Premier Tech Chronos Ltd.

weighing, solids handling & process control
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commission	19601840
CAE-No.	13027544
version	94 13027544

configuration	IQ / APW RETROFIT
1st customer	William Grant & sons
1st final customer	William Grant & sons

number of sheets	32
construction	09. Aug. 2019 PMC
modification	12. Sep. 2019 MMM

wiring

the wiring is done with flexible wires.
the wiring is done in accordance with the wiring diagram from up left side to down right side.
all connections are done in accordance with the VDE 0113/1 norm.

wire numbering

[X] no [ ] yes

all wires connected to terminals will get terminal number as their own.
the group numbers are preceding the wire numbers.
the priority of the wire numbers depends on the wiring arrangement.

potential declarations

power supply/preliminary fuse	1/PE~50Hz 110V/6A
nominal power/- current	110v/3A
control voltage(s)	24v DC

conductors cross sections min[sq.mm copper]

(correspondend to VDE 0113-1, IEC/EN 60204-1)
(see also schemes of terminal blocks)

main current power supply	2*2,5
motor circuit	1,5
control-circuit	0,75
instrument circuit	0,75

wiring colours (VDE 0113-1, IEC/EN 60204-1)

L1, L2, L3	black
PE	green-yellow
N	light-blue
control voltage AC	red
control voltage DC	blue
instrument leads	brown
external voltages	orange

special notes

protection control panel IP55
isolator switch [X] left [ ] door [ ] right [ ] others
regulations VDE
[X] no
[ ] yes:
PLC [X] no [ ] yes:
service board [X] no [ ] yes:
bus system [X] no [ ] yes:

regulations

- earth the installation according to regulations valid on site!
- VDE 0113 / IEC-Publ. 204:
  if control circuit is not earthed, remove link drawn in - provide leakage protective system!
- all metallic housings have to be connected with grounding circuit!
- the number of connectors given for the cables are always without the ground wire!

group key

identification number to classify an installation into technological and organizational components.

site key

identification number to classify physical sites within one group.
the site key number numerically corresponds to the group key.

expanded site key

the expanded site key determines the positioning of the control equipments more detailed.

voltage key

the digit following X for separation of terminals with different potentials.

remarks

due to the modular conception of the installations, the sheets are not consecutively paginated.
the installations with intrinsic security correspond to the VDE 0170/0171 norm.
the text relating to circuit path refer to the active condition of the complete circuit path!

W1 and W2 are defined as external cable connections.

⊡ = external terminals W1 = main feed line
W2 = represents all cables leading to points at site (without main feed line)

the plan specifies all components according to DIN.

a complete specification consists of:

identification 1 = group
identification 2 + site
identification 3 - number / kind / number
identification 4 : connection

identification 1 and 2 are always mentioned in the heading of the drawing in the area "group key" resp. "site key"
and refer to all components of this page if no other identification is mentioned.
identification 3 is listed on the left side before the symbol concerned, identification 4 is written on the right hand side after.

the controls of the installation are installed in the control panel.

an installation can consist of different lines and groups.

a line is part of an installation with a self-contained product flow
(i.e. from product placed at disposal => SILO up to bagging => conveyor).

lines are distinguished by letters!

a group is a technological part of a line.

groups are distinguished by digits!

in order to clearly separate voltage potentials, voltage identification numbers are determined.
these identification numbers follow DIN identification letter X.

```
                                                          = 2 + G 2 - 14 S 23 .1
                                                          = 4 +   4 -  1 X  1
                                                            -   - -   -- - -- --
groupe key (technological component) ------------------------------------------+
expanded site key (detailed statements to site) -----------------------------------+
site key (physical site) ----------------------------------------------------------+
page of circuit diagram (resp. count number at comp. key "X") -------------------------+
component key ------------------------------------------------------------------------+
circuit path (resp. voltage key at comp. key "X") ------------------------------------------+
circuit path key (not used at comp. key "X") ----------------------------------------------+
```

group key

identification number to classify an installation into technological and organizational components.

=000 general informations

=0 power supply (control panel)	=4 filling machine	=8 bag handling	=TRML terminal diagrams
=1 material feeding	=5 bag placer	=9 closing unit	=CABL cable diagrams
=2 weigher	=6 bag transfer	=10 conveying	=PLST parts lists
=3 evacuation, hopper	=7 top-up		

note 1: if the same component exists in the installation line more then one time, a letter is added for its identification within the group key (letters to start with A).

i.e.	=2A 1st weigher	=2B 2nd weigher
	=4A 1st filling machine	=4B 2nd filling machine
	=5A 1st placer	=5B 2nd placer

note 2: if there are some installation lines in the installation, a letter is send on before for its identification within the group key (letters to start with A).

i.e.	=A2A 1st line 1st weigher	=A2B 1st line 2nd weigher
	=A4A 1st line 1st filling machine	=A4B 1st line 2nd filling machine
	=A5A 1st line 1st placer	=A5B 1st line 2nd placer
	=B2A 2nd line 1st weigher	=B2B 2nd line 2nd weigher
	=B4A 2nd line 1st filling machine	=B4B 2nd line 2nd filling machine
	=B5A 2nd line 1st placer	=B5B 2nd line 2nd placer

site key

identification number to classify physical sites within one group.
the site key number numerically corresponds to the group key.
(site = physical site)

+0 control panel	+4 filling machine	+8 bag handling
+1 material feeding	+5 bag placer	+9 closing unit
+2 weigher	+6 bag transfer	+10 conveying
+3 evacuation, hopper	+7 top-up	

Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 09. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text	abreviated words (electro) according to DIN 40719 part 1	drawing-No. 94 13027544	following page 5	page 4
			installation	IQ / APW RETROFIT	group =000 / site +	preceding page 3	off 10

expanded site key

the expanded site key determines the positioning of the control equipments more detailed.

T - installed in control panel door
D - installed in terminal box cover
G - installed in control box

circuit plan page

page of diagram showing the component.

note: terminal blocks and boxes have a count number (starting with 1).
sub-terminal boxes are distinguished by the count number and a digit after a point.

component key

letter according to DIN.

circuit path

circuit path within the diagram showing the component.

note: terminal blocks and boxes have a voltage key:

1 - mains voltage
2 - control voltage
3 - auxiliary voltage
4 - intrinsically safe
5 - thermistors
6 - potential free

circuit path key

if the same component exists more then one time within the circuit path, it is numbered with a digit after a point.

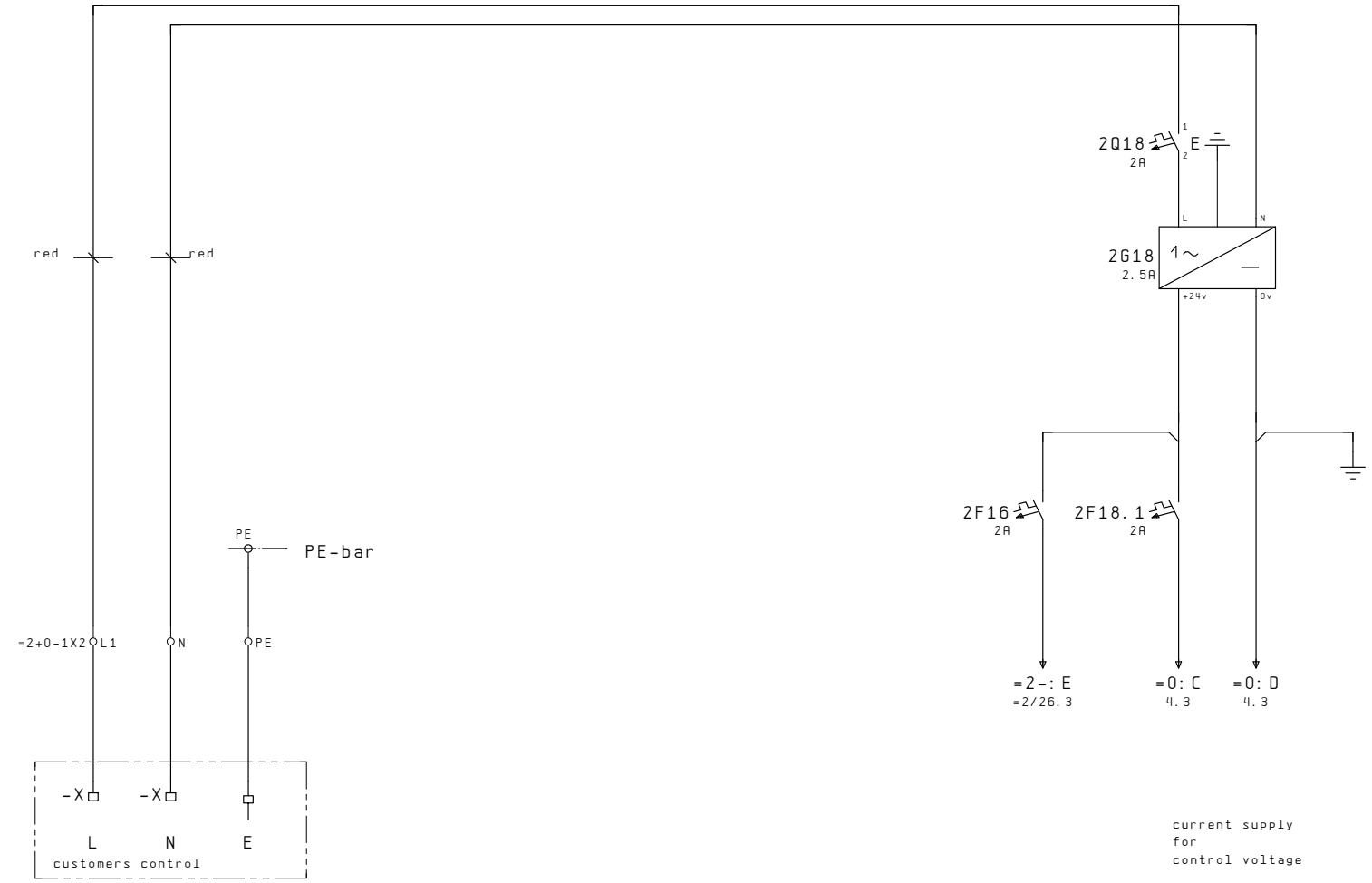
revision	date	name	approved	description
00	09. Aug. 2019	MMM	PMC	initial release
01	12. Sep. 2019	MM	PMC	Test modifications added.

Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 12. Sep. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text revisions installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =000 site +	following page =0/1 preceding page 5	page 10 off 10	1960180

general datas for group =0 (power supply)

terminal blocks and plug boards of group =0:

=0+0-1X2=terminal block in control panel (mains voltage)
=0+0-1X3=terminal block in control panel (control voltage)
=0+0-1X6=terminal block in control panel (free potential)

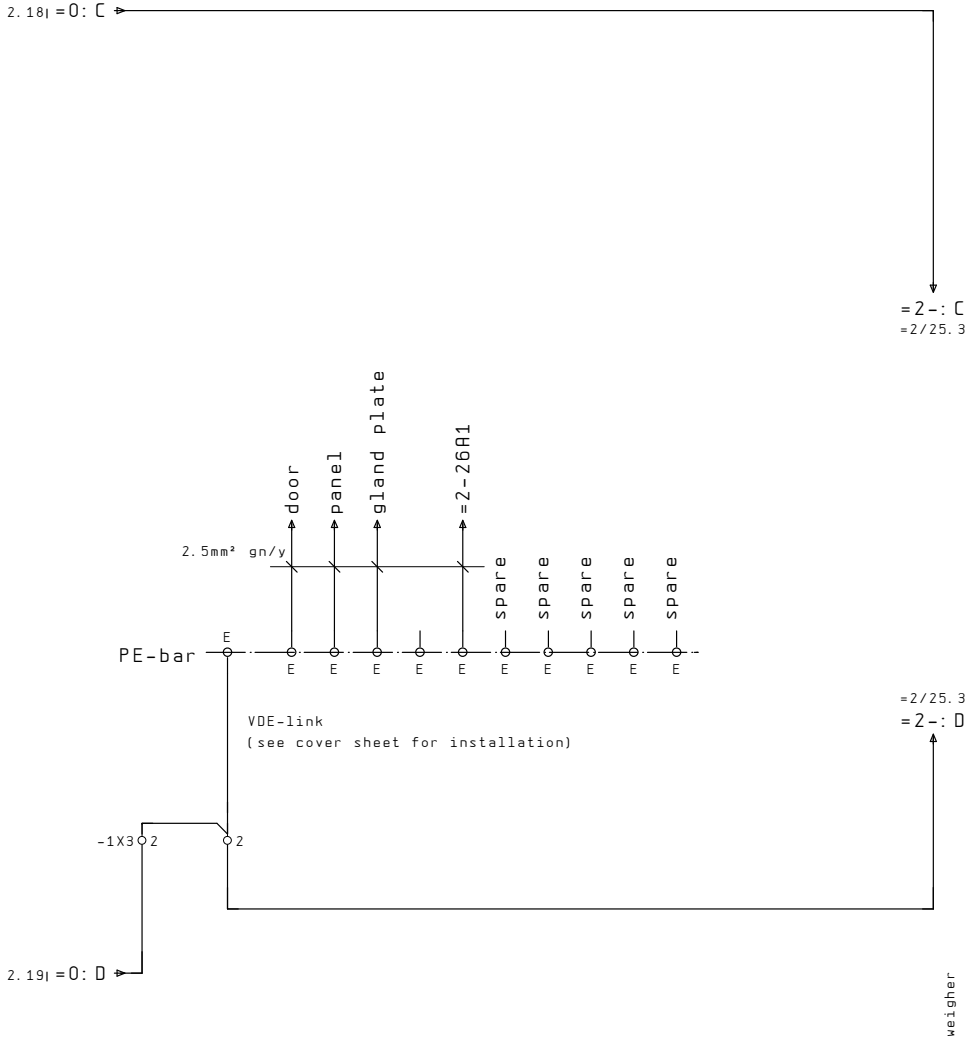


Customers fused and
isolated power supply

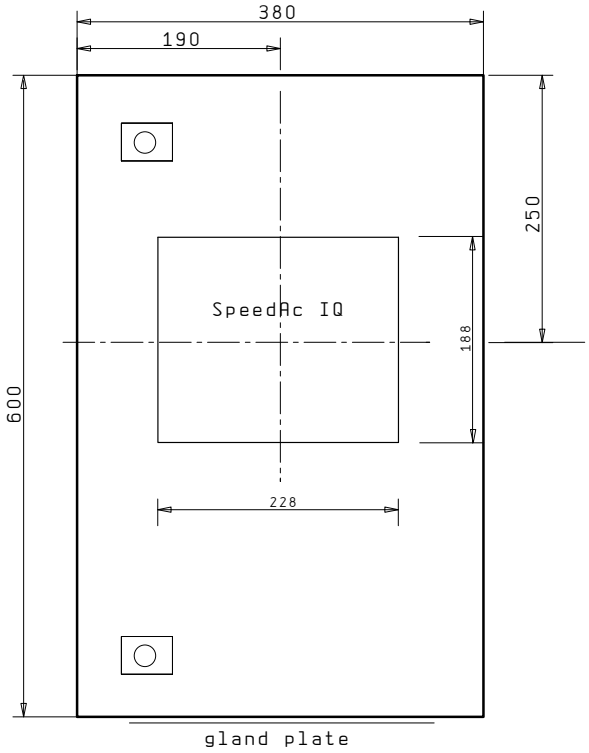
110v-1PH-50Hz

Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 25. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text power supply installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =0 site +0	following page 4 preceding page 1	page 2 off 45

196018.40



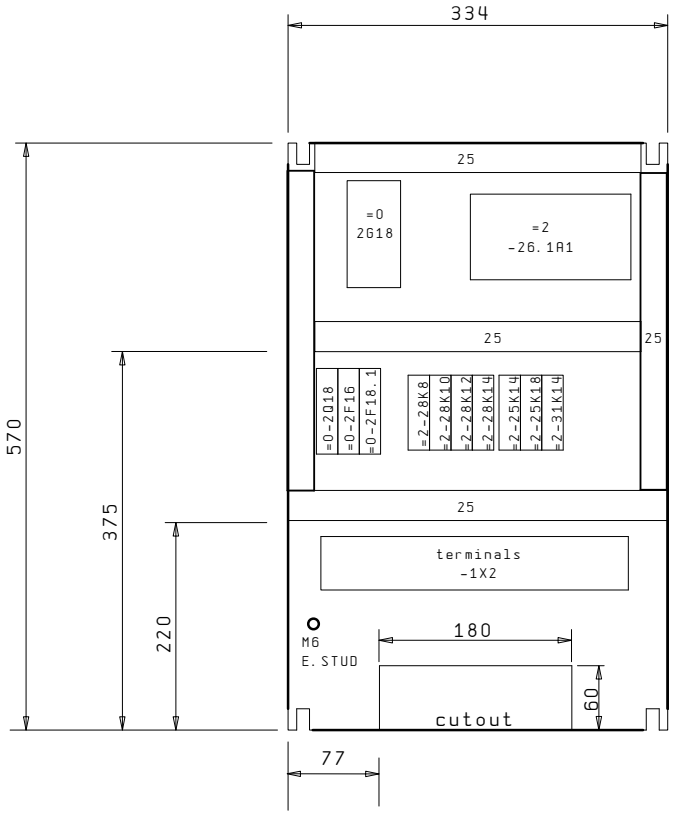
Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 25. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text potential transitions installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =0 site +0	following page 25 preceding page 2	page 4 off 45

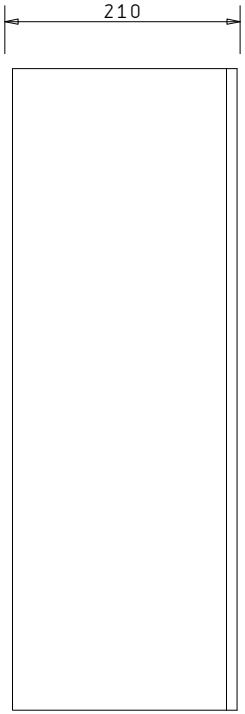


boreholes : 22,5 ⌀

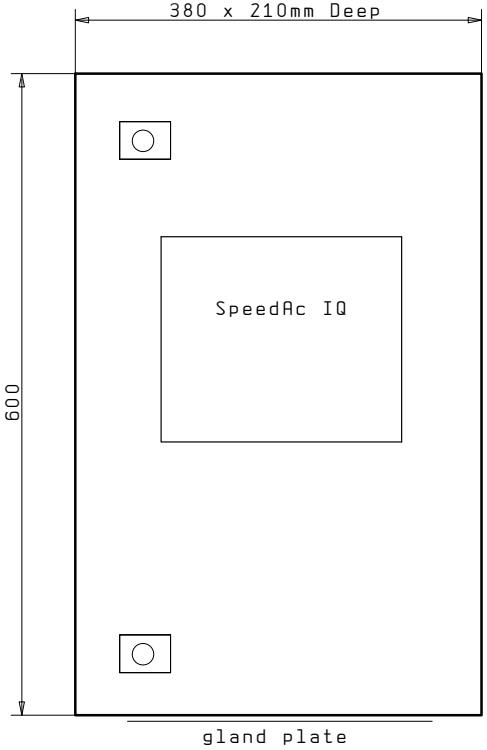
scale 1:5 (dinA3)

Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 10. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text: view of the control panel door installation: IQ / APW RETROFIT	drawing-No. 94 13027544 group =0	site +T0	following page 45 preceding page 4	page 25 off 45

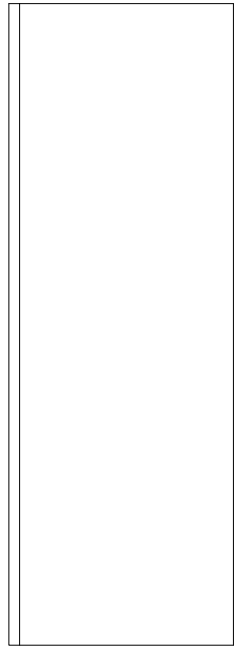




view of
left side
of panel



Mounted separately
from APW weigher



view of
right side
of panel

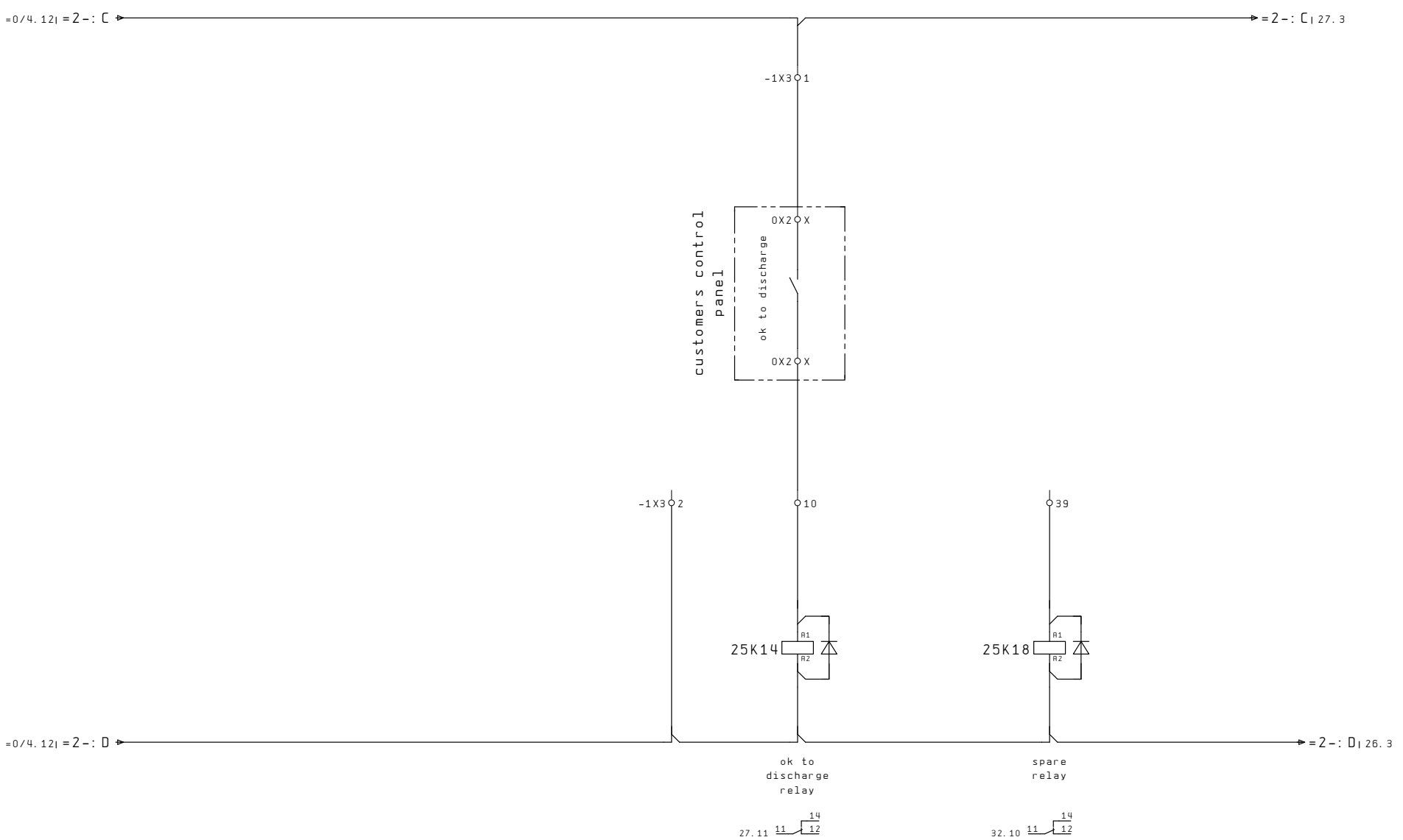
Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 10. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text control panel view installation IQ / APW RETROFIT	drawing-No. 94 13027544		following page =2/1	page 45
				group =0	site +0	preceding page 25	off 45

general datas for group =2 (weigher/E..)

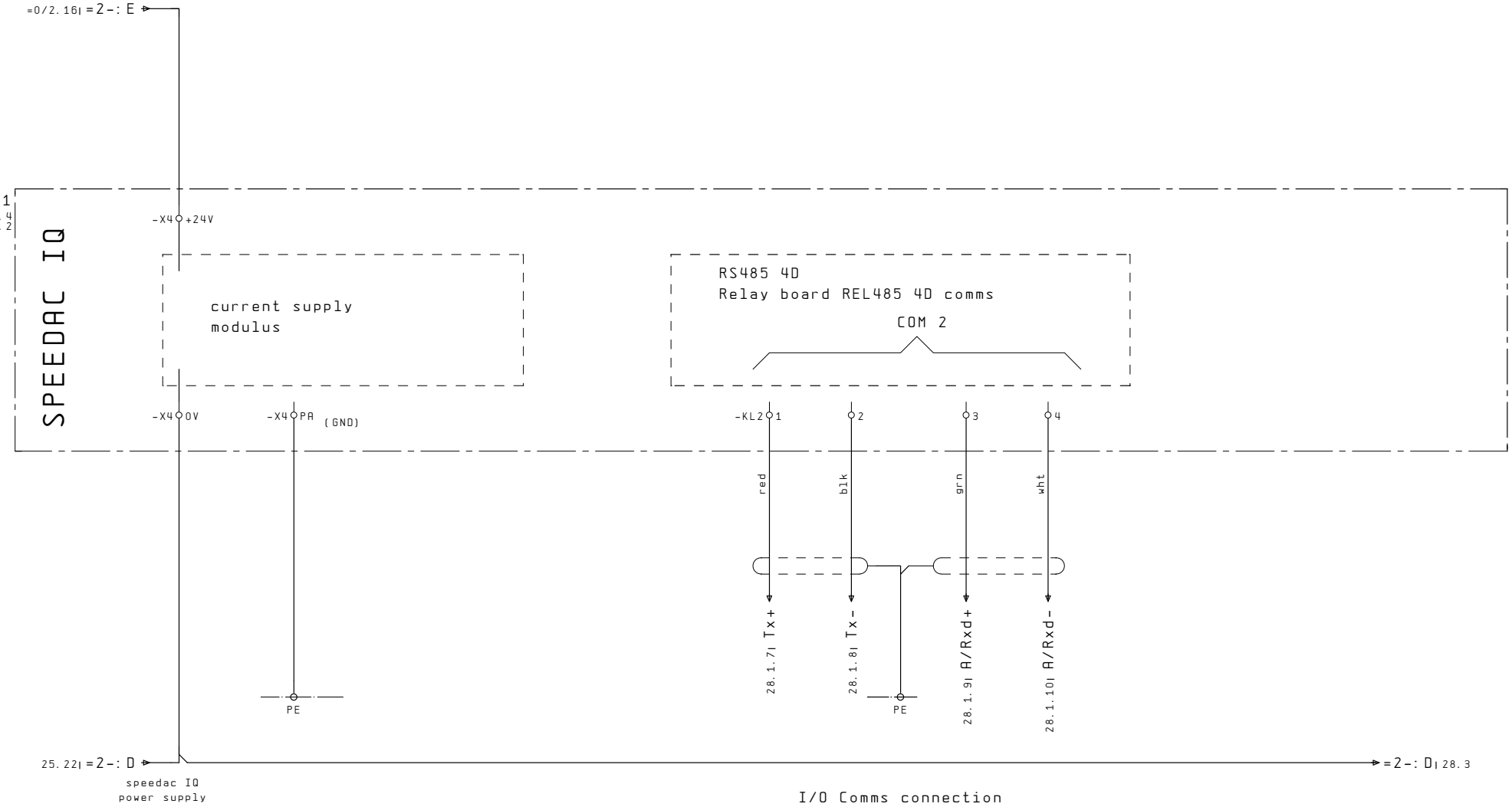
terminal blocks and plug boards of group =2:

=2+0-1X2=terminal block in control panel (auxiliary voltage)
=2+0-1X3=terminal block in control panel (control voltage)
=2+0-1X6=terminal block in control panel (free potential)

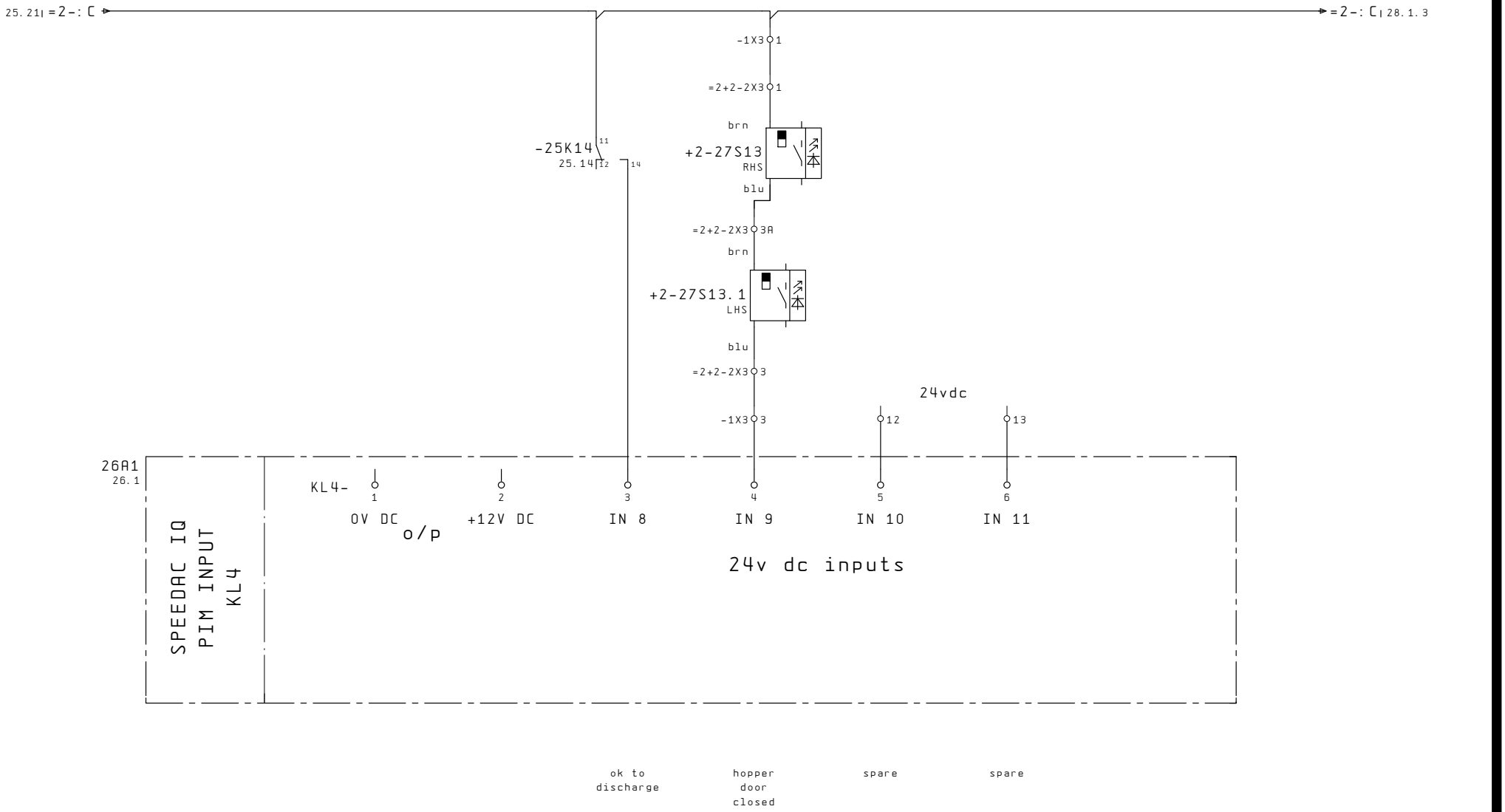
=2+2-1X3=terminal box for load cells
=2+2-2X3=terminal box for weigher (control voltage)
=2+2-2X6=terminal box for weigher (free potential)



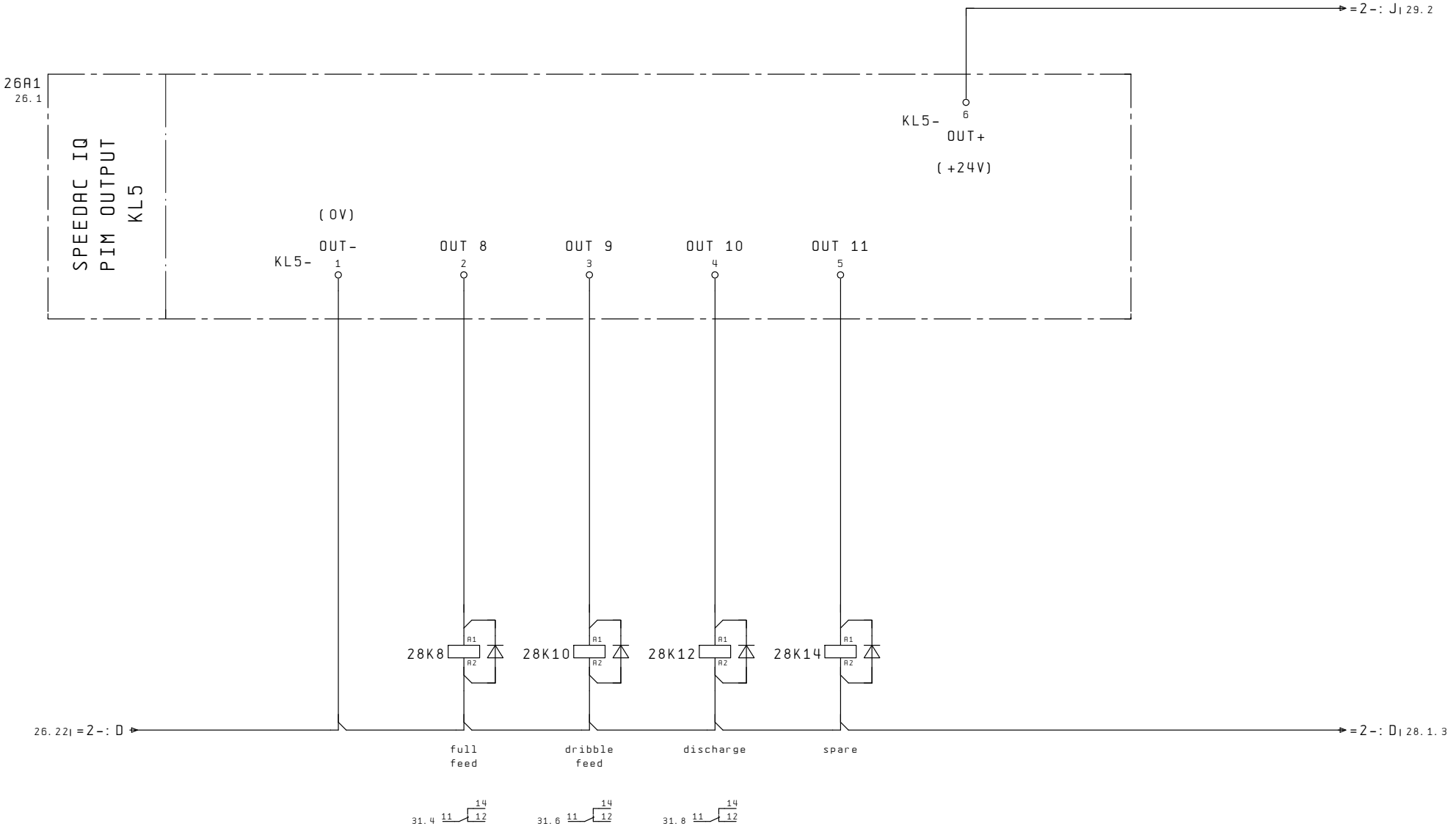
Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 25. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text control: general part installation IQ / APW RETROFIT	drawing-No. 94 13027544	following page 26	page 25
				group =2 site +0	preceding page 1	off 46



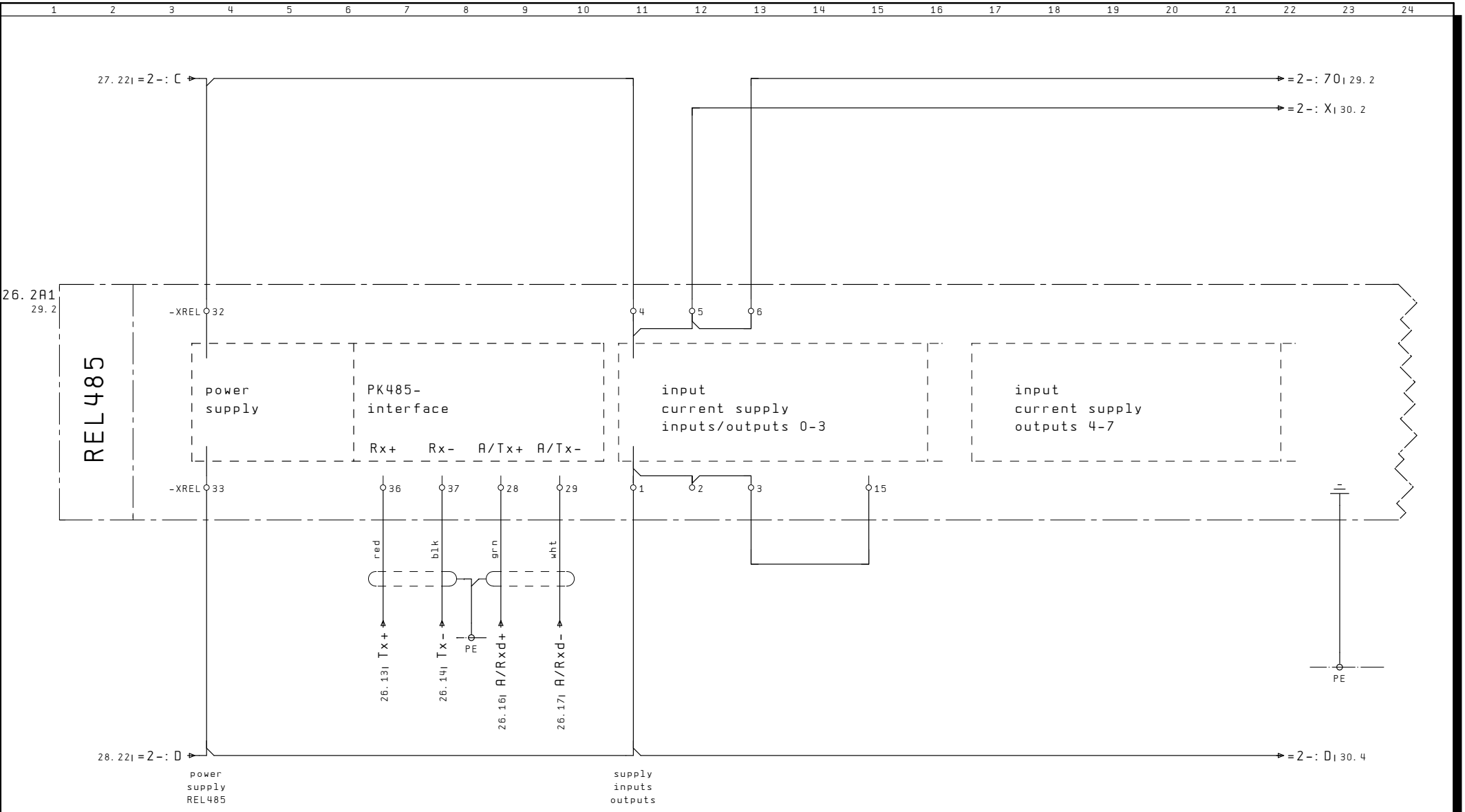
Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 10. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text current supply SPEEDAC IQ installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =2 site +0	following page 27 preceding page 25	page 26 off 46



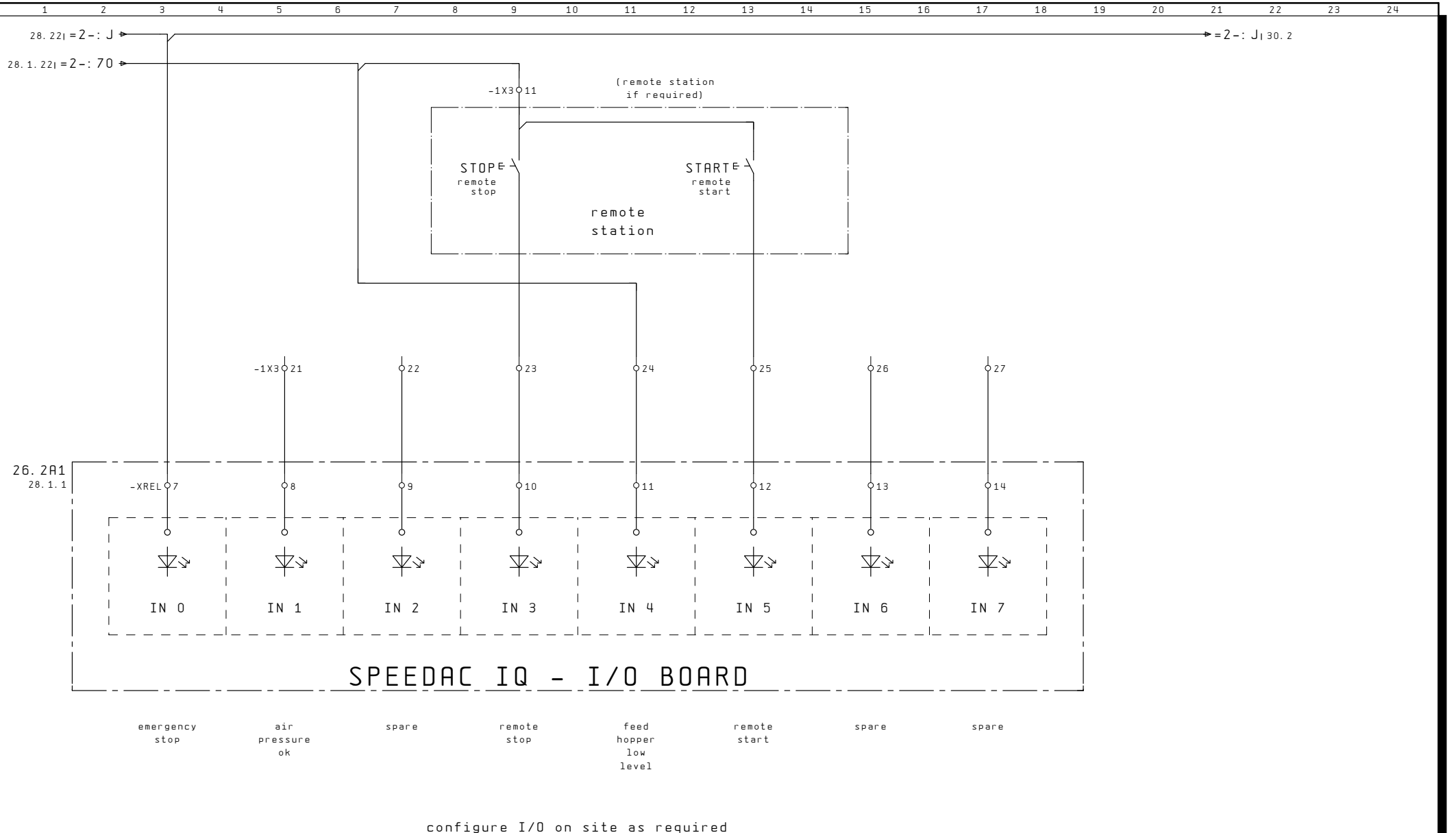
Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 25. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text SPEEDAC IQ high speed inputs installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =2 site +0	following page 28 preceding page 26	page 27 off 46



Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 10. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text SPEEDAC IQ high speed outputs installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =2	site +0	following page 28.1 preceding page 27	page 28 off 46	196018.40

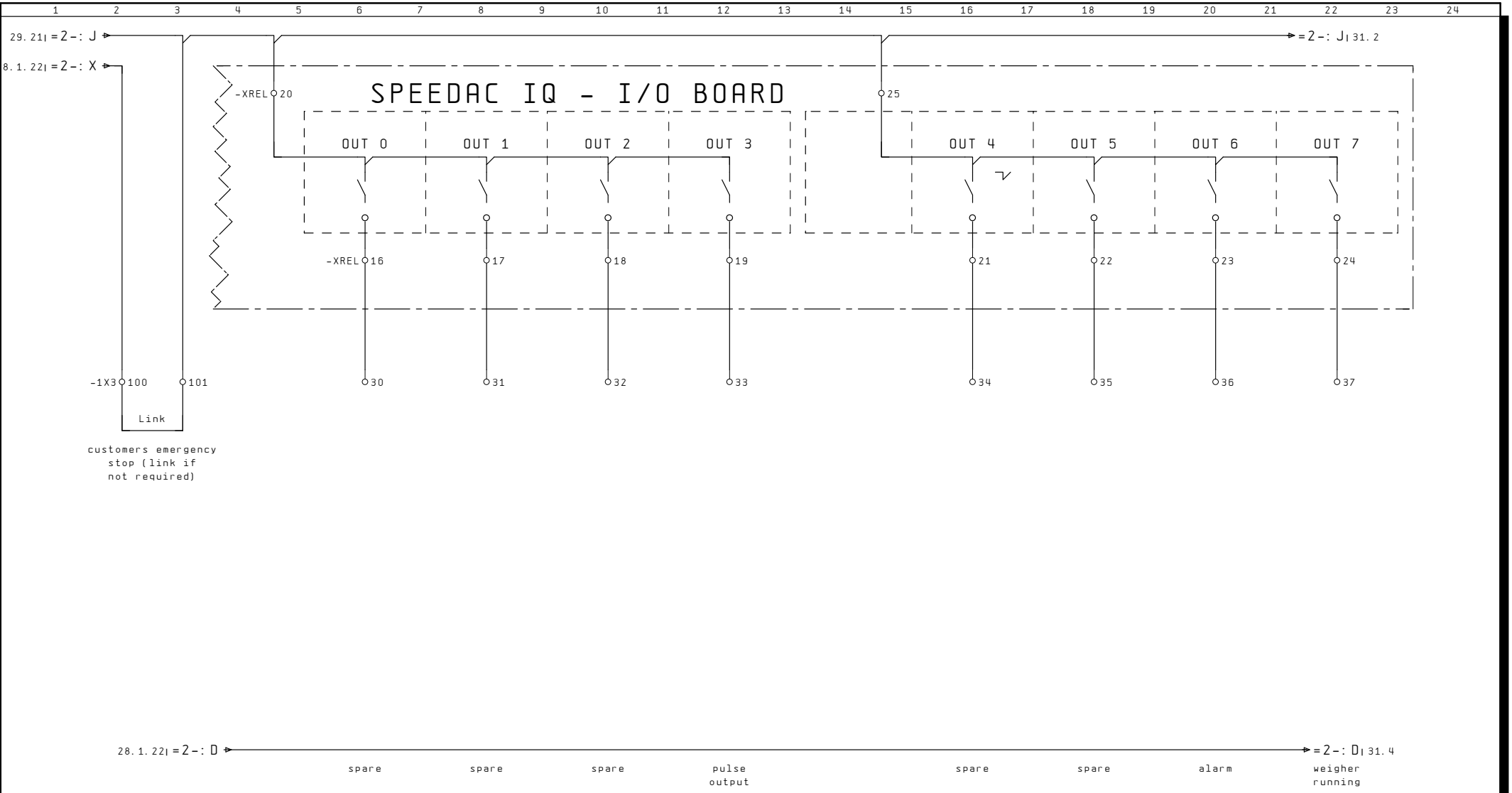


Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 12. Sep. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text input / output board REL485 installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =2 site +0	following page 29 preceding page 28	page 28.1 off 46

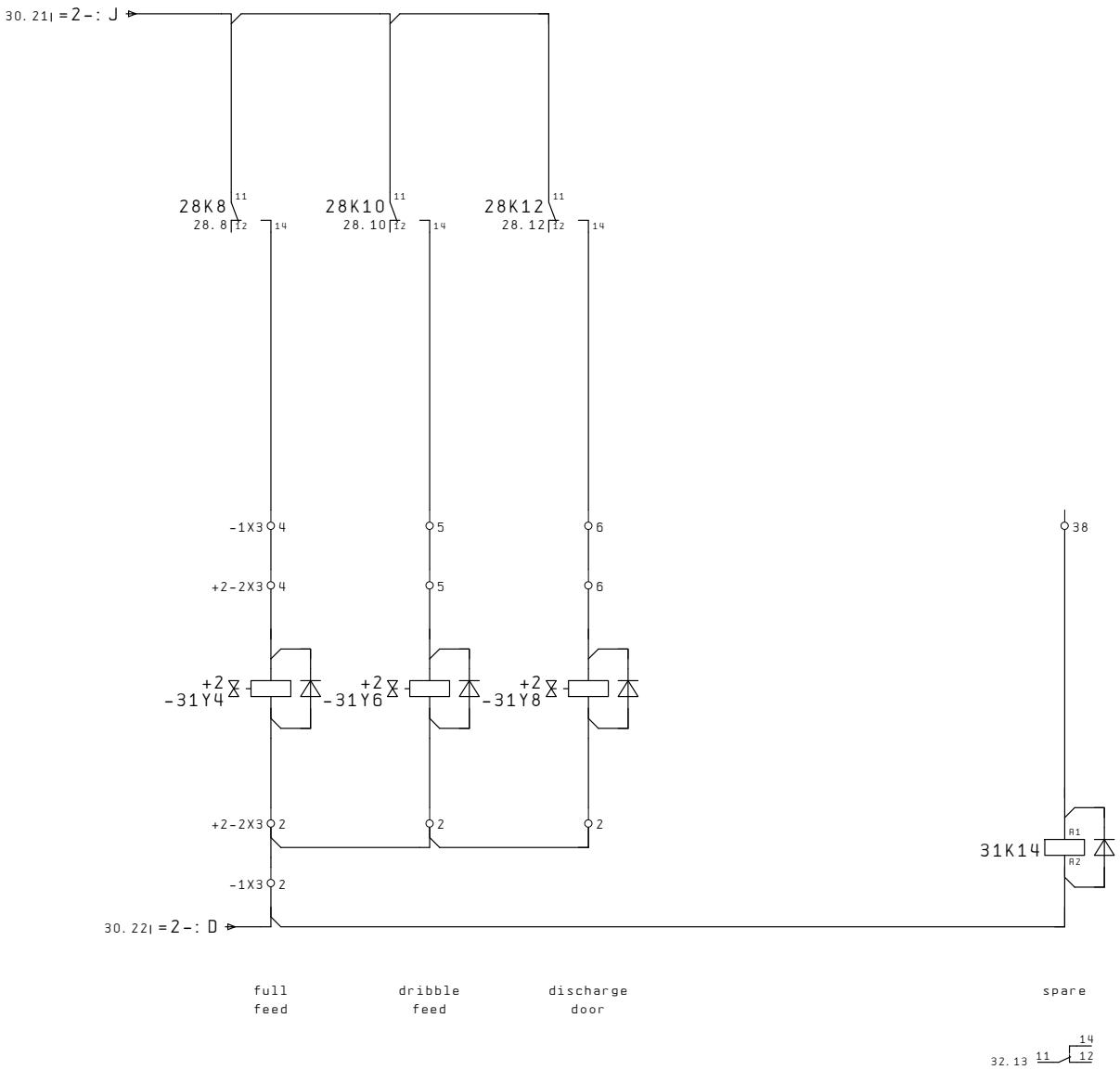


configure I/O on site as required

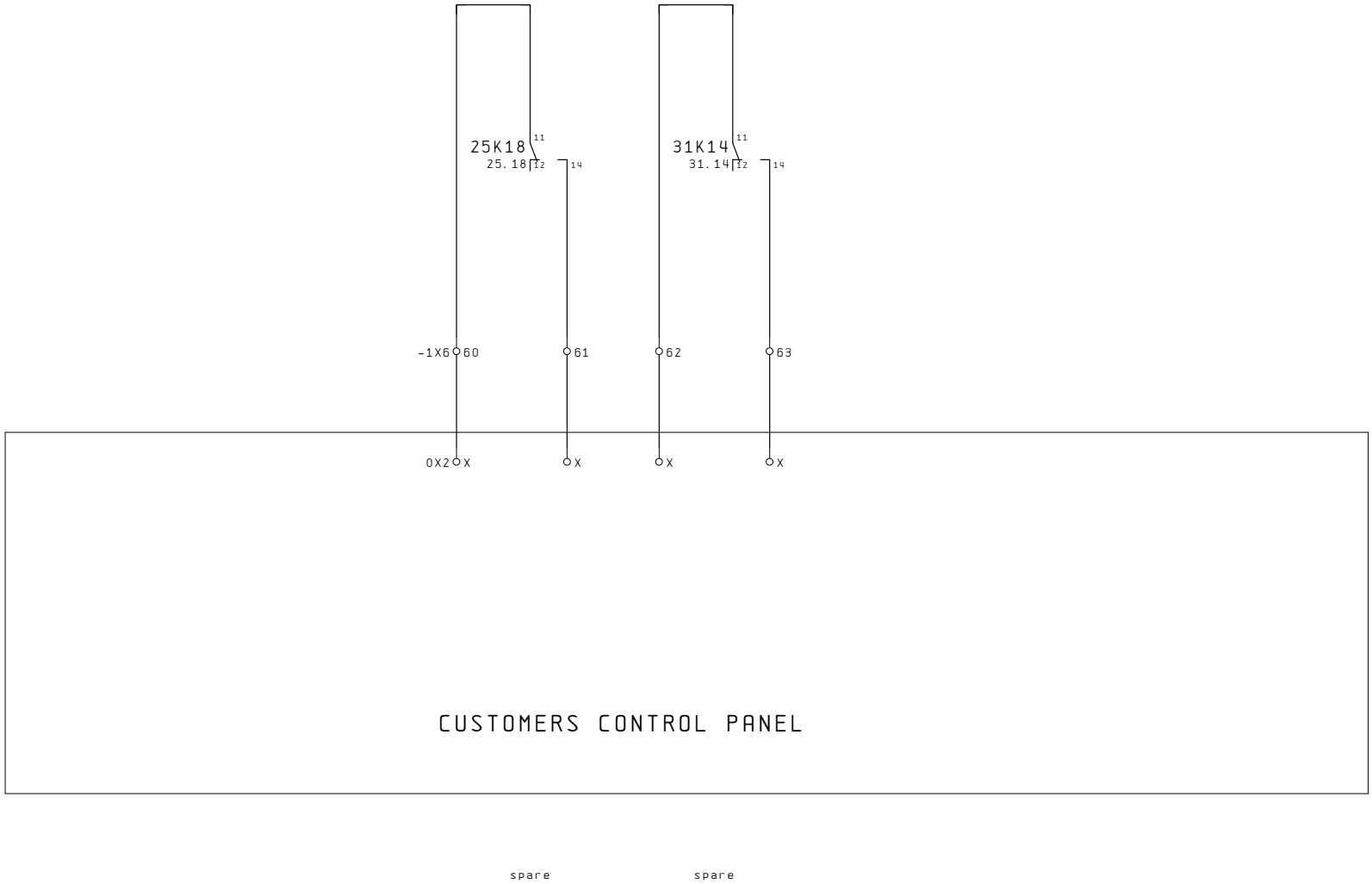
Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 12. Sep. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text SPEEDAC IQ inputs installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =2 site +0	following page 30 preceding page 28.1	page 29 off 46



Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 10. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text SPEEDAC IQ outputs installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =2	site +0	following page 31 preceding page 29	page 30 off 46



Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 10. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text outputs installation IQ / APW RETROFIT	drawing-No. 94 13027544		following page 32	page 31
				group =2	site +0	preceding page 30	off 46



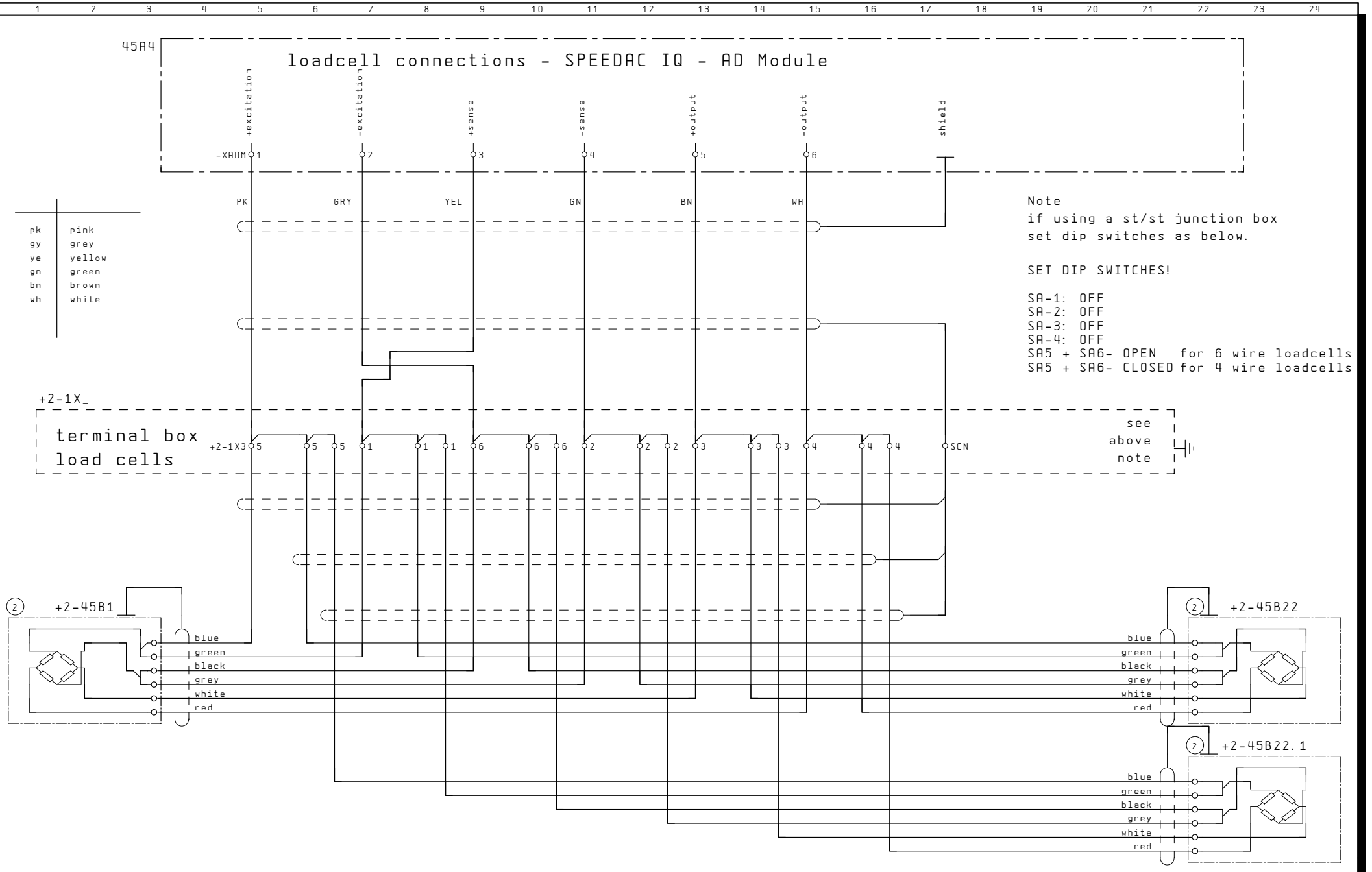
Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 25. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text outputs installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =2	site +0	following page 40 preceding page 31	page 32 off 46

=2+TO-26A1

RS232
printer card

(FITTED)

Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 10. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text Analogue outputs installation IQ / APW RETROFIT	drawing-No. 94 13027544		following page 45	page 40
				group =2	site +0	preceding page 32	off 46



Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 10. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text load cell connection for 1..3 load cells installation IQ / APW RETROFIT	drawing-No. 94 13027544 group =2 site +0	following page 46 preceding page 40	page 45 off 46

196018 40

① screen

the screen of the loadcell must be connected with the chassis.

② load cells

for load cell application and installations
refer to separate manuals.

③ installation requirements for load cell cable

the distance to all power- and control cables
has to be min 0,5m.

crossing power- and control cables under 90 degrees.

safety order

before any operation on the loadcell cable,
the plug at the weighing module must be disconnected.

admissible cable length

number load cells 350 ohm each	max cable length 0,34sq.mm. cu
3	330m

#	cable reference cable designation	source from	target to	cable type	conductors total	conductors used	cross section mm²	length m	note
1	=0+0-W1	=2+0-1X2	=0+0-X		2	2	-	-	
2	=2+0-W1	=2+0-1X3	=2+2-2X3		6	6	-	-	
3	=2+0-W2	=2+0-XADM	=2+2-1X3		6	6	-	-	
4	=2+0-W3				6	6	-	-	customers control panel
4		=2+0-0X2	=2+0-1X3		6	2	-	-	customers control panel
5		=2+0-0X2	=2+0-1X6		6	4	-	-	customers control panel
6	=2+0-W4				3	3	-	-	
6		=2+0-1X3	=2+0-STOP		3	2	-	-	
7		=2+0-1X3	=2+0-START		3	1	-	-	

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plotting date 14. Feb. 2020

CAE-No. 13027544

page text survey of cables

installation IQ / APW RETROFIT

drawing-No. 94 13027544

group =CABL

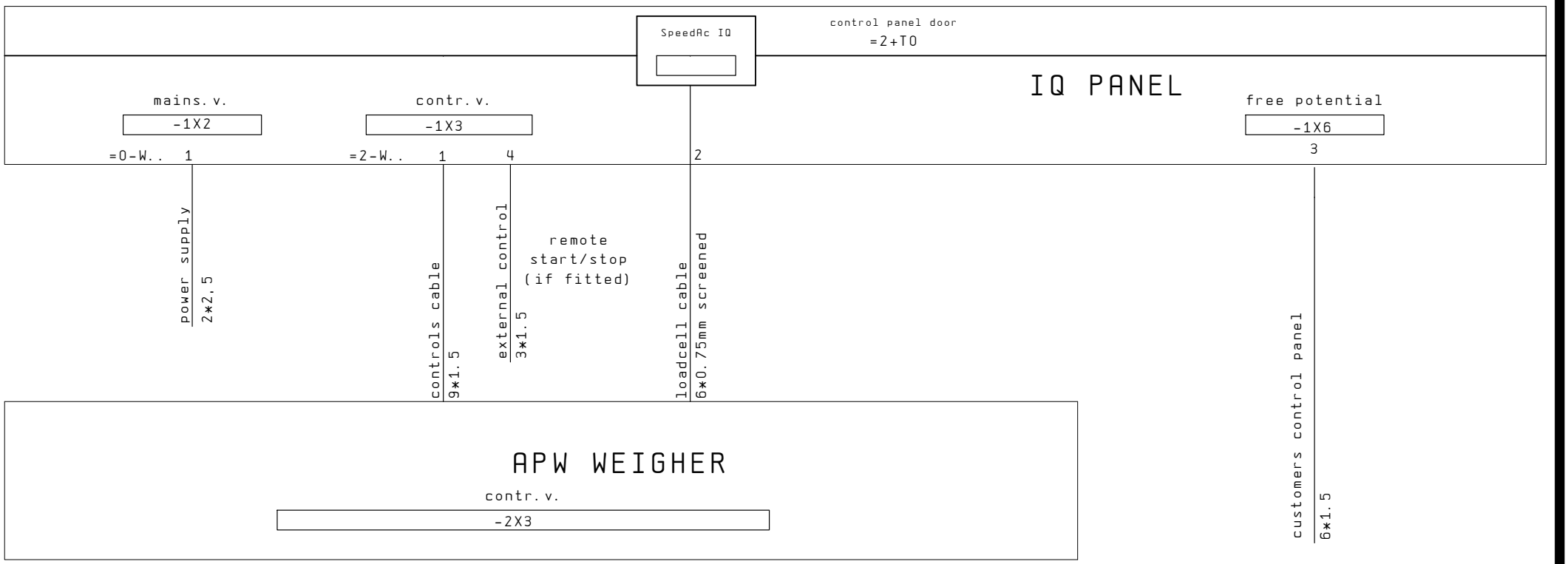
site +

following page =TRML/10

preceding page =2/46

page 1

off 1



the minimum quantity of wires without ground is given !
all wire specifications refer to sq. mm copper !

Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 25. Aug. 2019 MMM plotting date 14. Feb. 2020	CAE-No. 13027544	page text: scheme of terminal blocks installation: IQ / APW RETROFIT	drawing-No. 94 13027544 group =TRML site +0	following page 21 preceding page =CABL/1	page 10 off 26

=group /page .path	=0/4.3	=0/4.4

external

contact		
target designation		E

cable number	cores *

name of the terminal block

=0+0-1X3

links	linked	linked
terminal	2	2

cable number	cores *

internal

contact	0v	2
target designation	-2G18	=2-1X3

* without cross section: the minimum quantity of wires without ground is given!

Premier Tech Chronos	issue 09.Aug.2019 PMC; modification 25.Aug.2019; plotting date 14.Feb.2020	CAE-No. 13027544	page text: terminal block in control panel (control voltage); installation: IQ / APW RETROFIT	drawing-No. 94 13027544; group =TRML; site +	following page 22; preceding page 10	page 21 off 26

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=group /page .path	=0/2.4	=0/2.5	=0/2.6

external

contact			
target designation	=0-X	=0-X	
=0+0-W1	2x	X	X
cable number	cores *		

name of the terminal block =2+0-1X2

links			
terminal	L1	N	PE

cable number	cores *

internal

contact	1	N	
target designation	=0-2018	=0-2G18	

* without cross section: the minimum quantity of wires without ground is given!

Premier Tech Chronos	issue 09.Aug.2019 PMC	CAE-No.	page text	terminal block in control panel (auxiliary voltage)	drawing-No.	94 13027544	following page 23	page 22
	modification 25.Aug.2019	13027544	installation	IQ / APW RETROFIT	group =TRML	site +	preceding page 21	off 26
	plotting date 14.Feb.2020							

19601840

=group /page .path	external contact	external target designation	=2+0-W4 (3x)	=2+0-W1 (6x)	=2+0-W3 (6x)	links	terminal (=2+0-1X3)	internal contact	internal target designation
=2/25.14	X	-0X2			X		1	-2	=0-2F18.1
=2/27.13	1	+2-2X3		X			1	11	-25K14
=2/25.12							2	2	=0-1X3
=2/31.4	2	+2-2X3		X			2	1	-XREL
=2/27.13	3	+2-2X3		X			3	4	-26A1
=2/31.4	4	+2-2X3		X			4	14	-28K8
=2/31.6	5	+2-2X3		X			5	14	-28K10
=2/31.8	6	+2-2X3		X			6	14	-28K12
=2/25.14	X	-0X2			X		10	A1	-25K14
=2/29.9		-STOP	X				11	6	-XREL
=2/27.15							12	5	-26A1
=2/27.17							13	6	-26A1
=2/29.5							21	8	-XREL
=2/29.7							22	9	-XREL
=2/29.9		-STOP	X				23	10	-XREL
=2/29.11							24	11	-XREL
=2/29.13		-START	X				25	12	-XREL
=2/29.15							26	13	-XREL
=2/29.17							27	14	-XREL
=2/30.6							30	16	-XREL
=2/30.8							31	17	-XREL
=2/30.10							32	18	-XREL
=2/30.12							33	19	-XREL
=2/30.16							34	21	-XREL
=2/30.18							35	22	-XREL
=2/30.20							36	23	-XREL
=2/30.22							37	24	-XREL
=2/31.14							38	A1	-31K14
=2/25.18							39	A1	-25K18
=2/30.2						●—●	100	5	-XREL
=2/30.3						●—●	101	7	-XREL

name of the terminal block =2+0-1X3

cable number | cores *

* without cross section: the minimum quantity of wires without ground is given!

Premier Tech Chronos	issue 09.Aug.2019 PMC; modification 25.Aug.2019; plotting date 14.Feb.2020	CAE-No. 13027544	page text: terminal block in control panel (control voltage); installation: IQ / APW RETROFIT	drawing-No. 94 13027544; group =TRML; site +	following page 24; preceding page 22; page 23 off 26

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		60	61	62	63
	=group /page .path	=2/32.9	=2/32.11	=2/32.12	=2/32.14
external	contact	x	x	x	x
	target designation	-0X2	-0X2	-0X2	-0X2
=2+0-W3	6x	X	X	X	X
cable number	cores *				
name of the terminal block =2+0-1X6	links				
	terminal	60	61	62	63
cable number	cores *				
internal	contact	11	14	11	14
	target designation	-25K18	-25K18	-31K14	-31K14

* without cross section: the minimum quantity of wires without ground is given!

Premier Tech Chronos	issue 09.Aug.2019 PMC; modification 25.Aug.2019; plotting date 14.Feb.2020	CAE-No. 13027544	page text: terminal block in control panel (free potential); installation: IQ / APW RETROFIT	drawing-No. 94 13027544; group =TRML; site +	following page 25; preceding page 23	page 24 off 26

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	=group /page .path	=2/45.7	=2/45.8	=2/45.8	=2/45.11	=2/45.12	=2/45.12	=2/45.13	=2/45.14	=2/45.14	=2/45.15	=2/45.16	=2/45.16	=2/45.5	=2/45.6	=2/45.6	=2/45.9	=2/45.10	=2/45.10	=2/45.17
external	contact	3			4			5			6			1			2			
external	target designation	+0-XADM			+0-XADM			+0-XADM			+0-XADM			+0-XADM			+0-XADM			SH
=2+0-W2	6x	X			X			X			X			X			X			
cable number	cores *																			
name of the terminal block =2+2-1X3	links	●—	—●—	—●	●—	—●—	—●	●—	—●—	—●	●—	—●—	—●	●—	—●—	—●	●—	—●—	—●	
	terminal	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	SCN
cable number	cores *																			
internal	contact																			
internal	target designation	-45B1	-45B22	-45B22.1	-45B1	-45B22	-45B22.1	-45B1	-45B22	-45B22.1	-45B1	-45B22	-45B22.1	-45B1	-45B22	-45B22.1	-45B1	-45B22	-45B22.1	SH

* without cross section: the minimum quantity of wires without ground is given!

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	=group /page . path	=2/27.13	=2/31.4	=2/31.6	=2/31.8	=2/27.13	=2/31.4	=2/31.6	=2/31.8	=2/27.13															
external	contact	1	2			3	4	5	6																
	target designation	+0-1X3	+0-1X3			+0-1X3	+0-1X3	+0-1X3	+0-1X3	-27S13.1															
=2+0-W1	6x	X	X			X	X	X	X																
cable number	cores *																								
name of the terminal block =2+2-2X3	links																								
	terminal	1	2	2	2	3	4	5	6	3A															
cable number	cores *																								
internal	contact																								
	target designation	-27S13	-31Y4	-31Y6	-31Y8	-27S13.1	-31Y4	-31Y6	-31Y8	-27S13															

* without cross section: the minimum quantity of wires without ground is given!

Premier Tech Chronos	issue 09. Aug. 2019 PMC modification 25. Aug. 2019 plotting date 14. Feb. 2020	CAE-No. 13027544	page text: terminal box for weigher (control voltage) installation: IQ / APW RETROFIT	drawing-No. 94 13027544 group =TRML site +	following page:	page 26 preceding page 25 off 26	1960180