surveillance Page 001: Updated. Page 041: Connections in PFC Panel +AT3, W630 and Main Filter fault added. Connections to AT2 ICP Converter B04 Rx & Tx exchanged.
00	10.01.2005	SLB/SLB	First version

Cooling Station +AN7 f. Converter

Drawing no.: 6015865

Version	Date	Init./App.	Description of change since last revision
01	04.02.2005	INI/FLT	Page 001: Updated Page 030: Glands updated with cable numbers and S01 added. Page 031: Q52 and Q54 AUX contact added. Page 100: Q52 terminal no. changed and settings added. K56 terminal no. Changed. M01 text "0,55KW" added. Q54 settings added. H01 text "2KW"added. Q52 and Q54 terminal no changed from 21/22 to 41/42. X36.B5 and B6 W629 and S02 removed text corrected. Between X50.13 and X50.16 jumper added. Cable color added.
00	04.01.2005	FLT/FLT	First version

LST no.: xxxxxxxx ***Material BOM no.: xxxxxxxx***

Version	Date	Init./App.	Description of change since last revision
xx	xx.xx.xxxx	xxx/	Writhe the change

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E-mail: vestas@vestas.com • Web: www.vestas.com

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PAGE	CONTENT	DATE	REVISION
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040	Cables to main panel +AT1	060201	-
041	Cables to operation panel	050621	-
042	Cables to conection box +	060201	-
043	Cable to UPS Panel +AT5	050110	-

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	Date	Initials	Function	Table of Contents		
Designed	050110	SLB	Project title	Connections to PCS Converter (Statcon) = BA+1S1		
Approved	060201	SLB	Comments		Customer	
Reviced	060201	INI	Rev. 02	Drawing no. 6015876	Cont. sheet 030	Sheet 001

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FOR DETAILS RELATED TO PCS CABLE OUTLINE PLEASE REFER TO PLANT OUTLINE DIAGRAM

DETAILED DOCUMENTATION RELATED TO PCS CONVERTER =BA+1S1 IS FOUND IN SEPERATE BINDER

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08:37

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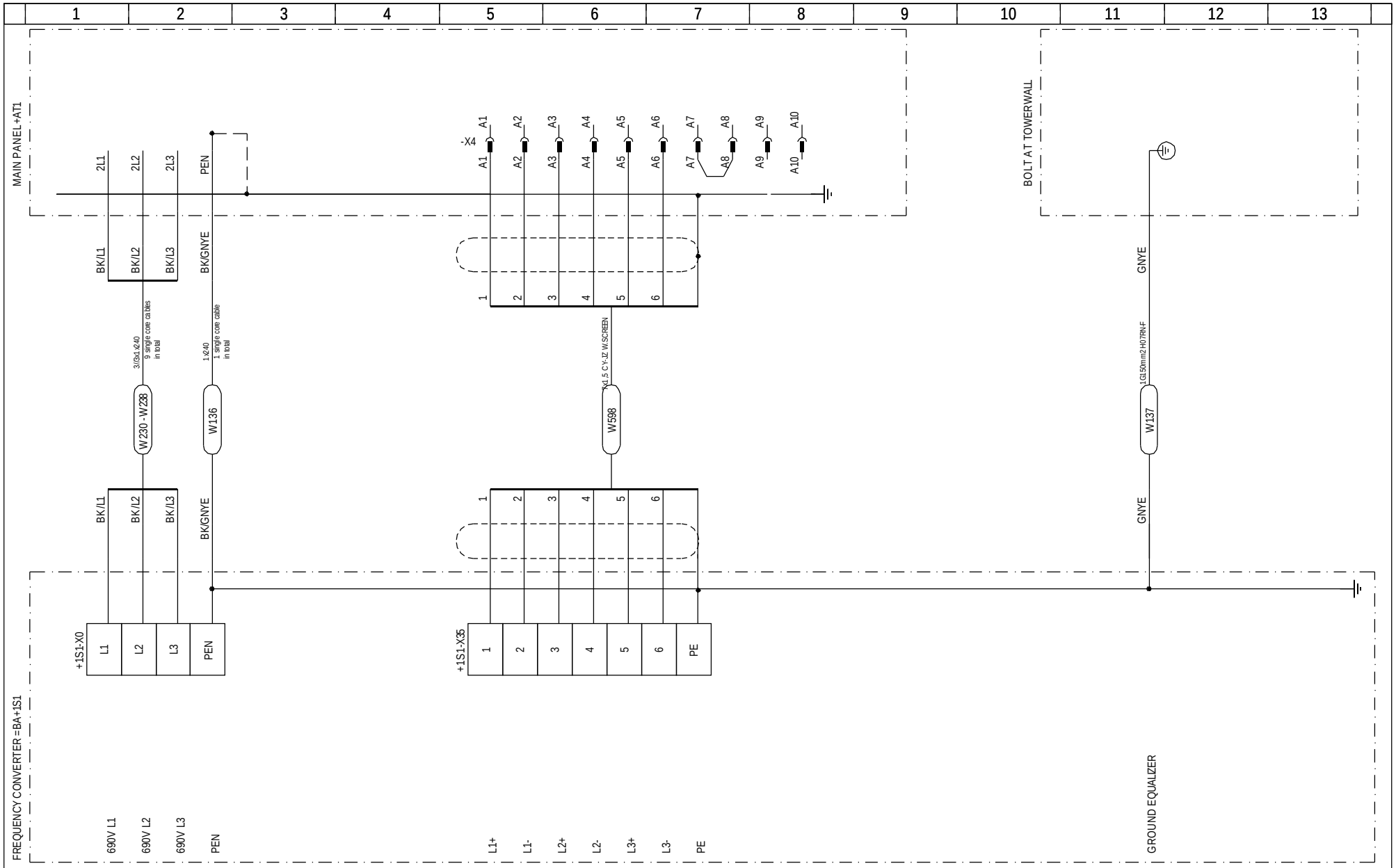
	Date	Initials	Function	Cable Outline			
Designed	050110	SLB	Project title	Connections to PCS Converter (Statcon) = BA+1S1			
Approved			Comments			Customer	
Reviced	050110	SLB	Rev. -	Drawing no. 6015876		Cont. sheet 040	Sheet 030



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	Date	Initials	Function	Cables to main panel +AT1 and ground equalizer		
Designed	050110	SLB	Project title	Connections to PCS Converter (Statcon) = BA+1S1		
Approved	060201	SLB	Comments		Customer	
Reviced	060201	INI	Rev. -	Drawing no. 6015876	Cont. sheet 041	Sheet 040

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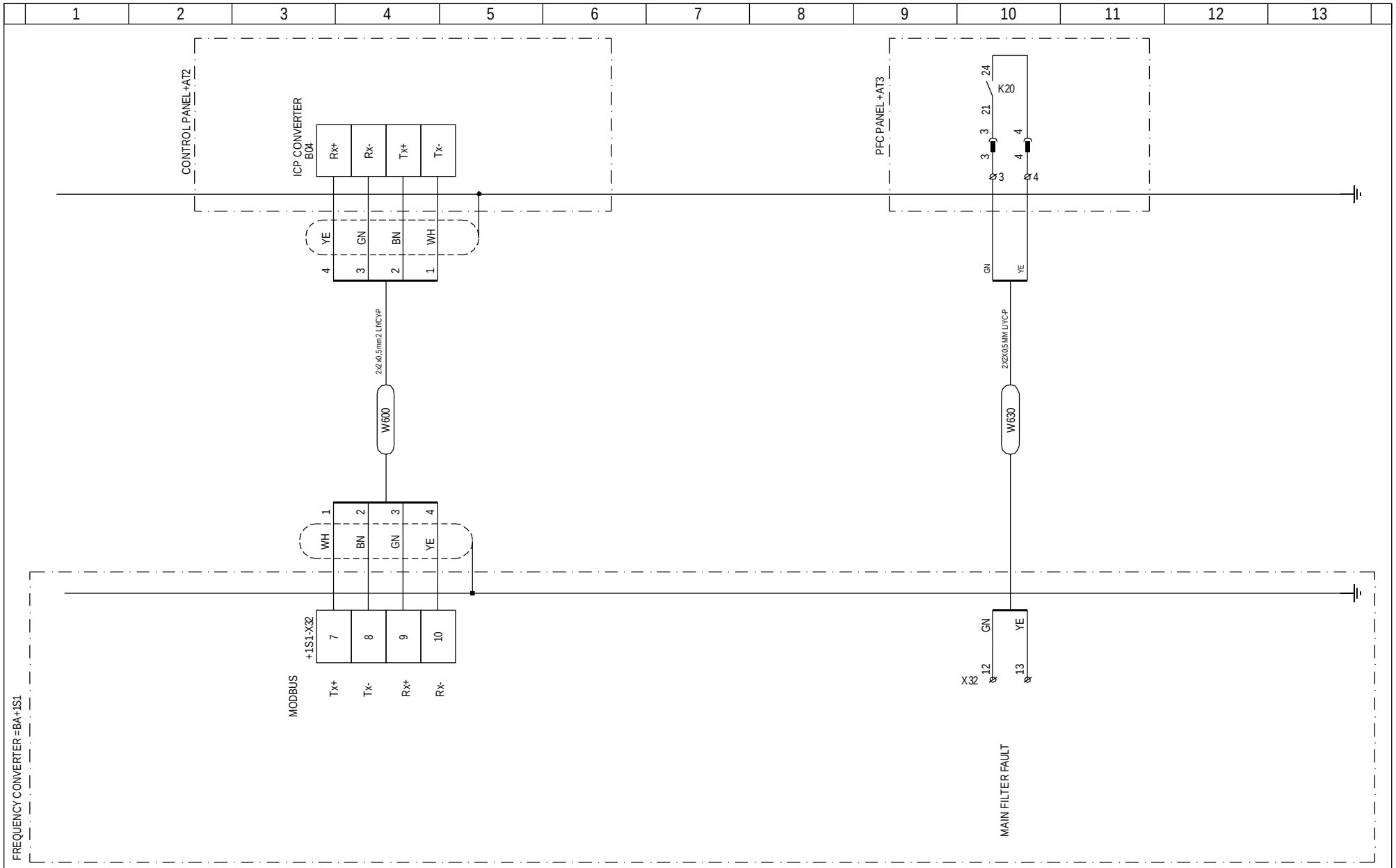

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	Date	Initials	Function	Cables to operation panel +AT2,		
Designed	050110	SLB	Project title	Connections to PCS Converter (Statcon) = BA+1S1		
Approved	050621	SLB	Comments		Customer	
Reviced	050621	INI	Rev. -	Drawing no. 6015876	Cont. sheet 042	Sheet 041

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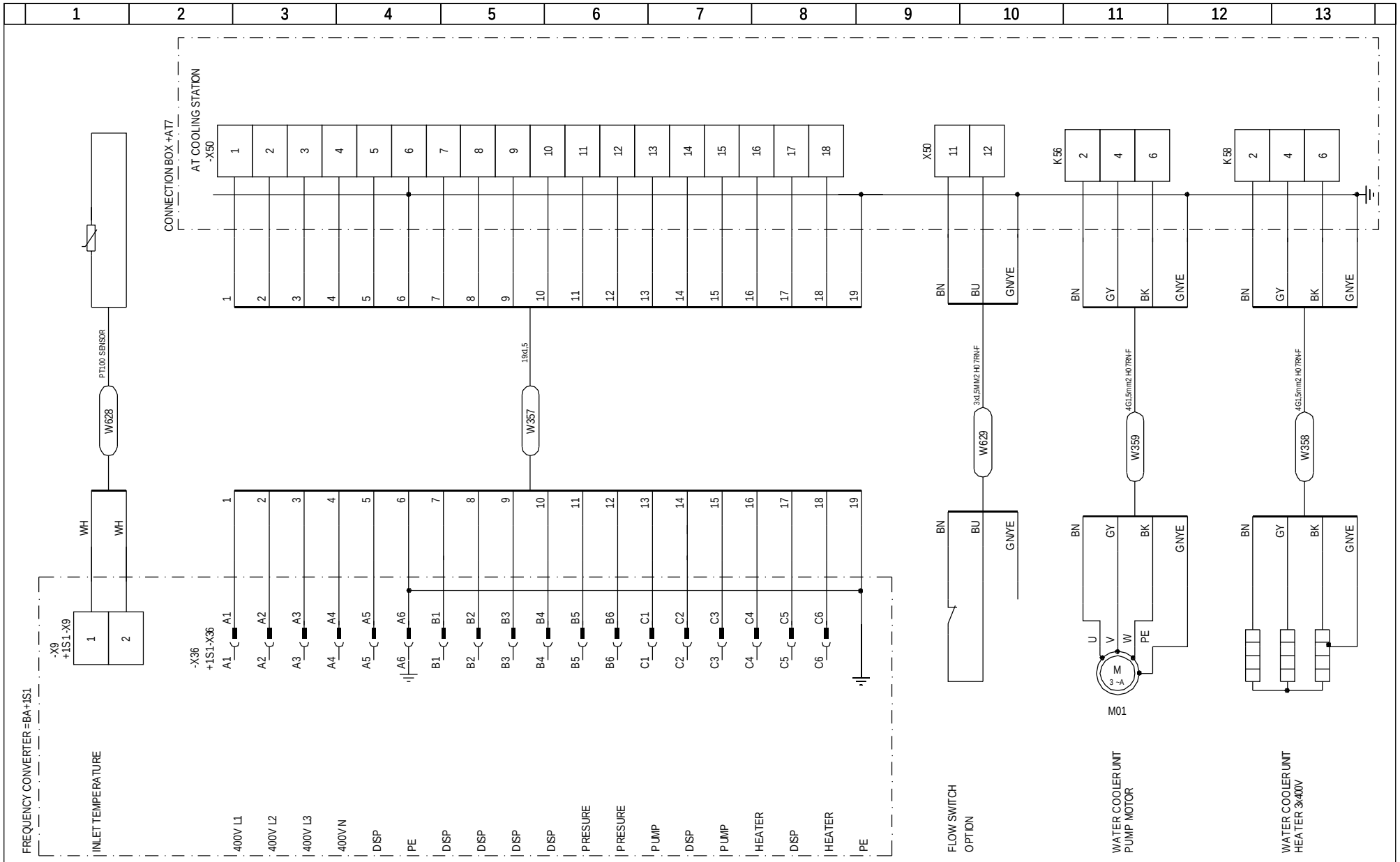

	Date	Initials	Function	Cables to conection box +AT7 Cooling station		
Designed	050110	SLB	Project title	Connections to PCS Converter (Statcon) = BA+1S1		
Approved	060201	SLB	Comments		Customer	
Reviced	060201	INI	Rev. -	Drawing no. 6015876	Cont. sheet 043	Sheet 042

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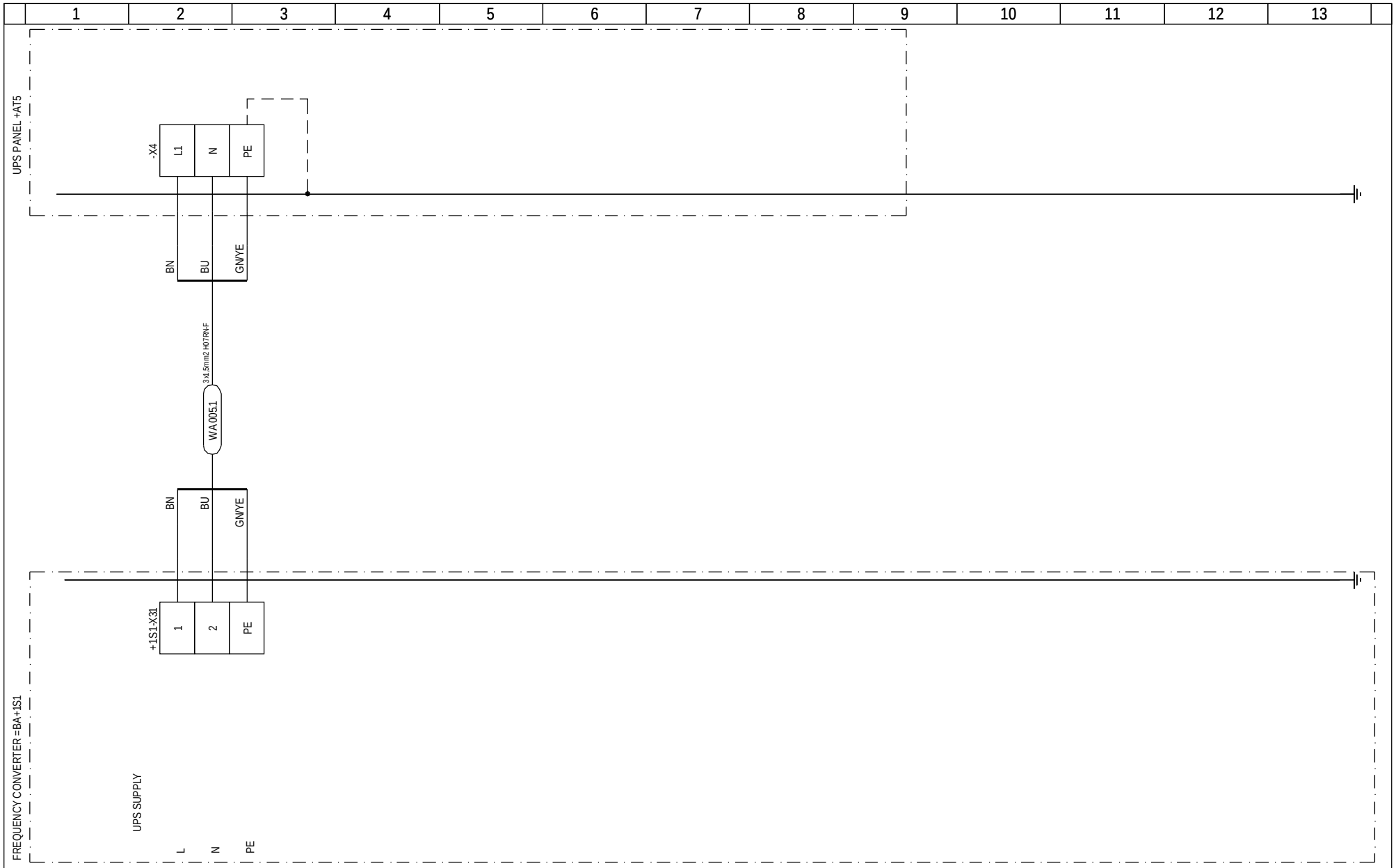

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	Date	Initials	Function	Cable to UPS Panel +AT5		
Designed	050110	SLB	Project title	Connections to PCS Converter (Statcon) = BA+1S1		
Approved			Comments		Customer	
Reviced	050110	SLB	Rev. -	Drawing no. 6015876	Cont. sheet -	Sheet 043

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PAGE	CONTENT	DATE	REVISION
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030	Panel Outline	050204	-
031	Mounting Plate Outline	050204	-
100	Cooling system for PCS	060201	-

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	Date	Initials	Function	Table of Content		
Designed	050104	FLT	Project title	Terminal Box +AT7 for Cooling Station		
Approved	060201	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	060201	INI	Rev. 02	Drawing no. 6015865	Cont. sheet 030	Sheet 001

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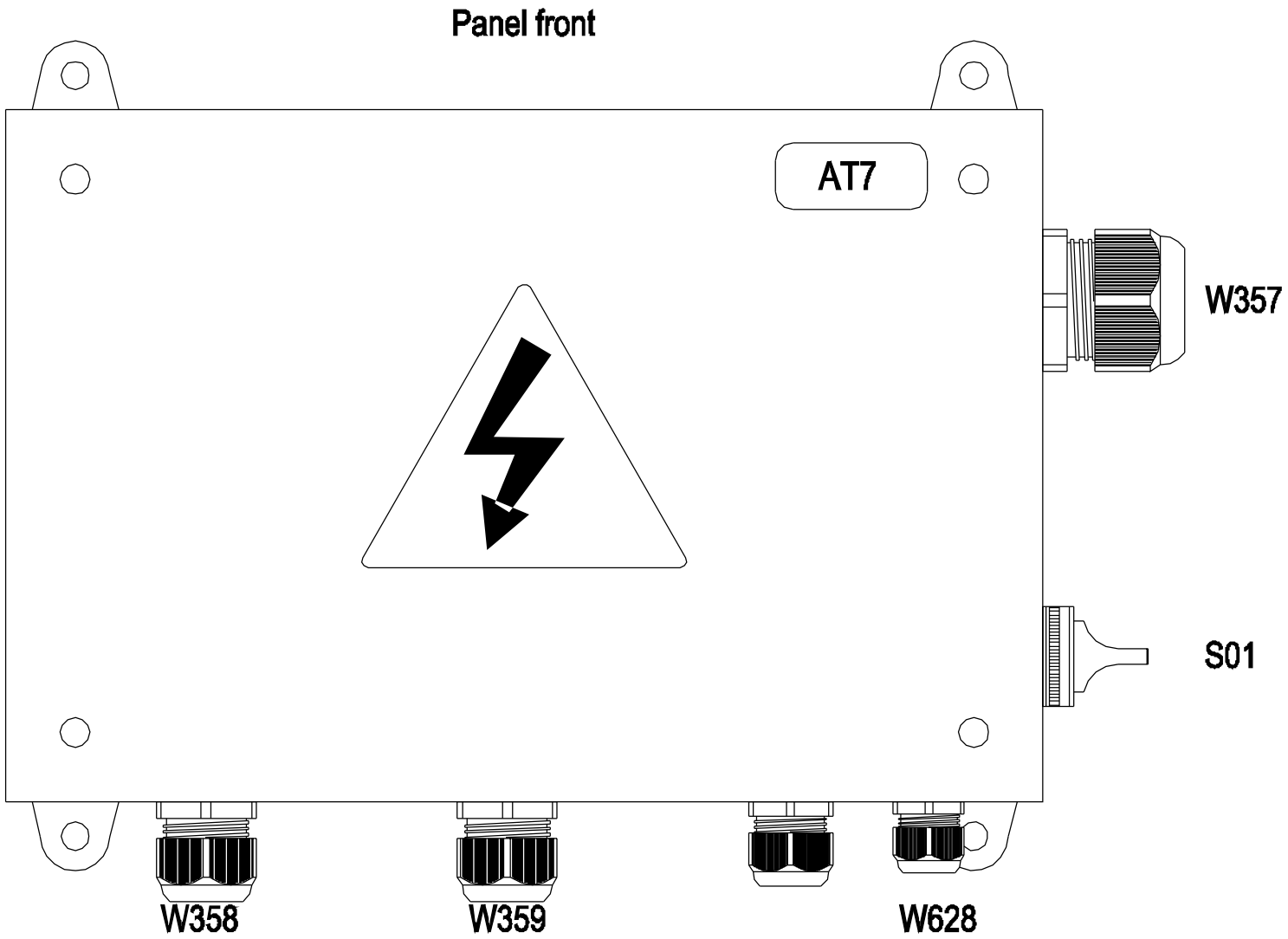

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	Date	Initials	Function	Panel Outline		
Designed	050104	FLT	Project title	Terminal Box +AT7 for Cooling Station		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050204	INI	Rev. -	Drawing no. 6015865	Cont. sheet 031	Sheet 030

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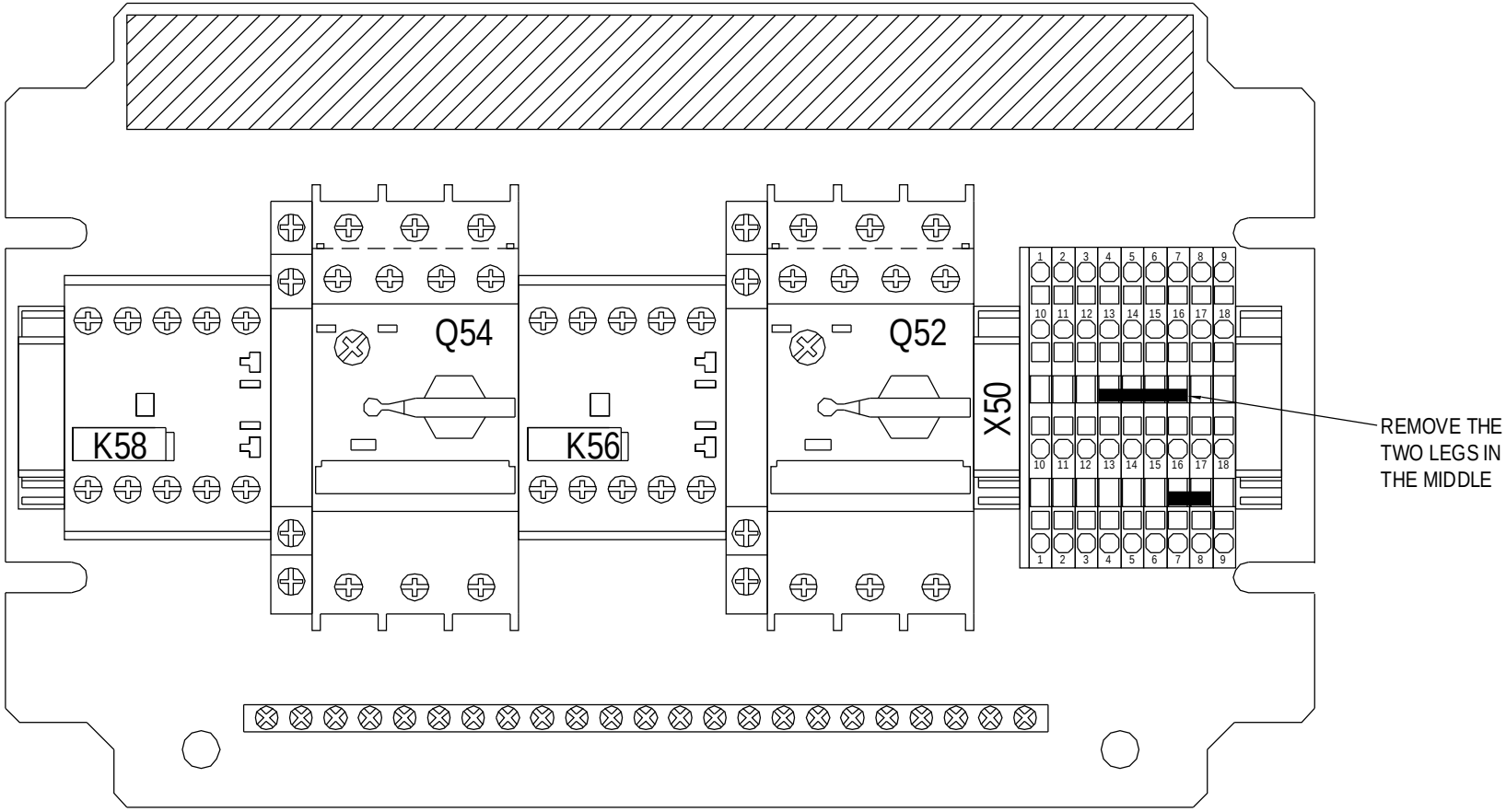
Mounting plate



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: Mounting Plate Outline		
		Designed	050104	FLT	Project title: Terminal Box +AT7 for Cooling Station		
		Approved			Comments	Customer: Vestas Wind Systems A/S	
		Reviced	050204	INI	Rev.: -	Drawing no.: 6015865	Cont. sheet: 100	Sheet: 031

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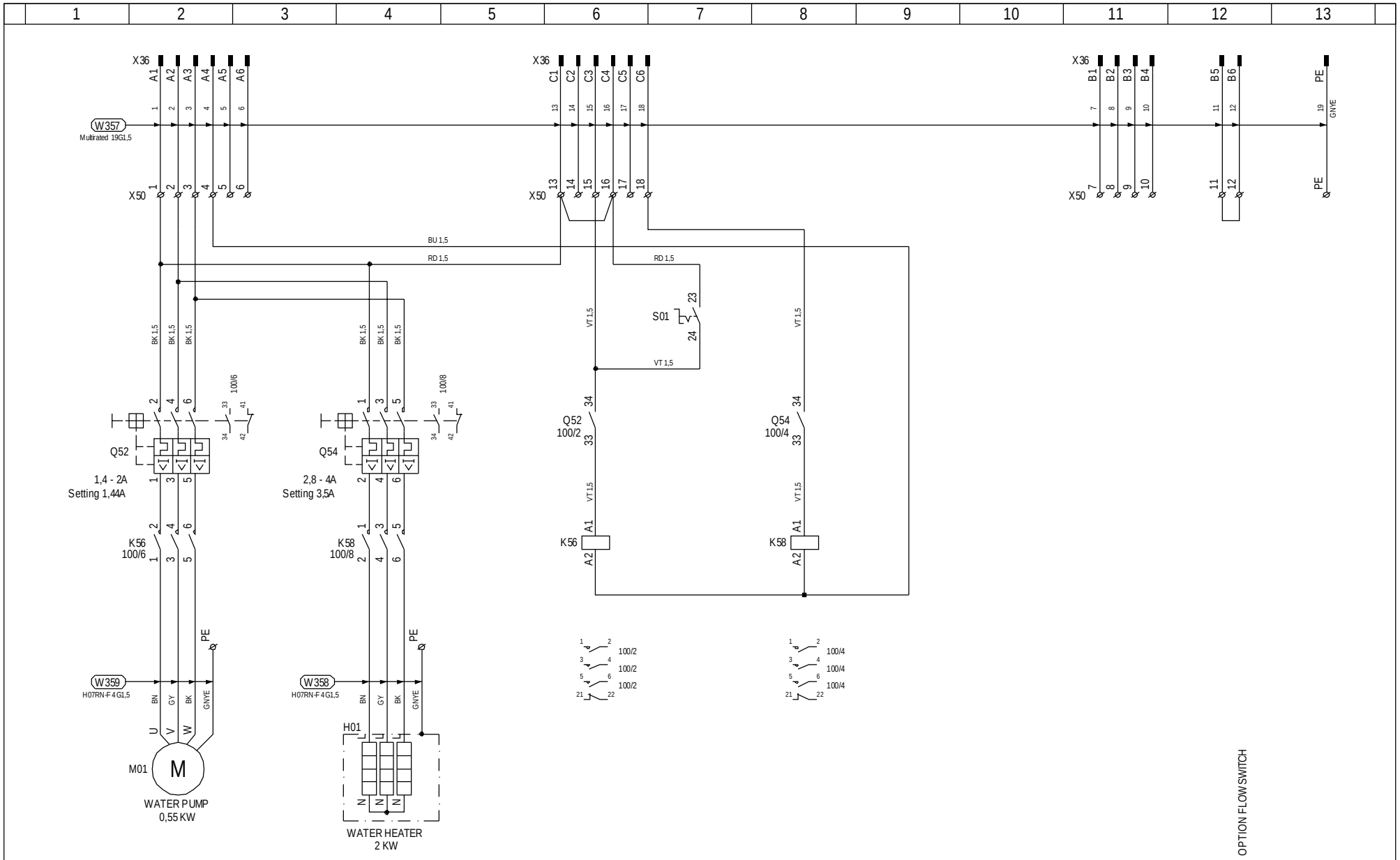

	Date	Initials	Function	Cooling system for PCS		
Designed	050104	FLT	Project title	Terminal Box +AT7 for Cooling Station		
Approved	060201	SLB	Comments		Customer	Vestas Wind Systems A/S
Reviced	060201	INI	Rev. -	Drawing no. 6015865	Cont. sheet -	Sheet 100

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LST: 21000197
Version: 01

Material 60108580
Description Terminal Box +AT7 for Cooling Station

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60108618	TERMINAL BOX KL 300X200X120MM W. WORK	1	PC	
1	60096809	WALL BRACKET for KL BOX	4	PC	
1	60102739	MOUNTING PLATE KL 285x175mm W. WORK	1	PC	
1	60004747	CIRCUIT BREAKER 3RV1121-1BA10 1.4-2.0A	1	PC	Q52
1	60004779	AUX. CONTACT 3RV1901-1A 1NO+1NC 1.0A	1	PC	Q52
1	60004662	CIRCUIT BREAKER 3RV1021-1EA10 2.8-4.0A	1	PC	Q54
1	60004779	AUX. CONTACT 3RV1901-1A 1NO+1NC 1.0A	1	PC	Q54
1	60004394	CONTACTOR 3RT1016-1AP02 230V 50/60Hz	1	PC	K56
1	60004394	CONTACTOR 3RT1016-1AP02 230V 50/60Hz	1	PC	K58
1	60007182	DIN RAIL PP0735H 7x35mm	0,280	M	
1	60007201	EARTH BAR 01130 9x6.5x1000mm	0,200	M	
1	60013412	ANGLE BRACKET 2x10x25mm f. EARTH BUSBAR	2	PC	
1	60006071	TERMINAL WAGO 870-501 2-LEV.0,08-2,5mm²	9	PC	X50
1	60006083	END SECTION 870-518 2-LEVEL GREY WAGO	1	PC	X50
1	60094860	MARKER CARD WAGO Nos 1-10 TYPE WMB	1	PC	X50
1	60094872	MARKER CARD WAGO Nos 11-20 TYPE WMB	1	PC	X50
1	60006086	PUSH-IN JUMPER BAR 870-402 2-POLED	1	PC	
1	60006088	PUSH-IN JUMPER BAR 870-404 4-POLED	1	PC	
1	60091912	END STOP WAGO 249-117 10mm TS35	3	PC	
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	
1	60105941	QUICK-RELEASE FASTENER for KL BOX	4	PC	
1	60002566	Label "+AT7"	1	PC	
1	60006819	STICKER "JORD" 14mm	1,000	SH	
1	60007588	CABLE GLAND BM-EN-15 M40 PA 6	1	PC	
1	60007596	LOCKNUT BML-15 M40 PA 6	1	PC	
1	60007584	CABLE GLAND BM-EN-11 M16 PA 6	1	PC	
1	60007592	LOCKNUT BML-11 M16 PA 6	1	PC	
1	60007630	CABLE GLAND BMBC-02 M20 BRASS	1	PC	
1	60007639	LOCKNUT BMBL-03 M20 BRASS	1	PC	
1	60007631	CABLE GLAND BMBC-03 M25 BRASS	2	PC	
1	60007640	LOCKNUT BMBL-04 M25 BRASS	2	PC	
1	60005827	SELECT SWITCH ISFA616200R1001 B-C BLACK	1	PC	S01
1	60005844	CONTACT ELEMENT SK616 001-A 1NO	1	PC	S01
1	60005848	HOLDER for 3 ELEMENTS SK616 013-F	1	PC	S01
1	60108631	THERMOLABEL "PUMP AUTO MAN"	1	PC	
1	60108656	CABLE -W357 NM30t. 19G1.5 UNI	1	PC	
1	60108687	CABLE -W358 COOLING SYSTEM 4G2.5 Uni	1	PC	
1	60108690	CABLE -W359 COOLING SYSTEM 4G2.5 Uni	1	PC	
1	60108700	CABLE -W628 COOLING PT100 Ø6x200mm	1	PC	
1	60108702	CABLE -W629 COOLING STATION. 3G1.5	1	PC	
1	60109380	WIRING +AT7 PANEL V82/1650	1	PC	

Change Info

Item no.	***Item text:***
60097529	**Junction Box +AT6, V82-1.65MW & NM72/1650KW 1-Speed 690V 50Hz**

Active revision for production

Drawing no.: 6013202

Version	Date	Init./App.	Description of change since last revision
01	04.10.2004	BOBN/BOBN	First version

LST no.: 21000096 *Material BOM no.: 60097265*

Version	Date	Init./App.	Description of change since last revision
03	10.03.2005	PNN/	60009842 changed from 2 to 1 pc. 60009809 changed from 84 to 85 pc. 60009638 changed from 8 to 12 pc. 60009803 changed from 20 to 24 pc. 60009761 added.

Old revisions for service

Drawing no.: xxxxxxx

Version	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx/	Write the change

LST no.: 21000096 *Material BOM no.: 60097265*

Version	Date	Init./App.	Description of change since last revision
02	30.09.2004	LBO+BOBN/BOBN	60009676 changed to 60034943, there have been two different no. on same item. 2 pc 60009761 screw ISO 4766 M8x35-22H added.
01	28.01.2004	FOM/FOM	First version

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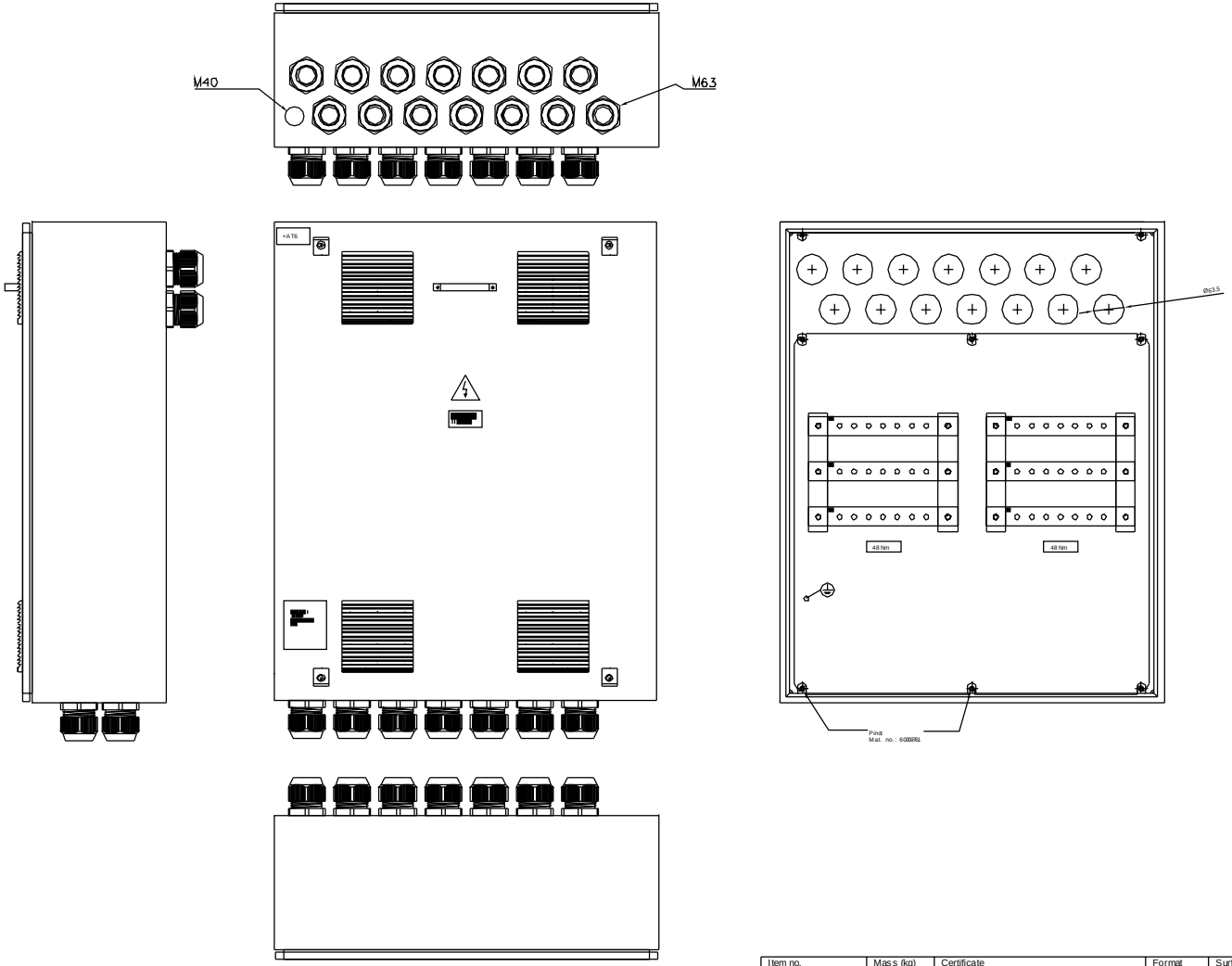

Item no.	Mass (kg)	Certificate	Format	Surface treatment	Revised by	Created date	Created by
60097265	50	-	A3	-		041004	BOBN
Material			Scale	Change no.	PDM rev.	Approved date	Approved by
-			1:10	500000004672			

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Item
Assembling Drawing Complet
Junction Box +AT6 IEC

Status	Replaces	Drawing no.	Rev.
Production	-	6013202	01

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LST: 21000096
Version: 03

Material 60097265
Description Junction box +AT6 NM1650 IEC

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60007330	ISOLATOR 15850201 8x40 for BUSBAR	12	PC	2.3+2.4
1	60013734	SUPPORT 383mm for 3xISOLATOR	4	PC	2.3
1	60007635	CABLE GLAND BMBC-07 M63 BRASS	28	PC	1.2
1	60007644	LOCKNUT BMBL-08 M63 BRASS	28	PC	1.2
1	60010369	CABINET AE 800x1000x300mm 1 DOOR w. WORK	1	PC	1.1
1	60010452	HANDEL for COMPONENT SHELVES	1	PC	1.7
1	60091253	Mounting plate +AT6 1650kW UL /IEC	1	PC	2.1
1	60091258	Copper Busbar 10x40x310mm	6	PC	2.5
1	60034943	Screw ISO 4017 M10 x 30 - 8.8 - FZB	1	PC	2.1
1	60009678	SCREW ISO 4017 M10 x 35 - 8.8 - FZB	42	PC	2.6
1	60009842	LOCK WASHER DIN 6798 A 10 - FZB	1	PC	2.1
1	60009879	NUT ISO 4032 M10 - 8	43	PC	2.5+2.11
1	60009809	SPRING WASHER DIN 6796 10 - FZG	85	PC	2.6+2.11
1	60009639	SCREW ISO 4017 M 8 x 20 - 8.8 - FZB	16	PC	2.1+2.5
1	60009638	SCREW ISO 4017 M 8 x 16 - 8.8 - FZB	12	PC	2.1+2.3
1	60009803	SPRING WASHER DIN 6796 8 - FZG	24	PC	2.3 - 2.5
1	60009841	LOCK WASHER DIN 6798 A 8 - FZB	8	PC	2.1
1	60009873	NUT ISO 4032 M 8 - 8 - FZB	4	PC	2.4
1	60020594	Cable W135 1x95mm² 1m, from junction box	1	PC	2.11
1	60002430	THERMOLABEL "48 Nm"	3	PC	2.7
1	60002679	THERMOLABEL "WARNING! 3 x 690V"	1	PC	1.7
1	60006819	STICKER "JORD" 14mm	1,000	SH	2.11
1	60014044	LABELS +AT6 1650/900 BOX f. copper bar	1	PC	2.7
1	60002527	THERMOLABEL "+AT6"	1	PC	1.7
1	60006824	STICKER "LYN" 100mm	1	PC	1.7
1	60024084	FOAM POLYESTER 1800x300x30mm GREY	1	PC	1.5
1	60014619	FILTER PAD PFA2.000FM-500g 150x150mm	4	PC	1.7
1	60097270	Type sign f. +AT6 72-82/1650 IEC	1	PC	1.7
1	60097275	CABLE SHOE KIT for NM82C/1650 IEC	1	PC	
1	60009761	SCREW ISO 4766 M 8 x 35 - 22H	2	PC	
1	60109546	Sticker general use VESTAS TOWERS	1	PC	1.6

Change Info

Item no.	***Item text:***
60104194	**Top Panel +AN1, Active Stall 30t IEC/UL Active Brake**

Active revision *for production*

Drawing number: 6015269

Version	Date	Init./App.	Description of change since last revision
05	09.06.2005	INI/FLT	Page 001 and 002: Updated Page 207: STD. RS485 CABLE TAC84, core text corrected.

LST no.: 21000163 *Material BOM no.: 60104193*

Version	Date	Init./App.	Description of change since last revision
05	31.05.2006	SHL/FLT	MAPICS implementation, controls DK Århus. Phased out 60015605_Display OP-PAN 50A 1.5MW C Phased out 60015648 replaced by 51701601_TOI-II Phased out 60015770 replaced by 51701001_TAC 84CVibr.Grd/2 Filters NMCS Phased out 60015773 replaced by 51700402_TAC 85-1 Direction Grd. VWS

Old revisions *for service*

Drawing number: 6015269

Version	Date	Init./App.	Description of change since last revision
04	22.11.2004	CHO/FLT	All pages updated with Vestas logo. Page 049: Cable WA750-1-2 beacon light fault and W573 ice detector/ice detector fault added Page 051: Wind sensor cables updated. W405 Wire no/color changed to multi rated cables Page 052: text" only on 2sp generators" added to g pt100 sensors. Wire ID on B07 and B08 deleted Page 404: References updated.
03	29.06.2004	INI/CHO	Page 001 and 002: Updated. Page 032: Correction in version 02 was incorrect, changed back to before version 02. Page 043: X02.3 corrected to X02.131. X02.4 removed. F08.8 corrected to F07.6. Page 045: F08.8 reference updated. Page 048: F07.6 moved to page 043. Page 214: F07.6 reference updated.
02	23.06.2004	INI/FLT	Page 001 and 002: Updated. Page 032: Jumper bars added. Terminal no.6 changed to 3. Terminal no.7 changed to 4. Terminal no.9 changed to 6.
01	10.06.2004	CHO/CHO	First version

LST no.: 21000163 *Material BOM no.: 60104193*

Version	Date	Init./App.	Description of change since last revision
04	13.12.2004	MILJE/MILJE	U01 60001934 BLA5 12820.6 FEMALE TERMINAL SCREW 180° changed from 11 to 9 pc.
03	11.10.2004	MILJE/MILJE	Following items are added. 4 pc. 60001869 MSTBT 2.5/4-ST FEM. SCREW ANGLE 1 pc. 60091912 ENDSTOP WAGO 249-117 10mm TS35 (-F26) Following items are removed. 1 pc. 60014286 MARKER CARD WAGO No 1-10 TYPE 870-
02	09.08.2004	MILJE/CHO	Following items are removed: 60007353 CABLE CONDUIT 25x25mm, 60007354 CABLE CONDUIT 25x40mm, 60007356 CABLE CONDUIT 25x80mm, 60007360 CABLE CONDUIT 40x80mm, 60007366 CABLE CONDUIT 60x80mm, 60007182 DIN RAIL, 60007201EARTH BAR. New BOM added 60104149 Cable conduit, DIN rail & earth rail for +AN1.
01	14.06.2004	CHO/CHO	First version.

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PAGE	CONTENT	DATE	REVISION
001	Table of Contents	050609	05
002	Table of Contents	050609	05
030	Panel front layout	041122	-
031	Panel outline	041122	-
032	Terminal row X02	041122	-
033	Terminal row X05 and X08	041122	-
040	Socket X01 Connections to	041122	-
041	Connections f. Sliprings	041122	-
042	Connections to +AN11	041122	-
043	Connections to +AN12	041122	-
044	Connections to +AN12	041122	-
045	Connections to +AN13	041122	-
046	Connections to +AN13	041122	-
047	Connections to +AN14	041122	-
048	Connections to +AN15	041122	-
049	Terminal row X02	041122	-
050	Terminal row X02	041122	-
051	Terminal row X02 & F28-F2	041122	-
052	Varistor box F10-F13	041122	-
080	Connections f. Sliprings	041122	-
200	Supply	041122	-
201	Hub supply	041122	-
202	Connections to sliprings	041122	-
203	SUPPLY 230 VAC	041122	-
204	24VDC supply	041122	-
205	24VDC supply	041122	-
206	Internal connections	041122	-
207	Internal connections	050609	-
208	Internal connections	041122	-
209	Internal connections	041122	-
210	Internal connections	041122	-
211	Internal connections	041122	-
212	Internal connections	041122	-
213	Internal connections	041122	-
214	Varistor box F06-F07	041122	-
215	Varistor box F08-F09	041122	-

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	Date	Initials	Function	Table of Contents		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved	050609	FLT	Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	050609	INI	Rev. 05	Drawing no. 6015269	Cont. sheet 002	Sheet 001

PAGE	CONTENT	DATE	REVISION
216	Varistor box F10-F11	041122	-
217	Varistor box F12-F13	041122	-
218	Varistor box F27	041122	-
219	Windsensors 24Vdc supply	041122	-
301	Output 800-809	041122	-
302	Output 810-819	041122	-
303	Output 820-829	041122	-
304	Output 830-839	041122	-
305	Output 840-844	041122	-
401	Input 500-509	041122	-
402	Input 510-519	041122	-
403	Input 520-529	041122	-
404	Input 530-604	041122	-
405	Input 605-614	041122	-
406	Input 615-624	041122	-
407	Input 625-634	041122	-
408	Input 300-319	041122	-
409	Input 400-419	041122	-
410	Input 710-724	041122	-
411	Input 725-739	041122	-
412	Input 740-749	041122	-
413	Input 100-204	041122	-
414	Input 700 - 709	041122	-
415	Input 535-638	041122	-
416	Supply for TOI & OP-panel	041122	-
451	TOI outline output	041122	-
452	TOI outline output ext.	041122	-
453	TOI outline input	041122	-
454	TOI outline input	041122	-
455	TOI outline input ext.	041122	-
501	Communication	041122	-

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	Date	Initials		
Designed	040610	CHO	Function	Table of Contents
Approved	050609	FLT	Project title	Top Panel +AN1
Reviced	050609	INI	Comments	NM72 & NM82
			Customer	Vestas Wind Systems A/S
			Rev. 05	Drawing no. 6015269
			Cont. sheet 030	Sheet 002

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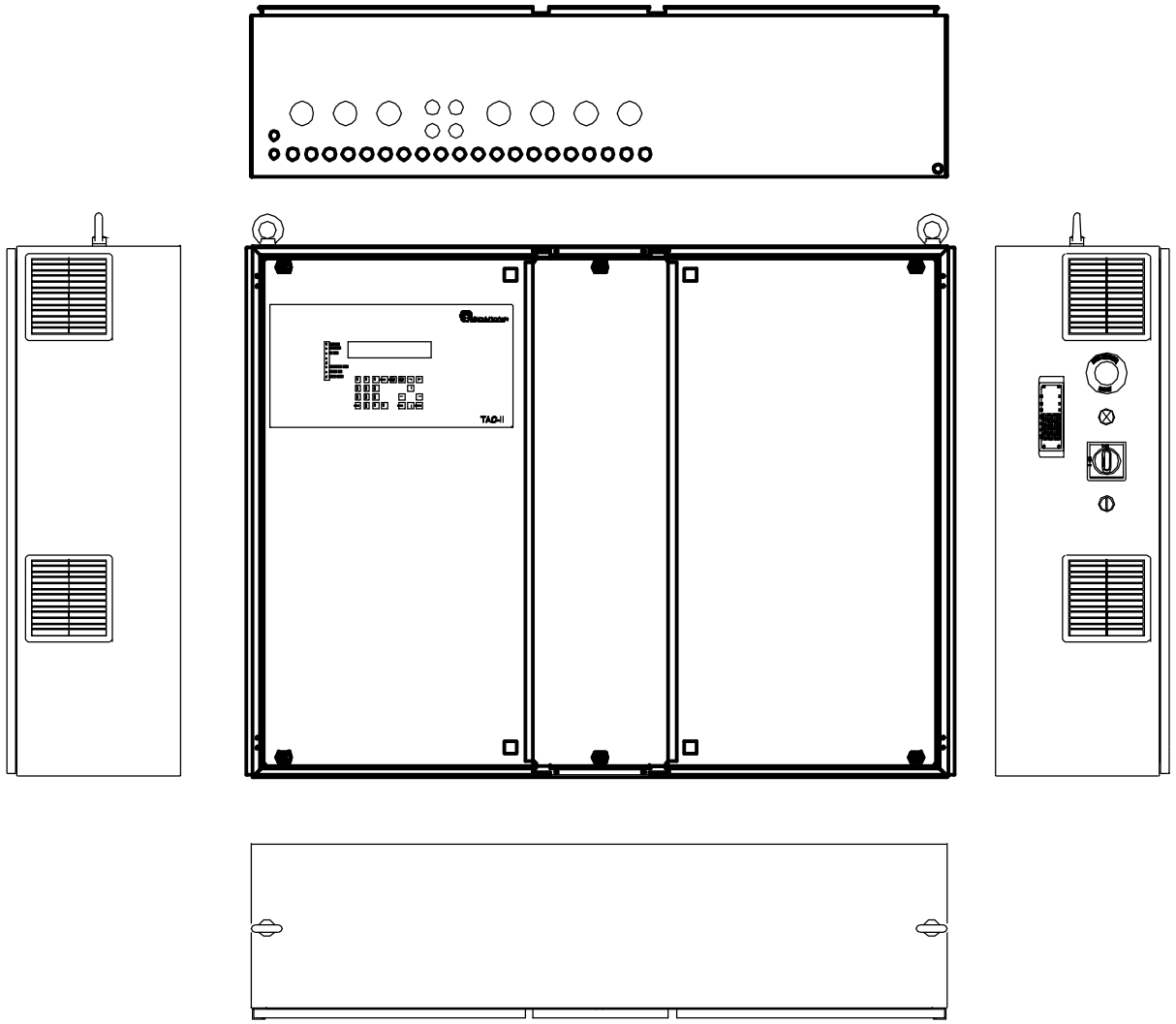

1200x915x300mm (WxHxD)

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		Designed	040610	CHO	Project title	Top Panel +AN1	
		Approved			Comments	NM72 & NM82	Customer: Vestas Wind Systems A/S
		Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 031 / Sheet 030

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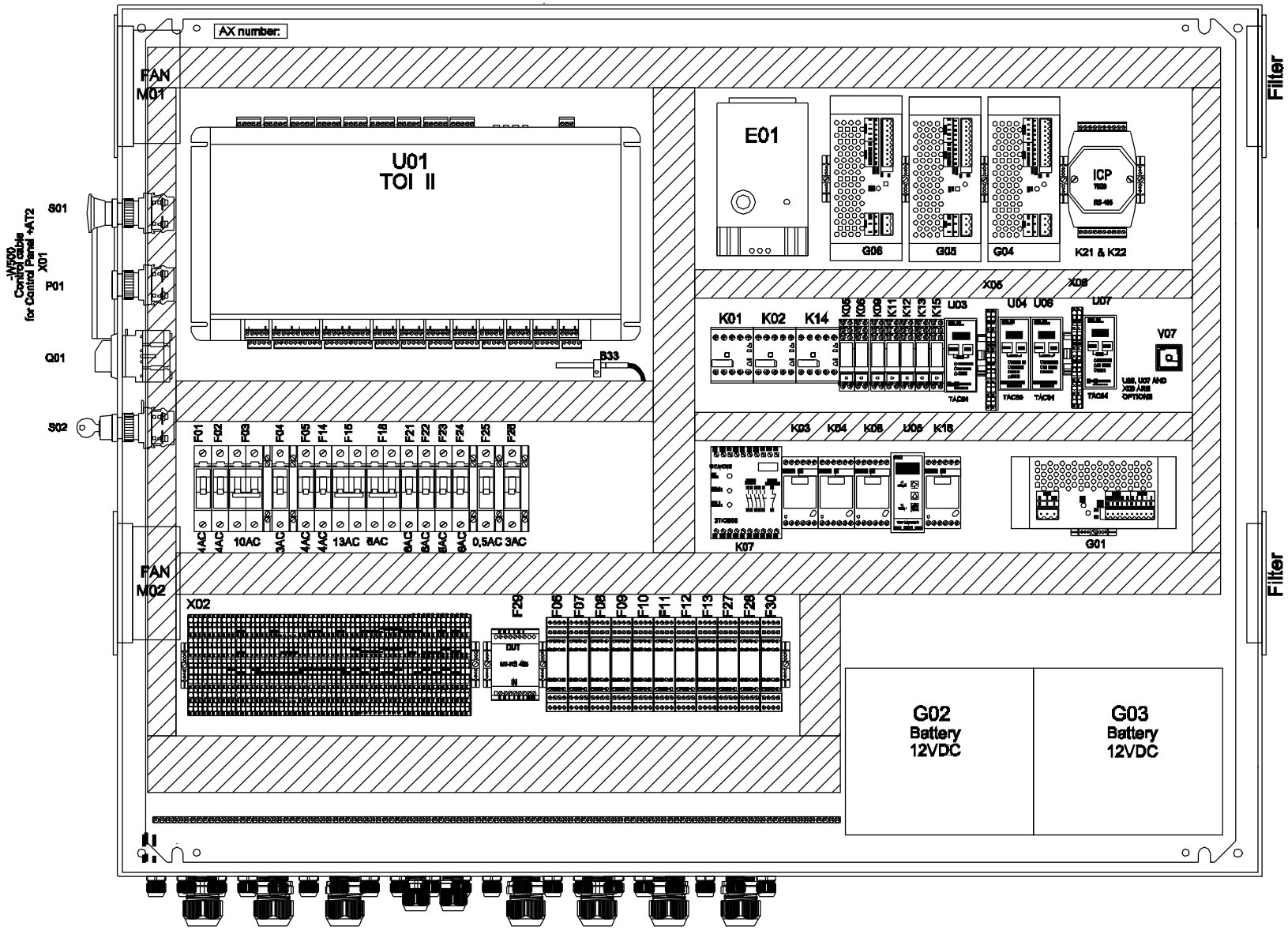

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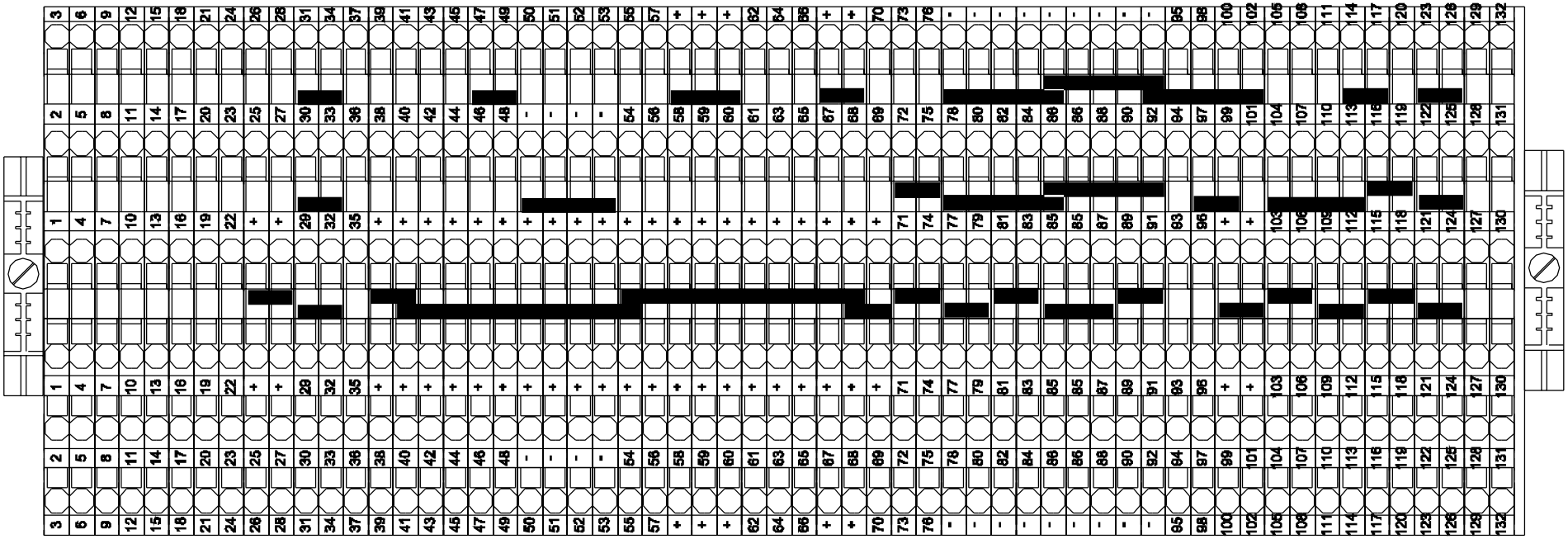
	Date	Initials	Function	Panel outline		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 032	Sheet 031



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	Designed	040610	CHO	Project title	Top Panel +AN1							
	Approved			Comments	NM72 & NM82			Customer	Vestas Wind Systems A/S			
	Reviced	041122	CHO	Rev.	-	Drawing no.	6015269	Cont. sheet	033	Sheet	032	

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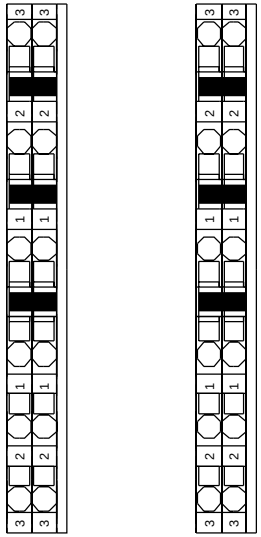
X05 X08



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	Date	Initials	Function	Terminal row X05 and X08		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 040	Sheet 033

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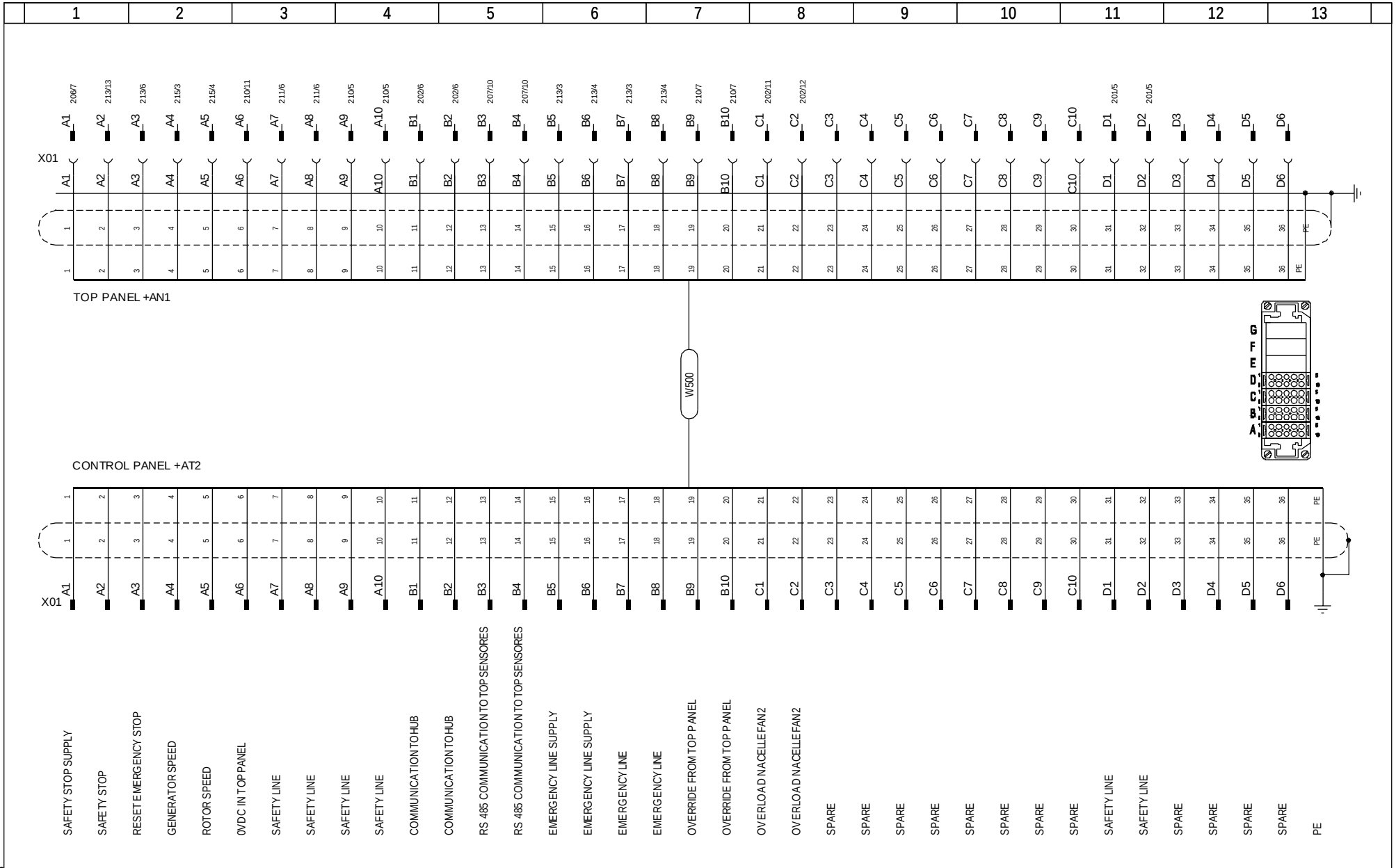

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	Date	Initials	Function	Socket X01 Connections to +AT2		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 041	Sheet 040

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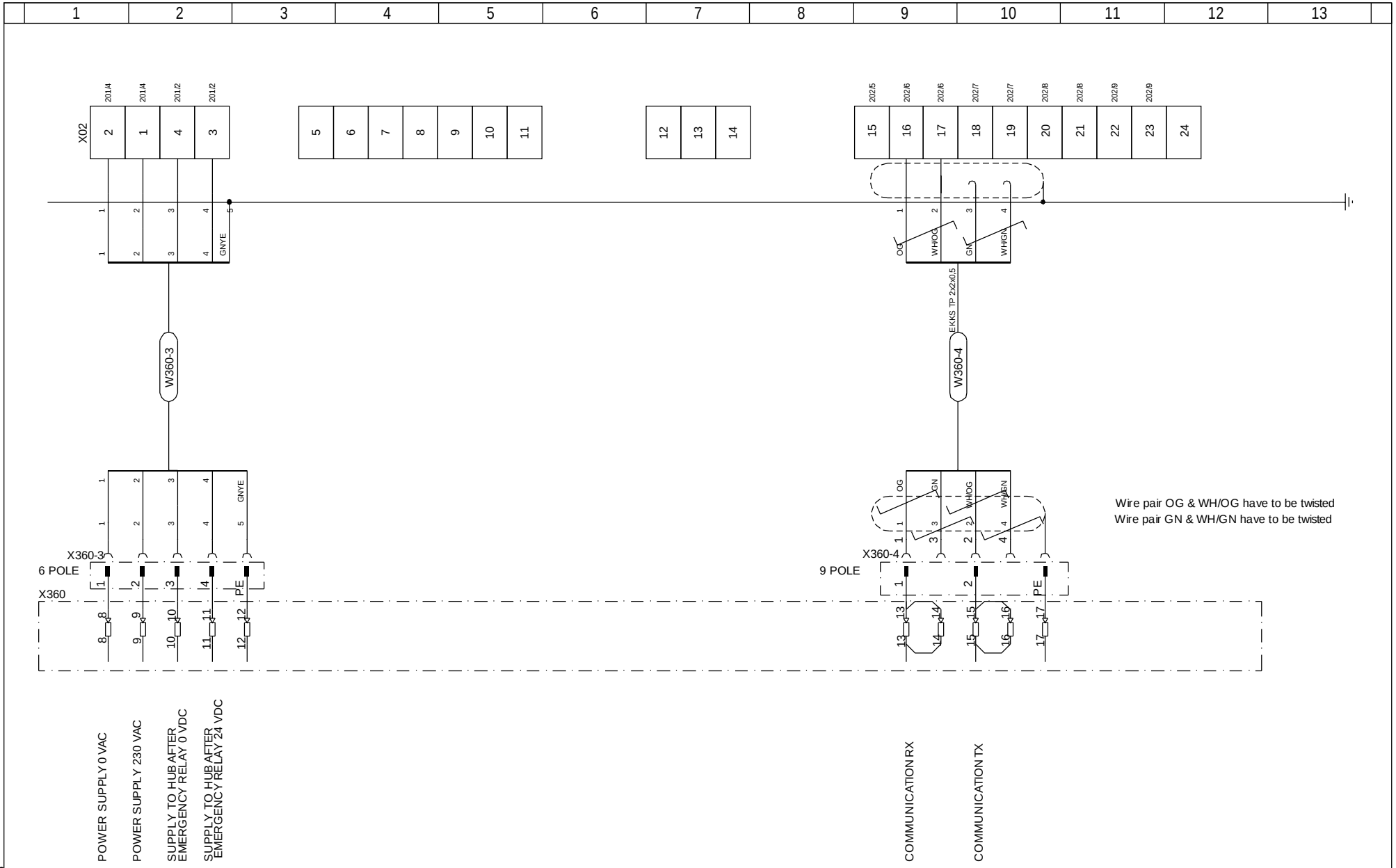

	Date	Initials	Function	Connections f. Sliprings		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 042	Sheet 041

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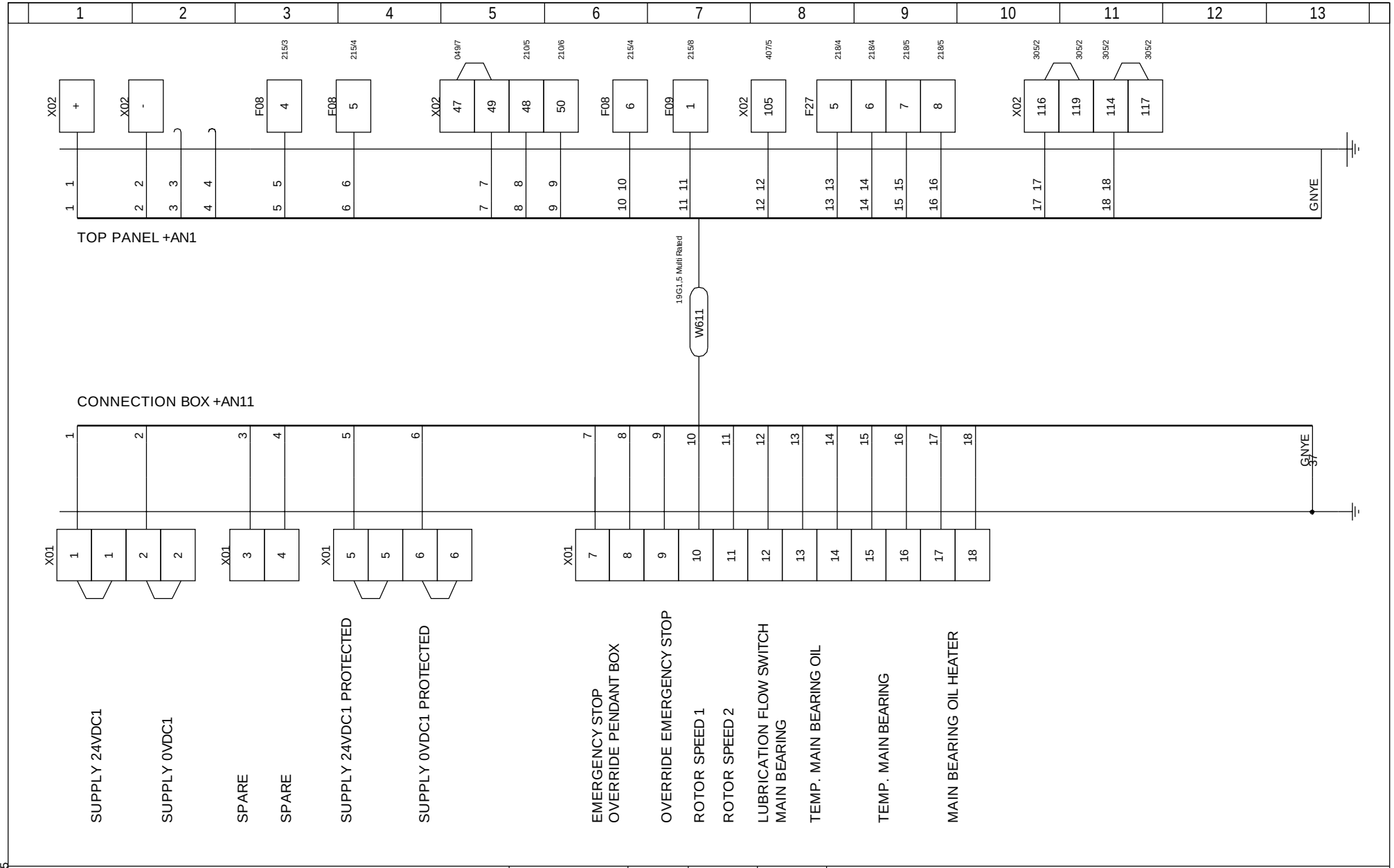

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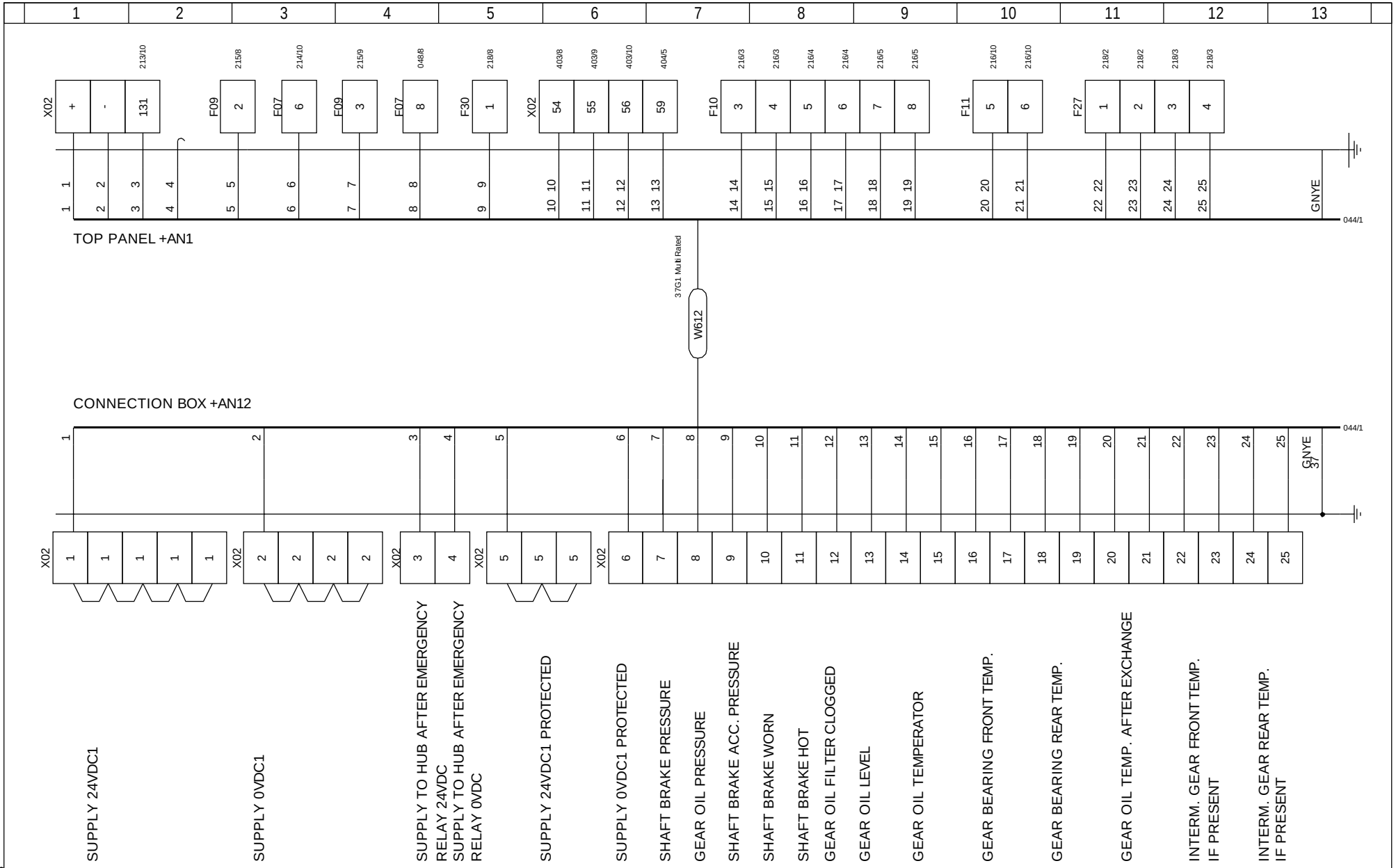
	Date	Initials	Function	Connections to +AN11		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 043	Sheet 042



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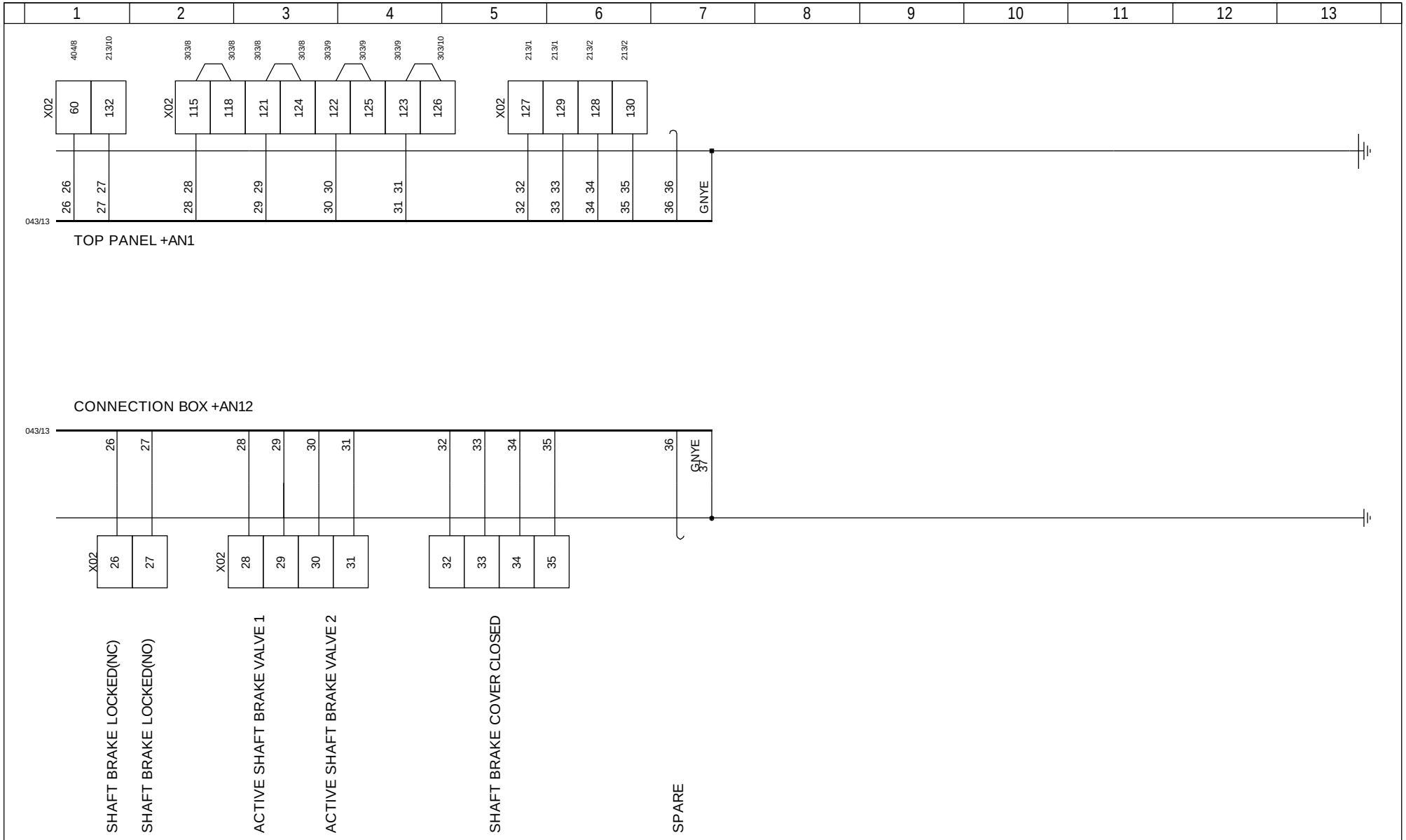
	Date	Initials	Function	Connections to +AN12		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 044	Sheet 043



Vestas

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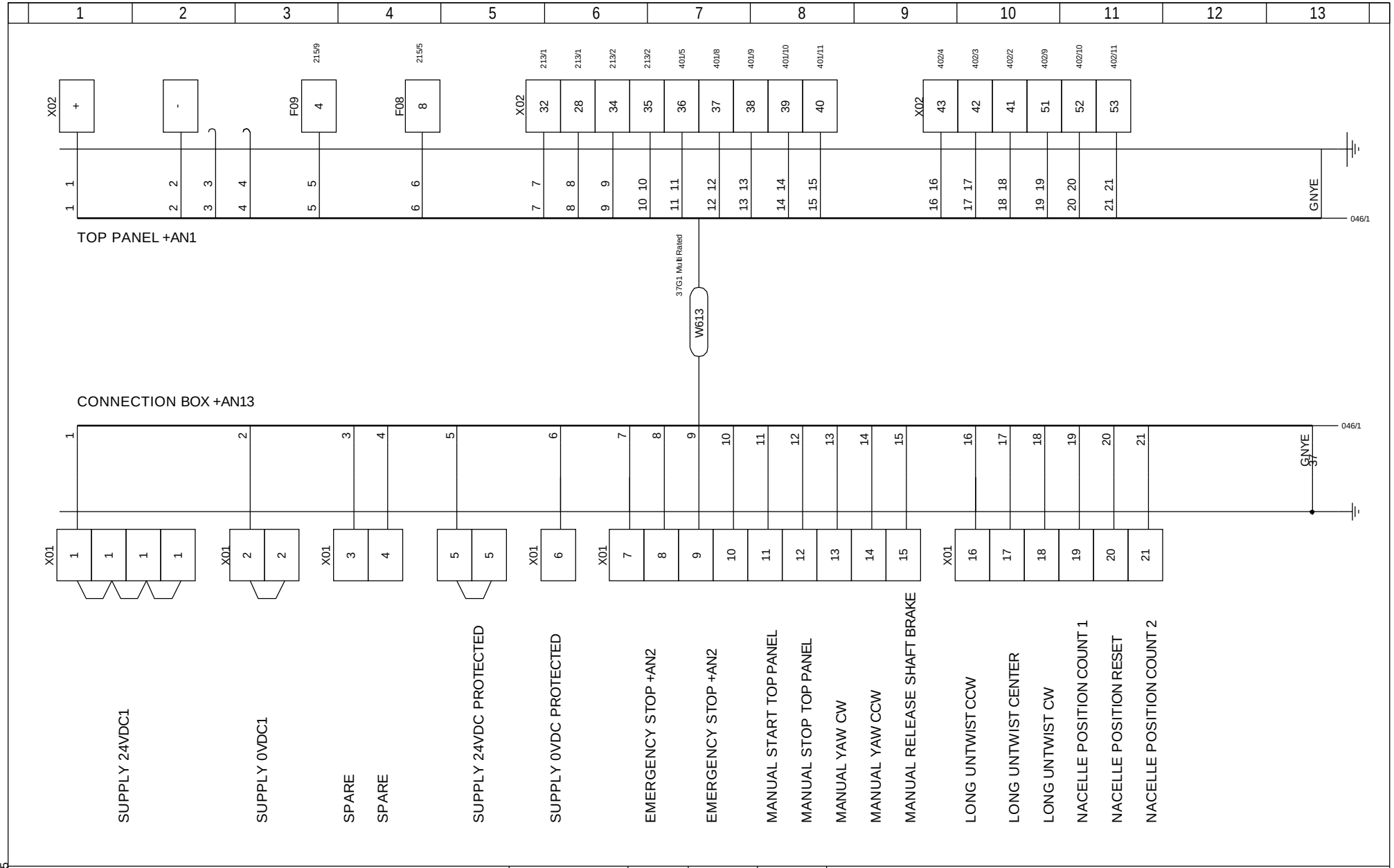
	Date	Initials	Function	Connections to +AN12		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 045	Sheet 044

09-06-05
08:58



Vestas

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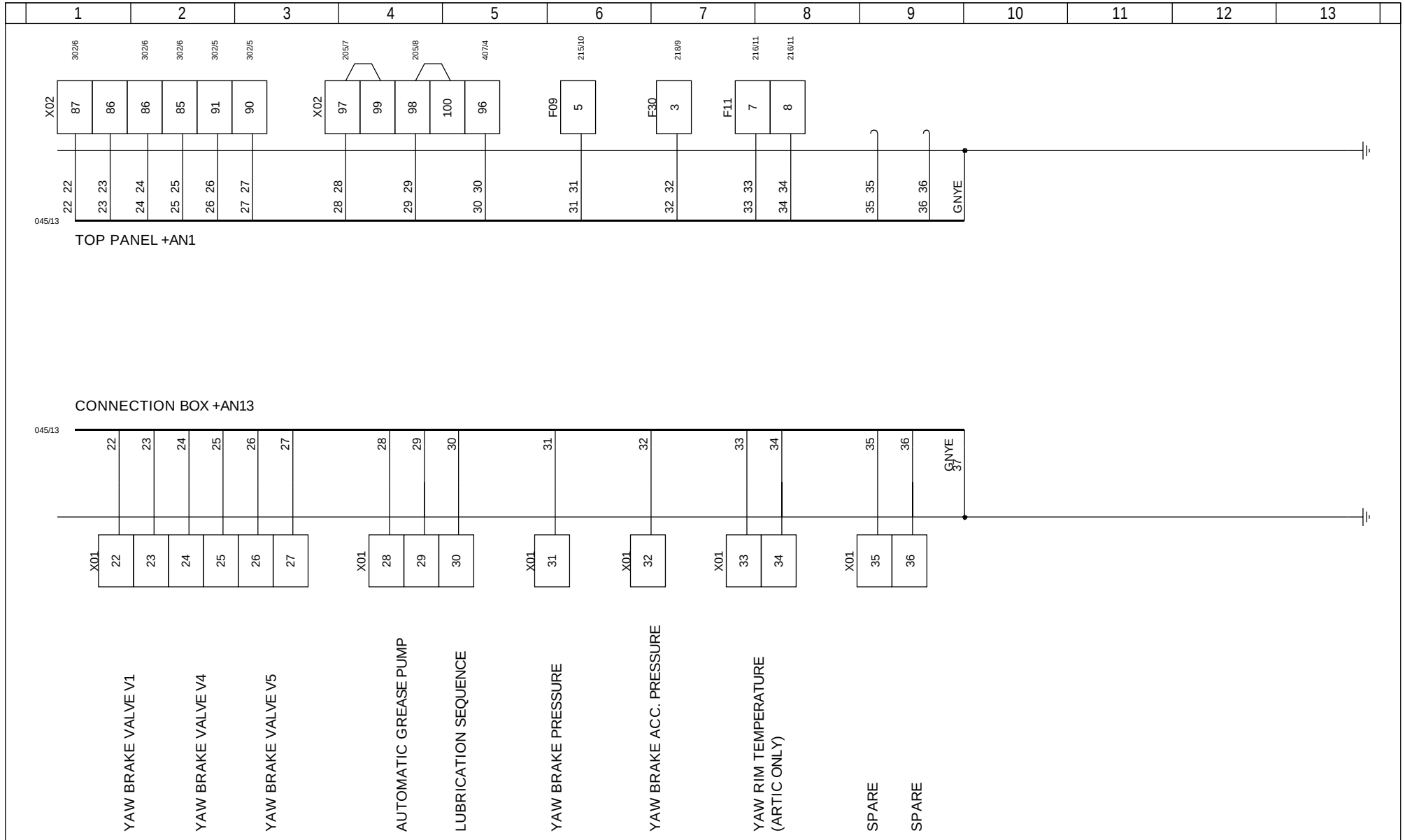
	Date	Initials	Function	Connections to +AN13		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 046	Sheet 045

09-06-05
08:58



Vestas

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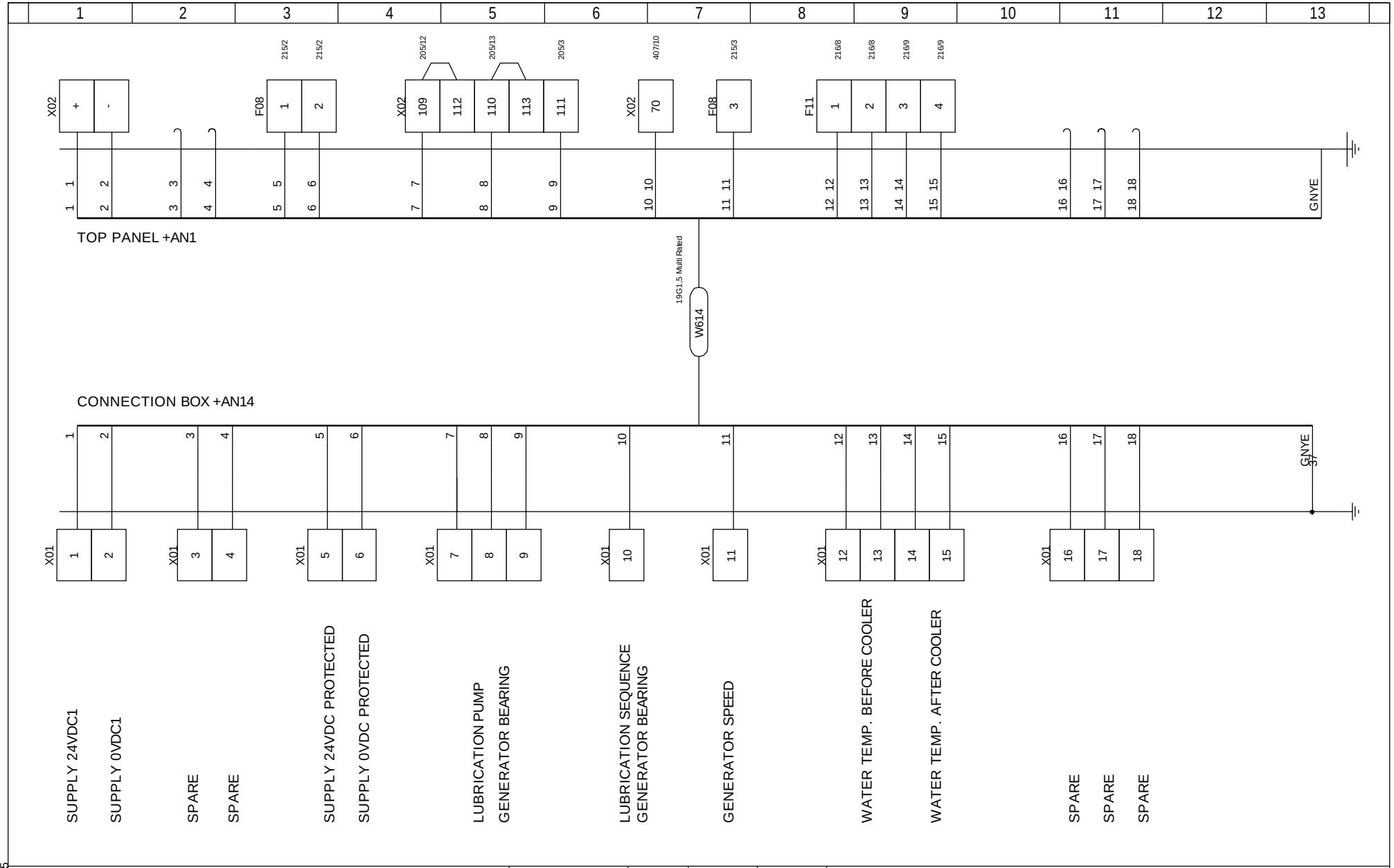
	Date	Initials	Function	Connections to +AN13		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 047	Sheet 046

09-06-05 08:58



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Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 048	Sheet 047

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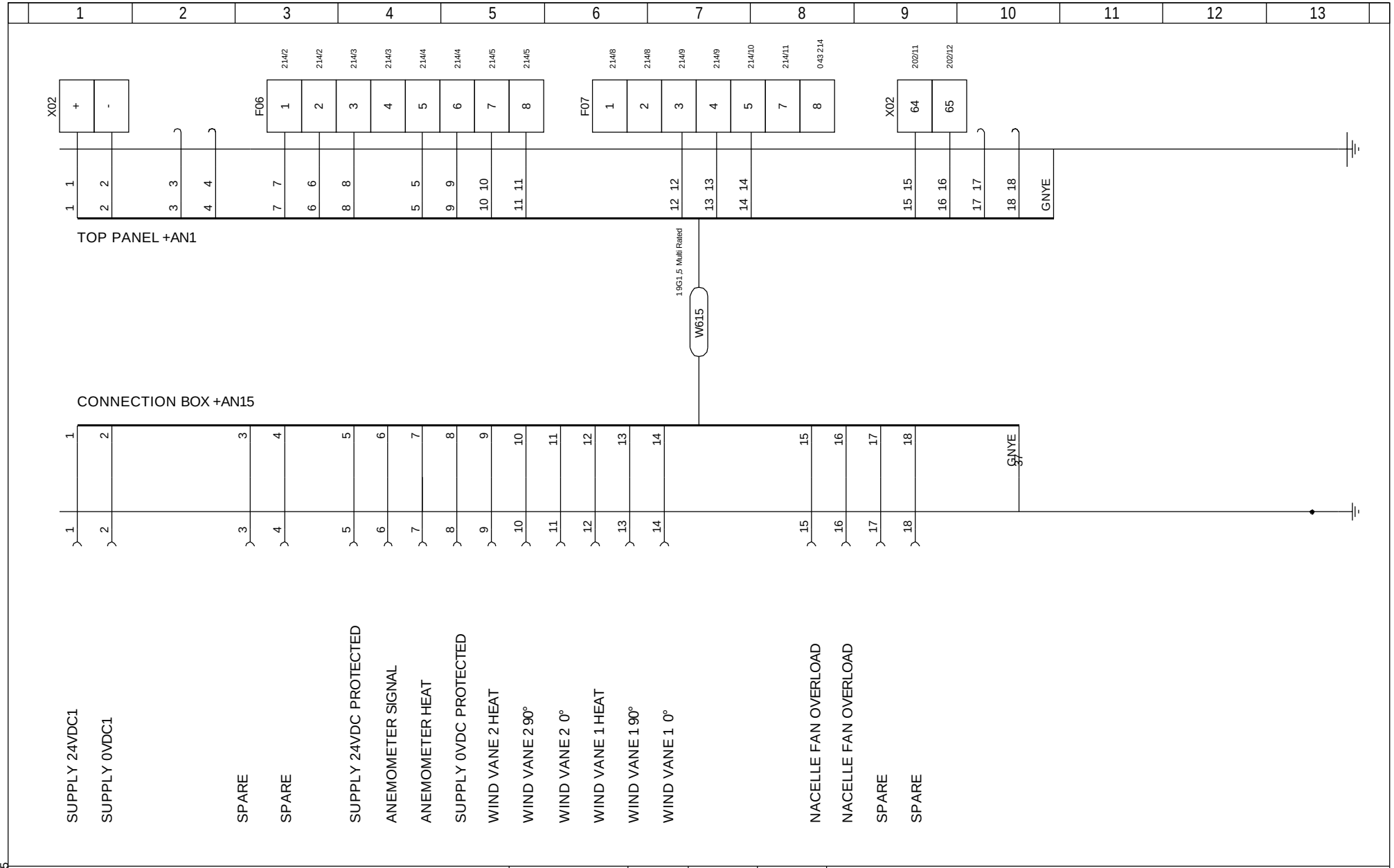
08:58



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	Date	Initials	Function	Connections to +AN15		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 049	Sheet 048

09-06-05
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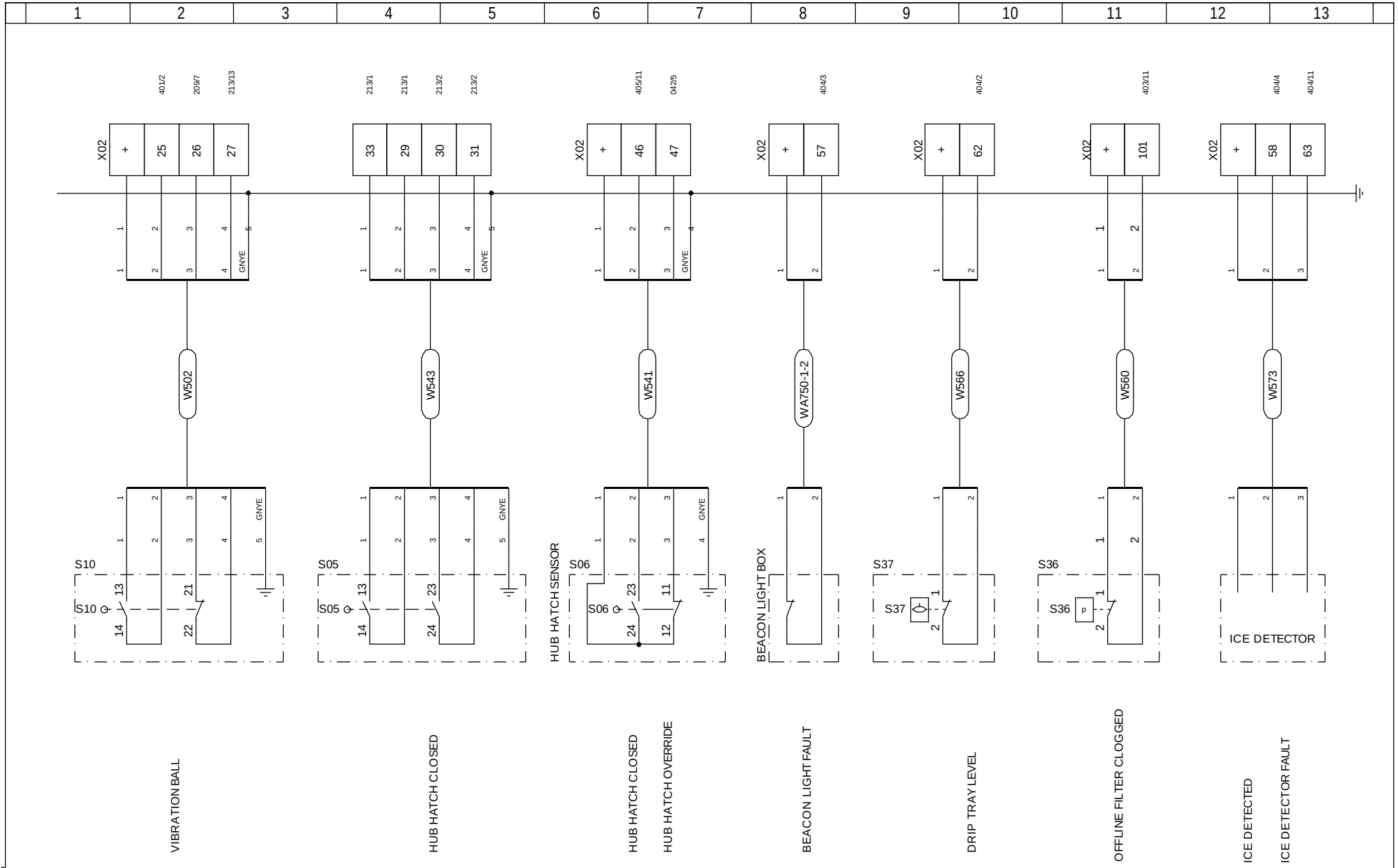

Vestas

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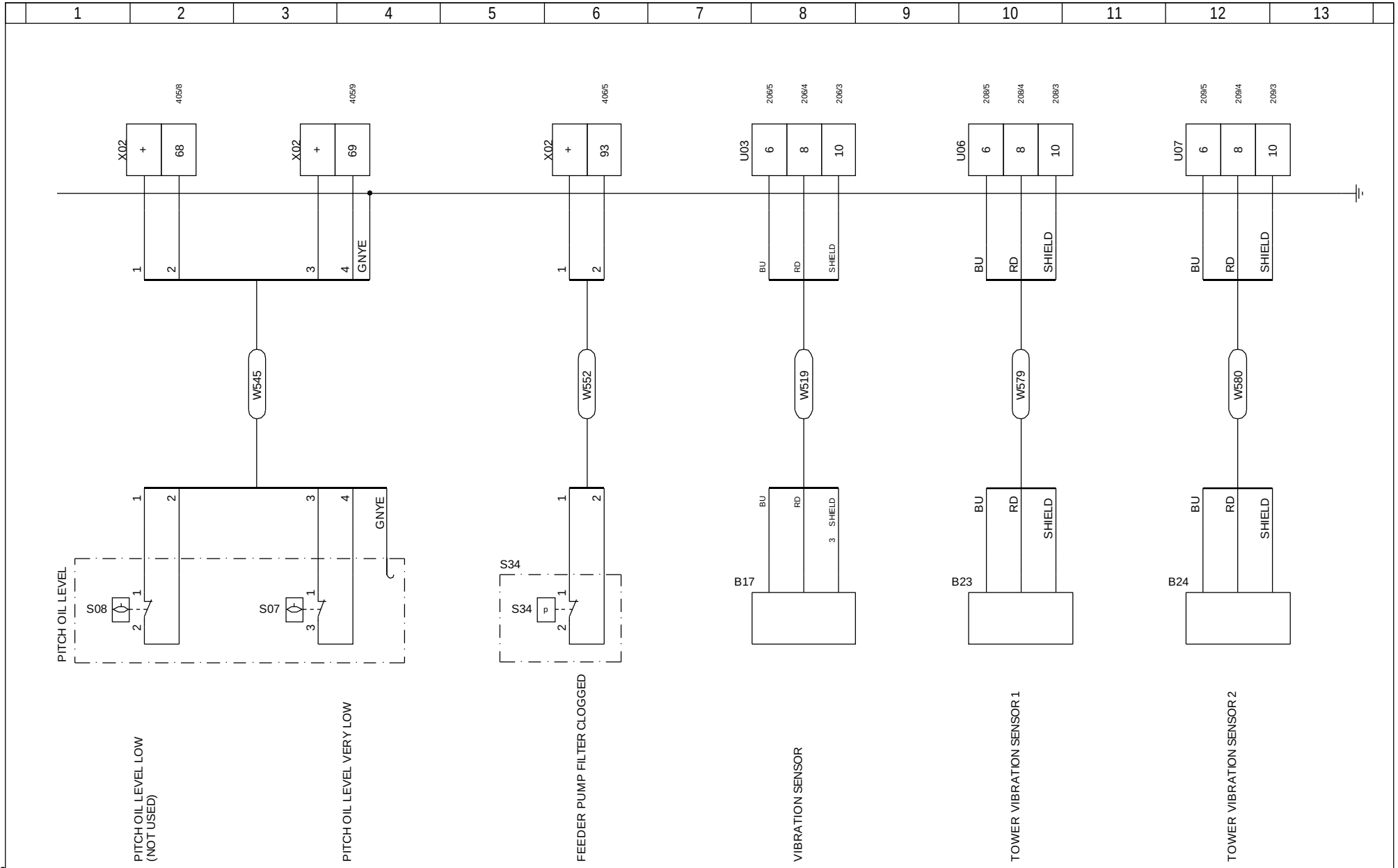
	Date	Initials	Function	Terminal row X02		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 050	Sheet 049

09-06-05
08:58



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	Date	Initials	Function	Terminal row X02		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 051	Sheet 050

09-06-05
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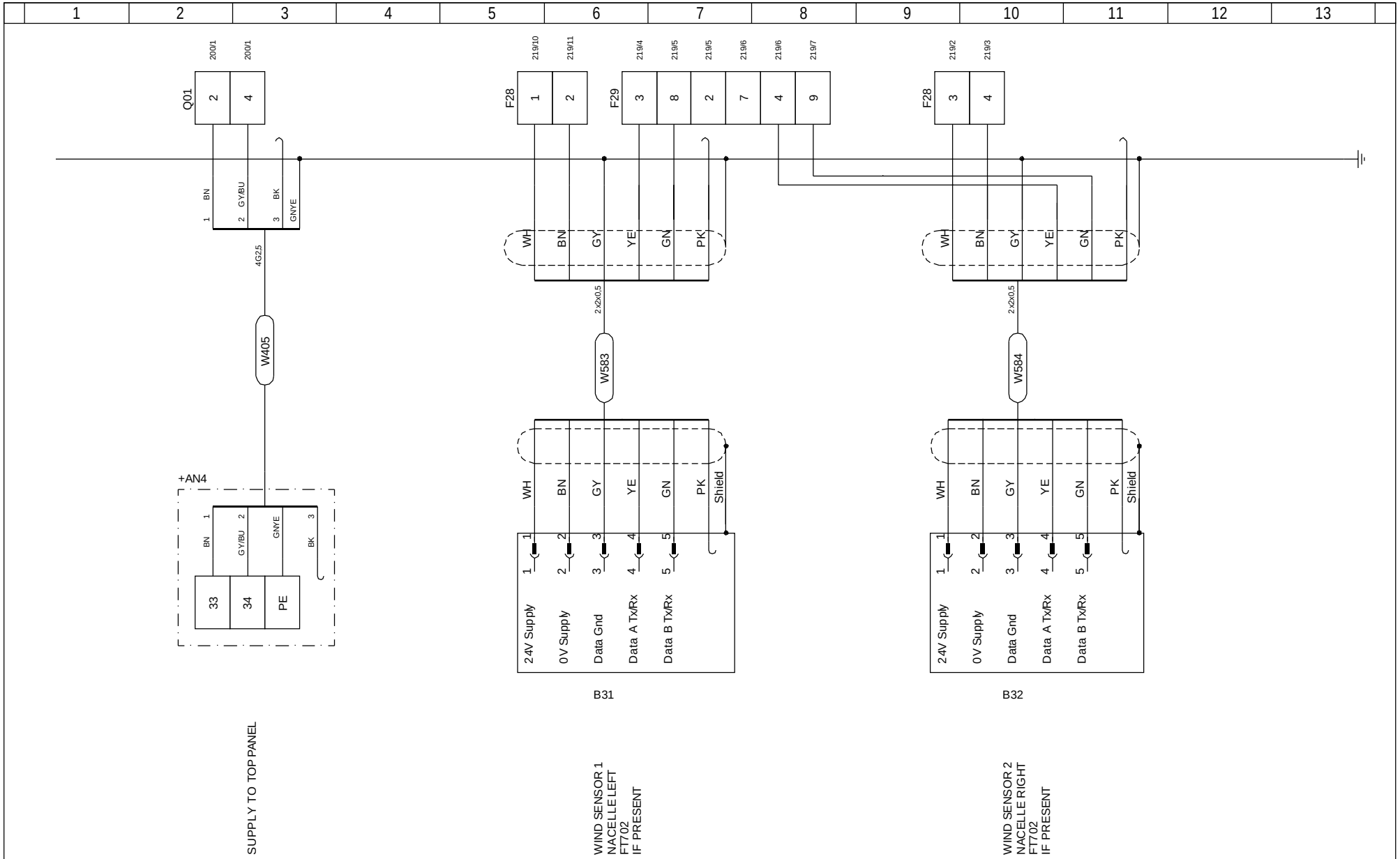

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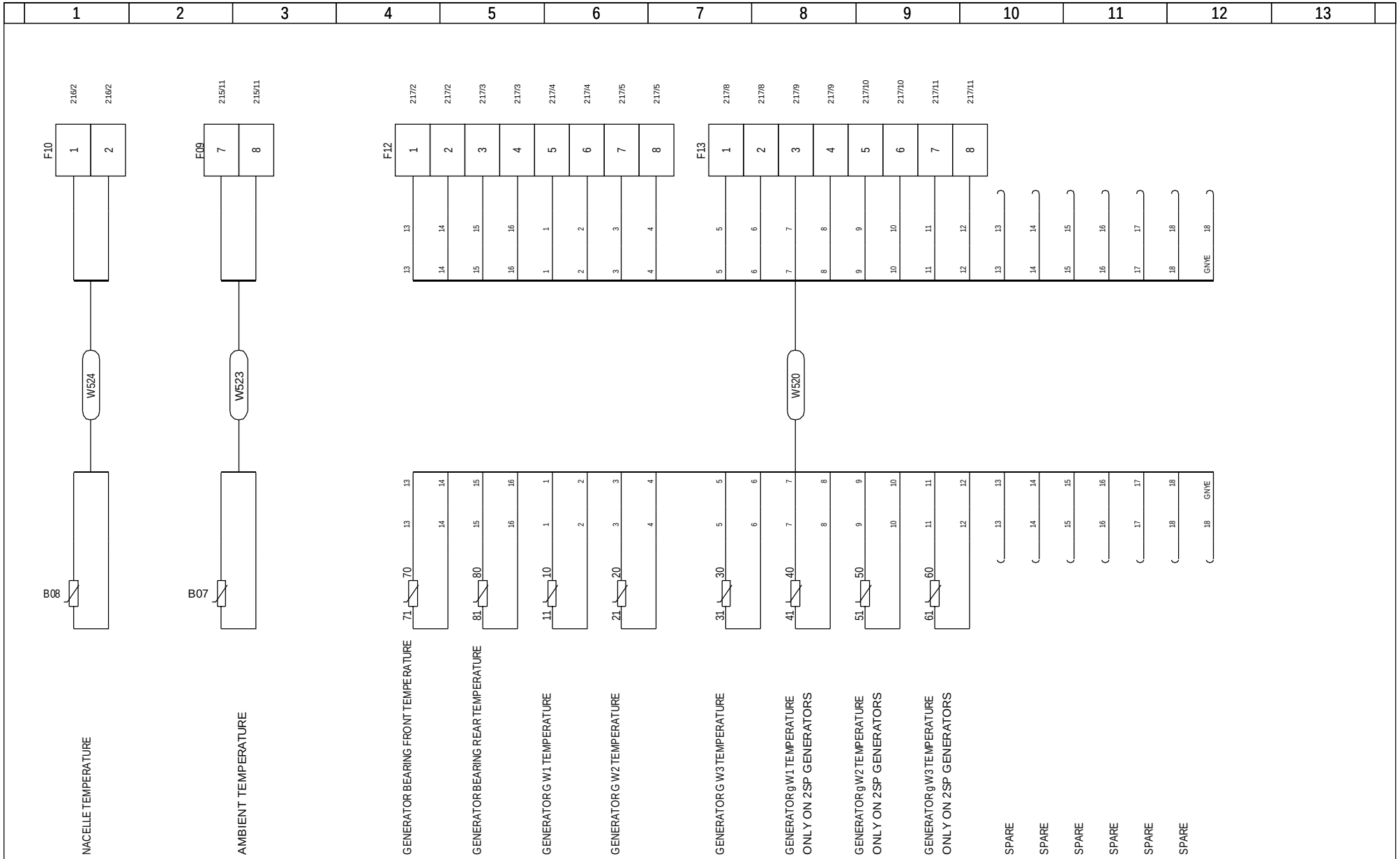
	Date	Initials	Function	Terminal row X02 & F28-F29		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 052	Sheet 051

09-06-05
08:58



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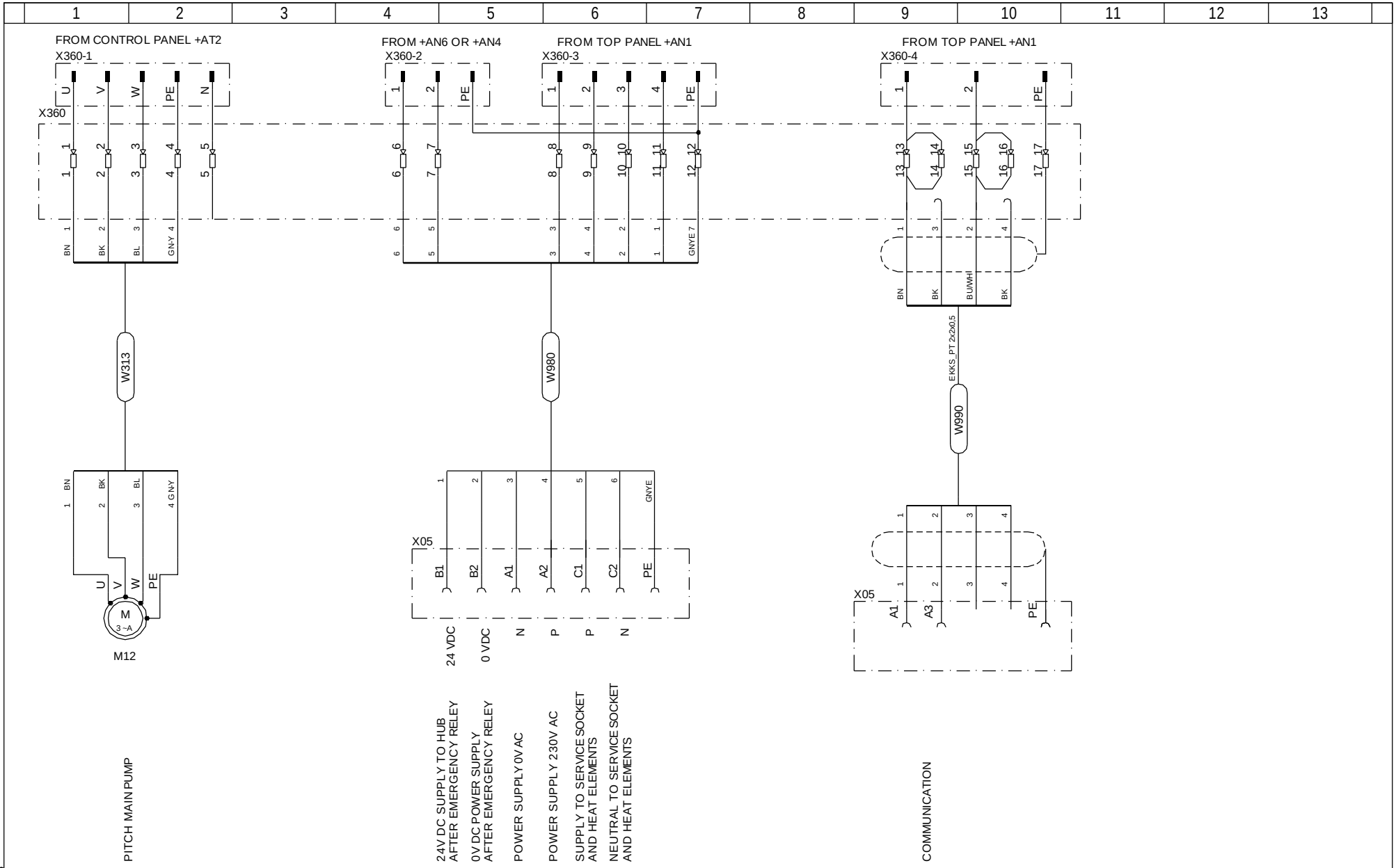
	Date	Initials		
Designed	040610	CHO	Function	Varistor box F10-F13
Approved			Project title	Top Panel +AN1
Reviced	041122	CHO	Comments	NM72 & NM82
			Customer	Vestas Wind Systems A/S
			Rev.	-
			Drawing no.	6015269
			Cont. sheet	080
			Sheet	052

09-06-05
08:58



Vestas

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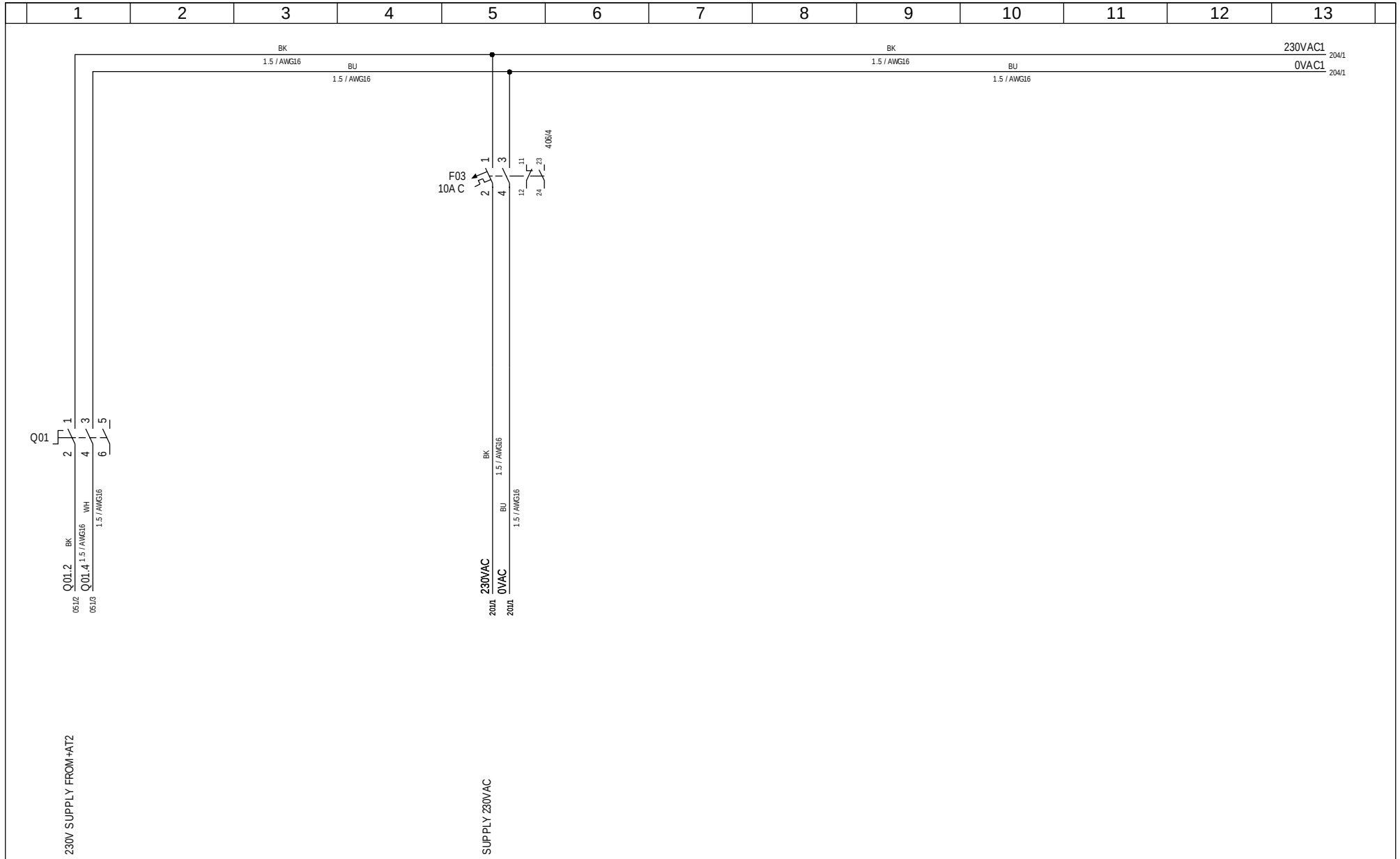
	Date	Initials	Function	Connections f. Sliprings		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 200	Sheet 080

09-06-05
08:58



09-06-05
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Vestas

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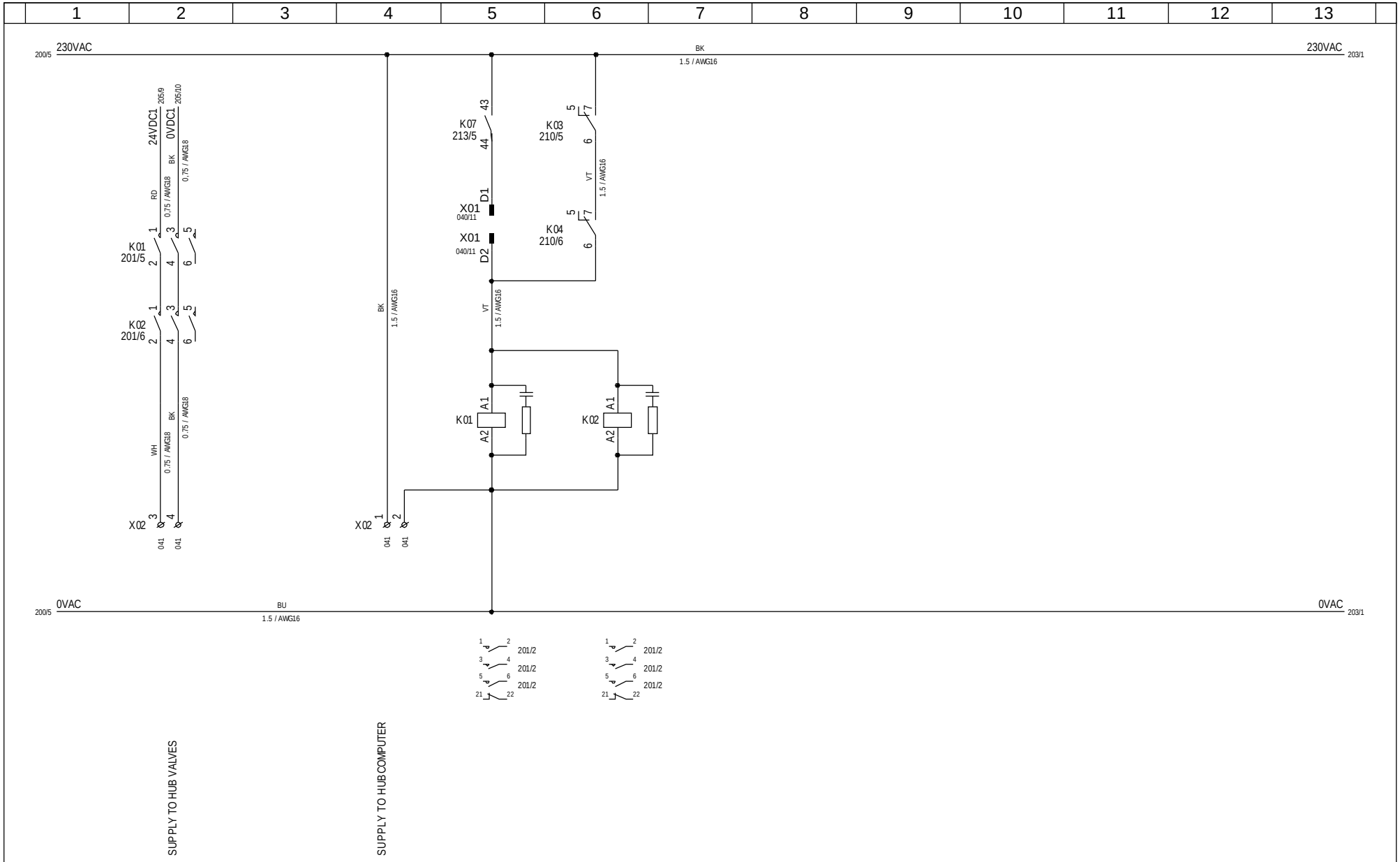
	Date	Initials	Function	Supply		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 201	Sheet 200



09-06-05
09:56

Vestas

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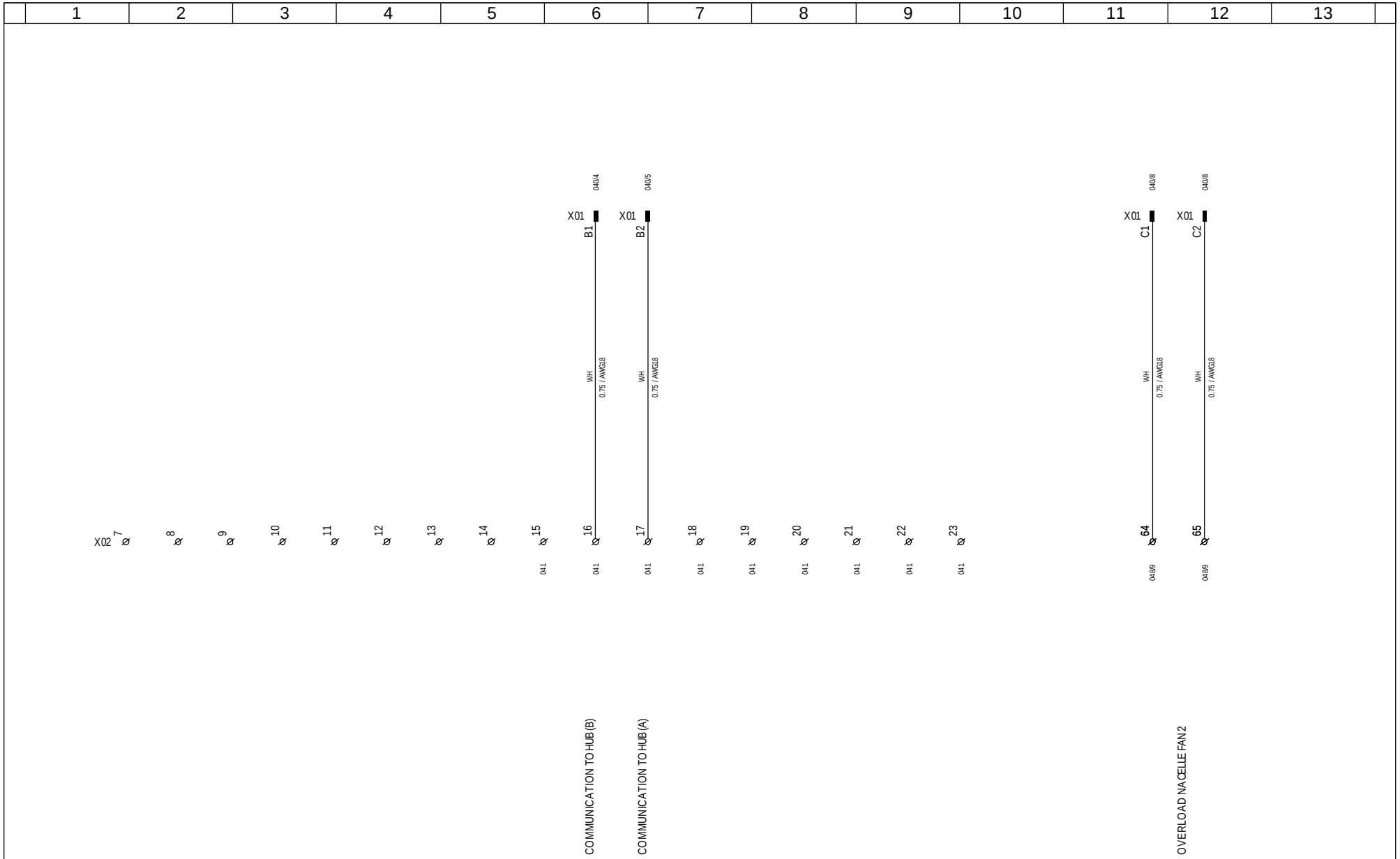
	Date	Initials	Function	Hub supply		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 202	Sheet 201



09-06-05

09:56

Vestas

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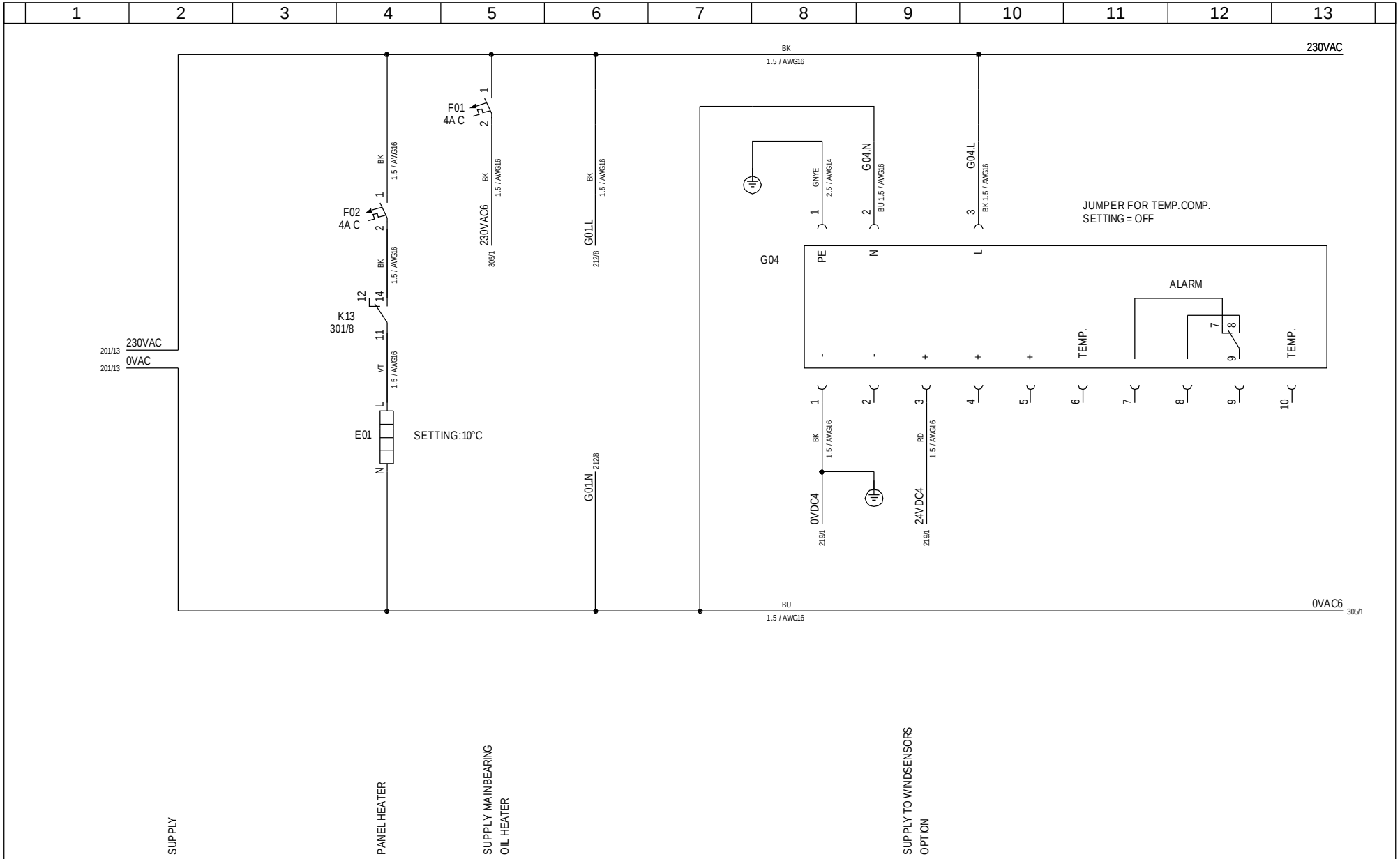
	Date	Initials	Function	Connections to sliprings		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 203	Sheet 202



09-06-05
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Vestas

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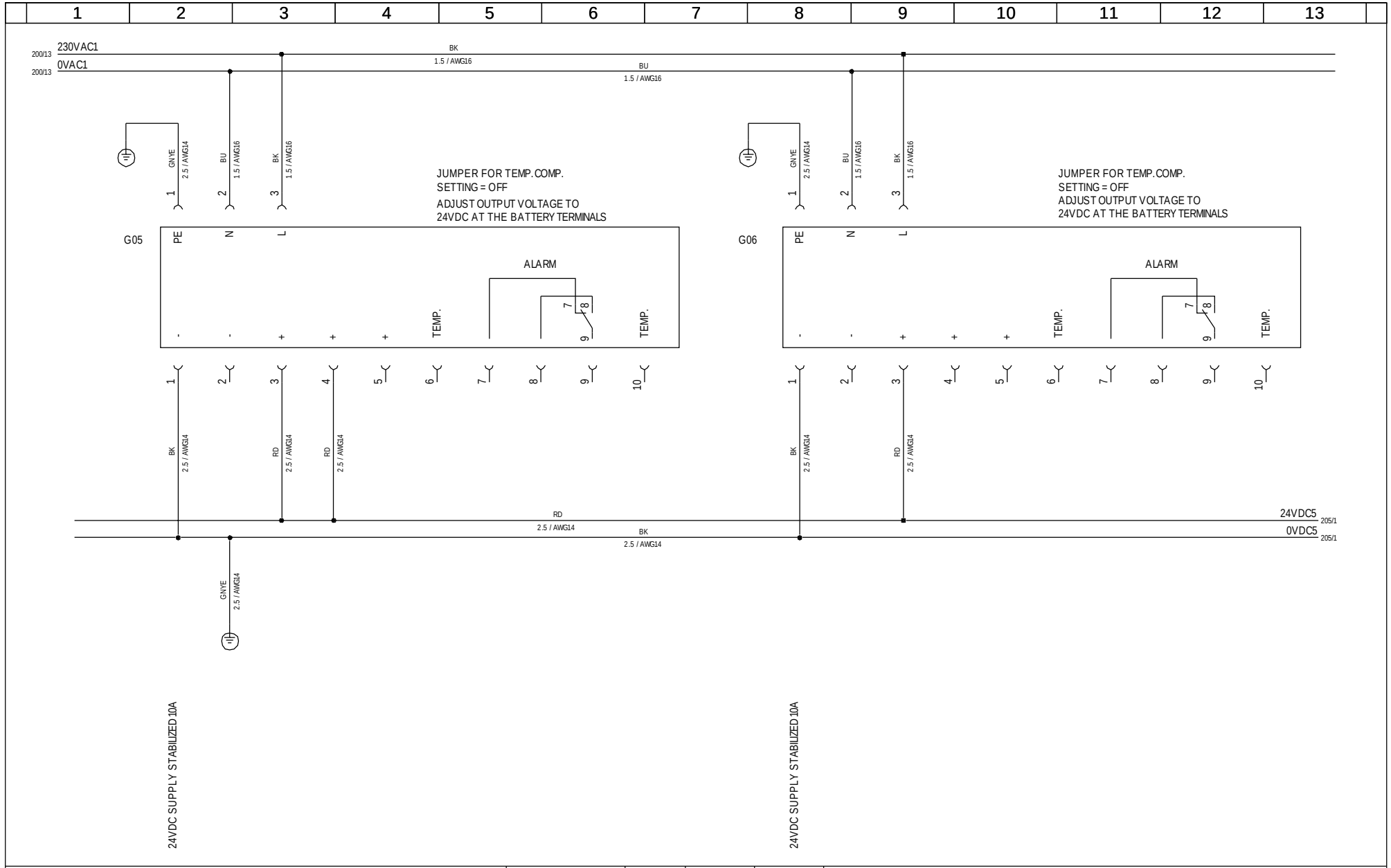
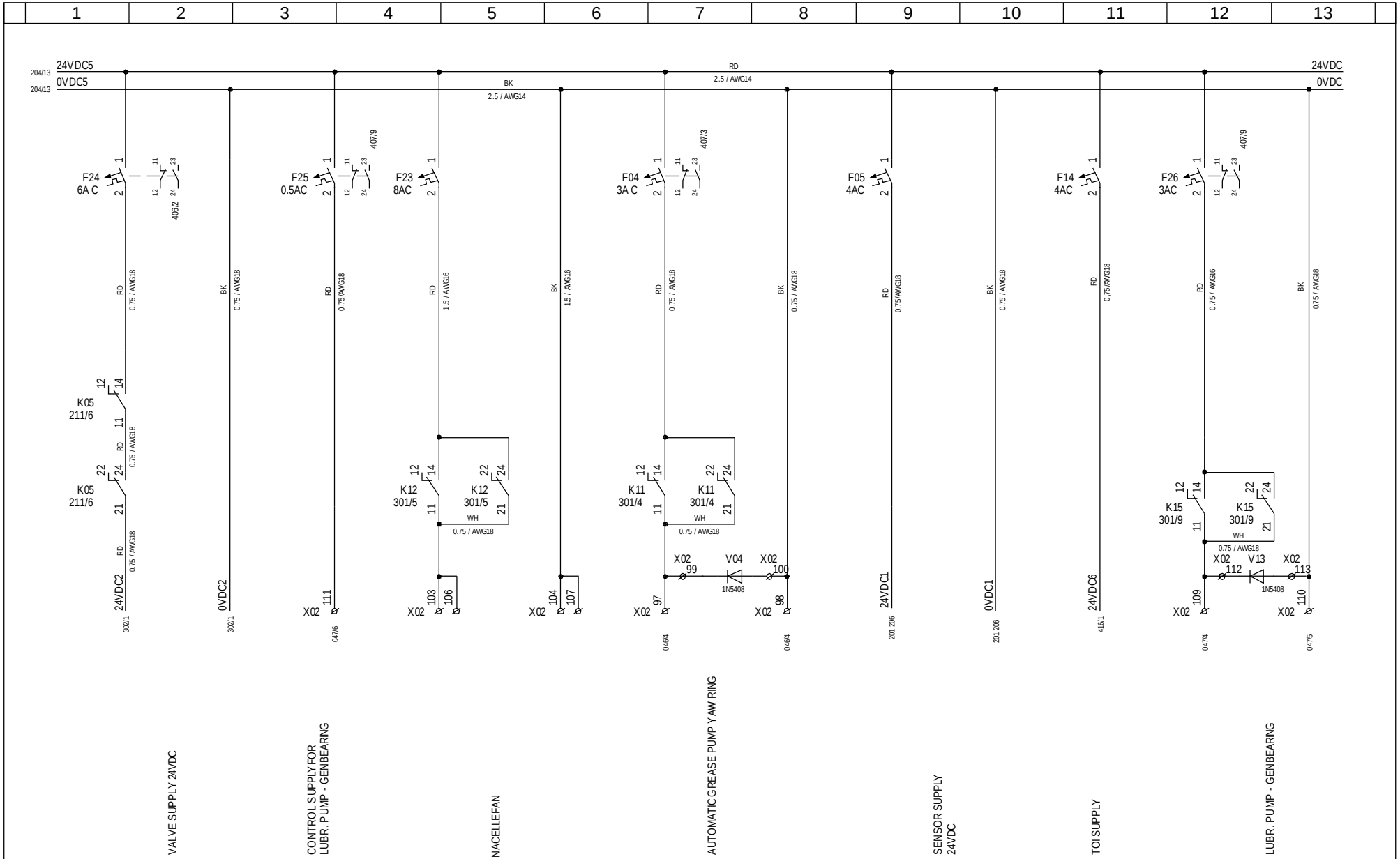
	Date	Initials	Function	SUPPLY 230 VAC		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 204	Sheet 203



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	24VDC supply	
		Designed	040610	CHO	Project title	Top Panel +AN1	
		Approved			Comments	NM72 & NM82	Customer: Vestas Wind Systems A/S
		Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 205 / Sheet 204

09-06-05
09:56



09-06-05
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Vestas

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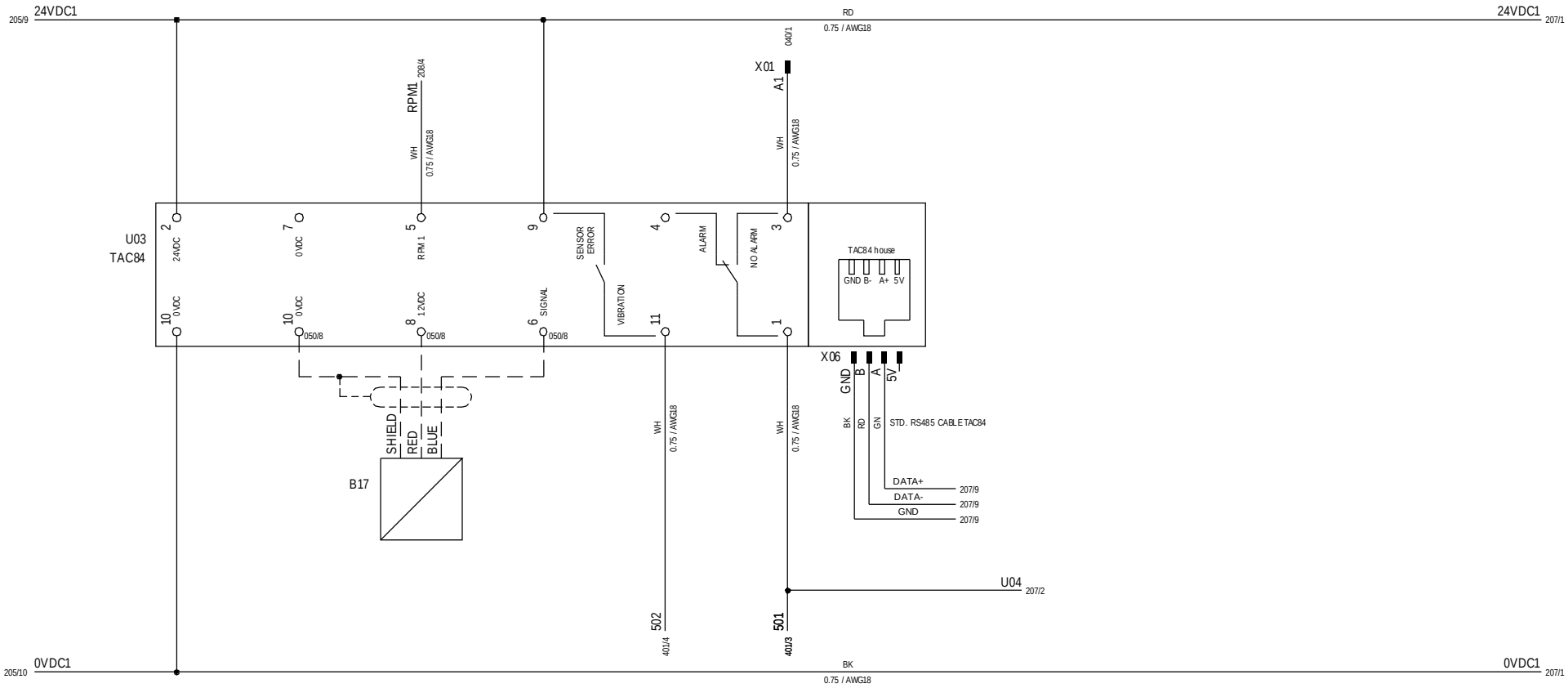
	Date	Initials	Function	24VDC supply		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 206	Sheet 205



VIBRATION SENSOR

VIBRATION TAC84

OVERSPEED TAC84

09-06-05

08:56

Vestas

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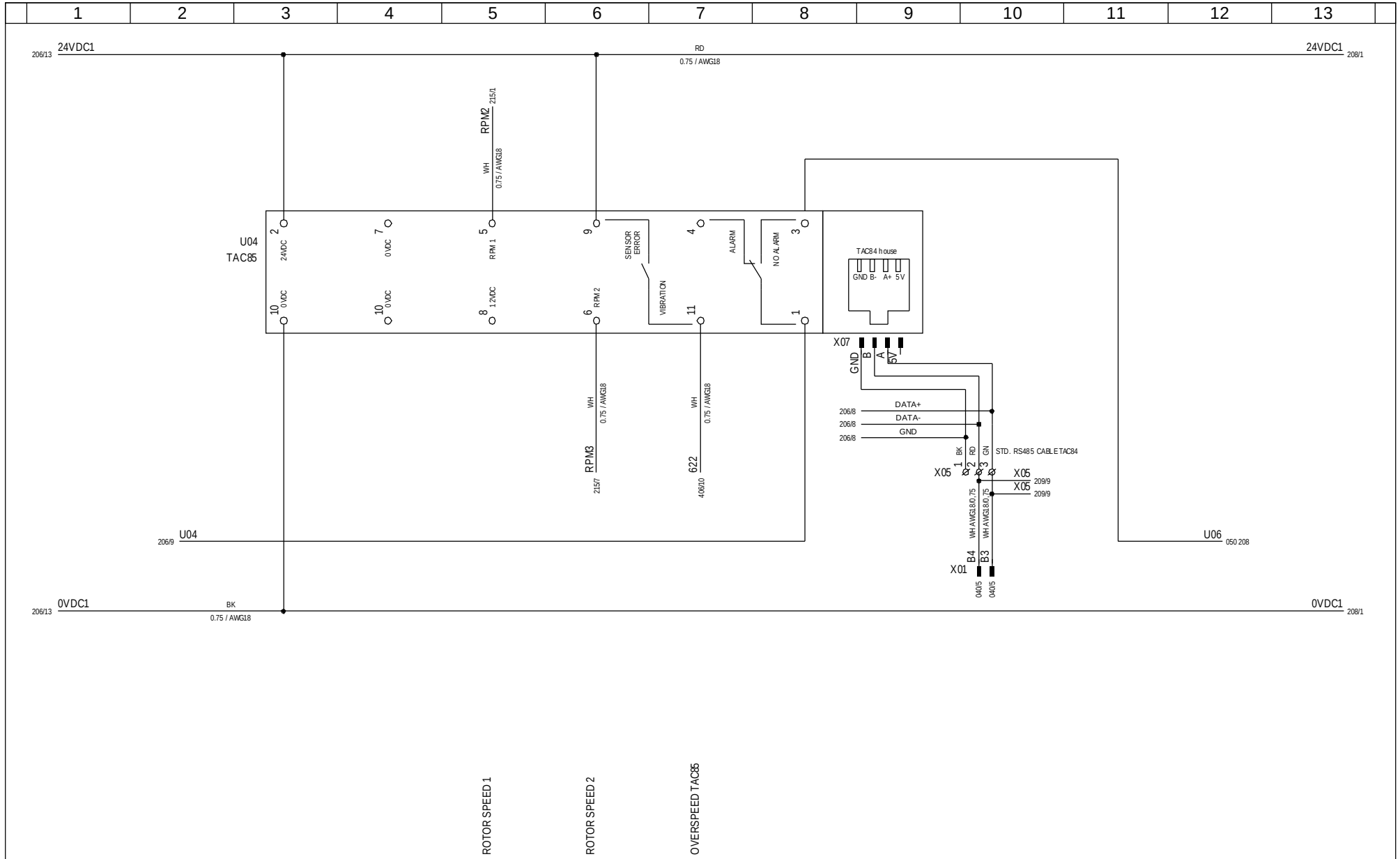
	Date	Initials	Function	Internal connections		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 207	Sheet 206



09-06-05
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Vestas

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	Date	Initials	Function	Internal connections		
Designed	040610	CHO	Project title	Top Panel +AN1		
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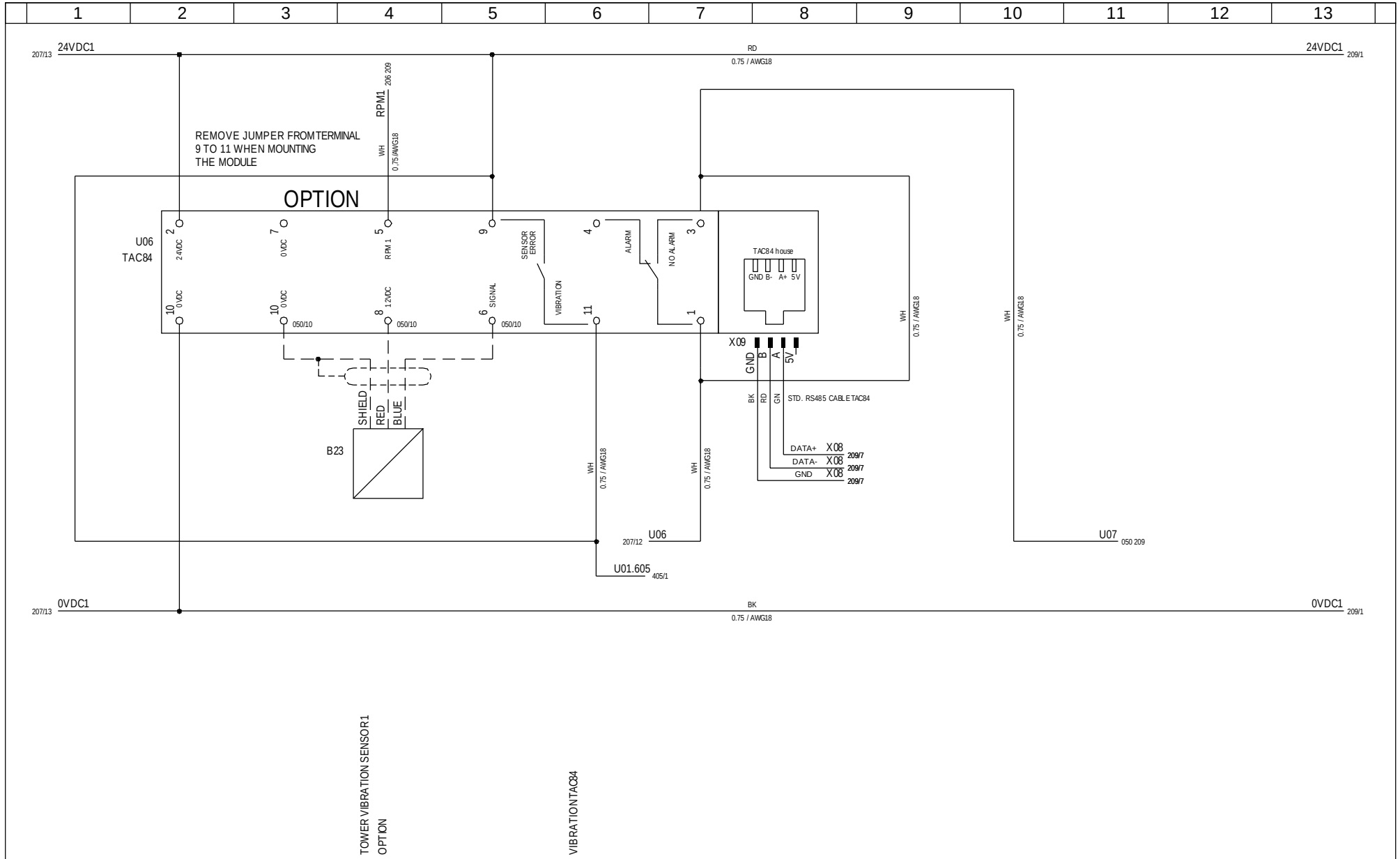
Reviced	050609	INI	Rev. -	Drawing no. 6015269	Cont. sheet 208	Sheet 207



TOWER VIBRATION SENSOR 1
OPTION

VIBRATION TAC84

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Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Internal connections	
		Designed	040610	CHO	Project title	Top Panel +AN1	
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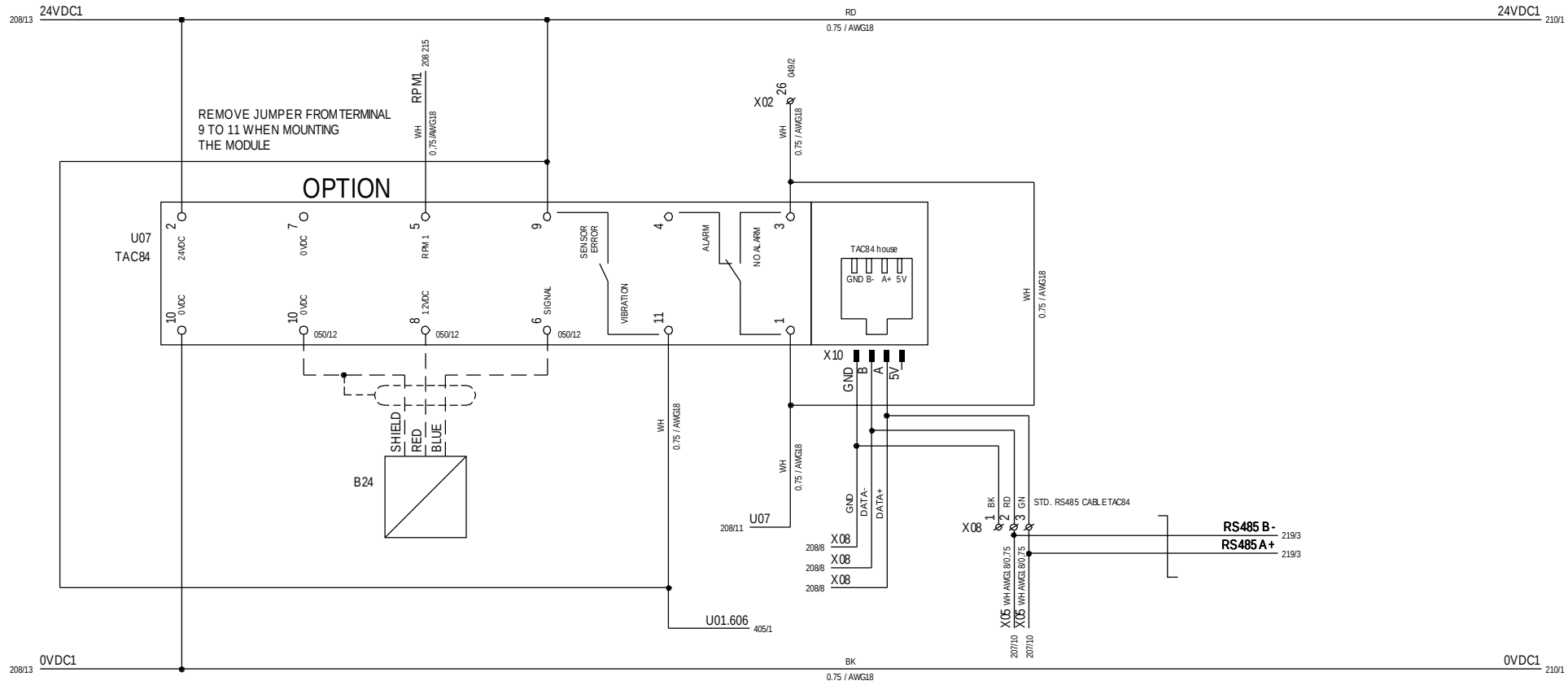
		Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 209 / Sheet 208



TOWER VIBRATION SENSOR 2
OPTION: MOUNTED ON NM82

VIBRATION TAC84

OVERSPEED TAC84

09-06-05
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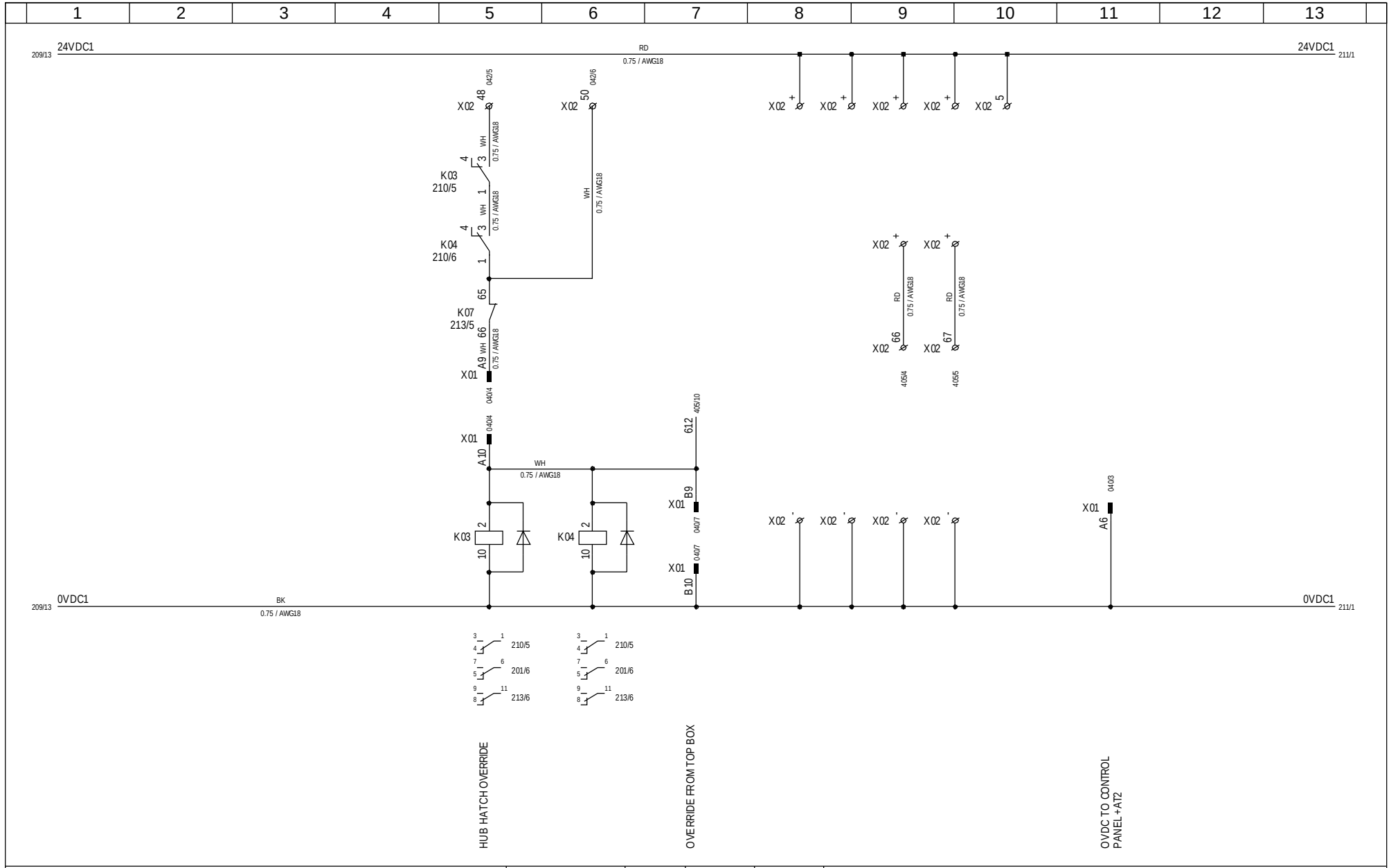
	Date	Initials	Function	Internal connections		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 210	Sheet 209



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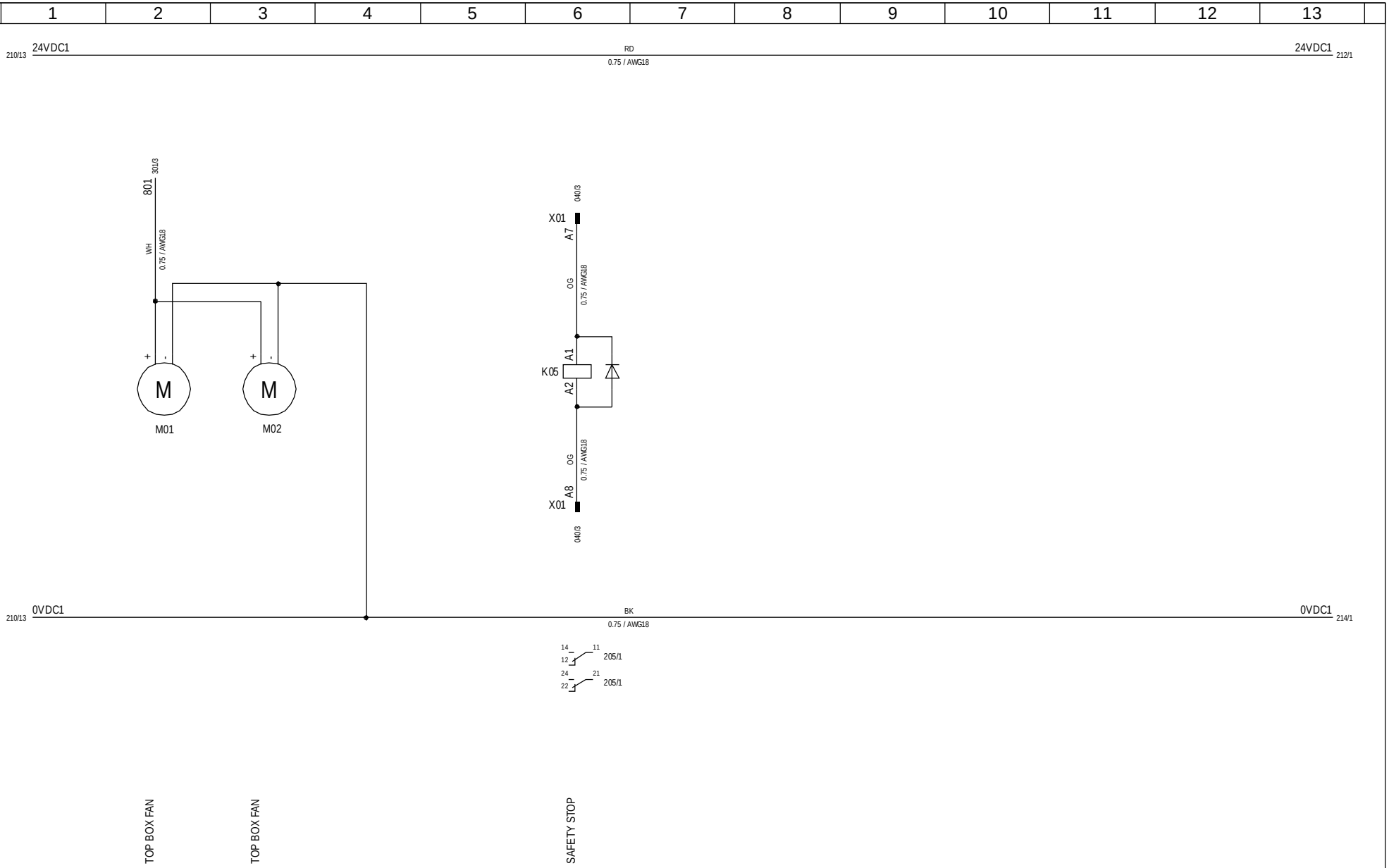
	Date	Initials	Function	Internal connections		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 211	Sheet 210



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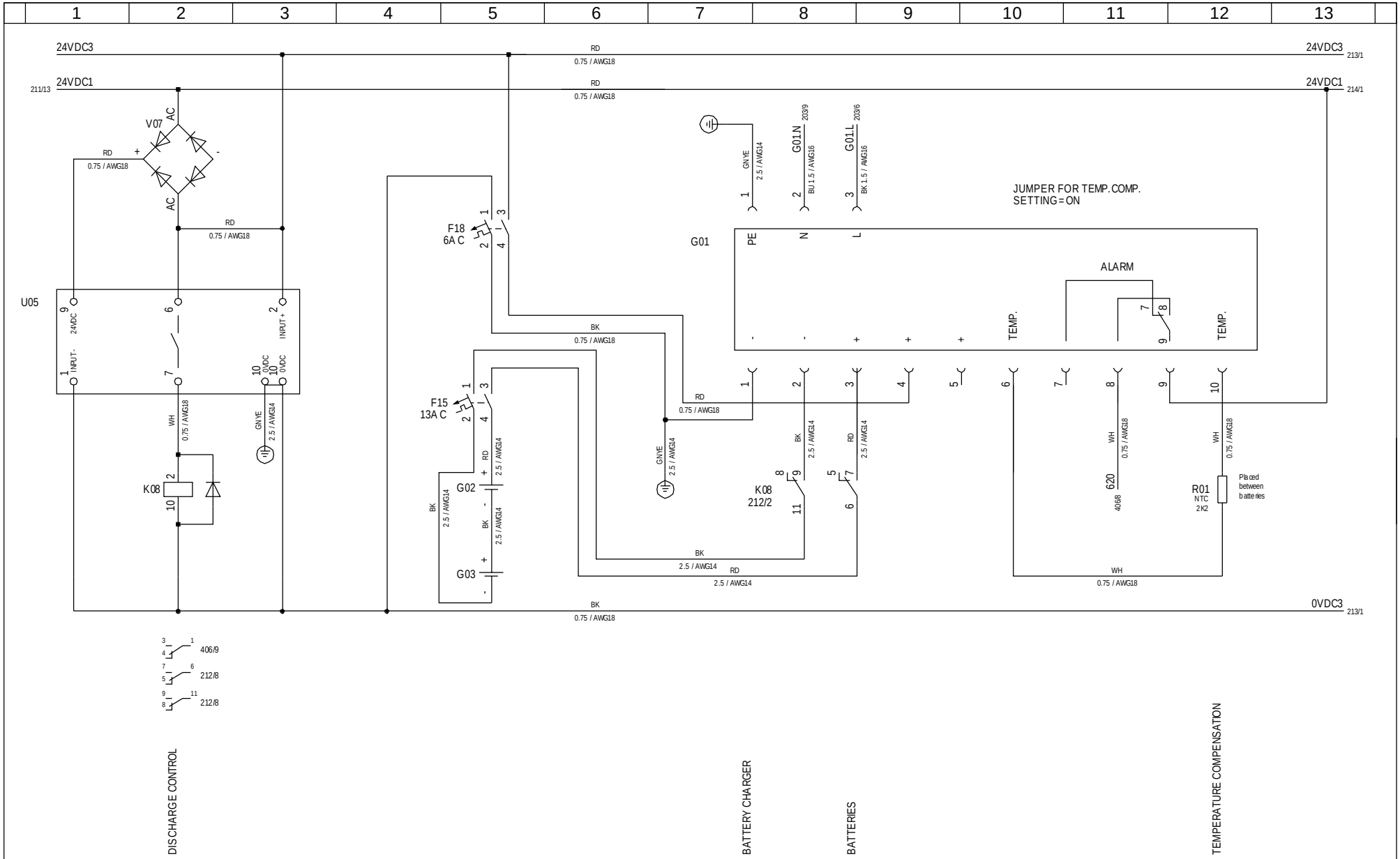
	Date	Initials	Function	Internal connections		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 212	Sheet 211

09-06-05
09:56



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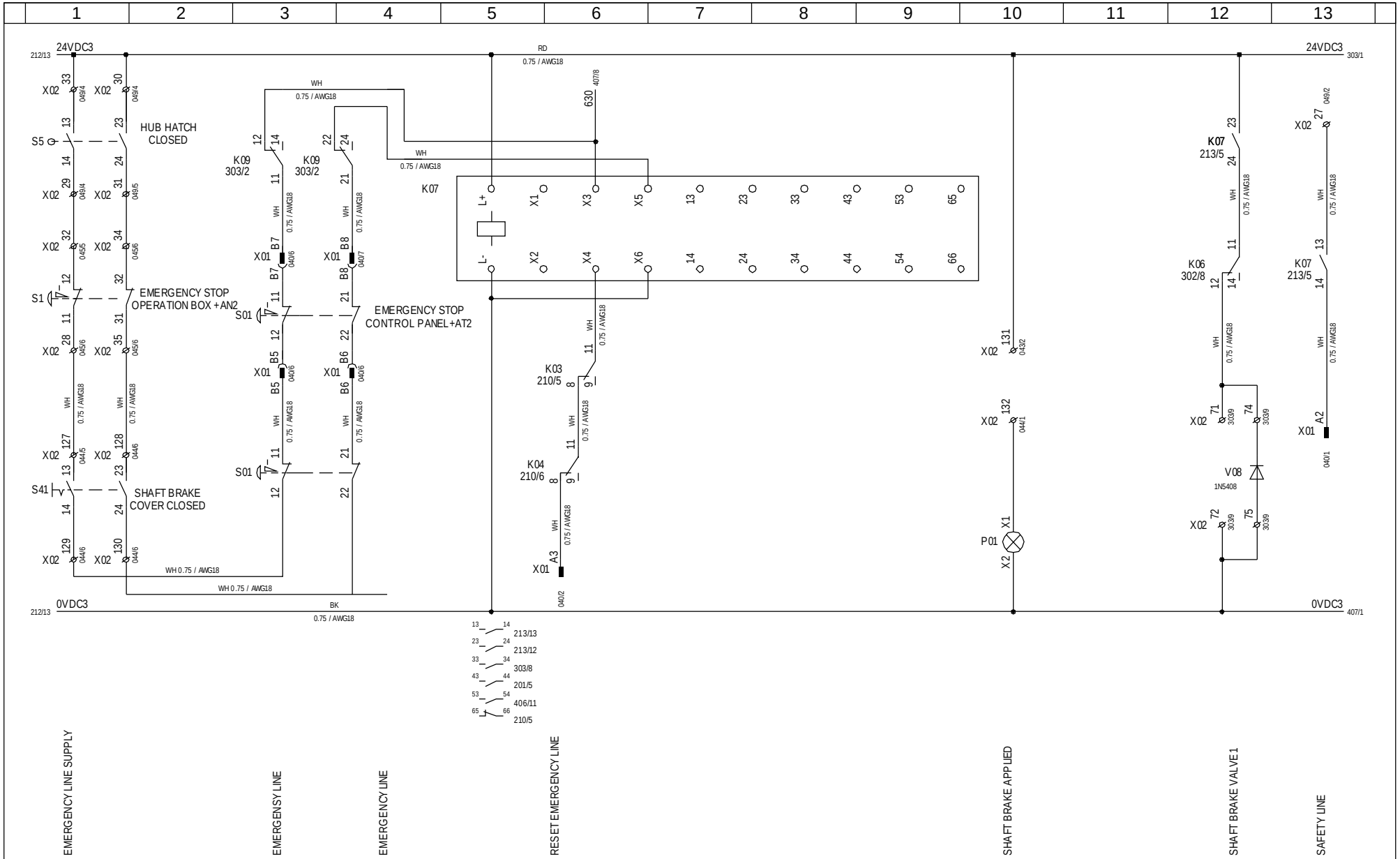
	Date	Initials	Function	Internal connections		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 213	Sheet 212



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Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 214	Sheet 213

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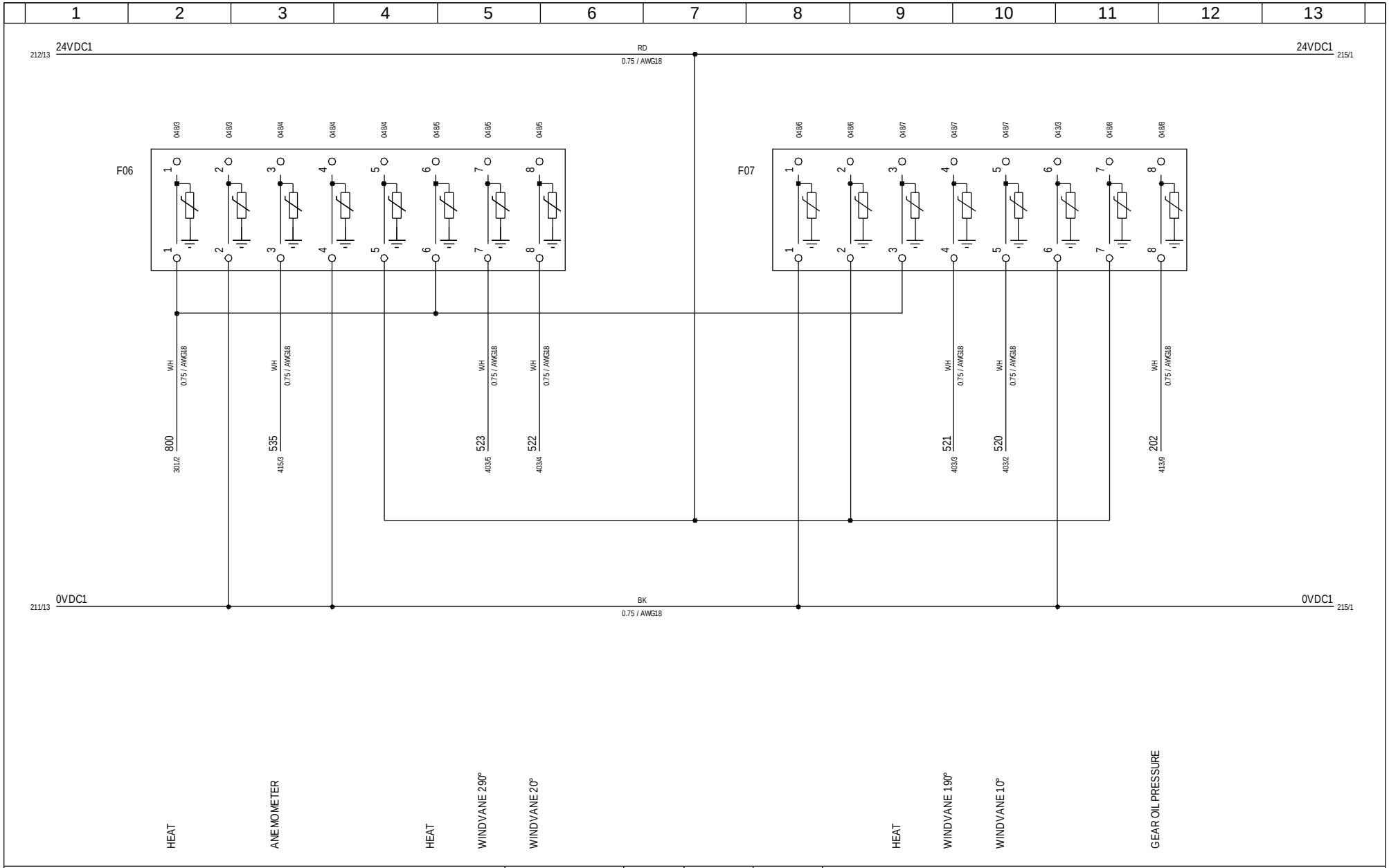

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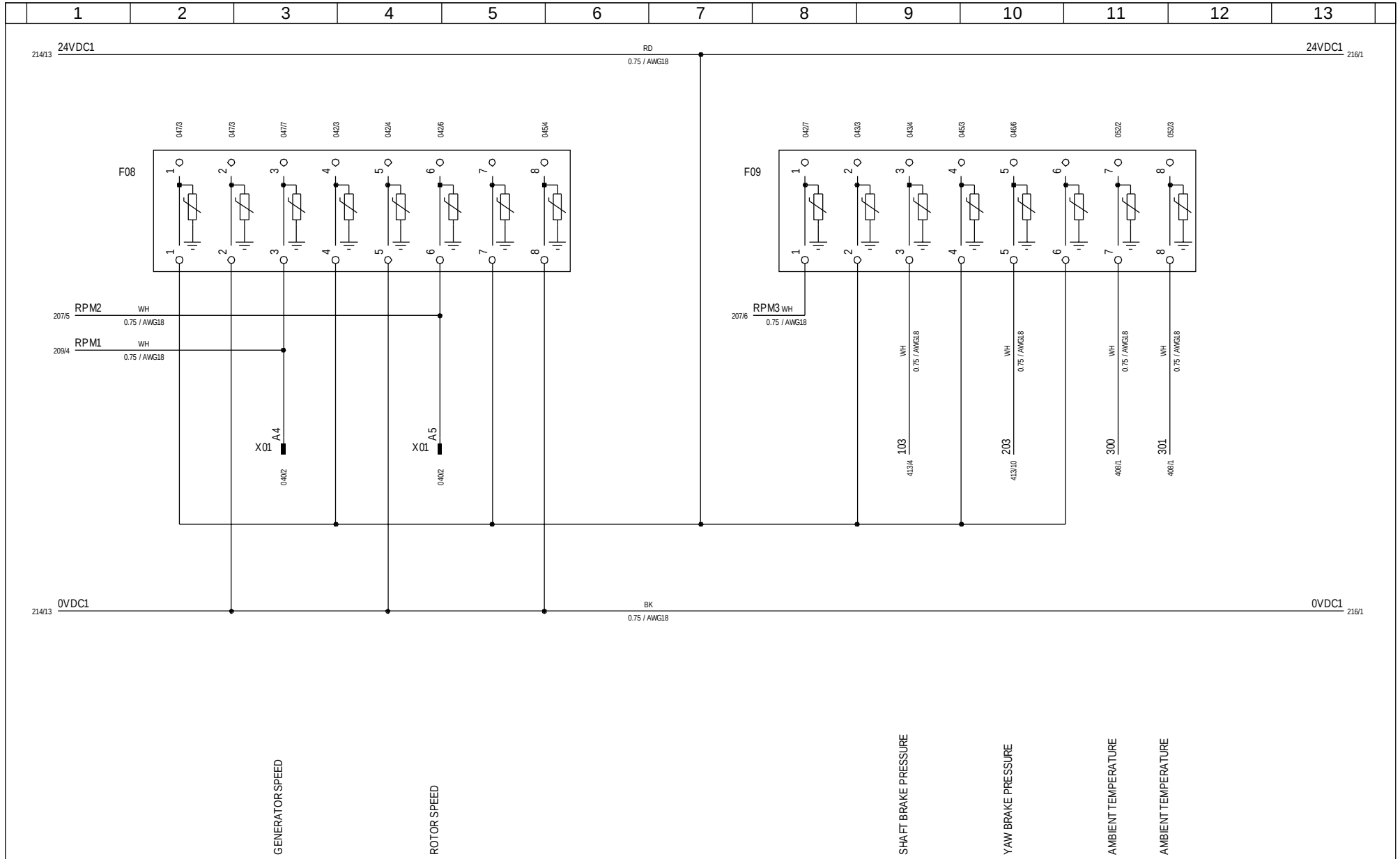
	Date	Initials	Function	Varistor box F06-F07		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 215	Sheet 214



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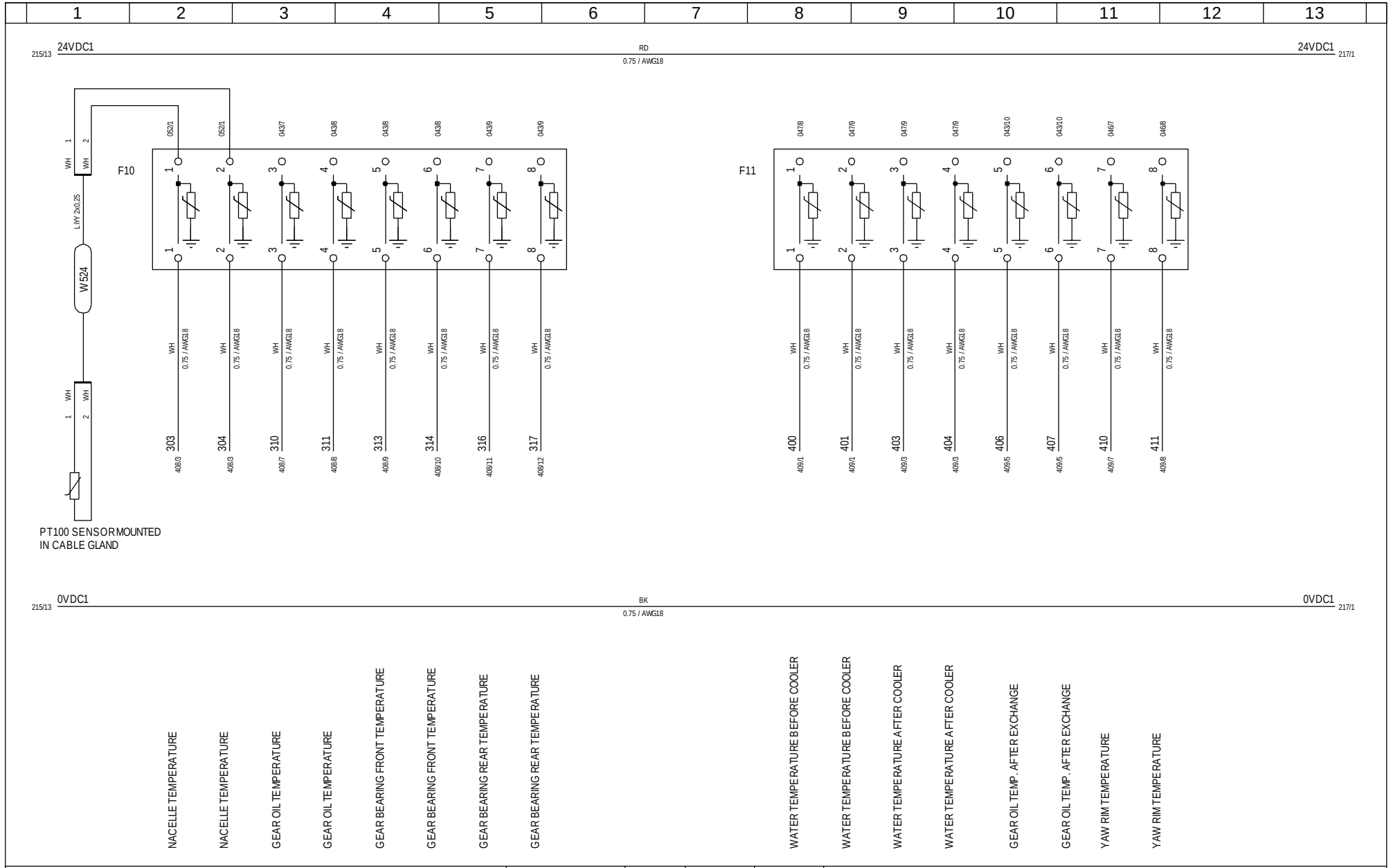
	Date	Initials	Function	Varistor box F08-F09		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 216	Sheet 215



Vestas

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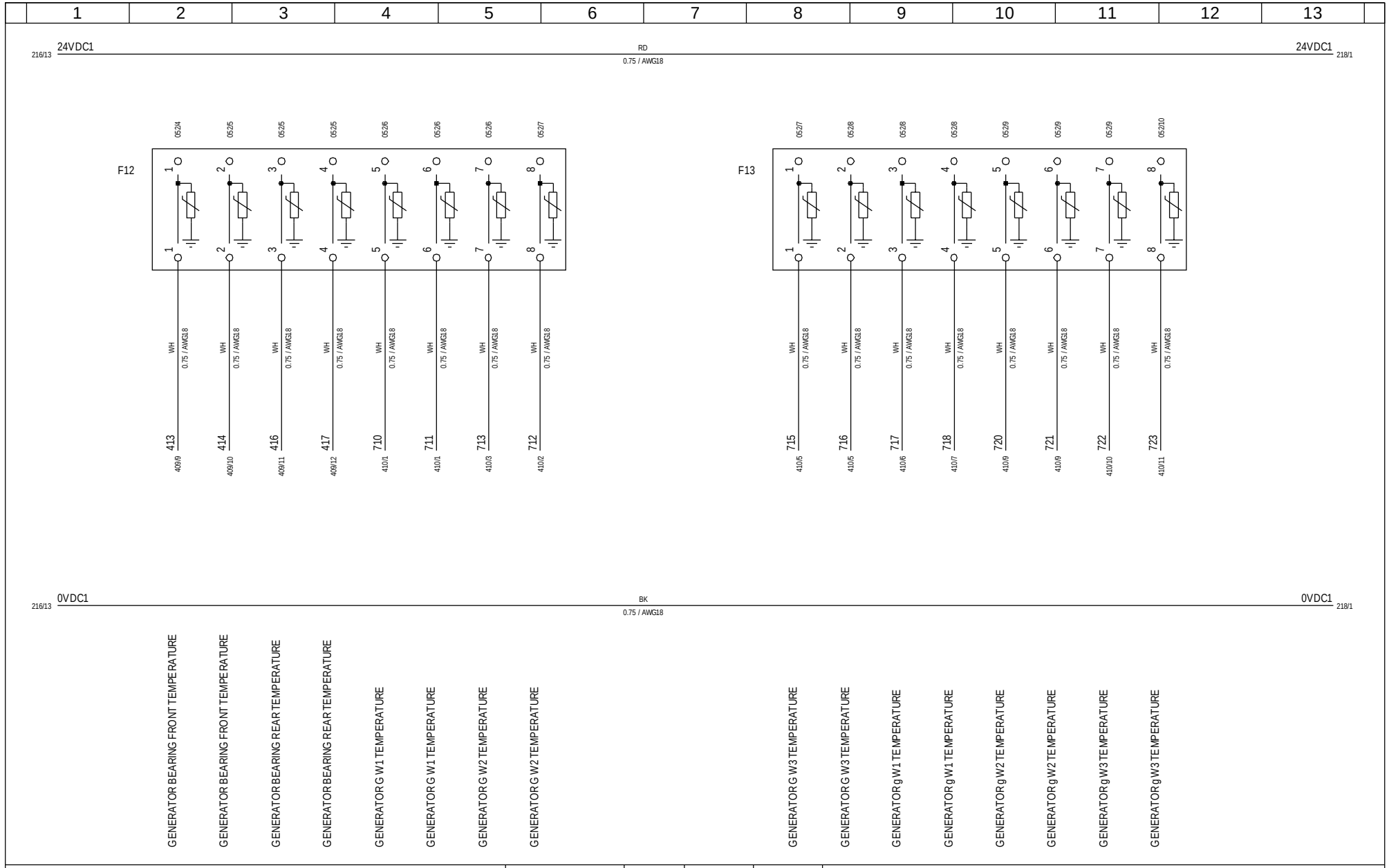
	Date	Initials	Function	Varistor box F10-F11		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 217	Sheet 216

09-06-05
09:56



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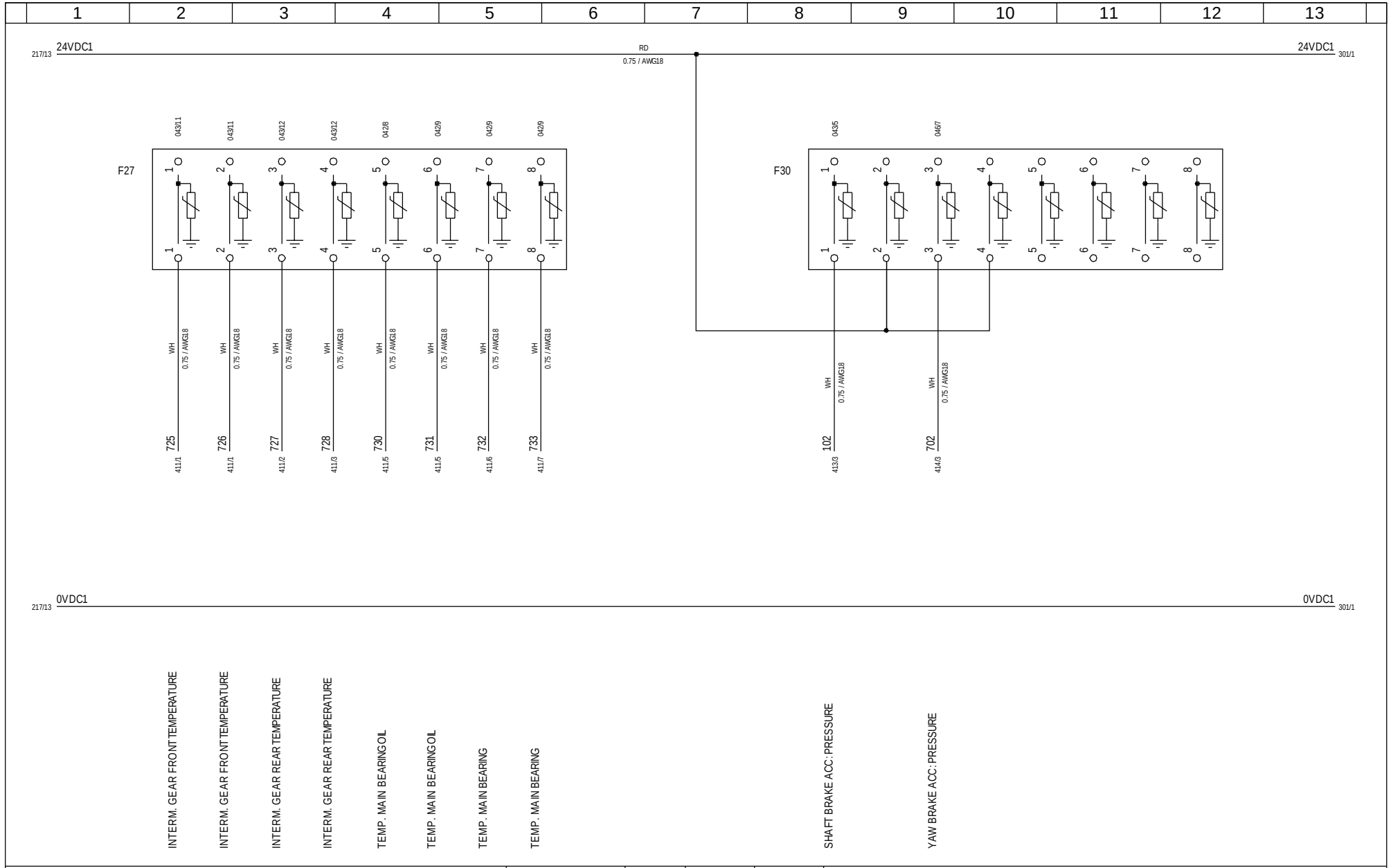
	Date	Initials	Function	Varistor box F12-F13		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 218	Sheet 217

09-06-05 08:56



09-06-05
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Vestas

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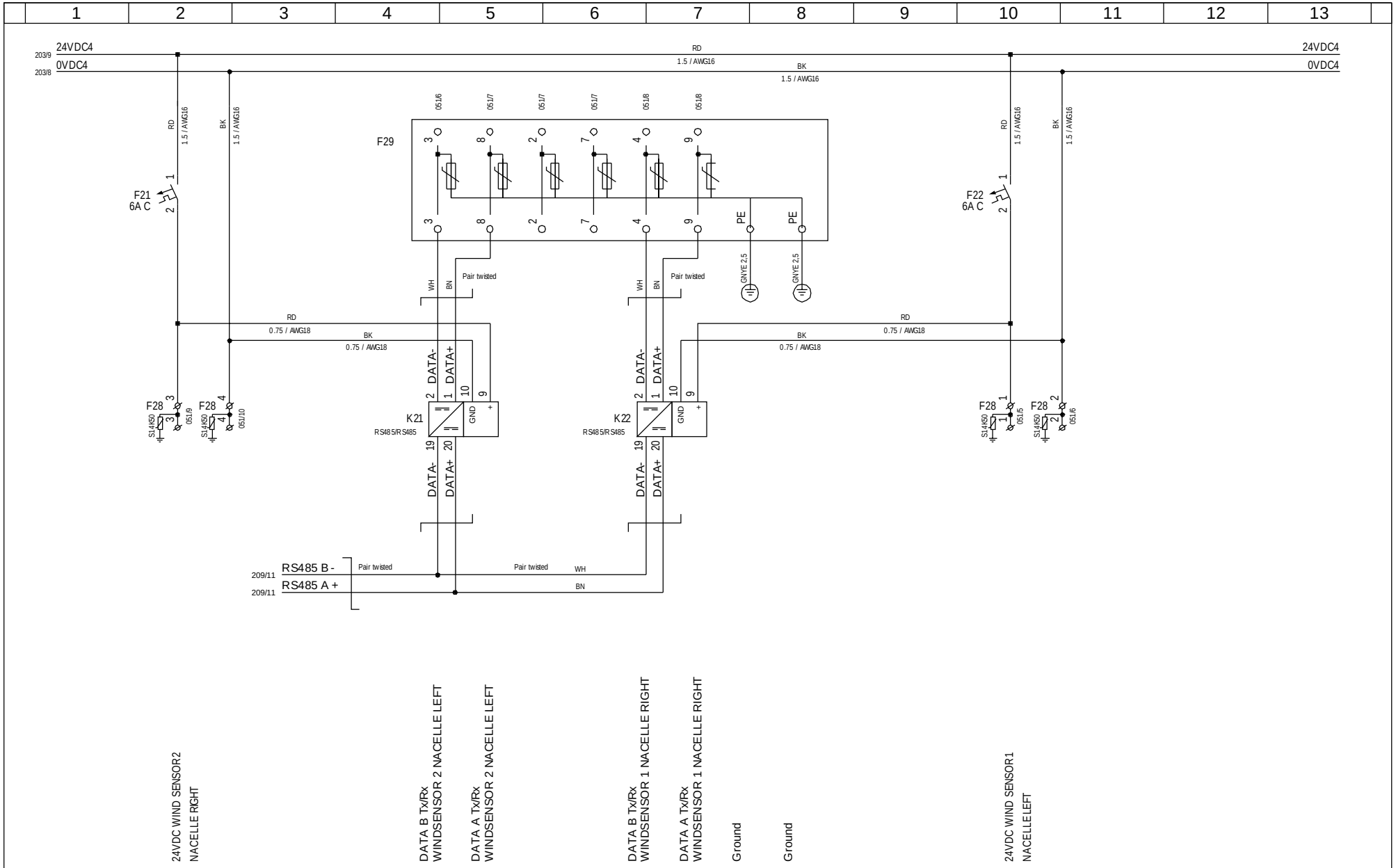
	Date	Initials	Function	Varistor box F27		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 219	Sheet 218



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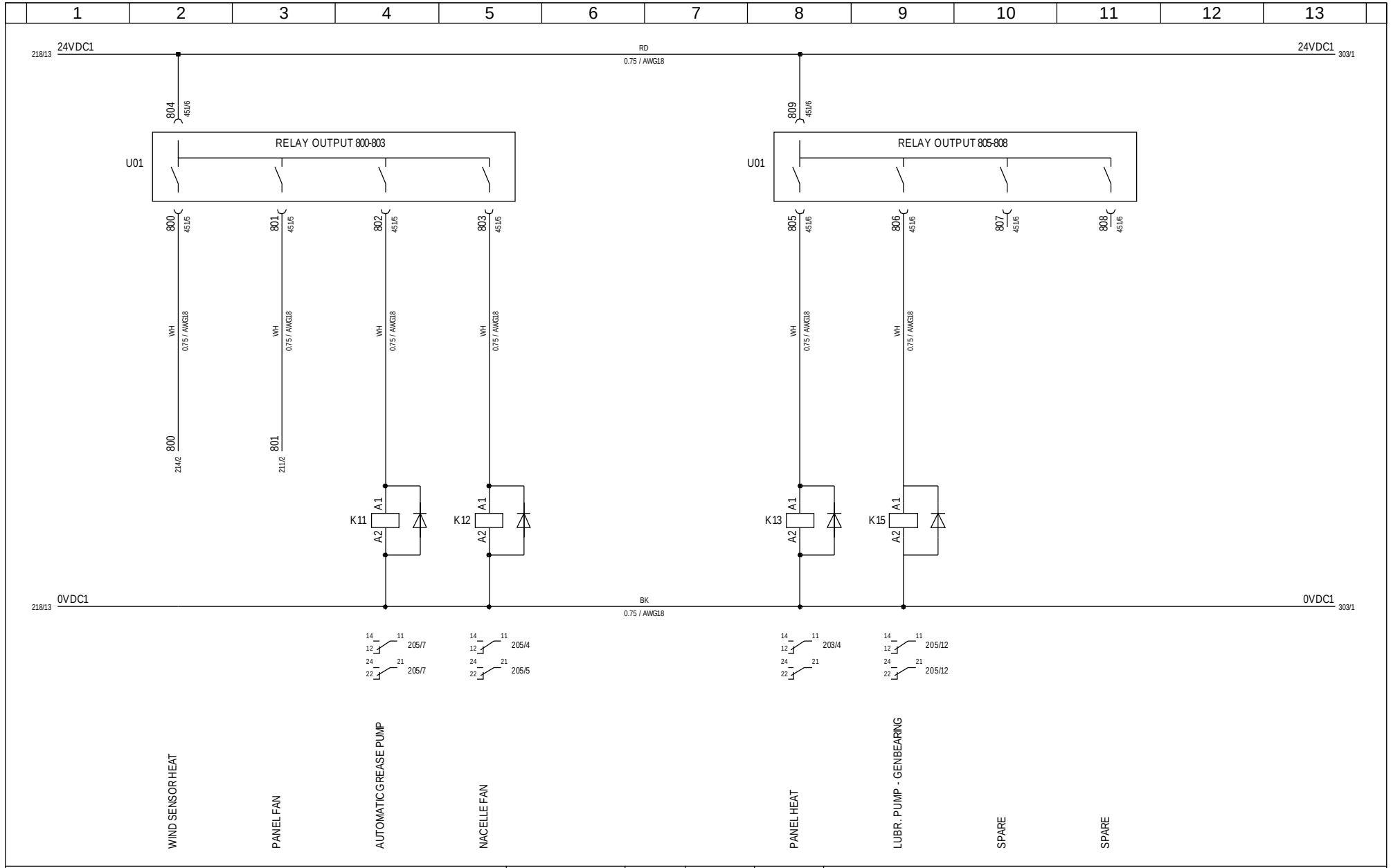
	Date	Initials	Function	Windsensors 24Vdc supply		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 301	Sheet 219

09-06-05
08:56



Vestas

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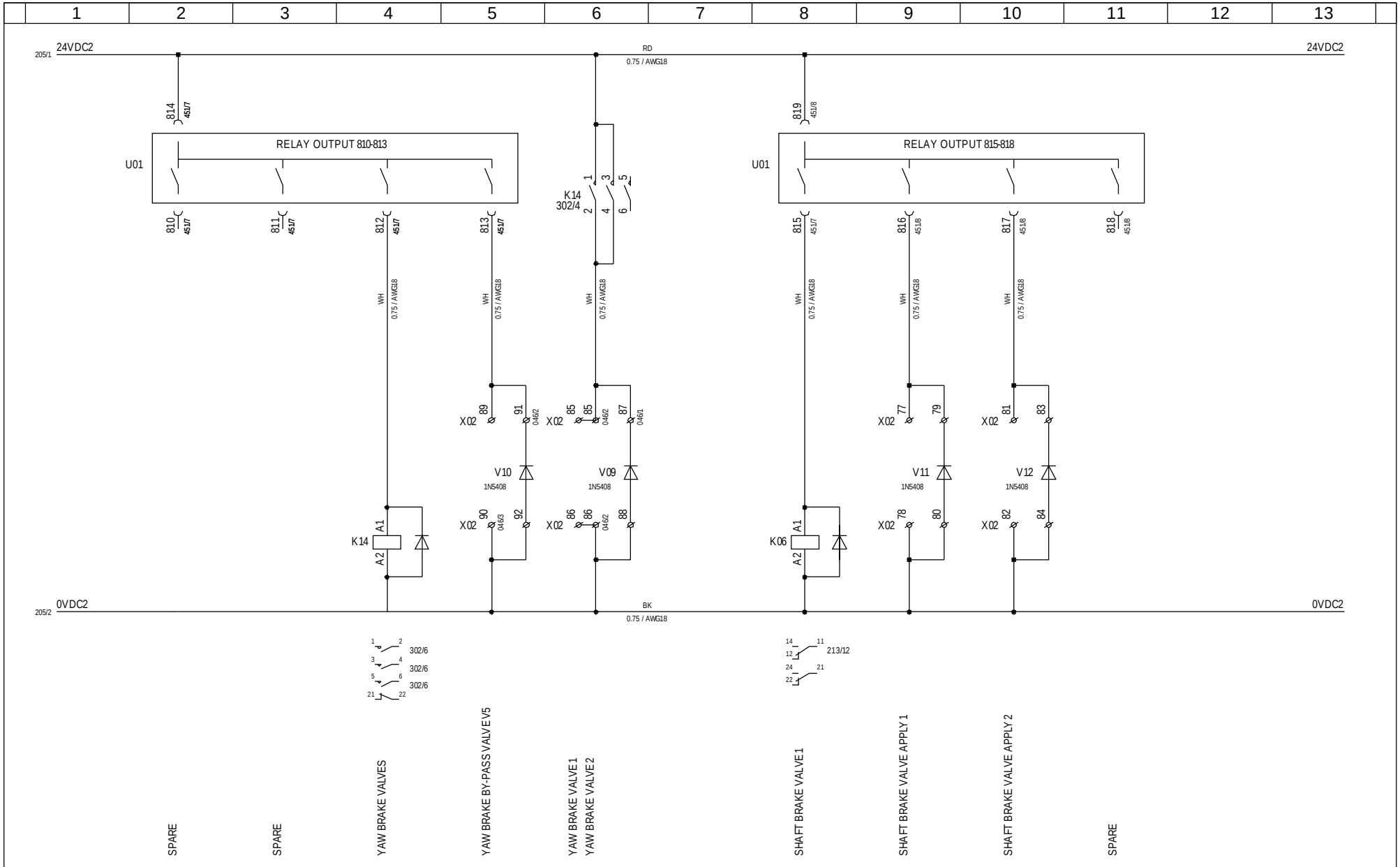
	Date	Initials	Function	Output 800-809		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 302	Sheet 301

09-06-05
09:56



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Vestas

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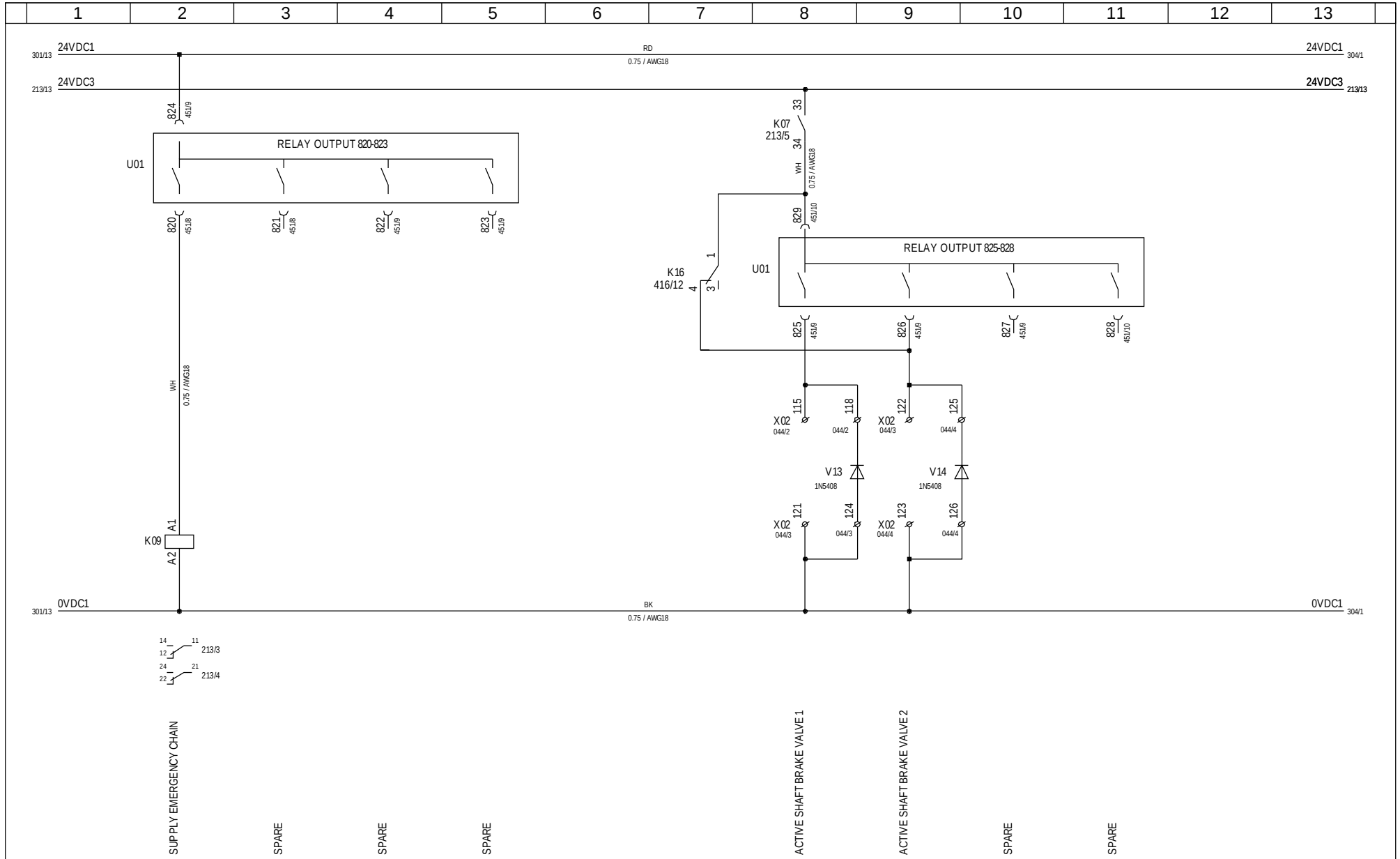
	Date	Initials	Function	Output 810-819		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 303	Sheet 302



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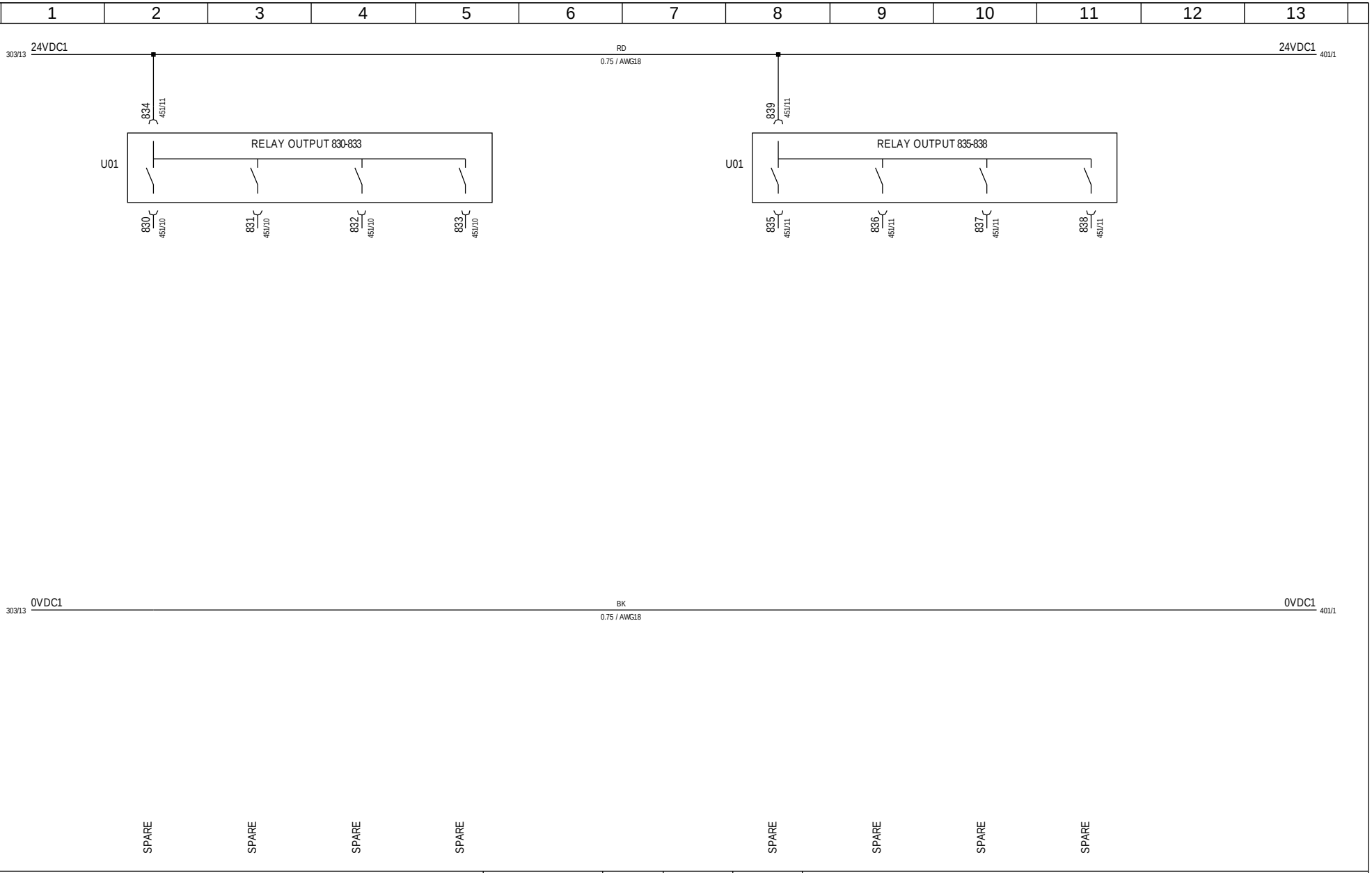
	Date	Initials	Function	Output 820-829		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 304	Sheet 303

09-06-05
09:56



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Vestas

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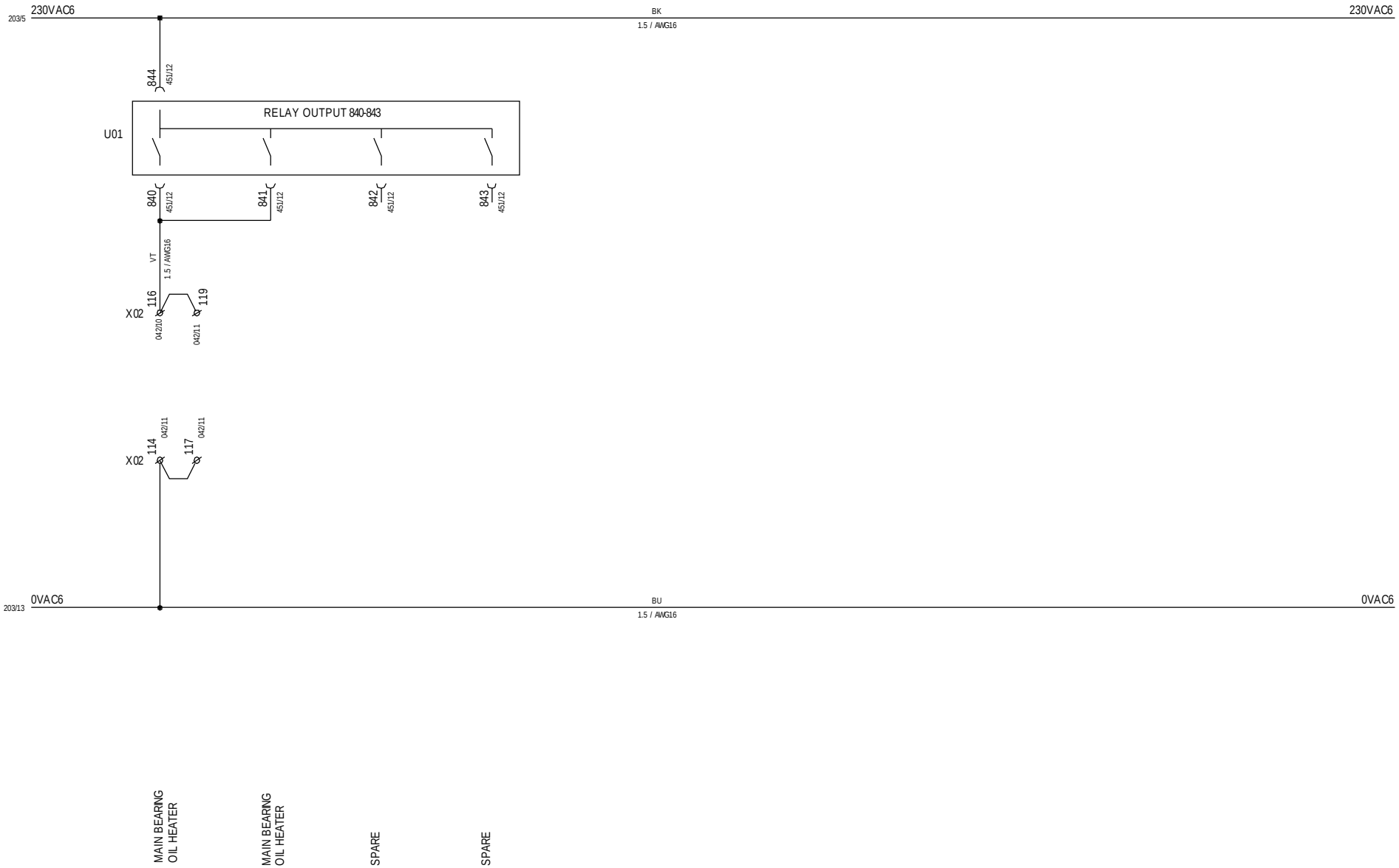
	Date	Initials	Function	Output 830-839		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 305	Sheet 304



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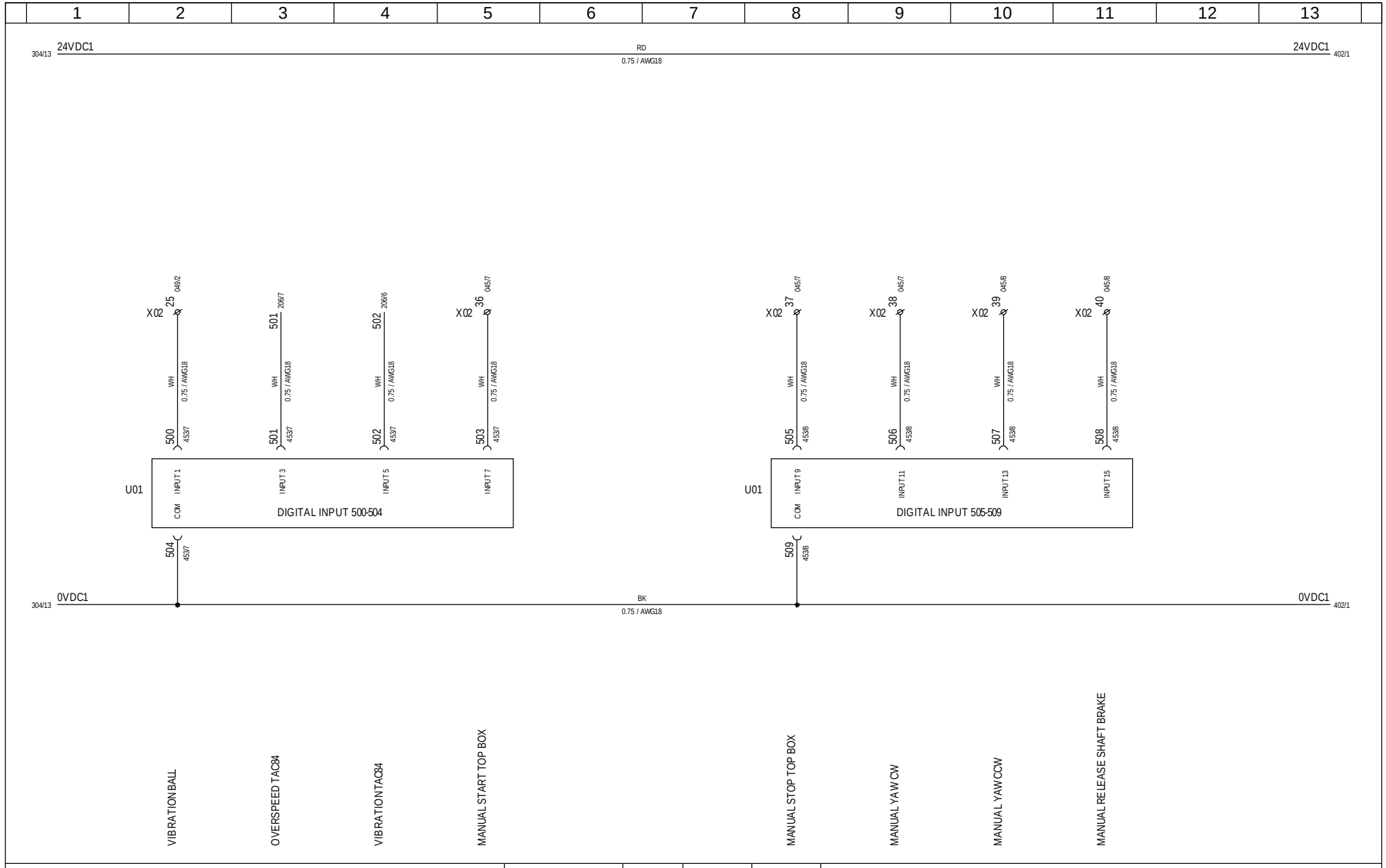
	Date	Initials	Function	Output 840-844		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 401	Sheet 305

09-06-05
09:56



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Vestas

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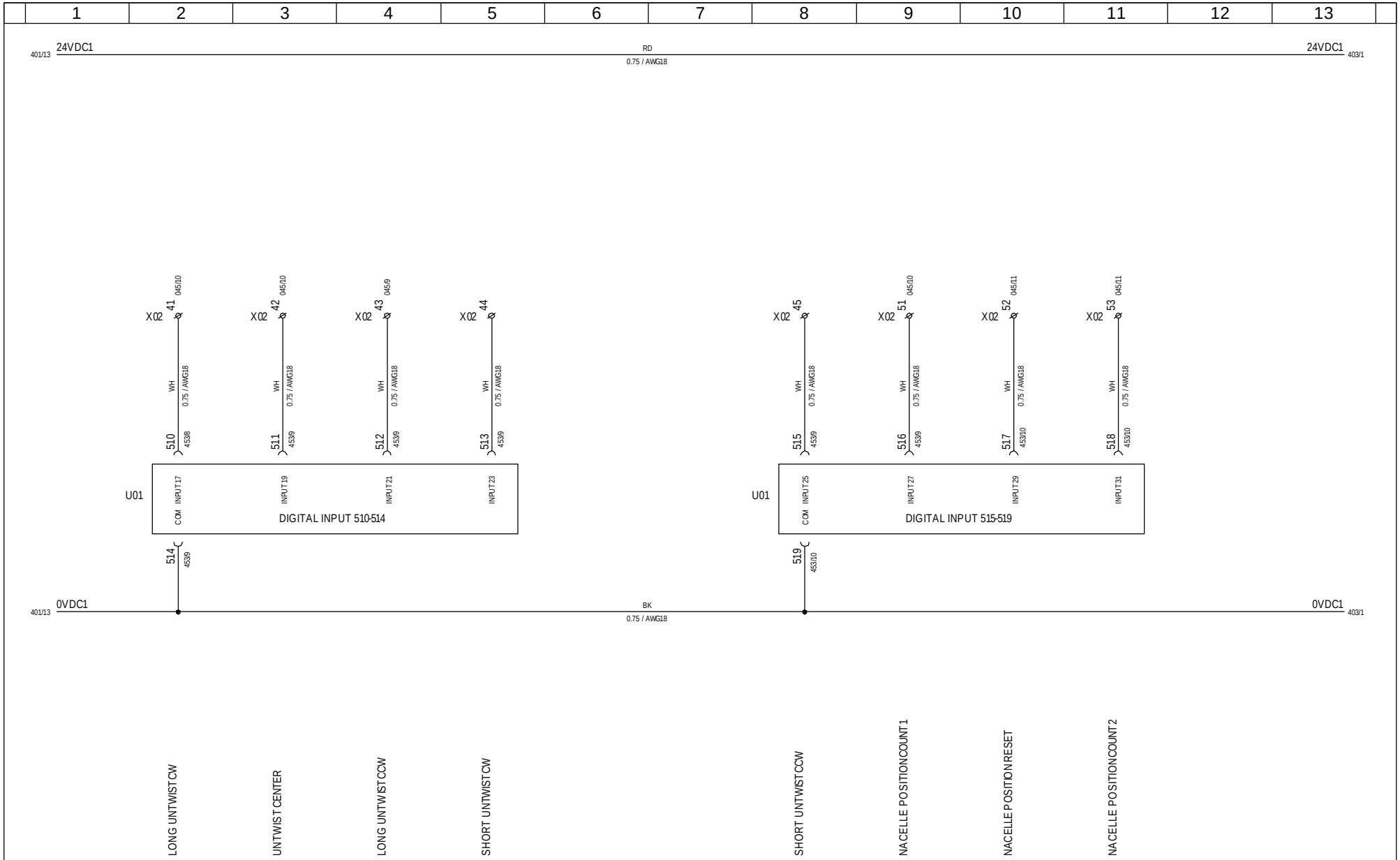
	Date	Initials	Function	Input 500-509		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 402	Sheet 401



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Vestas

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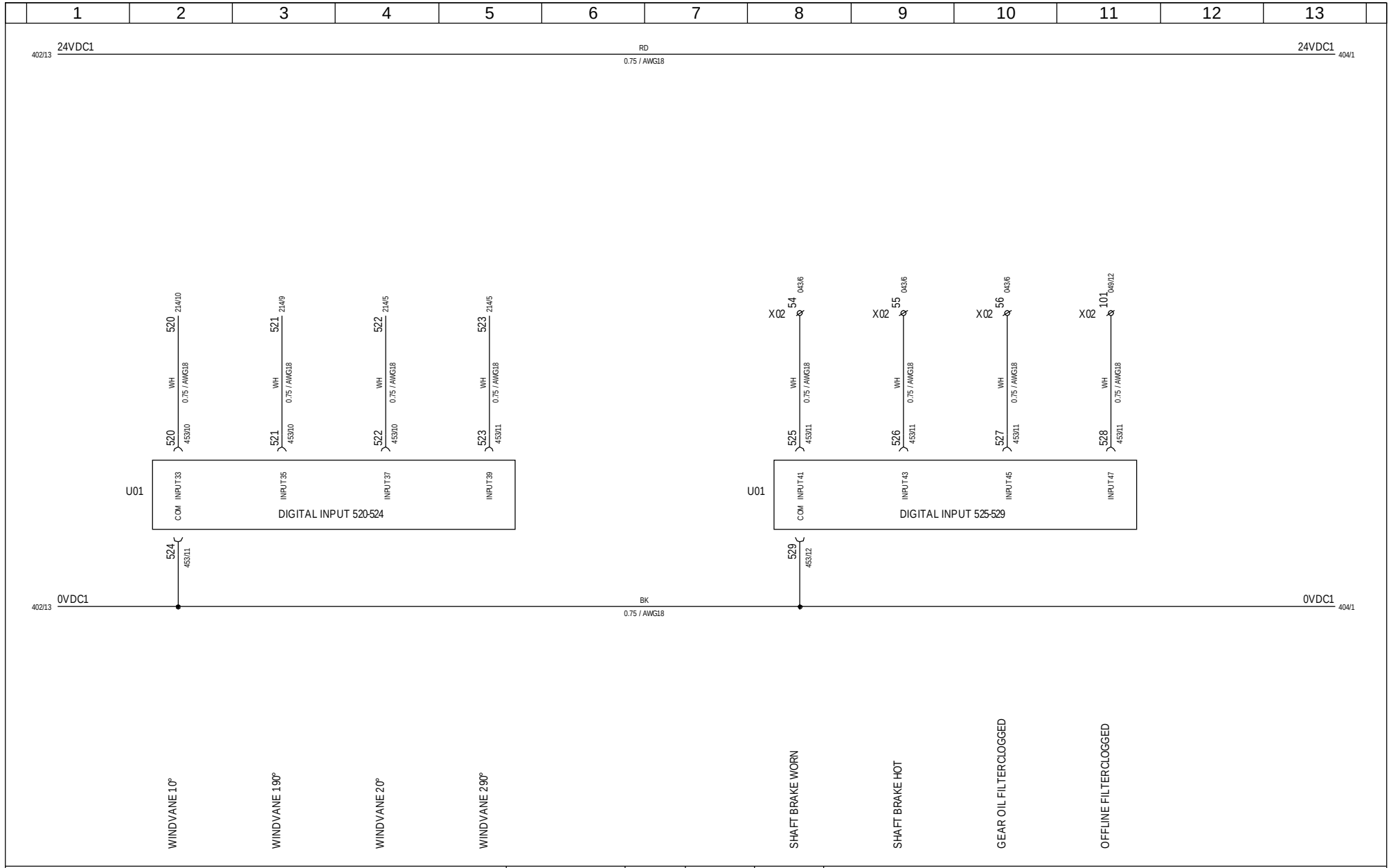
	Date	Initials	Function	Input 510-519		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 403	Sheet 402



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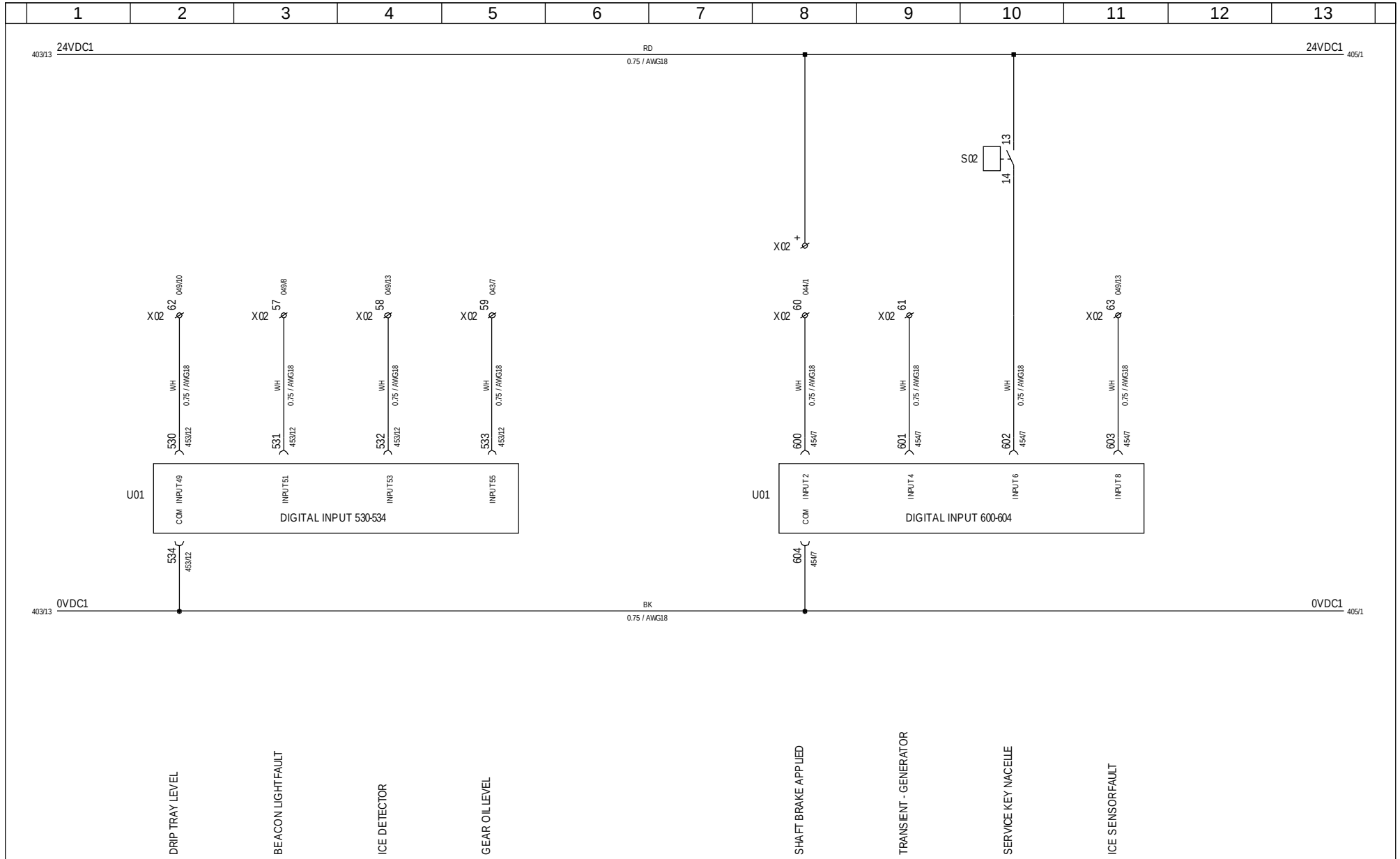
	Date	Initials	Function	Input 520-529		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 404	Sheet 403



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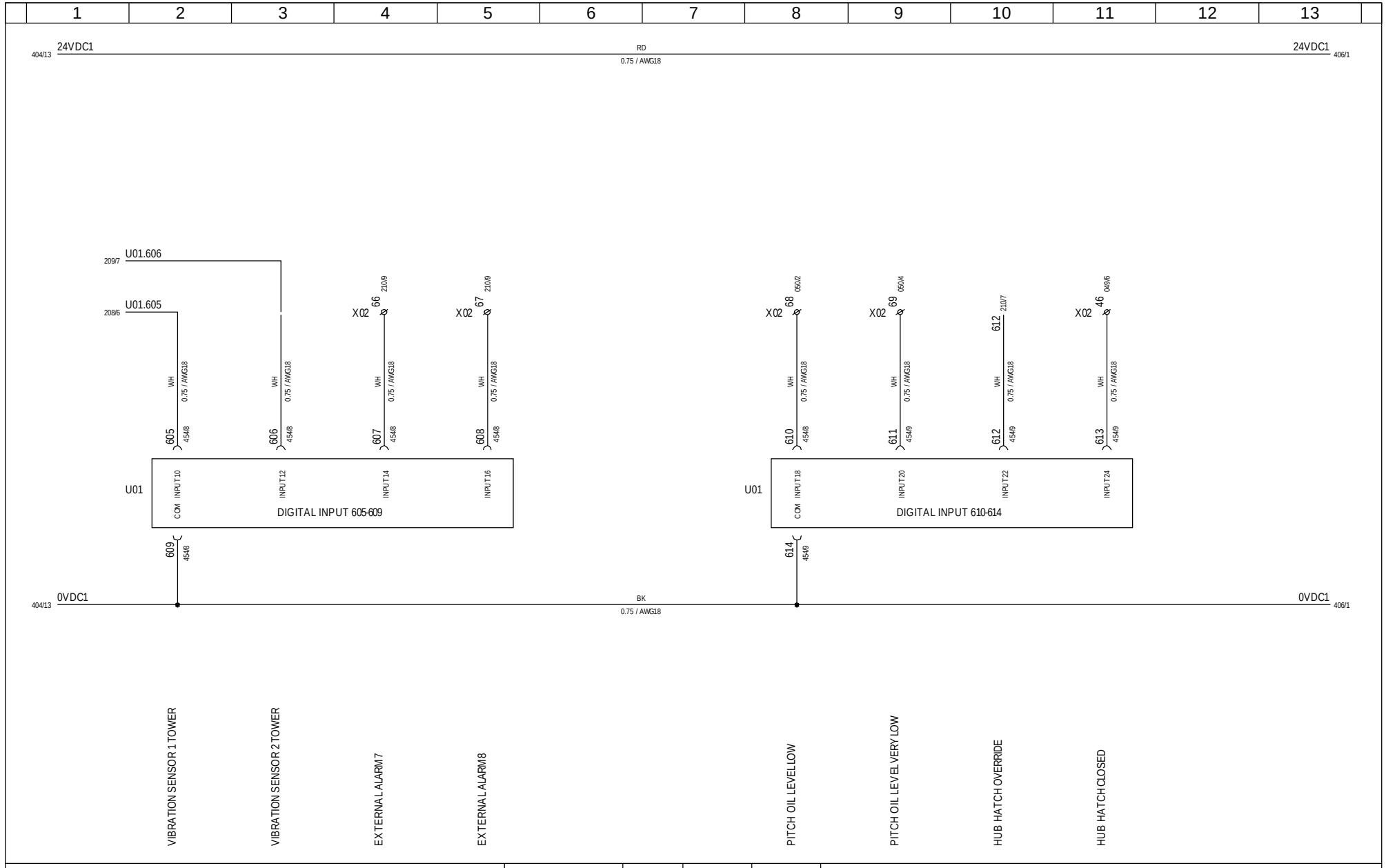
	Date	Initials	Function	Input 530-604		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 405	Sheet 404



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Vestas

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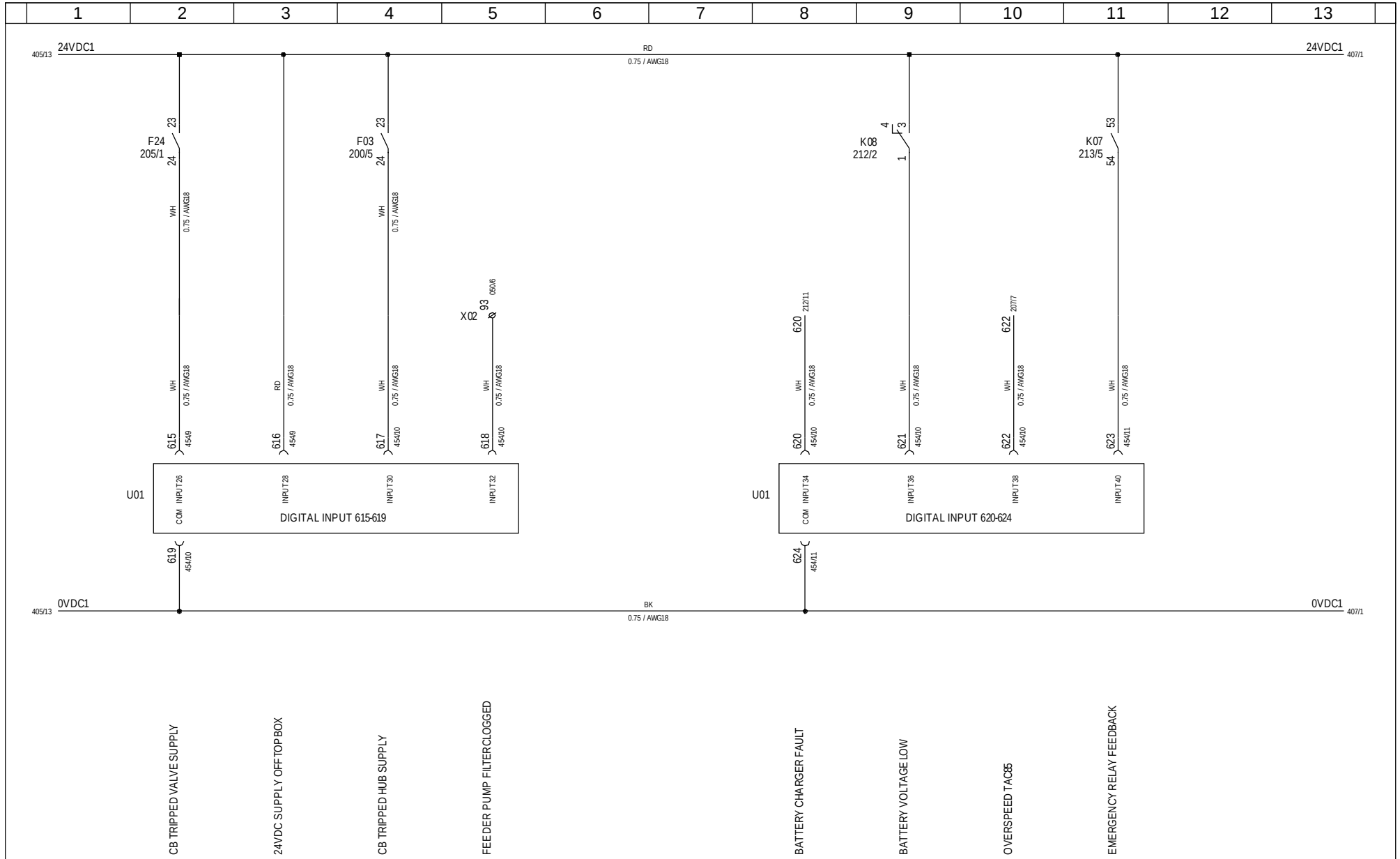
	Date	Initials	Function	Input 605-614		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 406	Sheet 405



Vestas

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	Date	Initials	Function	Input 615-624		
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Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 407	Sheet 406

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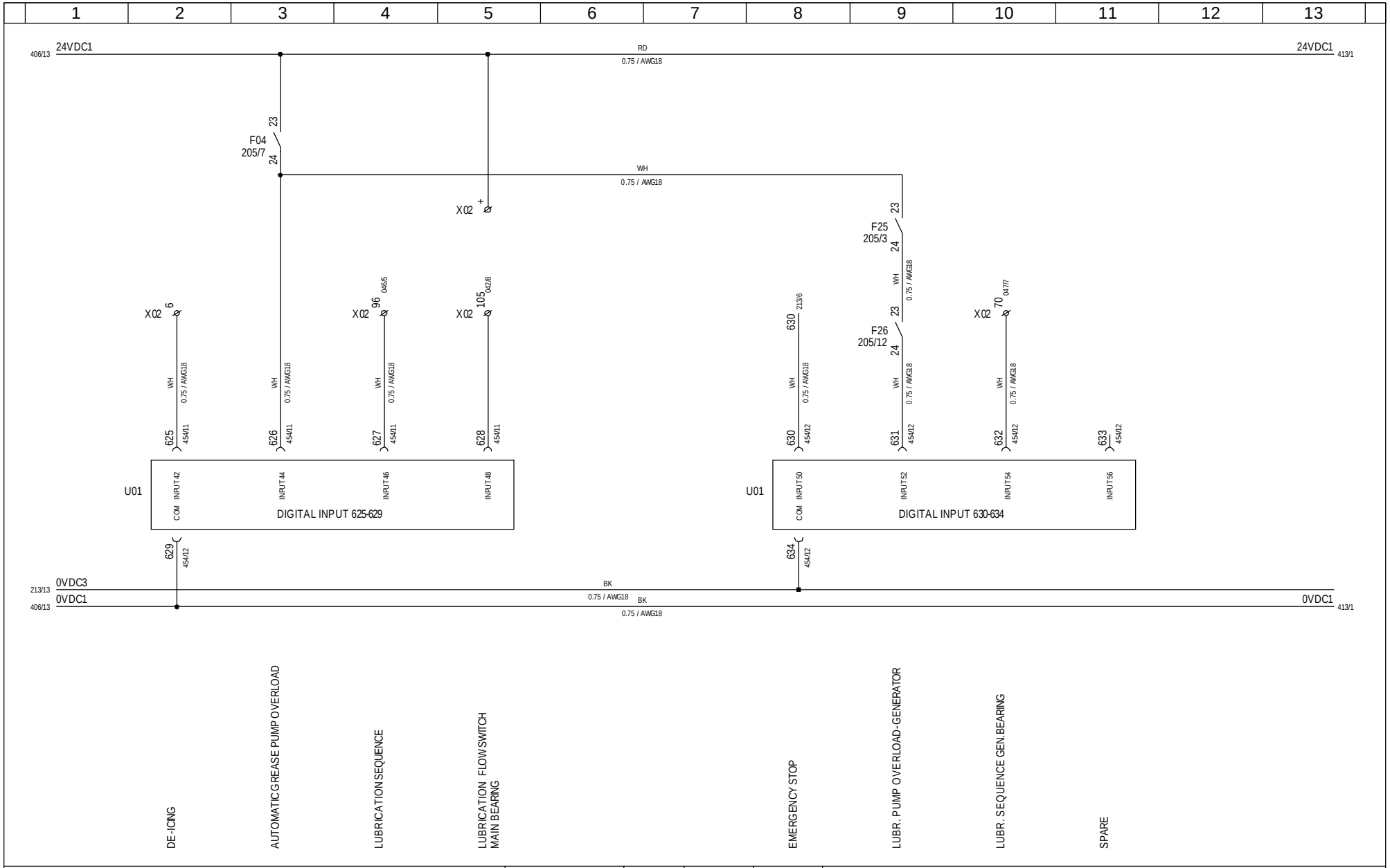

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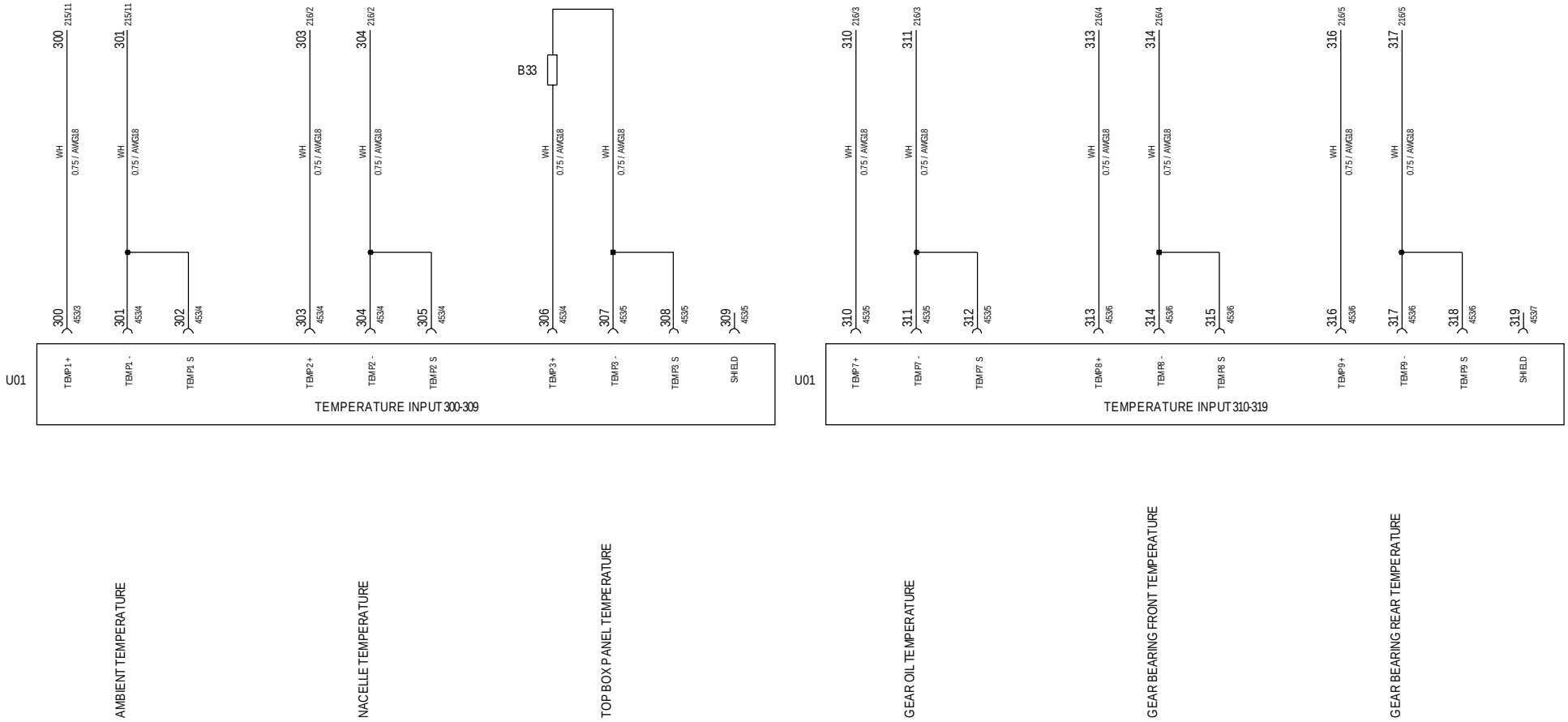

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Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 409	Sheet 408

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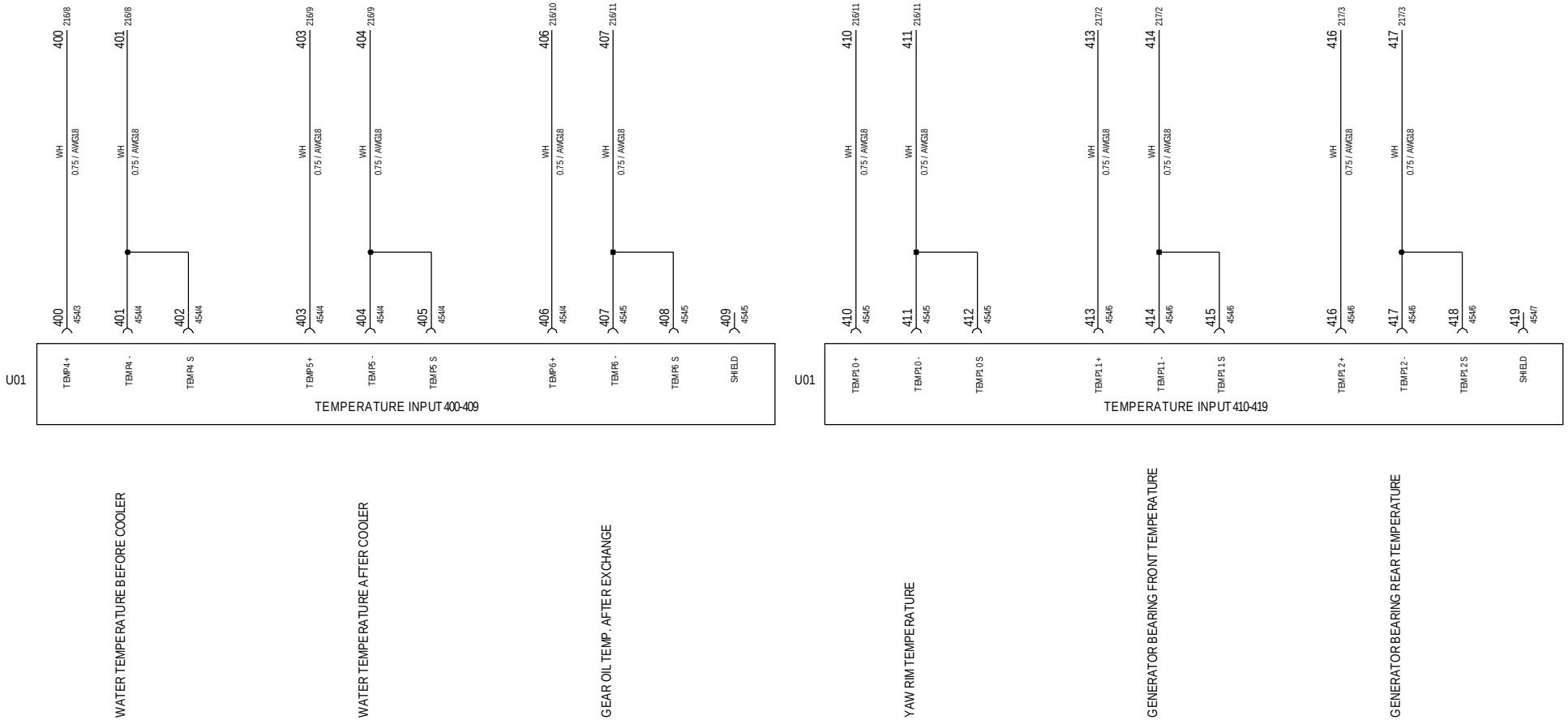
09:56



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Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 410	Sheet 409

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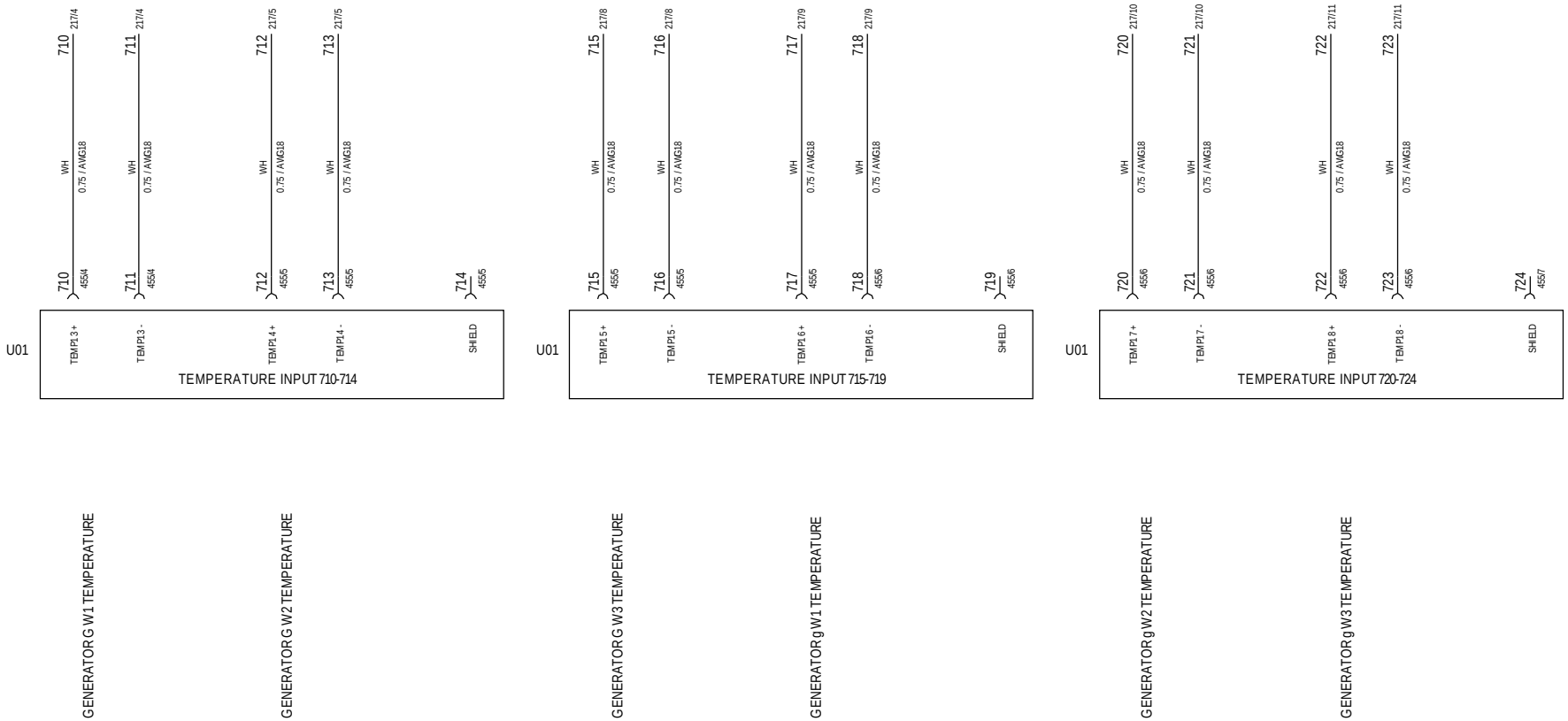
09:56



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Vestas

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	Date	Initials				
Designed	040610	CHO	Function	Input 710-724		
Approved			Project title	Top Panel +AN1		
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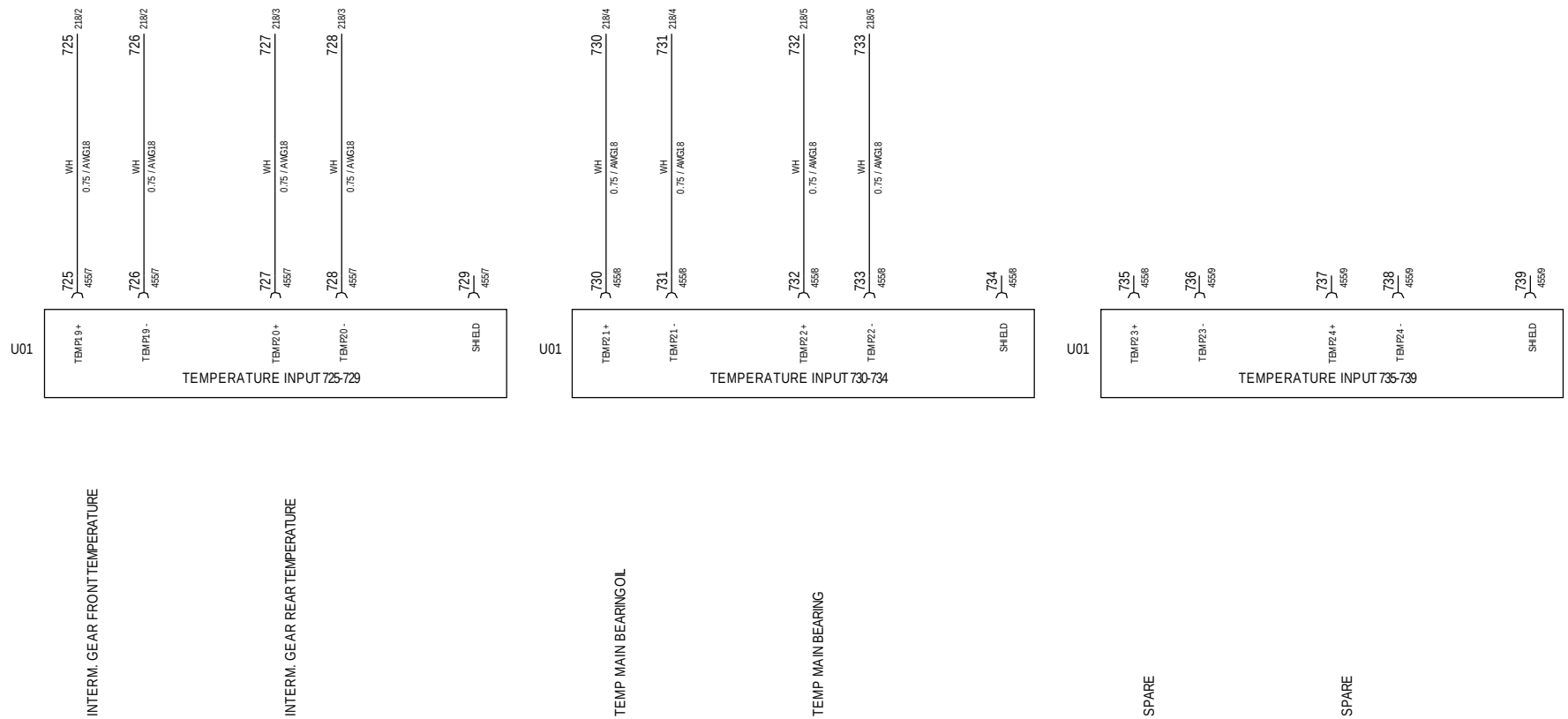
			Rev. -	Drawing no. 6015269	Cont. sheet 411	Sheet 410



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Vestas

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Designed	040610	CHO	Function	Input 725-739		
Approved			Project title	Top Panel +AN1		
Reviced	041122	CHO	Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
			Rev. -	Drawing no. 6015269	Cont. sheet 412	Sheet 411

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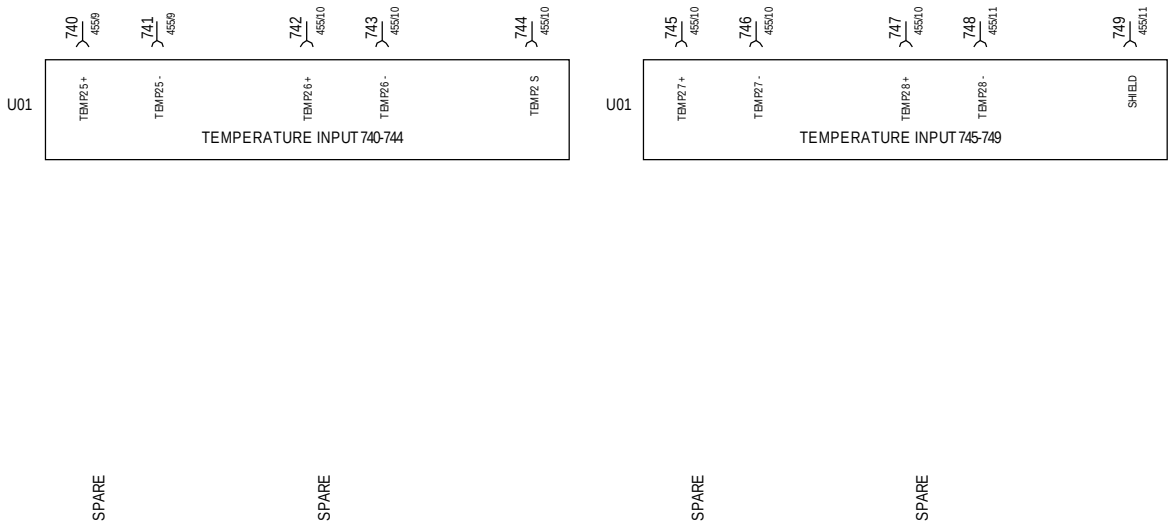

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	Date	Initials	Function	Input 740-749		
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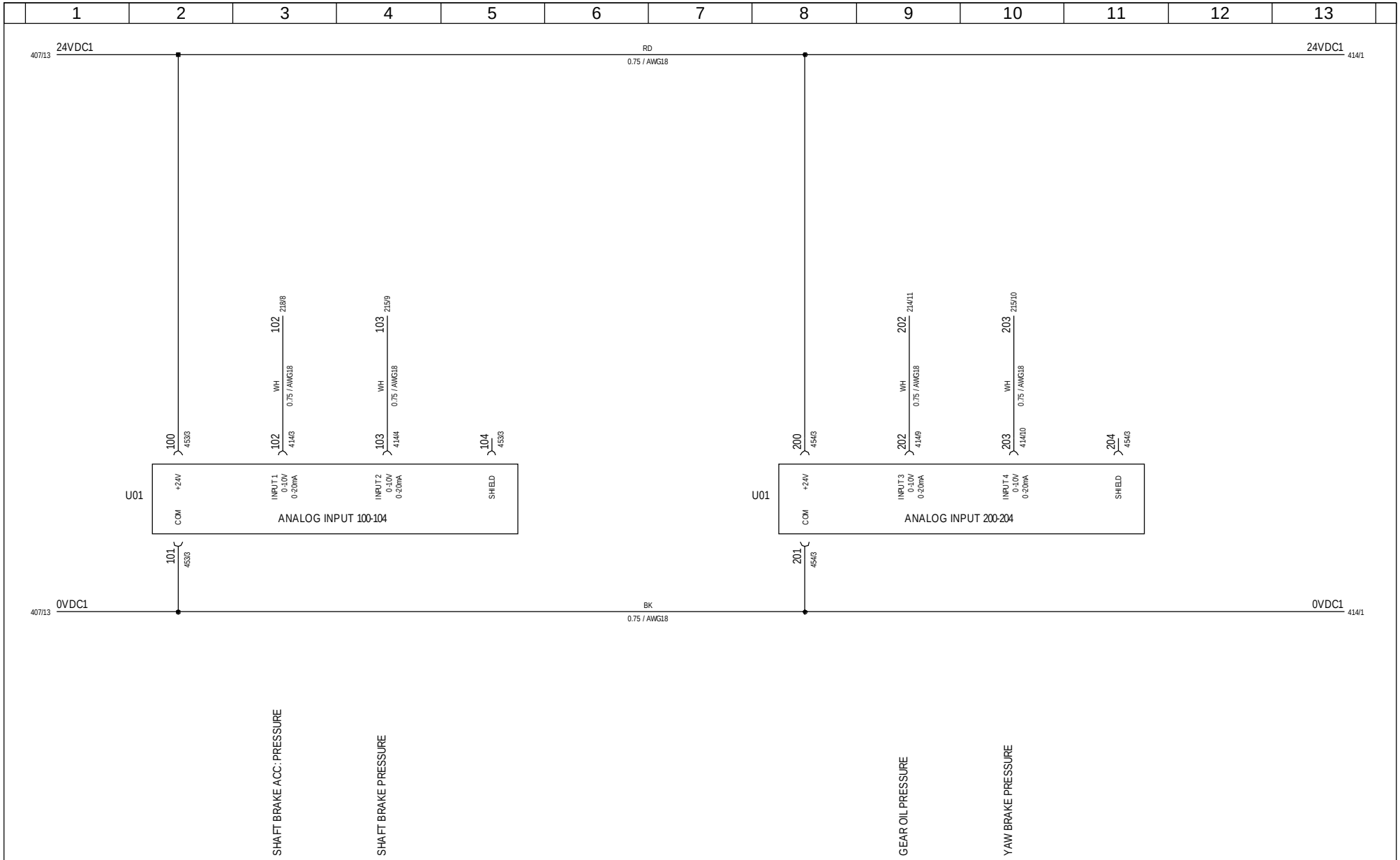
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 413	Sheet 412



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	Date	Initials	Function	Input 100-204		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 414	Sheet 413

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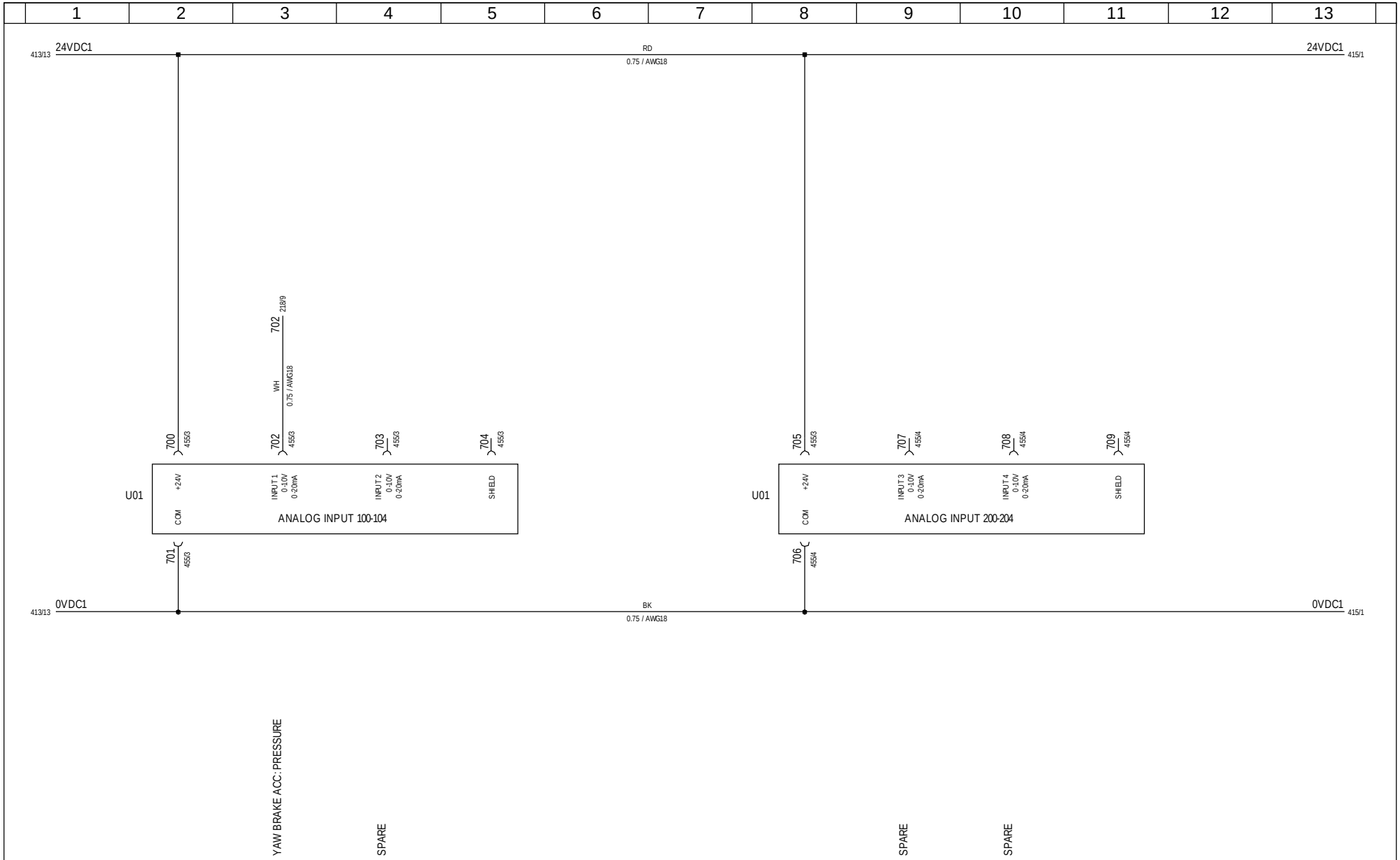
09:56



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	Date	Initials	Function	Input 700 - 709		
Designed	040610	CHO	Project title	Top Panel +AN1		
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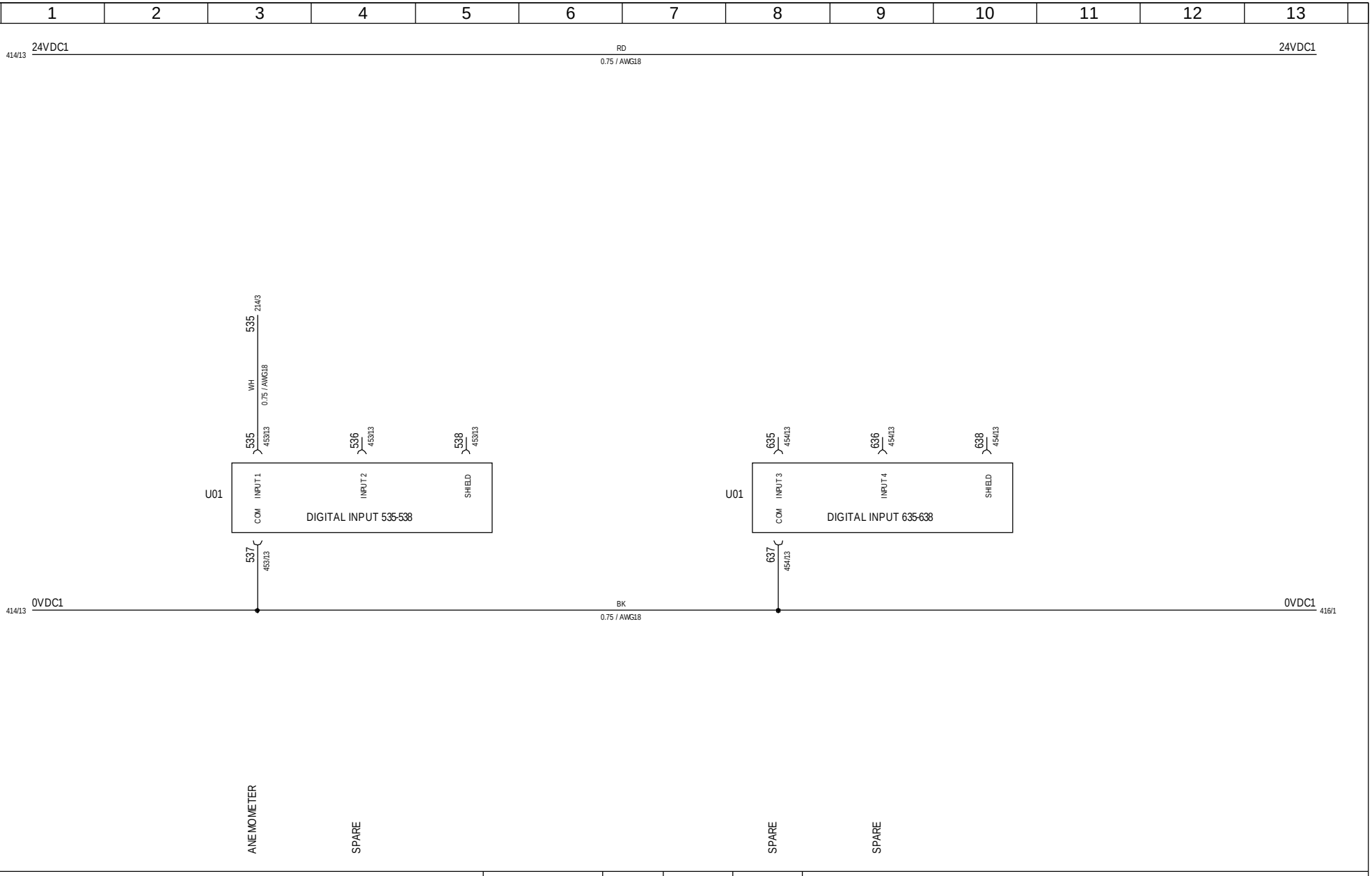
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 415	Sheet 414



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	Date	Initials	Function	Input 535-638		
Designed	040610	CHO	Project title	Top Panel +AN1		
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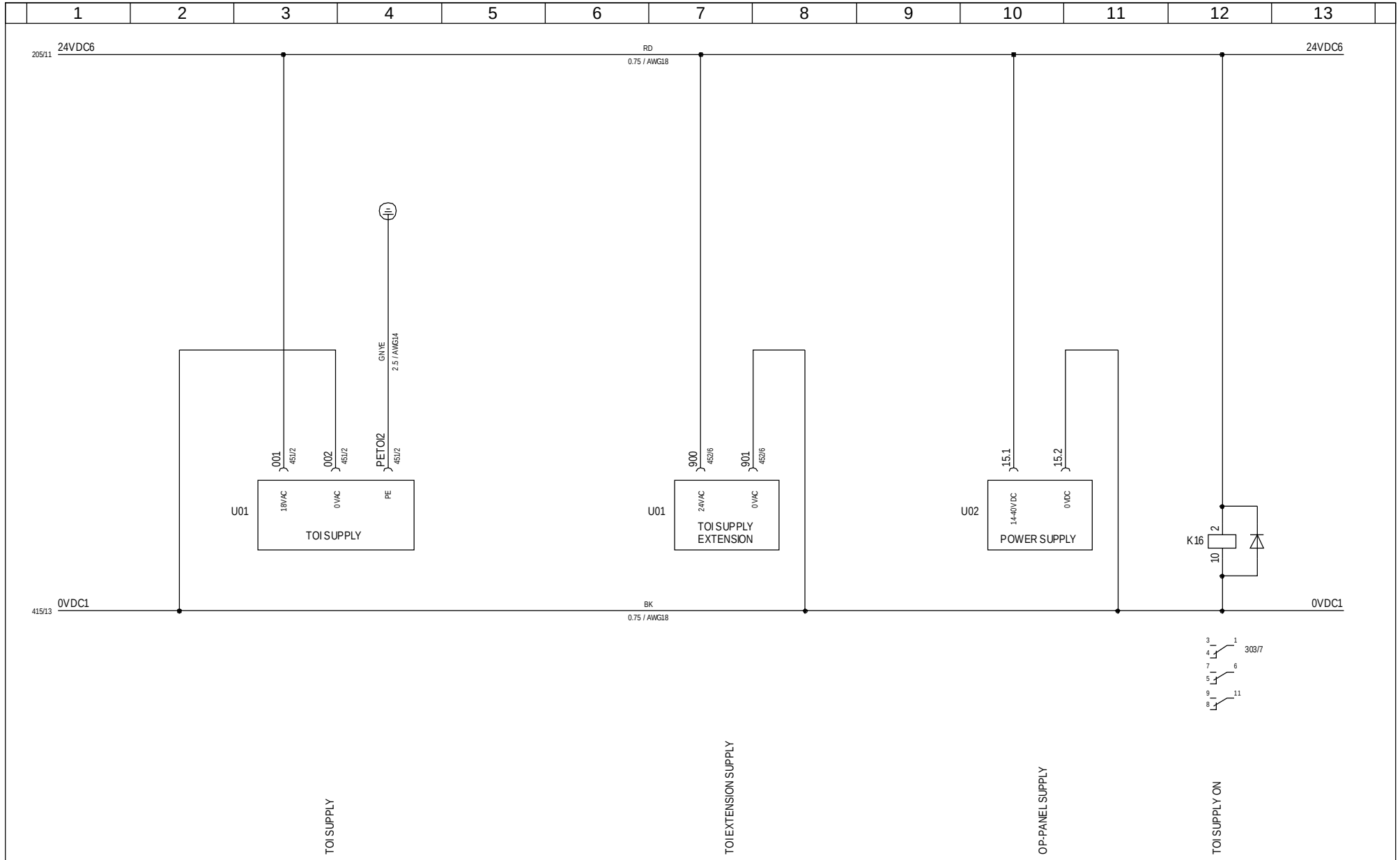
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 416	Sheet 415



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	Date	Initials	Function	Supply for TOI & OP-panel		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 451	Sheet 416

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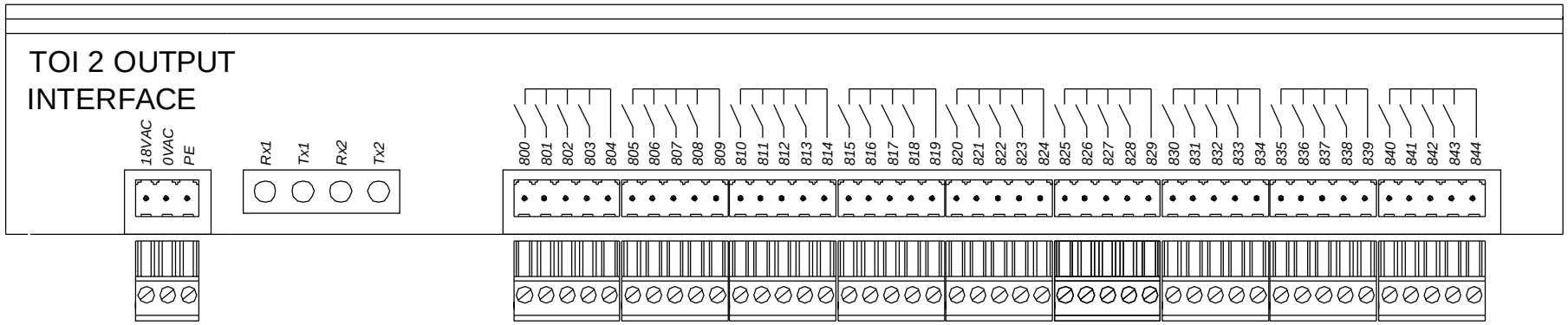

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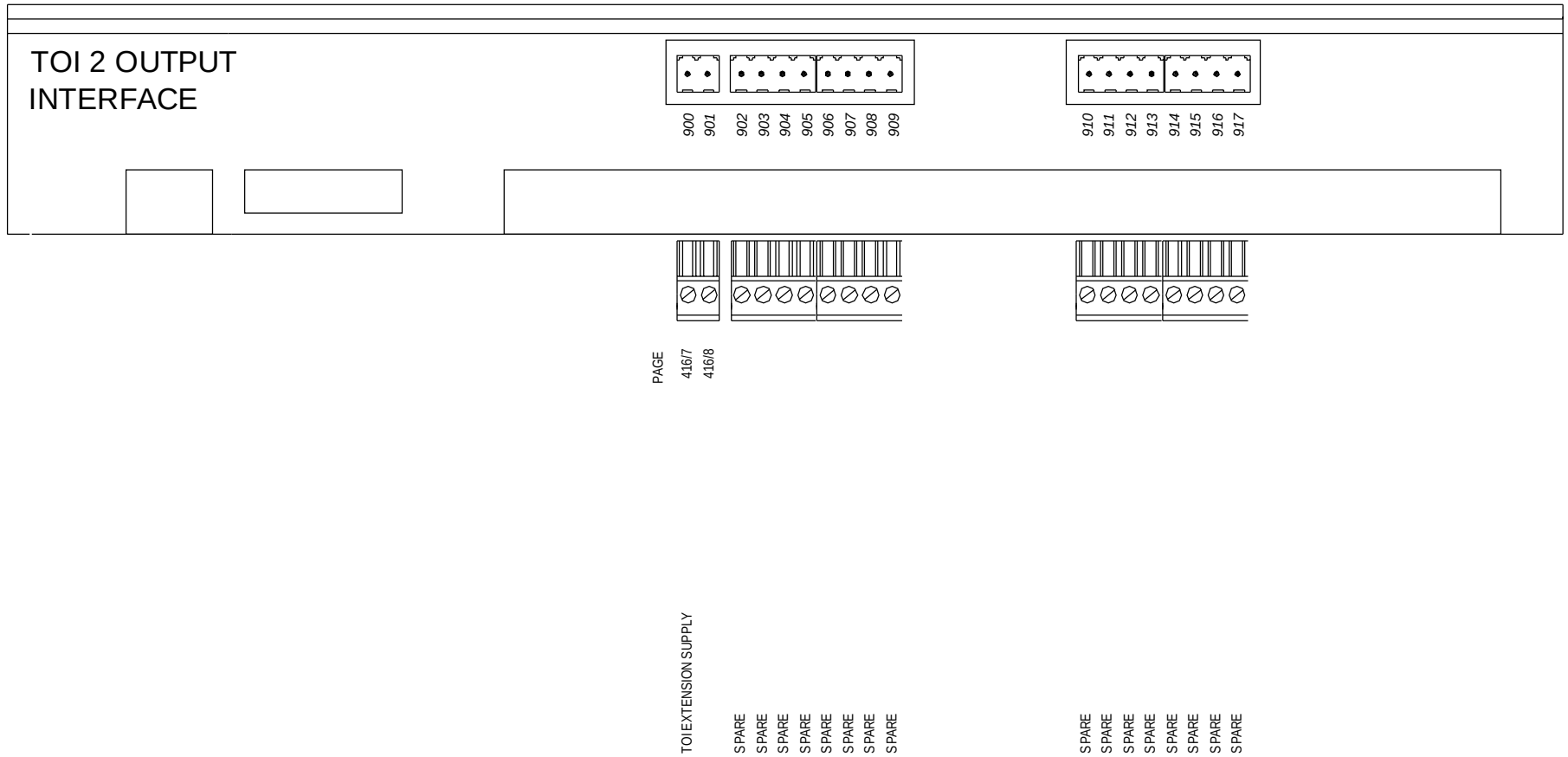
TOI 2 OUTPUT INTERFACE



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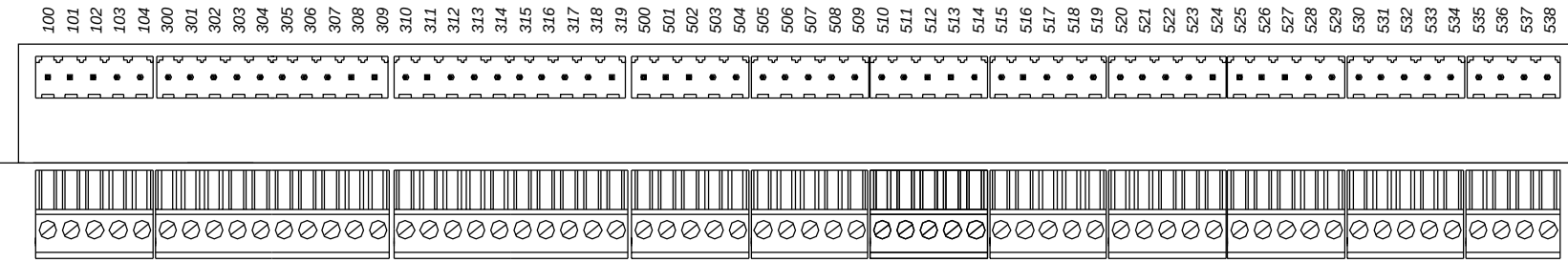
	Date	Initials	Function	TOI outline output ext.		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 453	Sheet 452

TOI 2 INPUT INTERFACE



	PAGE	
100	413/2	24VDC1
101	413/2	0VDC1
102	414/3	SHAFT BRAKE ACC PRESSURE
103	414/4	SHAFT BRAKE PRESSURE
104	413/5	SPARE
300	408/1	AMBIENT TEMPERATURE
301	408/2	AMBIENT TEMPERATURE
302	408/2	AMBIENT TEMPERATURE
303	408/3	NACELLE TEMPERATURE
304	408/4	NACELLE TEMPERATURE
305	408/4	NACELLE TEMPERATURE
306	408/5	TOP BOX PANEL TEMPERATURE
307	408/6	TOP BOX PANEL TEMPERATURE
308	408/6	TOP BOX PANEL TEMPERATURE
309	408/7	SHIELD
310	408/8	GEAR OIL TEMPERATURE
311	408/8	GEAR OIL TEMPERATURE
312	408/9	GEAR OIL TEMPERATURE
313	408/10	GEAR BEARING FRONT TEMPERATURE
314	408/10	GEAR BEARING FRONT TEMPERATURE
315	408/11	GEAR BEARING FRONT TEMPERATURE
316	408/12	GEAR BEARING REAR TEMPERATURE
317	408/12	GEAR BEARING REAR TEMPERATURE
318	408/13	GEAR BEARING REAR TEMPERATURE
319	408/13	SHIELD
500	401/2	VIBRATION BALL
501	401/3	OVERSPEED TAC84
502	401/4	VIBRATION TAC84
503	401/5	MANUAL START TOP BOX
504	401/2	0VDC1
505	401/8	MANUAL STOP TOP BOX
506	401/9	MANUAL YAW CW
507	401/10	MANUAL YAW CCW
508	401/11	MANUAL RELEASE SHAFT BRAKE
509	401/8	0VDC1
510	402/2	LONG UNTWIST CW
511	402/3	UNTWIST CENTER
512	402/4	LONG UNTWIST CCW
513	402/5	SHORT UNTWIST CW
514	402/2	0VDC1
515	402/8	SHORT UNTWIST CCW
516	402/9	NACELLE POSITION COUNT 1
517	402/10	NACELLE POSITION RESET
518	402/11	NACELLE POSITION COUNT 2
519	402/8	0VDC1
520	403/2	WINDVANE 10°
521	403/3	WINDVANE 190°
522	403/4	WINDVANE 20°
523	403/5	WINDVANE 290°
524	403/2	0VDC1
525	403/8	SHAFT BRAKE WORN
526	403/9	SHAFT BRAKE HOT
527	403/10	GEAR OIL FILTER CLOGGED
528	403/11	OFFLINE FILTER CLOGGED
529	403/8	0VDC1
530	404/2	DRIP TRAY LEVEL
531	404/3	BEACON LIGHT FAULT
532	404/4	ICE DETECTOR
533	404/5	GEAR OIL LEVEL
534	404/2	0VDC1
535	415/3	WIND SPEED 1
536	415/4	SPARE
537	415/3	0VDC1
538	415/5	SHIELD

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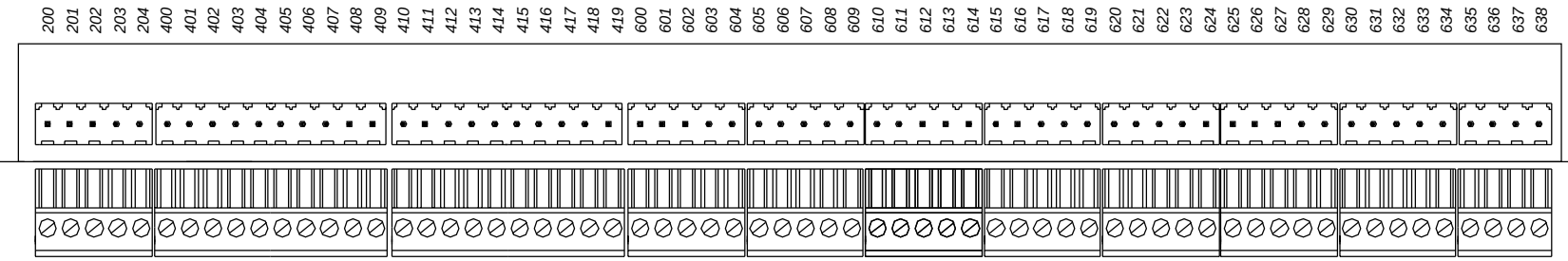
	Date	Initials	Function	TOI outline input		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 454	Sheet 453

09-06-05 09:56

TOI 2 INPUT INTERFACE



	Date	Initials	Function	TOI outline input		
Designed	040610	CHO	Project title	Top Panel +AN1		
Approved			Comments	NM72 & NM82	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269	Cont. sheet 455	Sheet 454

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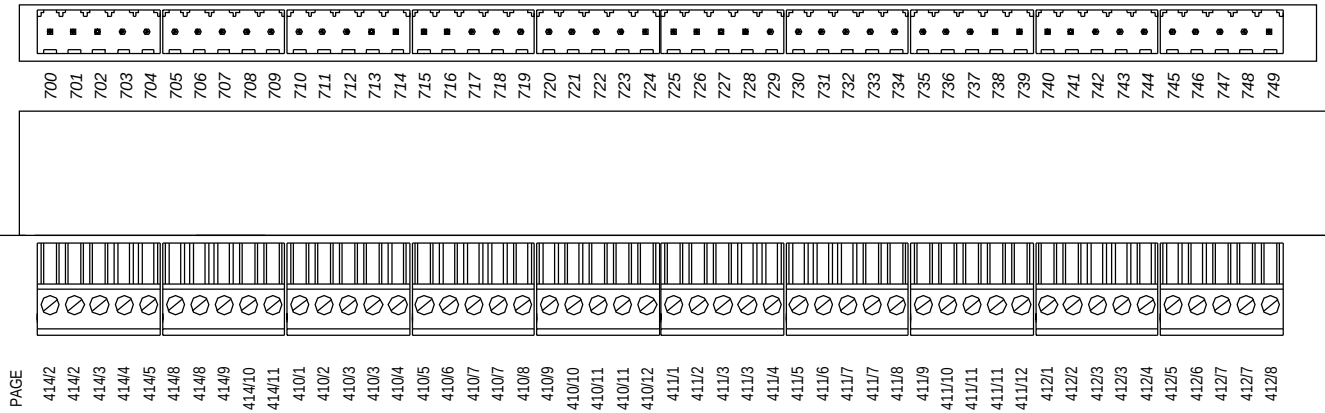
09-06-05
09:56

TOI 2 INPUT INTERFACE



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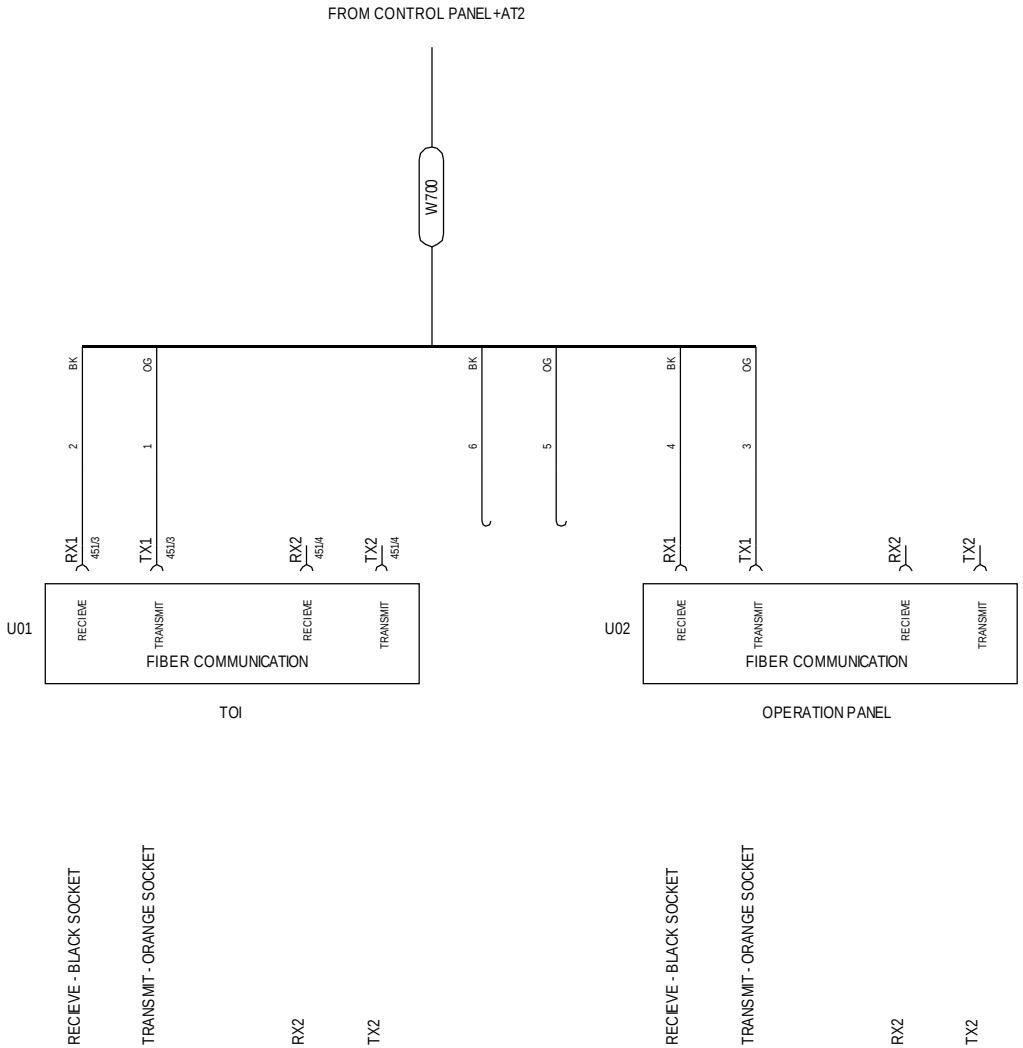

Vestas

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	Date	Initials					
			Function	Communication			
Designed	040610	CHO	Project title	Top Panel +AN1			
Approved			Comments	NM72 & NM82		Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6015269		Cont. sheet -	Sheet 501

09-06-05
09:56

Bill of Material - 60104193 TOP PANEL+AN1 AS 30t IEC/UL Active Brake

Component	Description	Qty per	Stk UM	Position Number
D21000163	BOM 60104193,TOP PANEL+AN1 AS	0,000	EA	
D22000353	CI-TOP PANEL +AN1 AS 30t IEC/U	0,000	EA	
D6015269	TOP PANEL+AN1 AS 30t IEC/UL Ac	0,000	EA	
51700402	TAC 85-1 Direction Guard VWS	1,000	EA	U04
51701001	TAC 84CVibr.Grd/2 Filters NMCS	1,000	EA	U03
51701601	TOI-II Interf.w.ext.1 1500 Top	1,000	EA	U01
60000693	OVP MT RS485	1,000	EA	F29
60000711	BAT H4 12V 32Ah	1,000	EA	G02
60000711	BAT H4 12V 32Ah	1,000	EA	G03
60000719	BATT 115-230/24V10A ADC5423/83	1,000	EA	G01
60000719	BATT 115-230/24V10A ADC5423/83	1,000	EA	G05
60000980	DIODE BRID KBPC3506G 600V 35A	1,000	EA	V07
60001869	CONN MSTBT F 4 LEADED	44,000	EA	F06-28
60001911	CONN BLA F 2 LEADED	1,000	EA	U01
60001911	CONN BLA F 2 LEADED	1,000	EA	U02
60001918	CONN BLA F 3 LEADED	1,000	EA	U01
60001927	CONN BLA F 4 LEADED	5,000	EA	U01
60001934	CONN BLA F 5 LEADED	9,000	EA	U01
60002320	STICKER GEN USE VCS	1,000	EA	
60002421	LABEL "SERVICE 0 1"	1,000	EA	
60002424	LABEL "+AN1"	1,000	EA	
60002503	LABEL "-X01"	1,000	EA	
60002589	LABEL "MAIN DISC CONTROL "	1,000	EA	
60004391	CONT 3RT1016-1BB41 24V DC	1,000	EA	K14
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	K01
60004394	CONT 3RT10161AP02 230V 50/60Hz	1,000	EA	K02
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	K01
60004450	RCUNIT 3RT19161CD00 127-240VAC	1,000	EA	K02
60004452	DIODE 3RT1916-1LM00 24-70V	1,000	EA	K14
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K05
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K06
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K09
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K11
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K12
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K13
60004513	RELAY RT424024 8A 24V 2P	1,000	EA	K15
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K05
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K06
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K09
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K11
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K12
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K13
60004517	SKT RT RT78625 2x12A 300VAC 2P	1,000	EA	K15
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K05
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K06
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K09
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K11
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K12
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K13
60004518	RETAINER FOR RT SOCEKT RT16016	1,000	EA	K15
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K05
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K06
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K09
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K11
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K12
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K13
60004520	DIODE MODULE RPML0024 12-24V	1,000	EA	K15
60004532	RELAY MT3230C4 10A 24V 3P	1,000	EA	K03
60004532	RELAY MT3230C4 10A 24V 3P	1,000	EA	K04
60004532	RELAY MT3230C4 10A 24V 3P	1,000	EA	K08
60004532	RELAY MT3230C4 10A 24V 3P	1,000	EA	K16
60004924	TRIP AMPLIFIER 2231D-1050	1,000	EA	U05
60004933	RS485/RS485 REPEATE I-7510 ICP	1,000	EA	K22
60004996	RELAY EMER 3TK2806OBB4 400V	1,000	EA	K07
60005026	SOCKET MT 78740 11-POLED	1,000	EA	K03
60005026	SOCKET MT 78740 11-POLED	1,000	EA	K04
60005026	SOCKET MT 78740 11-POLED	1,000	EA	K08
60005026	SOCKET MT 78740 11-POLED	1,000	EA	K16
60005026	SOCKET MT 78740 11-POLED	1,000	EA	U03
60005026	SOCKET MT 78740 11-POLED	1,000	EA	U04

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60005026	SOCKET MT 78740 11-POLED	1,000	EA	U05
60005026	SOCKET MT 78740 11-POLED	1,000	EA	U06
60005026	SOCKET MT 78740 11-POLED	1,000	EA	U07
60005027	FASTENING BRACKET F S-SYSTEM	1,000	EA	U03
60005027	FASTENING BRACKET F S-SYSTEM	1,000	EA	U04
60005027	FASTENING BRACKET F S-SYSTEM	1,000	EA	U05
60005028	FASTENING BRACKET F RELAY 3P	1,000	EA	K03
60005028	FASTENING BRACKET F RELAY 3P	1,000	EA	K04
60005028	FASTENING BRACKET F RELAY 3P	1,000	EA	K08
60005028	FASTENING BRACKET F RELAY 3P	1,000	EA	K16
60005131	MCB 5SX2105-7 0.5A C 1P	1,000	EA	F25
60005135	MCB 5SX2103-7 3.0A C 1P	1,000	EA	F04
60005135	MCB 5SX2103-7 3.0A C 1P	1,000	EA	F26
60005136	MCB 5SX2104-7 4.0A C 1P	1,000	EA	F01
60005136	MCB 5SX2104-7 4.0A C 1P	1,000	EA	F02
60005136	MCB 5SX2104-7 4.0A C 1P	1,000	EA	F05
60005136	MCB 5SX2104-7 4.0A C 1P	1,000	EA	F14
60005138	MCB 5SX2106-7 6.0A C 1P	1,000	EA	F22
60005138	MCB 5SX2106-7 6.0A C 1P	1,000	EA	F24
60005139	MCB 5SX2108-7 8.0A C 1P	1,000	EA	F23
60005157	MCB 5SX2206-7 6.0A C 2P	1,000	EA	F18
60005160	MCB 5SX2210-7 10.0A C 2P	1,000	EA	F03
60005162	MCB 5SX2213-7 13.0A C 2P	1,000	EA	F15
60005193	AUX CONTACT 5SX9100	1,000	EA	F03
60005193	AUX CONTACT 5SX9100	1,000	EA	F04
60005193	AUX CONTACT 5SX9100	1,000	EA	F24
60005768	SWI SWDIS 25A 3P OT25ET3	1,000	EA	Q01
60005774	HANDLE OHB 2RJ BK	1,000	EA	Q01
60005776	SWI COVER OTS32T3 3P	2,000	EA	Q01
60005824	MUSHROOM BUTTON RED	1,000	EA	S01
60005836	SS ISFA616280R100 2 POS W KEY	1,000	EA	S02
60005838	PIL ISFA 616 400 R1002 GN	1,000	EA	P01
60005844	CE SK616 001 A 1NO	1,000	EA	S02
60005846	CE SK616 001 B 1NC	2,000	EA	S01
60005848	HO 3 ELEMENTS SK616 013-F	1,000	EA	P01
60005848	HO 3 ELEMENTS SK616 013-F	1,000	EA	S02
60005849	SAFETY HOLDER F.3 ELEMENTS	1,000	EA	S01
60005850	LAMP BLOCK SK616 003-A	1,000	EA	P01
60005871	SIGN "EMERGENCY STOP" YELLOW	1,000	EA	S01
60005886	BULB BA9S 24V	1,000	EA	P01
60006072	TERMINAL WAGO 870-551 3-LEV	59,000	EA	X02
60006072	TERMINAL WAGO 870-551 3-LEV	2,000	EA	X05
60006072	TERMINAL WAGO 870-551 3-LEV	2,000	EA	X08
60006084	END SECTION 870-568 3-LEV GREY	1,000	EA	X02
60006084	END SECTION 870-568 3-LEV GREY	1,000	EA	X05
60006084	END SECTION 870-568 3-LEV GREY	1,000	EA	X08
60006086	PUSH-IN JUMPER BAR 870-402	23,000	EA	X02
60006086	PUSH-IN JUMPER BAR 870-402	3,000	EA	X05
60006086	PUSH-IN JUMPER BAR 870-402	3,000	EA	X08
60006087	PUSH-IN JUMPER BAR 870-403	2,000	EA	X02
60006088	PUSH-IN JUMPER BAR 870-404	2,000	EA	X02
60006089	PUSH-IN JUMPER BAR 870-405	5,000	EA	X02
60006090	PUSH-IN JUMPER BAR 870-410	2,000	EA	X02
60006576	HOUSING 46P BULKHEAD	1,000	EA	X01
60006819	STICKER "EARTH" 14MM	0,060	EA	
60007195	DIN RAIL FTG TST 2/M6 100MM	3,000	EA	X02
60007197	SCREW FKSC M6x12MM	3,000	EA	
60007420	HOSE WIRE 20mm BK	0,140	M	
60007438	BRAIDED SLEEVE 15-25mm BK	0,350	M	
60007481	CABLE RACK TK 5-7	1,000	EA	B33
60007584	CABLE GLAND M16 PA6 BM-EN-11	2,000	EA	
60007585	CABLE GLAND M20 PA6 BM-EN-12	20,000	EA	
60007586	CABLE GLAND M25 PA6 BM-EN-13	4,000	EA	
60007588	CABLE GLAND M40 PA6 BM-EN-15	7,000	EA	
60007592	LOCKNUT M16 PA6 BML-1S	2,000	EA	
60007593	LOCKNUT BML-12 M20 PA 6	20,000	EA	
60007594	LOCKNUT M25 PA6 BML-13	4,000	EA	
60007596	LOCKNUT M40 PA6 BML-15	7,000	EA	
60008794	FIBRE PLUG ST-COUPLER AMP	2,000	EA	U02
60008824	CABLE PATCH DUPLEX MM 62.5/125	1,000	EA	U02
60009279	PT100 180-4-2M Ø6x60mm	1,000	EA	B8
60009279	PT100 180-4-2M Ø6x60mm	1,000	EA	B33
60012101	WIRING RS485 - TAC84/85	2,000	EA	U03-04
60013657	SHELF F TWO H4 BATTERIES	1,000	EA	

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60013658	ANGLE F SHELF F TWO H4 BAT	2,000	EA	
60013760	HOLDER DIN-RAIL	2,000	EA	
60014286	MARK WAGO NOS 1-10 TYPE 870-	0,200	EA	X05
60014286	MARK WAGO NOS 1-10 TYPE 870-	0,200	EA	X08
60014631	FAN 55M3/H 24VDC	1,000	EA	M01
60014631	FAN 55M3/H 24VDC	1,000	EA	M02
60014664	FILTER EXH 148x148x24MM	1,000	EA	M01
60014664	FILTER EXH 148x148x24MM	1,000	EA	M02
60014729	HEATER FAN CR0 27 230V 350W UL	1,000	EA	E01
60015832	VS05E ACCELEROMETER 12m	1,000	EA	U03
60015847	VARISTOR BOX X8	1,000	EA	F06
60015847	VARISTOR BOX X8	1,000	EA	F07
60015847	VARISTOR BOX X8	1,000	EA	F08
60015847	VARISTOR BOX X8	1,000	EA	F09
60015847	VARISTOR BOX X8	1,000	EA	F10
60015847	VARISTOR BOX X8	1,000	EA	F11
60015847	VARISTOR BOX X8	1,000	EA	F12
60015847	VARISTOR BOX X8	1,000	EA	F13
60015847	VARISTOR BOX X8	1,000	EA	F27
60015847	VARISTOR BOX X8	1,000	EA	F30
60091902	END STOP WAGO 249-116 6MM TS35	5,000	EA	
60091912	END STOP WAGO 249-117 10MM	1,000	EA	F26
60091912	END STOP WAGO 249-117 10MM	1,000	EA	X05
60091912	END STOP WAGO 249-117 10MM	1,000	EA	X08
60091912	END STOP WAGO 249-117 10MM	4,000	EA	
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X05
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	X08
60091915	END STOP LABEL HOLDER WAGO 249	1,000	EA	
60092939	MOUN PL AE W/W	1,000	EA	
60093115	MARK WAGO +AN1 X02 TOP NM72	2,000	EA	X02
60093116	MARK WAGO +AN1 X02 CENTER	2,000	EA	X02
60093117	MARK WAGO +AN1 X02 BOTTOM	2,000	EA	X02
60096756	WIRING IEC I & +AN1 230VAC	1,000	EA	
60096761	WIRING IEC I & +AN1 24VDC6	1,000	EA	
60096766	WIRING IEC I & +AN1 EARTHING	1,000	EA	
60096769	WIRING IEC I & +AN1 U01.500	1,000	EA	
60096780	WIRING IEC I & +AN1 K21-	1,000	EA	
60096859	EYE BOLT SZ2509.000	2,000	EA	
60097076	WIRING IEC I & +AN1 U01.600	1,000	EA	
60097166	GASKET IP54	2,000	EA	M01
60097166	GASKET IP54	2,000	EA	M02
60102228	WIRING IEC I & +AN1 24VDC1	1,000	EA	
60102271	ENCL AE W/W	1,000	EA	
60102749	LABEL "SHAFT BRAKE LOCKED"	1,000	EA	P01
60102918	WIRING IEC I & +AN1 K07	1,000	EA	
60102920	WIRING IEC I & +AN1 0VDC	1,000	EA	
60102921	WIRING IEC I & +AN1 ASORTED	1,000	EA	
60102923	WIRING NM72 IEC I & NM82+AN1 X	1,000	EA	
60102927	WIRING IEC I & +AN1 U01.800	1,000	EA	
60102929	WIRING IEC I & +AN1 G01	1,000	EA	
60102931	WIRING IEC I & +AN1 U01.300-	1,000	EA	
60102934	WIRING IEC I & +AN1 U01.700	1,000	EA	
60102943	LABEL TYPE SIGN +AN1	0,170	EA	
60104149	CABLE CONDUIT DIN RAIL TOP BOX	1,000	EA	
60104186	LABEL TYPE SIGN TOP PANEL AS	1,000	EA	

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Change Info

Item no.	***Item text:***
60112234	**Operation Box +AN2**

Active revision *for production*

Drawing no.: 6010125

Version	Date	Init./App.	Description of change since last revision
04	13.12.2007	INI /BIVA	Changed with ECO 232839 - All pages updated with new Vestas logo. Page 030: Layout, box bottom inside, position ID corrected. Page 040: Symbols for S2, S3 and S4 updated, terminal numbers corrected.

LST no.: 21000218 *Material BOM no.: 60112234*

Version	Date	Init./App.	Description of change since last revision
03	18.04.2007	HHU+INI/FLT	Changed with ECO 216586 + ECO 223407_Updated for production in Spain Added items: 60073080 Bracket x 1 pc. 60009587 SCREW ISO 7046 M4 x 2 pc. 60009599 SCREW ISO 7045 x 4 pc. 60009838 LOCK WASHER DIN 6798 x 4 pc. 60009987 MAGNET x 2 pc. Removed item 60007458 CABLE TIE 140x2.5mm WH x 3 pc.

Old revisions *for service*

Drawing no.: 6010125

Version	Date	Init./App.	Description of change since last revision
03	10.03.2006	INI /FLT	Reason for changes, Push button box 60010964 is left out from ABB assortment, replaced with 769055 Page 001 Updated Page 030: Layout updated with the new box.
02	29.09.2005	INI /FLT	Reason for changes, new pushbutton series from ABB, dim. of PG changed. Layout corrected with new 60005849_SAFETY HOLDER and illustrated that terminals are placed inside the cover. PG21 changed to PG13.5 Page 40:Internal connections updated.
01	24.04.2003	INI /FLT	First version in the new SAP no. system.

LST no.: 21000218 *Material BOM no.: 60112234*

Version	Date	Init./App.	Description of change since last revision
03	18.04.2007	HHU+INI/FLT	Changed with ECO 216586 + ECO 223407_Updated for production in Spain Added items: 60073080 Bracket x 1 pc. 60009587 SCREW ISO 7046 M4 x 2 pc. 60009599 SCREW ISO 7045 x 4 pc. 60009838 LOCK WASHER DIN 6798 x 4 pc. 60009987 MAGNET x 2 pc. Removed item 60007458 CABLE TIE 140x2.5mm WH x 3 pc.
02	02.03.2006	INI/FLT	Reason for changes, Push button box 60010964 is left out from ABB assortment, replaced with 769055 60010964 changed to 769055_Push Bottom Box 4 holes 60002309 changed to 118928_Sign 60007541 changed to 193712_Cable gland FM20GPA polyamid. 60007557 changed to 193722_Locknut MM20GPA polyamid. 60005844 changed to 60005845_CE SK616 002-A 1NO din rail 60005847x1 pc CE SK616 002B 1NC din rail added 60007458x3 pc. Cable tie 140x2.5mm WH added. 60005881x4 pc. 60007665x1 pc. 60005849x3 pc. removed
01	03.10.20005	INI/FLT	Reason for changes, new pushbutton series from ABB. Added: 60007656_Reduction adapter PG21-PG13.5 60005849_Safety holder f.3 ELEMEN.1SFA616605R1100 (S2,S3,S4) 60110724_Wiring 70MM X-LINE 0,75MM2 RØD SV/SV Changed: 60007545 to 60007541_cable gland BS14 PG13.5 nylon 60005832 to 60112230_SS ISFA611210R1006 3POS BK 60005834 to 60112231_SS ISFA611212R1006 3POS RETUR 60005828 to 60112228_SS ISFA611202R1006 B-C RETURN 60005845 to 60005844_Contact element SK616 001-A 1NO

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Earlier BOM no Longer Active for Serial Production

LST no.: 21000003 *Material BOM no.: 60015962*

Version	Date	Init./App.	Description of change since last revision
02	02.06.2005	HRN/	Production required changes.
01	14.03.2000	FLT /FLT	First version in the new SAP no. system.

Change Info: 0000203

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PAGE	CONTENT	DATE	REVISION
001	Table of Contents	071213	04
030	Layout	071213	-
040	Internal Connection	071213	-

Vestas

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	Date	Initials
Designed	010924	FLT
Approved	071213	BIVA
Reviced	071213	INI

Function: Table of Contents

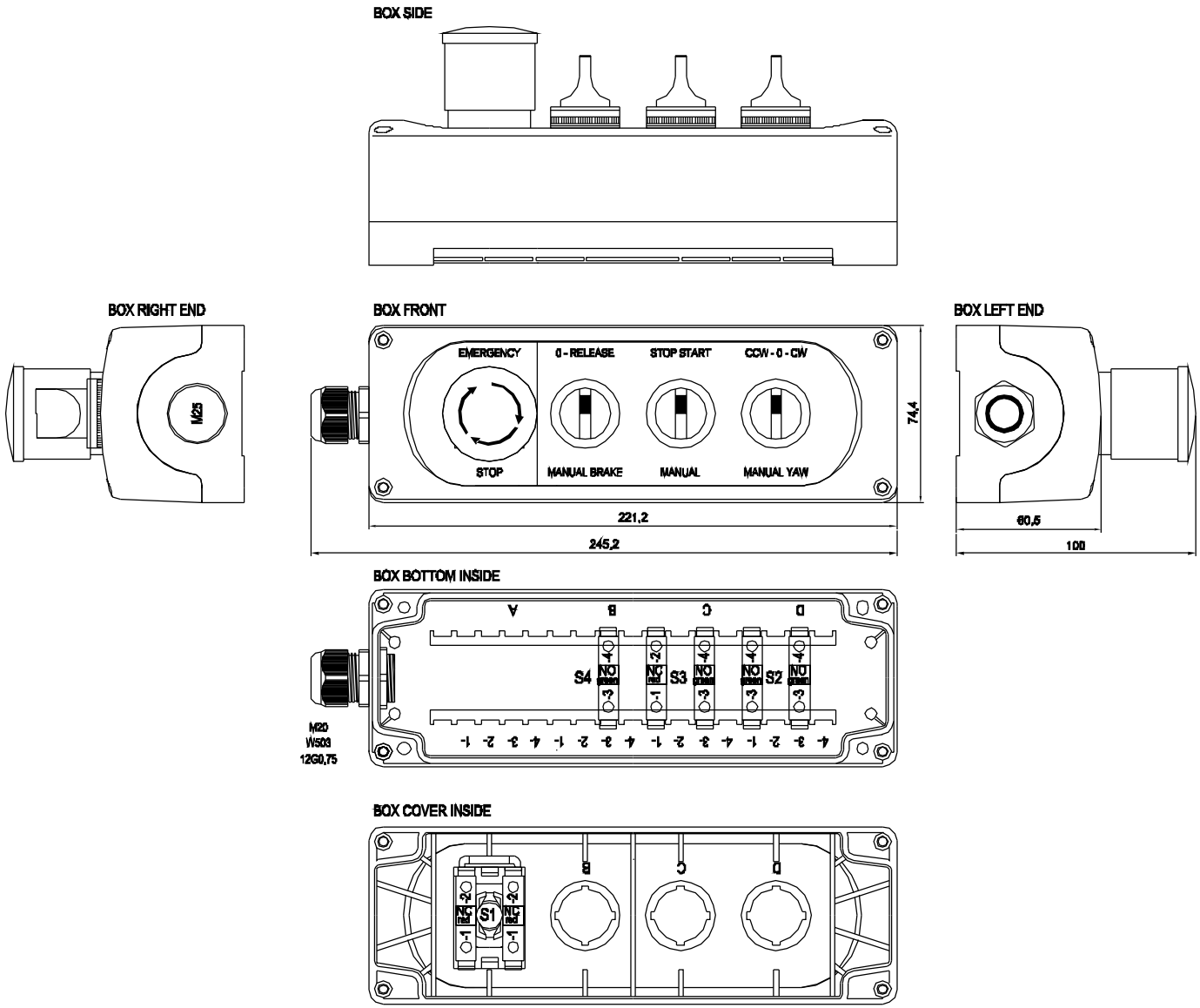
Project title: Operation Box +AN2

Comments

Customer: Vestas Wind Systems A/S

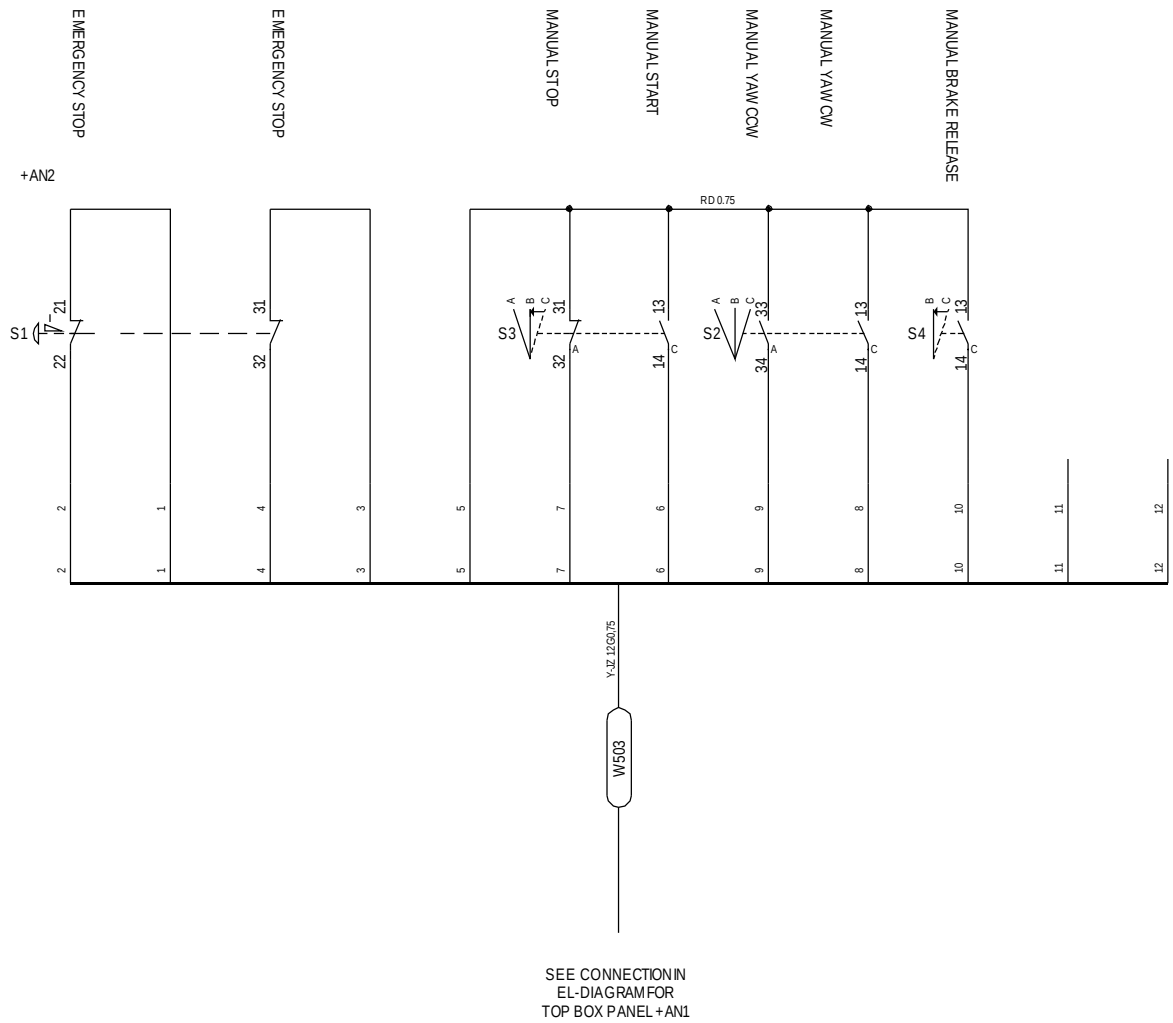
Rev. 04 | Drawing no. 6010125 | Cont. sheet 030 | Sheet 001

1:1:5



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Layout	
		Designed	010924	FLT	Project title	Operation Box +AN2	
		Approved	071213	BIVA	Comments		Customer: Vestas Wind Systems A/S
		Reviced	071213	INI	Rev. -	Drawing no. 6010125	Cont. sheet 040 / Sheet 030

1115



	Date	Initials	Function	Internal Connection		
Designed	010924	FLT	Project title	Operation Box +AN2		
Approved	071213	BIVA	Comments		Customer	Vestas Wind Systems A/S
Reviced	071213	INI	Rev. -	Drawing no. 6010125	Cont. sheet -	Sheet 040

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11:15

60112234 OPERATION BOX +AN2 30t

Component	Description	Qty per	Stk UM	Position Number
D6010125	OPERATION BOX +AN2 30t	0,000	EA	
60110664	CABLE F OPERATIONS BOX +AN2	1,000	EA	
60110724	WIRING 70MM X-LINE 0,75MM2	4,000	EA	
769055	PUSH BOTTON BOX W. 4 HOLES	1,000	EA	
118928	SIGN, OPERATION BOX +AN2 V82	1,000	EA	
193712	CABLE GLAND FM20GPA POLYAMID	1,000	EA	
193722	LOCKNUT MM20GPA POLYAMID	1,000	EA	
D1001713	WKI f. production of +AN2 NM72	0,000	EA	
60009587	SCR CRS UH M4x10 4.8 FZB	2,000	EA	
60009599	SCR CRS PH M4x14 4.8 FZB	4,000	EA	
60009987	MAGNET A43A-KSM4 43MM	2,000	EA	
60073080	BRA F CONTROL BOX AN2	1,000	EA	
60009838	LOCK WASHER DIN 6798 A4 - FZB	4,000	EA	
60005824	MUSHROOM BUTTON ISAF616510R100	1,000	EA	S1
60005846	CONTACT ELEMENT SK616 001-B 1N	2,000	EA	S1
60005849	HO 3 ELEMEN 1SFA616605R1100	1,000	EA	S1
60112230	SS M3SS1-10B 3POS BK	1,000	EA	S2
60005845	CE SK616 002-A 1NO DIN RAIL	2,000	EA	S2
60112231	SS M3SS3-10B 3POS RETUR	1,000	EA	S3
60005847	CE SK616 002-B 1NC DIN RAIL	1,000	EA	S3
60005845	CE SK616 002-A 1NO DIN RAIL	1,000	EA	S3
60112228	SS M2SS3-10B B-C RETURN	1,000	EA	S4
60005845	CE SK616 002-A 1NO DIN RAIL	1,000	EA	S4

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Change Info

Item no.	***Item text:***
60016180	**Top Box +AN3b f. NRG Wind Sensors, V82-1.65MW MRK II**

Active revision for production

Drawing no.: 6016010

Version	Date	Init./App.	Description of change since last revision
01	20.04.2005	INI/FLT	Top Box +AN3b reworked to fit +A6C Page 001, 030 and 031: updated Page 100: X400 Motor Box +AN4 X400.6 and X400.7 corrected to X01 Junction Box +AN15 X01.4 and X01.5

LST no.: 21000071 *Material BOM no.: 60016180*

Version	Date	Init./App.	Description of change since last revision
06	30.05.2006	SHL/FLT	MAPICS implementation, Controls DK Århus 60015837 replaced with 51705201 NRG Interface 2VF +2VH

Old revisions for service

Drawing no.: 6016010

Version	Date	Init./App.	Description of change since last revision
00	03.03.2005	FLT+INI/FLT	First version

LST no.: 21000071 *Material BOM no.: 60016180*

Version	Date	Init./App.	Description of change since last revision
05	23.05.2005	HRN/FLT	Production required change. Removed 60007182_din rail and 60007355 cable conduit. Added 1 pc 60111053_cable conduit, din rail and 1 sh. 60111004_laser label
04	14.04.2005	INI/FLT	Top Box +AN3b reworked to fit +A6C Removed: 1 x 60002654_Label, 1 x 60007541_ PG13.5, 6 x 60007540_ PG11, 6 x 60007554_LOCKNUT, 1 x 60007657_REDUC. ADAPTER, 1 x 60007543_PG16, 1 x 60007615_LOCKNUT PG21, 3x60005050_FUSE 10A Added : 1 x 60110519_THERMOLABEL, 1 x 60007535_Connector PG13.5, 6 x 60007584_ M16, 6 x 60007592_LOCKNUT M16 1 x 60007536_Connector PG16, 1 x 60007556_LOCKNUT PG16 2 x 60007578_Blind plug PG13.5
03	25.08.2004	LBO/	60009627 changed to 60033040 Screw ISO 4017 M 6 x 20 - 8.8 – FZB, there have been two different no. to same item.
02	17.12.2003	ATM/ATM	Base unit changed from pack to pc.
01	25.03.2002	INI/RPJ	First version in SAP no. system

Earlier Drawing no. 6012547 no Longer Active for Serial Production

Change Info: 22000171

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PAGE	CONTENT	DATE	REVISION
001	Table of Contents	050420	01
030	Box Layout	050420	-
031	Box Outline	050420	-
100	Internal Connections	050420	-

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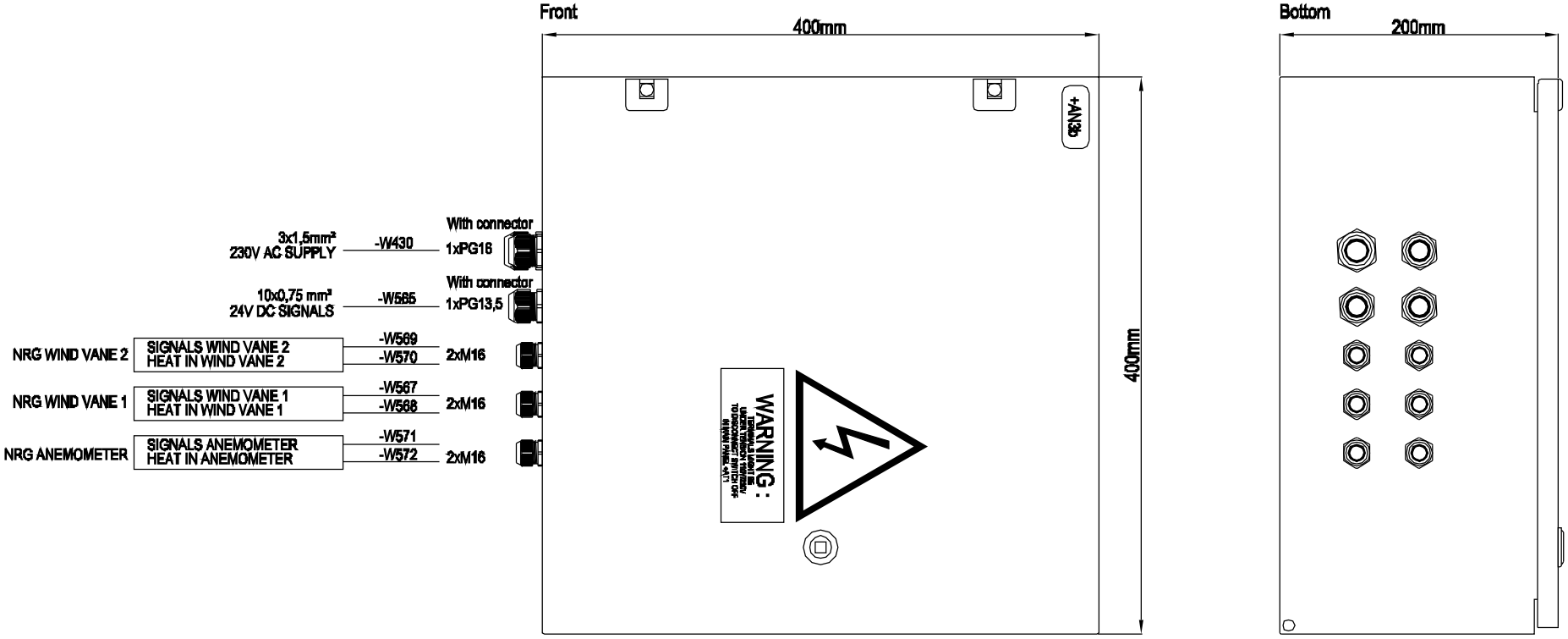
	Date	Initials	Function	Table of Contents		
Designed	050303	FLT	Project title	Top Box +AN3b f. NRG Wind Sensors, V82-1.65MW, NM72/NM82 IEC		
Approved			Comments	Tropic -20gr. & Arctic	Customer	Vestas Wind Systems A/S
Reviced	050420	INI	Rev. 01	Drawing no. 6016010	Cont. sheet 030	Sheet 001

20-04-05 14:52



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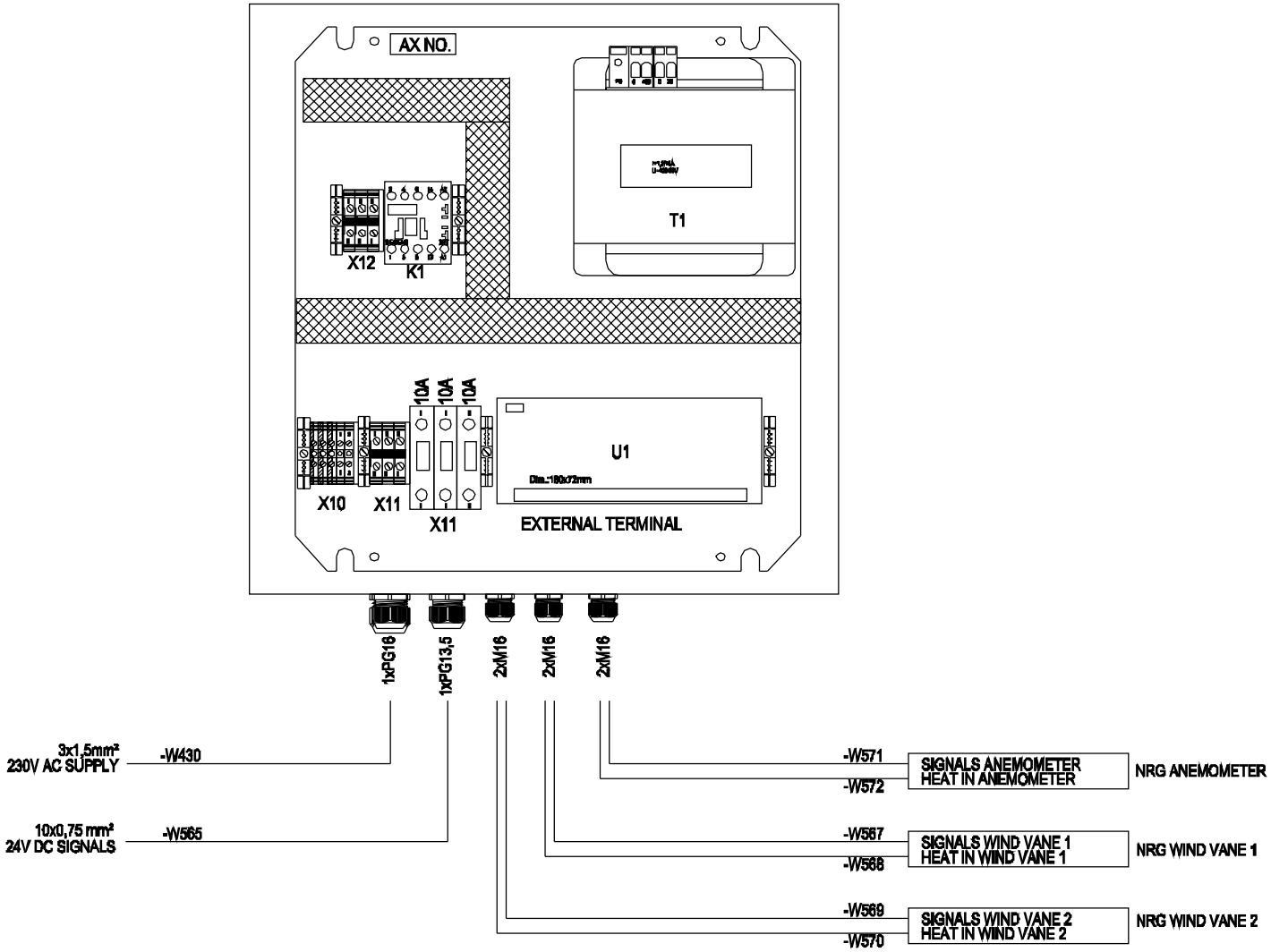
	Date	Initials	Function	Box Layout			
Designed	050303	FLT	Project title	Top Box +AN3b f. NRG Wind Sensors, V82-1.65MW, NM72/NM82 IEC			
Approved			Comments	Tropic -20gr. & Arctic		Customer	Vestas Wind Systems A/S
Reviced	050420	INI	Rev. -	Drawing no. 6016010		Cont. sheet 031	Sheet 030



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	Date	Initials	Function	Box Outline			
Designed	050303	FLT	Project title	Top Box +AN3b f. NRG Wind Sensors, V82-1.65MW, NM72/NM82 IEC			
Approved			Comments	Tropic -20gr. & Arctic		Customer	Vestas Wind Systems A/S
Reviced	050420	INI	Rev. -	Drawing no. 6016010		Cont. sheet 100	Sheet 031

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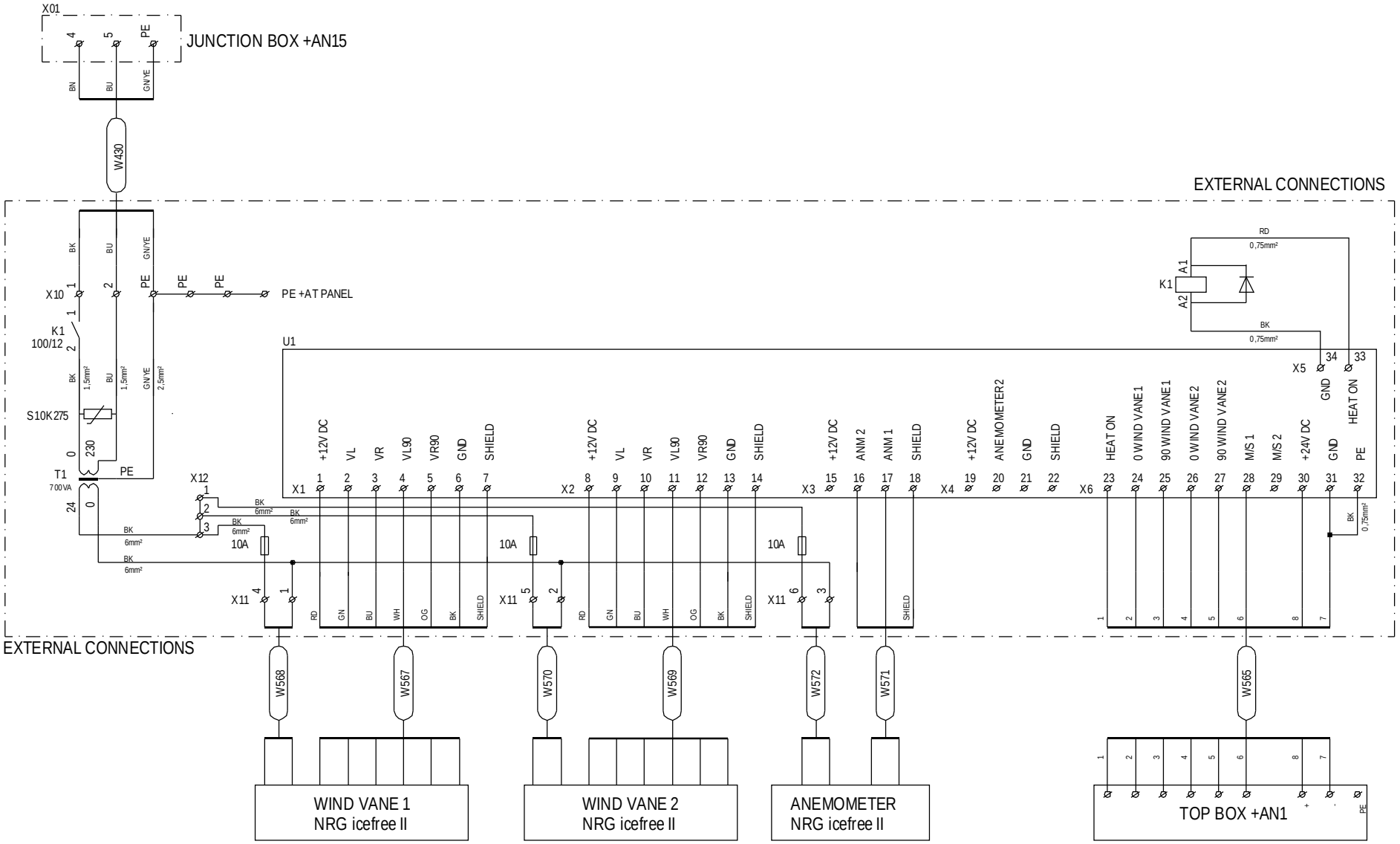

EXTERNAL CONNECTIONS

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Internal Connections	
		Designed	050303	FLT	Project title	Top Box +AN3b f. NRG Wind Sensors, V82-1.65MW, NM72/NM82 IEC	
		Approved			Comments	Tropic -20gr. & Arctic	Customer: Vestas Wind Systems A/S
		Reviced	050420	INI	Rev. -	Drawing no. 6016010	Cont. sheet - / Sheet 100

20-04-05
14:52

Document no.: 21000071
Version: 06
Date: 19/06/2006
Init: Inge Nielsen

Bill of Material - 60016180 TOP BOX+AN3b NRG WIND SENENSORS:

Component	Description	Qty per	Stk UM	Position Number
D21000071	BOM 60016180 TOP BOX +AN3b for	0,000	EA	
D22000171	CI, TOP BOX +AN3b for NRG VIND	0,000	EA	
D22000548	CI, TOP BOX +AN3b for NRG VIND	0,000	EA	
D6012547	60019412 TOP BOX +AN3b for NRG	0,000	EA	
D6016010	Top Box +AN3b f. NRG Wind Sens	0,000	EA	
51705201	NRG Interface 2VF+2VH	1,000	EA	U1
60000608	VDR SIOV-S10K275 275V	1,000	EA	T1
60002426	LABEL "+AN3B"	1,000	EA	AN3B
60002735	LABEL TYPE SIGN TOP BOX +AN3B	1,000	EA	OUTSIDE
60004392	CONT 3RT1016-1BB42 24V DC	1,000	EA	K1
60004452	DIODE 3RT1916-1LM00 24-70V	1,000	EA	K1
60005050	FUSE 250V 10A 6.35x32 AGC-10 F	3,000	EA	X11
60005977	FUSE HOLDER M10/16 SF 10.0MM2	3,000	EA	X11
60005983	TERMINAL STD M4/6	2,000	EA	X10
60005984	TERMINAL GROUND M4/6P	3,000	EA	X10
60005996	TERMINAL STD M6/8 GY 115118.11	3,000	EA	X11
60005996	TERMINAL STD M6/8 GY 115118.11	3,000	EA	X12
60005998	END SEC FEM6 GY 118368.16	1,000	EA	X10
60005998	END SEC FEM6 GY 118368.16	1,000	EA	X11
60005998	END SEC FEM6 GY 118368.16	1,000	EA	X12
60006001	JUMPER BAR BJM8 3-POLED	1,000	EA	X11
60006001	JUMPER BAR BJM8 3-POLED	1,000	EA	X12
60006034	END STOP 9708/2 S35	1,000	EA	
60006034	END STOP 9708/2 S35	2,000	EA	X10
60006034	END STOP 9708/2 S35	1,000	EA	X11
60006034	END STOP 9708/2 S35	2,000	EA	X12
60006824	STICKER "LIGHTNING" 100MM	1,000	EA	AN3B
60006981	TRAFO 110/230VAC 753VA	1,000	EA	T1
60007535	CONNECTOR PG13.5 FOR HOSE PROT	1,000	EA	U1
60007536	CONNECTOR PG16 FOR HOSE PROT	1,000	EA	X10
60007555	LOCKNUT BLN-14 PG13,5 PA 6	1,000	EA	U1
60007556	LOCKNUT PG16 PA6 BLN15	1,000	EA	X10
60007578	BLIND PLUG PG13.5 PA6	2,000	EA	X10
60007584	CABLE GLAND M16 PA6 BM-EN-11	6,000	EA	U1
60007592	LOCKNUT M16 PA6 BML-1S	6,000	EA	U1
60009751	SCREW HFC 208 M 4.8 X 9.5 -FZB	11,000	EA	
60009795	WASHER SPR 6 FZG	4,000	EA	T1
60009840	LOCK WASHER DIN 6798 A 6 FZB	4,000	EA	T1
60009841	WASHER LOCK 8 FZB	4,000	EA	AN3B
60009869	NUT HEX M6 8 FZB	4,000	EA	T1
60009873	NUT HEX M8 8 FZB	4,000	EA	AN3B
60009998	CABINET SN 400x400x200mm 1 DOO	1,000	EA	AN3B
60010107	MOUN PL SN DOC 4001046 W/W	1,000	EA	AN3B
60011510	STEEL WIRE 57.03849.400301	0,600	M	F. NØGLE
60012188	WIRING +AN3B	1,000	EA	
60013947	LABEL +AN3B TOP BOX NM750	1,000	EA	
60014077	MARK RC610 +AN3B JUNCTION BOX	1,000	EA	X10-11-12
60014247	MARK RC810 +AN3B NM750 ARCTIC	1,000	EA	
60033040	SCR HEX SET M6x20 8.8 FZB	4,000	EA	T1
60097132	WIRE LOCK 57.03849.325505	2,000	EA	F. NØGLE
60110519	LABEL +AN3B "WAR 110V/230V"	1,000	EA	AN3B
60111004	LABEL TYPE SIGN +AN3B IEC / UL	1,000	EA	
60111053	CABLE CONDUIT DIN RAIL AN3B	1,000	EA	

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Change Info

Item no.	***Item text:***
60104156	**Motor Box +AN4, NM30t Module Design IEC**

Active revision *for production*

Drawing no.: 6014856

Version	Date	Init./App.	Description of change since last revision
03	22.11.2004	CHO/CHO	All pages updated with Vestas logo Page 042: Wire no corrected on cable –W350, Terminal X01.21 deleted Page 101: Wire no/color changed to multi rated cables Page 102: Wire no/color changed to multi rated cables Page 103: Jumpers added Page 104: Wire no/color changed to multi rated cables Page 105: Wire no/color changed to multi rated cables

LST no.: 21000164 *Material BOM no.: 60104156*

Version	Date	Init./App.	Description of change since last revision
03	16.08.2005	HRN/FLT	Production required change, 6 pcs. 60013412 angle bracket added.

Old revisions *for service*

Drawing no.: 6014856

Version	Date	Init./App.	Description of change since last revision
02	24.06.2004	INI/FLT	Page 001: Updated Page 030 and 031: Text X01 and X01 updated. Page 043: X03.22, X03.23 and X03.24 changed to X03.55, X03.56 and X03.57 Page 032: New page with terminal rows X400, X401 and X03 added.
01	22.04.2004	MLJ/ MLJ	First version

LST no.: 21000164 *Material BOM no.: 60104156*

Version	Date	Init./App.	Description of change since last revision
02	15.03.2005	HRN/FLT	Production required change 6 pc 60105941 quick-release fastener for KL box added.
01	07.06.2004	CHO/CHO	First version

Earlier BOM:
LST no.: 21000085 *Material BOM no.: 60097587*

Version	Date	Init./App.	Description of change since last revision
03	01.04.2004	CHO/	Changes for modulation project. One cable gland changed from M20 to M40
02	28.01.2004	ATM/ATM	60006819 base unit changed from pc. to sheet.
01	30.10.2003	ATM/ATM	First version

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1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
001	Table of Contents	041122	03
030	Panel front	041122	-
031	Panel outline	041122	-
032	Terminal rows X400, X401	041122	-
040	Connection to +AT2 contro	041122	-
041	Connection to +AT2 contro	041122	-
042	Connection to conection b	041122	-
043	Connection to conection b	041122	-
101	External connections	041122	-
102	External connections	041122	-
103	External connections	041122	-
104	External connections	041122	-
105	External connections	041122	-

22-11-04
11:39

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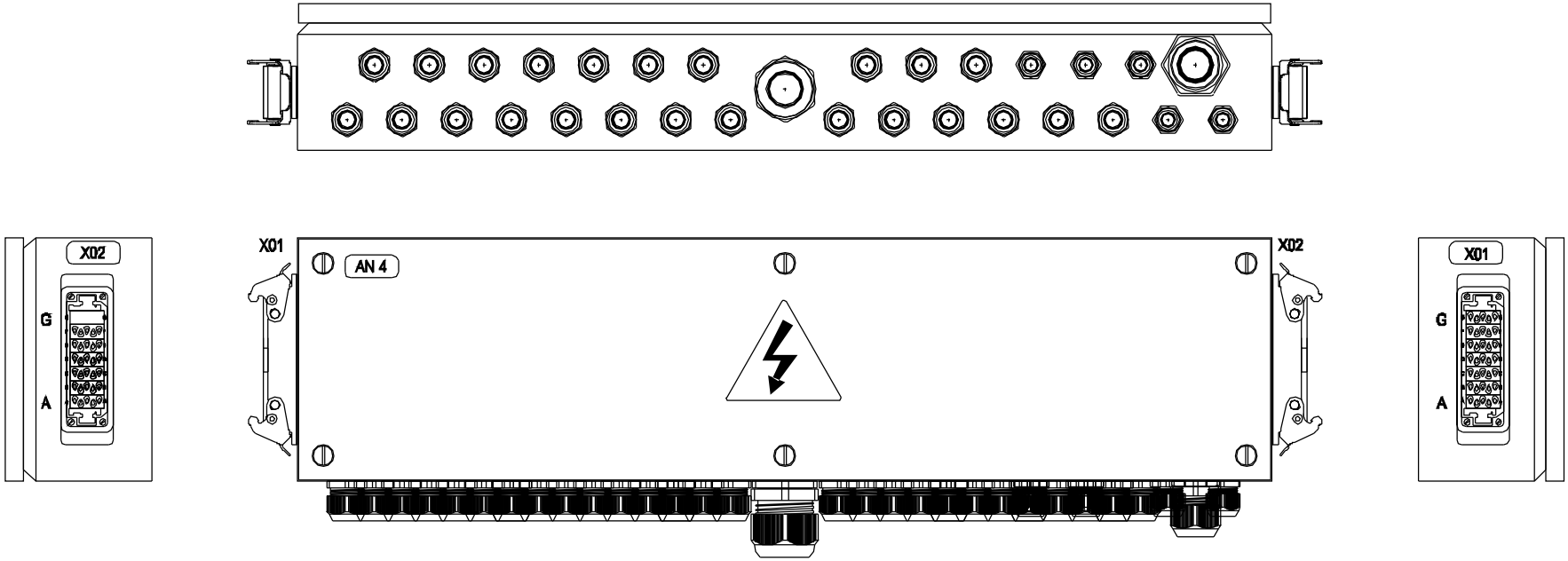
	Date	Initials				
Designed	040422	MILJE	Function	Table of Contents		
Approved			Project title	Motor Box +AN4		
Reviced	041122	CHO	Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
			Rev. 03	Drawing no. 6014856	Cont. sheet 030	Sheet 001



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	Date	Initials				
			Function	Panel front		
Designed	040422	MILJE	Project title	Motor Box +AN4		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 031	Sheet 030

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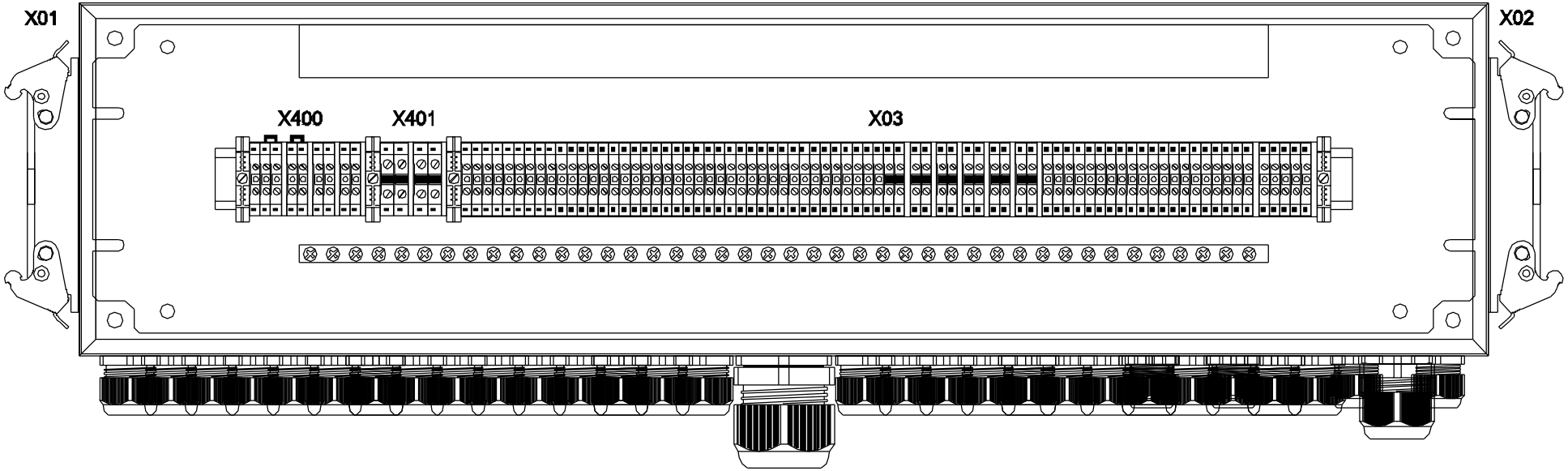

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel outline	
		Designed	040422	MILJE	Project title	Motor Box +AN4	
		Approved			Comments	Modularisering NM30t 2004	Customer: Vestas Wind Systems A/S
		Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 032 / Sheet 031

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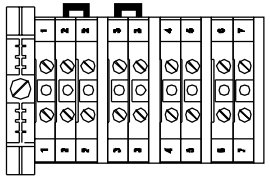
1	2	3	4	5	6	7	8	9	10	11	12	13

X400



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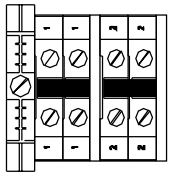

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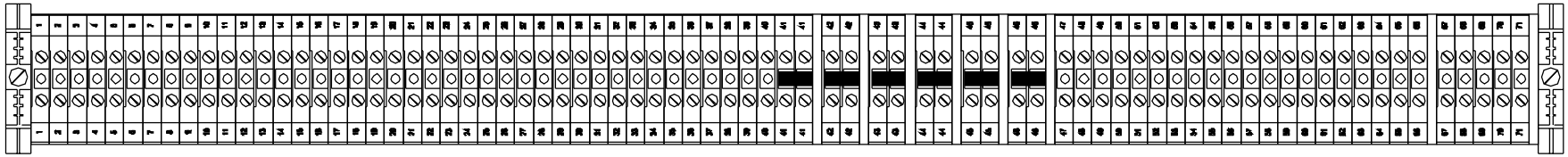

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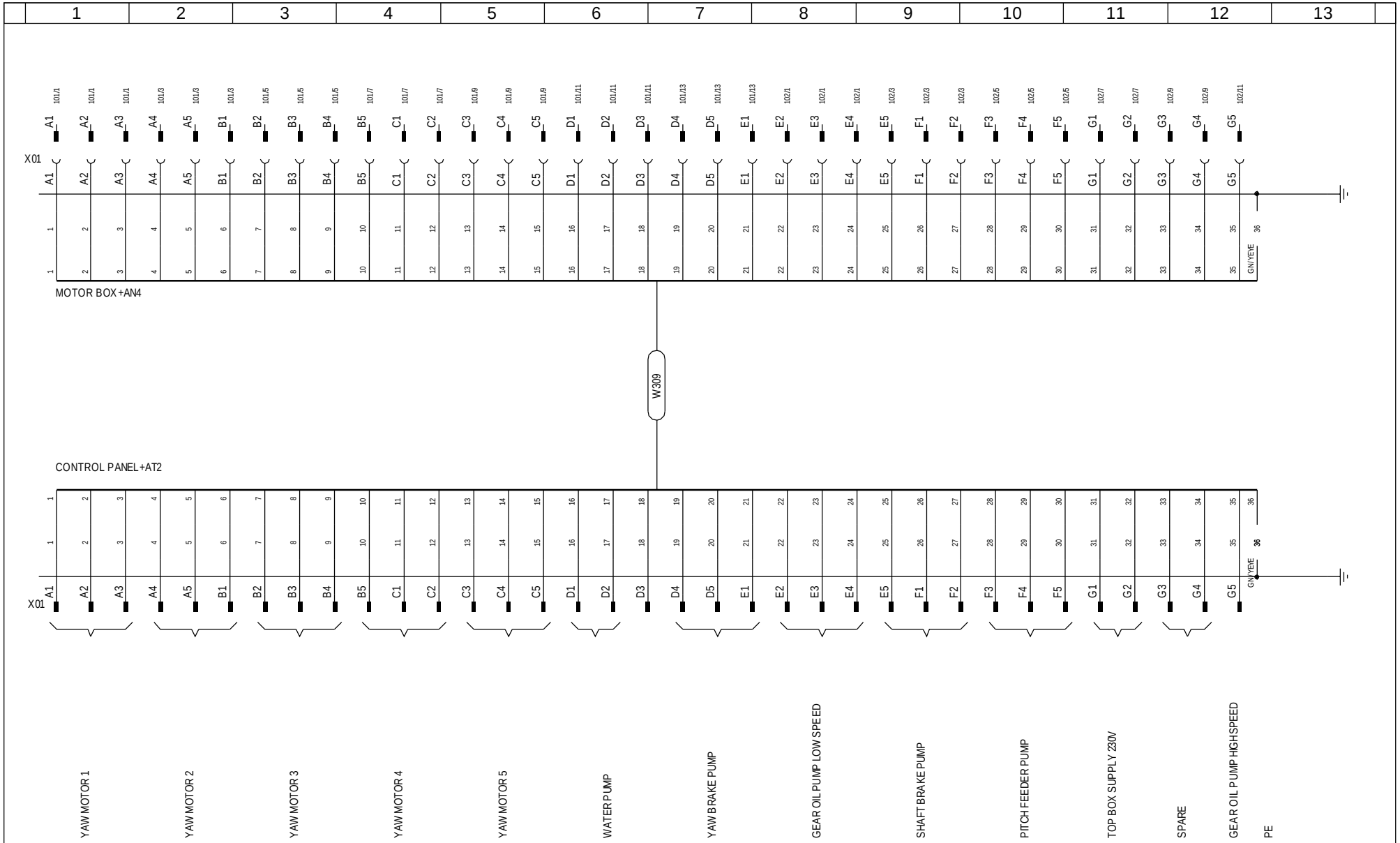
	Date	Initials	Function	Terminal rows X400, X401 and X03		
Designed	040422	MILJE	Project title	Motor Box +AN4		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 040	Sheet 032



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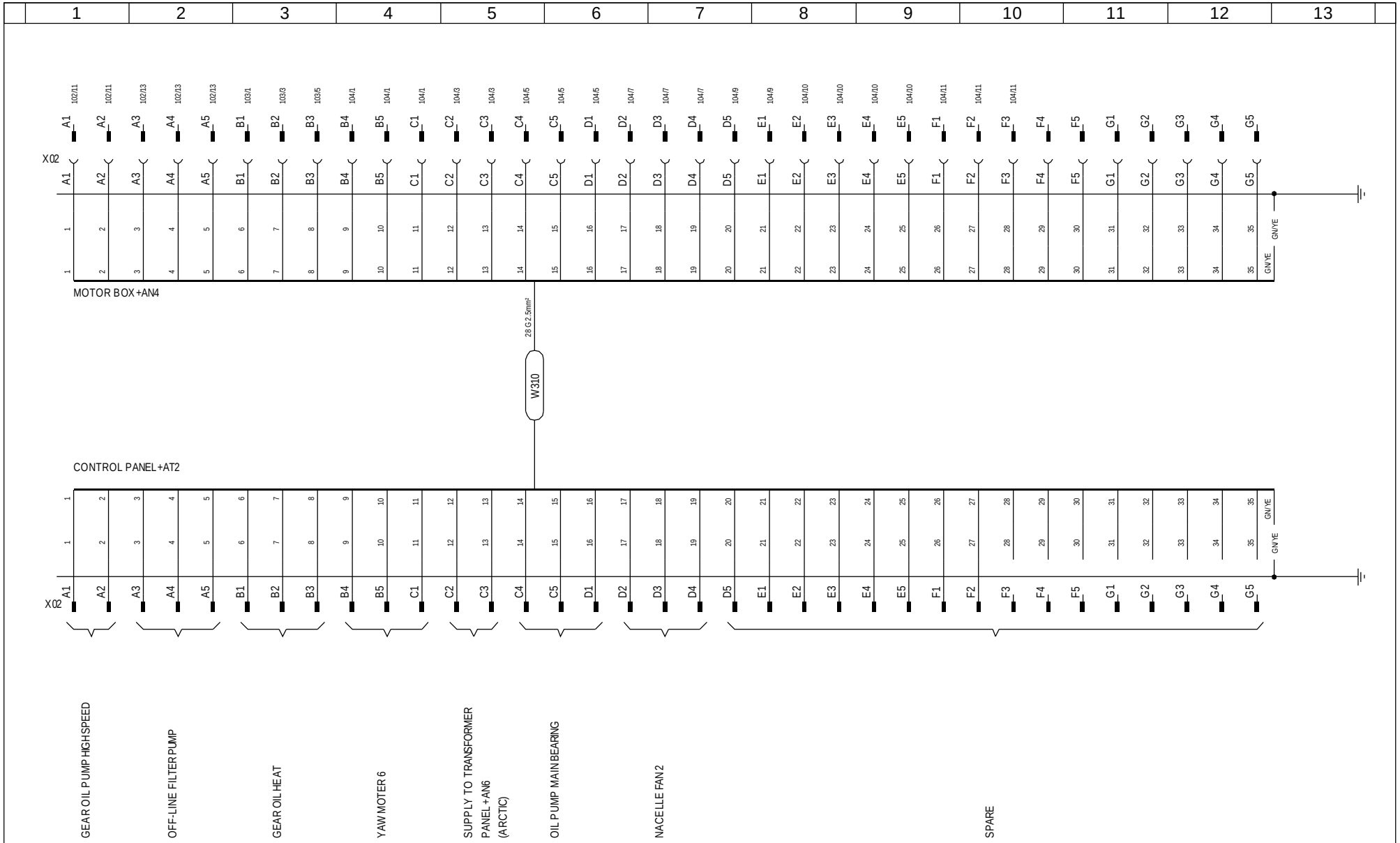
	Date	Initials	Function	Connection to +AT2 control panel		
Designed	040422	MILJE	Project title	Motor Box +AN4		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 041	Sheet 040



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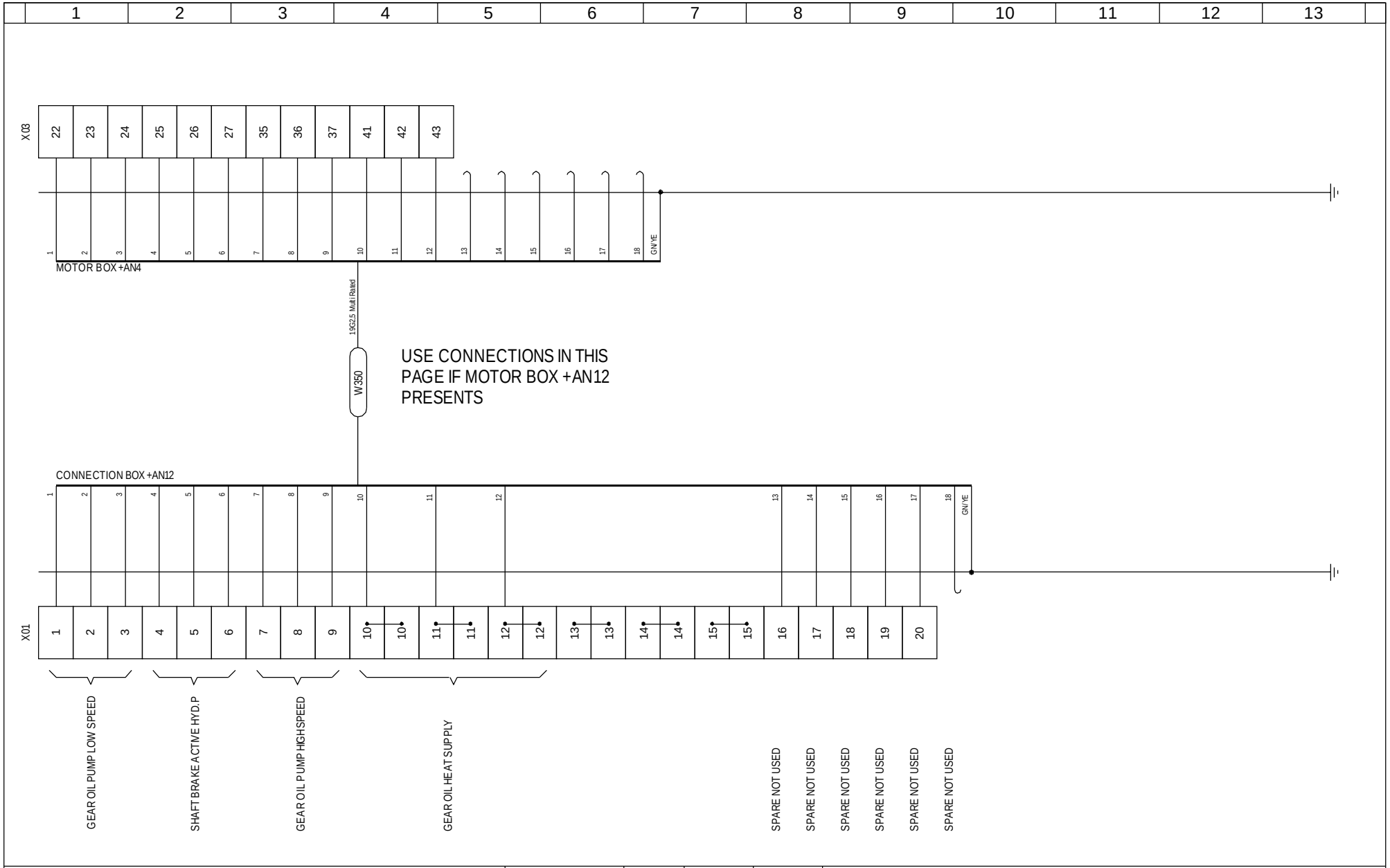
	Date	Initials	Function	Connection to +AT2 control panel		
Designed	040422	MILJE	Project title	Motor Box +AN4		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 042	Sheet 041



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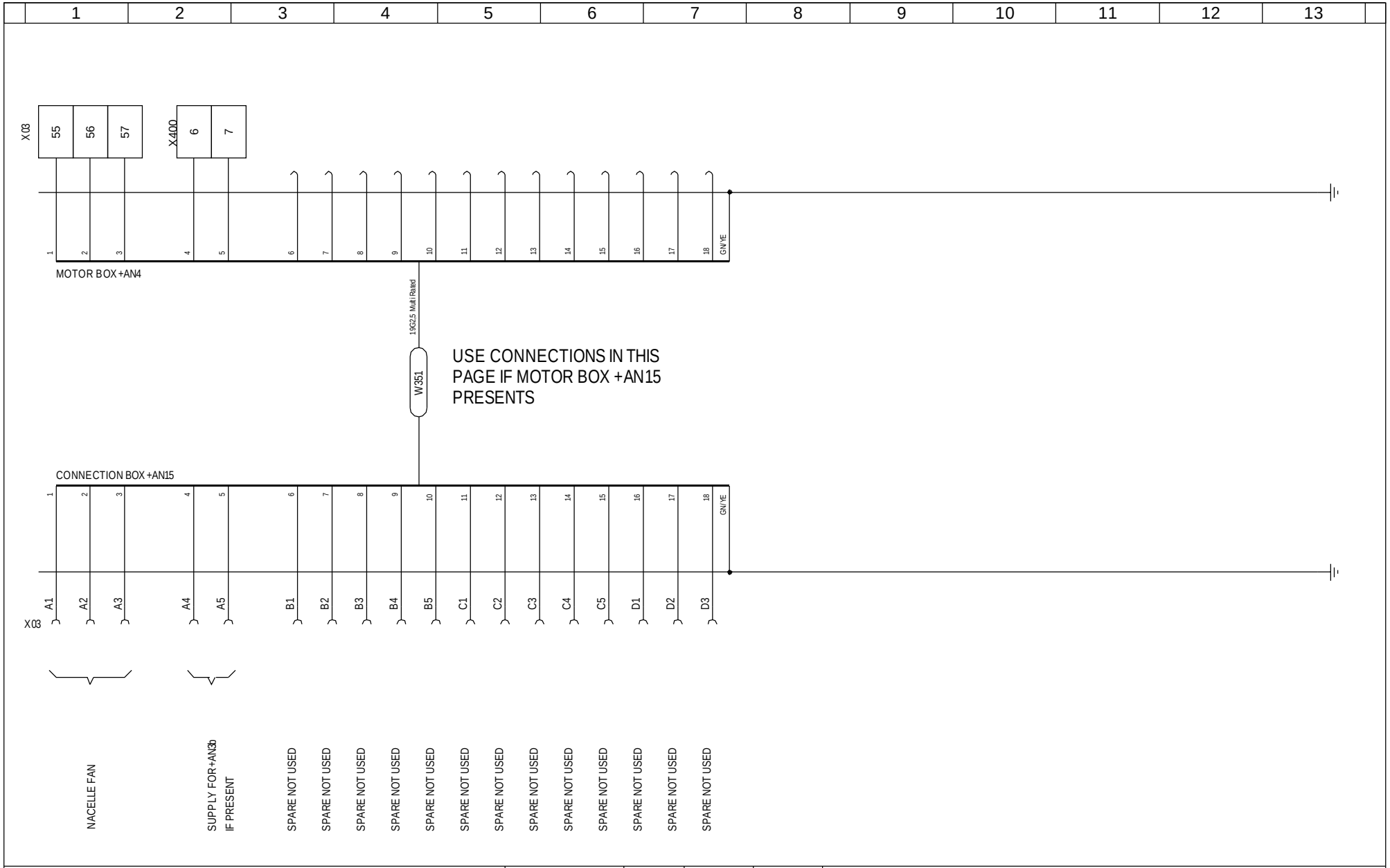
	Date	Initials	Function	Connection to conection box +AN12		
Designed	040422	MILJE	Project title	Motor Box +AN4		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 043	Sheet 042



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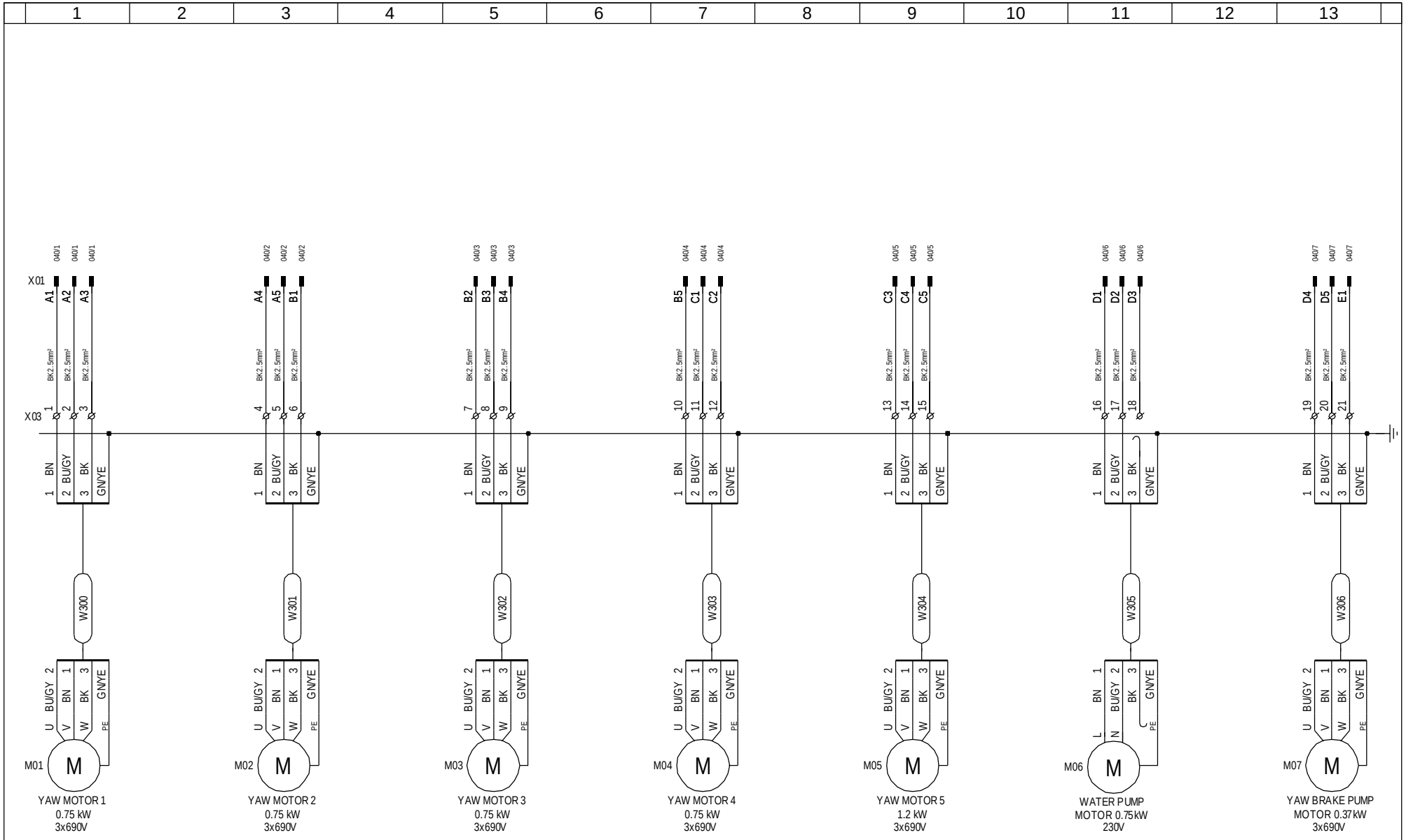
	Date	Initials	Function	Connection to conection box +AN15		
Designed	040422	MILJE	Project title	Motor Box +AN4		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 101	Sheet 043



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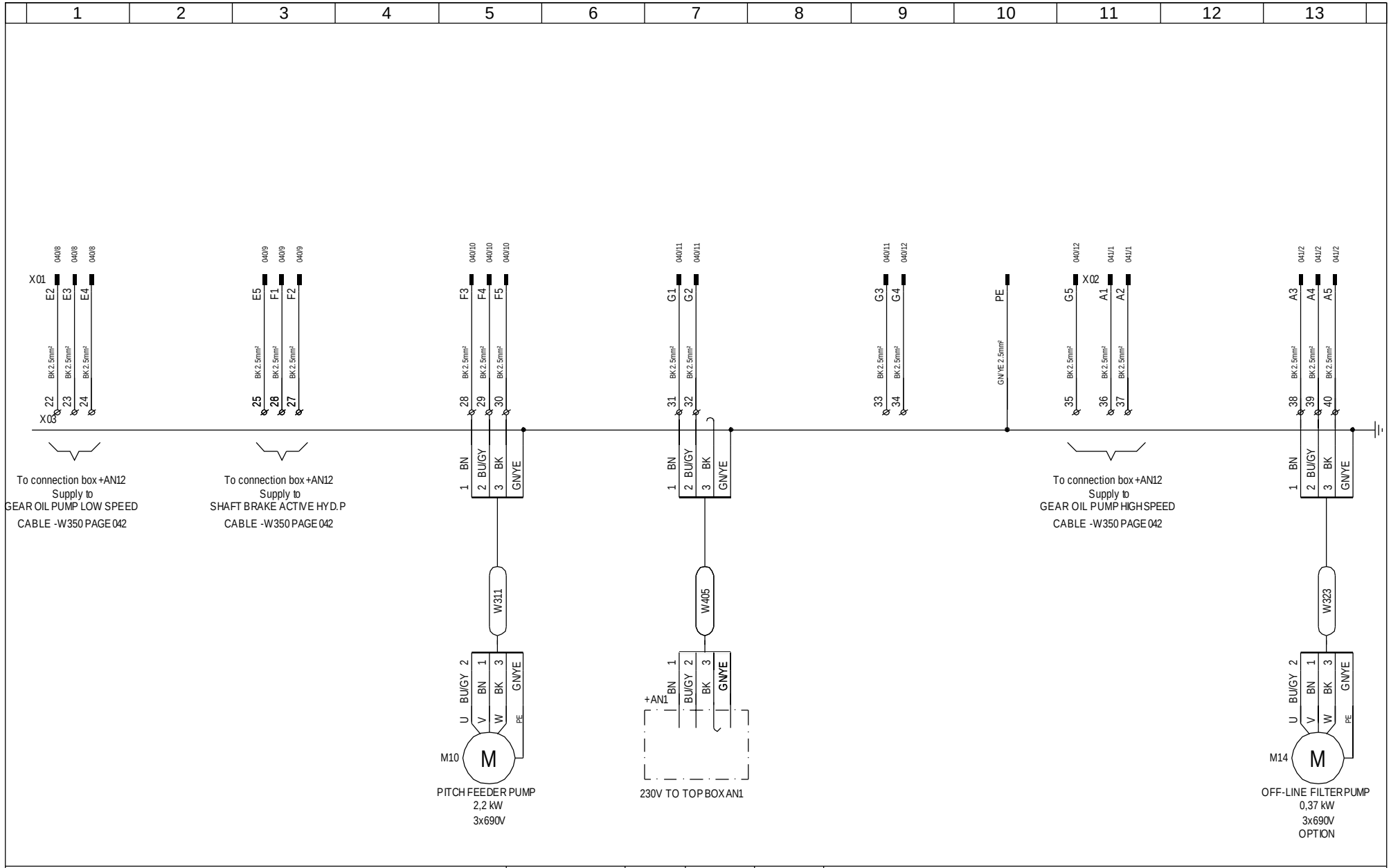
	Date	Initials	Function	External connections		
Designed	040422	MILJE	Project title	Motor Box +AN4		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 102	Sheet 101

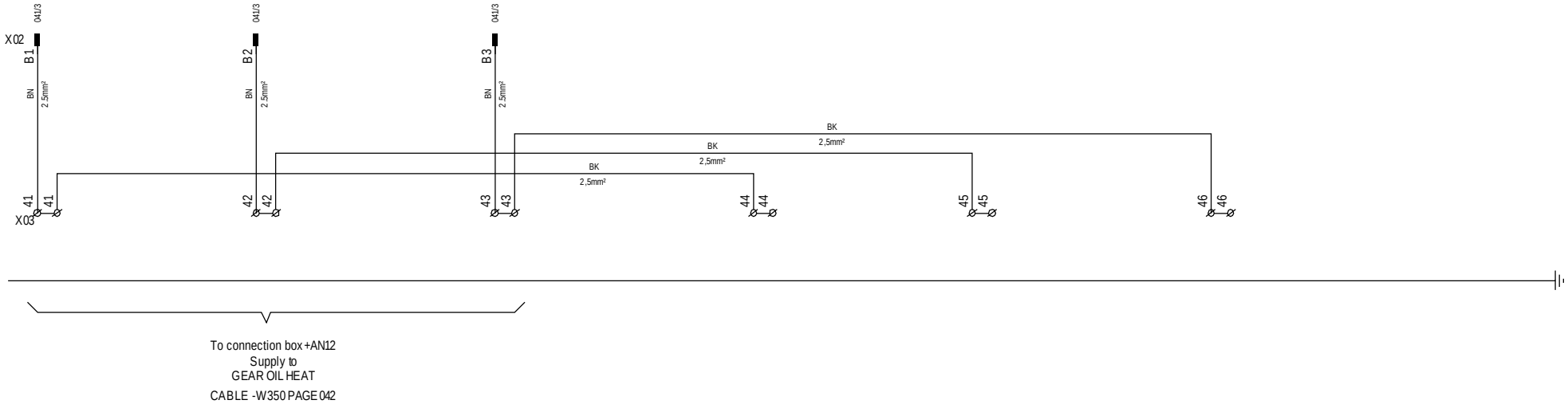


22-11-04
11:39

Vestas

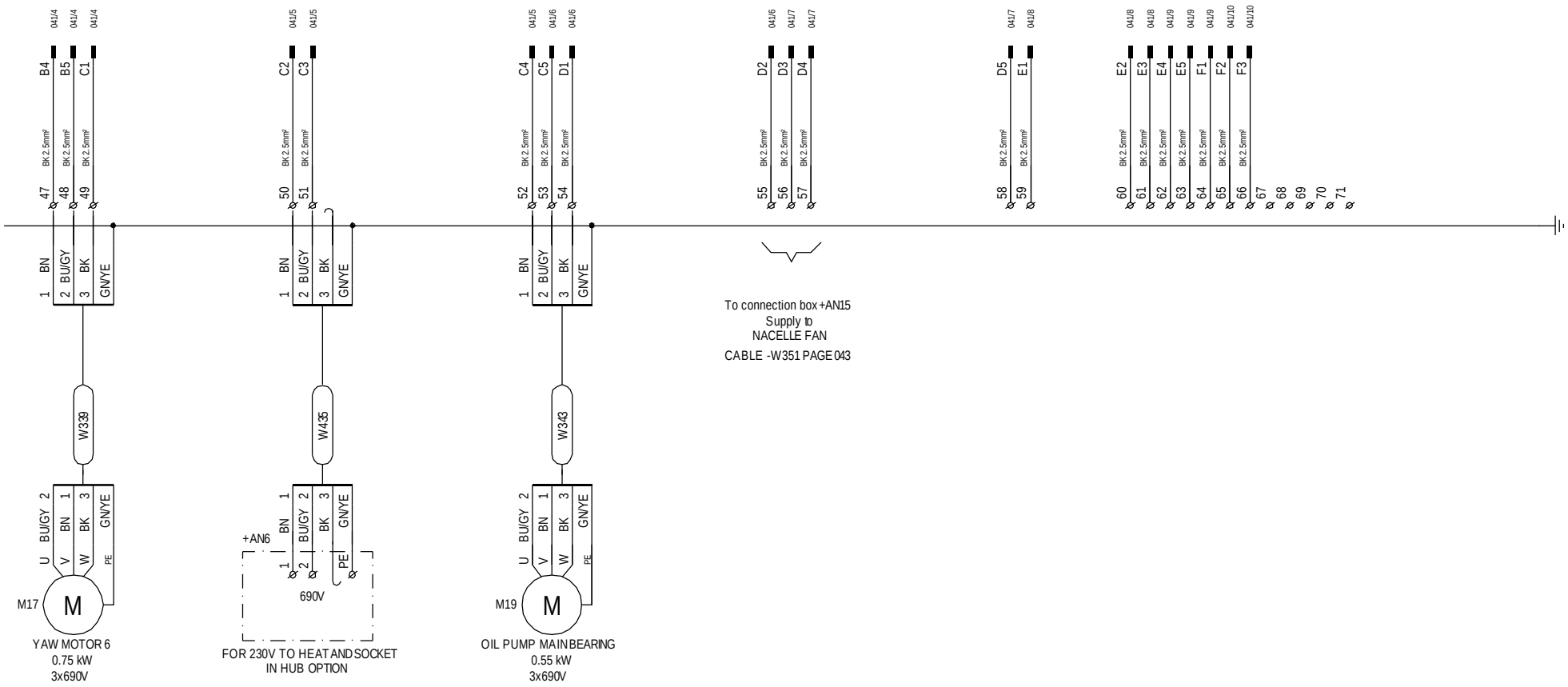
Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	External connections		
Designed	040422	MILJE	Project title	Motor Box +AN4		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 103	Sheet 102



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connections	
		Designed	040422	MILJE	Project title	Motor Box +AN4	
		Approved			Comments	Modularisering NM30t 2004	Customer: Vestas Wind Systems A/S
		Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 104 / Sheet 103

22-11-04
11:39



22-11-04
11:39

Vestas

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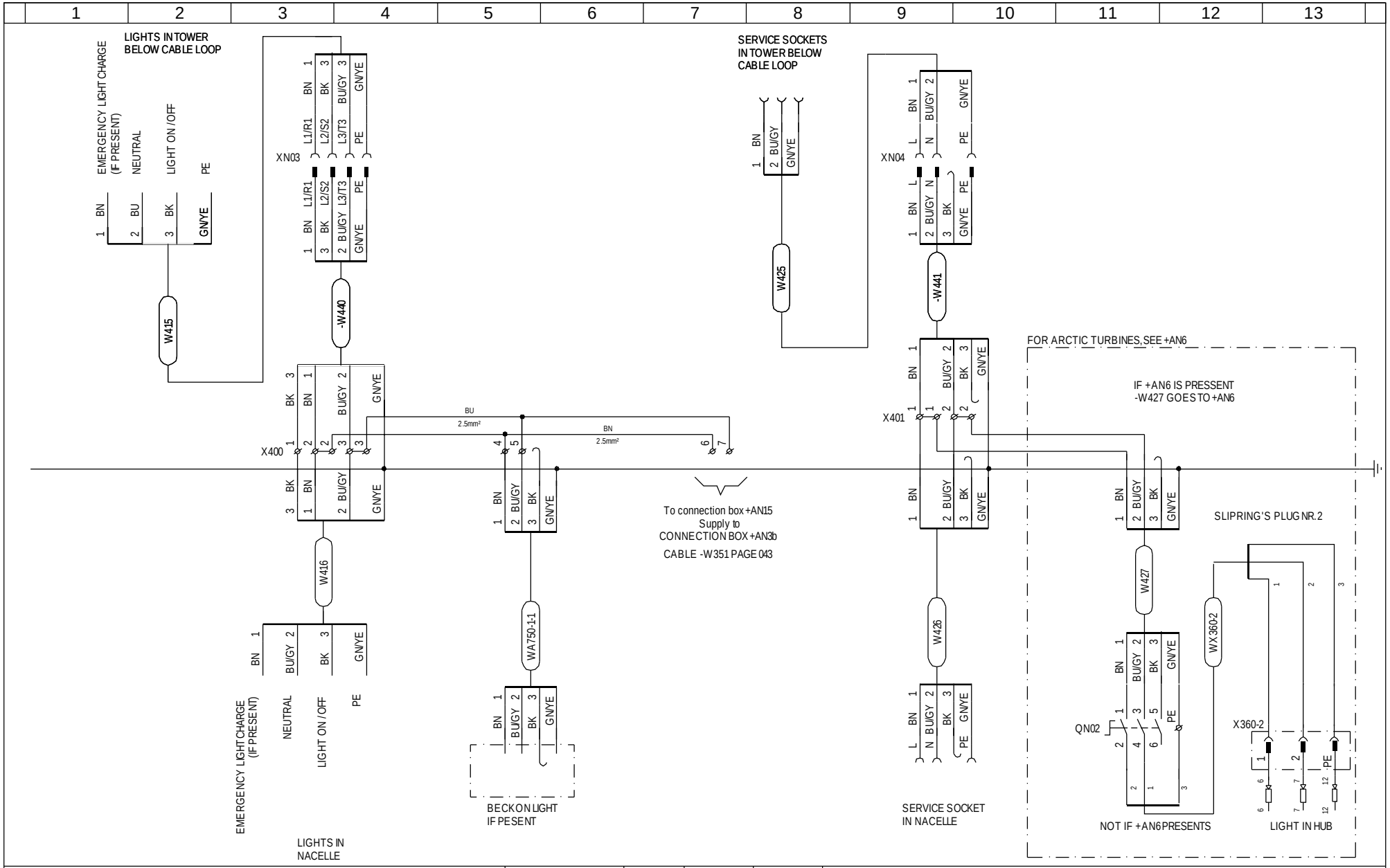
	Date	Initials	Function	External connections		
Designed	040422	MILJE	Project title	Motor Box +AN4		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet 105	Sheet 104



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connections	
		Designed	040422	MILJE	Project title	Motor Box +AN4	
		Approved			Comments	Modularisering NM30t 2004	Customer: Vestas Wind Systems A/S
		Reviced	041122	CHO	Rev. -	Drawing no. 6014856	Cont. sheet - / Sheet 105

22-11-04
11:39

LST: 21000164
Version: 03

Material 60104156
Description MOTOR BOX +AN4 NM72/82 for modul nacelle

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60097605	TERM.BOX KL 800x200x120mm 1 DOOR w.WORK	1	PC	
1	60010402	MOUNTING PLATE KL 785x175mm w. WORK	1	PC	
1	60096809	WALL BRACKET for KL BOX	4	PC	
1	60014034	LASER LABEL MOTOR BOX +AN4 NM72/1500C	1	PC	
1	60002446	THERMOLABEL "+AN4"	1	PC	
1	60002503	THERMOLABEL "-X01"	1	PC	
1	60002504	THERMOLABEL "-X02"	1	PC	
1	60006824	STICKER "LYN" 100mm	1	PC	
1	60007585	CABLE GLAND BM-EN-12 M20 PA 6	5	PC	
1	60007593	LOCKNUT BML-12 M20 PA 6	5	PC	
1	60007586	CABLE GLAND BM-EN-13 M25 PA 6	24	PC	
1	60007594	LOCKNUT BML-13 M25 PA 6	24	PC	
1	60007547	CABLE GLAND BS18 PG36 NYLON	1	PC	
1	60007559	LOCKNUT BLN-18 PG36 PA 6	1	PC	
1	60007588	CABLE GLAND BM-EN-15 M40 PA 6	1	PC	
1	60007596	LOCKNUT BML-15 M40 PA 6	1	PC	
1	60006576	HOUSING C14610F0240001 46P BULKHEAD	1	PC	X01
1	60012595	WIRING X01 +AN4 NM1500C/72 UL	1	PC	
1	60006576	HOUSING C14610F0240001 46P BULKHEAD	1	PC	X02
1	60012596	WIRING X02 +AN4 NM1500C/72 UL	1	PC	
1	60005983	TERMINAL STANDARD M4/6 115116.07	77	PC	X03
1	60005985	JUMPER BAR BJM6 2-POLED 168516.25	6	PC	
1	60005998	END SECTION FEM6 GREY 118368.16	8	PC	
1	60006034	END STOP 9708/2 S35	2	PC	
1	60012594	WIRING X400 +AN4 NM1500C/72 UL	1	PC	
1	60012593	WIRING X03 +AN4 NM1500C/72 UL	1	PC	
1	60014138	MARKER CARD RC610 Nos 1-10 horisontal	1,000	SH	
1	60014139	MARKER CARD RC610 Nos 11-20	1,000	SH	
1	60014140	MARKER CARD RC610 Nos 21-30	1,000	SH	
1	60014141	MARKER CARD RC610 Nos 31-40	1,000	SH	
1	60014142	MARKER CARD RC610 Nos 41-50	1,000	SH	
1	60014143	MARKER CARD RC610 Nos 51-60	1,000	SH	
1	60014144	MARKER CARD RC610 Nos 61-70	1,000	SH	
1	60014145	MARKER CARD RC610 Nos 71-80	1,000	SH	
1	60005983	TERMINAL STANDARD M4/6 115116.07	9	PC	X400
1	60005993	PUSH-IN JUMPER BAR PC6 2-POLED	2	PC	
1	60005998	END SECTION FEM6 GREY 118368.16	4	PC	
1	60006034	END STOP 9708/2 S35	1	PC	
1	60005996	TERMINAL STANDARD M6/8 GREY 115118.11	4	PC	X401
1	60005998	END SECTION FEM6 GREY 118368.16	2	PC	
1	60006000	JUMPER BAR BJM8 2-POLED 168520.05	2	PC	
1	60006034	END STOP 9708/2 S35	1	PC	
1	60014264	MARK RC810 +AN4 MOTOR BOX NM900 UL	1,000	SH	
1	60006819	STICKER "JORD" 14mm	1,000	SH	
1	60007201	EARTH BAR 01130 9x6.5x1000mm	0,730	M	
1	60007194	DIN RAIL PP0153H-Z 15x35mm	0,730	M	
1	60007355	CABLE CONDUIT 21159 25x60mm	0,730	M	
1	60105941	QUICK-RELEASE FASTENER for KL BOX	6	PC	
1	60013412	ANGLE BRACKET 2x10x25mm f. EARTH BUSBAR	6	PC	

Change Info

Item no.	***Item text:***
60099926	**Transformer Box +AN6 NM72/82 Arctic 690V 50Hz**

Active revision for production

Drawing no.: 6015212

Version	Date	Init./App.	Description of change since last revision
02	09.07.2004	INI/CHO	Page 001Updated. Page 100: T01 corrected to 690V

LST no.: 21000094 *Material BOM no.: 60099926*

Version	Date	Init./App.	Description of change since last revision
05	01.07.2005	FLT/FLT	60005765 this model is discontinued and replaced by 60110888 RCCB F202-25/0.03 2-POLED 25A 400VAC. The new one is also UL approved with file no. KDAX2.E244046.

Old revisions for service

Drawing no.: 6015212

Version	Date	Init./App.	Description of change since last revision
01	16.06.2004	CHO/CHO	First version

LST no.: 21000094 *Material BOM no.: 60099926*

Version	Date	Init./App.	Description of change since last revision
04	13.06.2005	MILJE/FLT	Production requirement for serial production, updated with bolt, screw, Washer and nut.
03	24.05.2005	HRN/FLT	Production required change - 60110372_Wiring added.
02	27.09.2004	CHO/CHO	Type sign label 60002792 changed to 60106616.
01	05.07.2004	CHO/CHO	First version

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E-mail: vestas@vestas.com • Web: www.vestas.com

1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
001	Table of Contents	040709	02
030	Front Layout	040616	-
031	Panel Outline	040616	-
040	External connections	040616	-
100	Internal connections	040709	-

09-07-04

09:26

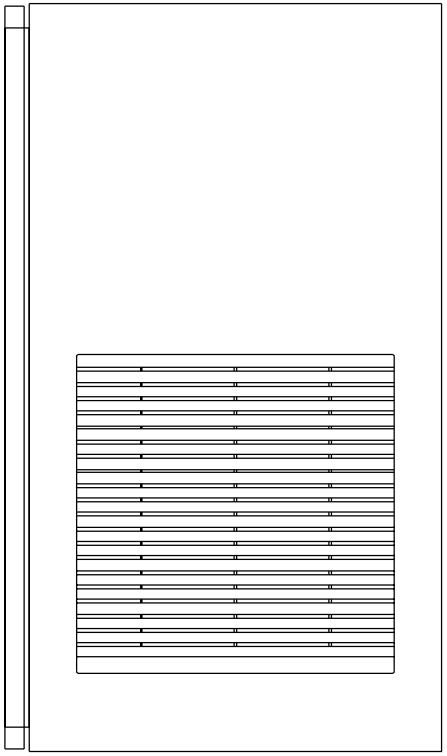
N·E·G MICON®
CONTROL SYSTEMS

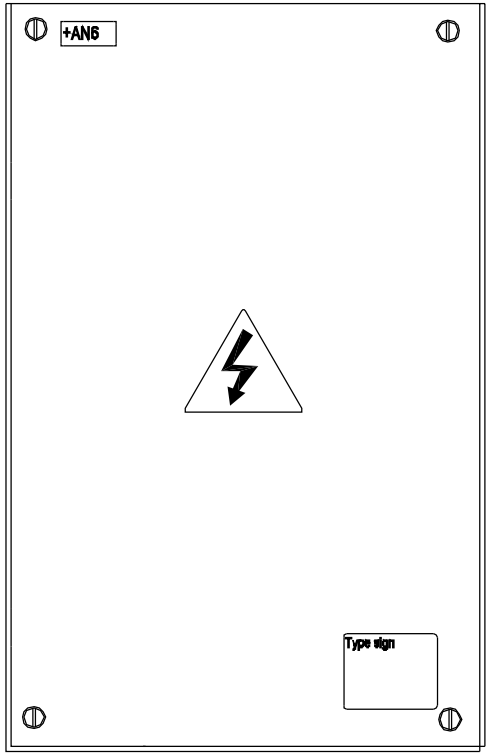
Property of NEG Micon Control systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	Table of Contents		
Designed	040616	CHO	Project title	Transformer Box +AN6 IEC		
Approved			Comments		Customer	NEG Micon A/S
Reviced	040709	INI	Rev. 02	Drawing no. 6015212	Cont. sheet 030	Sheet 001

1	2	3	4	5	6	7	8	9	10	11	12	13

RIGHT SIDE





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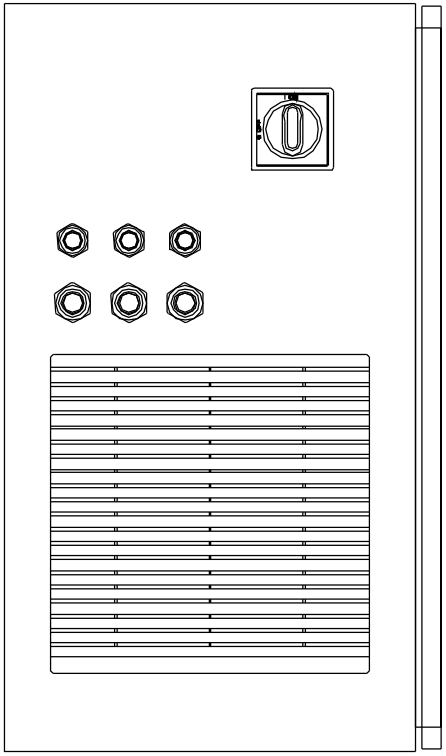

380 x 600 x 350 (WxHxD)
WEIGHT 65 kg.

09-07-04
09:26

N·E·G MICON®
CONTROL SYSTEMS

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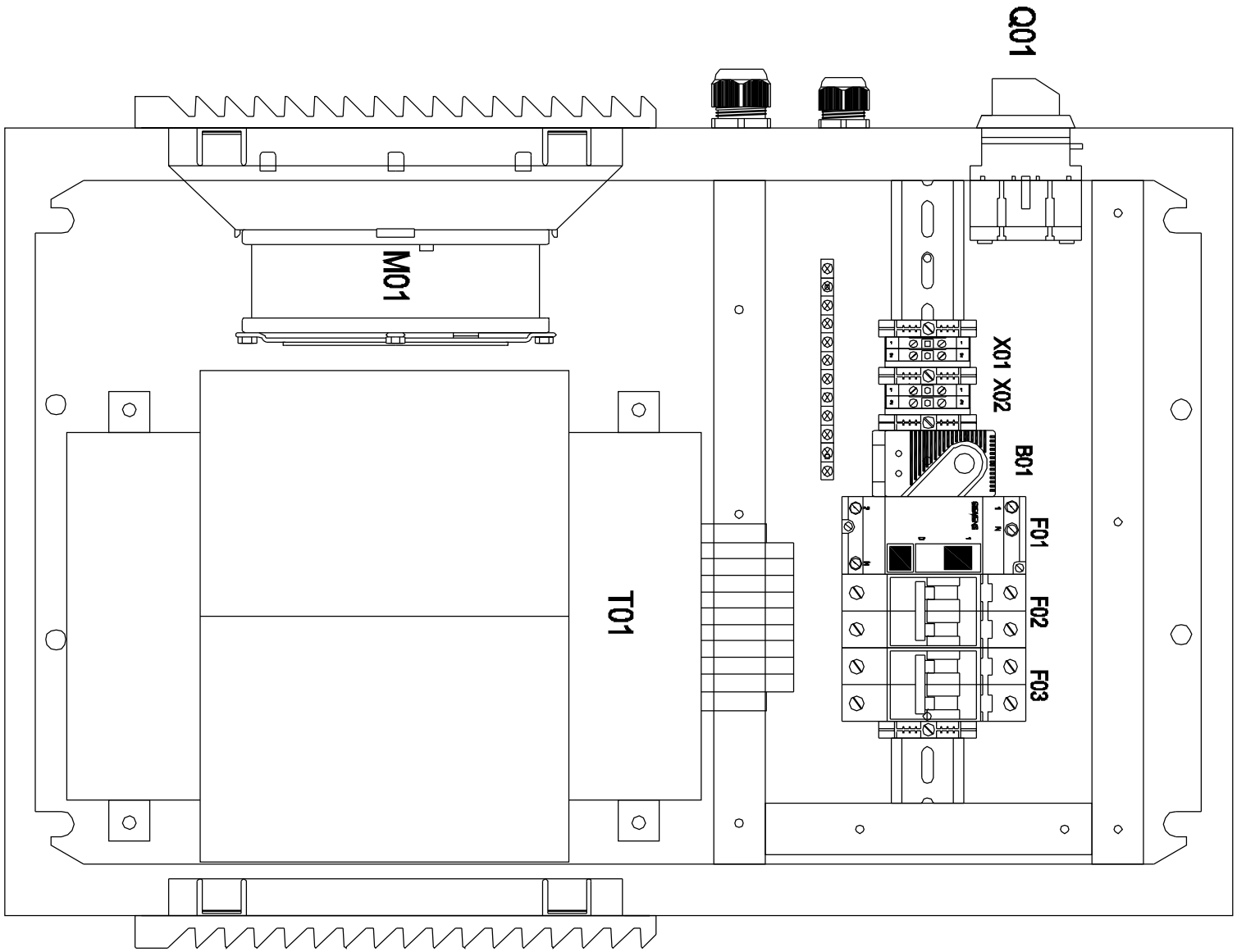
	Date	Initials	Function	Front Layout		
Designed	040616	CHO	Project title	Transformer Box +AN6 IEC		
Approved			Comments		Customer	NEG Micon A/S
Reviced	040616	CHO	Rev. -	Drawing no. 6015212	Cont. sheet 031	Sheet 030



N·E·G MICON® CONTROL SYSTEMS	Property of NEG Micon Control systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel Outline	
		Designed	040616	CHO	Project title	Transformer Box +AN6 IEC	
		Approved			Comments		Customer NEG Micon A/S
		Reviced	040616	CHO	Rev. -	Drawing no. 6015212	Cont. sheet 040 / Sheet 031

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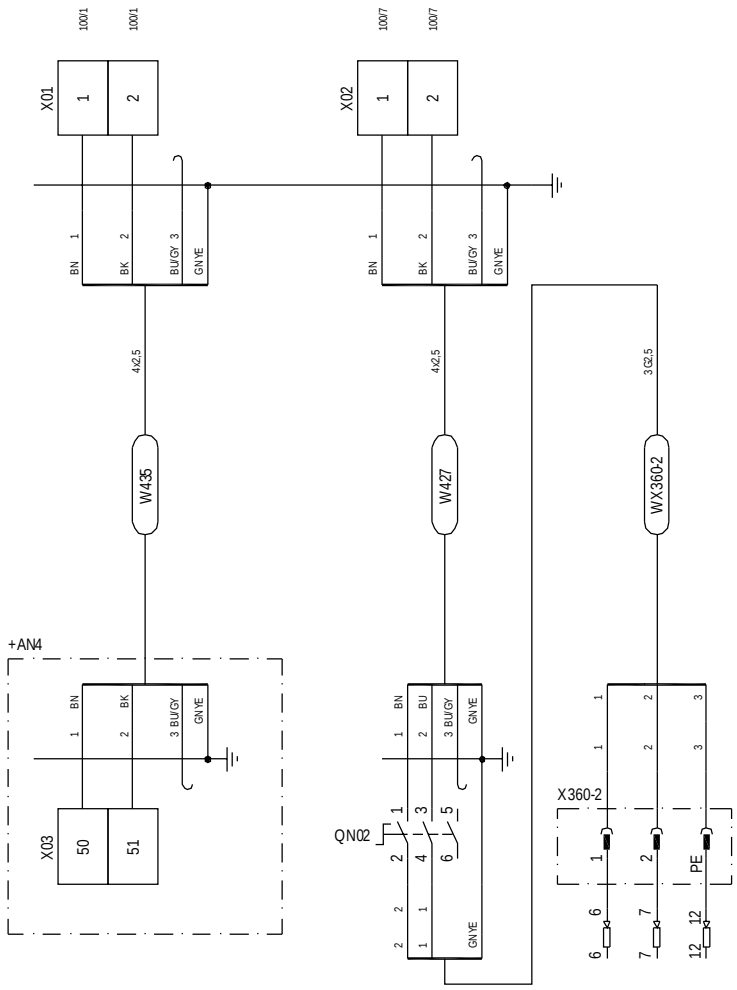
09:26



690V SUPPLY
FROM +AN4

230VAC SUPPLY TO HEAT &
SERVICE SOCKET IN HUB

09-07-04
09:26

N·E·G MICON®
CONTROL SYSTEMS

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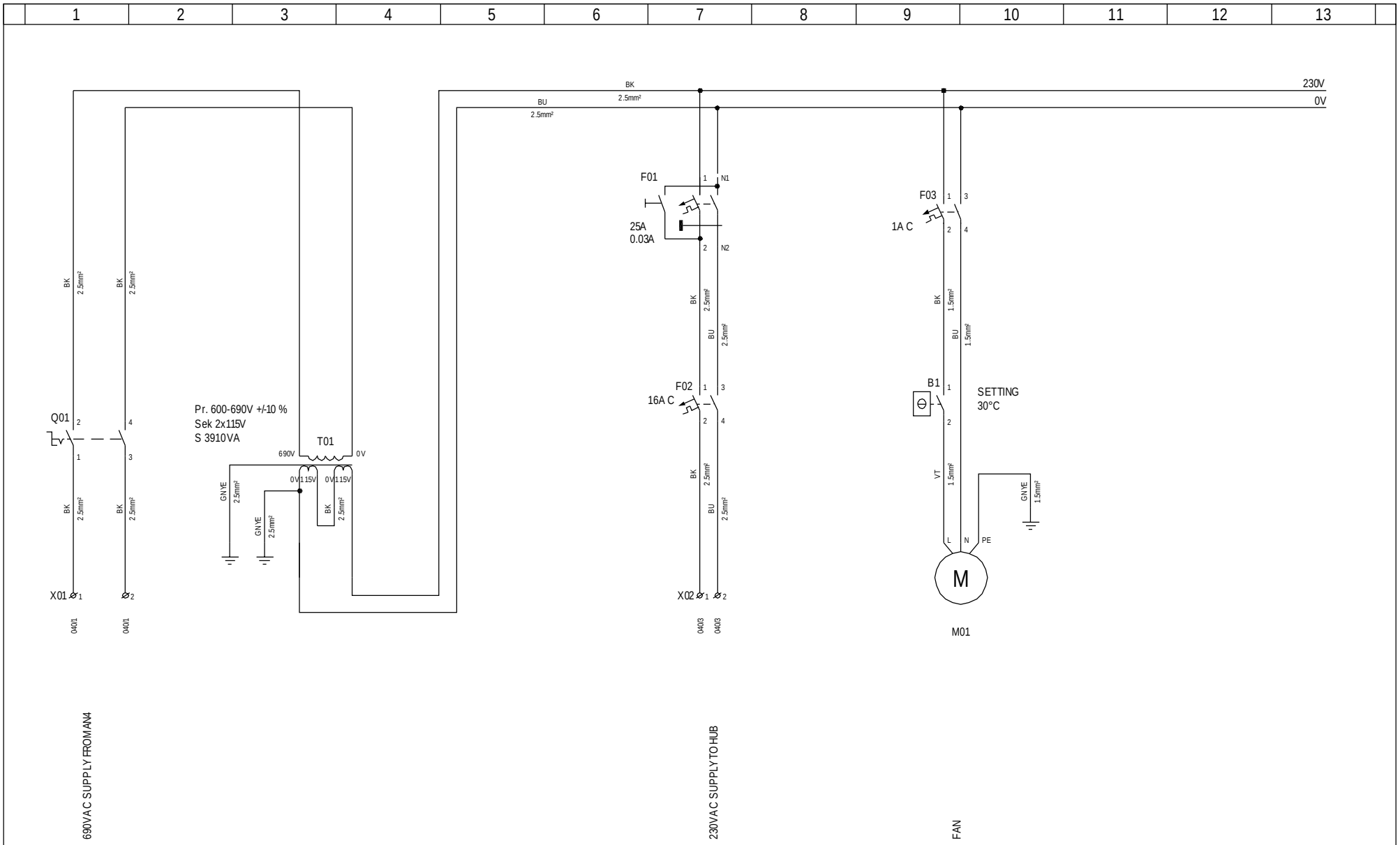
	Date	Initials	Function	External connections		
Designed	040616	CHO	Project title	Transformer Box +AN6 IEC		
Approved			Comments		Customer	NEG Micon A/S
Reviced	040616	CHO	Rev. -	Drawing no. 6015212	Cont. sheet 100	Sheet 040



N·E·G MICON® CONTROL SYSTEMS	Property of NEG Micon Control systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: Internal connections	
		Designed	040616	CHO	Project title: Transformer Box +AN6 IEC	
		Approved			Comments	Customer: NEG Micon A/S
		Reviced	040709	INI	Rev. - / Drawing no. 6015212	Cont. sheet - / Sheet 100

09-07-04
09:26

LST: 21000094
Version: 05

Material 60099926
Description TRAFO BOX +AN6 NM72/82 Arctic 690V 50Hz

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60010374	CABINET AE 380x600x350mm 1 DOOR w. WORK	1	PC	
1	60010375	MOUNTING PLATE AE 380x600 w. WORK	1	PC	
1	60010445	WALL BRACKET 2508.000 25*10mm	4	PC	
1	60103946	ISOLA.TRAFO UI 180/75-7536 600-690/2x115	1	PC	
1	60014652	FAN 1-PHASE 230V 230m³/h 38W 255x255x105	1	PC	
1	60014667	EXHAUST FILT. 3325.200 f.180-230m³/h FAN	1	PC	
1	60009288	THERMOSTAT 01147.9-00 60-0°C COOL UL	1	PC	
1	60005983	TERMINAL STANDARD M4/6 115116.07	4	PC	
1	60005998	END SECTION FEM6 GREY 118368.16	2	PC	
1	60006034	END STOP 9708/2 S35	4	PC	
1	60007585	CABLE GLAND BM-EN-12 M20 PA 6	3	PC	
1	60007354	CABLE CONDUIT 21154 25x40mm	1	M	
1	60007182	DIN RAIL PP0735H 7x35mm	1	M	
1	60005163	MCB 5SX2216-7 C 2-POL.16.0A 440VAC-60VDC	1	PC	
1	60005150	MCB 5SX2201-7 C 2-POL. 1.0A 440VAC-60VDC	1	PC	
1	60110888	RCCB F202-25/0.03 2-POLED 25A 400VAC	1	PC	
1	60005768	LOAD BREAK SWITCH OT25ET3 3-POLED	1	PC	
1	60005774	HANDLE OHB 2RJ BLACK	1	PC	
1	60005776	SWITCH COVER OTS32T3 3-POLED	2	PC	
1	60002488	THERMOLABEL "+AN6"	1	PC	
1	60007586	CABLE GLAND BM-EN-13 M25 PA 6	3	PC	
1	60007593	LOCKNUT BML-12 M20 PA 6	3	PC	
1	60007594	LOCKNUT BML-13 M25 PA 6	3	PC	
1	60006819	STICKER "JORD" 14mm	2	PC	
1	60007201	EARTH BAR 01130 9x6.5x1000mm	0,120	M	
1	60106616	THERMO. TYPE SIGN TRANSFORMER BOX +AN6	1	PC	
1	60006824	STICKER "LYN" 100mm	1	PC	
1	60110372	Wiring Transformerbox +AN6 IEC	1	PC	
1	60013412	ANGLE BRACKET 2x10x25mm f. EARTH BUSBAR	2	PC	
1	60009639	SCREW ISO 4017 M 8 x 20 - 8.8 - FZB	4	PC	
1	60009841	LOCK WASHER DIN 6798 A 8 - FZB	4	PC	
1	60009877	NUT ISO 4161 M 8 - 8 - FZB	4	PC	
1	60009599	SCREW ISO 7045 M 4 x 14 - 4.8 - FZB - Z	2	PC	
1	60009838	LOCK WASHER DIN 6798 A 4 - FZB	2	PC	
1	60009861	NUT ISO 4032 M 4 - 6 - FZB	2	PC	
1	60009578	SCREW ISO 7045 M 3 x 8 - FZB - H	2	PC	
1	60009751	SCREW HFC 208 M 4.8 x 9.5 - FZB	8	PC	
1	60014138	MARKER CARD RC610 Nos 1-10 horisontal	1,000	SH	

Change Info

Item no.	***Item text:***
60101166	**Junction Box +AN11**

Active revision *for production*

Drawing no.: 6014798

Version	Date	Init./App.	Description of change since last revision
02	22.11.2004	FLT/FLT	Update of wire colors according to Nacelle Production. All pages updated with Vestas logo. Page 200: W510 and W544 wire colors changed Page 201: W585 and W586 wire colors changed

LST no.: 21000103 *BOM no.: 60101166*

Version	Date	Init./App.	Description of change since last revision
05	09.09.2005	HRN/FLT	Production requirement. Removed 60007182_Din rail, 60007356_Cable conduit & 60007201_Earth bar Was not been removed then new kit 60111002 _cable conduit, din rail was add.

Old revisions *for service*

Drawing no.: 6014798

Version	Date	Init./App.	Description of change since last revision
01	17.03.2004	MLJ/ MLJ	First version

LST no.: 21000103 *BOM no.: 60101166*

Version	Date	Init./App.	Description of change since last revision
04	17.05.2005	MILJE/FLT	Production requirement, from proto type. Marker card 60094860 and 60094872 removed. Marker card 60110882 and cable conduit, din rail 60111002 added.
03	21.10.2004	MILJE/MILJE	Quick-release fastener 60105941 added.
02	19.07.2004	MILJE/CHO	60103163 wiring removed.
01	17.04.2004	MLJ/ MLJ	First version

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PAGE	CONTENT	DATE	REVISION
001	Table of contents	041122	02
030	Panel front	040317	–
031	Panel outline	040317	–
040	Connection to +AN1 Top bo	040317	–
100	Externals connections to	040317	–
200	Externals connections to	041122	–
201	Externals connections to	041122	–

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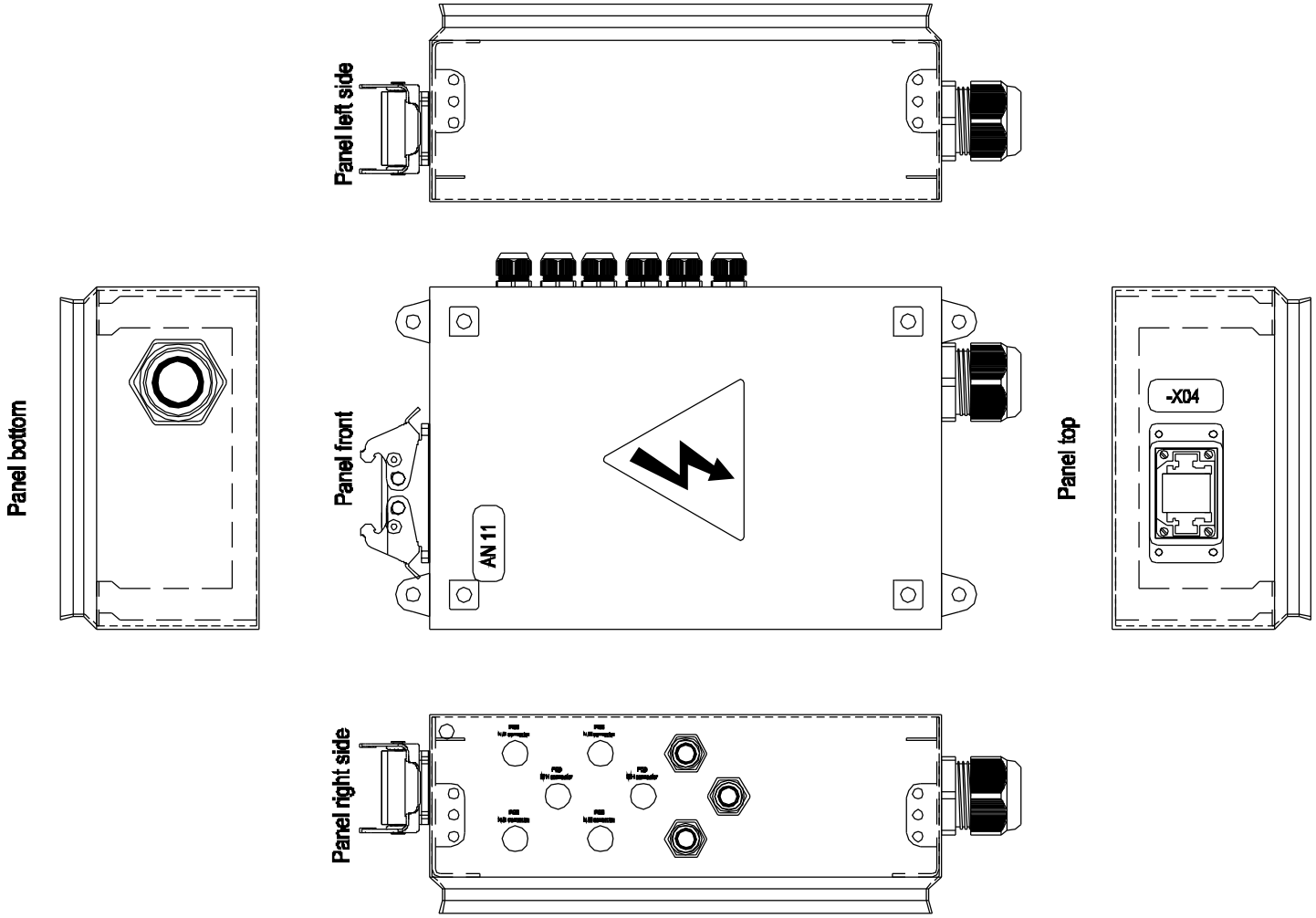
	Date	Initials					
Designed	040317	MLJ	Function	Table of Contents			
Approved			Project title	Connection box +AN11			
Reviced	041122	FLT	Comments	Modularisering NM30t 2004	Customer	NEG Micon A/S	
			Rev. 02	Drawing no. 6014798	Cont. sheet 030	Sheet 001	

18-11-04
15:01



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel front	
		Designed	040317	MLJ	Project title	Connection box +AN11	
		Approved			Comments	Modularisering NM30t 2004	Customer NEG Micon A/S
		Reviced	040317	MLJ	Rev. -	Drawing no. 6014798	Cont. sheet 031 / Sheet 030

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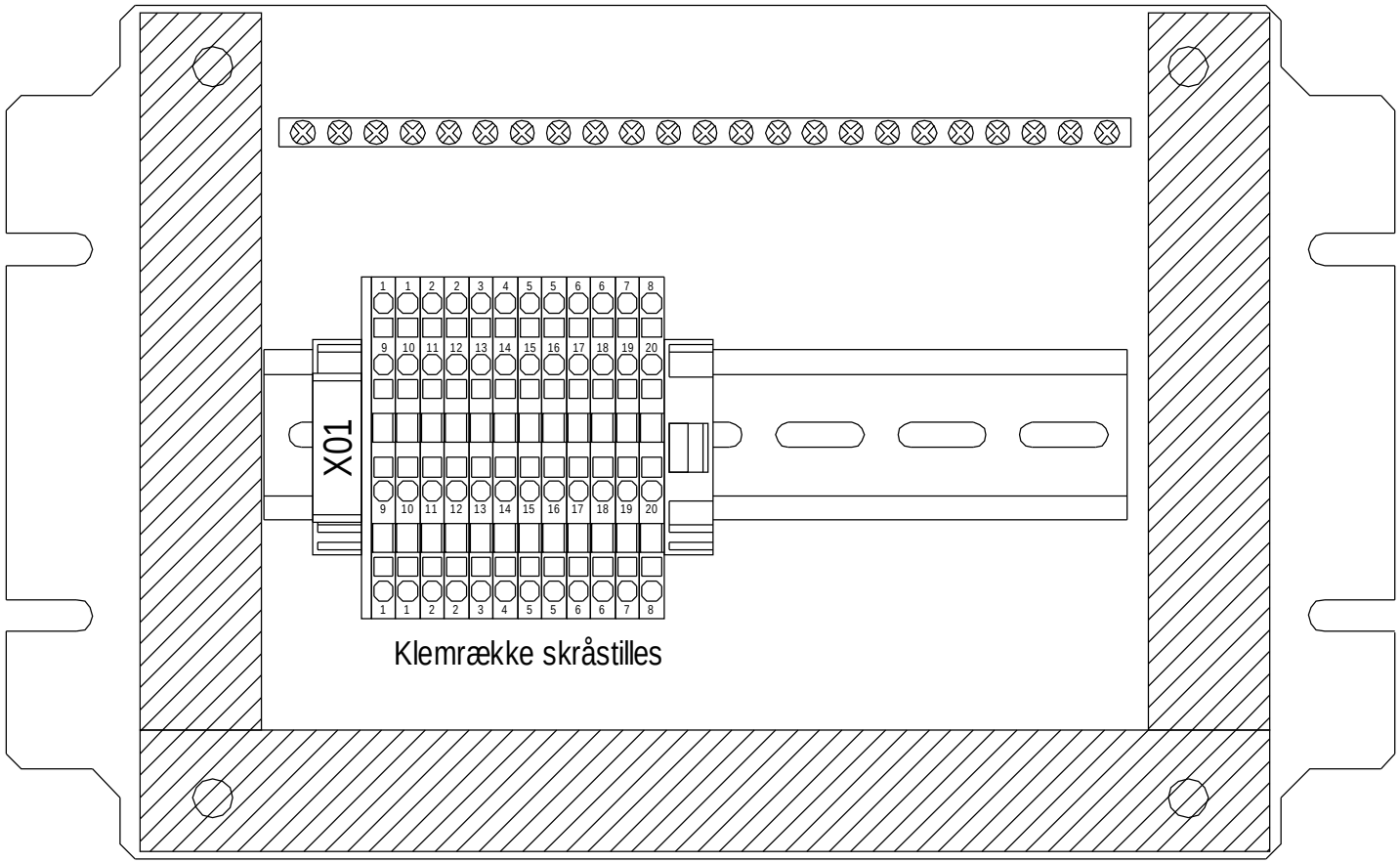
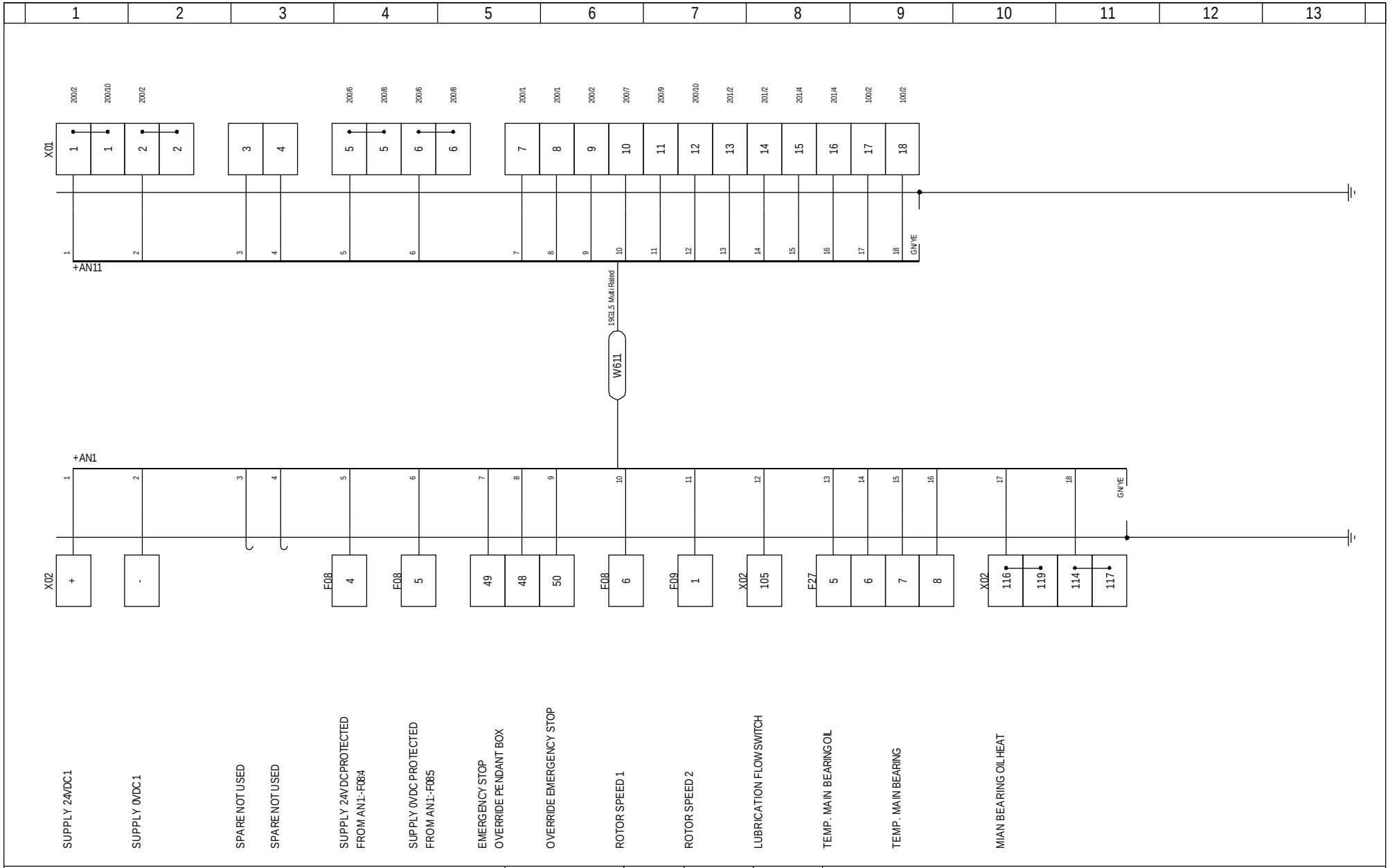
Mounting plate



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel outline	
		Designed	040317	MLJ	Project title	Connection box +AN11	
		Approved			Comments	Modularisering NM30t 2004	Customer NEG Micon A/S
		Reviced	040317	MLJ	Rev. -	Drawing no. 6014798	Cont. sheet 040 / Sheet 031

18-11-04
15:01



Vestas

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	Date	Initials	Function	Connection to +AN1 Top box		
Designed	040317	MLJ	Project title	Connection box +AN11		
Approved			Comments	Modularisering NM30t 2004	Customer	NEG Micon A/S
Reviced	040317	MLJ	Rev. -	Drawing no. 6014798	Cont. sheet 100	Sheet 040

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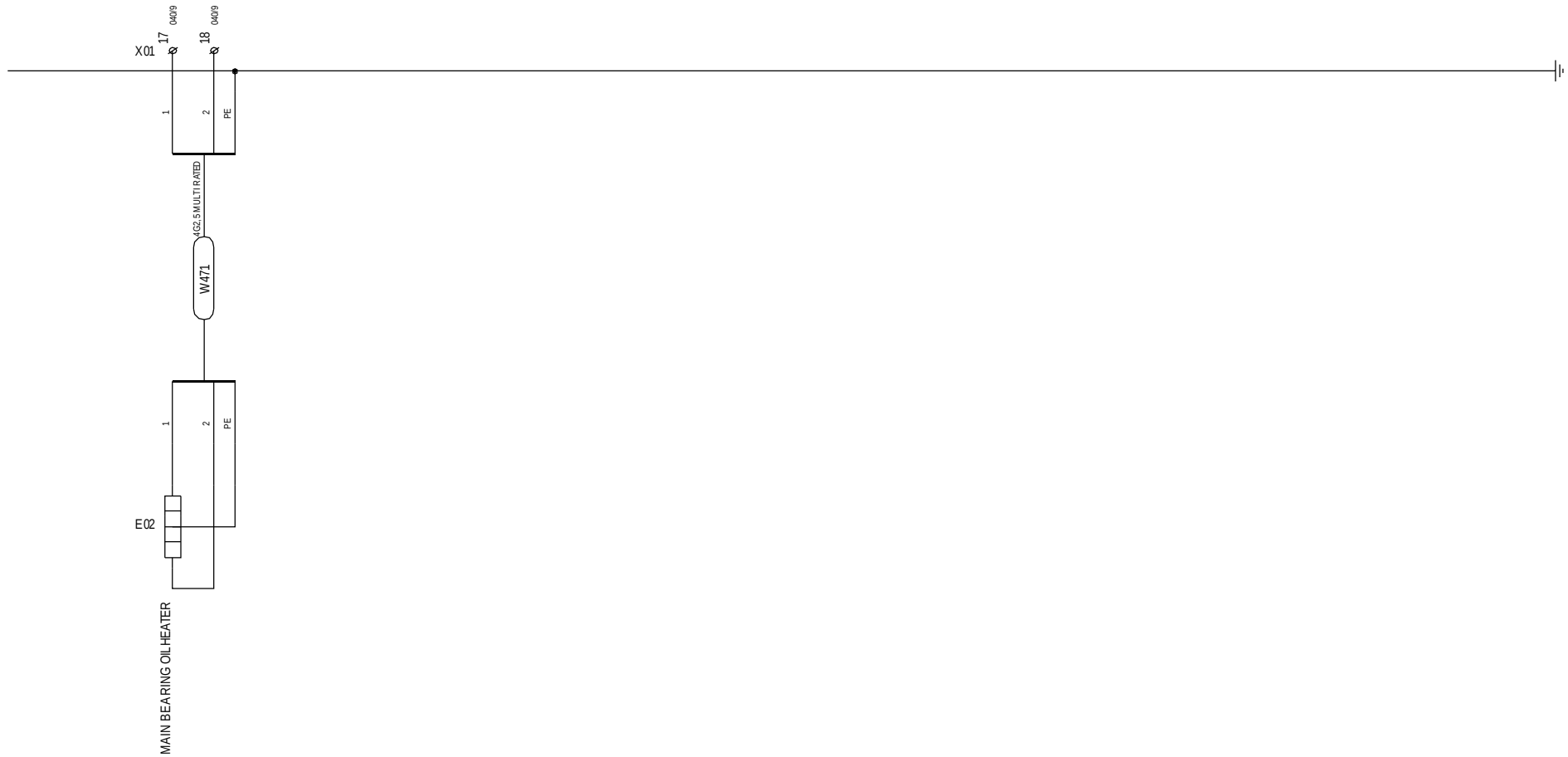
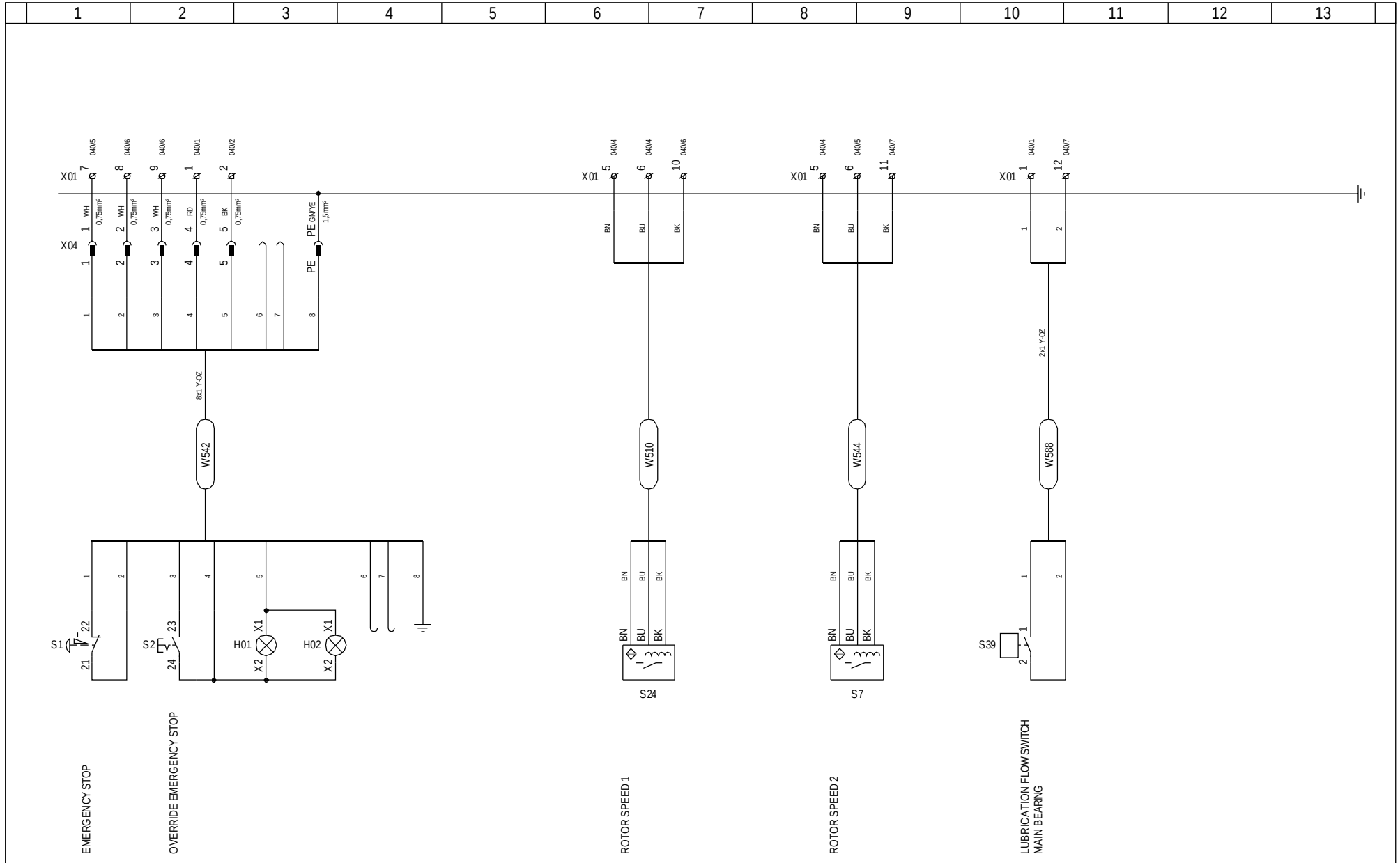


Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Externals connections to heat element	
		Designed	040317	MLJ	Project title	Connection box +AN11	
		Approved			Comments	Modularisering NM30t 2004	Customer NEG Micon A/S
		Reviced	040317	MLJ	Rev. -	Drawing no. 6014798	Cont. sheet 200 / Sheet 100

18-11-04
15:01

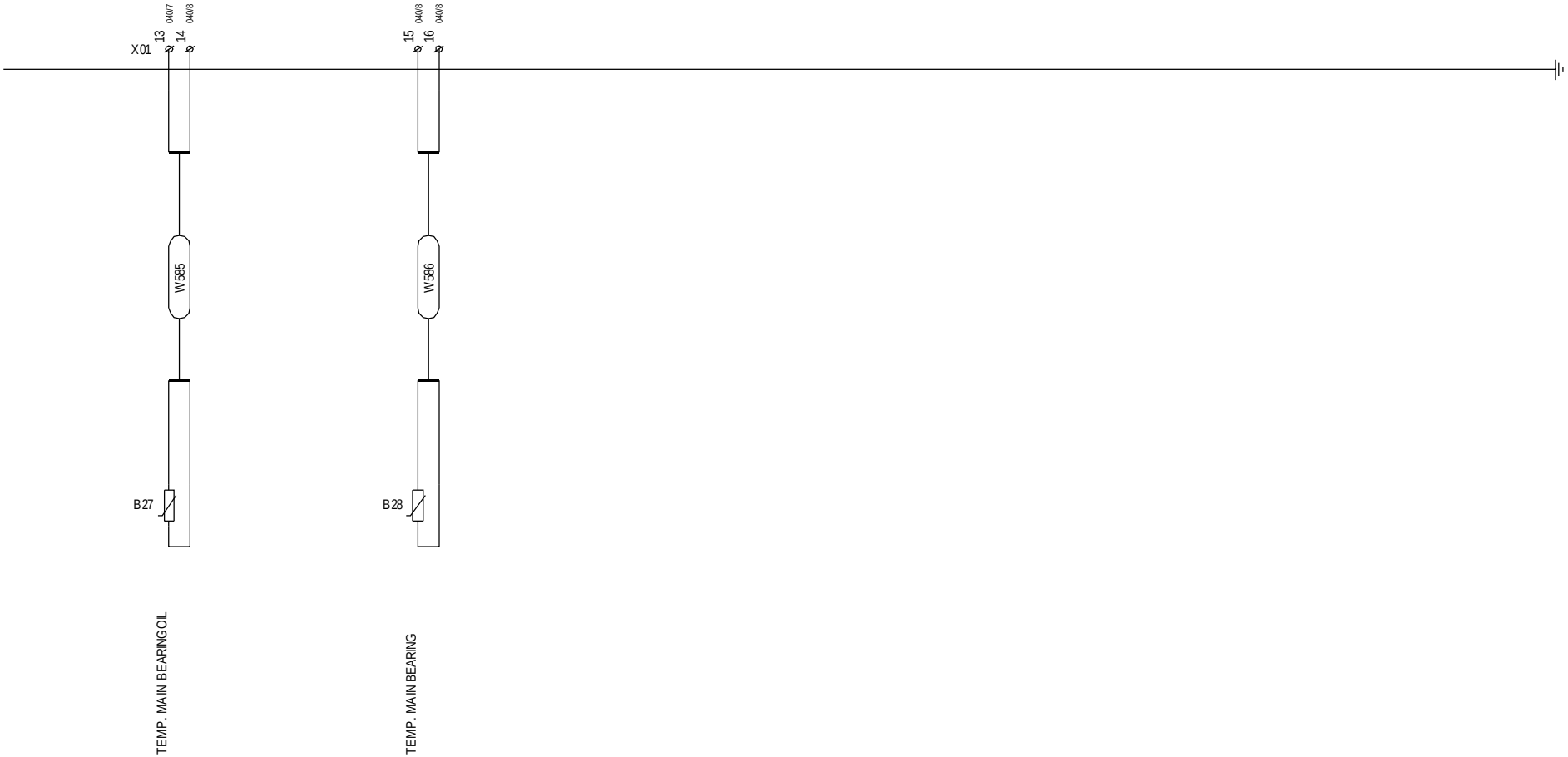


Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	Externals connections to signals		
Designed	040317	MLJ	Project title	Connection box +AN11		
Approved			Comments	Modularisering NM30t 2004	Customer	NEG Micon A/S
Reviced	041122	FLT	Rev. -	Drawing no. 6014798	Cont. sheet 201	Sheet 200

18-11-04
15:01



18-11-04
15:01

Vestas

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	Date	Initials	Function	Externals connections to signals		
Designed	040317	MLJ	Project title	Connection box +AN11		
Approved			Comments	Modularisering NM30t 2004	Customer	NEG Micon A/S
Reviced	041122	FLT	Rev. -	Drawing no. 6014798	Cont. sheet -	Sheet 201

LST: 21000103
Version: 05

Material 60101166
Description JUNCTION BOX +AN11

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60102733	TERMINAL BOX KL 300X200X120MM W. WORK	1	PC	+AN11
1	60096809	WALL BRACKET for KL BOX	4	PC	+AN11
1	60102739	MOUNTING PLATE KL 285x175mm W. WORK	1	PC	+AN11
1	60097599	HOUSING C14610F0060001 24P BULKHEAD	1	PC	-X04
1	60006428	METAL COVER 09300065425 6-POLED	1	PC	-X04
1	60103163	WIRING +AN11 -X04	1	PC	-X04
1	60002506	THERMOLABEL "-X04"	1	PC	-X04
1	60007588	CABLE GLAND BM-EN-15 M40 PA 6	1	PC	+AN11
1	60007596	LOCKNUT BML-15 M40 PA 6	1	PC	+AN11
1	60007584	CABLE GLAND BM-EN-11 M16 PA 6	3	PC	+AN11
1	60007592	LOCKNUT BML-11 M16 PA 6	3	PC	+AN11
1	60007534	Connector PG 9 NH 15/13 for protec.hose	6	PC	+AN11
1	60007553	LOCKNUT BLN-12 PG9 PA 6	6	PC	+AN11
1	60007196	DIN RAIL FITTING TSTW 72x48mm	2	PC	+AN11
1	60013412	ANGLE BRACKET 2x10x25mm f. EARTH BUSBAR	2	PC	+AN11
1	60006071	TERMINAL WAGO 870-501 2-LEV.0,08-2,5mm²	12	PC	-X01
1	60006083	END SECTION 870-518 2-LEVEL GREY WAGO	1	PC	-X01
1	60006086	PUSH-IN JUMPER BAR 870-402 2-POLED	4	PC	-X01
1	60091912	END STOP WAGO 249-117 10mm TS35	2	PC	-X01
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	-X01
1	60101923	THERMOLABEL +AN11	1	PC	+AN11
1	60006824	STICKER "LYN" 100mm	1,000	SH	+AN11
1	60006819	STICKER "JORD" 14mm	1,000	SH	+AN11
1	60105941	QUICK-RELEASE FASTENER for KL BOX	4	PC	
1	60110882	MARK WAGO +AN11 PANEL NM72/V82	1,000	SH	
1	60111002	CABLE CONDUIT, DIN RAIL AN11, 13, 14, 15	1	PC	

Change Info

Item no.	***Item text:***
60101167	**Junction Box +AN12**

Active revision *for production*

Drawing no.: 6014799

Version	Date	Init./App.	Description of change since last revision
06	22.11.2004	FLT/FLT	Update of wire colors according to Nacelle Production. Page 001: Index updated Page 040: X03 terminals 24,26,27 swaped with 35,36,37 Page 100: W307, W308 & W322 colors added and phase sequence changed. Page 101: W317, W318, W319, W320 colors added. Page 200: B16, B20, B29 terminal no. added. Page 201: W526 cable type changed. W527 cable type changed. W522 cable type changed. W525 cable type changed. W521 cable type changed. W536 cable no. deleted. W581 cable type changed. W582 cable type changed.

LST no.: 21000104 *BOM no.: 60101167*

Version	Date	Init./App.	Description of change since last revision
07	09.09.2005	HRN/FLT	Production requirement. Removed 60007182_Din rail, 60007356_Cable conduit & 60007201_Earth bar Was not been removed then new kit 60111003 _cable conduit, din rail was add.

Old revisions *for service*

Drawing no.: 6014799

Version	Date	Init./App.	Description of change since last revision
05	13.09.2004	MILJE/MILJE	All pages updated with Vestas logo. Page 031: Endplates added to terminal row –X01, and jumper bars moved in terminal row –X02. Page 041: +AN1, F08.3 corrected to F09.3
04	30.06.2004	INI/CHO	All pages, project title updated. Page 041: X02.3 corrected to X02.131. X02.4 removed. F08.8 corrected to F07.6. F08.8 corrected to F07.8.
03	17.06.2004	MLJ+INI/FLT	Page 001: Updated. Page 030: New layout, new cable glands added. Page 031: Jumper bars added. Page 202: Numbers on shaft brake locked switch changed.
02	19.05.2004	MLJ/MLJ	Page 001: Updated. Page 202: High speed shaft cower changed from NC to NO.
01	10.03.2004	MLJ/ MLJ	First version

LST no.: 21000104 *BOM no.: 60101167*

Version	Date	Init./App.	Description of change since last revision
06	17.05.2005	MILJE+HRN/FLT	Production requirement, from proto type department. 6007588 changed to 60110413 Cable Gland M40. 60110883 + 60110997 mark wago and 60111003 cable conduit/din rail added. 60014164, 60014165, 60094860, 60094872, 60094874, 094875 and 60094866 Marker card wago removed.
05	21.10.2004	MILJE/MILJE	Quick-release fastener 60105941 added.
04	13.09.2004	MILJE/MILJE	60005998 is change from 1 to 8 pc. 60005981 is change to 60005985.
03	19.07.2004	MILJE/CHO	Wire kitset added 60104971, X01 marker card changed to 60014164 and 60014165.
02	18.06.2004	MLJ/ FLT	Cable glands change. M50 Change to M40, M20 Change to M25, Quantity of M16 changed from 10 to 9.
01	17.04.2004	MLJ/ MLJ	First version

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1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
001	Table of Contents	041122	06
030	Panel front	040630	-
031	Panel outline	040913	-
040	Connections to +AN4 Motor	041122	-
041	Connections to +AN1 Top b	040913	-
042	Connections to +AN1 Top b	040630	-
043	Connections to +AN1 Top b	040630	-
100	External connections to m	041122	-
101	External connections to h	041122	-
200	External connections to s	041122	-
201	External connections to s	041122	-
202	External connections to s	040630	-
203	External connections to s	040630	-

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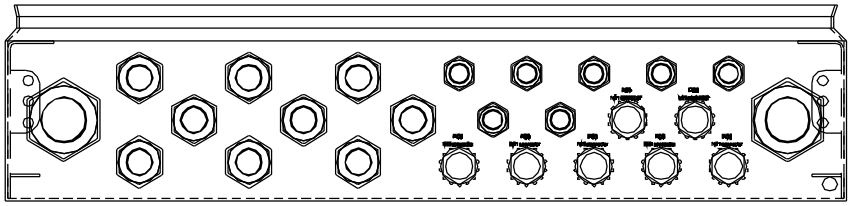
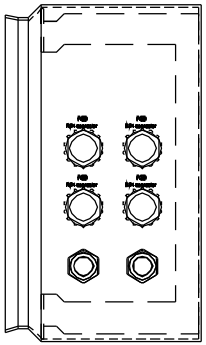
	Date	Initials				
Designed	040310	MILJE	Function	Table of Contents		
Approved			Project title	Junction Box +AN12		
Reviced	041122	FLT	Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
			Rev. 06	Drawing no. 6014799	Cont. sheet 030	Sheet 001

22-11-04 12:46



Panel bottom

Panel right side



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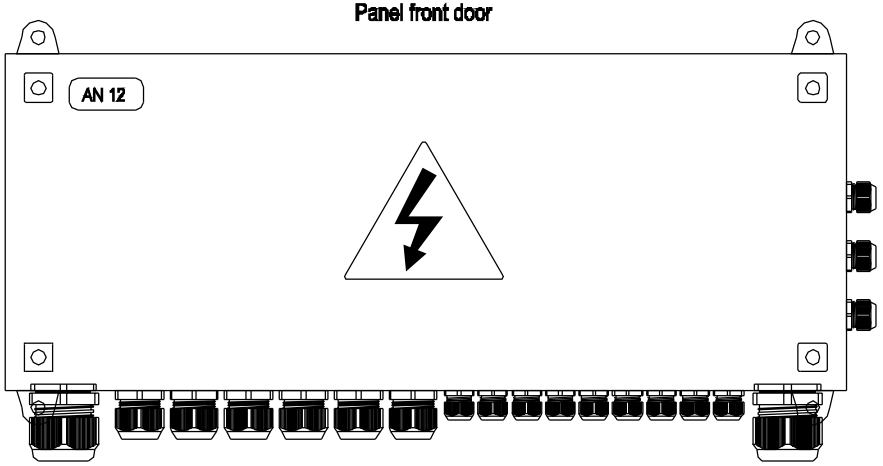

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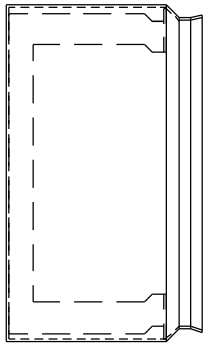
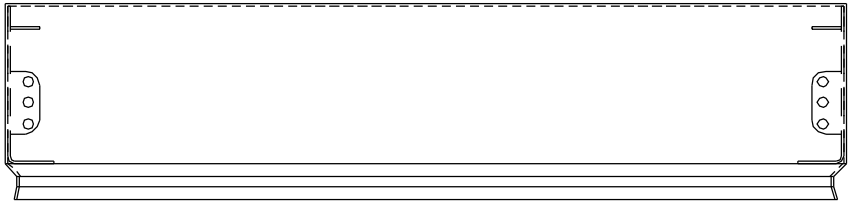


Panel top



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	Date	Initials	Function	Panel front		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	040630	INI	Rev. -	Drawing no. 6014799	Cont. sheet 031	Sheet 030

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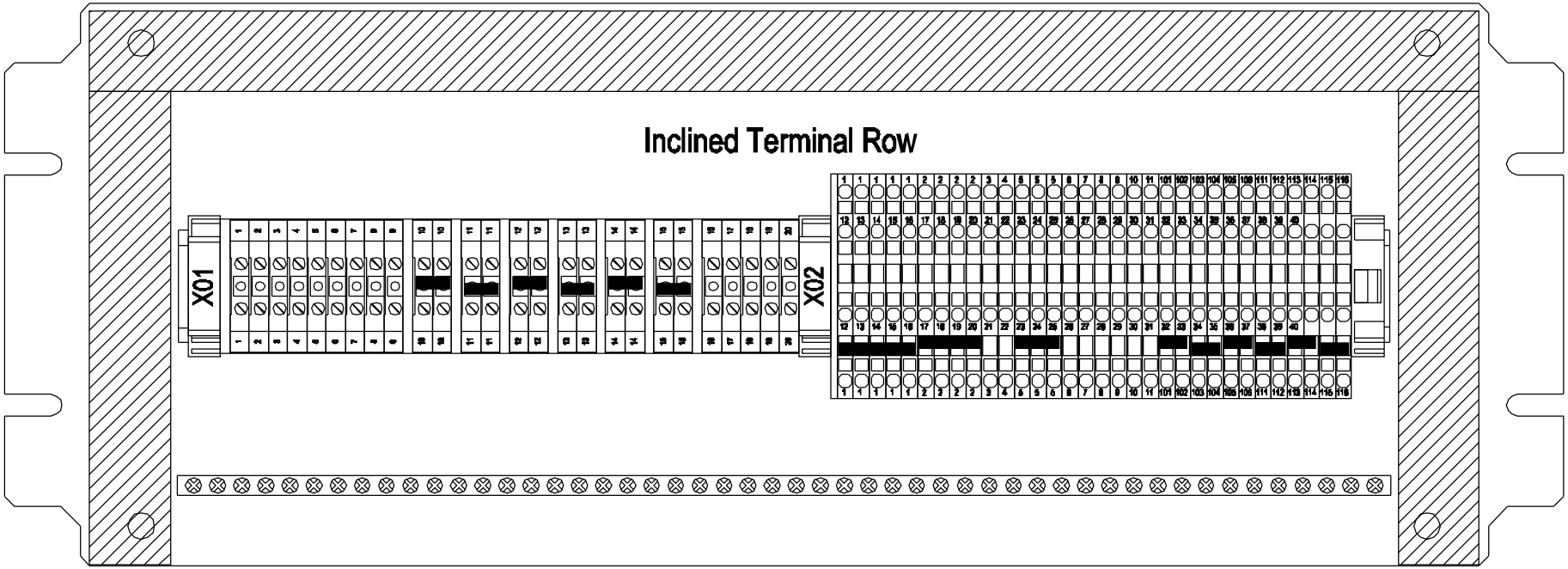
Mounting plate



	Date	Initials	Function	Panel outline				
Designed	040310	MILJE	Project title	Junction Box +AN12				
Approved			Comments	Modularisering NM30t 2004		Customer	Vestas Wind Systems A/S	
Reviced	040913	MILJE	Rev.	-	Drawing no. 6014799	Cont. sheet	040	Sheet 031

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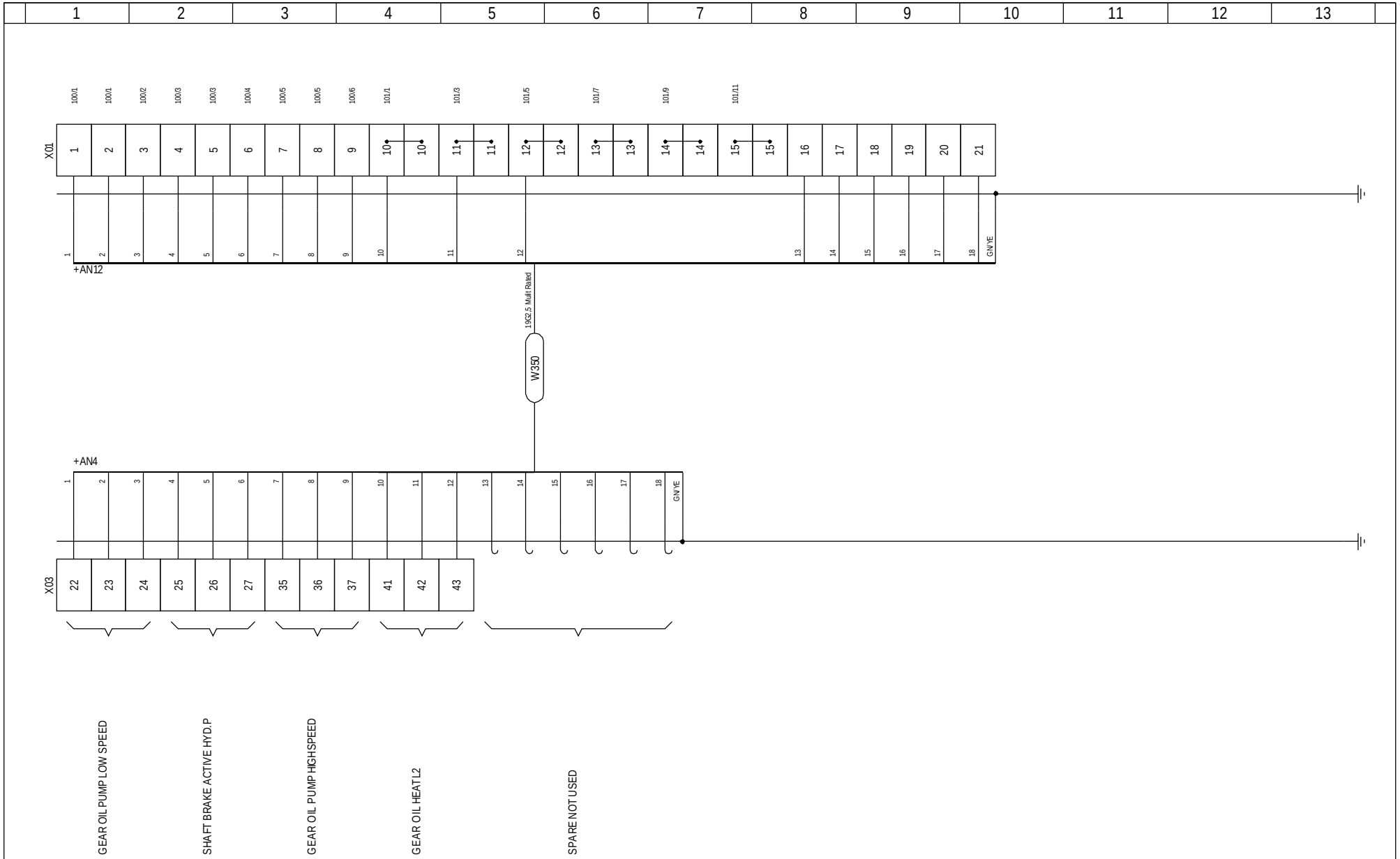

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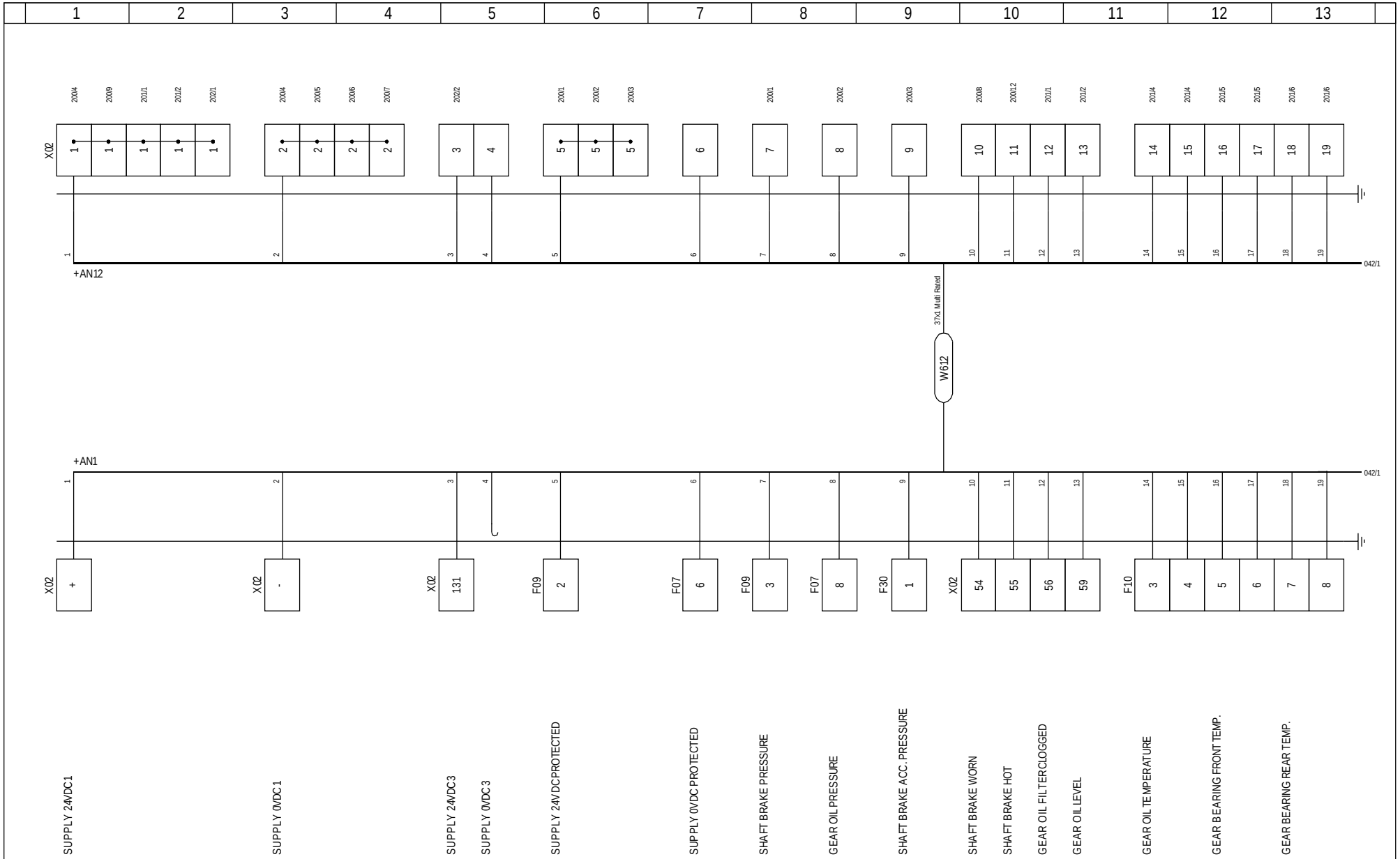
	Date	Initials	Function	Connections to +AN4 Motor box		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	FLT	Rev. -	Drawing no. 6014799	Cont. sheet 041	Sheet 040



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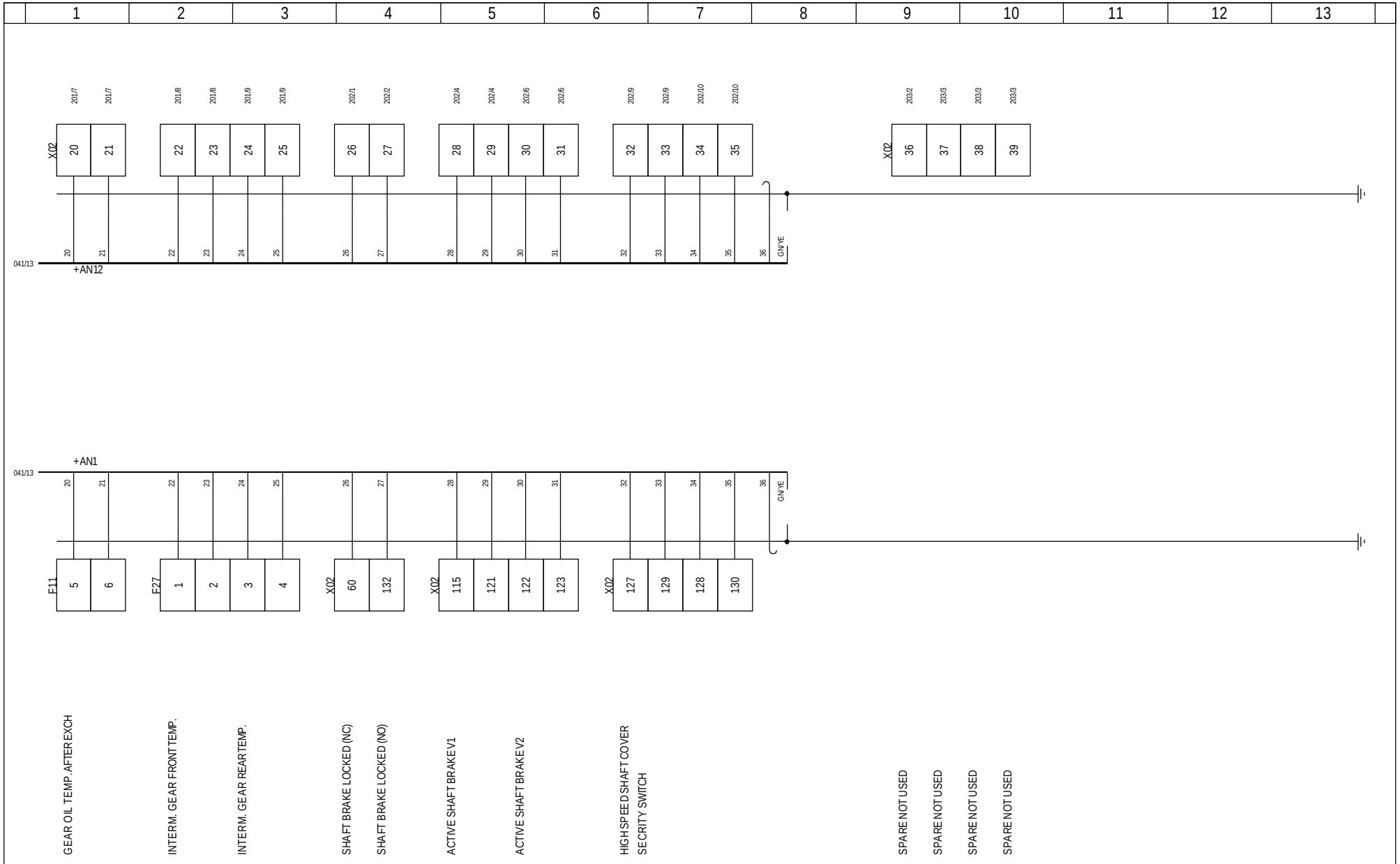
	Date	Initials	Function	Connections to +AN1 Top box		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	040913	MILJE	Rev. -	Drawing no. 6014799	Cont. sheet 042	Sheet 041



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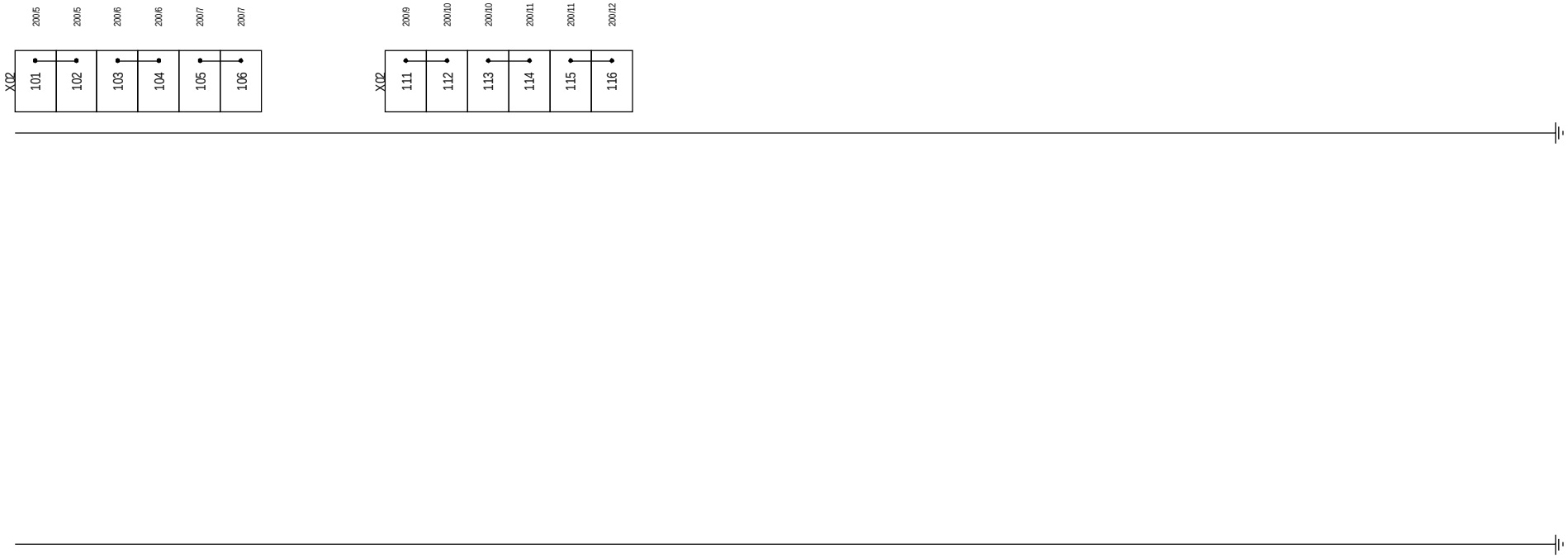
	Date	Initials	Function	Connections to +AN1 Top box		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	040630	INI	Rev. -	Drawing no. 6014799	Cont. sheet 043	Sheet 042



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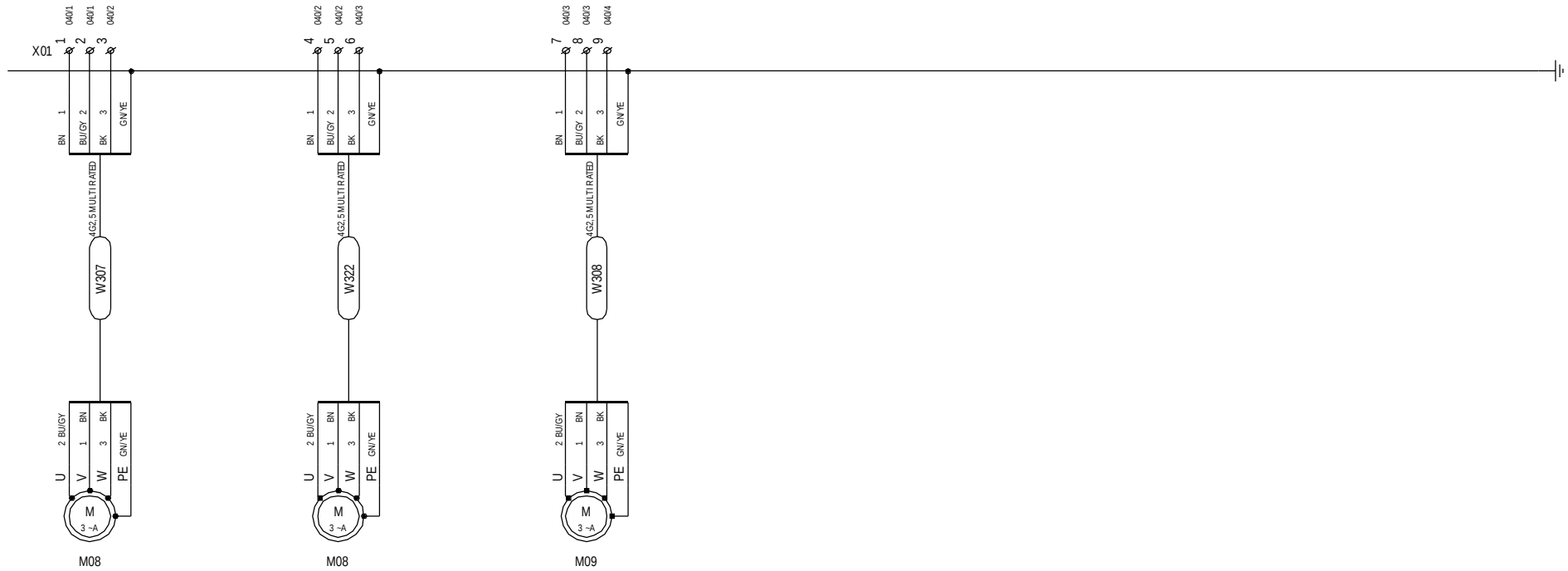
	Date	Initials	Function	Connections to +AN1 Top box		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	040630	INI	Rev. -	Drawing no. 6014799	Cont. sheet 100	Sheet 043



GEAR OIL PUMP LOW SPEED

3 x 690V 50Hz WTG
3 x 480V 60Hz WTG

GEAR OIL PUMP HIGH SPEED

3 x 690V 50Hz WTG
3 x 480V 60Hz WTG

SHAFT BRAKE PUMP

0,18kW

3 x 690V 50Hz WTG
3 x 480V 60Hz WTG

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	Date	Initials	Function	External connections to motors		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	FLT	Rev. -	Drawing no. 6014799	Cont. sheet 101	Sheet 100

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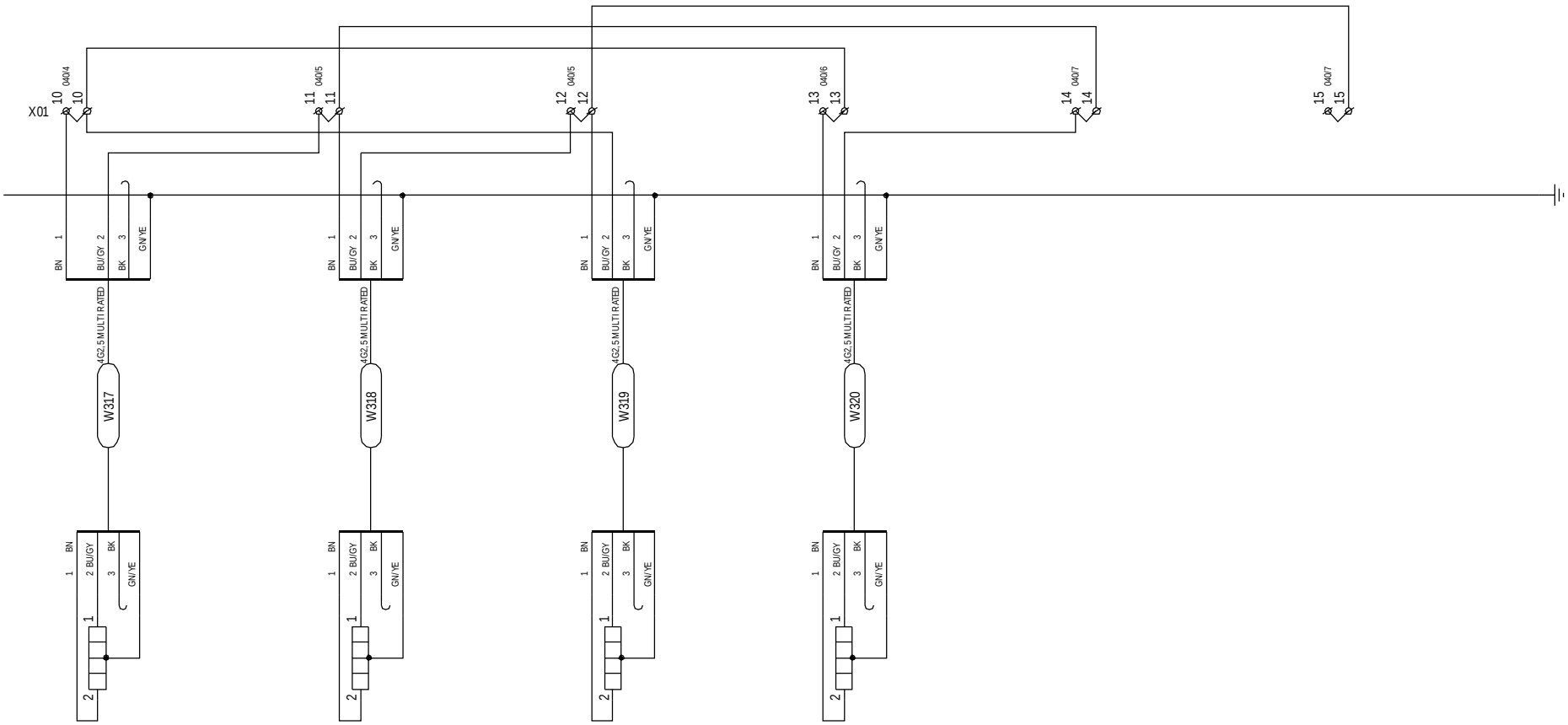

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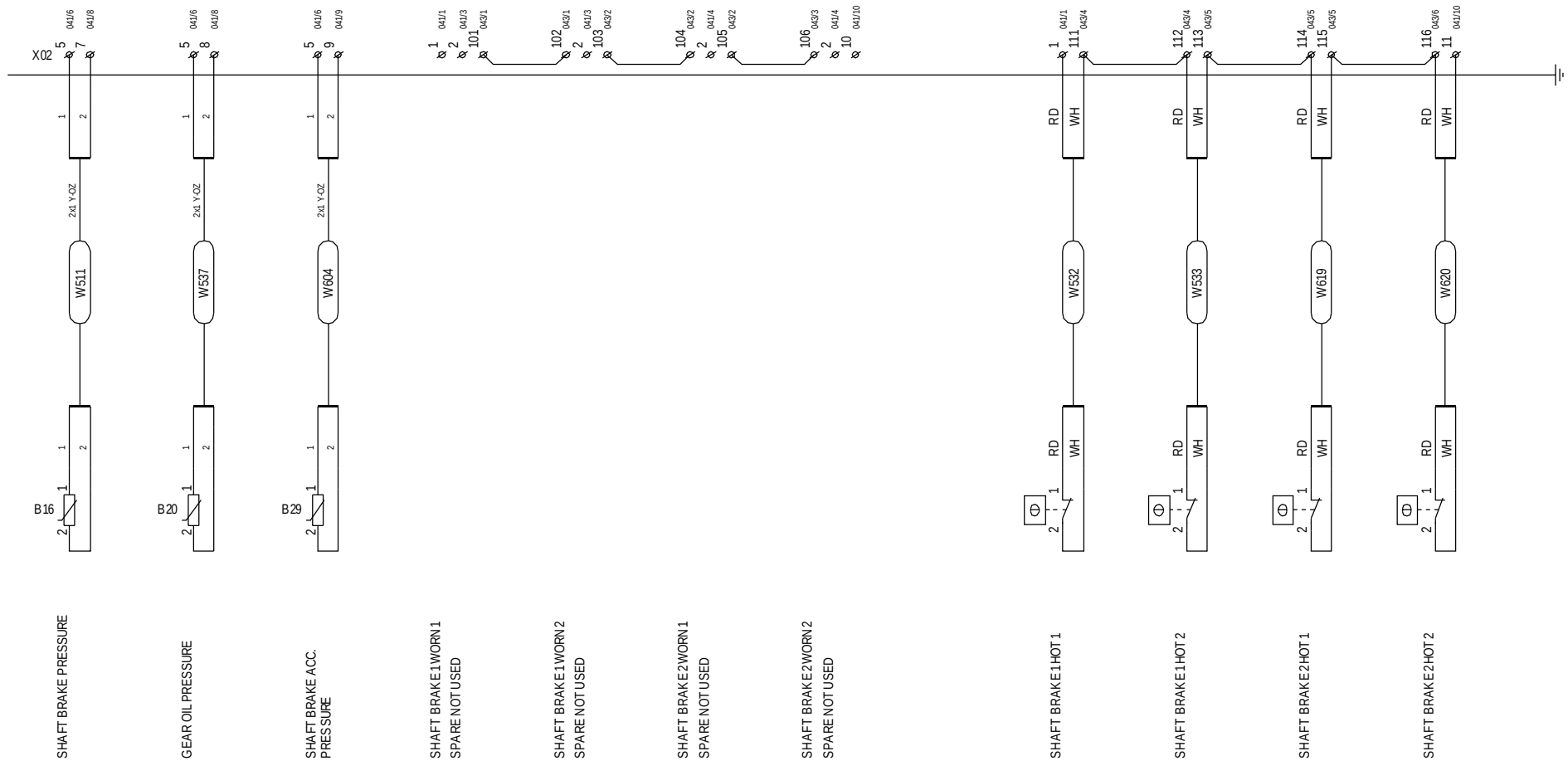
	Date	Initials	Function	External connections to heating elements		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	FLT	Rev. -	Drawing no. 6014799	Cont. sheet 200	Sheet 101



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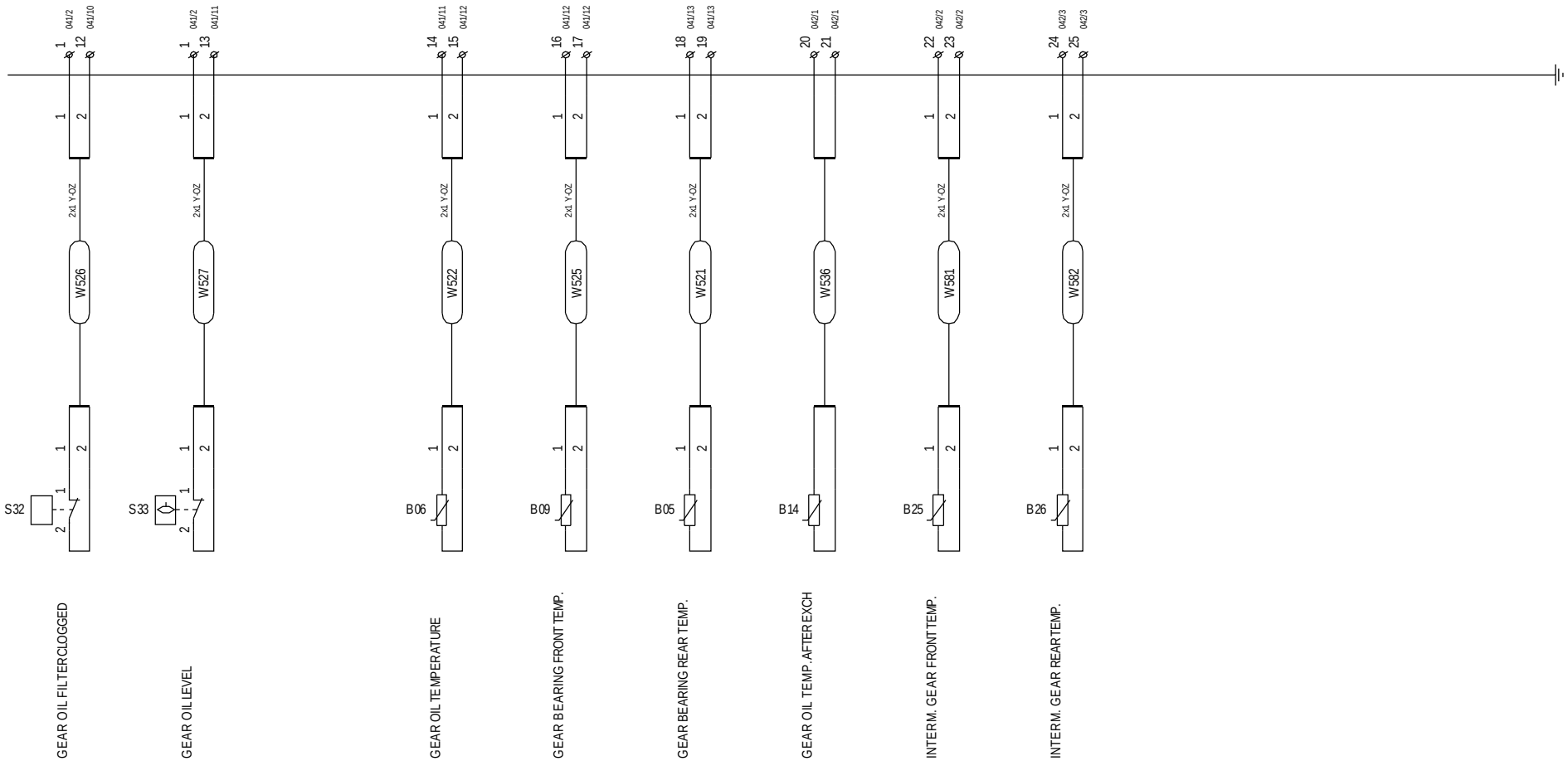
	Date	Initials	Function	External connections to signals		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	FLT	Rev. -	Drawing no. 6014799	Cont. sheet 201	Sheet 200



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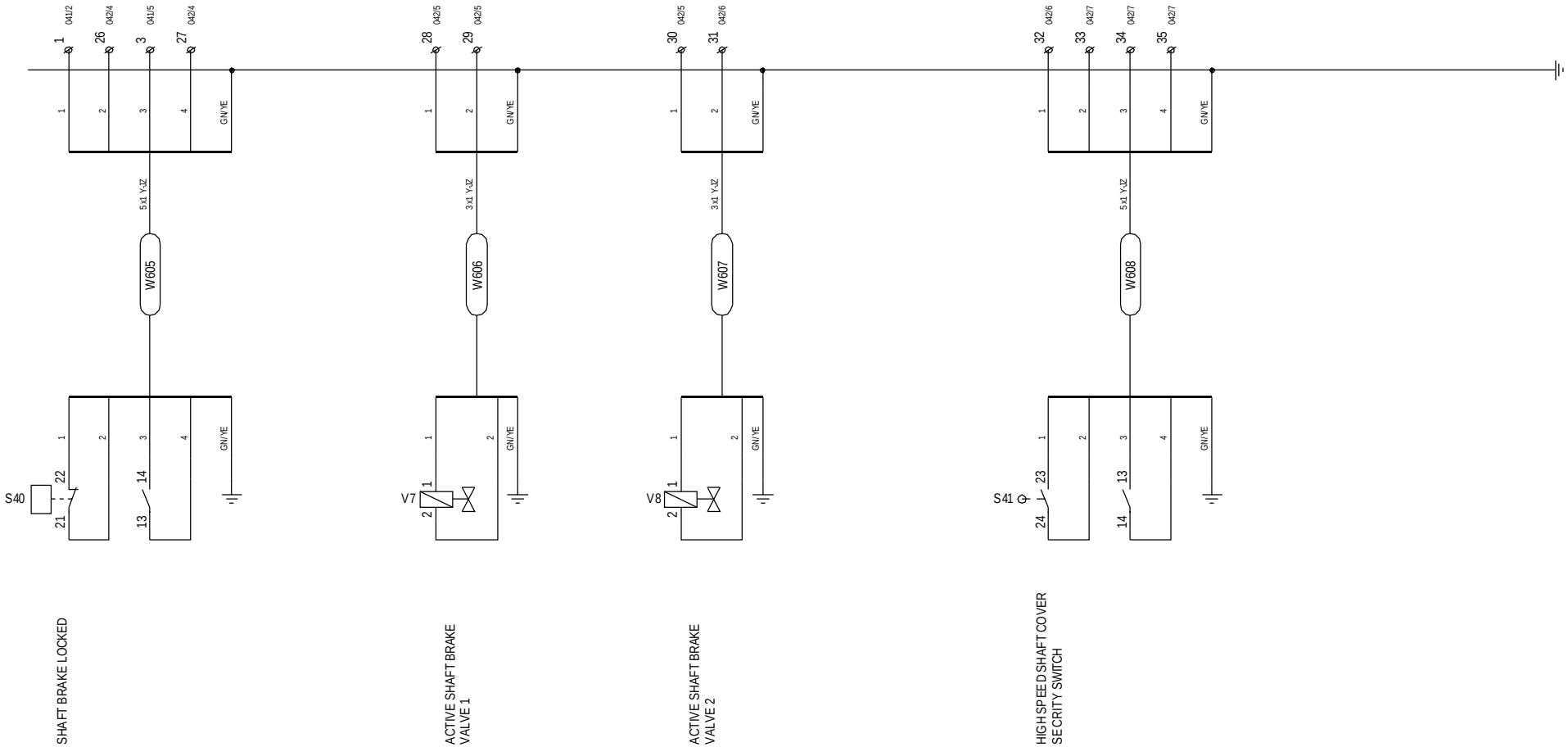
	Date	Initials	Function	External connections to signals		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	041122	FLT	Rev. -	Drawing no. 6014799	Cont. sheet 202	Sheet 201



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	Date	Initials	Function	External connections to signals		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	040630	INI	Rev. -	Drawing no. 6014799	Cont. sheet 203	Sheet 202

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	Date	Initials	Function	External connections to signals		
Designed	040310	MILJE	Project title	Junction Box +AN12		
Approved			Comments	Modularisering NM30t 2004	Customer	Vestas Wind Systems A/S
Reviced	040630	INI	Rev. -	Drawing no. 6014799	Cont. sheet -	Sheet 203

LST: 21000104
Version: 07

Material 60101167
Description JUNCTION BOX +AN12

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60102734	TERMINAL BOX KL 500X200X120MM W. WORK	1	PC	+AN12
1	60096809	WALL BRACKET for KL BOX	4	PC	+AN12
1	60102741	MOUNTING PLATE KL 485x175mm W. WORK	1	PC	+AN12
1	60110413	CABLE GLAND HSK-K M40x1.5 22 - 32mm PLA.	2	PC	+AN12
1	60007596	LOCKNUT BML-15 M40 PA 6	2	PC	+AN12
1	60007586	CABLE GLAND BM-EN-13 M25 PA 6	9	PC	+AN12
1	60007594	LOCKNUT BML-13 M25 PA 6	9	PC	+AN12
1	60007584	CABLE GLAND BM-EN-11 M16 PA 6	9	PC	+AN12
1	60007592	LOCKNUT BML-11 M16 PA 6	9	PC	+AN12
1	60007534	Connector PG 9 NH 15/13 for protec.hose	11	PC	+AN12
1	60007553	LOCKNUT BLN-12 PG9 PA 6	11	PC	+AN12
1	60007196	DIN RAIL FITTING TSTW 72x48mm	4	PC	+AN12
1	60013412	ANGLE BRACKET 2x10x25mm f. EARTH BUSBAR	3	PC	+AN12
1	60005983	TERMINAL STANDARD M4/6 115116.07	26	PC	-X1
1	60005998	END SECTION FEM6 GREY 118368.16	8	PC	-X1
1	60005985	JUMPER BAR BJM6 2-POLED 168516.25	6	PC	-X1
1	60091912	END STOP WAGO 249-117 10mm TS35	2	PC	-X1
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	-X1
1	60006071	TERMINAL WAGO 870-501 2-LEV.0,08-2,5mm²	32	PC	-X2
1	60006083	END SECTION 870-518 2-LEVEL GREY WAGO	1	PC	-X2
1	60006089	PUSH-IN JUMPER BAR 870-405 5-POLED	1	PC	-X2
1	60006088	PUSH-IN JUMPER BAR 870-404 4-POLED	1	PC	-X2
1	60006087	PUSH-IN JUMPER BAR 870-403 3-POLED	1	PC	-X2
1	60006086	PUSH-IN JUMPER BAR 870-402 2-POLED	6	PC	-X2
1	60091912	END STOP WAGO 249-117 10mm TS35	2	PC	-X2
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	-X2
1	60101926	LASER LABEL +AN12	1	PC	+AN12
1	60006824	STICKER "LYN" 100mm	1,000	SH	+AN12
1	60006819	STICKER "JORD" 14mm	1,000	SH	+AN12
1	60104971	WIRING CONECTION BOX +AN12 -X01 NM30t	1	PC	-X1
1	60105941	QUICK-RELEASE FASTENER for KL BOX	4	PC	
1	60110883	MARK WAGO +AN12 PANEL NM72/V82	2,000	SH	
1	60110997	MARK RC610 +AN12 JUNCTION BOX	1,000	SH	
1	60111003	CABLE CONDUIT, DIN RAIL AN12	1	PC	

Change Info

Item no.	***Item text:***
60101168	**Junction Box +AN13**

Active revision *for production*

Drawing no.: 6014800

Version	Date	Init./App.	Description of change since last revision
03	22.11.2004	FLT/FLT	Update of wire colors according to Nacelle Production. All pages updated with Vestas logo Page 201: B18, B30, terminal no. added. W539 cable no. deleted.

LST no.: 21000132 *BOM no.: 60101168*

Version	Date	Init./App.	Description of change since last revision
04	09.09.2005	HRN/FLT	Production requirement. Removed 60007182_Din rail, 60007356_Cable conduit & 60007201_Earth bar Was not been removed then new kit 60111002 _cable conduit, din rail was add.

Old revisions *for service*

Drawing no.: 6014800

Version	Date	Init./App.	Description of change since last revision
02	30.06.2004	INI/ CHO	All pages project title updated. Page 040: X01.20 and X01.21 references updated. Page 200: X01.20 corrected to X01.21 and X01.21 corrected to X01.20.
01	23.03.2004	MLJ/ MLJ	First version

LST no.: 21000132 *BOM no.: 60101168*

Version	Date	Init./App.	Description of change since last revision
03	17.05.2005	MILJE/FLT	Production requirement, from proto type department. 60110884 MARK WAGO and 60111002 CABLE CONDUIT, DIN RAIL added. 60094860, 60094872, 60094874 and 60094875 MARK WAGO removed.
02	21.10.2004	MILJE/MILJE	Quick-release fastener 60105941 added. M50 cable gland 60007589 & M50 locknut 60007597 changed to M40 cable Gland 60007588 & M40 locknut 60007596
01	17.04.2004	MLJ/ MLJ	First version

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E-mail: vestas@vestas.com • Web: www.vestas.com

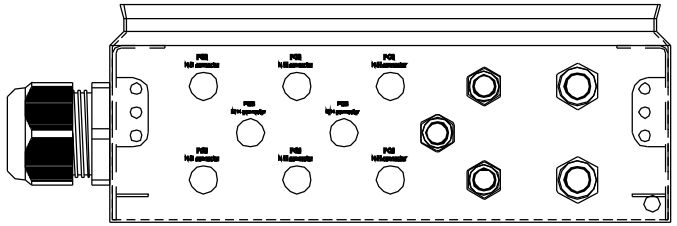
1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
001	Table of Contents	041122	03
030	Panel front	040630	-
031	Panel outline	040630	-
040	Connection to +AN1 Top bo	040630	-
041	Connection to +AN1 Top bo	040630	-
200	Externals connections to	040630	-
201	Externals connections to	041122	-

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

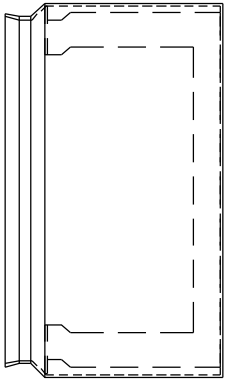
	Date	Initials				
Designed	040323	MLJ	Function	Table of Contents		
Approved			Project title	Junction Box +AN13		
Reviced	041122	FLT	Comments	Modularisering NM30t 2004	Customer	NEG Micon A/S
			Rev. 03	Drawing no. 6014800	Cont. sheet 030	Sheet 001

18-11-04
15:04



Panel bottom

Panel right side



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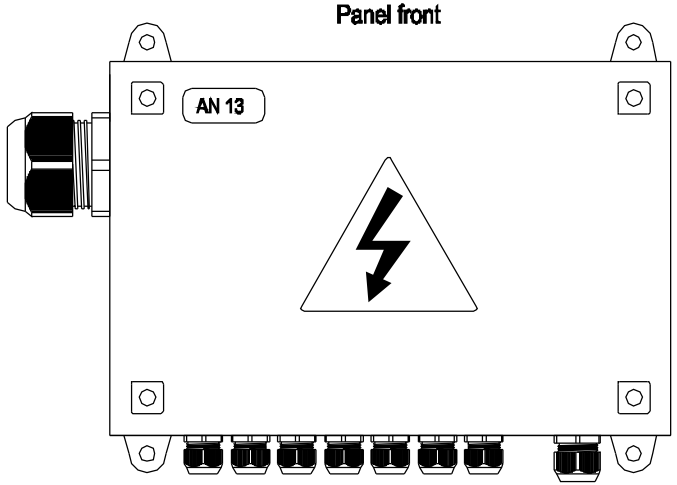

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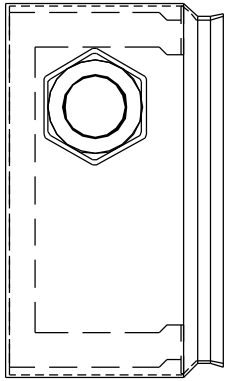
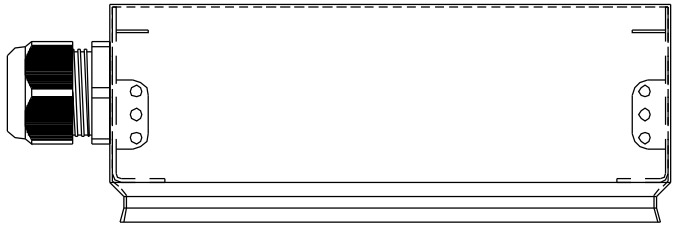


Panel top

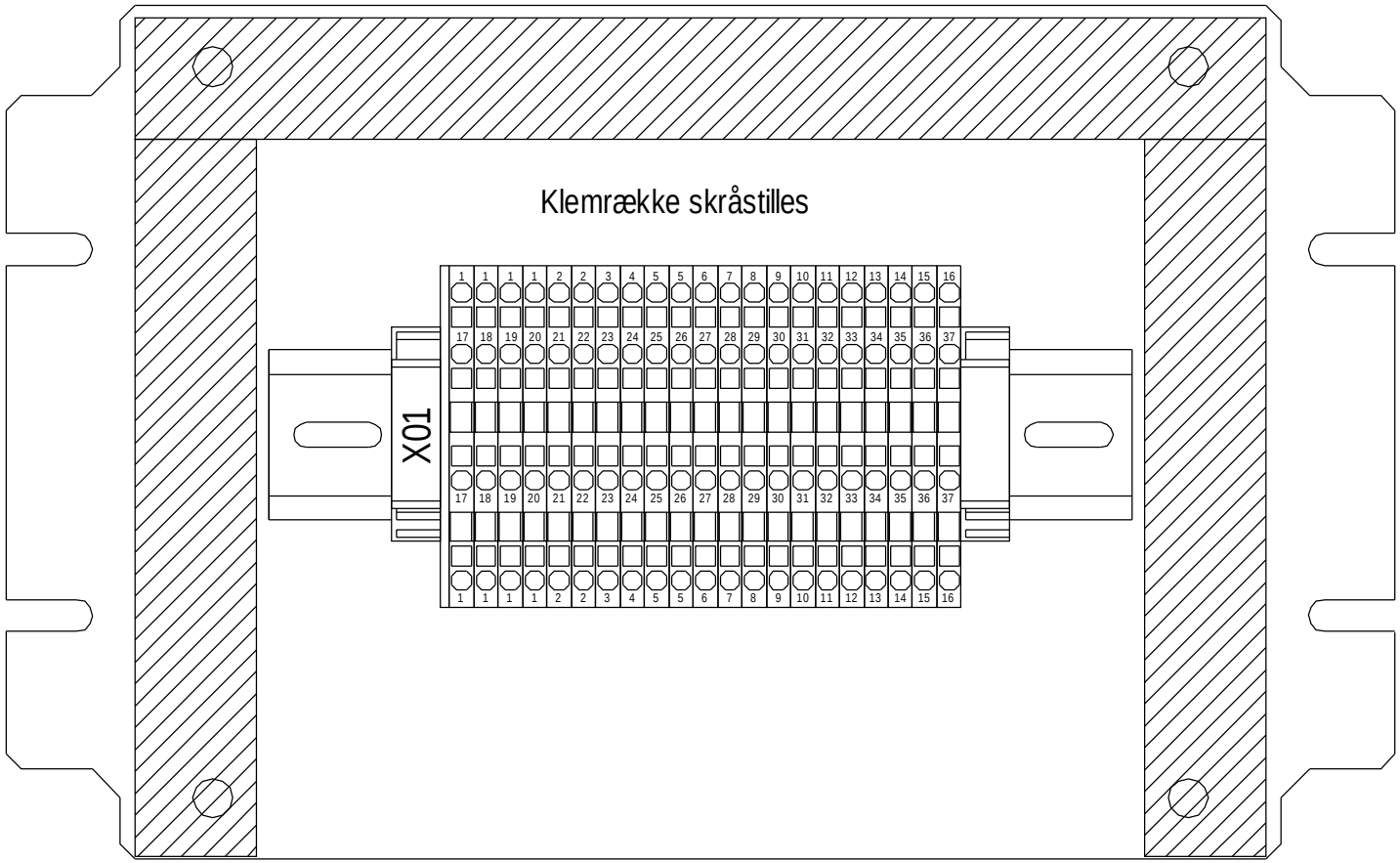


Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel front	
		Designed	040323	MLJ	Project title	Junction Box +AN13	
		Approved			Comments	Modularisering NM30t 2004	Customer NEG Micon A/S
		Reviced	040630	INI	Rev. -	Drawing no. 6014800	Cont. sheet 031 / Sheet 030

18-11-04

15:04

Mounting plate

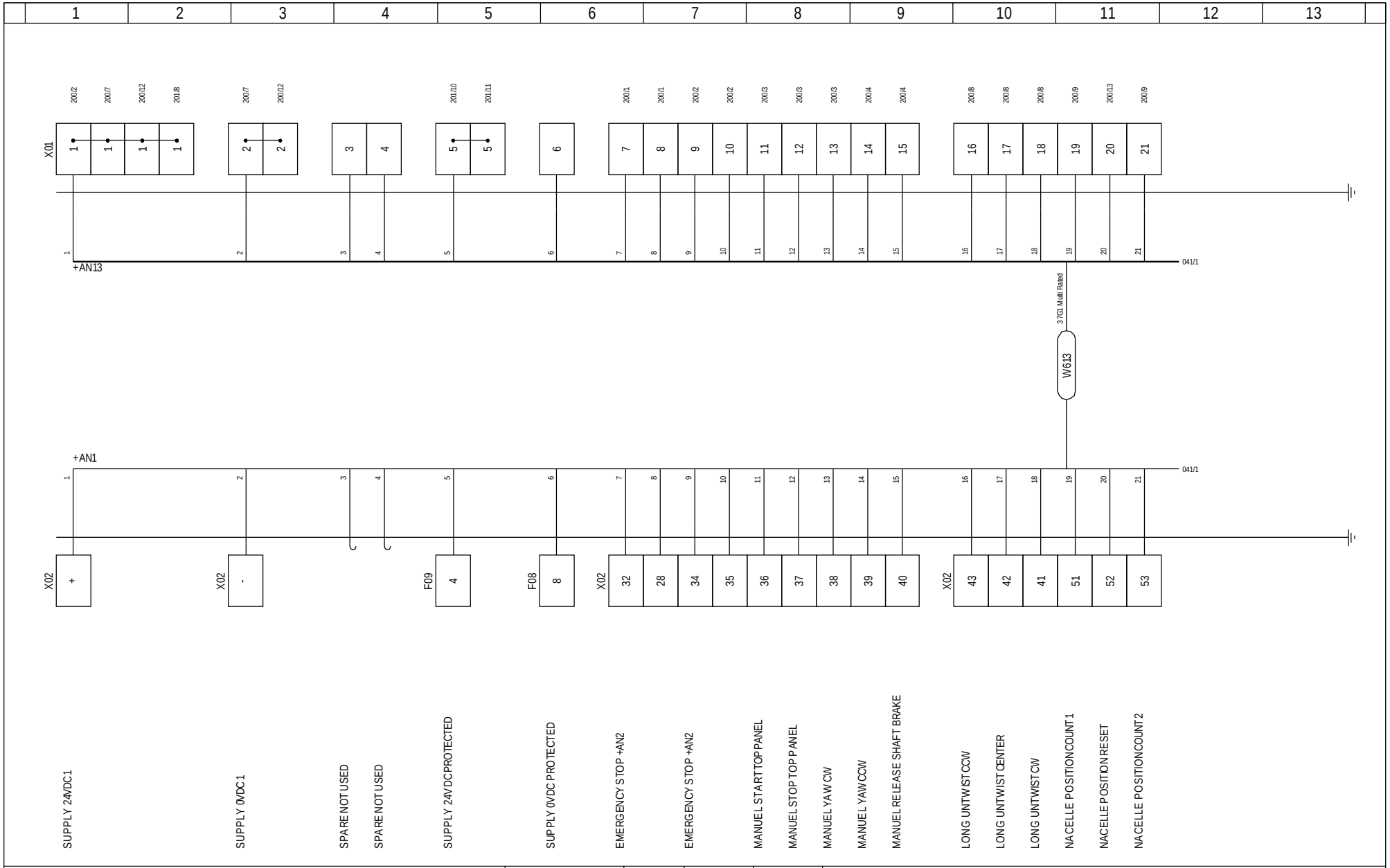


18-11-04
15:04

Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	Panel outline		
Designed	040323	MLJ	Project title	Junction Box +AN13		
Approved			Comments	Modularisering NM30t 2004	Customer	NEG Micon A/S
Reviced	040630	INI	Rev. -	Drawing no. 6014800	Cont. sheet 040	Sheet 031



18-11-04

15:04

Vestas

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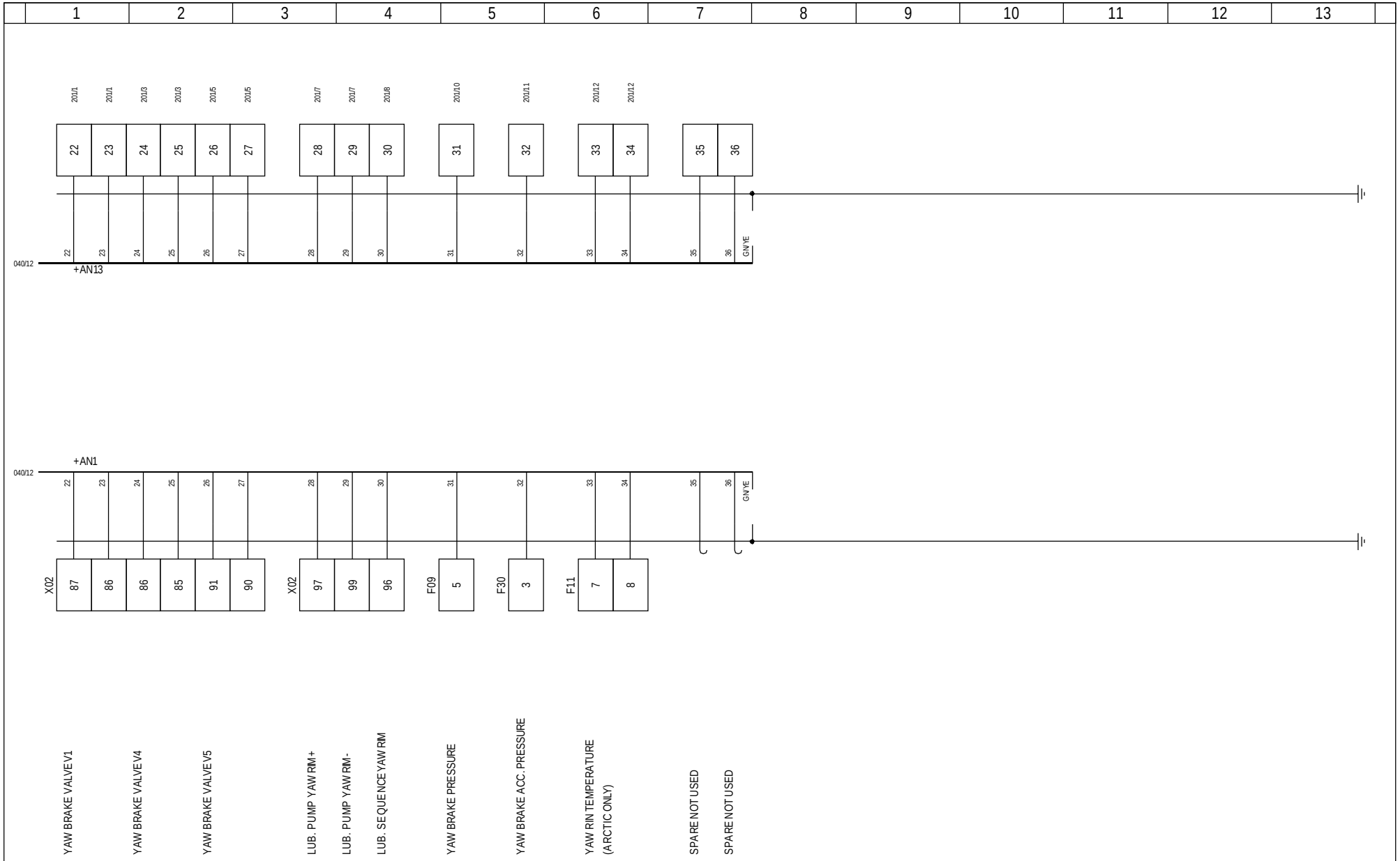
	Date	Initials	Function	Connection to +AN1 Top box		
Designed	040323	MLJ	Project title	Junction Box +AN13		
Approved			Comments	Modularisering NM30t 2004	Customer	NEG Micon A/S
Reviced	040630	INI	Rev. -	Drawing no. 6014800	Cont. sheet 041	Sheet 040



18-11-04

15:04

Vestas

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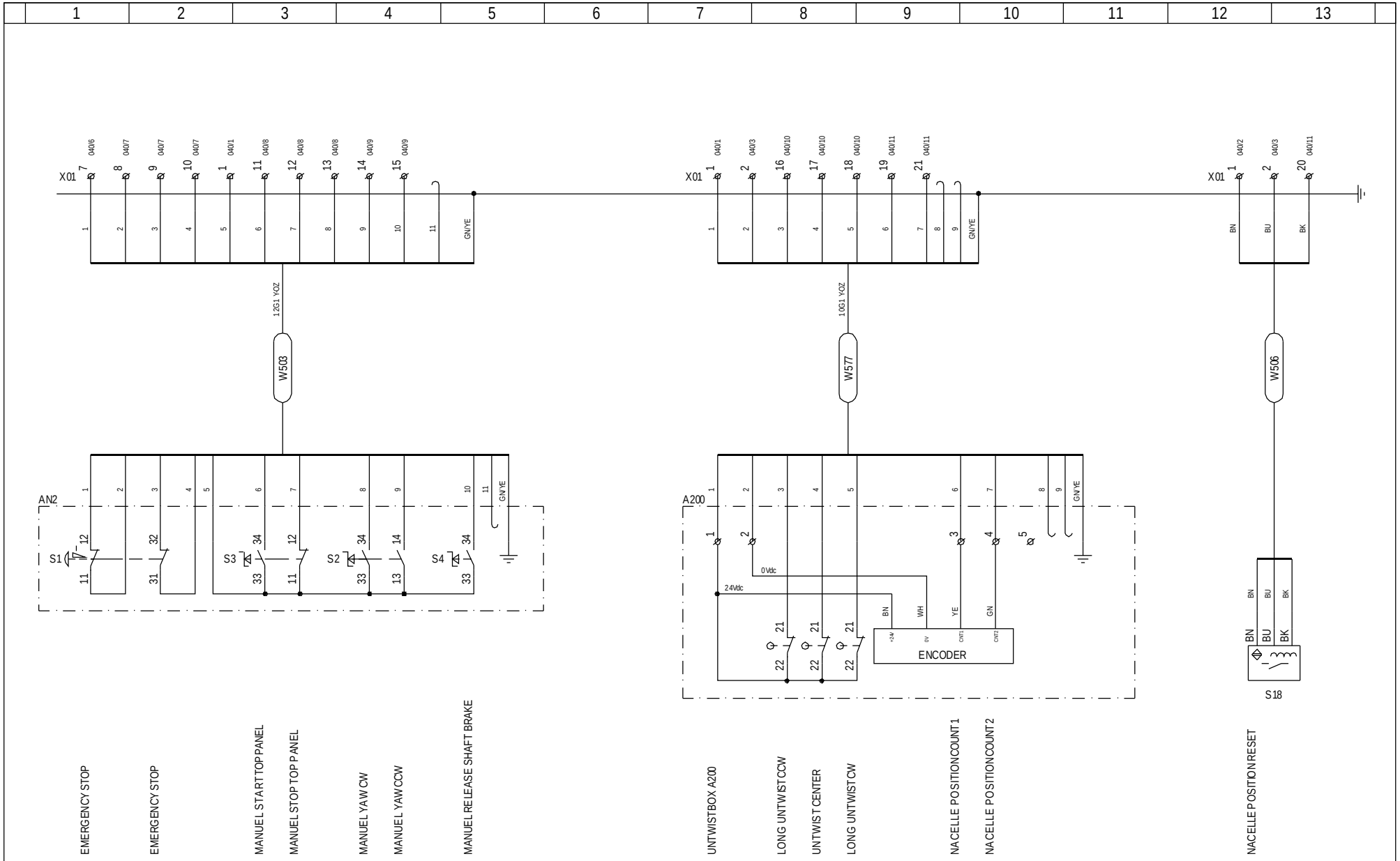
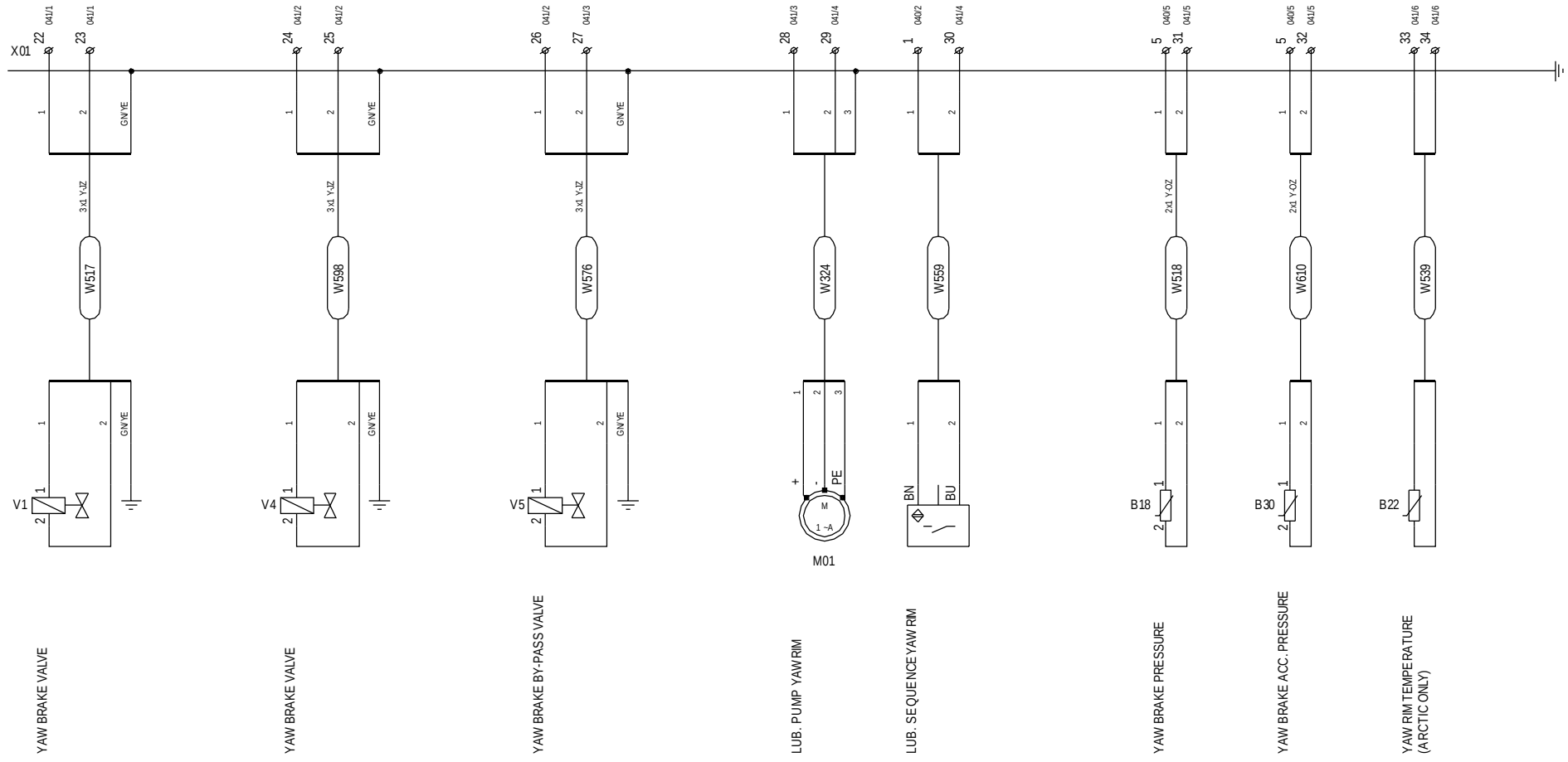
	Date	Initials	Function	Connection to +AN1 Top box		
Designed	040323	MLJ	Project title	Junction Box +AN13		
Approved			Comments	Modularisering NM30t 2004	Customer	NEG Micon A/S
Reviced	040630	INI	Rev. -	Drawing no. 6014800	Cont. sheet 200	Sheet 041



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Externals connections to signals	
		Designed	040323	MLJ	Project title	Junction Box +AN13	
		Approved			Comments	Modularisering NM30t 2004	Customer: NEG Micon A/S
		Reviced	040630	INI	Rev. -	Drawing no. 6014800	Cont. sheet 201 / Sheet 200

18-11-04
15:04



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Externals connections to signals	
		Designed	040323	MLJ	Project title	Junction Box +AN13	
		Approved			Comments	Modularisering NM30t 2004	Customer: NEG Micon A/S
		Reviced	041122	FLT	Rev. -	Drawing no. 6014800	Cont. sheet - / Sheet 201

18-11-04
15:04

LST: 21000132
Version: 04

Material 60101168
Description JUNCTION BOX +AN13

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60102735	TERMINAL BOX KL 300X200X120MM W. WORK	1	PC	+AN13
1	60096809	WALL BRACKET for KL BOX	4	PC	+AN13
1	60102739	MOUNTING PLATE KL 285x175mm W. WORK	1	PC	+AN13
1	60007588	CABLE GLAND BM-EN-15 M40 PA 6	1	PC	+AN13
1	60007596	LOCKNUT BML-15 M40 PA 6	1	PC	+AN13
1	60007585	CABLE GLAND BM-EN-12 M20 PA 6	2	PC	+AN13
1	60007593	LOCKNUT BML-12 M20 PA 6	2	PC	+AN13
1	60007584	CABLE GLAND BM-EN-11 M16 PA 6	3	PC	+AN13
1	60007592	LOCKNUT BML-11 M16 PA 6	3	PC	+AN13
1	60007534	Connector PG 9 NH 15/13 for protec.hose	8	PC	+AN13
1	60007553	LOCKNUT BLN-12 PG9 PA 6	8	PC	+AN13
1	60007196	DIN RAIL FITTING TSTW 72x48mm	2	PC	+AN13
1	60013412	ANGLE BRACKET 2x10x25mm f. EARTH BUSBAR	2	PC	+AN13
1	60006071	TERMINAL WAGO 870-501 2-LEV.0,08-2,5mm²	21	PC	-X01
1	60006083	END SECTION 870-518 2-LEVEL GREY WAGO	1	PC	-X01
1	60006086	PUSH-IN JUMPER BAR 870-402 2-POLED	2	PC	-X01
1	60006088	PUSH-IN JUMPER BAR 870-404 4-POLED	1	PC	-X01
1	60091912	END STOP WAGO 249-117 10mm TS35	2	PC	-X01
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	-X01
1	60101927	THERMOLABEL +AN13	1	PC	+AN13
1	60006824	STICKER "LYN" 100mm	1,000	SH	+AN13
1	60006819	STICKER "JORD" 14mm	1,000	SH	+AN13
1	60105941	QUICK-RELEASE FASTENER for KL BOX	4	PC	
1	60110884	MARK WAGO +AN13 PANEL NM72/V82	1,000	SH	
1	60111002	CABLE CONDUIT, DIN RAIL AN11, 13, 14, 15	1	PC	

Change Info

Item no.	***Item text:***
60101169	**Junction Box +AN14**

Active revision *for production*

Drawing no.: 6014801

Version	Date	Init./App.	Description of change since last revision
03	22.11.2004	FLT/FLT	Update of wire colors according to Nacelle Production. All pages updated with Vestas logo Page 200: W534 cable no. deleted. W535 cable no. deleted. W509 colors added. W578 wire no. 1 and 2 changed to 2 and 3.

LST no.: 21000133 *BOM no.: 60101169*

Version	Date	Init./App.	Description of change since last revision
04	09.09.2005	HRN/FLT	Production requirement. Removed 60007182_Din rail, 60007356_Cable conduit & 60007201_Earth bar Was not been removed then new kit 60111002 _cable conduit, din rail was add.

Old revisions *for service*

Drawing no.: 6014801

Version	Date	Init./App.	Description of change since last revision
02	30.06.2004	INI/CHO	All pages, project title updated. Page 200: W341 and W578 cable color added.
01	25.03.2004	MLJ/ MLJ	First version

LST no.: 21000133 *BOM no.: 60101169*

Version	Date	Init./App.	Description of change since last revision
03	17.05.2005	MILJE/FLT	Production requirement, from proto type department. Marker card 60094860 and 60094872 removed. Marker wago 60110885 and cable conduit, din rail 60111002 added.
02	21.10.2004	MILJE/MILJE	60105441 quick-release fastener added.
01	17.04.2004	MLJ/ MLJ	First version

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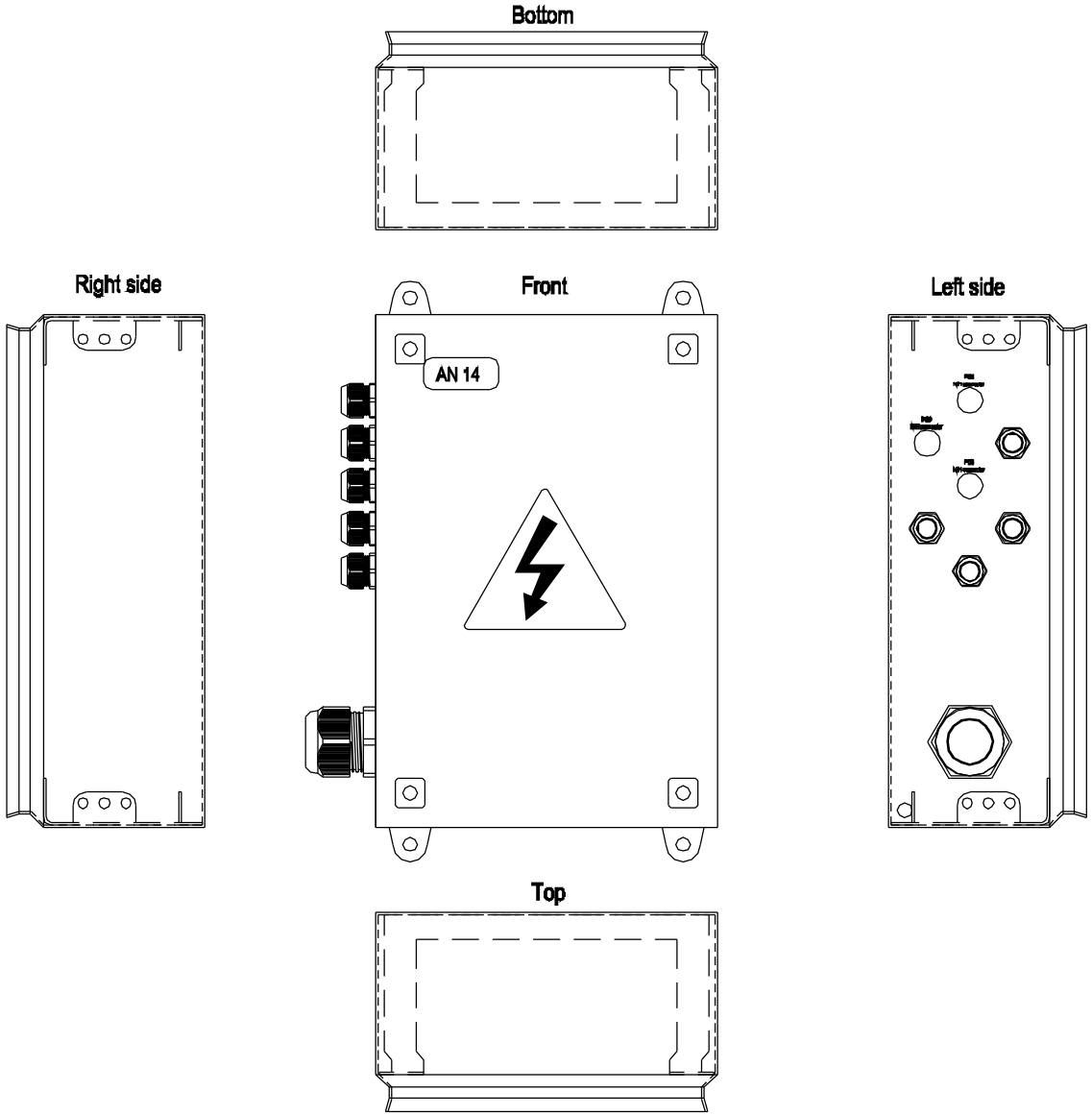
PAGE	CONTENT	DATE	REVISION
001	Table of Contents	041122	03
030	Front	040630	-
031	Outline	040630	-
040	Connections to +AN1 Top b	040630	-
200	External connection to si	041122	-

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials					
			Function	Table of Contents			
Designed	040325	MLJ	Project title	Junction Box +AN14			
Approved			Comments	Modularisering NM30t 2004		Customer	NEG Micon A/S
Reviced	041122	FLT	Rev. 03	Drawing no. 6014801		Cont. sheet 030	Sheet 001

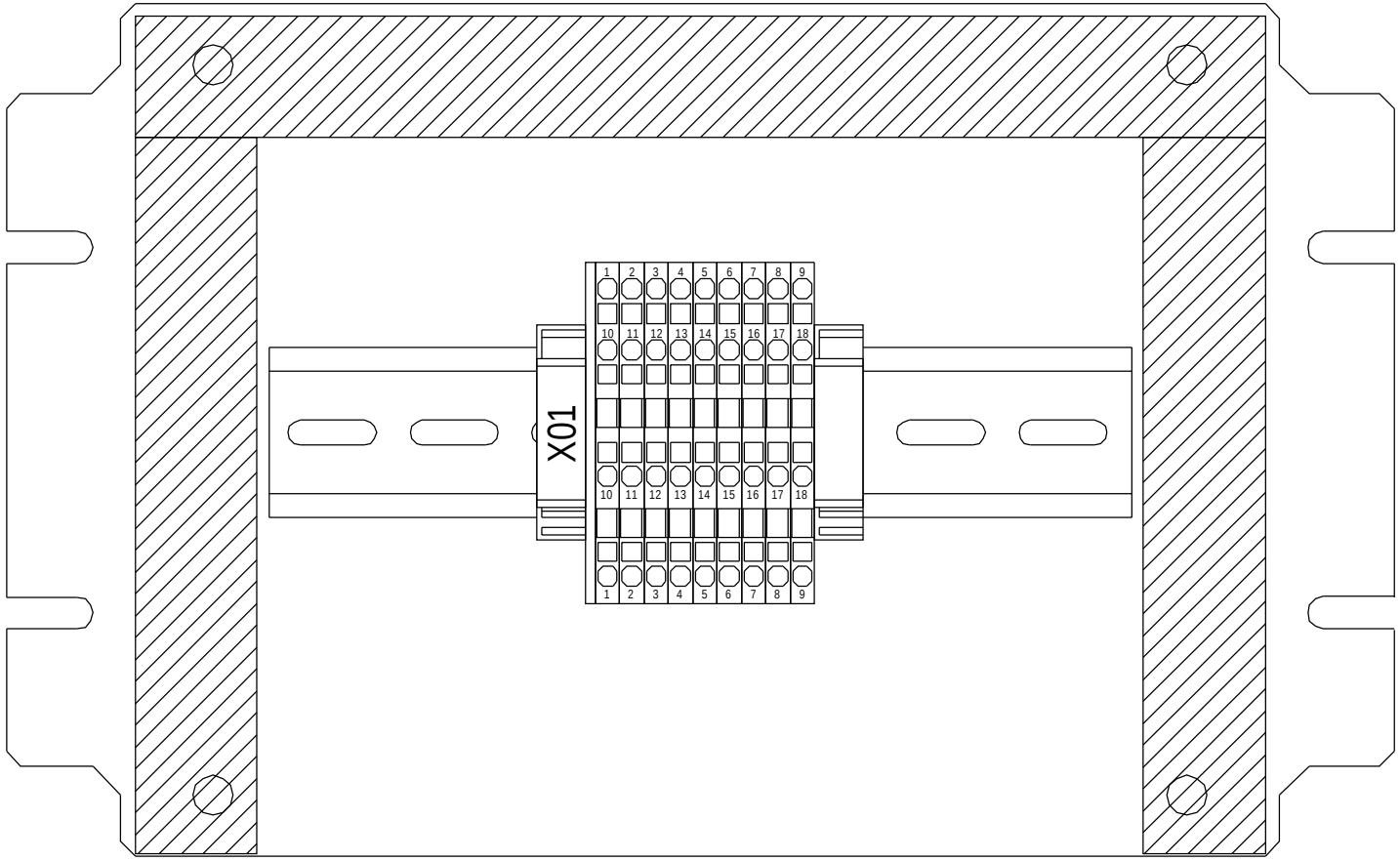
24-11-04 08:27



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Front	
		Designed	040325	MLJ	Project title	Junction Box +AN14	
		Approved			Comments	Modularisering NM30t 2004	Customer NEG Micon A/S
		Reviced	040630	INI	Rev. -	Drawing no. 6014801	Cont. sheet 031 / Sheet 030

24-11-04
08:27

Mounting plate



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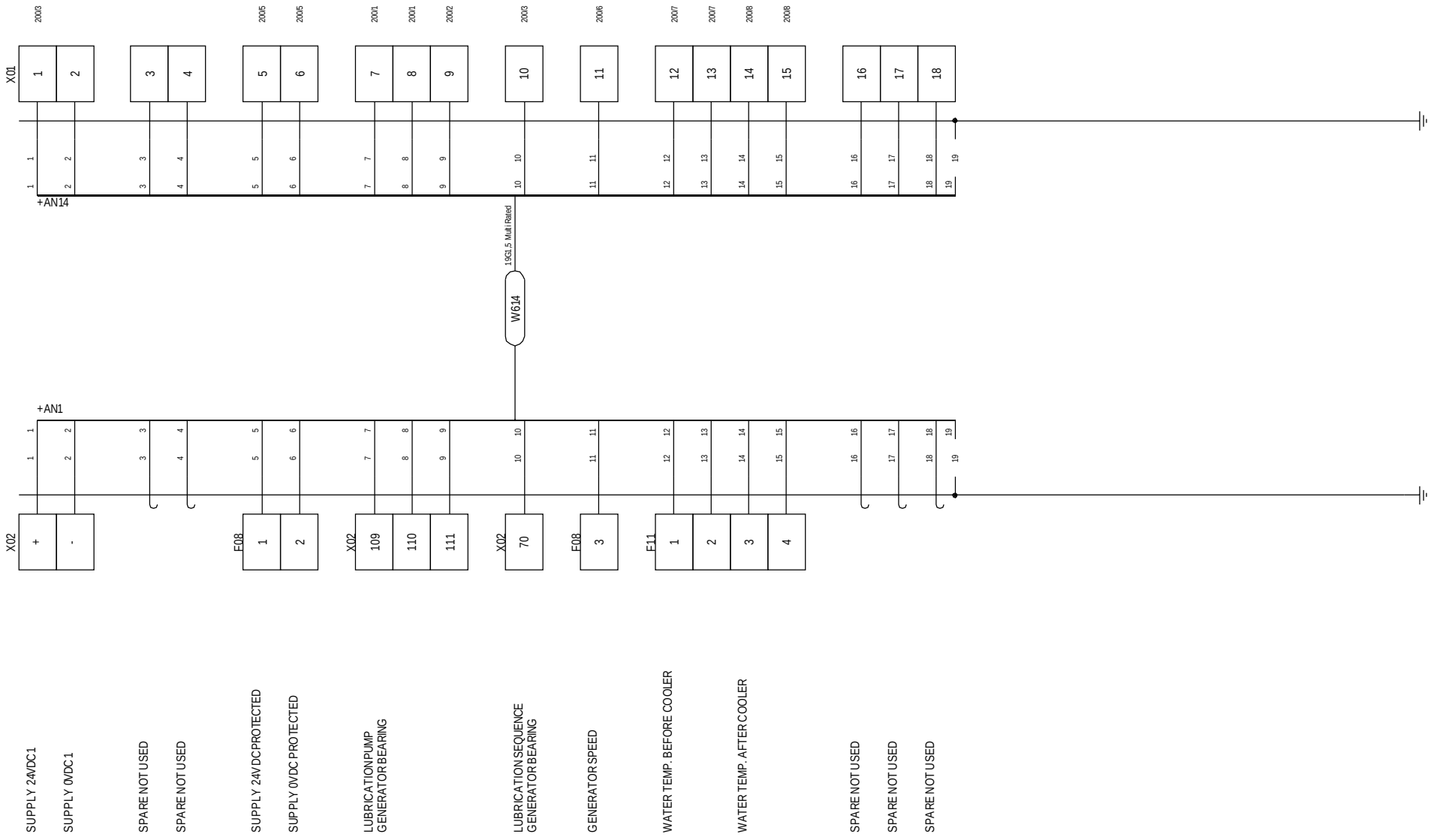
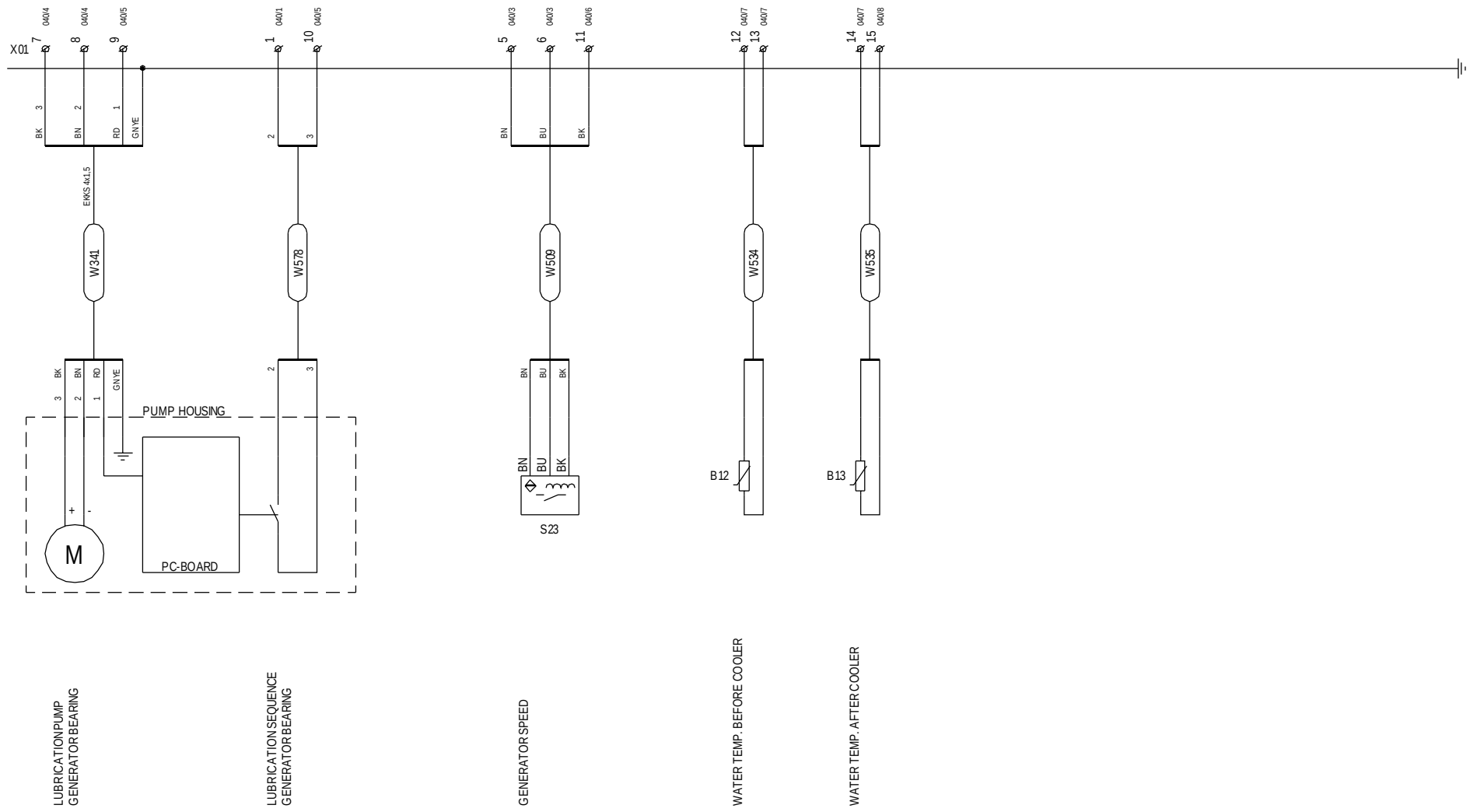
		Designed	040325	MLJ	Project title	Junction Box +AN14	
		Approved			Comments	Modularisering NM30t 2004	Customer NEG Micon A/S
		Reviced	040630	INI	Rev. -	Drawing no. 6014801	Cont. sheet 040 / Sheet 031

24-11-04 08:27



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Connections to +AN1 Top box	
		Designed	040325	MLJ	Project title	Junction Box +AN14	
		Approved			Comments	Modularisering NM30t 2004	Customer NEG Micon A/S
		Reviced	040630	INI	Rev. -	Drawing no. 6014801	Cont. sheet 200 / Sheet 040

24-11-04
08:27



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	Date	Initials	Function	External connection to signals		
Designed	040325	MLJ	Project title	Junction Box +AN14		
Approved			Comments	Modularisering NM30t 2004	Customer	NEG Micon A/S
Reviced	041122	FLT	Rev. -	Drawing no. 6014801	Cont. sheet -	Sheet 200

24-11-04
08:27

LST: 21000133
Version: 04

Material 60101169
Description JUNCTION BOX +AN14

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60102736	TERMINAL BOX KL 300X200X120MM W. WORK	1	PC	+AN14
1	60096809	WALL BRACKET for KL BOX	4	PC	+AN14
1	60102739	MOUNTING PLATE KL 285x175mm W. WORK	1	PC	+AN14
1	60007588	CABLE GLAND BM-EN-15 M40 PA 6	1	PC	+AN14
1	60007596	LOCKNUT BML-15 M40 PA 6	1	PC	+AN14
1	60007584	CABLE GLAND BM-EN-11 M16 PA 6	4	PC	+AN14
1	60007592	LOCKNUT BML-11 M16 PA 6	4	PC	+AN14
1	60007534	Connector PG 9 NH 15/13 for protec.hose	3	PC	+AN14
1	60007553	LOCKNUT BLN-12 PG9 PA 6	3	PC	+AN14
1	60013412	ANGLE BRACKET 2x10x25mm f. EARTH BUSBAR	2	PC	+AN14
1	60006071	TERMINAL WAGO 870-501 2-LEV.0,08-2,5mm²	9	PC	-X1
1	60006083	END SECTION 870-518 2-LEVEL GREY WAGO	1	PC	-X1
1	60091912	END STOP WAGO 249-117 10mm TS35	2	PC	-X1
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	-X1
1	60101928	THERMOLABEL +AN14	1	PC	+AN14
1	60006824	STICKER "LYN" 100mm	1,000	SH	+AN14
1	60006819	STICKER "JORD" 14mm	1,000	SH	+AN14
1	60105941	QUICK-RELEASE FASTENER for KL BOX	4	PC	
1	60110885	MARK WAGO +AN14 PANEL NM72/V82	1,000	SH	
1	60111002	CABLE CONDUIT, DIN RAIL AN11, 13, 14, 15	1	PC	

Change Info

Item no.	***Item text:***
60101170	**Junction Box +AN15**

Active revision *for production*

Drawing no.: 6014802

Version	Date	Init./App.	Description of change since last revision
03	18.04.2005	INI/FLT	All pages updated with Vestas logo Reason for change is new drawing 6016182 for +AN3b 30t. Page 100: W419 corrected to W430.

LST no.: 21000134 *BOM no.: 60101170*

Version	Date	Init./App.	Description of change since last revision
05	09.09.2005	HRN/FLT	Production requirement. Removed 60007182_Din rail, 60007356_Cable conduit & 60007201_Earth bar, was not been removed then new kit 60111002 _cable conduit, din rail was add.

Old revisions *for service*

Drawing no.: 6014802

Version	Date	Init./App.	Description of change since last revision
02	17.06.2004	MLJ/ MLJ	Page 001: Updated Page 030: New layout added. Page 201: New page added, connections for +AN3b
01	30.03.2004	MLJ/ MLJ	First version

LST no.: 21000134 *BOM no.r: 60101170*

Version	Date	Init./App.	Description of change since last revision
04	24.05.2005	MILJE+HRN/FLT	Production requirement, from proto type department. 6007588 Cable Gland M20 changed to 60007588 Cable Gland M40. 60007596 Lock nut M20 changed to 60007596 Lock nut M40 60110886 mark wago and 60111002 cable conduit/din rail added. 60094860, 60094872 Marker card wago removed.
03	21.10.2004	MILJE/MILJE	60105941 quick-release fastener added.
02	18.06.2004	MLJ/ MLJ	Cable glands M20 change to M25. Cable gland M50 change to M40.
01	17.04.2004	MLJ/ MLJ	First version

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1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
001	Table of contents	050418	03
030	Panel front	050418	-
031	Panel outline	050418	-
040	Connection to +AN4 Motor	050418	-
041	Connection to +AN1 Top bo	050418	-
100	External connections to m	050418	-
200	External connections to A	050418	-
201	External connections to +	050418	-

18-04-05

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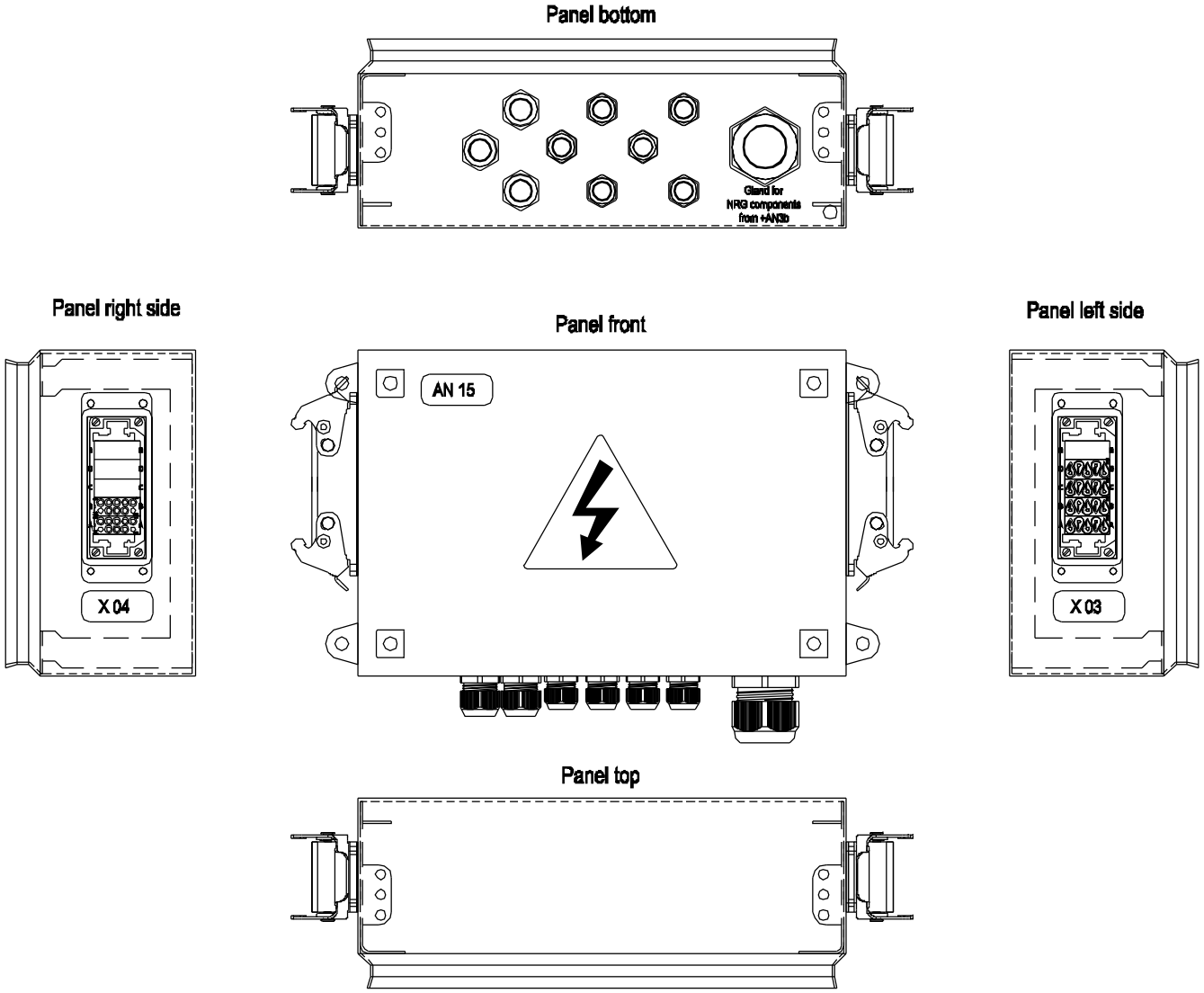
	Date	Initials	Function	Table of contents		
Designed	040330	MILJE	Project title	Connection Boc +AN15		
Approved			Comments	Modulation NM30t 2004	Customer	Vestas Wind Systems
Reviced	050418	INI	Rev. 03	Drawing no. 6014802	Cont. sheet 030	Sheet 001

08:54

1	2	3	4	5	6	7	8	9	10	11	12	13

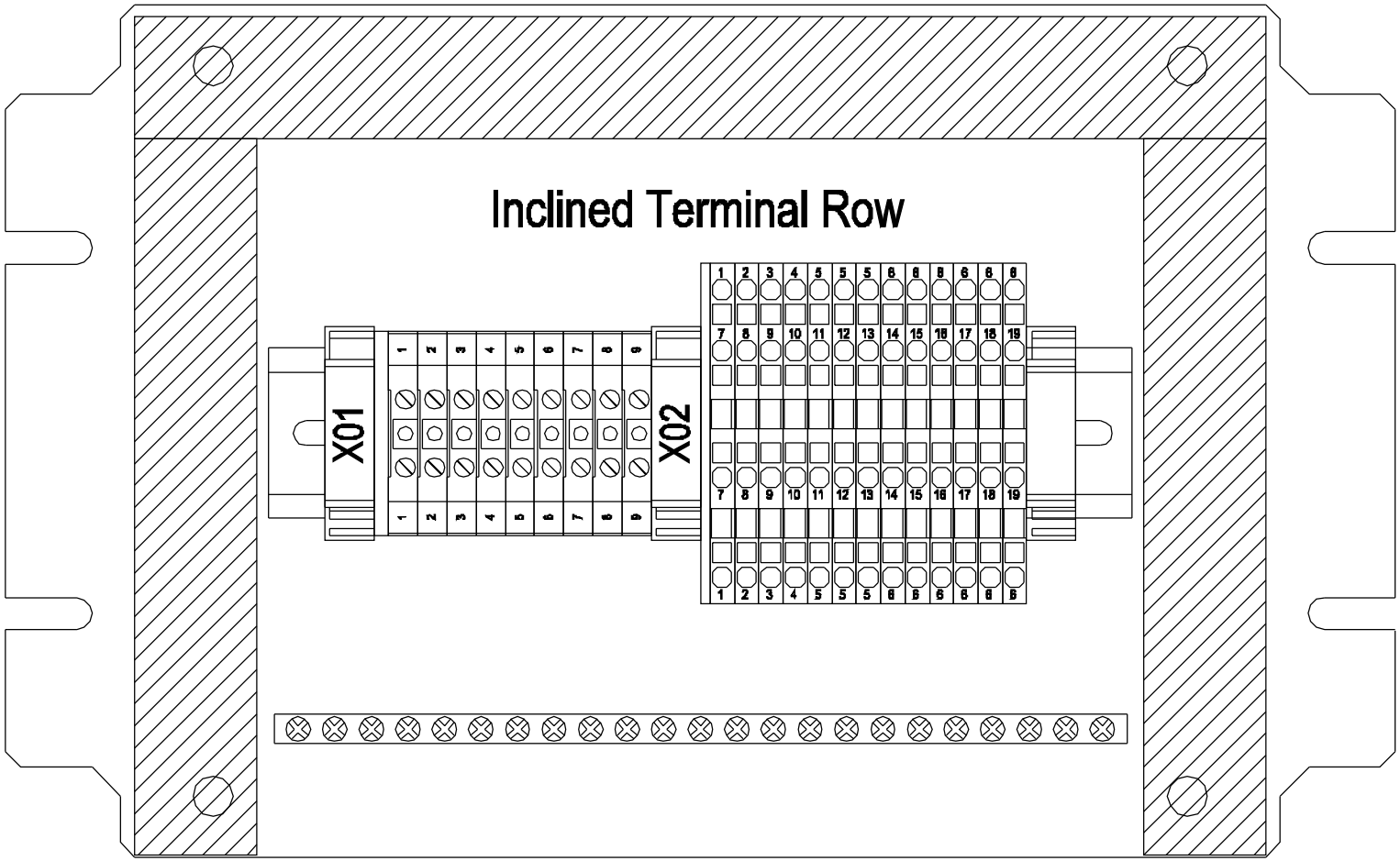


Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel front	
		Designed	040330	MILJE	Project title	Connection Boc +AN15	
		Approved			Comments	Modulation NM30t 2004	Customer: Vestas Wind Systems
		Reviced	050418	INI	Rev. -	Drawing no. 6014802	Cont. sheet 031 / Sheet 030

18-04-05

08:54

Mounting plate



	Date	Initials	Function	Panel outline			
Designed	040330	MILJE	Project title	Connection Boc +AN15			
Approved			Comments	Modulation NM30t 2004		Customer	Vestas Wind Systems
Reviced	050418	INI	Rev.	-	Drawing no. 6014802	Cont. sheet 040	Sheet 031

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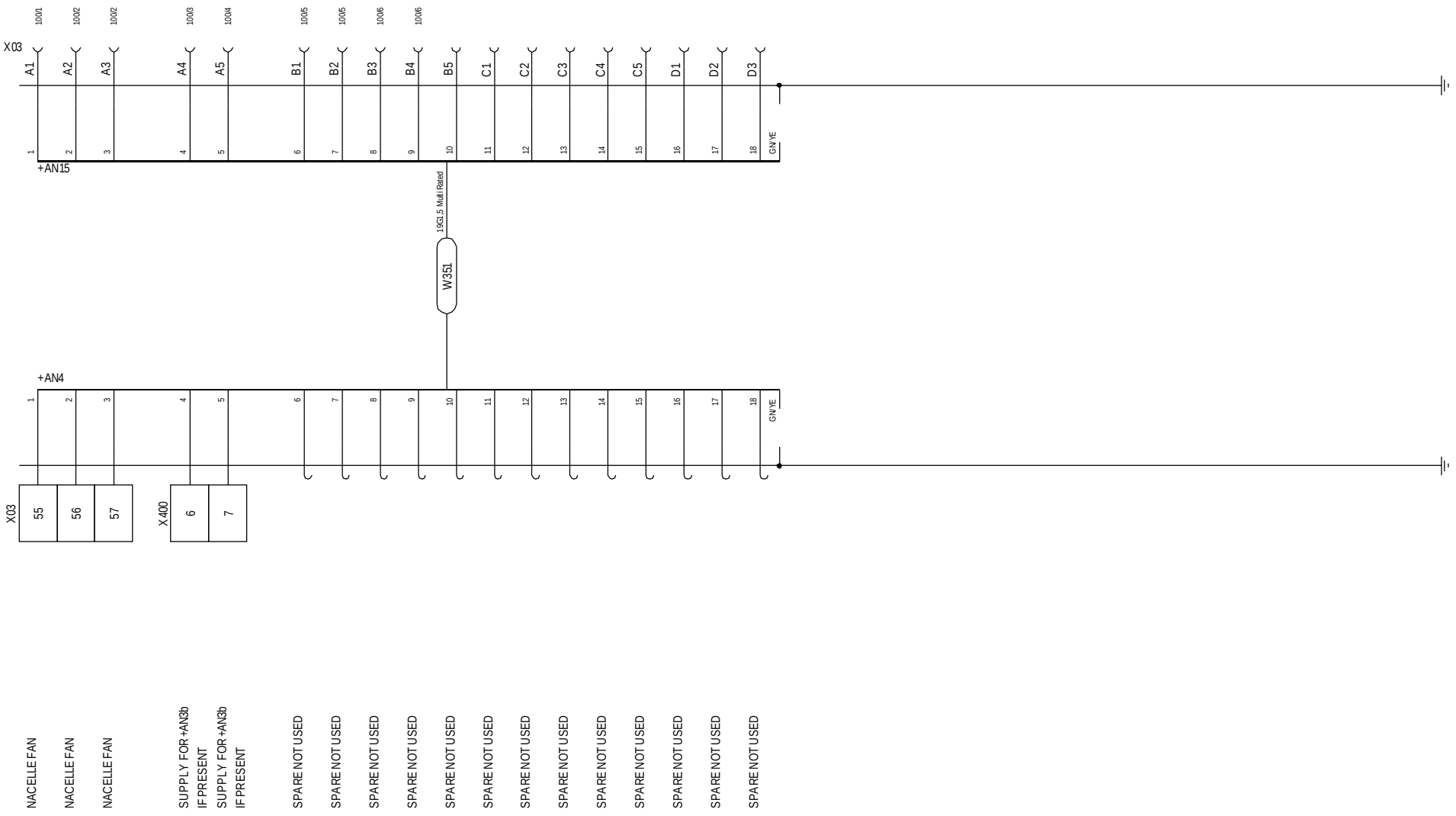
18-04-05

08:54



18-04-05

Vestas

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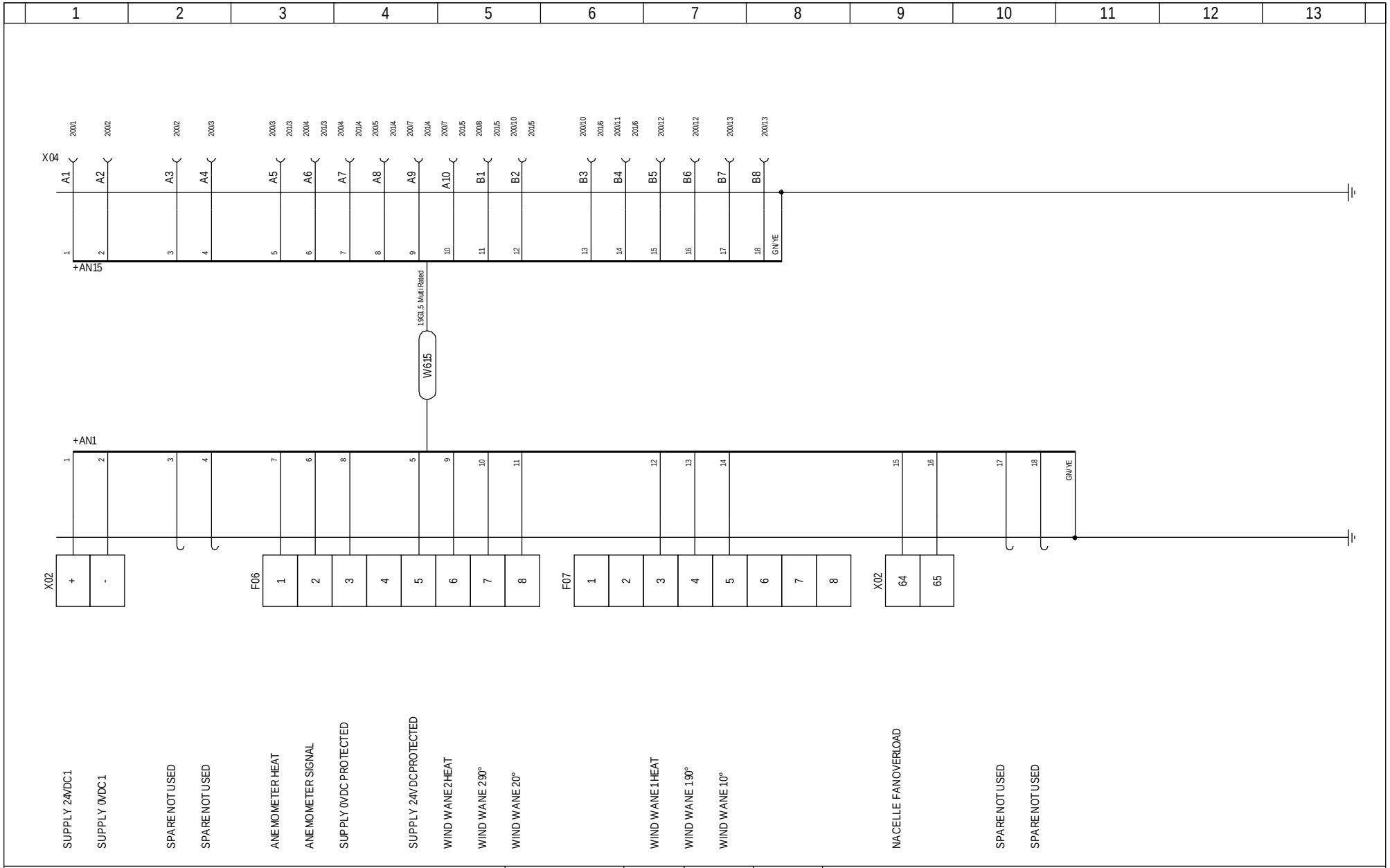
	Date	Initials	Function	Connection to +AN4 Motor box		
Designed	040330	MILJE	Project title	Connection Boc +AN15		
Approved			Comments	Modulation NM30t 2004	Customer	Vestas Wind Systems
Reviced	050418	INI	Rev. -	Drawing no. 6014802	Cont. sheet 041	Sheet 040

08:54



18-04-05

Vestas

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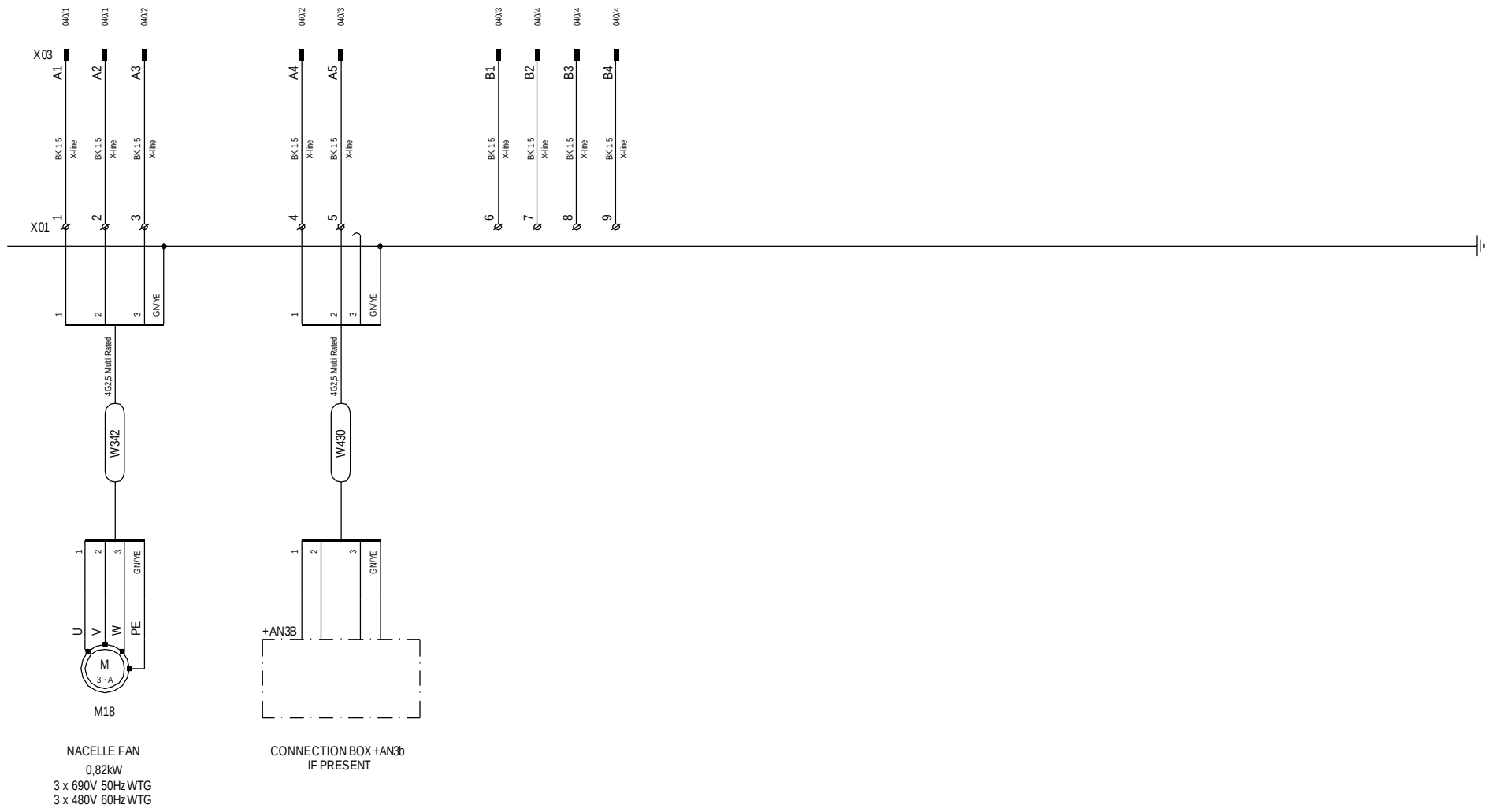
	Date	Initials	Function	Connection to +AN1 Top box		
Designed	040330	MILJE	Project title	Connection Boc +AN15		
Approved			Comments	Modulation NM30t 2004	Customer	Vestas Wind Systems
Reviced	050418	INI	Rev. -	Drawing no. 6014802	Cont. sheet 100	Sheet 041

08:54



18-04-05

Vestas

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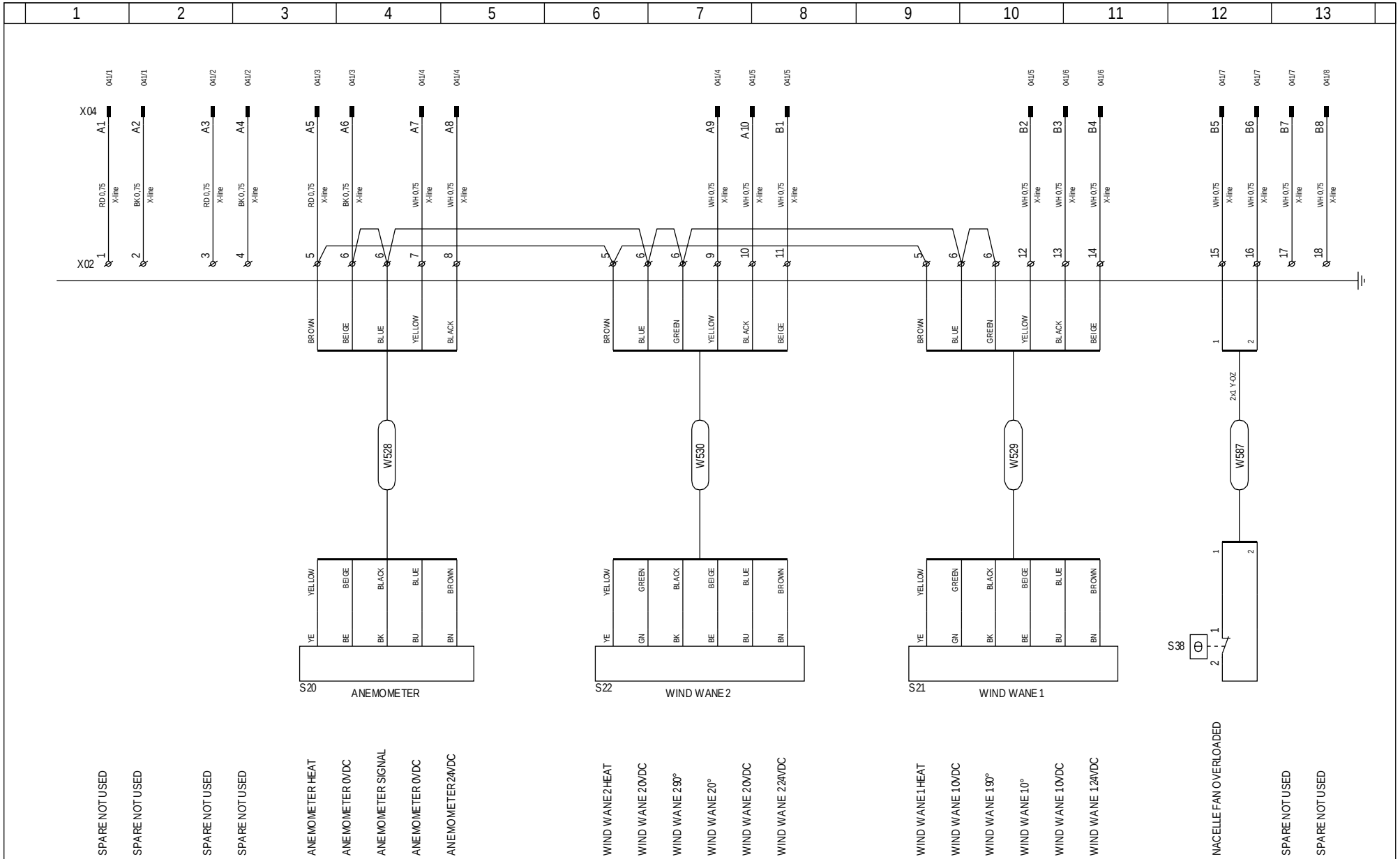
	Date	Initials	Function	External connections to motors		
Designed	040330	MILJE	Project title	Connection Boc +AN15		
Approved			Comments	Modulation NM30t 2004	Customer	Vestas Wind Systems
Reviced	050418	INI	Rev. -	Drawing no. 6014802	Cont. sheet 200	Sheet 100

08:54



18-04-05

Vestas

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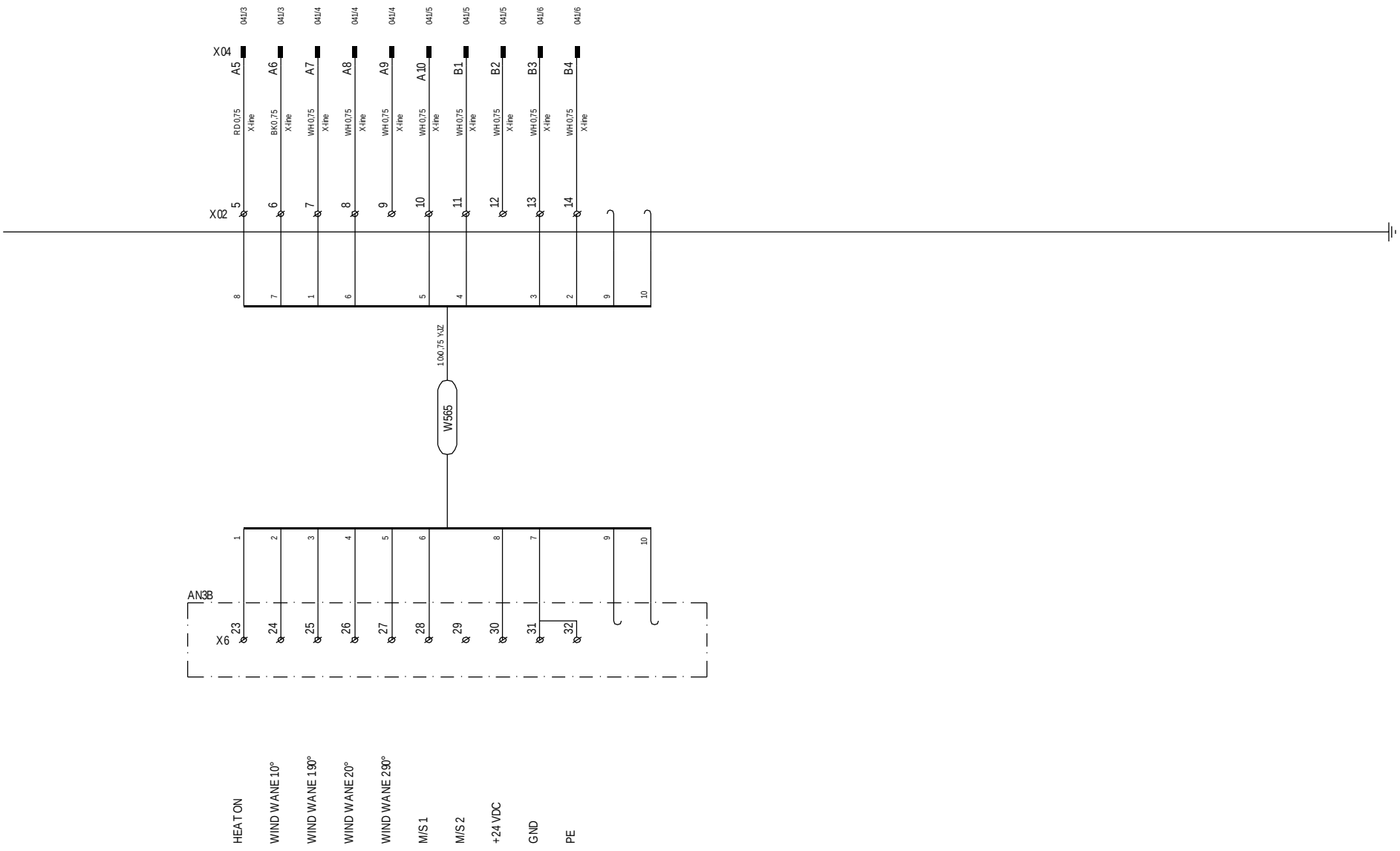
	Date	Initials	Function	External connections to Anometer & Wind wane 1 & 2 std.		
Designed	040330	MILJE	Project title	Connection Boc +AN15		
Approved			Comments	Modulation NM30t 2004	Customer	Vestas Wind Systems
Reviced	050418	INI	Rev. -	Drawing no. 6014802	Cont. sheet 201	Sheet 200

08:54



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connections to +AN3b Arctic only, for NRG componets	
		Designed	040330	MILJE	Project title	Connection Boc +AN15	
		Approved			Comments	Modulation NM30t 2004	Customer: Vestas Wind Systems
		Reviced	050418	INI	Rev. -	Drawing no. 6014802	Cont. sheet - / Sheet 201

18-04-05

08:54

LST: 21000134
Version: 05

Material 60101170
Description JUNCTION BOX +AN15

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60102737	TERMINAL BOX KL 300X200X120MM W. WORK	1	PC	+AN15
1	60096809	WALL BRACKET for KL BOX	4	PC	+AN15
1	60102739	MOUNTING PLATE KL 285x175mm W. WORK	1	PC	+AN15
1	60007586	CABLE GLAND BM-EN-13 M25 PA 6	3	PC	+AN15
1	60007594	LOCKNUT BML-13 M25 PA 6	3	PC	+AN15
1	60007584	CABLE GLAND BM-EN-11 M16 PA 6	6	PC	+AN15
1	60007592	LOCKNUT BML-11 M16 PA 6	6	PC	+AN15
1	60007196	DIN RAIL FITTING TSTW 72x48mm	2	PC	+AN15
1	60013412	ANGLE BRACKET 2x10x25mm f. EARTH BUSBAR	2	PC	+AN15
1	60005983	TERMINAL STANDARD M4/6 115116.07	9	PC	-X1
1	60005998	END SECTION FEM6 GREY 118368.16	1	PC	-X1
1	60014138	MARKER CARD RC610 Nos 1-10 horisontal	1,000	SH	-X1
1	60091912	END STOP WAGO 249-117 10mm TS35	1	PC	-X1
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	-X1
1	60006071	TERMINAL WAGO 870-501 2-LEV.0,08-2,5mm²	13	PC	-X2
1	60006083	END SECTION 870-518 2-LEVEL GREY WAGO	1	PC	-X2
1	60006089	PUSH-IN JUMPER BAR 870-405 5-POLED	1	PC	-X2
1	60006086	PUSH-IN JUMPER BAR 870-402 2-POLED	1	PC	-X2
1	60006087	PUSH-IN JUMPER BAR 870-403 3-POLED	1	PC	-X2
1	60091912	END STOP WAGO 249-117 10mm TS35	2	PC	-X2
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	-X2
1	60006571	HOUSING C14610F0160001 32P BULKHEAD	1	PC	-X3
1	60102905	WIRING CONECTION BOX +AN15 -X03 NM30t	1	PC	-X3
1	60002505	THERMOLABEL "-X03"	1	PC	-X3
1	60006571	HOUSING C14610F0160001 32P BULKHEAD	1	PC	-X4
1	60102906	WIRING CONECTION BOX +AN15 -X04 NM30t	1	PC	-X4
1	60002506	THERMOLABEL "-X04"	1	PC	-X4
1	60101929	LASER LABEL +AN15	1	PC	+AN15
1	60006824	STICKER "LYN" 100mm	1,000	SH	+AN15
1	60006819	STICKER "JORD" 14mm	1,000	SH	+AN15
1	60105941	QUICK-RELEASE FASTENER for KL BOX	4	PC	
1	60110886	MARK WAGO +AN15 PANEL NM72/V82	1,000	SH	
1	60111002	CABLE CONDUIT, DIN RAIL AN11, 13, 14, 15	1	PC	
1	60007596	LOCKNUT BML-15 M40 PA 6	1	PC	
1	60007588	CABLE GLAND BM-EN-15 M40 PA 6	1	PC	

Change Info

Item no.	***Item text:***
60019632	**Nacelle Heater 2x10 kW 690V 50Hz**

Active revision for production

Drawing no.: 6012661

Version	Date	Init./App.	Description of change since last revision
02	02.06.2005	INI/FLT	All pages updated with Vestas logo.

LST no.: 21000084 *Material BOM no.: 60016183*

Version	Date	Init./App.	Description of change since last revision
02	17.11.2006	INI/FLT	Changed with ECO 218664 60008058 replaced with 194173_Cable rubber 4G2,5 60

Old revisions for service

Drawing no.: 6012661

Version	Date	Init./App.	Description of change since last revision
01	08.10.2003	INI/RPJ	First version in SAP no. system. Drawing converted to another drawing program. Project title changed.

LST no.: 21000084 *Material BOM no.: 60016183*

Version	Date	Init./App.	Description of change since last revision
01	07.12.2000	RPJ/RPJ	First version in SAP no. system. Description text changed.

Earlier Drawings and Part Lists no Longer Active for Serial Production

Change Info: 0000500

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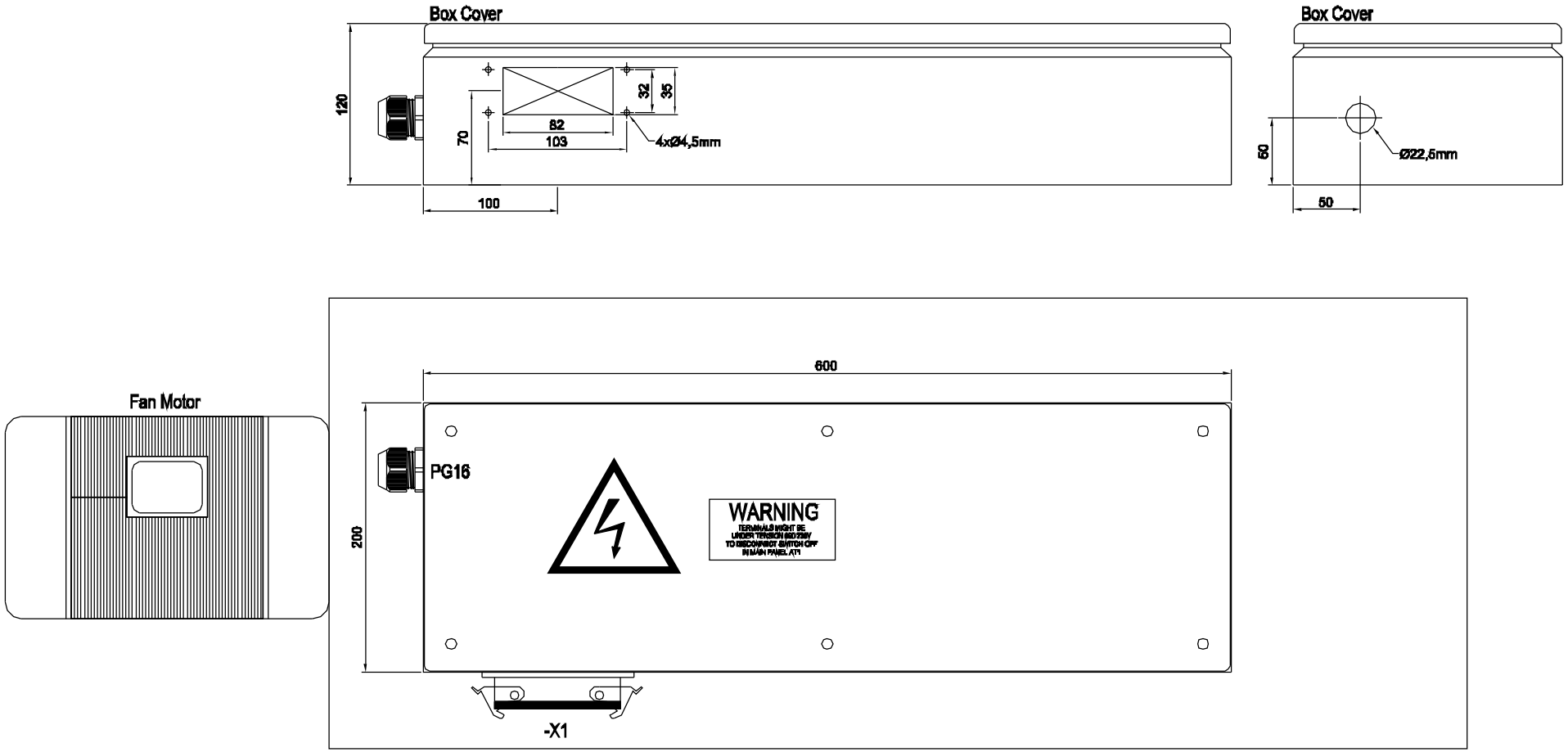
PAGE	CONTENT	DATE	REVISION
001	Table of Contents	050602	02
030	Panel Front	050602	-
031	Panel Outline	050602	-
100	Main Connections, Main Pa	050602	-
101	Main Connections, Nacelle	050602	-

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

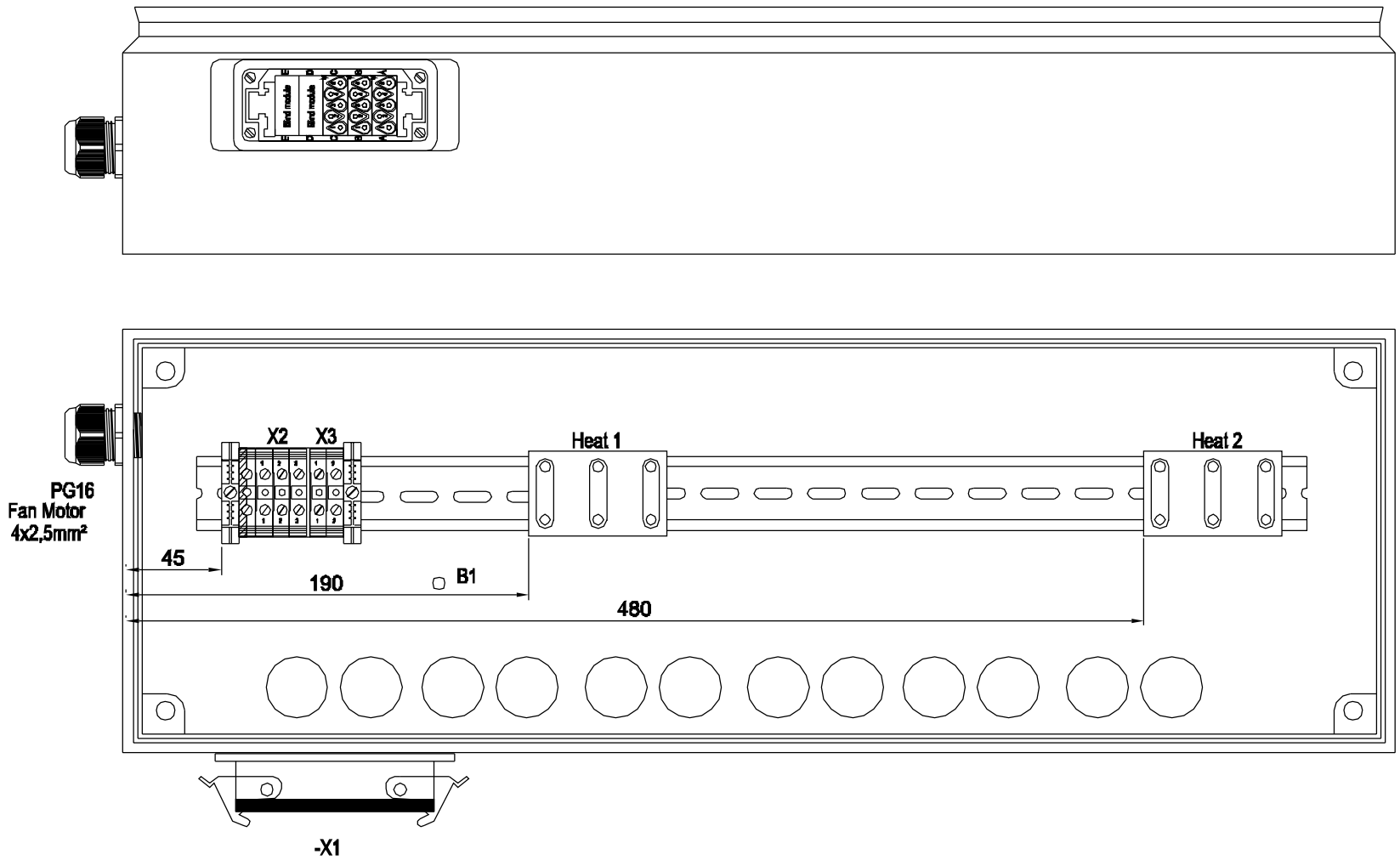
	Date	Initials	Function	Table of Contents		
Designed	011207	RPJ	Project title	Nacelle Heater 2x10 kW 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. 02	Drawing no. 6012661	Cont. sheet 030	Sheet 001

02-06-05 15:23



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel Front	
		Designed	011207	RPJ	Project title	Nacelle Heater 2x10 kW 690V 50Hz	
		Approved			Comments		Customer: Vestas Wind Systems A/S
		Reviced	050602	INI	Rev. -	Drawing no. 6012661	Cont. sheet 031 / Sheet 030

02-06-05 15:23



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel Outline	
		Designed	011207	RPJ	Project title	Nacelle Heater 2x10 kW 690V 50Hz	
		Approved			Comments		Customer: Vestas Wind Systems A/S
		Reviced	050602	INI	Rev. -	Drawing no. 6012661	Cont. sheet 100 / Sheet 031

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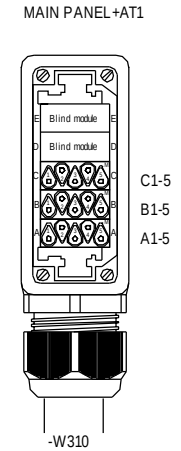
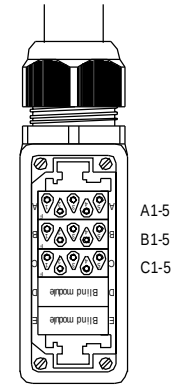
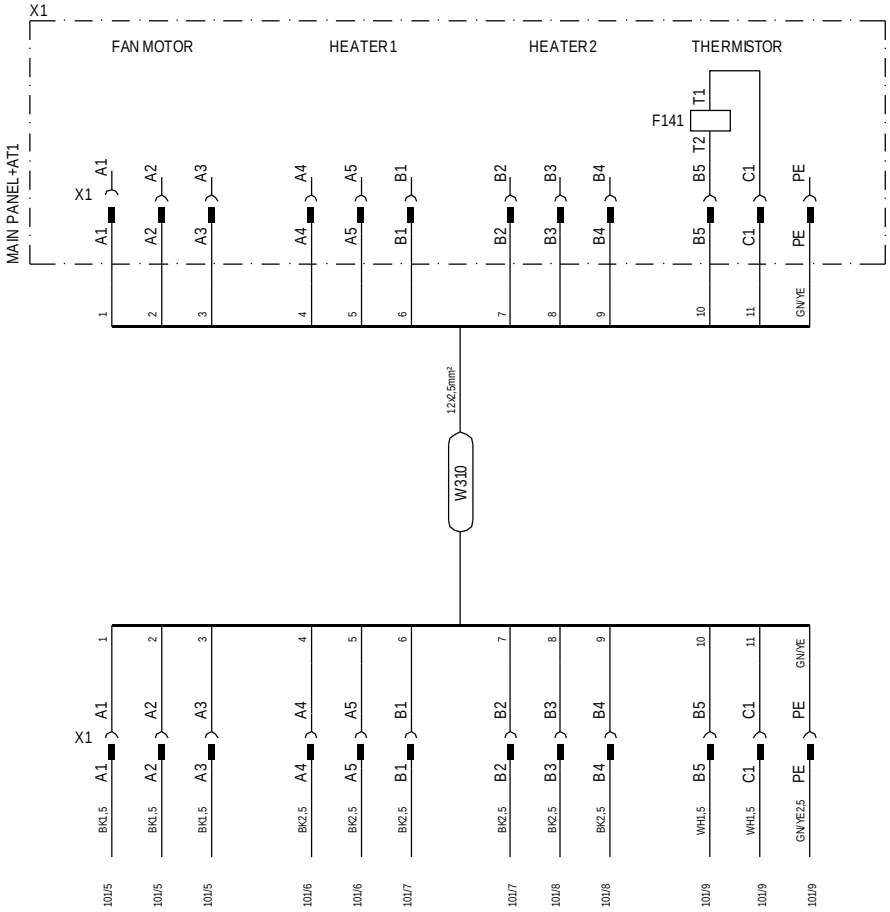
15:23



CABLE TO
NACELLE HEATER



NACELLE HEATER



	Date	Initials	Function	Main Connections, Main Panel +AT1		
Designed	011207	RPJ	Project title	Nacelle Heater 2x10 kW 690V 50Hz		
Approved			Comments		Customer	Vestas Wind Systems A/S
Reviced	050602	INI	Rev. -	Drawing no. 6012661	Cont. sheet 101	Sheet 100

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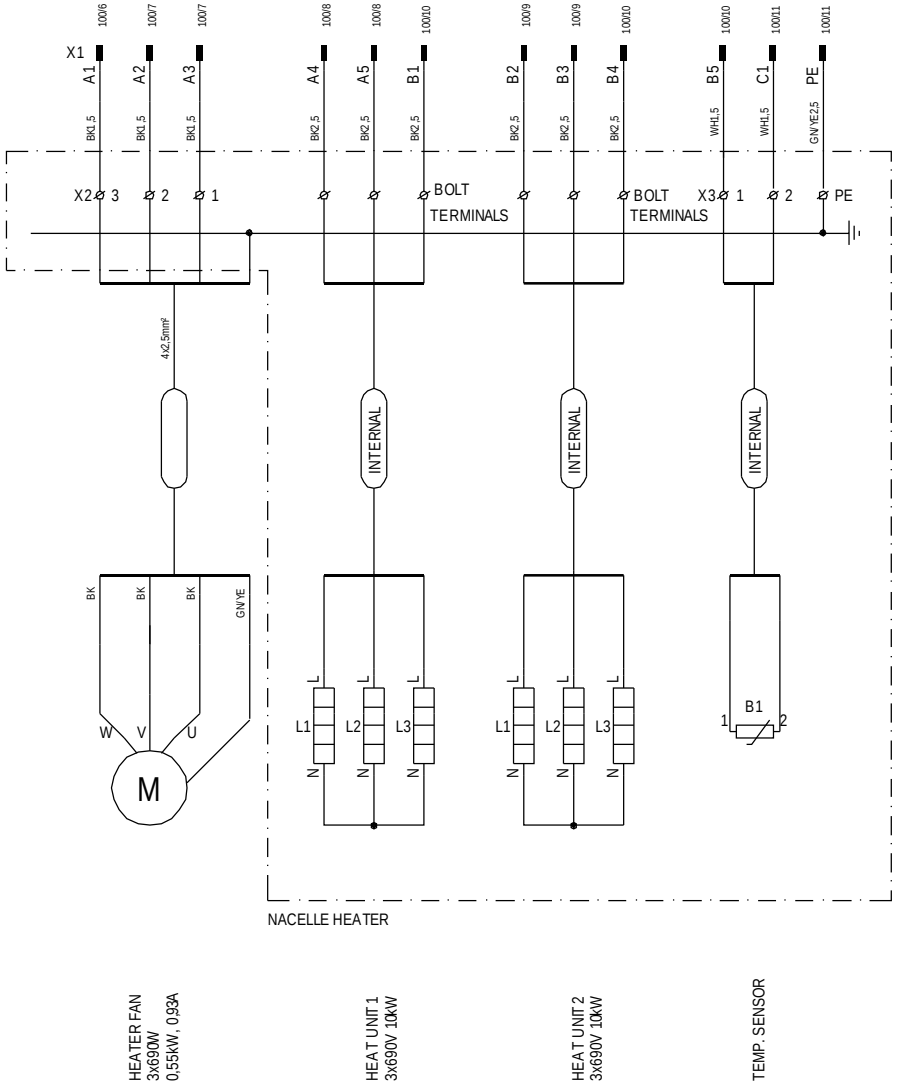

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Main Connections, Nacelle Heater	
		Designed	011207	RPJ	Project title	Nacelle Heater 2x10 kW 690V 50Hz	
		Approved			Comments		Customer: Vestas Wind Systems A/S
		Reviced	050602	INI	Rev. -	Drawing no. 6012661	Cont. sheet - / Sheet 101

02-06-05 15:23

Document no.: 21000084
Version: 02
Date: 15/12/2006
Init: Inge Nielsen

60016183 NAC HEATER 2x10 kW 690V 50Hz

Component	Description	Qty per	Stk UM	Position Number
D6012661	NACELLE HEATER 2x10 kV, 690V 5	0,000	EA	
60006824	STICKER "LIGHTNING" 100MM	1,000	EA	
60014091	MARK CARD RC610 HEATER NM750	1,000	EA	
60002655	LABEL	1,000	EA	
60007603	CABLE GLAND PG16 BRASS BSBC-05	1,000	EA	
60007614	LOCKNUT PG16 BRASS BSL-05	1,000	EA	
60014736	HEATER 3x690V 2x10kW NM900	1,000	EA	
D21000084	60016183 MATERIAL BOM, NACELLE	0,000	EA	
D22000188	NACELLE HEATER 2x10 kW 690V 50	0,000	EA	
194173	MO. WIRE H07RN-F 4G2.5MM2	1,000	M	
60000601	RES PTC 100R 155C 1 MODUL	1,000	EA	B1
60002736	LABEL TYPE SIGN NACELLE HEATER	1,000	EA	Outside
60006571	HOUSING 32P BULKHEAD	1,000	EA	X1
60012189	WIRING NAC HEATER	1,000	EA	X1
60007351	CABLE CONDUIT 15x40mm 21153	0,530	M	X1
60002439	LABEL "-X1"	1,000	EA	X1
60005983	TERMINAL STD M4/6	3,000	EA	X2
60005998	END SEC FEM6 GY 118368.16	1,000	EA	X2
60006034	END STOP 9708/2 S35	2,000	EA	X2
60005984	TERMINAL GROUND M4/6P	1,000	EA	X2
60005983	TERMINAL STD M4/6	2,000	EA	X3
60005998	END SEC FEM6 GY 118368.16	1,000	EA	X3
60006034	END STOP 9708/2 S35	1,000	EA	X3

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Change Info

Item no.	***Item text:***
60019479	**Hub Computer Panel +AK4 NM72-NM82 EVO-II**
60097711	**Hub Computer Panel +AK4 NM72 EVO II**

Active revision for production

Drawing number: 6010128

Version	Date	Init./App.	Description of change since last revision
09	28.11.2005	INI/KSS	Correction of text. Page 210, 211, 212, 213, 214, 215, 340, 3421, 342, 600 and 601 "Supplied From –X.." terminal numbers corrected.

LST no.: 21000000 Material BOM no.: 60017297

Version	Date	Init./App.	Description of change since last revision
10	20.05.2005	HRN/FLT	60114322 changed to 60110379 Contactor AL 9-30-10 24VDC. 60004358 changed to 60110382 Varistor 24-60V RV5/50.

LST no.: 21000054 Material BOM no.: 60022842 - Cables

Version	Date	Init./App.	Description of change since last revision
03	27.04.2005	MILJE/FLT	60110062_CABLE -W960 NM30T. MRK III 4G1.5 UNI added.

LST no.: 21000055 Material BOM no.: 60019750 - Measuring Kit

Version	Date	Init./App.	Description of change since last revision
02	27.02.2004	INI / KSS	Cables add. W923 no.60021527, W924 no.60021528, W925 no.60021529

Old revisions for service

Drawing number: 6010128

Version	Date	Init./App.	Description of change since last revision
08	05.10.2005	INI/KSS	Text changed or added for better understanding of the diagram. Page 210: X15 hub input D1 => D4 changed to DI 4 <= DI 1 Page 211: X16 hub input D5 => D8 changed to DI 8 <= DI 5 Page 212: Text (DI 12), (DI 11), (DI 10), (DI 9) added to input. Page 213: X18 hub input DI 9 => DI 12 changed to DI 16 <= DI 13. Text (DI 16), (DI 15), (DI 14), (DI 13) to input & text "only for internal use!" added. Page 214: Digital input-X18 corrected to Analog input. Text (ANI 6), (ANI 5), (ANI 4), (ANI 9) added to input. TAC Channel no added. Page 215: TAC Channel no added. Page 216: Text (ANI 8), (ANI 7) and TAC Channel no added. Page 310,311,312 & 313: Text (OP 1) to (OP 16) added. Page 340,341 & 342: Text (ANO 1) to (ANO 3) and chart of proportional value.
07	22.09.2004	INI/CHO	All pages updated with VESTAS logo. Page 100: G400 Switch setting 230VAC changed. Page 101: G401 Switch setting 230VAC changed. Page 102: Text concerning UL removed. Page 110: Text to L1 X5:C1 and N X5:C2 changed to 115/230V AC.
06	09.08.2004	CHO/CHO	Page 001 and 002: Updated. Page 059: Terminal layout X09 updated. Page 061 and 062: X09 jumper bar and text updated for UL and IEC. Page 110: X09 jumper bar added. X06 wire ID changed from 1.5 to 2.5 mm²
05	17.05.2004	CHO/ CHO	Page 001 and 002: Updated. Page 080: X360-2 cable no. and X360-4 cable color corrected. X360-5 removed. Page 085: removed Page 105: K02 varistor added. Page 110: K03 reference added. Page 313: K03 varistor added.
04	01.10.2003	INI /KSS	Page 001 and 002: Updated. Page 030: B062 and PE bar added. Page 031: -X06 removed, -K02, -K03, -X09, and-X07 moved. Page 032: Label added on the enclosure, text for X03 updated. Page 033: Lay out updated. Page 034, 035 and 036: New pages.

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			Page 040: X04 changed, F01.1 added W953 ID changed. Page 041 and 080: Connection for Slip rings updated. Page 070: Cable ID W922 corrected. -X15 color WH changed to BU. Text to -X18 corrected. Page 085: Slip ring 12, PE added. Page: 101, 102, 103, 105, 215, 312, 313, 600, 601 and 602 cable color, references text, earth, changed or added. Page 110: Terminal X06 removed. Text X06 added. Cable color changed to LB. Page 210: B406 moved. –X01 cable color changed to DB 1,5.
03	10.07.2003	INI / KSS	Page 001 and 002: Updated. Page 041: W513 wire color added Page 080: W990 wire numbers changed to color
02	16.06.2003	INI / KSS	Page 001 and 002: Updated. Page 031:Terminal row no. and option added. F01 changed to automatic fuse. X06 and X08 moved. Page 041: New page added. Page 070: References added. Wire color changed. W919 corrected to W900. Page 071: References added. Option with measure equipment added. Page 072, 073, 074, 075, 076 and 077: Reference K01 added. Page 080 and 085: Slip rings corrected. Page 102: F02, text 4A added. Page 110: X06 and connection to CEE plug added. Text K03 added. Page 210: PE added. Terminal X06 changed to X15. Page 211, 212 and 213: PE added. Page 215: Option with measure equipment added. Page 216: B057 moved from terminal 67, 68 to 69, 70. Page 313: F02 changed to automatic fuse 10A.
01	22.04.2003	INI / KSS	First version in SAP no. system.

LST no.: 21000000 *Material BOM no.: 60017297*

Version	Date	Init./App.	Description of change since last revision
09	07.02.2005	MILJE/MILJE	SOCKET-X06 60011426 WALL SOCKET 216RS6 2P+E 250V 16A CEE 1pc added.
08	09.08.2004	MILJE+CHO/CHO	Following items are removed: 60007359 CABLE CONDUIT 40x60mm, 6000735 CABLE CONDUIT 25x40mm, 60007351 CABLE CONDUIT 15x40mm, 0007182 DIN rail, 60007201 Earth rail. New BOM added 60105763 Cable conduit, DIN rail & earth rail for +AK4. Implement heat in 50 Hz hub, jumpers in X09 are changed so heat units 200W 115V and 200W 230V can be connected.
07	09.08.2004	CHO/	Implement heat in 50 Hz hub, 60012753 and 60012754 updated so hat revision not will be shown.
06	14.05.2004	CHO/ CHO	Varistor for K02 and K03 added.
05	19.01.2004	KSS/ KSS	Component added to –X01; -X02; -X03; -X05;-X04/F02 All labels assembled to a kit Wire set corrected
04	07.10.2003	KSS/KSS	NMCS label, comp. marking added. End stop, screws and cable conduit changed
03	02.09.2003	INI/ KSS	Type sign 60002778 changed to 60093555.
02	25.06.2003	INI / KSS	F01 automatic fuse 10 A C
01	17.02.2003	INI / KSS	First version in the new SAP no. system.

LST no.: 21000054 *Material BOM no.: 60022842 - Cables*

Version	Date	Init./App.	Description of change since last revision
02	27.02.2004	INI / KSS	Cables removed W923 no.60021527, W924 no.60021528, W925 no.60021529
01	02.09.2003	INI / KSS	First version in SAP no. system.

LST no.: 21000055 *Material BOM no.: 60019750 - Measuring Kit*

Version	Date	Init./App.	Description of change since last revision
01	23.09.2002	KSS / KSS	First version in SAP no. system.

Earlier Drawings and Part Lists no Longer Active for Serial Production

Change Info: 00020659

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1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
001	Table of Contents	051128	09
002	Table of Contents	051128	09
030	Panel Outline	031001	–
031	Plant outline	031001	–
032	Plant outline	031001	–
033	Bottom layout of glands	031001	–
034	Panel Front	031001	–
035	X06 CE Plug 60011426	031001	–
036	X06 UL Socket 60002508	031001	–
040	External connections	031001	–
041	Connection for sliprings	031001	–
059	Terminal layout X09	040809	–
061	External connections	040809	–
062	External connections	040809	–
070	External connections inpu	031001	–
071	External connections inpu	030616	–
072	External connections inpu	030616	–
073	External connections outp	030616	–
074	External connections outp	030616	–
075	External connections outp	030616	–
076	External connections outp	030616	–
077	External Connections Prop	030616	–
080	Connestions f. Sliprings	040517	–
100	Power supply 24V DC Propv	040922	–
101	Power supply 24V DC norma	040922	–
102	Power supply for Input X1	040922	–
103	Isolation amplifier 4–20m	031001	–
105	Emergency relay 24 V DC3	040517	–
110	OPTION Terminal layout he	040922	–
210	Digital input –X15 DI 4	051128	–
211	Digital input –X16 DI 8	051128	–
212	Digital input –X17 CNT1	051128	–
213	Digital input –X18 DI 1	051128	–
214	Analog input –X18 Press	051128	–
215	Analog input –X19 AN1 =	051128	–
216	Temp. input –X20 Temp 1	031001	–

28-11-05
10:33

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	Date	Initials	Function	Table of Contents		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. 09	Drawing no. 6010128	Cont. sheet 002	Sheet 001

1	2	3	4	5	6	7	8	9	10	11	12	13

PAGE	CONTENT	DATE	REVISION
310	Digital output −X2 OP1	051005	–
311	Digital output −X3 OP5	051005	–
312	Digital output −X5 OP9 =	051005	–
313	Digital output −X6 OP13	051005	–
340	Analog output −X8 OVUT1	051128	–
341	Analog output −X9 OVUT2	051128	–
342	Analog output −X10 OVUT	051128	–
343	Emergency line	030422	–
500	Bus communication RS 485	030422	–
600	NAV Computer input	051128	–
601	NAV Computer output	051128	–
602	NAV Computer supply	031001	–

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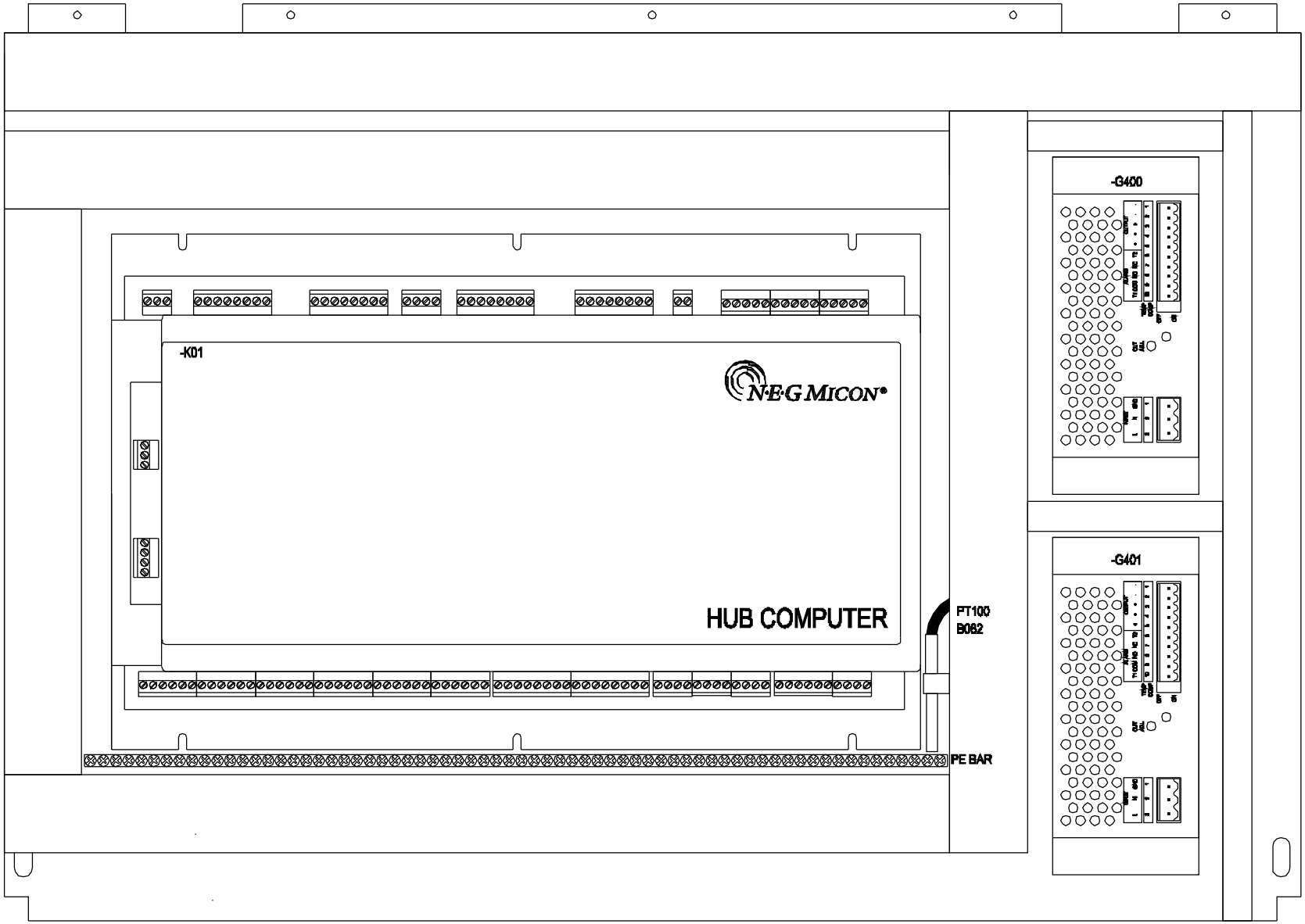
	Date	Initials	Function	Table of Contents			
Designed	020628	KSS	Project title	Hub Computer Panel +AK4			
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1		Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. 09	Drawing no. 6010128		Cont. sheet 030	Sheet 002



28-11-05

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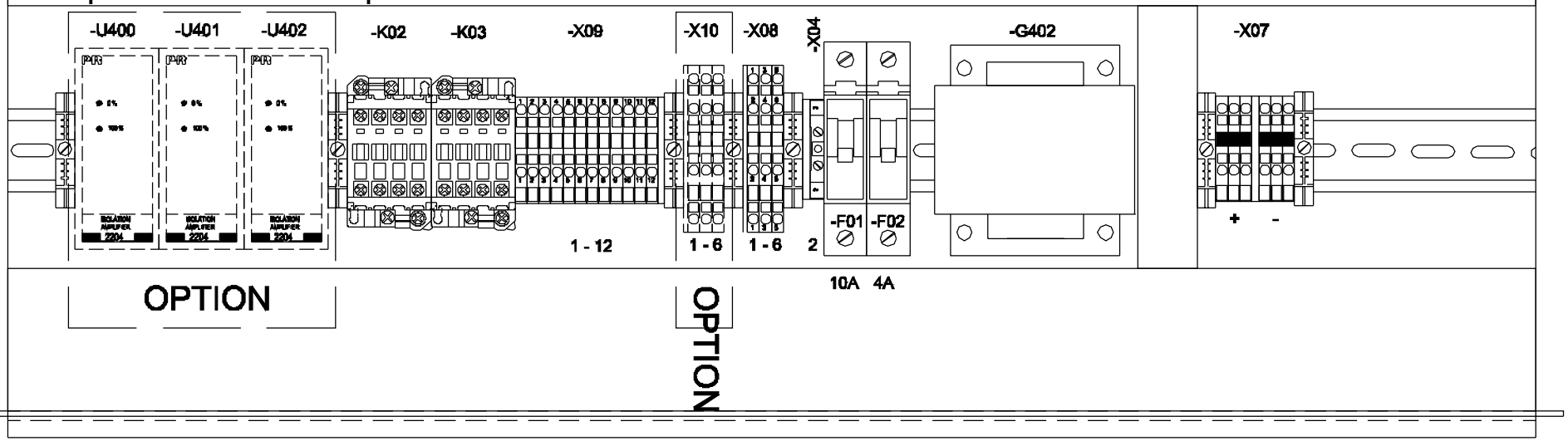
	Date	Initials	Function	Panel Outline			
Designed	020628	KSS	Project title	Hub Computer Panel +AK4			
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1		Customer	Vestas Wind Systems A/S
Reviced	031001	INI	Rev.	-	Drawing no. 6010128	Cont. sheet 031	Sheet 030

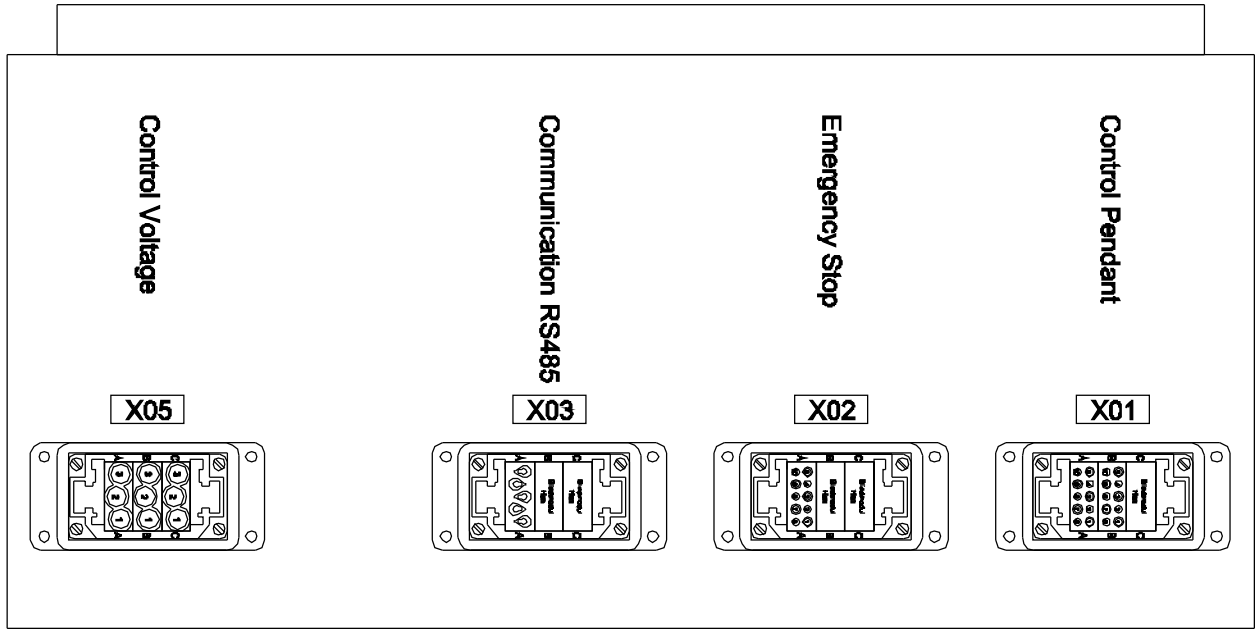
1	2	3	4	5	6	7	8	9	10	11	12	13

Prototype:
Endstop lased after isolation amplifier.



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Plant outline	
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4	
		Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer: Vestas Wind Systems A/S
		Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 032 / Sheet 031

28-11-05
10:33



Module C: Blind
Module B: 1 and 2
Module A: Complete

Module C: Blind
Module B: Blind
Module A: 1 and 3

Module C: Blind
Module B: Blind
Module A: 1,3 and 5

Module C: C1 and C2 230V AC Heating
Module B: 1 and 2 24 V DC After Emergncy
Module A: A1 and A2 230V AC Power supply

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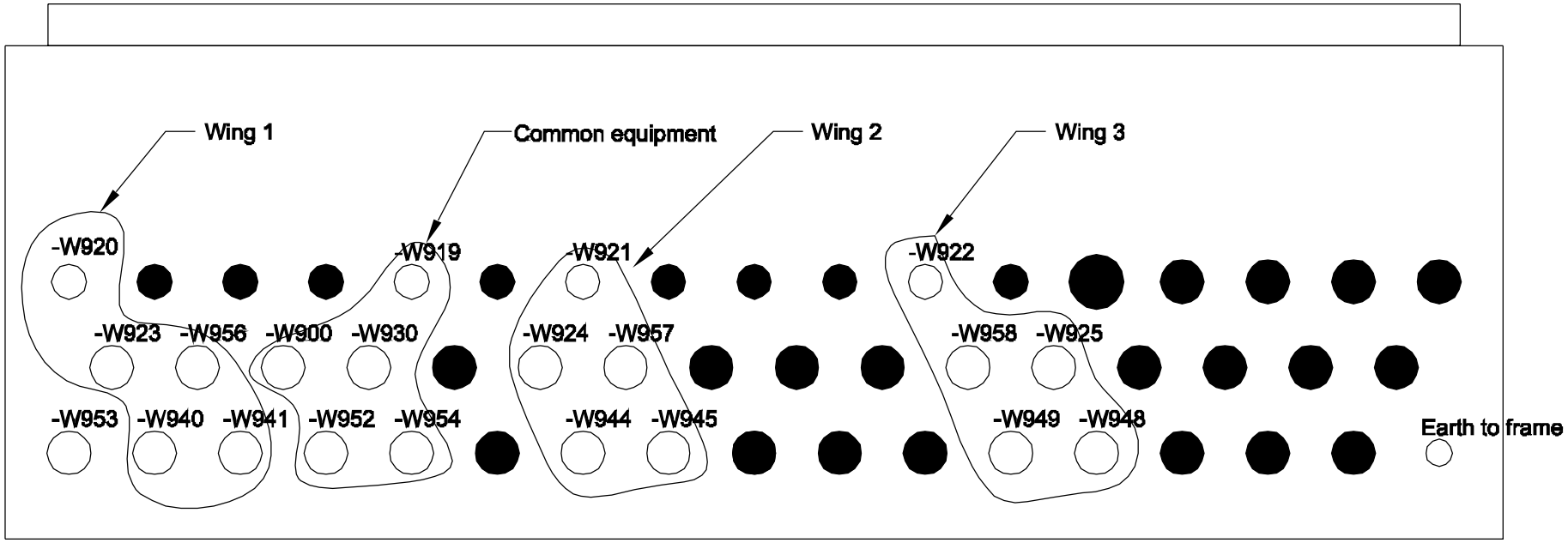
	Date	Initials	Function	Plant outline			
Designed	020628	KSS	Project title	Hub Computer Panel +AK4			
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S	
Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 033	Sheet 032	



Bottom

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Bottom layout of glands	
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4	
		Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer: Vestas Wind Systems A/S
		Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 034 / Sheet 033

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10:33

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Panel Front		
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
		Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
		Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 035	Sheet 034

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10:33

1	2	3	4	5	6	7	8	9	10	11	12	13

PANEL OUTSIDE

PANEL INSIDE

28-11-05
10:33

Vestas

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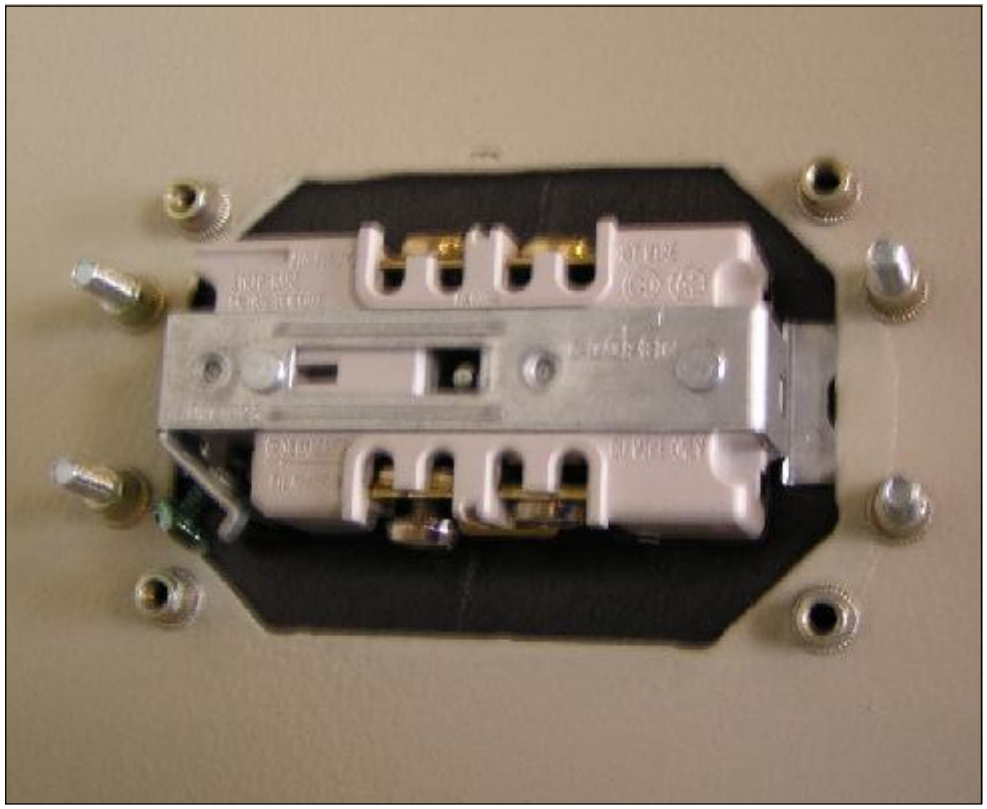
	Date	Initials	Function	X06 CE Plug 60011426			
Designed	020628	KSS	Project title	Hub Computer Panel +AK4			
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1		Customer	Vestas Wind Systems A/S
Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 036	Sheet 035	

1	2	3	4	5	6	7	8	9	10	11	12	13

PANEL OUTSIDE



PANEL INSIDE

28-11-05
10:33

Vestas

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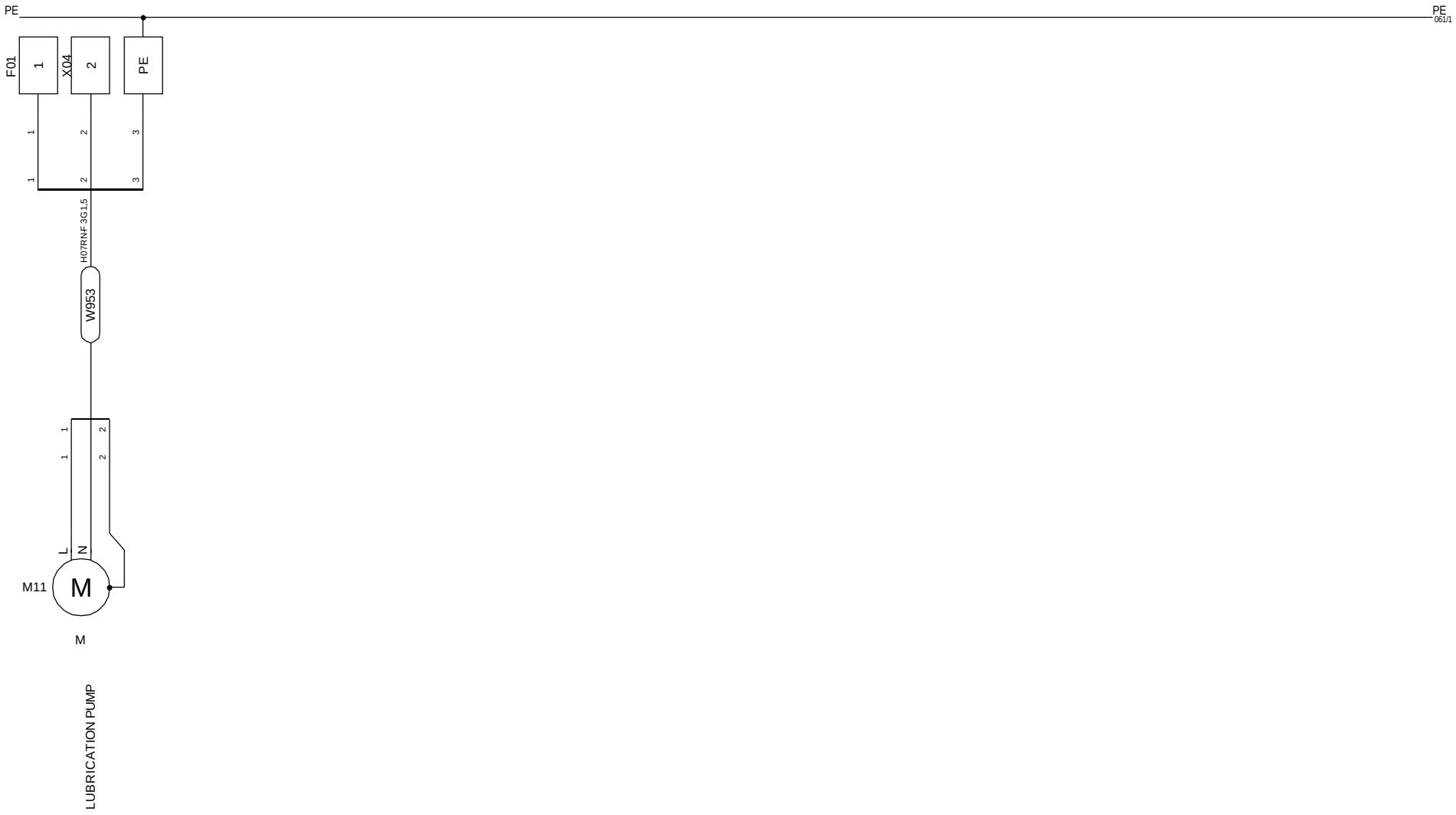
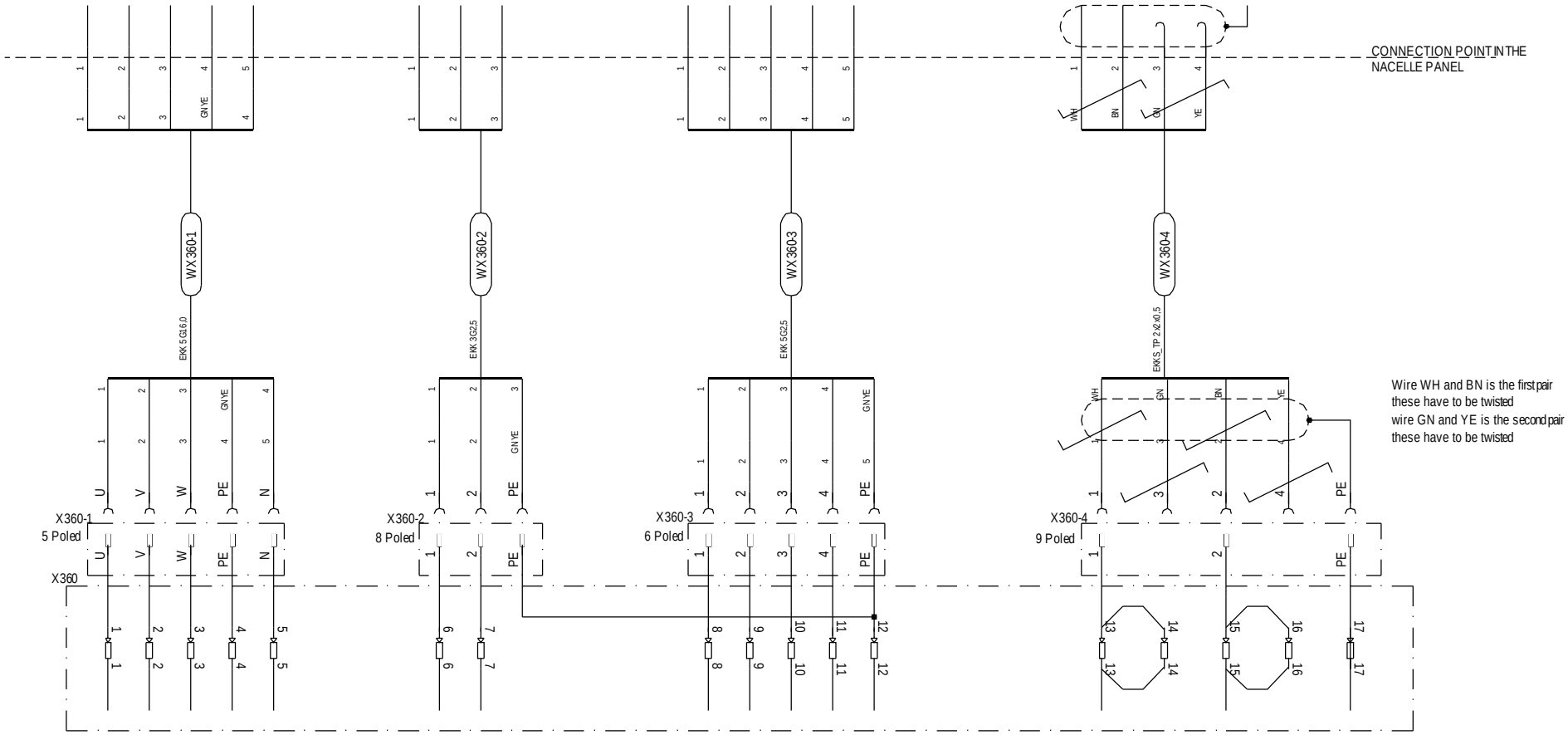
	Date	Initials	Function	X06 UL Socket 60002508			
Designed	020628	KSS	Project title	Hub Computer Panel +AK4			
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1		Customer	Vestas Wind Systems A/S
Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 040	Sheet 036	



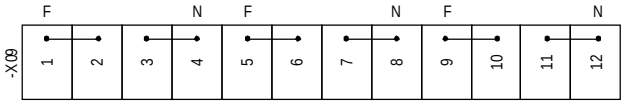
Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connections	
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4	
		Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer: Vestas Wind Systems A/S
		Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 041 / Sheet 040

28-11-05
10:33



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Connection for sliprings	
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4	
		Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer: Vestas Wind Systems A/S
		Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 059 / Sheet 041

28-11-05
10:33



Connection of heating elements
UL 115V AC Turbines connections.
IEC 230V AC Turbines connections.

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	Date	Initials	Function	Terminal layout X09		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	040809	CHO	Rev. -	Drawing no. 6010128	Cont. sheet 061	Sheet 059

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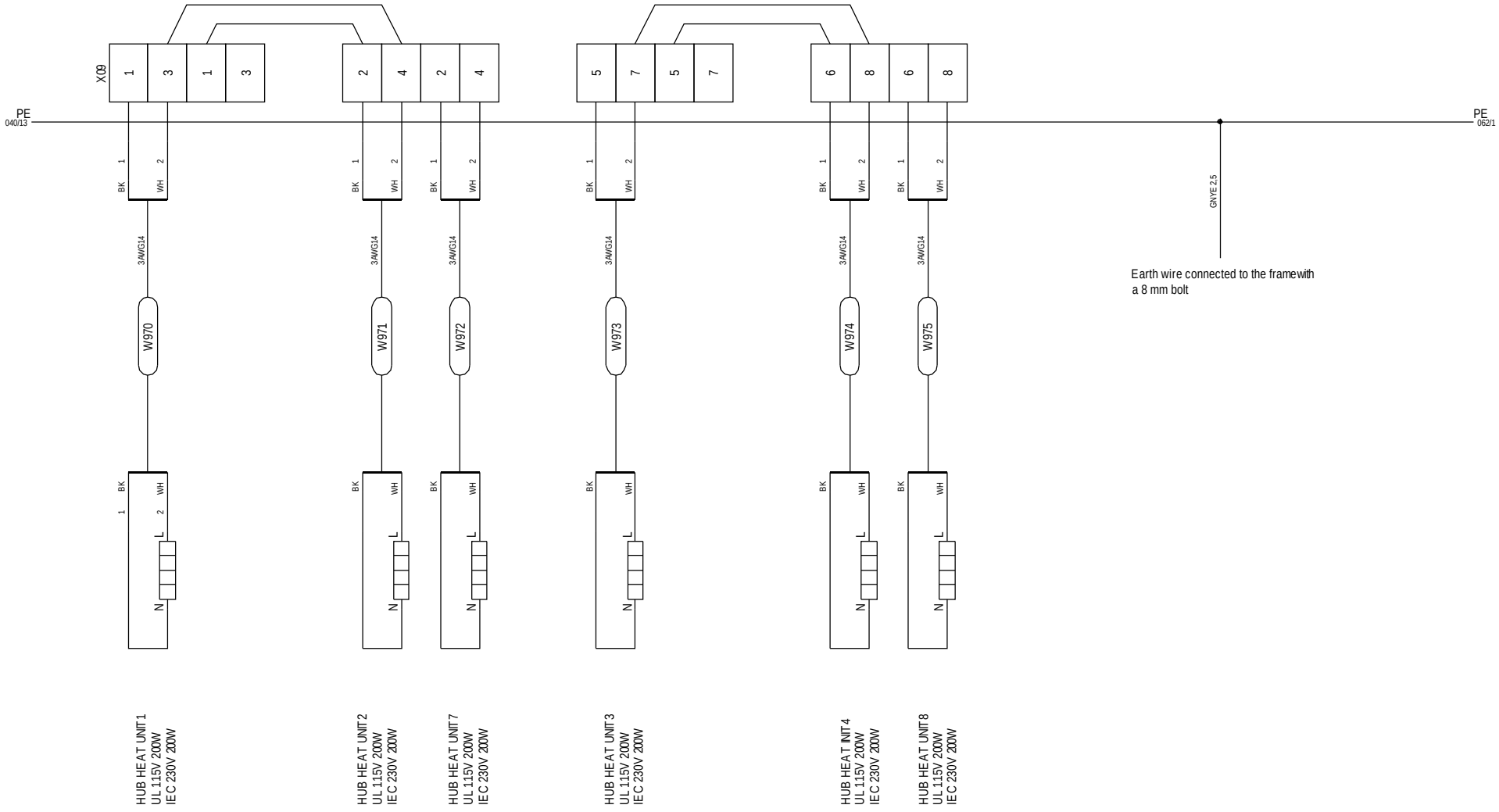
10:33

HEAT UNIT CONNECTION IN TURBINES



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Vestas

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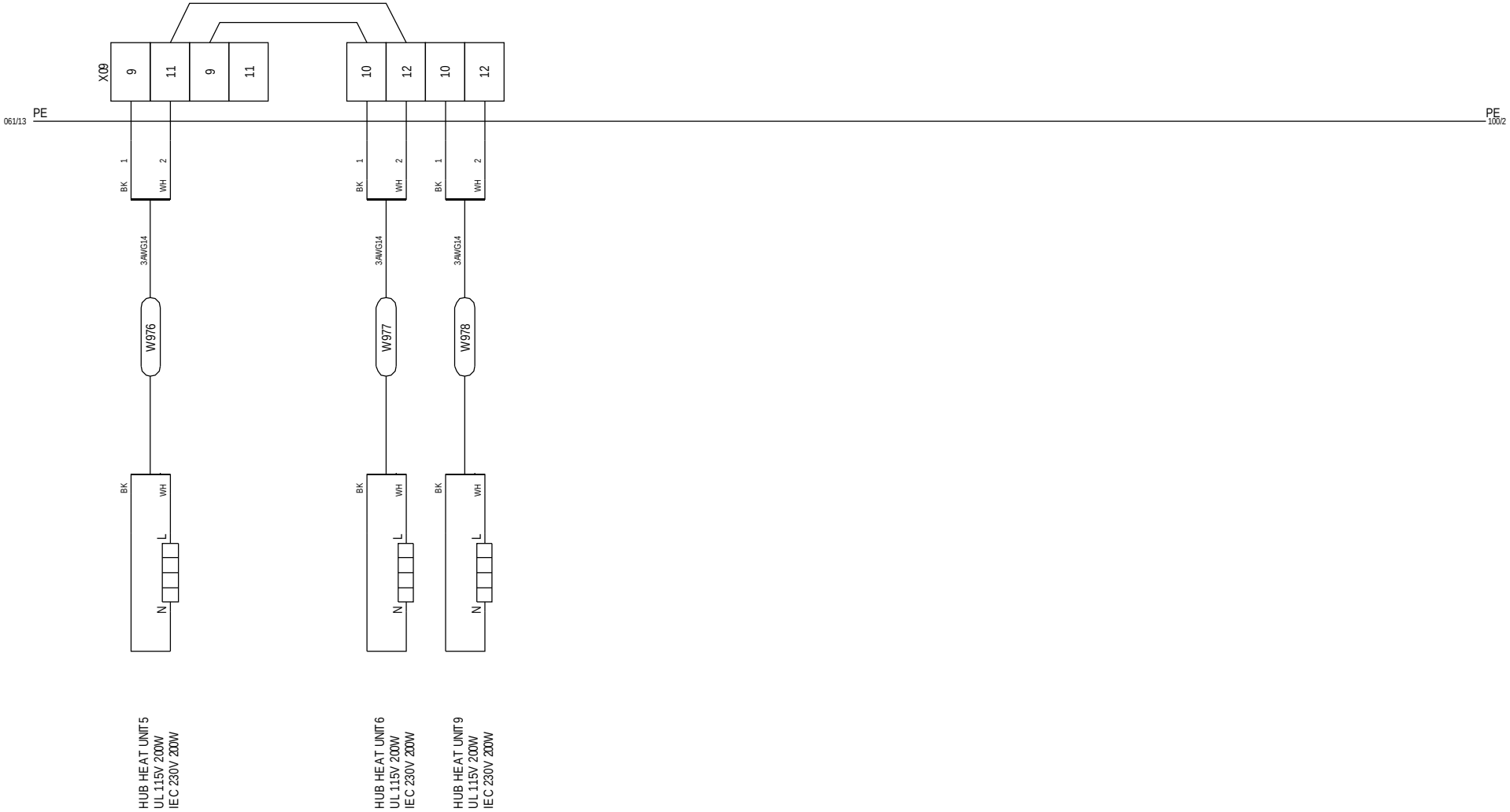
	Date	Initials	Function	External connections		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	040809	CHO	Rev. -	Drawing no. 6010128	Cont. sheet 062	Sheet 061

HEAT UNIT CONNECTION IN TURBINES



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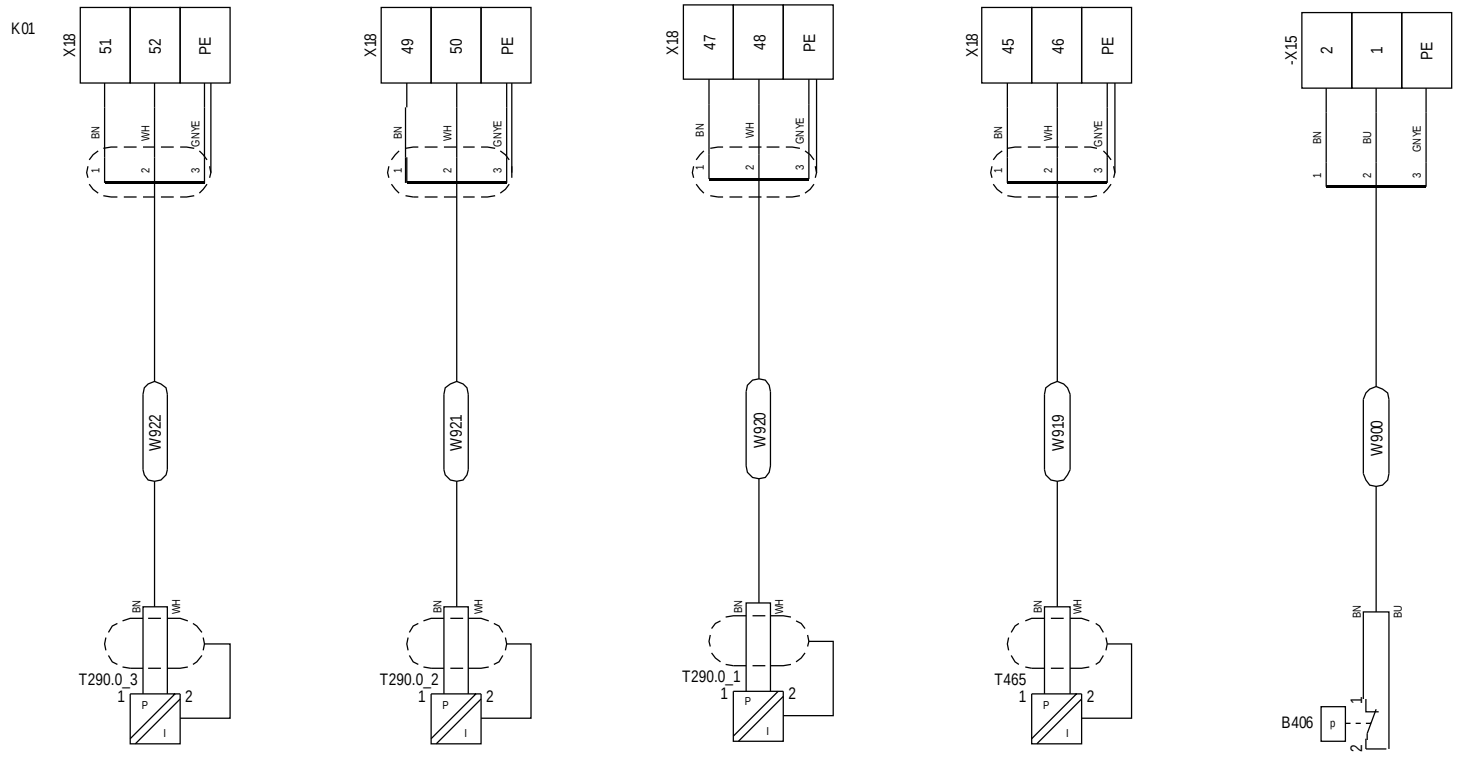
	Date	Initials	Function	External connections		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	040809	CHO	Rev. -	Drawing no. 6010128	Cont. sheet 070	Sheet 062

28-11-05
10:33



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10:33

Vestas

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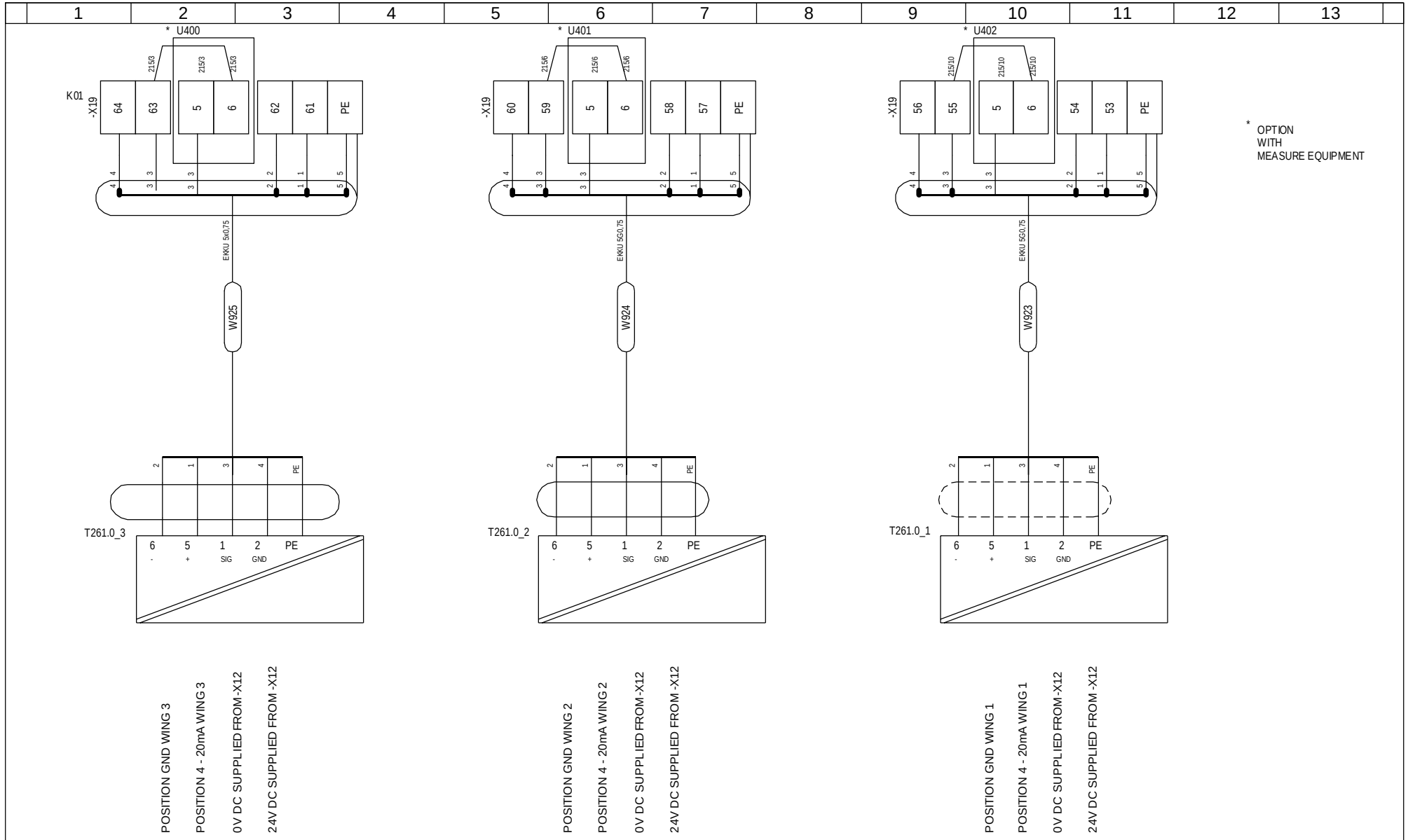
	Date	Initials	Function	External connections input analog		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 071	Sheet 070



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10:33

Vestas

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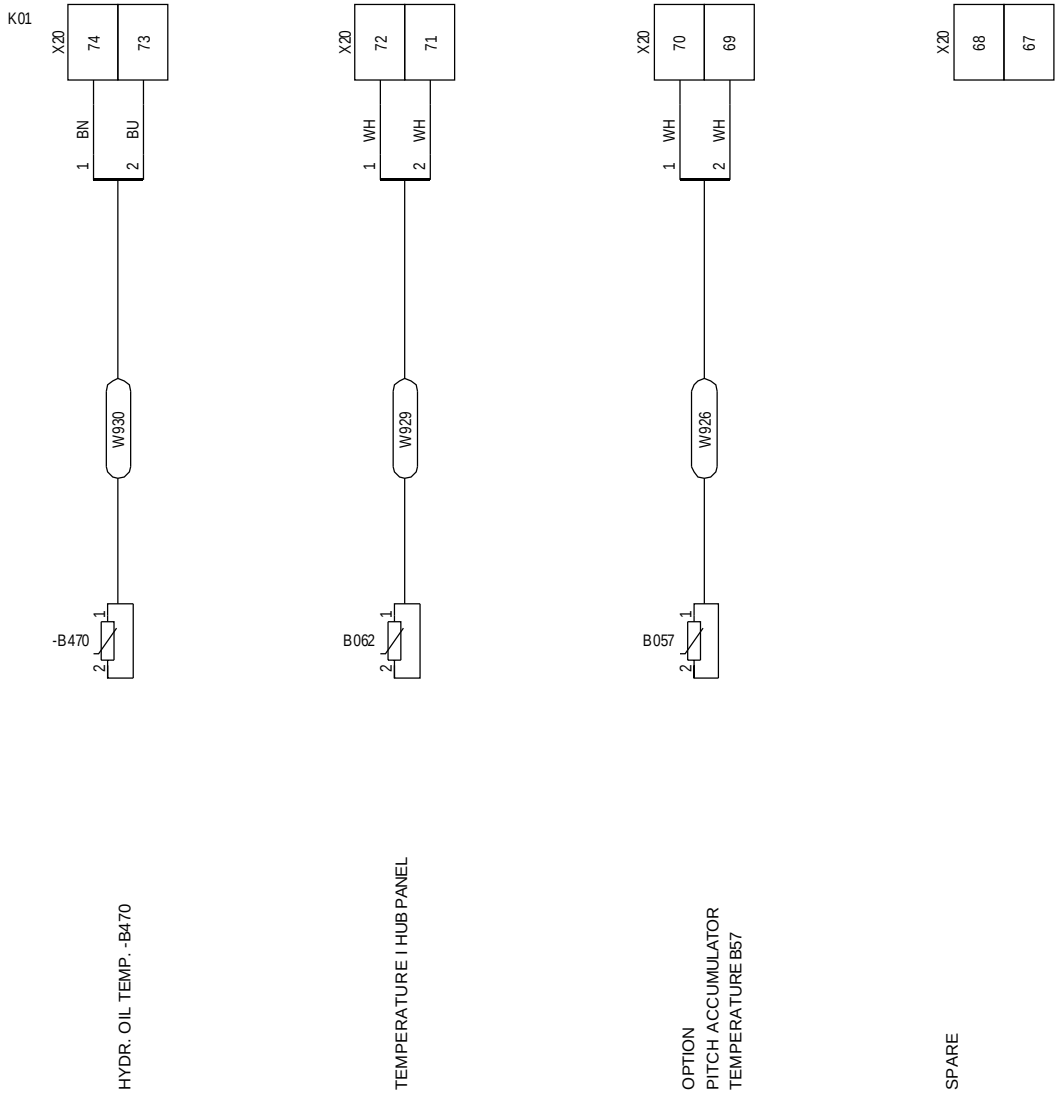
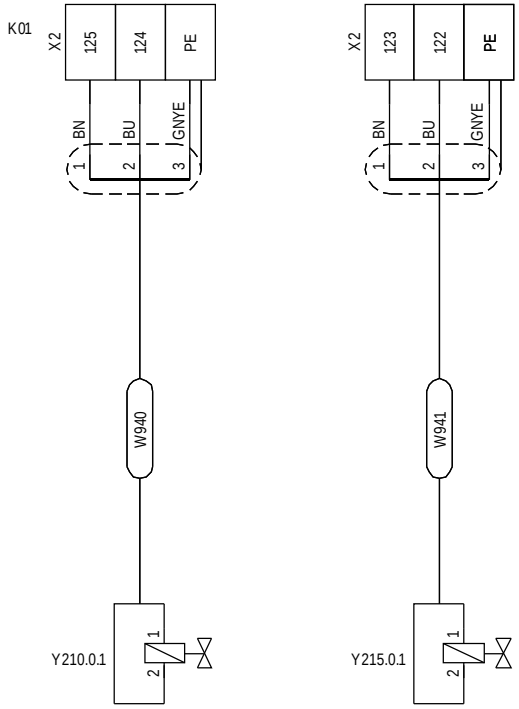
	Date	Initials	Function	External connections input analog		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	030616	INI	Rev. -	Drawing no. 6010128	Cont. sheet 072	Sheet 071



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	External connections input analog	
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4	
		Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer: Vestas Wind Systems A/S
		Reviced	030616	INI	Rev. -	Drawing no. 6010128	Cont. sheet 073 / Sheet 072

28-11-05
10:33



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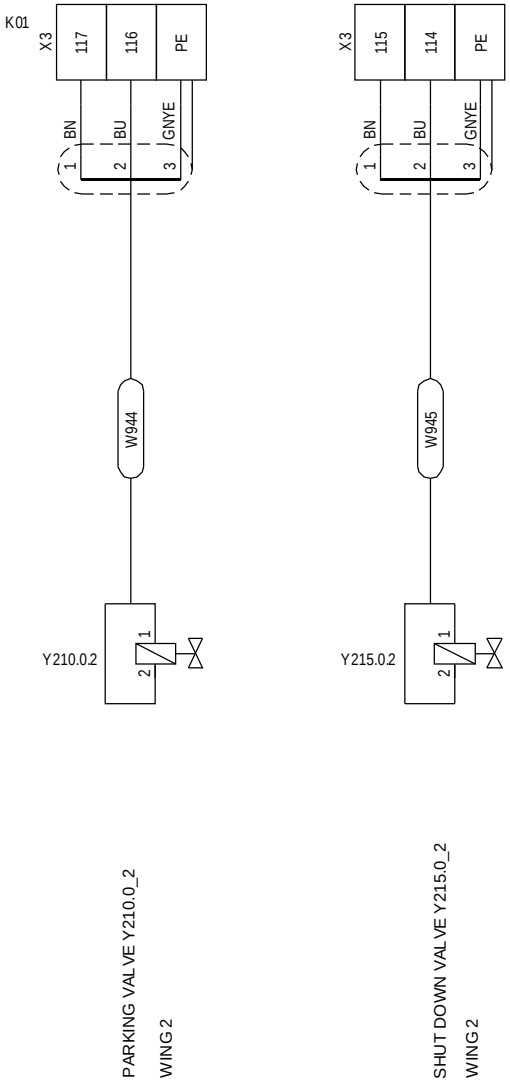
	Date	Initials	Function	External connections output analog		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	030616	INI	Rev. -	Drawing no. 6010128	Cont. sheet 074	Sheet 073

28-11-05
10:33



	Date	Initials	Function	External connections output analog		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	030616	INI	Rev. -	Drawing no. 6010128	Cont. sheet 075	Sheet 074

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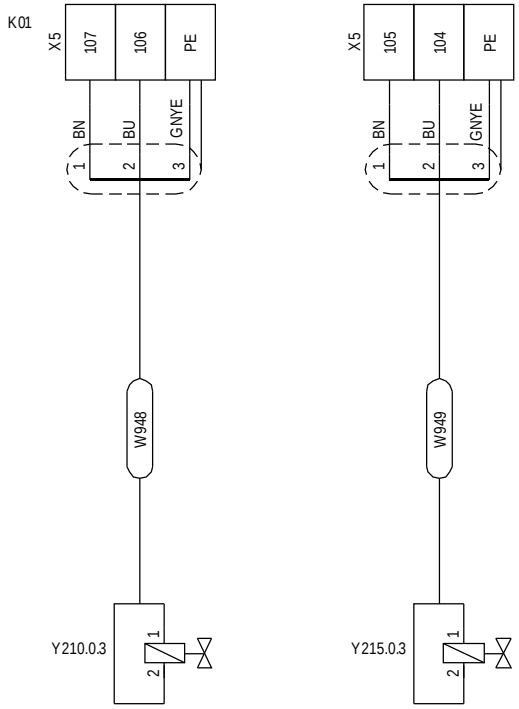
10:33



PARKING VALVE Y210.0_3
WING 3

SHUT DOWN VALVE Y215.0_3
WING 3

28-11-05
10:33

Vestas

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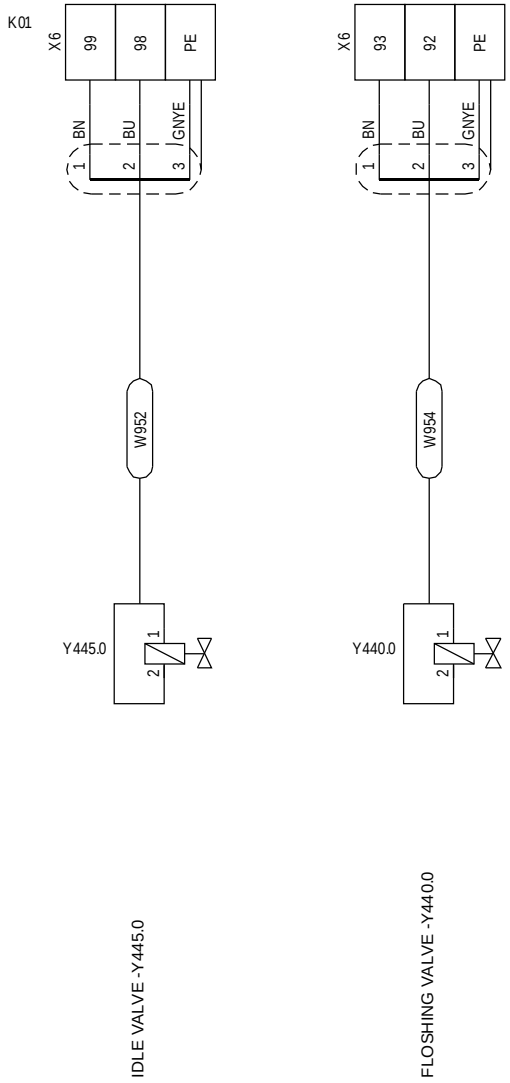
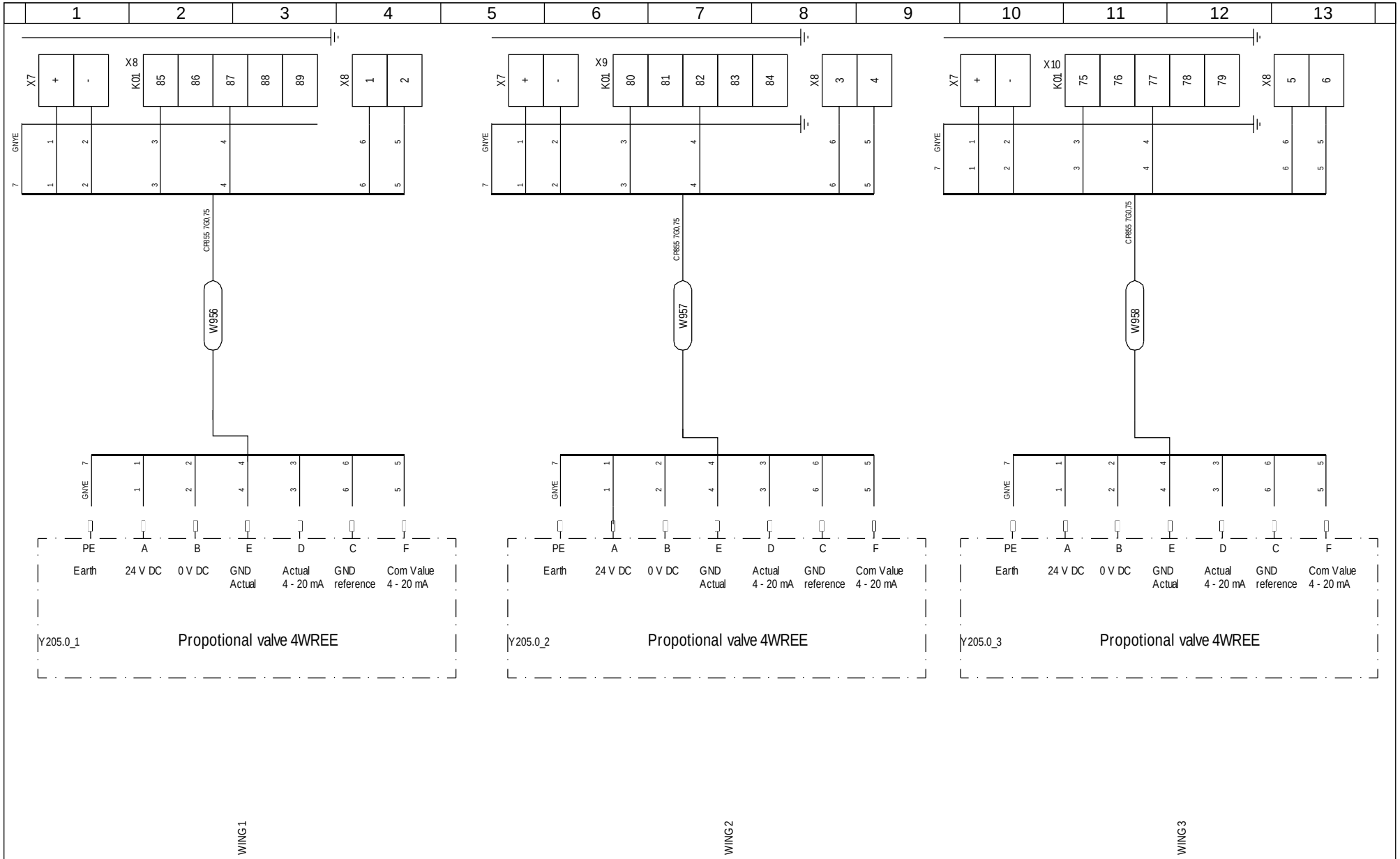
	Date	Initials	Function	External connections output analog		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	030616	INI	Rev. -	Drawing no. 6010128	Cont. sheet 076	Sheet 075



Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	External connections output Digital		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	030616	INI	Rev. -	Drawing no. 6010128	Cont. sheet 077	Sheet 076

28-11-05
10:33



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10:33

Vestas

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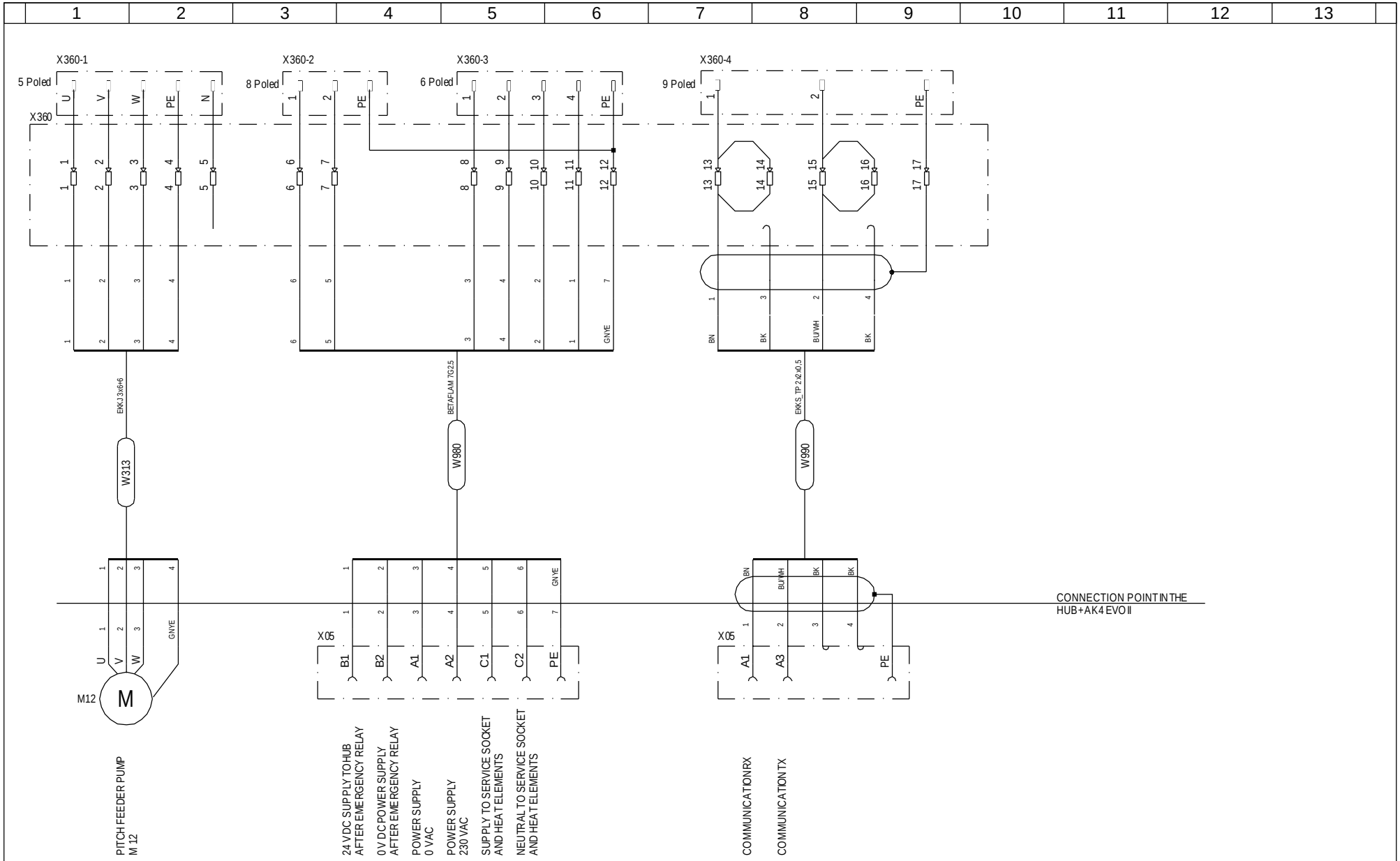
	Date	Initials	Function	External Connections Proportional valves		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	030616	INI	Rev. -	Drawing no. 6010128	Cont. sheet 080	Sheet 077



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Vestas

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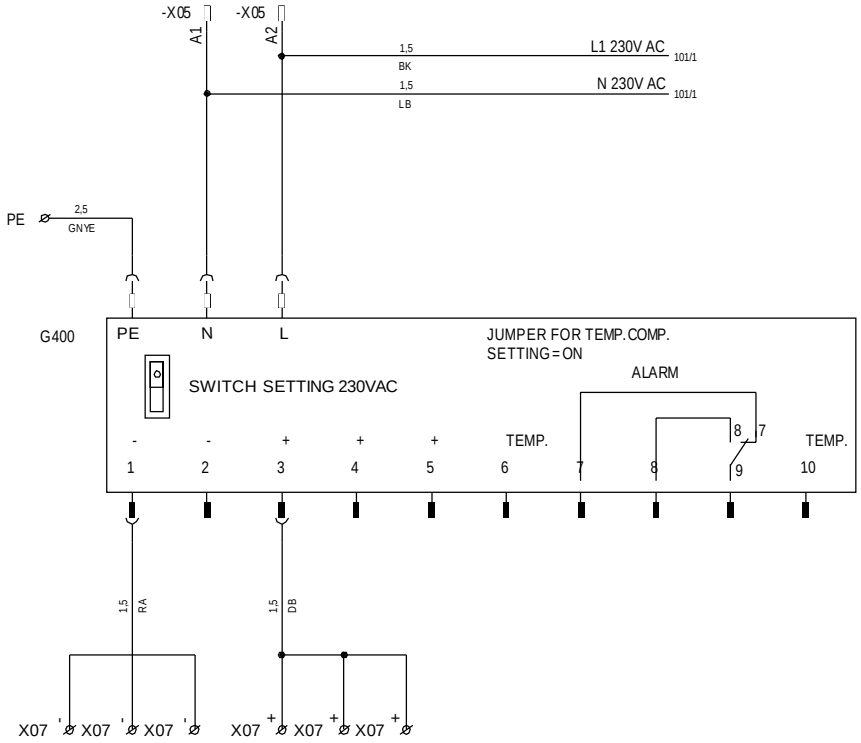
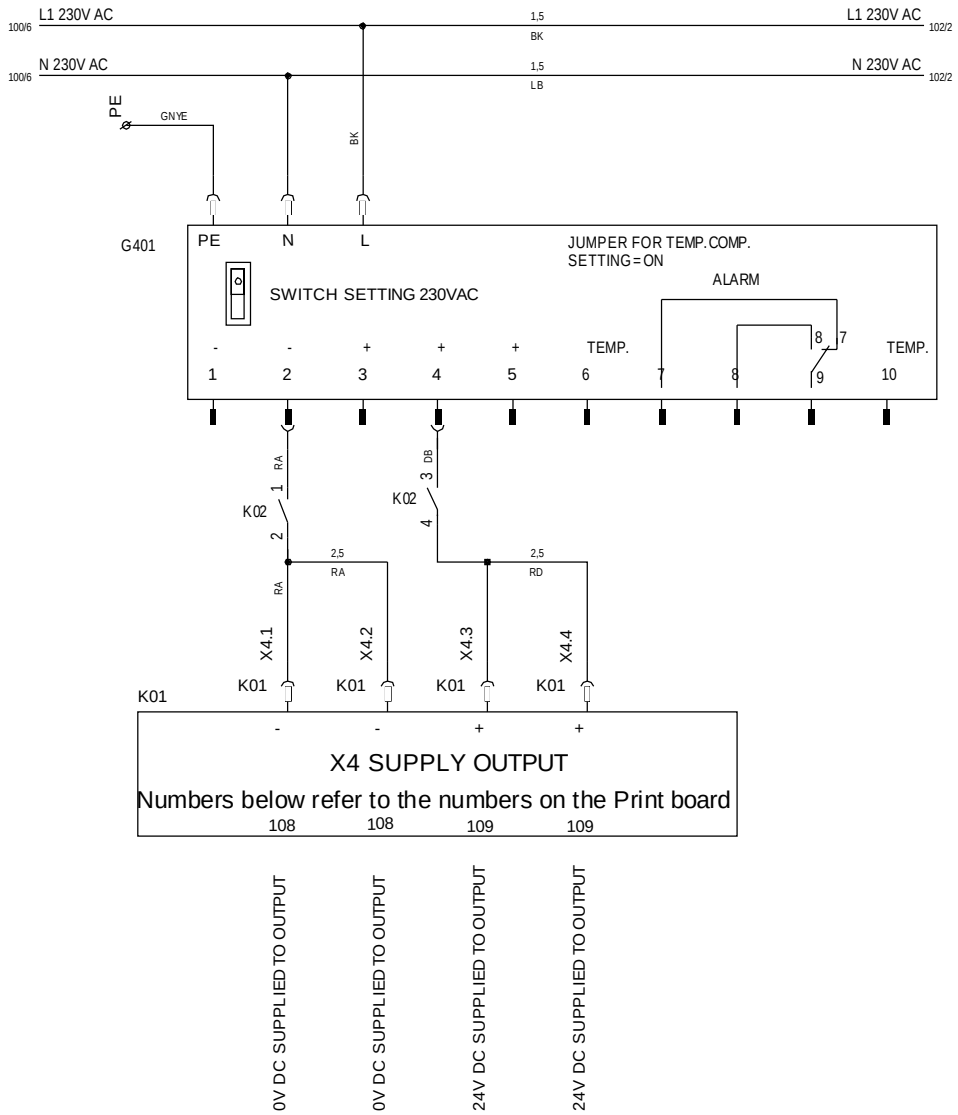
	Date	Initials	Function	Connestions f. Sliprings		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	040517	INI	Rev. -	Drawing no. 6010128	Cont. sheet 100	Sheet 080



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Power supply 24V DC Propvent	
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4	
		Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer: Vestas Wind Systems A/S
		Reviced	040922	INI	Rev. -	Drawing no. 6010128	Cont. sheet 101 / Sheet 100

28-11-05
10:27

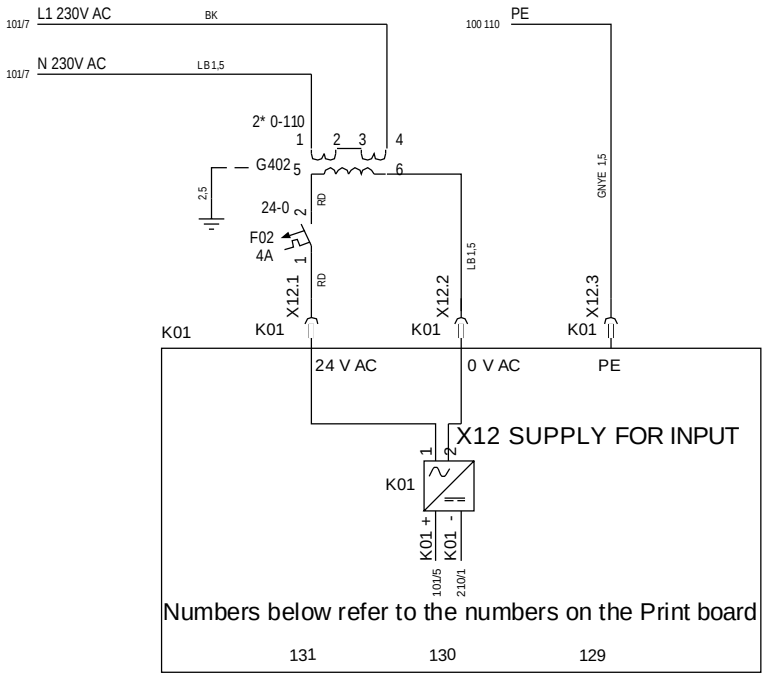


Vestas

Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	Power supply 24V DC normal valves		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	040922	INI	Rev. -	Drawing no. 6010128	Cont. sheet 102	Sheet 101

28-11-05
10:27



24V AC SUPPLY
ON INPUT TERMINALS

0V AC SUPPLY
ON INPUT TERMINALS

EARTH

28-11-05
10:27

Vestas

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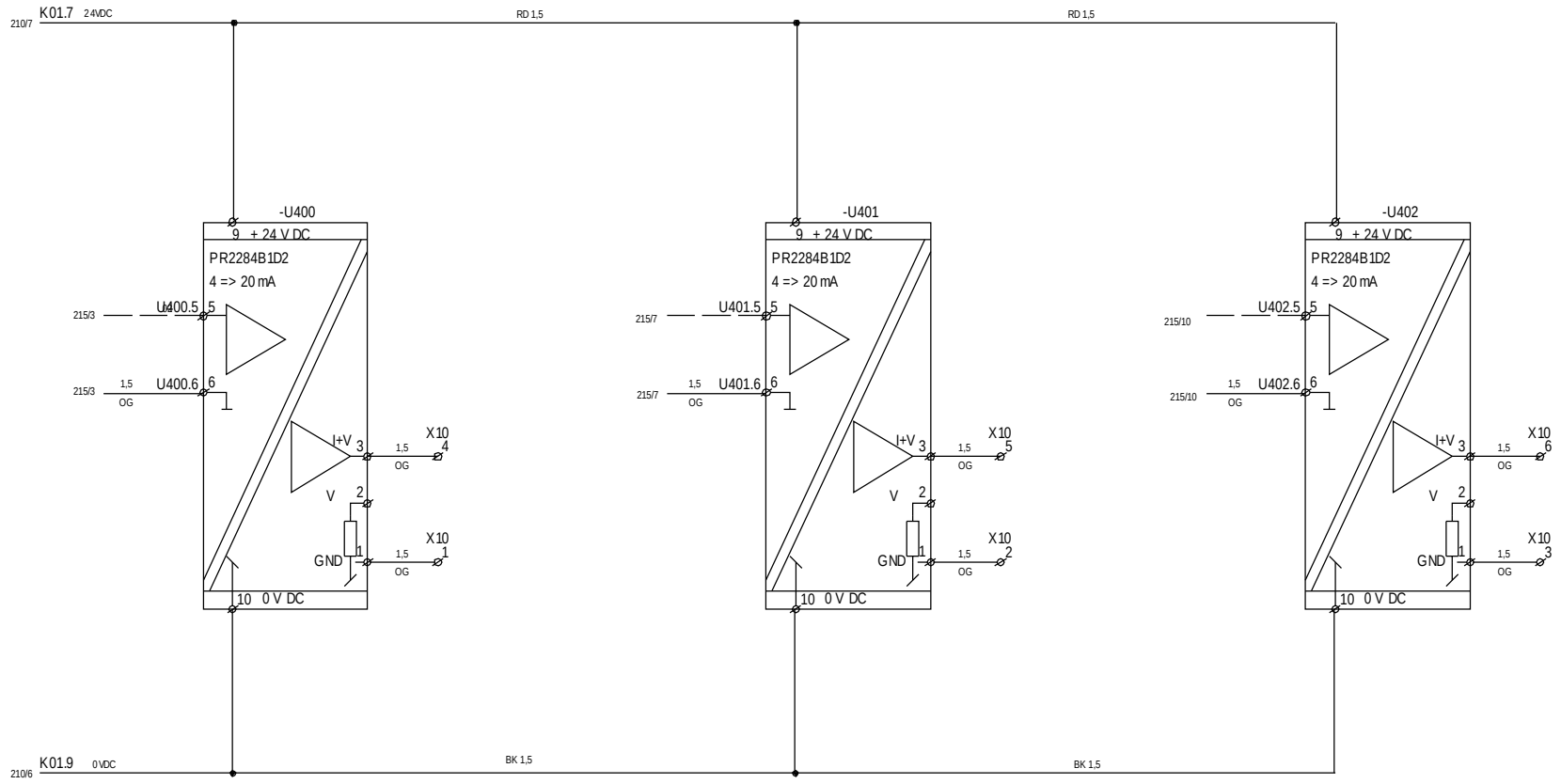
	Date	Initials	Function	Power supply for Input X12		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	040922	INI	Rev. -	Drawing no. 6010128	Cont. sheet 103	Sheet 102



OPTION

WING 3

WING 2

WING 1

28-11-05

10:27

Vestas

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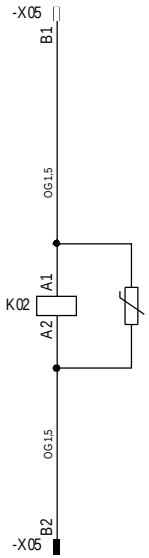
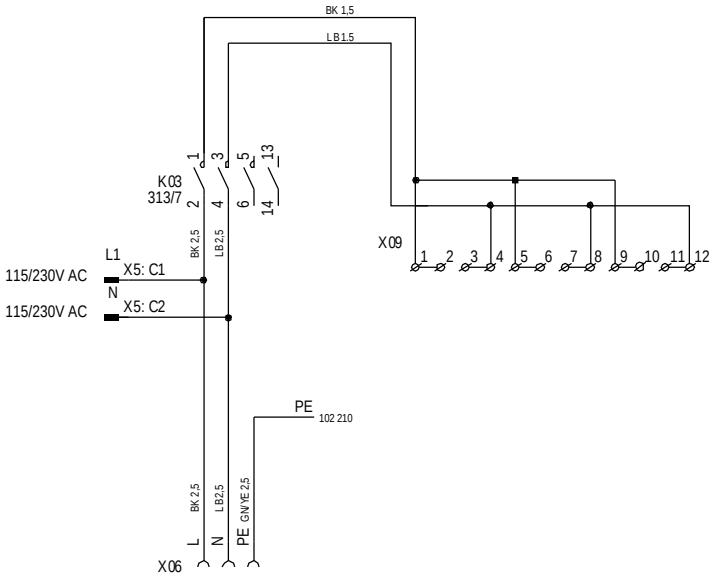
	Date	Initials	Function	Isolation amplifier 4-20mA, wing position		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 105	Sheet 103

1	2	3	4	5	6	7	8	9	10	11	12	13



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Emergency relay 24 V DC3 from Nacelle		
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
		Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
		Reviced	040517	CHO	Rev. -	Drawing no. 6010128	Cont. sheet 110	Sheet 105

28-11-05
10:27

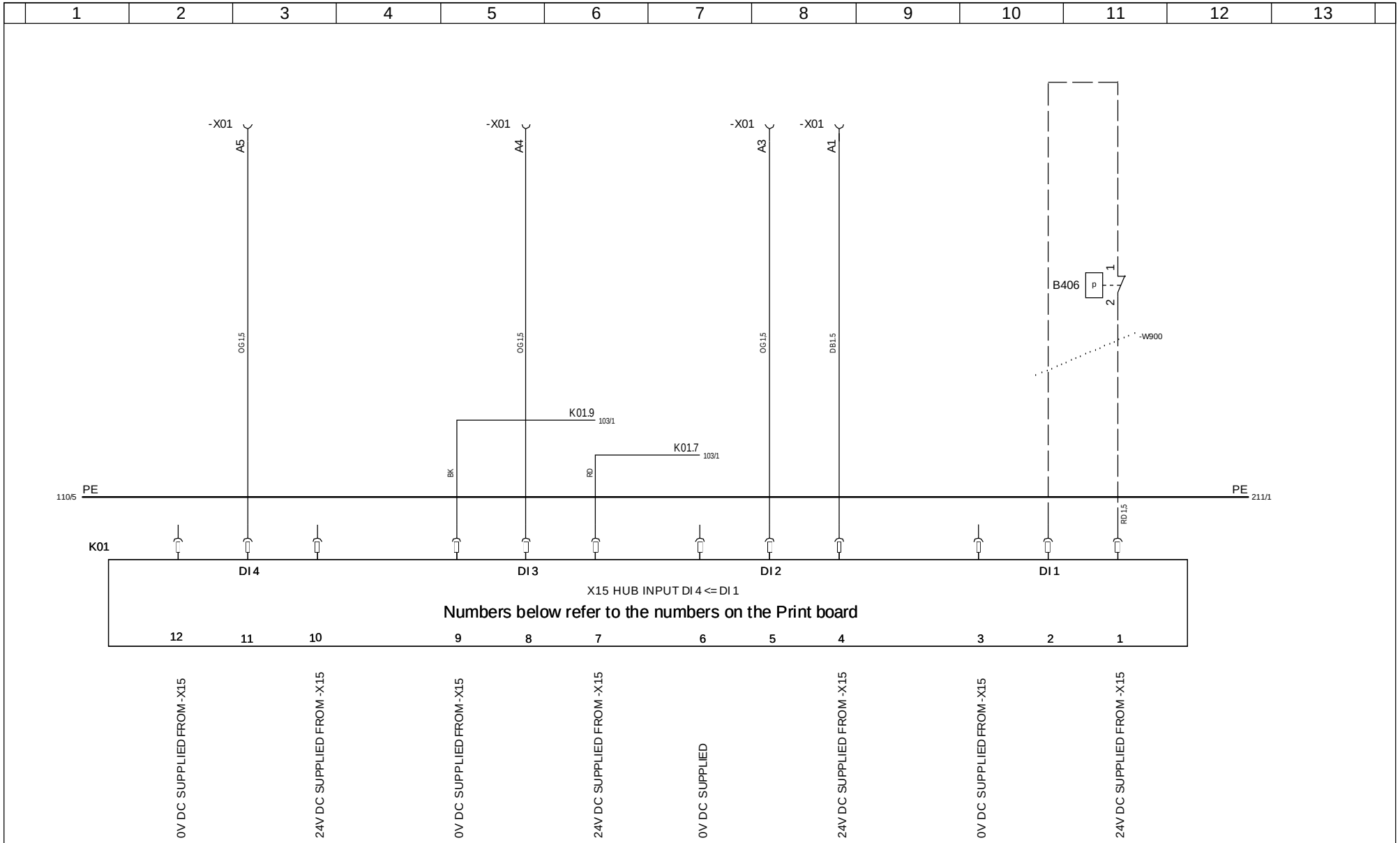


CEE PLUG
CONNECTION TO SERVICE
PLUGS IN THE HUB OPTIONS

SEE X09 TERMINAL LAYOUT
PAGE 059

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	OPTION Terminal loyout heating		
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
		Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
		Reviced	040922	INI	Rev. -	Drawing no. 6010128	Cont. sheet 210	Sheet 110

28-11-05
10:27



28-11-05

10:27

Vestas

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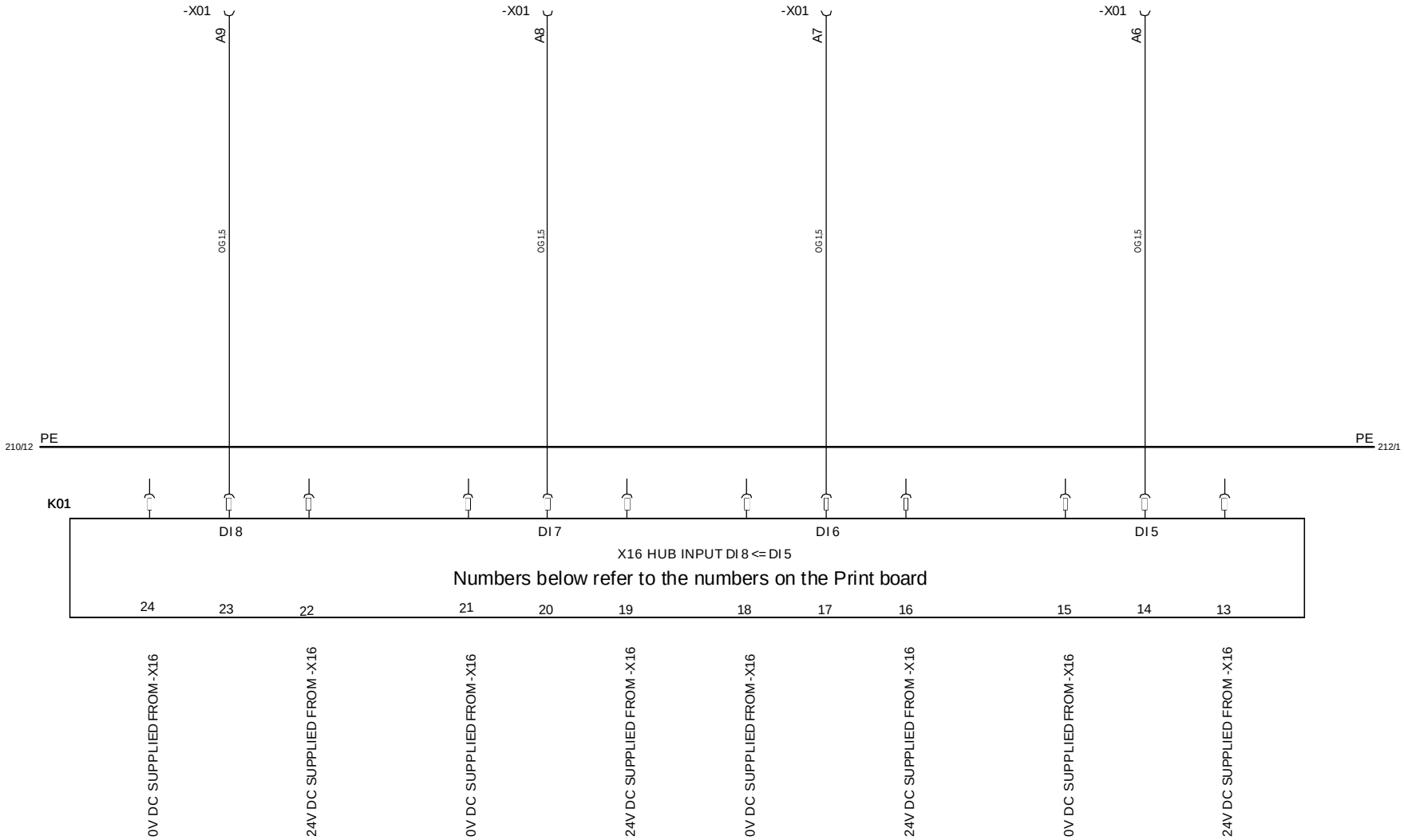
	Date	Initials	Function	Digital input -X15 DI 4 <= DI 1		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 211	Sheet 210



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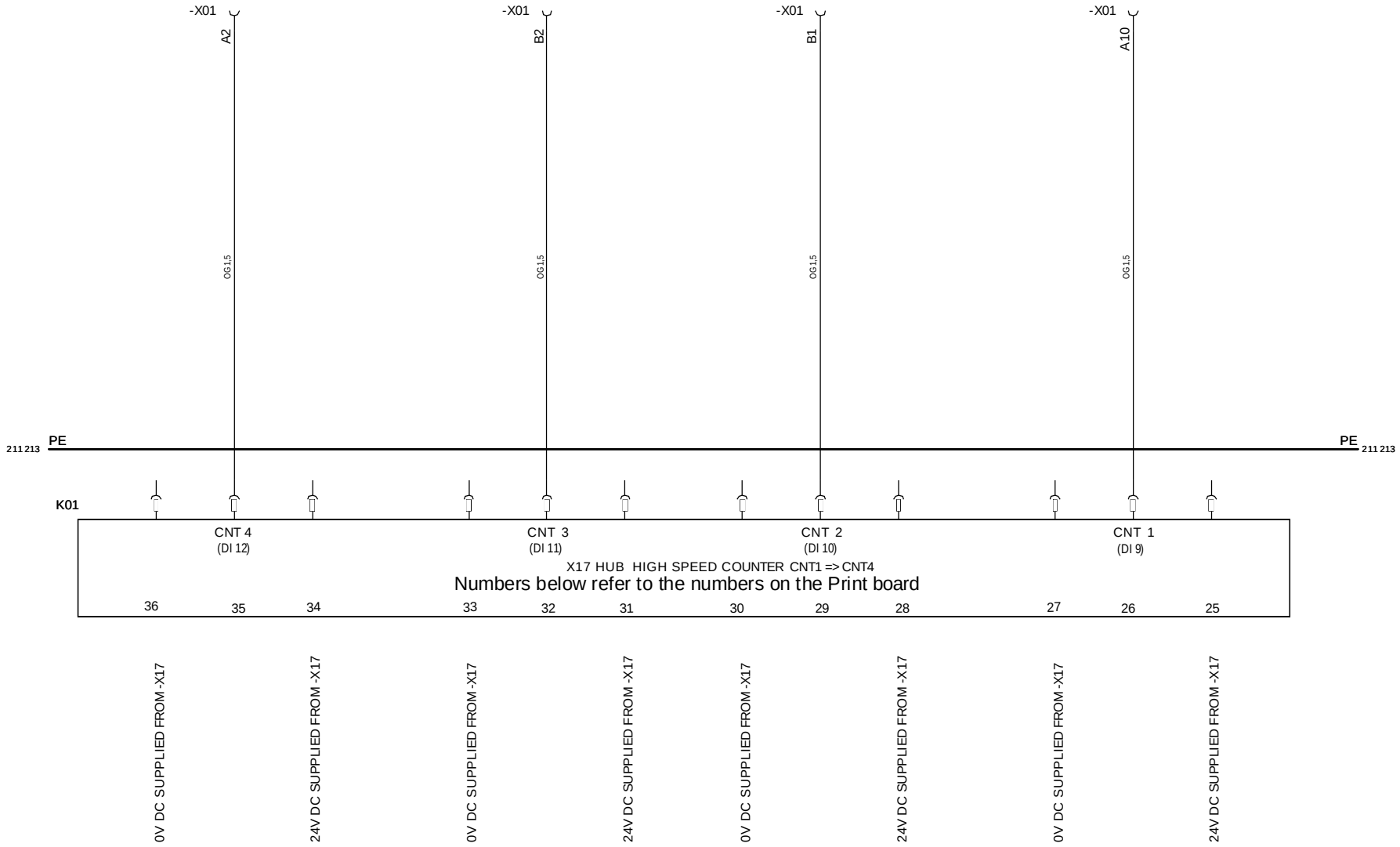
	Date	Initials	Function	Digital input -X16 DI 8 <= DI 5		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 212	Sheet 211

28-11-05
10:27



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	Date	Initials	Function	Digital input -X17 CNT1 => CNT4		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 213	Sheet 212

1	2	3	4	5	6	7	8	9	10	11	12	13

212/12 PE — PE 214/1

K01

DI 16		DI 15		DI 14		DI 13	
44	43	42	41	40	39	38	37
SPARE	24V DC SUPPLIED FROM -X18	SPARE	24V DC SUPPLIED FROM -X18	SPARE	24V DC SUPPLIED FROM -X18	SPARE	24V DC SUPPLIED FROM -X18

X18_1 HUB INPUT DI 16 <= DI 13

Numbers below refer to the numbers on the Print board

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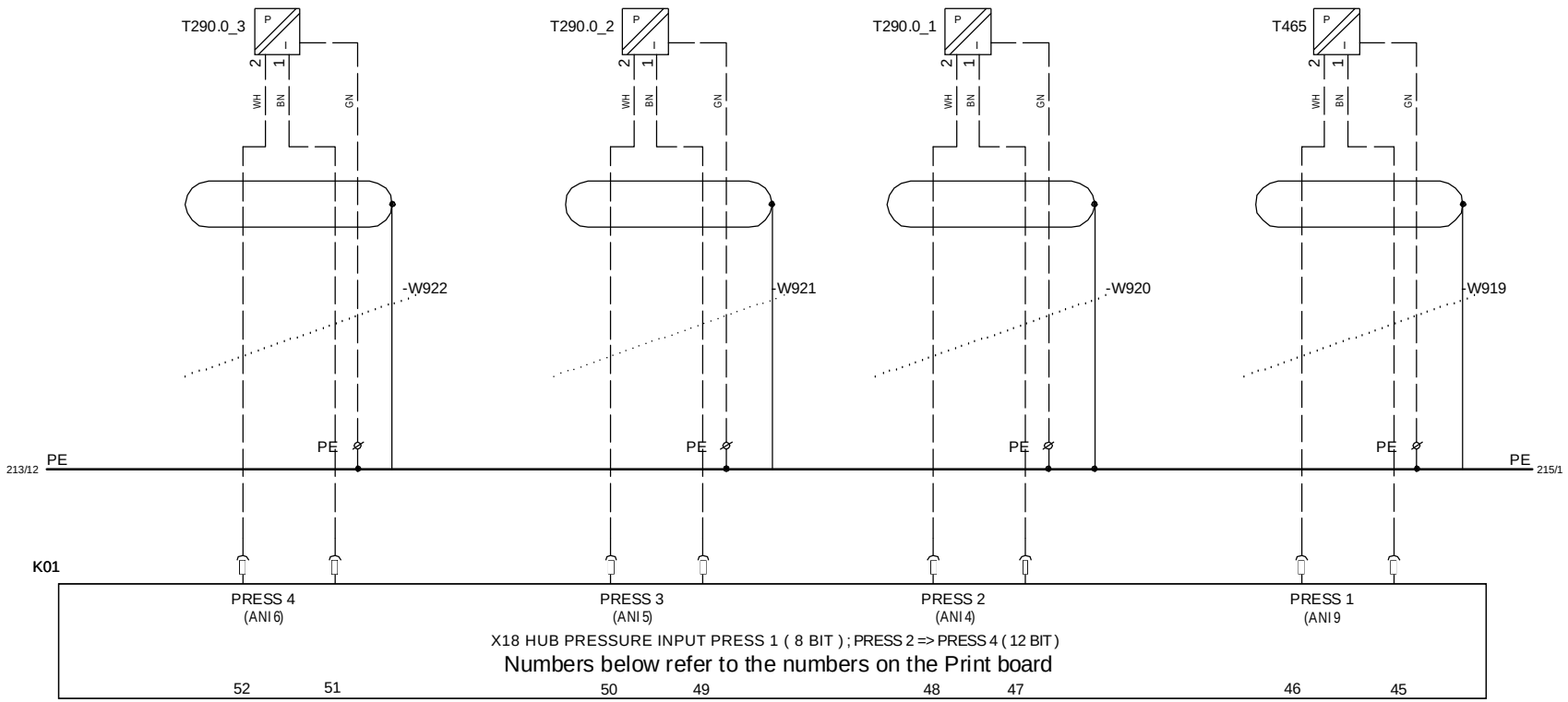
	Date	Initials	Function	Digital input -X18 DI 16<= D13			
Designed	020628	KSS	Project title	Hub Computer Panel +AK4			
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S	
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 214	Sheet 213	



PRESSURE WING 3
400 BAR 4 - 20 mA
TAC CHANNEL 6

24V DC SUPPLIED FROM -X18

PRESSURE WING 2
400 BAR 4 - 20 mA
TAC CHANNEL 5

24V DC SUPPLIED FROM -X18

PRESSURE WING 1
400 BAR 4 - 20 mA
TAC CHANNEL 4

24V DC SUPPLIED FROM -X18

PRESSURE MAIN FLOW
25 BAR 4 - 20 mA
TAC CHANNEL 9

24V DC SUPPLIED FROM -X18

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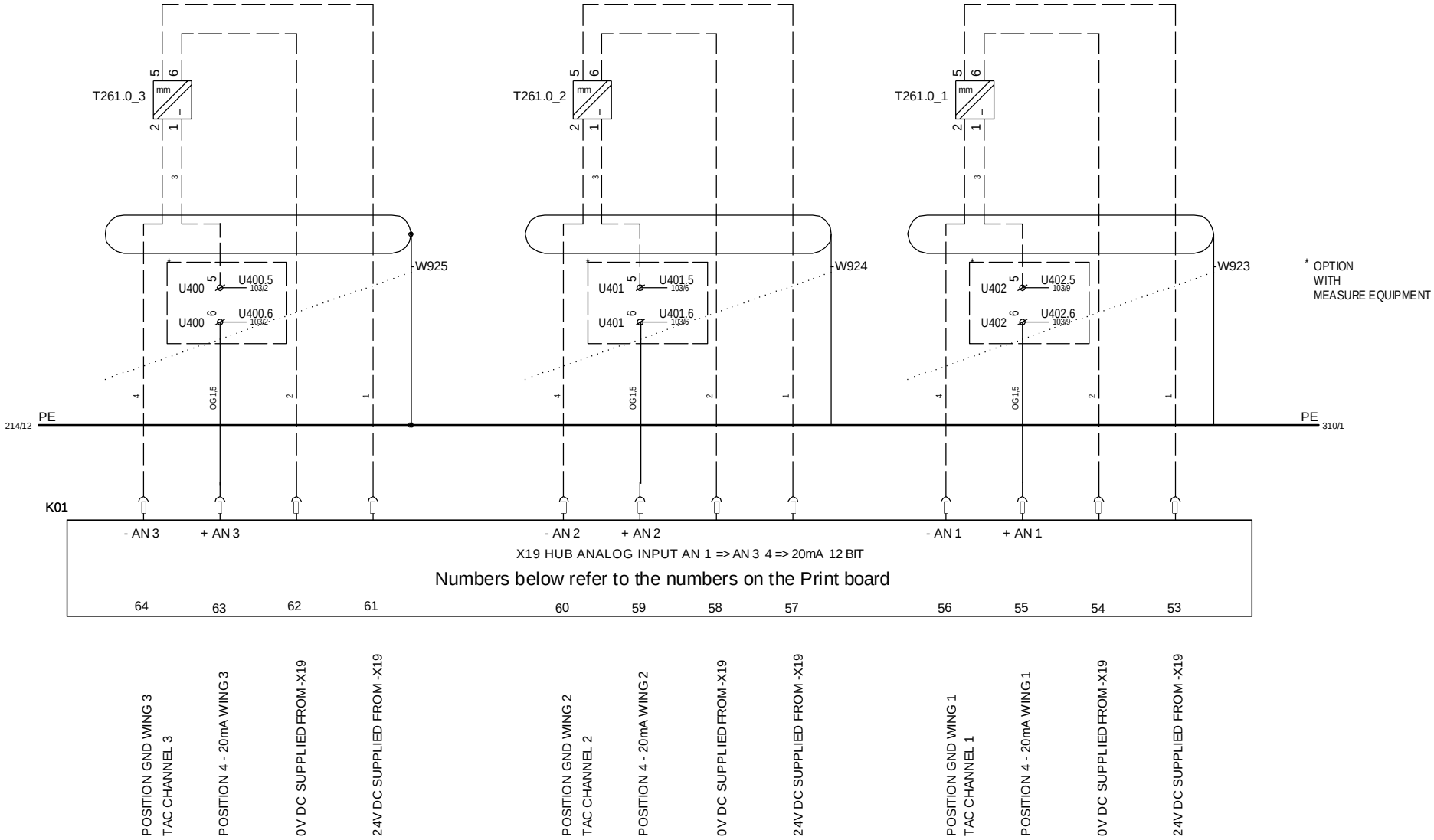
	Date	Initials	Function	Analog input -X18 Press 1 => Press 4		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 215	Sheet 214



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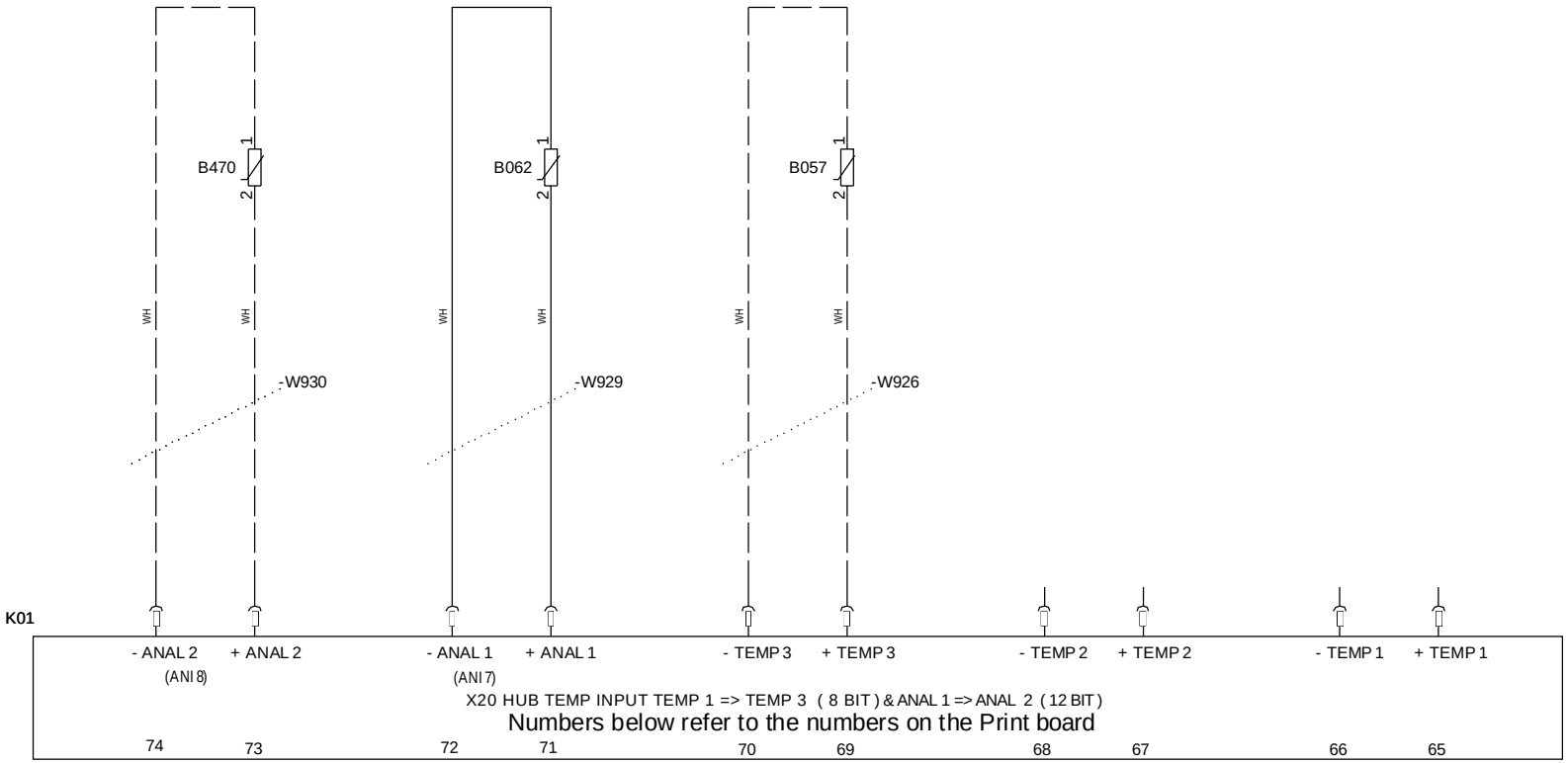
	Date	Initials	Function	Analog input -X19 AN1 => AN3		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 216	Sheet 215



HYDR. OIL TEMP. -B470
TAC CHANNEL 8

TEMPERATURE I HUB PANEL
TAC CHANNEL 7

OPTION
PITCH ACCUMULATOR
TEMPERATURE B57

SPARE

SPARE

SPARE

SPARE

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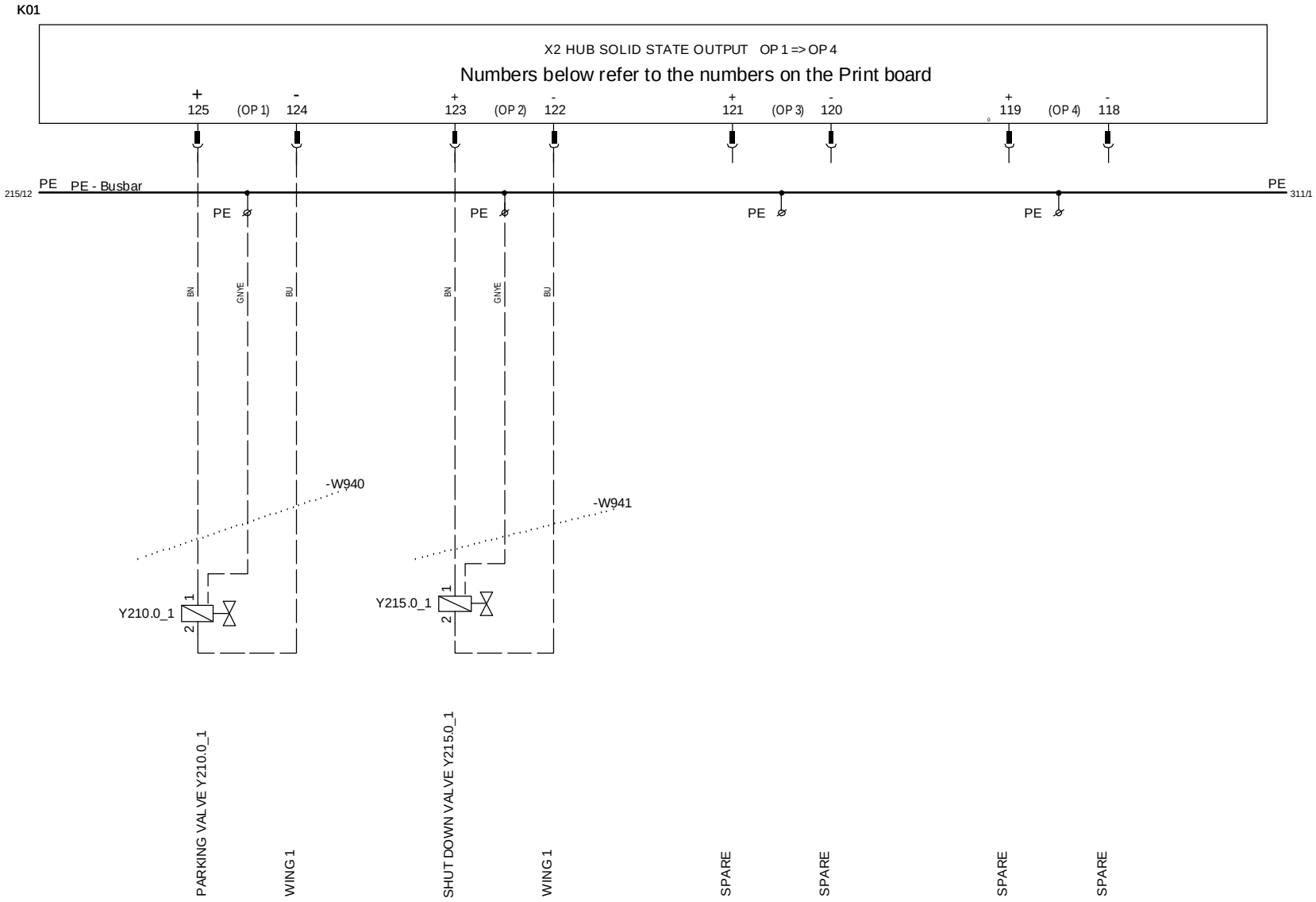
	Date	Initials	Function	Temp. input -X20 Temp 1 => Temp 3 and Analog 1 => 2		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet 310	Sheet 216



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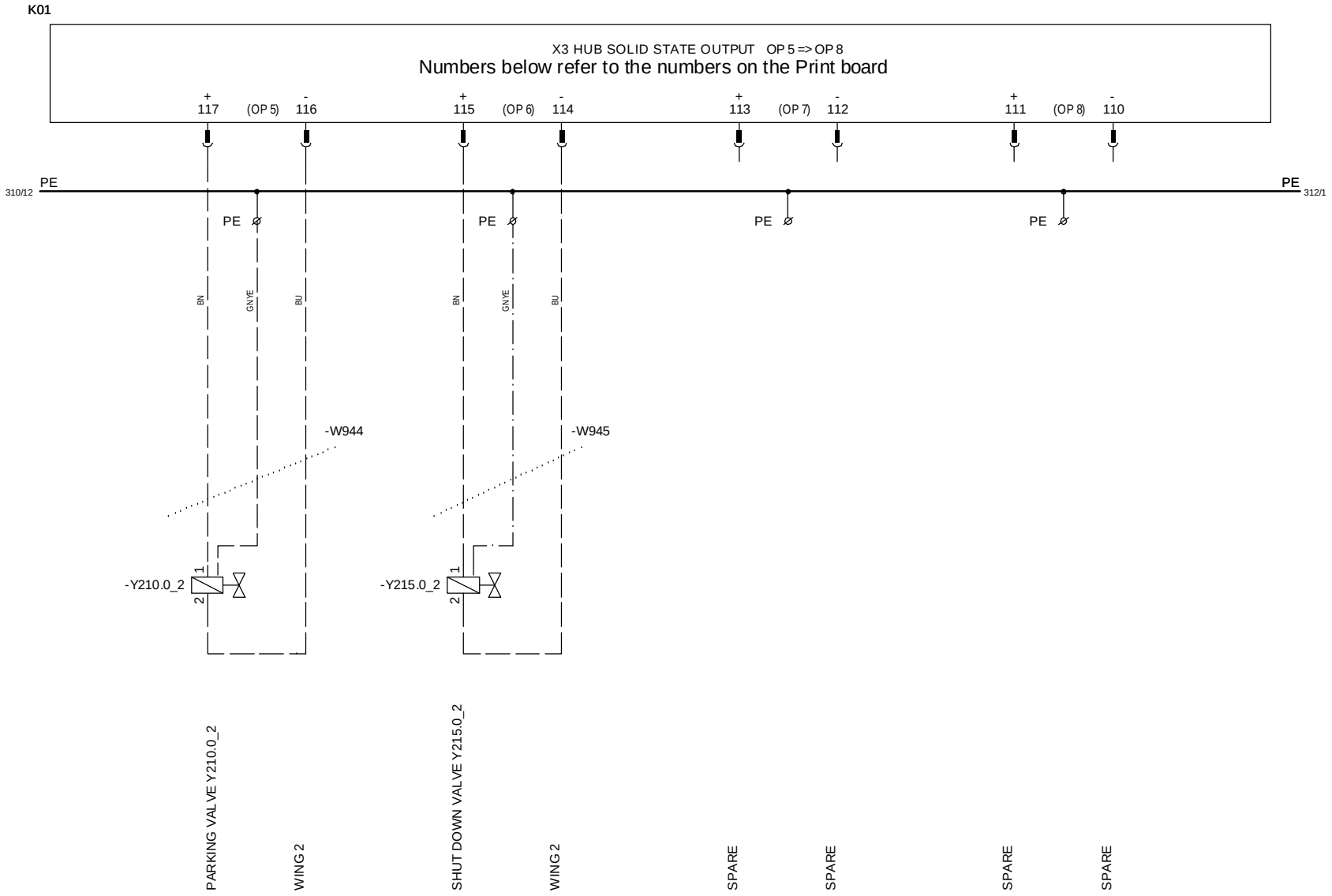
	Date	Initials	Function	Digital output -X2 OP1 => OP4 WING 1		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051005	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051005	INI	Rev. -	Drawing no. 6010128	Cont. sheet 311	Sheet 310



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function	Digital output -X3 OP5 => OP8 WING 2	
		Designed	020628	KSS	Project title	Hub Computer Panel +AK4	
		Approved	051005	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer: Vestas Wind Systems A/S
		Reviced	051005	INI	Rev. -	Drawing no. 6010128	Cont. sheet 312 / Sheet 311

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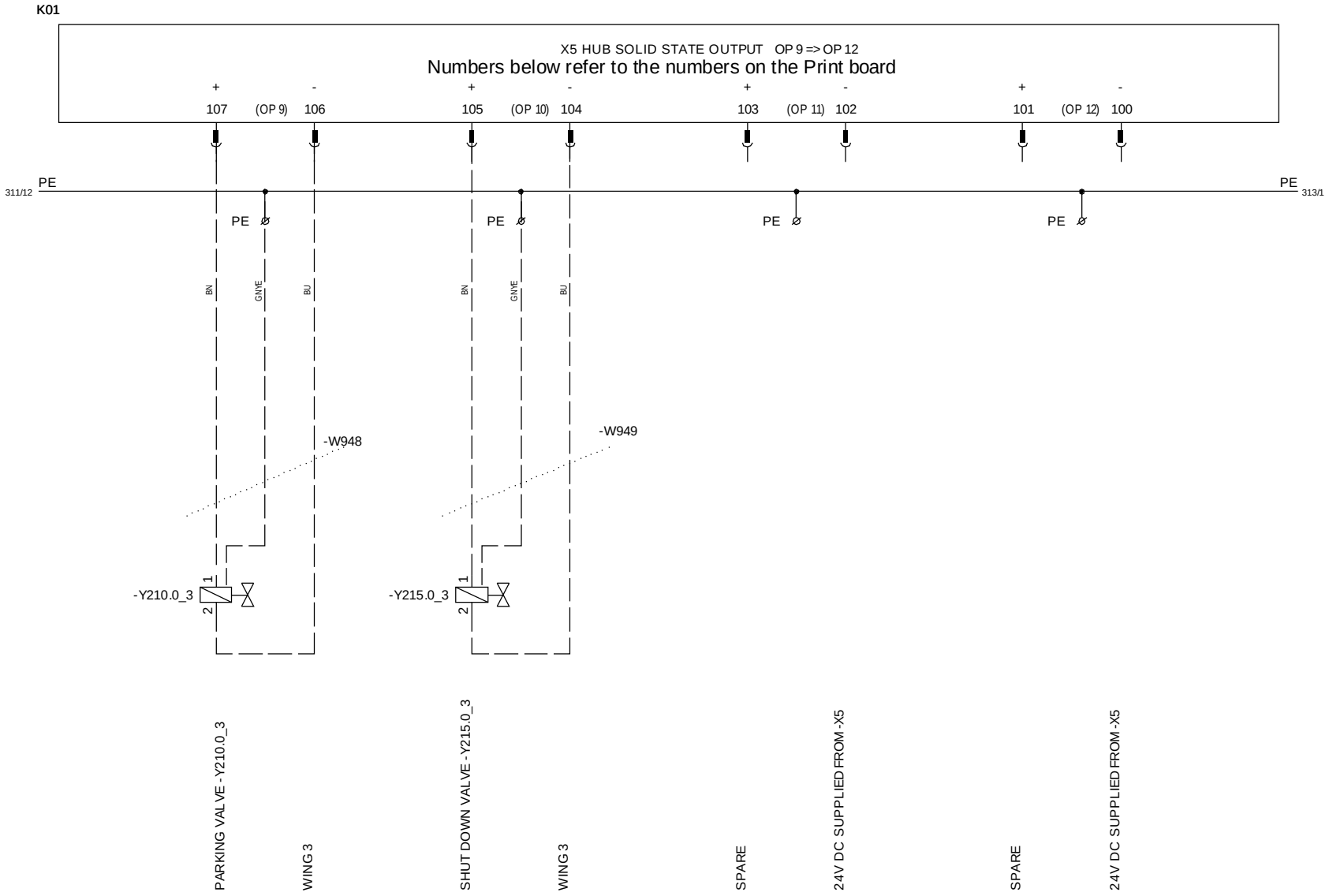
10:27



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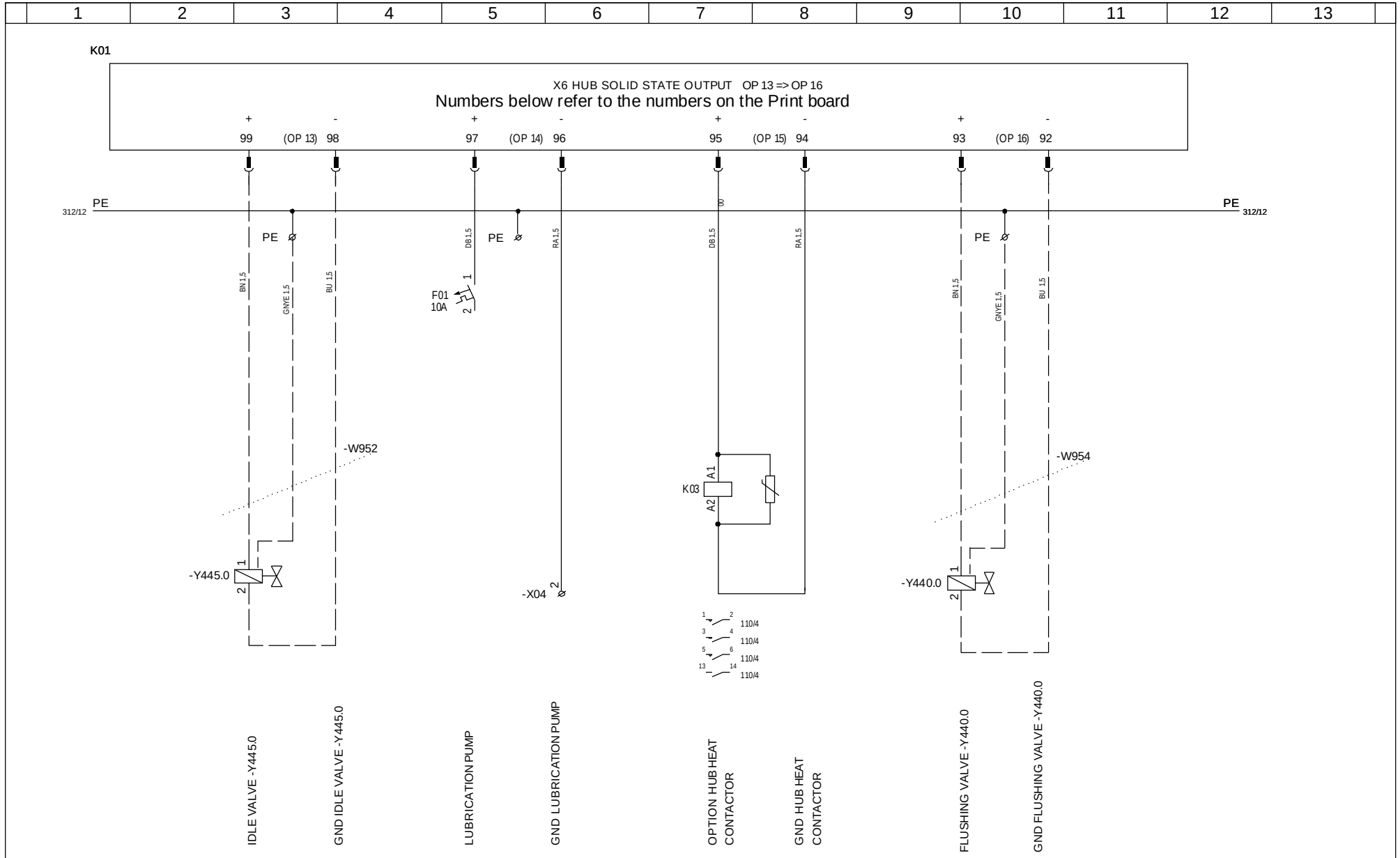
	Date	Initials	Function	Digital output -X5 OP9 => OP12 WING 3		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051005	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051005	INI	Rev. -	Drawing no. 6010128	Cont. sheet 313	Sheet 312



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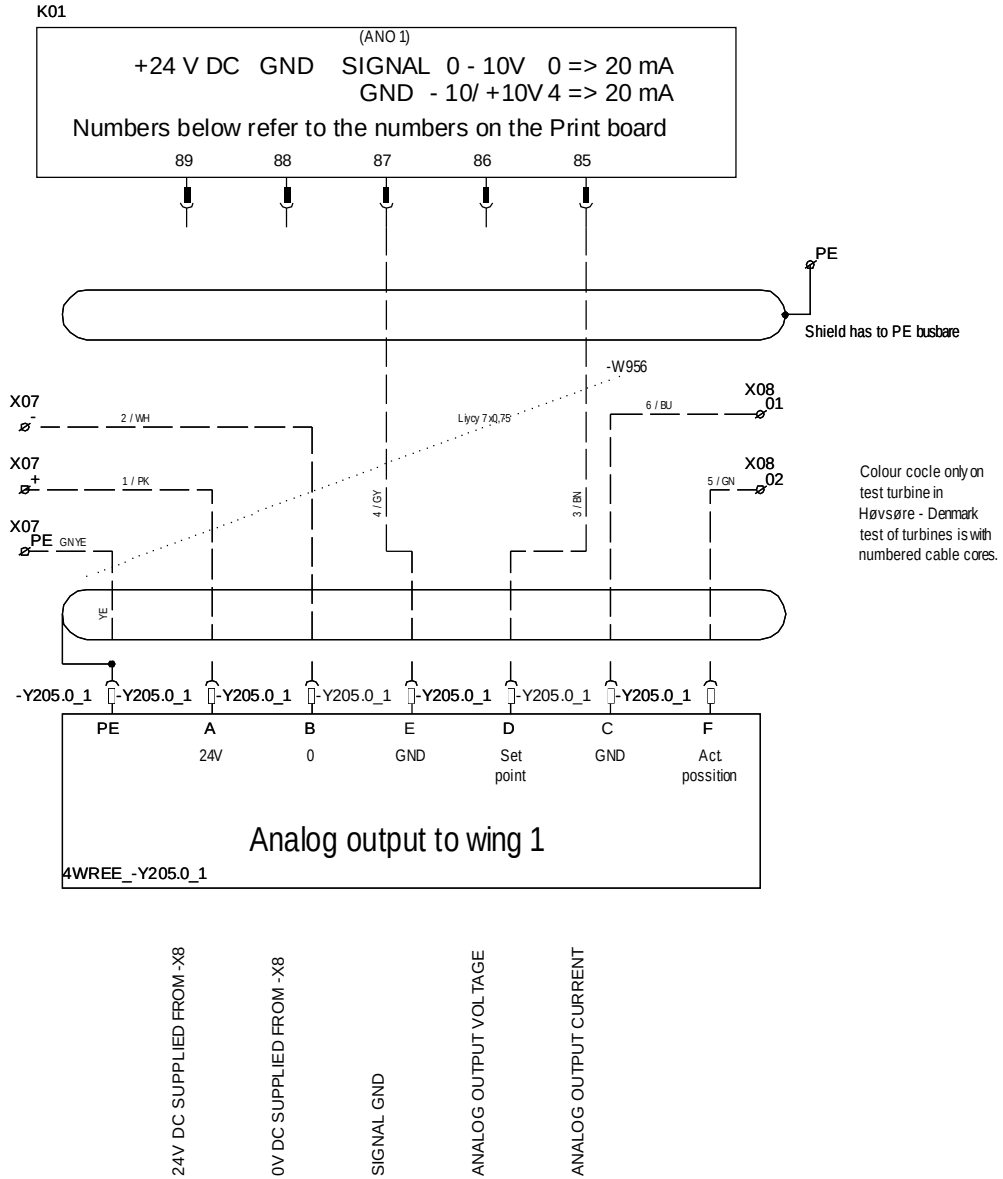
	Date	Initials	Function	Digital output -X6 OP13 => OP16		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051005	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051005	INI	Rev. -	Drawing no. 6010128	Cont. sheet 340	Sheet 313



Colour cocle only on test turbine in Høvsøre - Denmark test of turbines is with numbered cable cores.

THIS CHART REFER TO EACH PROPORTIONAL VALUE	
PRODUCT NAME	MEASURE VALUE
BOSCH REXROTH	4 - 20 mA
PARKER HANNIFIN	-10.. 0.. + 10V
MEASURE VALUE IS MEASURED ON TERMINAL X08:	

28-11-05 10:27

Vestas

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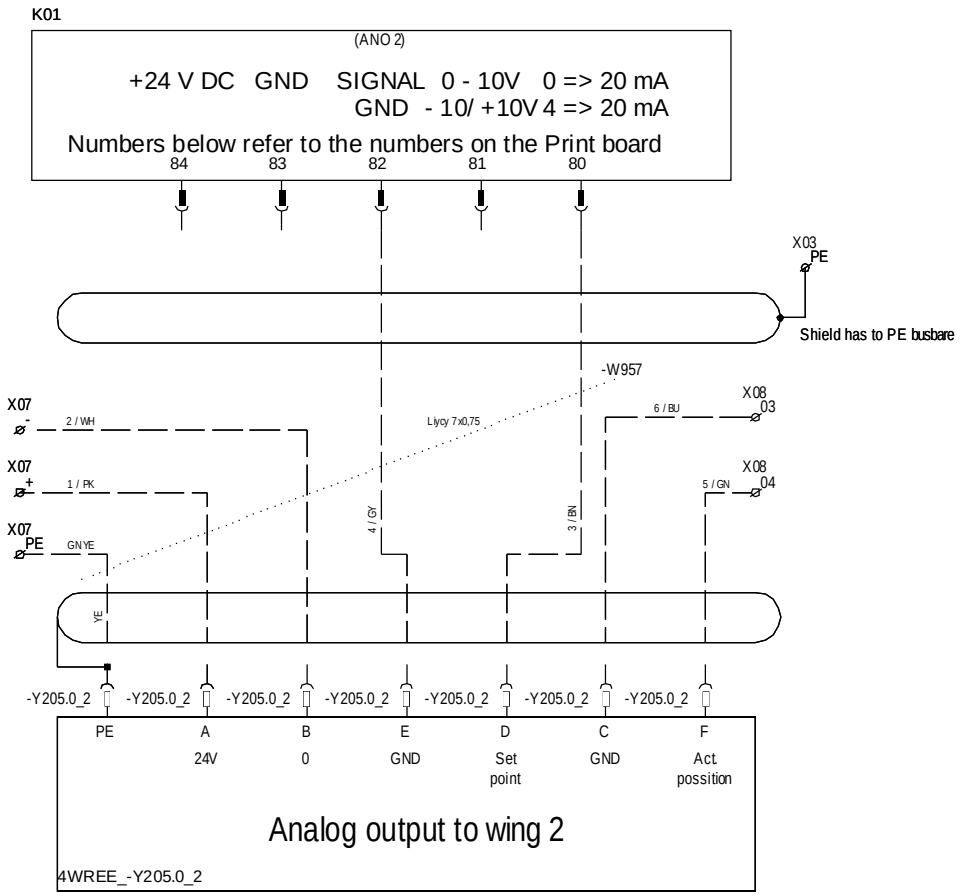
	Date	Initials	Function	Analog output -X8 OVUT1 & IOUT1 WING 1		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 341	Sheet 340



THIS CHART REFER TO EACH PROPORTIONAL VALUE	
PRODUCT NAME	MEASURE VALUE
BOSCH REXROTH	4 - 20 mA
PARKER HANNIFIN	-10.. 0.. + 10V
MEASURE VALUE IS MEASURED ON TERMINAL X08:	

28-11-05
10:27

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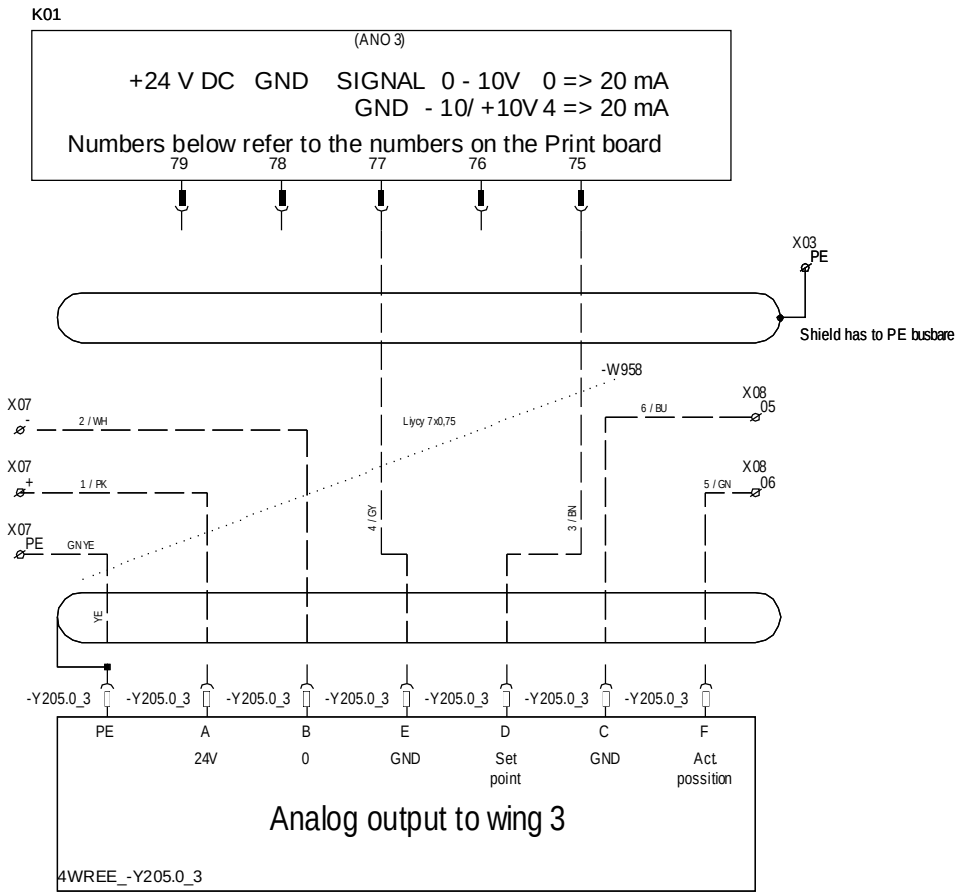
	Date	Initials	Function	Analog output -X9 OVUT2 & IOUT2 WING 2		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 342	Sheet 341



THIS CHART REFER TO EACH PROPORTIONAL VALUE	
PRODUCT NAME	MEASURE VALUE
BOSCH REXROTH	4 - 20 mA
PARKER HANNIFIN	-10.. 0.. + 10V
MEASURE VALUE IS MEASURED ON TERMINAL X08:	

28-11-05 10:27

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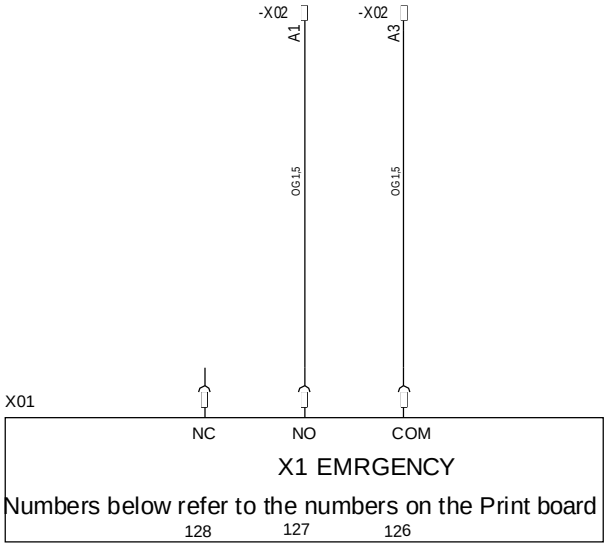
	Date	Initials	Function	Analog output -X10 OVUT3 & IOUT3 WING 3		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 343	Sheet 342



EMERGENCY STOP RELAY NC

EMERGENCY STOP RELAY NO

EMERGENCY STOP RELAY COMMON

28-11-05

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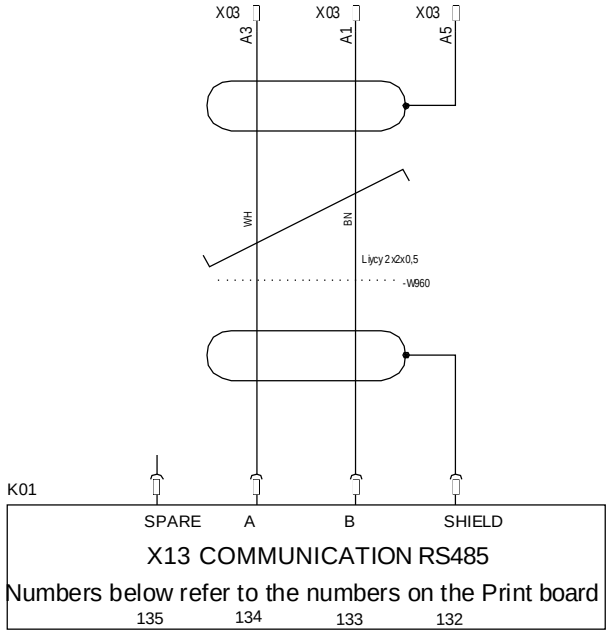
	Date	Initials	Function	Emergency line		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	030422	INI	Rev. -	Drawing no. 6010128	Cont. sheet 500	Sheet 343



SPARE RXA RXB SHIELD

	Date	Initials	Function	Bus communication RS 485		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	030422	INI	Rev. -	Drawing no. 6010128	Cont. sheet 600	Sheet 500

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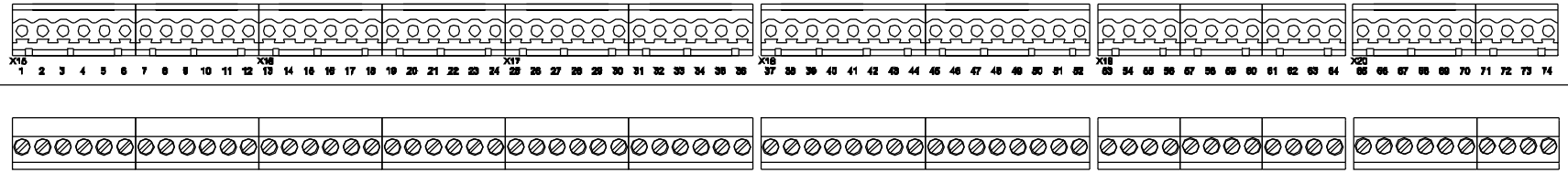
1	2	3	4	5	6	7	8	9	10	11	12	13

NAV Computer Input



1	24V DC SUPPLIED FROM -X15
2	FILTER CLOG MANIFOLD -B406
3	0V DC SUPPLIED FROM -X15
4	24V DC SUPPLIED FROM -X15
5	CHARGE RUN
6	0V DC SUPPLIED FROM -X15
7	24V DC SUPPLIED FROM -X15
8	SHOT DOWN
9	0V DC SUPPLIED FROM -X15
10	24V DC SUPPLIED FROM -X15
11	ALL BLADES
12	0V DC SUPPLIED FROM -X15
13	24V DC SUPPLIED FROM -X16
14	BLADE 1
15	0V DC SUPPLIED FROM -X16
16	24V DC SUPPLIED FROM -X16
17	BLADE 2
18	0V DC SUPPLIED FROM -X16
19	24V DC SUPPLIED FROM -X16
20	BLADE 3
21	0V DC SUPPLIED FROM -X16
22	24V DC SUPPLIED FROM -X16
23	PITCH TO RUN
24	0V DC SUPPLIED FROM -X16
25	24V DC SUPPLIED FROM -X17
26	PITCH TO STOP
27	0V DC SUPPLIED FROM -X17
28	24V DC SUPPLIED FROM -X17
29	PULSE TO RUN
30	0V DC SUPPLIED FROM -X17
31	24V DC SUPPLIED FROM -X17
32	PULSE TO STOP
33	0V DC SUPPLIED FROM -X17
34	24V DC SUPPLIED FROM -X17
35	PENDANT CONT. 24 VDC
36	0V DC SUPPLIED FROM -X17
37	24V DC SUPPLIED FROM -X18
38	SPARE
39	24V DC SUPPLIED FROM -X18
40	SPARE
41	24V DC SUPPLIED FROM -X18
42	SPARE
43	24V DC SUPPLIED FROM -X18
44	SPARE
45	24V DC SUPPLIED FROM -X18
46	PRESSURE MAIN FLOW, 25 BAR 4-20mA
47	24V DC SUPPLIED FROM -X18
48	PRESSURE WING 1, 400 BAR 4-20mA
49	24V DC SUPPLIED FROM -X18
50	PRESSURE WING 2, 400 BAR 4-20mA
51	24V DC SUPPLIED FROM -X18
52	PRESSURE WING 3, 400 BAR 4-20mA
53	24V DC SUPPLIED FROM -X19
54	0V DC SUPPLIED FROM -X19
55	POSITION 4 - 20mA WING 1
56	POSITION GND WING 1
57	24V DC SUPPLIED FROM -X19
58	0V DC SUPPLIED FROM -X19
59	POSITION 4 - 20mA WING 2
60	POSITION GND WING 2
61	24V DC SUPPLIED FROM -X19
62	0V DC SUPPLIED FROM -X19
63	POSITION 4 - 20mA WING 3
64	POSITION GND WING 3
65	SPARE
66	SPARE
67	SPARE
68	SPARE
69	OPTION, PITCH ACC. TEMP. B57
70	OPTION, PITCH ACC. TEMP. B57
71	TEMPERATURE IN HUB PANEL
72	TEMPERATURE IN HUB PANEL
73	HYDR. OIL TEMP. -B470
74	HYDR. OIL TEMP. -B470

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11:05

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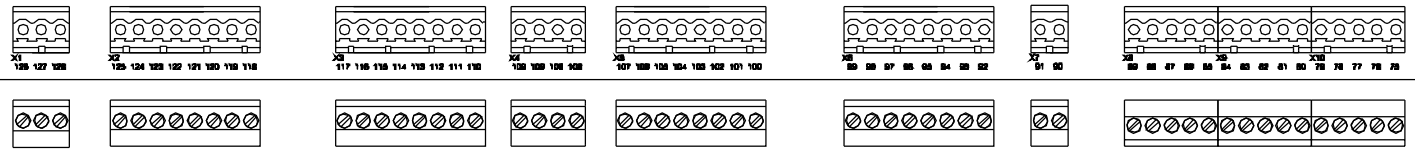
	Date	Initials	Function	NAV Computer input		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 601	Sheet 600

1	2	3	4	5	6	7	8	9	10	11	12	13

NAV Computer Output



EMERGENCY STOP RELAY NC	PARKING VALVE Y210.0_1	PARKING VALVE Y210.0_2	24V DC SUPPLIED TO OUTPUT	PARKING VALVE Y210.0_3	IDLE VALVE -Y445.0	. .	24V DC SUPPLIED FROM -X8				
EMERGENCY STOP RELAY NO	WING 1	WING 2	24V DC SUPPLIED TO OUTPUT	WING 3	GND IDLE VALVE -Y445.0		0V DC SUPPLIED FROM -X8				
EMERGENCY STOP RELAY COMMON	SHUT DOWN VALVE Y215.0_1	SHUT DOWN VALVE Y215.0_2	0V DC SUPPLIED TO OUTPUT	SHUT DOWN VALVE Y215.0_3	LUBRICATION PUMP		SIGNAL GND				
	WING 1	WING 2	0V DC SUPPLIED TO OUTPUT	WING 3	GND LUBRICATION PUMP		ANALOG OUTPUT VOLTAGE				
	SPARE	SPARE		SPARE	OPTION HUB HEAT CONTACTOR		ANALOG OUTPUT CURRENT				
	SPARE	SPARE		24V DC SUPPLIED FROM -X5	GND HUB HEAT CONTACTOR		24V DC SUPPLIED FROM -X9				
	SPARE	SPARE		SPARE	FLUSHING VALVE Y440.0		0V DC SUPPLIED FROM -X9				
		SPARE		24V DC SUPPLIED FROM -X5	GND FLUSHING VALVE Y440.0		SIGNAL GND				
							ANALOG OUTPUT VOLTAGE				
							ANALOG OUTPUT CURRENT				
							24V DC SUPPLIED FROM -X10				
							0V DC SUPPLIED FROM -X10				
							SIGNAL GND				
							ANALOG OUTPUT VOLTAGE				
							ANALOG OUTPUT CURRENT				

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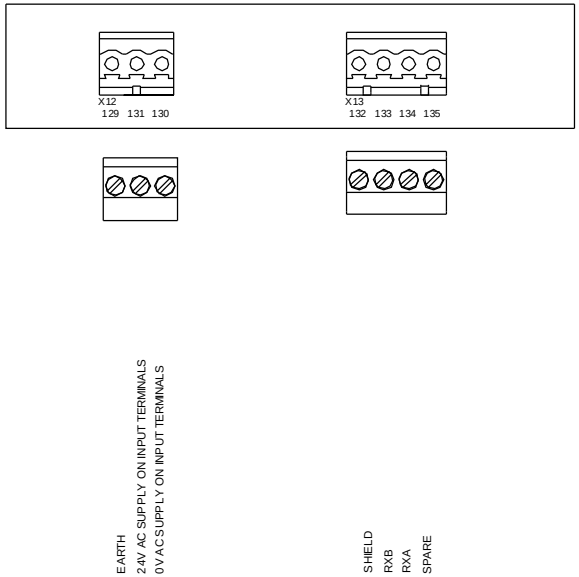
	Date	Initials	Function	NAV Computer output			
Designed	020628	KSS	Project title	Hub Computer Panel +AK4			
Approved	051128	KSS	Comments	V82 MRK II & NM72/82 EVO II v.1		Customer	Vestas Wind Systems A/S
Reviced	051128	INI	Rev. -	Drawing no. 6010128	Cont. sheet 602	Sheet 601	



Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.

	Date	Initials	Function	NAV Computer supply		
Designed	020628	KSS	Project title	Hub Computer Panel +AK4		
Approved			Comments	V82 MRK II & NM72/82 EVO II v.1	Customer	Vestas Wind Systems A/S
Reviced	031001	INI	Rev. -	Drawing no. 6010128	Cont. sheet -	Sheet 602

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Material 60017297
Description HUB CPU PANEL +AK4 NM72-82 EVO II

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60099039	Label kit HUB CPU-EVO II	1	PC	
1	60011426	WALL SOCKET 216RS6 2P+E 250V 16A CEE	1	PC	SOCKET-X06
1	60010352	CABINET AE 500x700x250mm 1 DOOR w. WORK	1	PC	+AK4
1	60010159	MOUNTING PLATE 665x690x2mm w. WORK	1	PC	+AK4
1	60010445	WALL BRACKET 2508.000 25*10mm	4	PC	+AK4
1	60105763	CABLE CONDUIT, DIN RAIL HUB COMPUTER	1	PC	
1	60009751	SCREW HFC 208 M 4.8 x 9.5 - FZB	32	PC	
1	60013412	ANGLE BRACKET 2x10x25mm f. EARTH BUSBAR	3	PC	
1	60015652	SIF HUB COMPUTER w.CABINET NM72/82 EVOII	1	PC	
1	60009578	SCREW ISO 7045 M 3 x 8 - FZB - H	9	PC	
1	60009861	NUT ISO 4032 M 4 - 6 - FZB	3	PC	
1	60009838	LOCK WASHER DIN 6798 A 4 - FZB	3	PC	
1	60009599	SCREW ISO 7045 M 4 x 14 - 4.8 - FZB - Z	3	PC	
1	60009580	SCREW ISO 7045 M 4 x 10 - FZB - H	12	PC	-G400-G401
1	60009577	SCREW ISO 7045 M 3 x 6 - FZB - H	8	PC	-G400-G401
1	60009525	SCREW ISO 1207 M 4 x 16 - 4.8 - FZB	4	PC	
1	60005136	MCB 5SX2104-7 C 1-POL. 4.0A 440VAC-60VDC	1	PC	-F02
1	60000719	BATT CHARGER 115-230/24V 10A ADC5423/83	2	PC	
1	60001890	MVSTBW 2,5/10 - ST - 5,08	2	PC	
1	60001892	GMVSTBW 2,5/3 - ST - 7,62	2	PC	
1	60010158	MOUNTING PLATE 100x172mm w. WORK	2	PC	
1	60006942	ISOLA.TRAFO EI84/43 2x110/24VAC 70VA	1	PC	-G402
1	60110379	CONTACTOR AL 9-30-10 24VDC	1	PC	-K02
1	60110382	VARISTOR 24-60V RV 5/50	1	PC	-K02
1	60110379	CONTACTOR AL 9-30-10 24VDC	1	PC	-K03
1	60110382	VARISTOR 24-60V RV 5/50	1	PC	-K03
1	60001914	BLZ2 15527.6 FEMALE TERMINAL SCREW 90°	1	PC	
1	60001930	BLZ4 15529.6 FEMALE TERMINAL SCREW 90°	4	PC	
1	60001937	BLZ5 15530.6 FEMALE TERMINAL SCREW 90°	3	PC	
1	60001946	BLZ6 15531.6 FEMALE TERMINAL SCREW 90°	1	PC	
1	60001960	BLZ8 15533.6 FEMALE TERMINAL SCREW 90°	5	PC	
1	60009279	PT100 180-4-2M Ø6x60mm 2m CABLE	1	PC	-B062
1	60007481	CABLE RACK TK 5-7	1	PC	-B062
1	60009578	SCREW ISO 7045 M 3 x 8 - FZB - H	1	PC	
1	60006566	HOUSING C14610F0100001 42P BULKHEAD	1	PC	-X01
1	60006567	COVER f.HOUSING C14610Z0101001 10P	1	PC	-X01
1	60099102	FRAME f. 3 MOD.C146 P10 002 G8 MALE 2+PE	1	PC	-X01
1	60006483	MODULE BLIND C146A00001E8 MALE	1	PC	-X01
1	60009617	SCREW HFC 9046 M 4 x 16 - 4.8 - FZB	4	PC	-X01
1	60009838	LOCK WASHER DIN 6798 A 4 - FZB	4	PC	-X01
1	60009861	NUT ISO 4032 M 4 - 6 - FZB	4	PC	-X01
1	60006566	HOUSING C14610F0100001 42P BULKHEAD	1	PC	-X02
1	60006567	COVER f.HOUSING C14610Z0101001 10P	1	PC	-X02
1	60099102	FRAME f. 3 MOD.C146 P10 002 G8 MALE 2+PE	1	PC	-X02
1	60009617	SCREW HFC 9046 M 4 x 16 - 4.8 - FZB	4	PC	-X02
1	60009838	LOCK WASHER DIN 6798 A 4 - FZB	4	PC	-X02
1	60009861	NUT ISO 4032 M 4 - 6 - FZB	4	PC	-X02
1	60006483	MODULE BLIND C146A00001E8 MALE	2	PC	-X02
1	60006566	HOUSING C14610F0100001 42P BULKHEAD	1	PC	-X03
1	60006567	COVER f.HOUSING C14610Z0101001 10P	1	PC	-X03
1	60099102	FRAME f. 3 MOD.C146 P10 002 G8 MALE 2+PE	1	PC	-X03
1	60009617	SCREW HFC 9046 M 4 x 16 - 4.8 - FZB	4	PC	-X03
1	60009838	LOCK WASHER DIN 6798 A 4 - FZB	4	PC	-X03
1	60009861	NUT ISO 4032 M 4 - 6 - FZB	4	PC	-X03
1	60006483	MODULE BLIND C146A00001E8 MALE	2	PC	-X03
1	60091902	END STOP WAGO 249-116 6mm TS35	2	PC	-X04
1	60006566	HOUSING C14610F0100001 42P BULKHEAD	1	PC	-X05
1	60006567	COVER f.HOUSING C14610Z0101001 10P	1	PC	-X05
1	60099102	FRAME f. 3 MOD.C146 P10 002 G8 MALE 2+PE	1	PC	-X05
1	60009617	SCREW HFC 9046 M 4 x 16 - 4.8 - FZB	4	PC	-X05
1	60009838	LOCK WASHER DIN 6798 A 4 - FZB	4	PC	-X05
1	60009861	NUT ISO 4032 M 4 - 6 - FZB	4	PC	-X05
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	2	PC	-X07;-X04
1	60014306	MARK +AK4 HUB COMP. EVO II TYPE 870	1,000	SH	
1	60006078	TERMINAL WAGO DOUBLE 870-831 2.5mm²	6	PC	-X07
1	60006079	END PLATE 870-948	2	PC	-X07
1	60006087	PUSH-IN JUMPER BAR 870-403 3-POLED	2	PC	-X07
1	60091902	END STOP WAGO 249-116 6mm TS35	3	PC	-X07

Material 60017297
Description HUB CPU PANEL +AK4 NM72-82 EVO II

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60006078	TERMINAL WAGO DOUBLE 870-831 2.5mm²	12	PC	-X09
1	60006079	END PLATE 870-948	1	PC	-X09
1	60091902	END STOP WAGO 249-116 6mm TS35	1	PC	-X09
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	-X09
1	60006086	PUSH-IN JUMPER BAR 870-402 2-POLED	6	PC	-X09
1	60006071	TERMINAL WAGO 870-501 2-LEV.0,08-2,5mm²	3	PC	-X08
1	60006083	END SECTION 870-518 2-LEVEL GREY WAGO	1	PC	-X08
1	60091902	END STOP WAGO 249-116 6mm TS35	1	PC	-X08
1	60091915	END STOP LABEL HOLDER WAGO 249-119 10mm	1	PC	-X08
1	60007583	CABLE GLAND BM-EN-1S M12 PA 6	1	PC	
1	60007591	LOCKNUT BML-1S M12 PA 6	1	PC	
1	60007584	CABLE GLAND BM-EN-11 M16 PA 6	12	PC	
1	60007592	LOCKNUT BML-11 M16 PA 6	12	PC	
1	60007585	CABLE GLAND BM-EN-12 M20 PA 6	36	PC	
1	60007593	LOCKNUT BML-12 M20 PA 6	36	PC	
1	60007586	CABLE GLAND BM-EN-13 M25 PA 6	1	PC	
1	60007594	LOCKNUT BML-13 M25 PA 6	1	PC	
1	60012753	WIRING HUB CPU NM72-82/1500 IEC/UL	1	PC	
1	60012754	WIRING HUB CPU NM72-82/1500 IEC/UL	1	PC	
1	60007196	DIN RAIL FITTING TSTW 72x48mm	3	PC	
1	60007197	SCREW FKSC M6x12mm	3	PC	
1	60006078	TERMINAL WAGO DOUBLE 870-831 2.5mm²	1	PC	-X04/-F01
1	60005140	MCB 5SX2110-7 C 1-POL.10.0A 440VAC-60VDC	1	PC	-X04/-F01
1	60006079	END PLATE 870-948	1	PC	-X04/-F01
1	60091902	END STOP WAGO 249-116 6mm TS35	1	PC	-X04/-F01

LST: 21000054
Version: 03

Material 60022842
Description CABLES f. HUB +AK4 NM72-82/1500/1650

Lev	Obj	Object description	Quantity	Un	SortStrng
1	60021519	Cable W900 Filter Clog -B406	1	PC	
1	60021523	Cable W919 -T465 HUB Pressure	1	PC	
1	60021524	Cable W920 -T290_1 Pressure transducer W	1	PC	
1	60021525	Cable W921 -T290_2 Pressure transducer W	1	PC	
1	60021526	Cable W922 -T290_3 Pressure transducer W	1	PC	
1	60021530	Cable W926	1	PC	
1	60021533	Cable W930 -B470 Hydraulic olie	1	PC	
1	60021534	Cable -W940 Parking valve Y210.0_1	1	PC	
1	60021535	Cable -W941 Shot down Valve -Y215.0_1	1	PC	
1	60021536	Cable -W944 Parking valve -Y210.0_2	1	PC	
1	60021537	Cable -W945 Shot down Valve -Y215.0_2	1	PC	
1	60021538	Cable -W948 Parking valve -Y210.0_3	1	PC	
1	60021539	Cable -W949 Shot down Valve -Y215.0_3	1	PC	
1	60021541	Cable W952 Idle Valve -Y445.0	1	PC	
1	60021542	Cable W953 Lubrication Pump M11	1	PC	
1	60021543	Cable W954 Flushing Valve Y440.0	1	PC	
1	60021544	Cable -W956 Pro. valve -Y205.0_1 wing 1	1	PC	
1	60021545	Cable -W957 Pro. valve -Y205.0_2 wing 2	1	PC	
1	60021546	Cable -W958 Pro. Valve -Y205.0_3 wing 3	1	PC	
1	60101018	Cable W923 _T261_1 Pos. transducer 1 Std	1	PC	
1	60101148	Cable W924 -T261_2 Pos. Transducer 2 Std	1	PC	
1	60101149	Cable W925 -T261_3 Pos. Transducer 3 Std	1	PC	
1	60110062	CABLE -W960 NM30T. MRK III 4G1.5 UNI	1	PC	

LST: 2000055
Version: 02

Material 60019750
Description MEASURING KIT f.HUB CPU NM72 EVO-II

Obj	Object description	Quantity	Un	SortStrng
60004912	ISOLATION AMPLIFIER 2284	3	PC	
60005026	SOCKET MT 78740 11-POLED	3	PC	
60005027	FASTENING BRACKET for S-SYSTEM	3	PC	
60006034	END STOP 9708/2 S35	1	PC	
60006071	TERMINAL WAGO 870-501 2-LEV.0,08-2,5mm²	3	PC	-X10
60006083	END SECTION 870-518 2-LEVEL GREY	1	PC	-X10
60006034	END STOP 9708/2 S35	1	PC	-X10
60012756	WIRING HUB CPU NM72-82/1500 IEC/UL	1	PC	
60021527	Cable W923 _T261_1 Position transducer 1	1	PC	
60021528	Cable W924 -T261_2 Position Transducer 2	1	PC	
60021529	Cable W925 -T261_3 Position transducer 3	1	PC	

Change Info

Item no.	***Item text:***
60112243	**Hub Hatch Override Pendant 30t**

Active revision *for production*

Drawing no.: 6010129

Version	Date	Init./App.	Description of change since last revision
07	22.03.2007	INI/FLT	Changed with ECO 222950 and SAP ECM 500000006852. Page 040: Cable number for NM2000 corrected to W504.

LST no.: 21000219 *BOM no.: 60112243*

Version	Date	Init./App.	Description of change since last revision
06	03.04.2007	HHU+INI/FLT	Changed with ECO 222950 + 223433_Updated for production in Spain. Added: 60110725 wiring120mm X-line 1,5mm² reed_3 pcs. Removed: 60025271_Locktite 243 nut lock, is still used but not 2 cans, just a touch from a can.

Old revisions *for service*

Drawing no.: 6010129

Version	Date	Init./App.	Description of change since last revision
06	20.09.2006	INI/FLT	Changed with ECO 216938. Text in bottom/cover inside were mirror written. Page 030: Numbers and capital letters in the bottom/cover inside layout are been corrected
05	10.03.2006	INI/FLT	Reason for changes, Push button box 60010964 is left out from ABB assortment, replaced with 769055 Page 001 Updated Page 030: Layout updated with the new box.
04	06.01.2006	INI/FLT	Reason for change, layout of cover inside corrected. Page 030: Holder removed from S2, layout cover inside.
03	22.11.2005	INI/FLT	Reason for changes, ABB have changed series of push-button and revision 02 was not entirely correct. Page 001_Index, updated Page 030_Layout, cover inside, terminal S1.11/S1.12 corrected to S1.21/S1.22 and terminal S2.13 /S2.14 removed. Layout of bottom with terminal S2.23/S2.24 added. Page 040_Internal Connection, terminal S2.13/S2.14 corrected to S2.23/S2.24.
02	29.09.2005	INI/FLT	Reason for changes, new pushbutton series from ABB. Page 001: New index Page 030: Layout corrected with new 60005849_SAFETY HOLDER and illustrated that terminals are placed inside the cover. PG21 changed to PG13.5 Page 040: New page with updated internal connections.
01	14.05.2003	FLT/FLT	First version in SAP no. system.

LST no.: 21000219 *BOM no.: 60112243*

Version	Date	Init./App.	Description of change since last revision
05	20.09.2006	INI/FLT	Changed with ECO 216938. Following item are been added: 2x60009587_SCREW ISO 7046 M 4 x 10 - 4.8 - FZB - Z 2x60025271_LOCTITE 243 NUT LOCK 4x60009600_SCREW ISO 7045 M 4 x 16 - 4.8 - FZB - Z 4x60009838_LOCK WASHER DIN 6798 A 4 – FZB
04	02.03.2006	INI/FLT	Reason for changes, Push button box 60010964 is left out from ABB assortment, replaced with 769055 60010964 changed to 769055_Push Bottom Box 4 holes 60005874 + 60005876 changed to 118928_Sign 60007541 changed to 193712_Cable gland FM20GPA polyamid. 60007557 changed to 193722_Locknut MM20GPA polyamid. 60112246 changed to 185029_Lamp blockMLB-1B 60112248 changed to 185030_Push bottom blue MP1-10L 60007458x3 pc. Cable tie 140x2.5mm WH added. 60005881x2 pc. 60007656x1 pc. 60112245x2 pc. removed
03	06.01.2006	INI/FLT	Reason for change, version 02 was printed in a wrong view, so that phased out items were shown.
02	23.11.2005	INI/FLT	Reason for changes, ABB have changed series of push-button and revision 02 was not entirely correct. Replaced item, 60005844_CONTACT ELEMENT SK616 001-A 1NO with 60005845_CONTACT ELEMENT SK616 002-A 1NO DIN-RAIL Removed item 60112245 _HO 3 ELEMEN 1SFA611605R1100

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01	03.10.2005	INI/FLT	Reason for changes, new pushbutton series from ABB. 60005826 changed to 60112248_PB 1SFA616162R1015 RESET W "R" 60005848 changed to 60112245_HO 3 ELEMEN 1SFA611605R1100 60005842 changed to 60112244_PIL 1SFA 611 400 R1008 CLEAR 60005850 changed to 60112246_LAMP BLOCK 1SFA611620R1001 Added 60005881_INSERT for PUSH BUTTON 36122100.

Earlier BOM no Longer Active for Serial Production

LST no.: 21000166 *BOM no.: 60104917*

Version	Date	Init./App.	Description of change since last revision
04	13.06.2005	MILJE/MILJE	Production required changes.
03	29.03.2005	MILJE/MILJE	Production required change 2x60009987_ MAGNET A43A-KSM4 43mm added. 1x60073080_ Bracket for control box +AN2 added
02	13.12.2004	MILJE/MILJE	60108271 CABLE for OVERRIDE PENDANT added Following items is removed from BOM 60006456 HOUSING, 09300061541 6P+PE ANGLE PG16 1PC 60007543 CABLE GLAND BS15 PG16 NYLON 1PC 60006448 ADAPTER 09330062601 MALE 6P+PE SCREW 1PC 60008948 CABLE 8G0.75mm² Y-JZ IEC 8,0 M
01	30.06.2004	CHO/CHO	First version

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PAGE	CONTENT	DATE	REVISION
001	Table of Contents	070322	07
030	Layout	060920	-
040	Internal Connection	070322	-

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	Date	Initials
Designed	010924	FLT
Approved	070322	FLT
Reviced	070322	INI

Function: Table of Contents

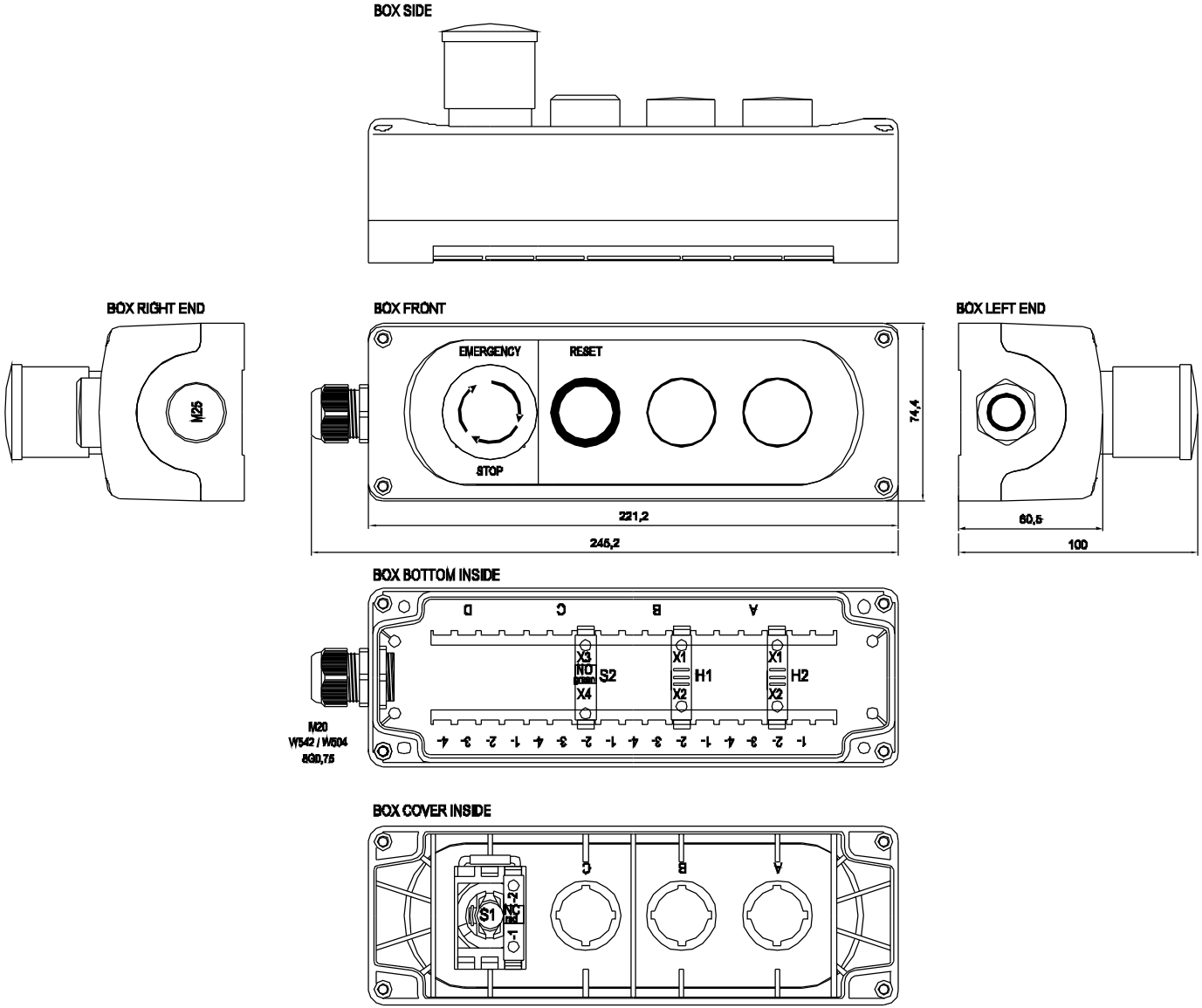
Project title: Hub Hatch Override Pendant

Comments:

Customer: Vestas Wind Systems A/S

Rev. 07 | Drawing no. 6010129 | Cont. sheet 030 | Sheet 001

22-03-07 11:41



Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: Layout	
		Designed	010924	FLT	Project title: Hub Hatch Override Pendant	
		Approved	060920	FLT	Comments	Customer: Vestas Wind Systems A/S
		Reviced	060920	INI	Rev.: - / Drawing no.: 6010129	Cont. sheet: 040 / Sheet: 030

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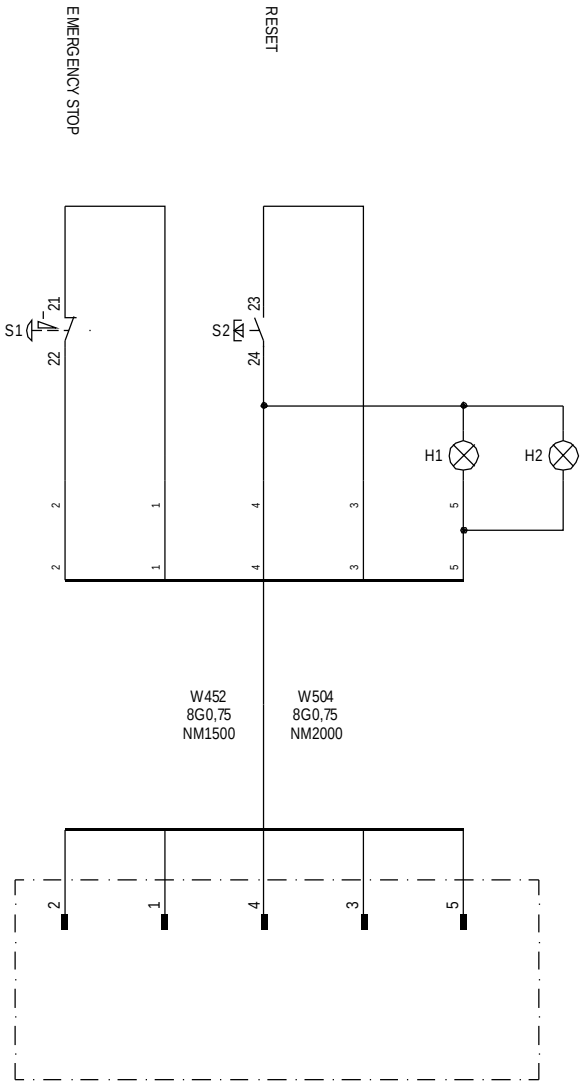

Vestas	Property of Vestas Wind Systems A/S. This drawing must not be passed on to any person, nor be copied or other wise made use of without our approval.		Date	Initials	Function: Internal Connection		
		Designed	010924	FLT	Project title: Hub Hatch Override Pendant		
		Approved	070322	FLT	Comments	Customer: Vestas Wind Systems A/S	
		Reviced	070322	INI	Rev. -	Drawing no. 6010129	Cont. sheet -	Sheet 040

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11:41

Document no.: 21000219
Version: 06
Date: 20/04/2007
Init: Inge Nielsen

60112243 HUB HATCH OVERRIDE PENDANT 30t

Component	Description	Qty per	Stk UM	Position Number
D6010129	HUB HATCH OVERRIDE PENDANT	0,000	EA	
60108271	CABLE F OVERRIDE PENDANT	1,000	EA	
60009987	MAGNET A43A-KSM4 43MM	2,000	EA	
60073080	BRA F CONTROL BOX AN2	1,000	EA	
193712	CABLE GLAND FM20GPA POLYAMID	1,000	EA	
193722	LOCKNUT MM20GPA POLYAMID	1,000	EA	
118927	SIGN, HUB HATCH OVERR. PENDANT	1,000	EA	
769055	PUSH BOTTON BOX W. 4 HOLES	1,000	EA	
60007458	CABLE TIE 140x2.5mm WH	3,000	EA	
60009587	SCR CRS UH M4x10 4.8 FZB	2,000	EA	
60009600	SCREW ISO 7045 M 4 X 16 - 4.8	4,000	EA	
60009838	LOCK WASHER DIN 6798 A4 - FZB	4,000	EA	
60110725	WIRING 120MM X-LINE 1,5MM2	3,000	EA	
60112244	PIL 1SFA 611 400 R1008 CLEAR	1,000	EA	H1
60005886	BULB BA9S 24V	2,000	EA	H1+H2
185029	LAMP BLOCK MLB-1B	2,000	EA	H1, H2
60112244	PIL 1SFA 611 400 R1008 CLEAR	1,000	EA	H2
60005824	MUSHROOM BUTTON ISAF616510R100	1,000	EA	S1
60005846	CONTACT ELEMENT SK616 001-B 1N	1,000	EA	S1
60005849	HO 3 ELEMEN 1SFA616605R1100	1,000	EA	S1
60005845	CE SK616 002-A 1NO DIN RAIL	1,000	EA	S2
185030	PUSH-BOTTON BLUE MP1-10L	1,000	EA	S2

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Change Info

Item no.	***Item text:***
60019483	**Control Pendant**

Active revision *for production*

Drawing no.: 6010130

Version	Date	Init./App.	Description of change since last revision
03	03.05.2005	INI/FLT	All pages updated with Vestas logo and to another no system

LST number: 21000005 *Material BOM no.: 60015995*

Version	Date	Init./App.	Description of change since last revision
06	11.05.2007	MOJDA/FLT	Changed with ECO 224800_Updated for production in Spain. 60005848 replaced by 60005849 HO 3 ELEMEN 1SFA616605R1100 1 pc. Pos. S1 60005848 replaced by 60005849 HO 3 ELEMEN 1SFA616605R1100 1 pc. Pos. S2 60005848 replaced by 60005849 HO 3 ELEMEN 1SFA616605R1100 1 pc. Pos. S4 60005848 replaced by 60005849 HO 3 ELEMEN 1SFA616605R1100 1 pc. Pos. S5 60005848 replaced by 60005849 HO 3 ELEMEN 1SFA616605R1100 1 pc. Pos. S6 60005848 replaced by 60005849 HO 3 ELEMEN 1SFA616605R1100 1 pc. Pos. S7 Item 60009587 SCREW ISO 7046 M 4 x 10 - 4.8_8 pc. added.

Old revisions *for service*

Drawing no.: 6010130

Version	Date	Init./App.	Description of change since last revision
02	02.05.2005	FLT/FLT	Page 2:Test W529 removed.
01	14.05.2003	FLT/FLT	First version in SAP no. system.

LST number: 21000005 *Material BOM no.: 60015995*

Version	Date	Init./App.	Description of change since last revision
05	13.06.2005	MILJE/	Production requirement serial production,
04	13.12.2004	MILJE/MILJE	Following items is removed 60008997 CABLE 18G1.5mm² Y-JZ IEC 2,5M 60006565 HOUSING C14610G0106008 3-mod. TOP ENTR 1PC 60098976 FRAME f. 3 MOD. C146 S10 00 2G8 FEM.2+PE 1PC 60099095 ADAPTER f.STAMP. C146 C10 001 G8FEM. 10P 2PC 60006484 MODULE BLIND C146B00001E8 FEMALE 1PC 60093531 CRIMP CONT. TN020160002 FEM. 0.5-1.5mm² 12PC 60007604 CABLE GLAND BSBC-06 PG21 BRASS 1PC 60006336 INSUL. END TERMINAL 18/0.75mm² 8mm CHAIN 19PC
03	17.06.2004	ATM/CHO	60006476 substituted by 60098976 and 60006496 substituted by 60099095.
02	23.07.2003	AME/FLT	Item no 60006510 changed to 60093531
01	29.06.2001	RPJ /RPJ	First version in the new SAP no. system.

Earlier Drawings and Part Lists no Longer Active for Serial Production

Change Info: 0000243

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Document no.: 21000005
Version: 06
Date: 04/07/2007
Init: Inge Nielsen

60015995 CONTROL PENDANT NM72 HUB

Component	Description	Qty per	Stk UM	Position Number
D6010130	CONTROL PENDANT	0,000	EA	
60011008	BOX TS242 240x120x100mm	1,000	EA	
60002455	LABEL "PULS TOWARDS STOP"	1,000	EA	
60002457	LABEL "PITCH TOWARDS RUN"	1,000	EA	
60002459	LABEL "PULSE TOWARDS RUN"	1,000	EA	
60002461	LABEL "PITCH TOWARDS STOP"	1,000	EA	
60002463	LABEL "CHARGE ACCUMULATORS"	1,000	EA	
60002465	LABEL "SHUT DOWN"	1,000	EA	
60002467	LABEL "BLADES ALL A-B-C"	1,000	EA	
60009987	MAGNET A43A-KSM4 43MM	4,000	EA	
60009587	SCR CRS UH M4x10 4.8 FZB	8,000	EA	
D22000013	CI-CONTROL PENDANT	0,000	EA	
D21000005	60015995 BOM CONTROL PENDANT	0,000	EA	
60111290	LABEL TYPE SIGN CTRL PENDANT	1,000	EA	
60110725	WIRING 120MM X-LINE 1,5MM2	6,000	EA	
60072439	BRA F CTRL BOX-HUB NM1500C/72	1,000	EA	
60007557	LOCKNUT PG21 PA6 BLN16	1,000	EA	
60007545	CABLE GLAND PG21 NYLON BS16	1,000	EA	
60005803	PB 1SFA 616 100 R1006 BLACK	1,000	EA	S1
60005849	HO 3 ELEMEN 1SFA616605R1100	1,000	EA	S1
60005844	CONTACT ELEMENT SK616 001-A 1N	1,000	EA	S1
60005849	HO 3 ELEMEN 1SFA616605R1100	1,000	EA	S2
60005844	CONTACT ELEMENT SK616 001-A 1N	1,000	EA	S2
60005803	PB 1SFA 616 100 R1006 BLACK	1,000	EA	S2
60005862	TS 5318136328 4-POSITIONS	1,000	EA	S3
60005844	CONTACT ELEMENT SK616 001-A 1N	1,000	EA	S4
60005849	HO 3 ELEMEN 1SFA616605R1100	1,000	EA	S4
60005803	PB 1SFA 616 100 R1006 BLACK	1,000	EA	S4
60005803	PB 1SFA 616 100 R1006 BLACK	1,000	EA	S5
60005844	CONTACT ELEMENT SK616 001-A 1N	1,000	EA	S5
60005849	HO 3 ELEMEN 1SFA616605R1100	1,000	EA	S5
60005849	HO 3 ELEMEN 1SFA616605R1100	1,000	EA	S6
60005803	PB 1SFA 616 100 R1006 BLACK	1,000	EA	S6
60005844	CONTACT ELEMENT SK616 001-A 1N	1,000	EA	S6
60005844	CONTACT ELEMENT SK616 001-A 1N	1,000	EA	S7
60005849	HO 3 ELEMEN 1SFA616605R1100	1,000	EA	S7
60005803	PB 1SFA 616 100 R1006 BLACK	1,000	EA	S7

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Change Info

Item no.	***Item text:***
None	**Table of Tightening Torques of Electrical Components in Panels**

Active revision for production

WKI number: 1000827

Revision	Date	Init./App.	Description of change since last revision
04	19.04.2006	KEGHA/SLB	Updated with new items.

LST no.: None *Material BOM no.: None*

Revision	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx	Write the change

Old revisions for service

WKI number: 1000827

Revision	Date	Init./App.	Description of change since last revision
03	11.08.2005	INI/SLB	Torque in Lb.ft. added.
02	28.07.2004	RPJ/RPJ	Item numbers changed from XAL to SAP numbers. Entrelec terminals added.
01	21.08.2002	RPJ /RPJ	First version in the new SAP no. system.

LST no.: xxxxxxxx *Material BOM no.: xxxxxxxx*

Revision	Date	Init./App.	Description of change since last revision
xx	dd.mm.yyyy	xxx	Write the change

Earlier Drawings and Part Lists no Longer Active for Serial Production

Change Info: 4002134

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Date: 19.05.2006	Doc. Type: **WKI**	Doc. No.: **1000827**	Version: **04**	Approver: **SLB**	Creator: **RPJ** / Rev.: **KEGHA**

Tightening Torque

Component	Standard bolt / nut	Torque				Tools	Vestas item no.	Supplier item no.
		Interval		Prefered				
		min	max					
	[mm]	[Nm]			[Lb.ft.]	[mm]		
Standard Bolts								
	3 mm			0,128	0,09			
	4 mm			0,290	0,21			
Standard bolt and nut	5 mm			0,575	0,42	8		
Standard bolt and nut	6 mm			9,9	7,30	10	**60009622-9729**	Steel 8,8
Standard bolt and nut	8 mm			24	17,70	12 / 13	**60009622-9729**	Steel 8,8
Standard bolt and nut	10 mm			48	35,40	16 / 17	**60009622-9729**	Steel 8,8
Standard bolt and nut	12 mm			70	51,63	18 / 19	**60009622-9729**	Steel 8,8
Standard bolt and nut	14 mm			75	55,32	22	**60009622-9729**	Steel 8,8
Standard bolt and nut	16 mm			90	66,38	24	**60009622-9729**	Steel 8,8
Standard bolt and nut								
CAPACITORS								
Capacitor 6,8kVAr 3x960V Vishay				2	1,48		**60000920**	50511/ PhMKP960.2.06.8
Capacitor 9,6kVAr 3x960V Vishay				2	1,48		**60000921**	50510/ PhMKP960.2.09.6
Capacitor 27,2kVAr 3x960V Vishay				10	7,38		**60000934**	50509/ PhMKDg 960.2.27.22
DIODES								
Diode STPS12045TV 2x60A 45V	4mm		1,5	1,3	0,96		**60000972**	567-449
Circuit Breakers								
ABB Circuit Breaker E2N	12 mm			70	51,63	18 / 19	**60005748**	25900314
Fixing on mounting plate	10 mm			48	35,40	16 / 17		
ABB Circuit Breaker S6H800 PR212 complete							**60005675**	25700308
- Relay screws to breaker				9	6,64			
- Relay screws to busbars				30	22,13			
-Cable terminal to breaker				9	6,64			
-Cable terminal to cable 70-185				43	31,72			
ABB Circuit Breaker S4H	8 mm			9	6,64		**60005660**	25700245
Fixing on mounting plate				2	1,48			
Siemens Circuit Breakers S00		0,8	1,2	1	0,74	PZ2	**60004779-4790**	3RV1X 11
Siemens Circuit Breakers S0		2	2,5	2,3	1,70	PZ2	**60004779-4790**	3RV1X 2X
Siemens Circuit Breakers S2		3	4,5	3,8	2,80	PZ2	**60004779-4790**	3RV1X 3X
Siemens Circuit Breakers S3		4	6	5	3,69	Hexagon	**60004779-4790**	3RV1X 4X
Siemens Transverse Auxiliary Switch 1NO + 1NC f. S00, S0, S2, S3		0,8	1,2	1	0,74	PZ2	**60004778**	3RV 19 01-E1
Siemens Transverse Auxiliary Switch 1changeover contact f. S00, S0, S2, S3		0,8	1,2	1	0,74	PZ2	**60004777**	3RV 19 01-G1
Siemens Lateran Auxiliary Switch 1NO + 1NC f. S00, S0, S2, S3		0,8	1,2	1	0,74	PZ2	**60004779**	3RV 19 01-1A
Siemens Lateral Auxiliary Switch 2NO f. S00, S0, S2, S3		0,8	1,2	1	0,74	PZ2	**60004780**	3RV 19 01-1B
Siemens Lateral Auxiliary Switch 2NC f. S00, S0, S2, S3		0,8	1,2	1	0,74	PZ2	**60004781**	3RV 19 01-1C
Miniature Circuit Breakers								

Tightening Torque

Component	Standard bolt / nut	Torque Interval min	Torque Interval max	Torque Prefered		Tools	Vestas item no.	Supplier item no.
	[mm]	[Nm]			[Lb.ft.]	[mm]		
Type ABB S230 6-40A 1-3 Pol				2	1,48			
Type ABB S260 0,5-63A 1-4 Pol				2	1,48			
Type ABB S270 0,5-63A 1-4 Pol				2	1,48			
Type ABB S280 0,2-63A 1-4 Pol				2	1,48			
Type ABB S290 80,100,125A 1-4 Pol				4,5	3,32			
Type ABB S200 0,5-63A 1-4 Pol				2,8	2,07			
Siemens MCB 5SX2.., 5SX4.., 5SX5.. 5SX7…0,5-63A	Top terminal		2,5	2	1,48	PZ2	**60005131-5193**	5SX2.., 5SX4.., 5SX5.. 5SX7…
Siemens MCB 5SX2.., 5SX4.., 5SX5.. 5SX7…0,5-63A	Bottom terminal		3	2	1,48	PZ2	**60005131-5193**	5SX2.., 5SX4.., 5SX5.. 5SX7…
Siemens MCB 63A 4pol C 5SP4463-7		3	3,5	3,2	2,36		**60005192**	5SP4463-7
Siemens MCB 16A 4pol C 5SY6616-7		2,5	3	2,7	1,99		**60005191**	5SY6616-7
Siemens Auxiliary Contact 1NO + 1NC f. 5SX2/4/5				0,5	0,37	PZ2	**60005193**	5SX9100
Siemens Circuit Breaker Auxiliary Contact 1NO + 1NC				0,5	0,37	PZ2	**??**	5SX9 260
Miniature Circuit Breakers with residual current release								
Siemens Residual Current Circuit Breakers 6A C 2 pol 0,03A		2,5	3	2,8	2,07	PZ2	**60005185**	5SU3 767-0KW06
Siemens Residual Current Circuit Breakers 10A C 2 pol 0,03A		2,5	3	2,8	2,07	PZ2	**60005186**	5SU3 767-0KW10
Siemens Residual Current Circuit Breakers 13A C 2 pol 0,03A		2,5	3	2,8	2,07	PZ2	**60005187**	5SU3 767-0KW13
Siemens Residual Current Circuit Breakers 16A C 2 pol 0,03A		2,5	3	2,8	2,07	PZ2	**60005188**	5SU3 767-0KW16
Residual Current Circuit Breakers								
Siemens Residual Current Circuit Breakers 16A 2 pol 30mA		2,5	3	2,8	2,07	PZ2	**??**	5SM1 111-6
Siemens Residual Current Circuit Breakers 25A 2 pol 30mA		2,5	3	2,8	2,07	PZ2	**60005759**	5SM1 312-6
Siemens Residual Current Circuit Breakers 25A 4 pol 30mA		2,5	3	2,8	2,07	PZ2	**??**	5SM1 342-6
Siemens Residual Current Circuit Breakers 40A 4 pol 30mA		2,5	3	2,8	2,07	PZ2	**60005762**	5SM1 344-6CA
Siemens Residual Current Circuit Breakers 63A 4 pol 30mA		2,5	3	2,8	2,07	PZ2	**??**	5SM1 346-6CA
ABB Residual Current Circuit Breakers 25A 2 pol 30mA F202A-25/0,03				2,8		PZ2	**185082**	8012542782506
Siemens Residual Current Module 0,03A for MCB		2,5	3	2,8	2,07	PZ2	**60005190**	5SM2342-6
Siemens Auxiliary Contact 1NO + 1NC 5SX9 260				0,5	0,37	PZ2	**??**	5SX9 260
Siemens Auxiliary Contact 1NO + 1NC 5SW3000		0,6	0,8	0,7	0,52	PZ2	**60005760**	5SW3000
Load break switches and Fuse material								
ABB Fuse Switch OESA250 D3-52 NH1	10 mm			22	16,23	16 / 17	**60005648**	34003500
ABB Aux contact 1no/1nc f. OESA_PL 200-800A				0,8	0,59		**60005641**	OZXK 1
ABB Fuse Switch OS 125 D04 N2 125A	8 mm			8	5,90	12 / 13	**60005633**	340020070

Tightening Torque

Component	Standard bolt / nut	Torque Interval min	Torque Interval max	Torque Prefered		Tools	Vestas item no.	Supplier item no.
	[mm]	[Nm]			[Lb.ft.]	[mm]		
ABB Load break switch OT16E				0,8	0,59			
ABB Load break switch OT25E				0,8	0,59		**60005768**	OT25ET3
ABB Load break switch OT32E				0,8	0,59		**184922**	
ABB Load break switch OT45E				2	1,48			
ABB Load break switch OT45M				2	1,48		**60005605**	OT45 M4
ABB Load break switch OT63E				2	1,48		**60005772**	OT63ET4
ABB Load break switch OT80E				2,5	1,84			
ABB Load break switch OT100E				6	4,43			
ABB Load break switch OT125E				6	4,43		**60005606**	OT125ET3
ABB Load break switch OT160E				6	4,43		**60005607**	OT160ET4
ABB aux. Switch for OT16 - 125				0,8	0,59		**60005625**	0A1 GA10 1
ABB aux. Switch for OT125 - 160				0,8	0,59		**60005627**	OBEA 10
ABB Load Switch OETL400 D1	10 mm			17	12,54	16 / 17	**60005609**	6417019 13888 6
ABB change over switch 3p 16A OT16E3C				0,8	0,59		**184819**	OT16E3C
ABB Fuse holder baseline NH00		30	44	44	32,45		**60005062**	OFAX 00 S1L
WOHNER Fuse Switch for Mounting on Busbar NH00 3pol	8 mm	12	14	13	9,59	12 / 13	**60005071**	33198
Ferraz Fuse holder 3P600V UL F6R			13,5	13,5	9,96		**60005363**	C209624
Contactors and relays								
ABB Contactor EH1200 Contactor	10 mm			48	35,40	16 / 17		364 63 300
ABB Contactor EH1200 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH1200 Earth Connection	10 mm			18	13,28	Hexagon		
ABB Contactor EH1200 Fixing on Mounting plate	6 mm			3	2,21	PZ2		
ABB Contactor EH800 Contactor	10 mm			48	35,40	16 / 17		364 59 300
ABB Contactor EH800 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH800 Earth Connection	10 mm			18	13,28	Hexagon		
ABB Contactor EH800 Fixing on Mounting plate	6 mm			3	2,21	PZ2		
ABB Contactor EH700 Contactor	10 mm			48	35,40	16 / 17		364 59 110
ABB Contactor EH700 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH700 Earth Connection	10 mm			18	13,28	Hexagon		
ABB Contactor EH70 Fixing on Mounting plate	6 mm			3	2,21	PZ2		
ABB Contactor EH550 Contactor	10 mm			48	35,40	16 / 17		364 57 100
ABB Contactor EH550 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH550 Earth Connection	10 mm			18	13,28	Hexagon		
ABB Contactor EH550 Fixing on Mounting plate	6 mm			3	2,21	PZ2		

Date: 19.05.2006	Doc. Type: **WKI**	Doc. No.: **1000827**	Version: **04**	Approver: **SLB**	Creator: **RPJ** / Rev.: **KEGHA**

Tightening Torque

Component	Standard bolt / nut	Torque				Tools	Vestas item no.	Supplier item no.
		Interval		Prefered				
		min	max					
	[mm]	[Nm]			[Lb.ft.]	[mm]		
ABB Contactor EH370 Contactor	10 mm			48	35,40	16 / 17		364 56 850
ABB Contactor EH370 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH370 Earth Connection	10 mm			18	13,28	Hexagon Socket		
ABB Contactor EH370 Fixing on Mounting plate	6 mm			3	2,21	PZ2		
ABB Contactor EH300 Contactor	10 mm			48	35,40	16 / 17		364 56 655
ABB Contactor EH300 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH300 Fix on Mounting plate	6 mm			3	2,21	PZ2		
ABB Contactor EH260 Contactor	10 mm			48	35,40	16 / 17		364 55 265
ABB Contactor EH260 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH260 Fix on Mounting plate	6 mm			3	2,21	PZ2		
ABB Contactor EH210 Contactor	10 mm			48	35,40	16 / 17		364 54 655
ABB Contactor EH210 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH210 Fix on Mounting plate	6 mm			3	2,21	PZ2		
ABB Contactor EH160 Contactor	10 mm			48	35,40	16 / 17		364 52 810
ABB Contactor EH160 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH160 Fix on Mounting plate	6 mm			3	2,21	PZ2		
ABB Contactor EH145 Contactor	6 mm			9,9	7,30	10		EH 145 AR 400-415/60
ABB Contactor EH145 Coil	3,5 mm	0,8	1,2	1	0,74	PZ2		
ABB Contactor EH145 Fix on Mounting plate	5 mm			3	2,21	PZ2		
ABB Contactor A9-30-10-80	3,5 mm		1,2	1			**093332**	
ABB aux contact for EH			1,2	1	0,74		**60004318**	CAL16-11A
ABB contactor UA75 contactor			6,5	6	4,43		**60004349**	UA75-30-00-R
ABB aux contact for A9-A110			1,2	1	0,74		**60004362**	CA5-10
Siemens Contactor S00 Coil	3 mm	0,8	1,2	1	0,74			3RT1X 1X
Siemens Contactor S00 Contactor	3 mm	0,8	1,2	1	0,74			3RT1X 1X
Siemens Contactor S0 Coil	3 mm	0,8	1,2	1	0,74			3RT10 2X
Siemens Contactor S0 Contactor	4 mm	2	2,5	2,3	1,70	PZ2		3RT10 2X
Siemens Contactor S2 Coil	3 mm	0,8	1,2	1	0,74			3RT10 3X
Siemens Contactor S2 Contactor	6 mm	3	4,5	3,8	2,80	PZ2		3RT10 3X
Siemens Contactor S3 Coil	3 mm	0,8	1,2	1	0,74			3RT10 4X
Siemens contactor S3 Contactor	6 mm	4	6	5	3,69	Hexagon		3RT10 4X

Date: 19.05.2006	Doc. Type: WKI	Doc. No.: 1000827	Version: 04	Approver: SLB	Creator: RPJ / Rev.: KEGHA

Tightening Torque

Component	Standard bolt / nut	Torque				Tools	Vestas item no.	Supplier item no.
		Interval		Prefered				
		min	max					
	[mm]	[Nm]			[Lb.ft.]	[mm]		
Siemens Aux. Contact for contactors 3RH1921-1CA01		0,8	1,2	1	0,74		**60004443**	3RH1921-1CA01
Siemens Aux. Contact for contactors 3RH1921-1FA22		0,8	1,2	1	0,74		**60004444**	3RH1921-1FA22
Siemens Emergency-stop Relay 3TK2806-0BB4	3,5 mm	0,8	1,2	1	0,74		**60004996**	3TK2806-OBB4
Schrack Relay socket 2POL 10A RT78625				0,8	0,59		**60004517**	RT78625
Lightning protection								
Dehnguard 600				3	2,21	PZ2	**188521**	900 627
Dehnguard 600FM				3	2,21	PZ2	**60000674**	
Dehnguard 600FM Auxiliary contact		0,5	0,8	0,7	0,52			
Dehnguardr 440FM				3	2,21	PZ2	**60000673**	900 627
Dehnguard 440FM Auxiliary contact		0,5	0,8	0,7	0,52			
Dehnguard 320				3	2,21	PZ2	**195052**	
Dehnguard 275FM				3	2,21	PZ2	**60000672**	900 620
Dehnguard 275FM Auxiliary contact		0,5	0,8	0,7	0,52			
Dehnguard 150				3	2,21	PZ2	**188488**	
Dehnguard 75				3	2,21	PZ2	**188508**	
Dehnguard 75FM				3	2,21	PZ2	**60000671**	900 624
Dehnguard 75FM Auxiliary contact		0,5	0,8	0,7	0,52			
Dehnguard DG TNC 600 / 1000 FM/S				5	3,69	PZ2	**60000684**	900 545S
Dehngap B N-PE SPD Uc 1000V				7	5,16	PZ2	**60000680**	**900130S**
Dehngap T- C SPD N-PE Uc 255V				5	3,69	PZ2	**60000681**	**900133**
Dehn terminal DK				5	3,69	PZ2	**60000687**	**900699**
PHOENIX CONTACT Overvoltage protection RS485 MT RS485	M3			0,8	0,59		**60000693**	2762265
Pushbuttons and lamps								
ABB PDA aux.contact 1NC/1NC						0,9	**60005844-47**	SK 616 001-A….2-B
ABB PDA Lamp holder						0,9	**60005850**	SK 616 003-A
Terminals								
Entrelec Terminal M2,5/5 2,5mm2		0,4	0,6	0,5	0,37		**60005970**	24517080
Entrelec Terminal M4/6 4mm2		0,5	0,8	0,7	0,52		**60005983**	24519250
Entrelec Terminal M6/8 6mm2		0,8	1	0,9	0,66		**60005996**	24519300
Entrelec Terminal M10/10 10mm2		1,2	1,4	1,3	0,96		**60006003**	24523800
Entrelec Terminal M16/12 16mm2		1,2	1,4	1,3	0,96		**60006008**	24519550

Tightening Torque

Component	Standard bolt / nut	Torque				Tools	Vestas item no.	Supplier item no.
		Interval		Prefered				
		min	max					
	[mm]	[Nm]			[Lb.ft.]	[mm]		
Entrelec Terminal M35/16 35mm2		2,8	3	2,9	2,14		**60006012**	24519400
Entrelec Terminal M70/22 70mm2		6	7	6,5	4,79		**60006019**	24521750
Entrelec fuse terminal M10/16 10mm2		0,8	1	0,9	0,66		**60005977**	24522300
Entrelec fuse terminal M4/8 4mm2		0,5	0,8	0,7	0,52		**60005975**	24520000
Jumber bar BJM5 & BJM5D	Entrelec		0,6	0,6	0,44			
Jumber bar BJM6 & BJM6D	Entrelec		0,6	0,6	0,44			
Jumber bar BJM62	Entrelec		0,6	0,6	0,44			
Jumber bar BJM8	Entrelec		0,6	0,6	0,44			
Jumber bar BJM10	Entrelec		0,6	0,6	0,44			
Jumber bar BJM12	Entrelec		0,6	0,6	0,44			
Jumber bar BJM16	Entrelec		1,2	1,2	0,89			
Jumber bar BJS22	Entrelec	2	3	2,9	2,14			
ERICO/Entrelec Distribution Terminal BRU 250A Connection 35 - 120mm2 (1 piece)				19	14,01	Hexagon	**60006028**	15870615
BRU 250 Outlet X2 6 - 25mm2 (2 piece)				3,5	2,58			
BRU 250 Outlet X5 2,5 - 16mm2 (5 piece)				2	1,48			
BRU 250 Outlet X4 2,5 - 10mm2 (4 piece)				2	1,48			
ENSTO Terminal KE58 (2x150 - 1x300 mm2) ALU/CU Terminal	8 mm			35	25,81	Hexagon	**60006050**	KE58
ENSTO Terminal KE58 Mounting on Busbar	12 mm			70	51,63	18 / 19		
ENSTO Terminal KE37 (300 mm2) ALU Terminal	8 mm			35	25,81	Hexagon	**60006049**	KE37
ENSTO Terminal KE37 Mounting on Busbar	12 mm			70	51,63	18 / 19		
ENSTO Terminal KE40.4 (240 mm2) ALU	8 mm	30	40	35	25,81	Hexagon	**60006048**	KE40.4
ENSTO Terminal KE40.4 Mounting on Busbar	12 mm			70	51,63	18 / 19		
Phoenex UKK 3 MSTB 5,08		0,5	0,6	0,55	0,41		**60006036**	2770888
VAN ALFEN Terminal Cu 25t/m 95mm2 Terminal <50mm2				25	18,44		**60006060**	2645.095-M10-DA
VAN ALFEN Terminal Cu 25t/m 95mm2 Terminal >50mm2				40	29,50			
VAN ALFEN Terminal Cu 25t/m 95mm2 Mounting on Busbar				45	33,19			
VAN ALFEN Terminal Cu 35t/m 120mm2 Terminal				40	29,50		**60006061**	2645.150/M10S
VAN ALFEN Terminal Cu 35t/m 120mm2 Mounting on Busbar				45	33,19			
VAN ALFEN Terminal Cu 70t/m 185mm2 Terminal				40	29,50		**60006062**	2645.185/M12
VAN ALFEN Terminal Cu 70t/m 182mm2 Mounting on Busbar				30	22,13			
Wöhner groundbar 01 130			3				**60007201**	
Wieland 35mm2 terminal 2,5-35mm2	6 mm			3			**190986**	57.535.0155.0

Tightening Torque

Component	Standard bolt / nut	Torque				Tools	Vestas item no.	Supplier item no.
		Interval		Prefered				
		min	max					
	[mm]	[Nm]			[Lb.ft.]	[mm]		
Current Transformer								
GARRE Current Transformer 2000/1 K100K				2	1,48		**60007164**	K100K 100-4813-2BK-1kV
GARRE Current Transformer 250/1 G33				2	1,48		**60007141**	G33 024-3513-4A
Transformer								
KOHSEL Voltage Transformer EI66/25		0,5	0,8	0,7	0,52		**60006928**	EI66/25-6835
KOHSEL Voltage Transformer EI66/25 230VAC		0,5	0,8	0,7	0,52		**60006921**	EI66/25-6852
KOHSEL Transformer UI150/75 400-690/230VAC				6			**188290**	UI150/75-7794
KOHSEL Transformer UI150/75 400-690/100-110VAC				6			**188289**	UI150/75-7792
DanTrafo Trafo UI180/78 400/690V+/-10%/230V		1,2	4	3	2,21		**60007030**	DT 15093-1
Busbar systems								
Siemens busbar holder 8US1923-2AA00		4	4	4	2,95		**60007240**	8US1923-2AA00
Erico Insulator ISO 15M4	4 mm			2,66	1,96			
Erico Insulator ISO 20M4	4 mm			2,66	1,96			
Erico Insulator ISO 20M6	6 mm			9,1	6,71		**60007324**	
Erico Insulator ISO 25M5	5 mm			5,2	3,84			
Erico Insulator ISO 25M6	6 mm			9,1	6,71		**60007325**	
Erico Insulator ISO 30M6	6 mm			9,1	6,71		**60007326**	
Erico Insulator ISO 30M8	8 mm			22	16,23		**60007329**	
Erico Insulator ISO 35M6L	6 mm			9,1	6,71		**60007327**	
Erico Insulator ISO 35M8	8 mm			22	16,23			
Erico Insulator ISO 35M10	10 mm			44	32,45			
Erico Insulator ISO 40M6	6 mm			9,1	6,71		**60007328**	
Erico Insulator ISO 40M8	8 mm			22	16,23		**60007330**	
Erico Insulator ISO 40M10	10 mm			44	32,45		**60007332**	
Erico Insulator ISO 45M6	6 mm			9,1	6,71			
Erico Insulator ISO 45M8	8 mm			22	16,23			
Erico Insulator ISO 45M8L	8 mm			22	16,23			
Erico Insulator ISO 45M10	10 mm			44	32,45			
Erico Insulator ISO 50M6	6 mm			9,1	6,71			
Erico Insulator ISO 50M8	8 mm			22	16,23		**60007331**	
Erico Insulator ISO 50M10	10 mm			44	32,45		**60007333**	
Erico Insulator ISO 60M8	8 mm			22	16,23			
Erico Insulator ISO 60M10	10 mm			44	32,45		**60007334**	
Erico Insulator ISO 70M12	12 mm			76	56,05			
Erico Insulator ISO 70M16	16 mm			189	139,40			
Erico Insulator ISO 75M12	12 mm			76	56,05		**60007335**	
Erico Insulator ISO 75M16	16 mm			189	139,40			
Erico Insulator ISO 80M12	12 mm			76	56,05		**60007336**	

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Tightening Torque

Component	Standard bolt / nut	Torque				Tools	Vestas item no.	Supplier item no.
		Interval		Prefered				
		min	max					
	[mm]	[Nm]			[Lb.ft.]	[mm]		
Erico Insulator ISO 80M16	16 mm			189	139,40			
Erico Insulator ISO 100M12	12 mm			76	56,05		**60007337**	
Erico Insulator ISO 100M16	16 mm			189	139,40			
Power supply units								
Omron power supply 10A 24Vdc				0,74	0,55		**60015070**	S82K-24024-10A
Omron power supply 0,6A 24Vdc				0,74	0,55		**60015067**	S82K-01524
Omron power Supply 1,2A 12Vdc				0,74	0,55		**60015069**	S82K-01512
Powernet 115-230/24V 5A ADC5183	3 mm	0,5	0,6	0,5	0,37		**60000717**	ADC5183
Powernet 115-230/24V 10A ADC5483	3 mm	0,5	0,6	0,5	0,37		**60000719**	ADC5483
Ventilation components								
Phannenberg Ventilator PF3000		0,5	0,8	0,7			**194959**	
Stego Termostat KTS		0,3	0,5	0,4			**114447**	
Panel/Service outlet								
ABB Service socket for Dinrail G.			1,2	1,2	0,89		**60011324**	13450000
Panel inlet								
ABB CEE inlet 2P+PE 230V 16A				0,8			**185050**	2CMA193338R1000
Control System Own Components								
TAC1 Computer	3 mm	0,5	0,6	0,5	0,37			
TAC2 Computer	3 mm	0,5	0,6	0,5	0,37			
TOI1 Interface	3 mm	0,5	0,6	0,5	0,37			
TOI2 Interface	3 mm	0,5	0,6	0,5	0,37			
TAC 40 Triggerboard 690V	3 mm	0,5	0,6	0,5	0,37			
TAC 41 Triggerboard 960V	3 mm	0,5	0,6	0,5	0,37			
Socket 11 pol for TAC 70, 80, 81, 82, 83, 84, 85, 86, 87	3 mm	0,5	0,6	0,5	0,37			
Varisterbox x 8	3 mm	0,5	0,6	0,5	0,37			
Resistor Modul	3 mm	0,5	0,6	0,5	0,37			
Power converters								
C-Thiim P-Conv. WAD 200kW/690V 4-20mA		1	1	1	0,74		**60004961**	