SIMATIC S7 400

UR1 rack with
PLC modules

PS407 10A
CPU 414-2 DP 256KB
SM421 32 dig.inp.
SM421 32 dig.inp.
SM421 32 dig.inp.
SM422 32 dig.outp..
SM422 32 dig.outp..
SM422 32 dig.outp..
SM431 16 AL.16bit inp.
SM431 16 AL.16bit inp.
SM431 16 AL.16bit inp.
FM455 C PID Control
CP 441 point to point
CP 441 point to point
CP 443-1 Advanced

From X2 DP Profibus

Phoenix contact VARIOFASE front adaptors
type FLKM 50-PA-S400
ORDER 22 94 50 0

FLKM 50-PA-S400 (3-48)

Phoenix contact
FLKM 50
2281089

Phoenix contact VARIOFASE front adaptors
type FLKM 50-PA-S400 (3-48)
ORDER 22 94 90 8

Phoenix contact Systemcable 50-pol.
FLK 50/EZ-DR/300/KONFEK/S
22 99 13 6

B6 32x — Q 8.0 to 11.7

TL-HT101
TL-HT102
TL-HT103
TL-HT104
TL-HT105
TR-HT101
TR-HT102
TR-HT103
TR-HT104
TR-HT105
TLR-HT102
Q 9.3
Q 9.4
Q 9.5
Q 9.6
Q 9.7
SA-VL106
SA-VL110
SA-VL114
SA-VL119
SB-VL106
SB-VL110
SB-VL114
SB-VL119
Q 11.0
Q 11.1
Q 11.2
Q 11.3
Q 11.4
Q 11.5
Q 11.6
Q 11.7

SS Relay

TL_PT004
TR_PT004
balzers
TPG 300

MICROMASTER
420

Pump

SA_PM101

I 0.0 to 0.7
TL-VL102 open
TL-VL102 close
TL-VL102 move
TL-VL103 prt 2
TL-VL103 close
TL-VL103 prt 3
TL-VL103 move
TL-VL104 open

I 1.0 to 1.7
TL-VL104 close
TL-VL104 move
TL-VL109 open
TL-VL109 close
TL-VL109 move
TL-VL111 open
TL-VL111 close
TL-VL111 move

I 2.0 to 2.7
TL-VL112 open
TL-VL112 close
TL-VL112 move
TR-VL102 open
TR-VL102 close
TR-VL102 move
TR-VL103 prt 2
TR-VL103 close

I 3.0 to 3.7
TR-VL103 prt 3
TR-VL103 move
TR-VL104 open
TR-VL104 close
TR-VL104 move
TR-VL108 prt 2
TR-VL108 close
TR-VL108 prt 3

B1 — I 0.0 to 3.7

Phoenix contact
FLKM 50/LA/PLC
2284552

I 4.0 to 4.7
TR-VL108 move
TR-VL109 open
TR-VL109 close
TR-VL109 move
TR-VL111 open
TR-VL111 close
TR-VL111 move
TR-VL112 open

I 5.0 to 5.7
TR-VL112 close
TR-VL112 move
TLR-VL101 prt 2
TLR-VL101 close
TLR-VL101 prt 3
TLR-VL101 move
TLR-VL109 prt 2
TLR-VL109 close

I 6.0 to 6.7
TLR-VL109 prt 3
TLR-VL109 move
TLR-VL110 open
TLR-VL110 close
TLR-VL110 move
TLR-VL111 open
TLR-VL111 close
TLR-VL111 move

I 7.0 to 7.7
I 7.0 ESD205
I 7.1 ESD205
I 7.2 EXD1311
I 7.3 EXD1311
I 7.4 EXD1306
I 7.5 EXD1306
I 7.6
I 7.7

B2 — I 4.0 to 7.7

I 8.0 to 8.7
TL-PM101 on
TL-PT103 mem
TR-PM101 on
TR-PT103 mem
TLR-PM101 on
TLR-PT103 mem
SA-PM101 Status
SA-PT108 L

I 9.0 to 9.7
SA-PT108 H
SB-PM101 on
SB-PT108 L
SB-PT108 H
Clixon status
Th C1 status
Th C2 status
Th C3 status

I 10.0 to 10.7
SB Pm101 th rel.
SA Motor Protec
Rack C02 leak
Rack A-B leak
Heater status
I 10.5 Vac. Stat.
I 10.6 Vac. Stat.
I 10.7 Vac. Stat

I 11.0 to 11.7
I 11.0 Alow A
I 11.1 Alow C
I 11.2 Smoke
I 11.3 Chilled
I 11.4 UPS batt
I 11.5 UPS main
I 11.6
I 11.7

B3 — I 8.0 to 11.7

Q 0.0 to 1.7
TL-VL102 open
TL-VL102 close
TL-VL103 prt 2
TL-VL103 close
TL-VL103 prt 3
TL-VL104 open
TL-VL104 close
TL-VL109 open
TL-VL109 close
TL-VL111 open
TL-VL111 close
TL-VL112 open
TL-VL112 close
TR-VL102 open
TR-VL102 close
TR-VL103 prt 2

I 2.0 to 3.7
TR-VL103 close
TR-VL103 prt 3
TR-VL104 open
TR-VL104 close
TR-VL108 prt 2
TR-VL108 close
TR-VL108 prt 3
TR-VL109 open
TR-VL109 close
TR-VL111 open
TR-VL111 close
TR-VL112 open
TR-VL112 close
Q 3.5
Q 3.6
Q 3.7

B4 — Q 0.0 to 3.7

Phoenix contact
UMK-16 RELS/KSR-G24/21/PLC
2974901
UMK-16 RELS/KSR-G24/21/E/PLC
2974891

Q 4.0 to 7.7

B5

Q 4.0 to 5.7
TLR-VL101 prt 2
TLR-VL101 close
TLR-VL101 prt 3
TLR-VL109 prt 2
TLR-VL109 close
TLR-VL109 prt 3
TLR-VL110 open
TLR-VL110 close
TLR-VL111 open
TLR-VL111 close
Q 5.2 Ready A
Q 5.3 Ready C
Q 5.4 Vent Inhib.
Q 5.5
Q 5.6
Q 5.7

Q 6.0 to 7.7
TL-PM101 on
TR-PM101 on
TLR-PM101 on
SB1-PM101 on
SB2-Fan on
Heater Power Off
Q 6.6
Q 6.7
Q 7.0 Br. HTR1
Q 7.1 Br. HTR2
Q 7.2
Q 7.4
Q 7.5
Q 7.6
Q 7.7

PIW640-670

B7
Curr.TL-HT01
Curr.TL-HT02
Curr.TL-HT03
Curr.TL-HT04
Curr.TR-HT01
Curr.TR-HT02
Curr.TR-HT03
Curr.TR-HT04

TL-PT001 0-10v
TL-PT002 0-10v
TL-PT003 0-10v
TR-PT001 0-10v
TR-PT002 0-10v
TR-PT003 0-10v
TL-PT101 4-20mA
TL-PT102 4-20mA

PIW672-702

B8
TL-PT104 4-20mA
TR-PT101 4-20mA
TR-PT102 4-20mA
TR-PT104 4-20mA
SA-PT101 4-20mA
SA-PT102 4-20mA
SA-PT103 4-20mA
SA-PT104 4-20mA
SA-PT105 4-20mA
SA-PT106 4-20mA
SA-PT107 4-20mA
SB-PT102 4-20mA
SB-PT103 4-20mA
SB-PT104 4-20mA
SB-PT105 4-20mA
SB-PT106 4-20mA

PIW704-734

B9
PT100 Temp Rack
PT100 Temp Rack
TL-TT121 T Couple
TL-TT122 T Couple
TL-TT123 T Couple
TL-TT124 T Couple
TL-TT125 T Couple
TR-TT121 T Couple
TR-TT122 T Couple
TR-TT123 T Couple
TR-TT124 T Couple
TR-TT125 T Couple
TLR-TT122 T Couple
PIW 730
TL-LT101
TR-LT101

PIW736-766

B10 — PT100 Haptas

B11 — FM455-C Left connector outputs (heaters)

512

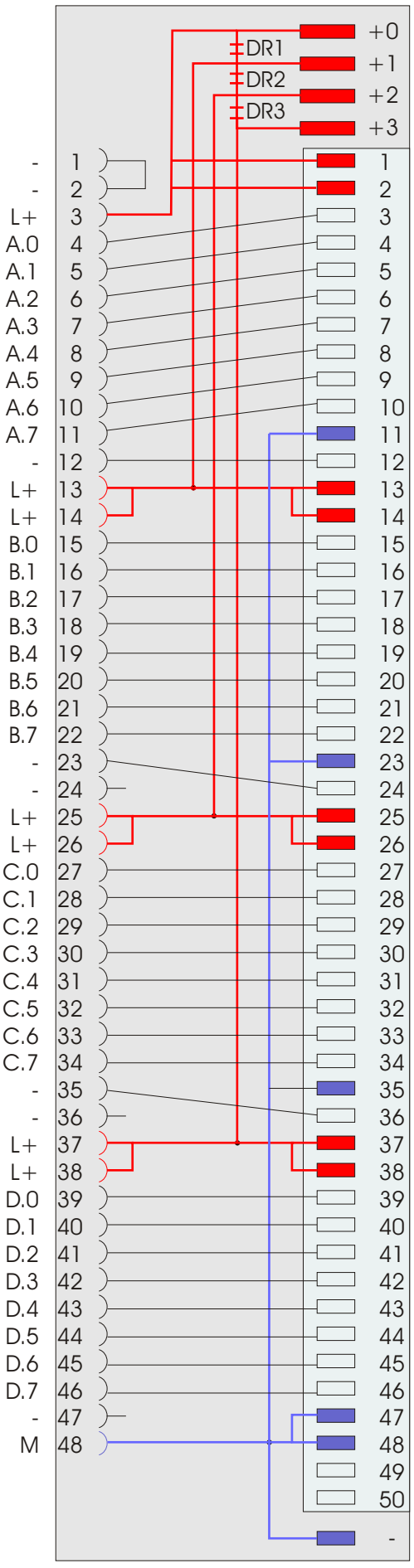
B12 — FM455-C Right connector inputs (Pt100's)

512

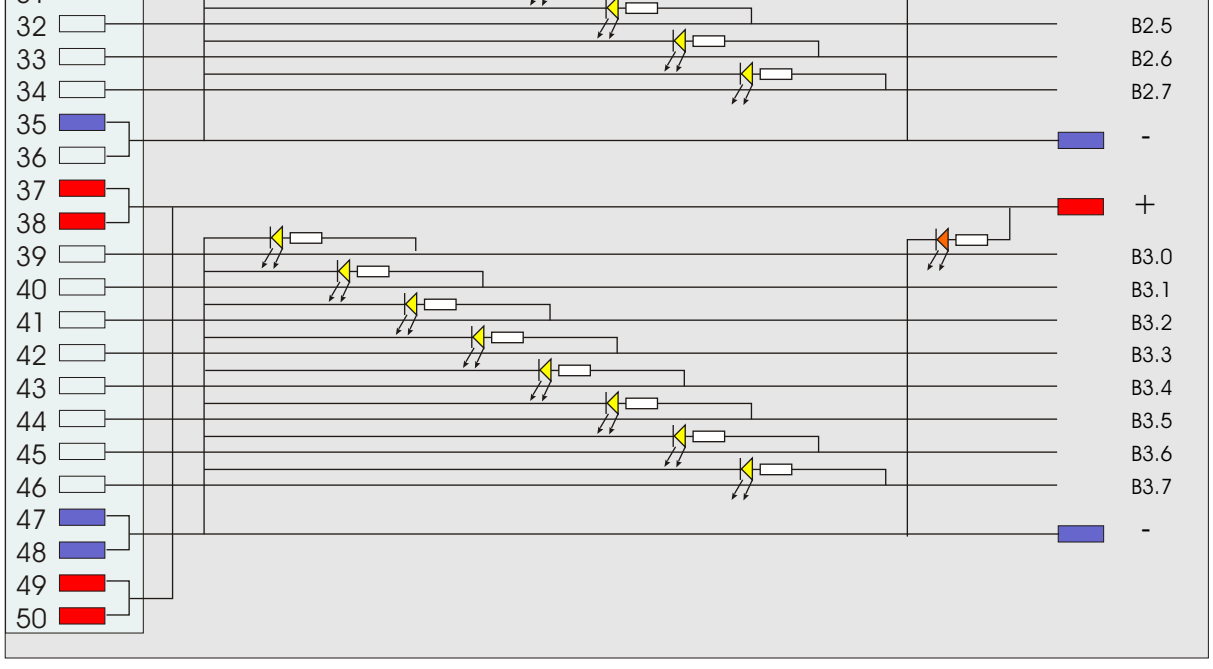
Profibus Terminator
6ES7 972-0DA00-0AA0

Cooling system From PLC to PreFab blocks		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 12-11-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4
		Page: 12 of 13

Block No B1
Dig in 0.0-3.7



Phoenix contact
FLKM 50-PA S400



Phoenix contact
FLKM 50/LA/PLC

I 0.0

TL-VL102 open
TL-VL102 close
TL-VL102 mov
TL-VL103 prt 2
TL-VL103 close
TL-VL103 prt 3
TL-VL103 mov
TL-VL104 open

I 1.0

TL-VL104 close
TL-VL104 mov
TL-VL109 open
TL-VL109 close
TL-VL109 mov
TL-VL111 open
TL-VL111 close
TL-VL111 mov

I 2.0

TL-VL112 open
TL-VL112 close
TL-VL112 mov
TR-VL102 open
TR-VL102 close
TR-VL102 mov
TR-VL103 prt 2
TR-VL103 close

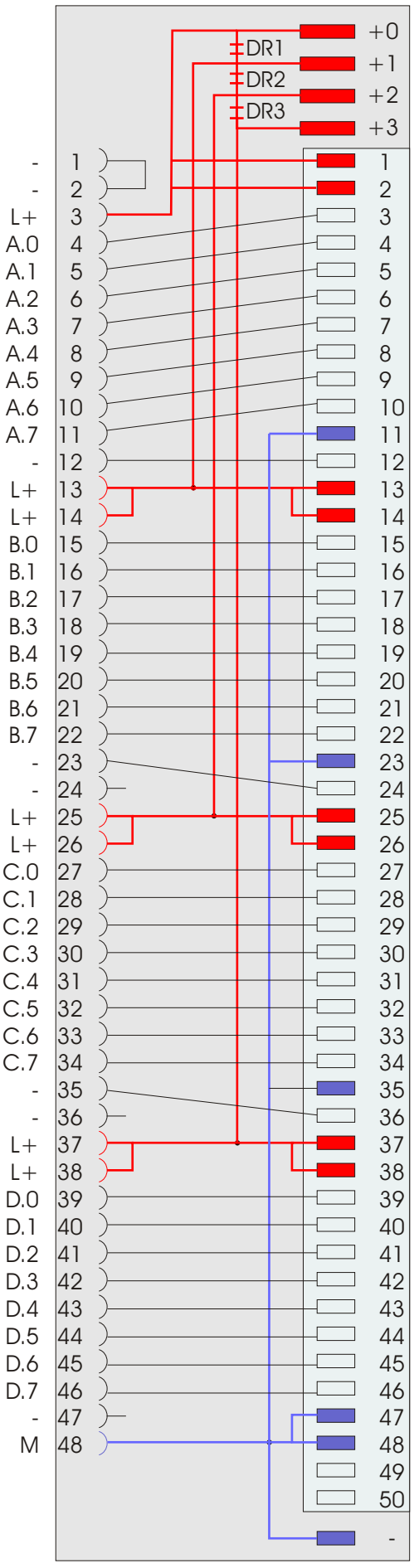
I 3.0

TR-VL103 prt 3
TR-VL103 mov
TR-VL104 open
TR-VL104 close
TR-VL104 mov
TR-VL108 prt 2
TR-VL108 close
TR-VL108 prt 3

I 3.7

Digital input-1 PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 12-02-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4
		Page: 12 of 13

Block No B2
Dig in 4.0-7.7



Phoenix contact
FLKM 50-PA S400

Phoenix contact
FLKM 50/LA/PLC

I 4.0

TR-VL108 mov
TR-VL109 open
TR-VL109 close
TR-VL109 mov
TR-VL111 open
TR-VL111 close
TR-VL111 mov
TR-VL112 open

I 5.0

TR-VL112 close
TR-VL112 mov
TLR-VL101 prt 2
TLR-VL101 close
TLR-VL101 prt 3
TLR-VL101 move
TLR-VL109 prt 2
TLR-VL109 close

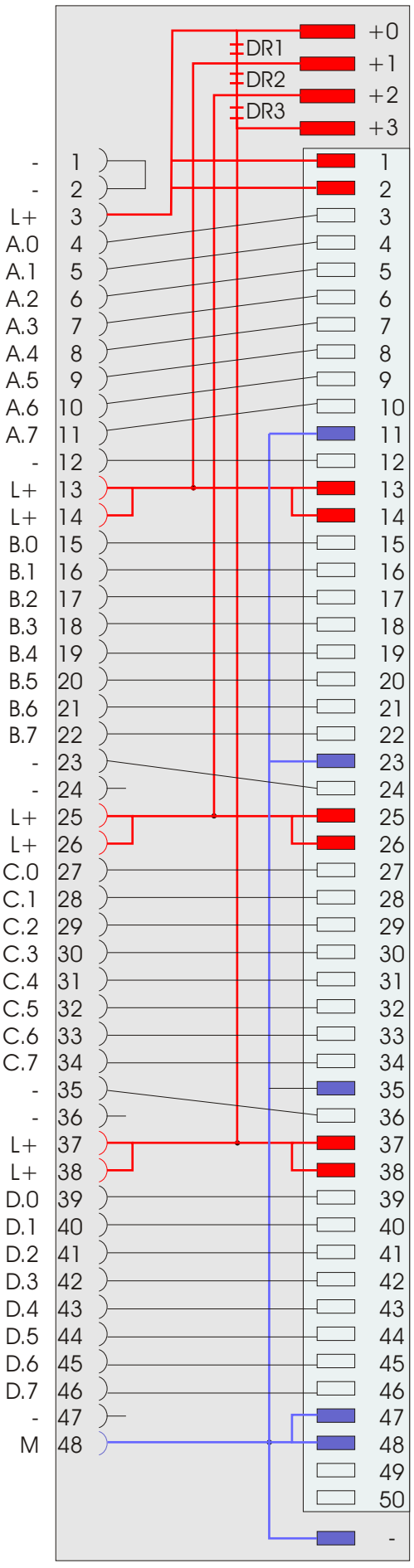
I 6.0

TLR-VL109 prt 3
TLR-VL109 mov
TLR-VL110 open
TLR-VL110 close
TLR-VL110 mov
TLR-VL111 openl
TLR-VL111 close
TLR-VL111 mov

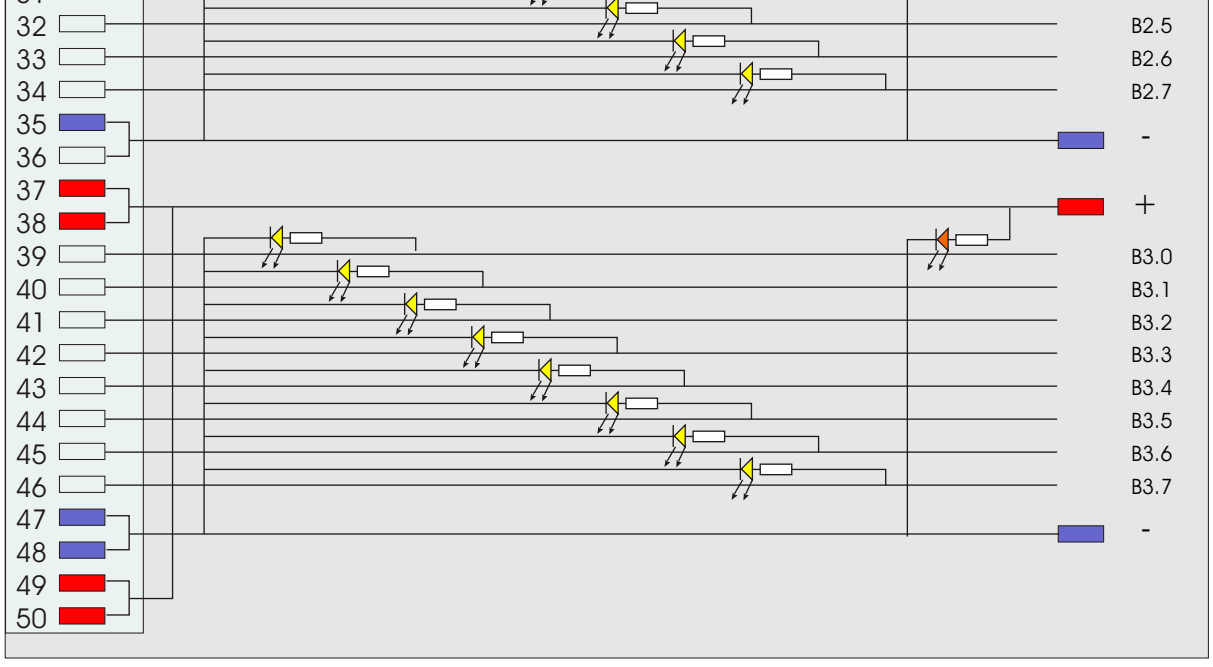
I 7.0 ESD205 No
I 7.1 ESD205 Nc
I 7.2 EXD1311No
I 7.3 EXD1311Nc
I 7.4 EXD1306No
I 7.5 EXD1306Nc
I 7.6
I 7.7

Digital input-2 PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 12-02-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4
		Page: 12 of 13

Block No B3
Dig in 8.0-11.7



Phoenix contact
FLKM 50-PA S400



Phoenix contact
FLKM 50/LA/PLC

I 8.0

TL-PM101 Status
TL-PT103 membr
TR-PM101 Status
TR-PT103 membr
TLR-PM101 Status
TLR-PT103 membr
SA-Freq.C Status
SA-PT108 Low

I 9.0

SA-PT108 High
SB1-PM101 Status
SB-PT108 Low
SB-PT108 High
Clixon Status
Th C1 status
Th C2 status
Th C3 status

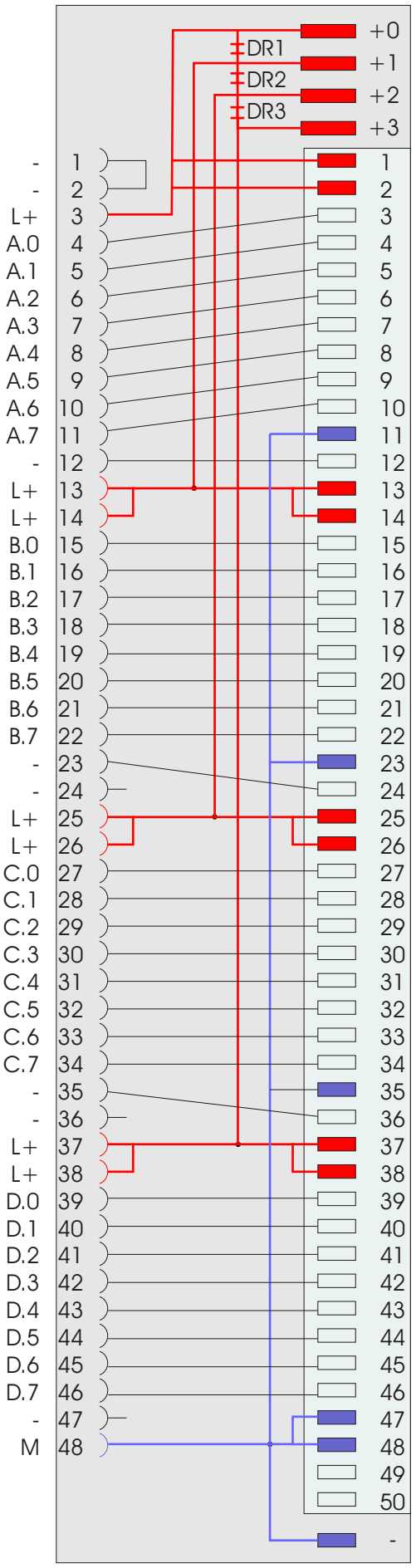
I 10.0

SA status Freq
SA Motor Prot.
Rack-CO2Leak
Rack-A-B Leak
Heater status
Vac. Stat.
Vac. Stat.
Vac. Stat.

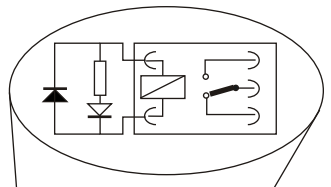
I 11.0 Alow A
I 11.1 Alow C
I 11.2 Smoke
I 11.3 Chilled w
I 11.4 UPS batt.
I 11.5 UPS main
I 11.6
I 11.7

Digital input-3 PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 3-12-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4 Page: 12 of 13

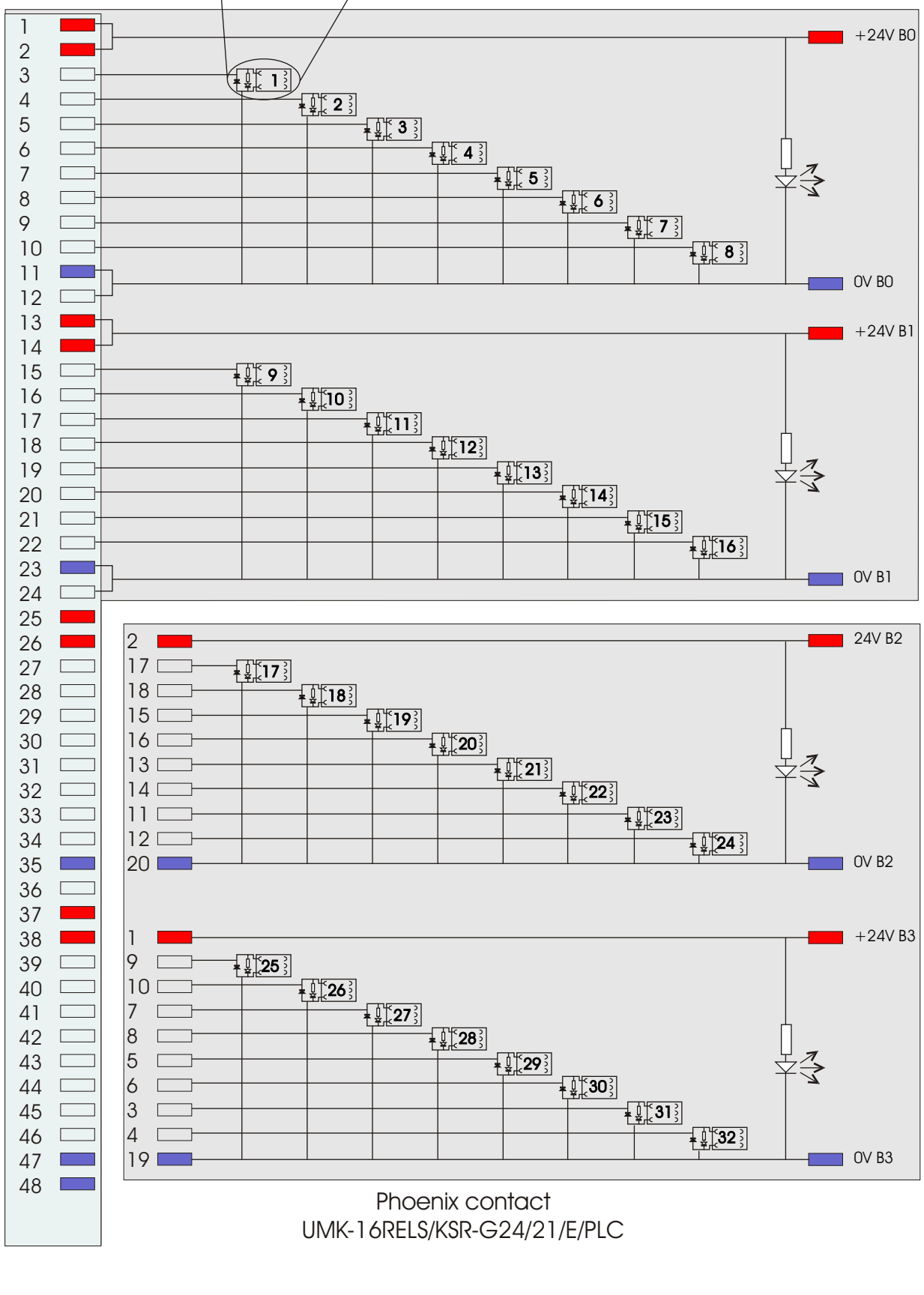
Block No B4
Dig out 0.0-3.7



Phoenix contact
FLKM 50-PA S400



Phoenix contact
UMK-16RELS/KSR-G24/21/PLC



Phoenix contact
UMK-16RELS/KSR-G24/21/E/PLC

Q 0.0

TL-VL102 open
TL-VL102 close
TL-VL103 prt 2
TL-VL103 close
TL-VL103 prt 3
TL-VL104 open
TL-VL104 close
TL-VL109 open

Q 1.0

TL-VL109 close
TL-VL111 open
TL-VL111 close
TL-VL112 open
TL-VL112 close
TR-VL102 open
TR-VL102 close
TR-VL103 prt 2

Q 2.0

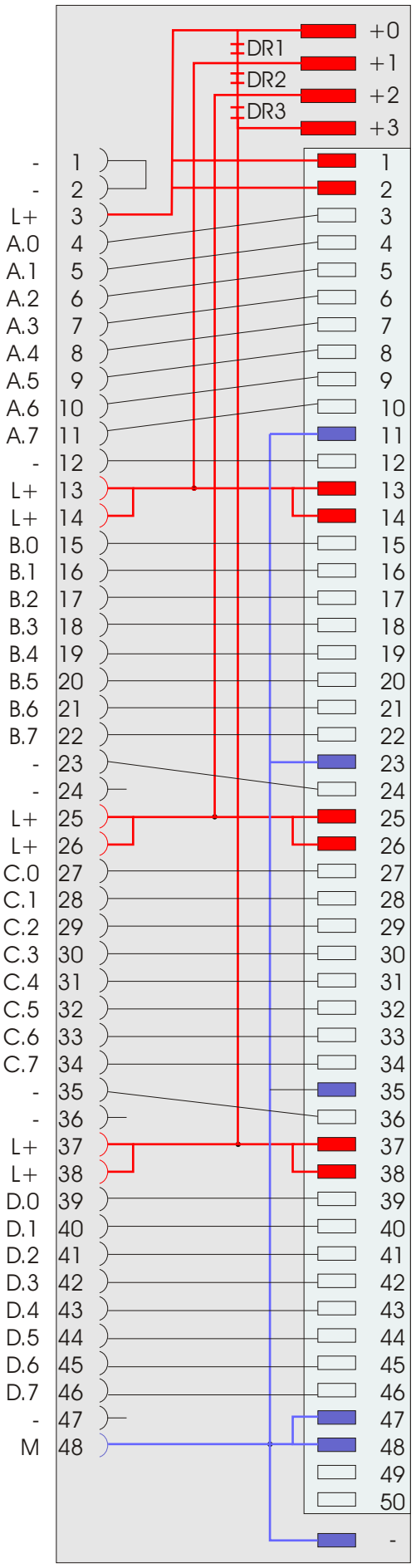
TR-VL103 close
TR-VL103 prt 3
TR-VL104 open
TR-VL104 close
TR-VL108 prt 2
TR-VL108 close
TR-VL108 prt 3
TR-VL109 open

Q 3.0

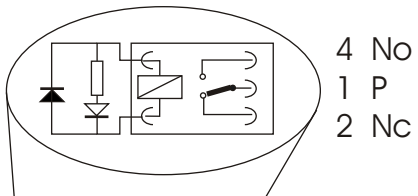
TR-VL109 close
TR-VL111 open
TR-VL111 close
TR-VL112 open
TR-VL112 close
Q 3.5
Q 3.6
Q 3.7

Digital Relais-output PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 12-02-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4 Page: 12 of 13

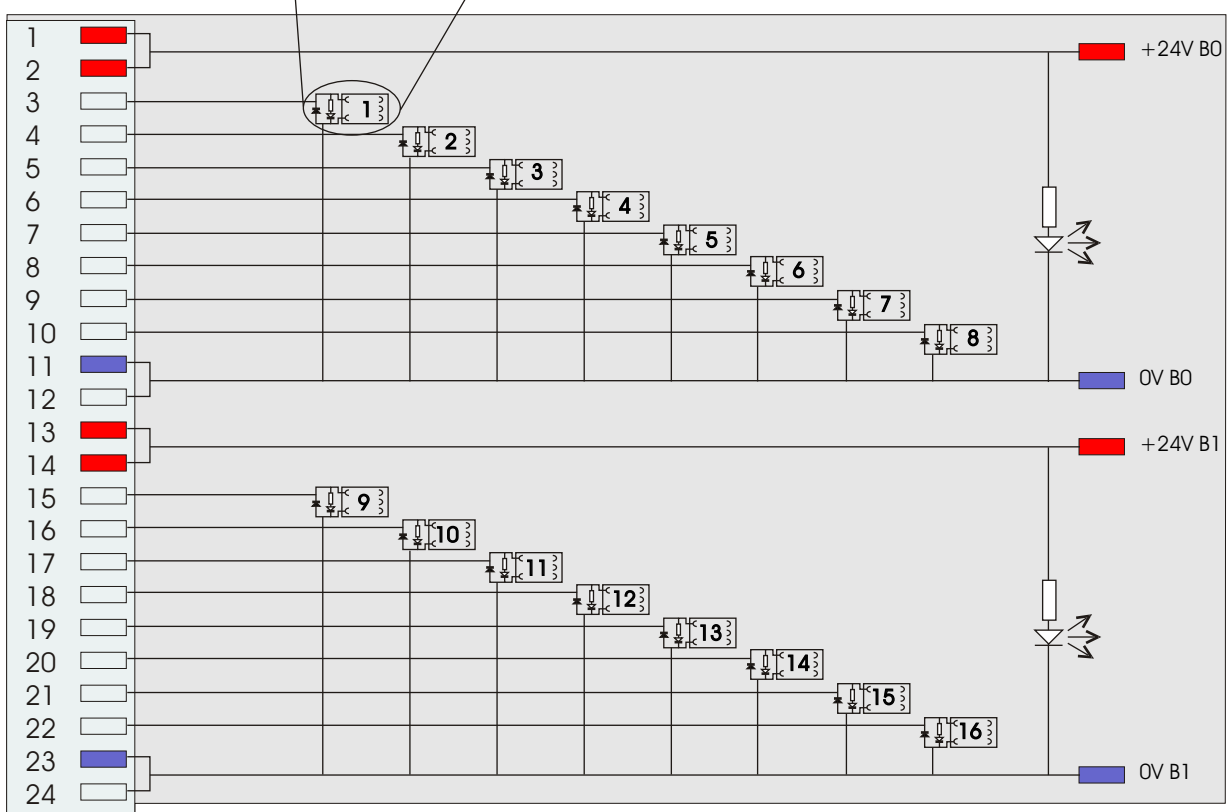
Block No B5
Dig out 4.0-7.7

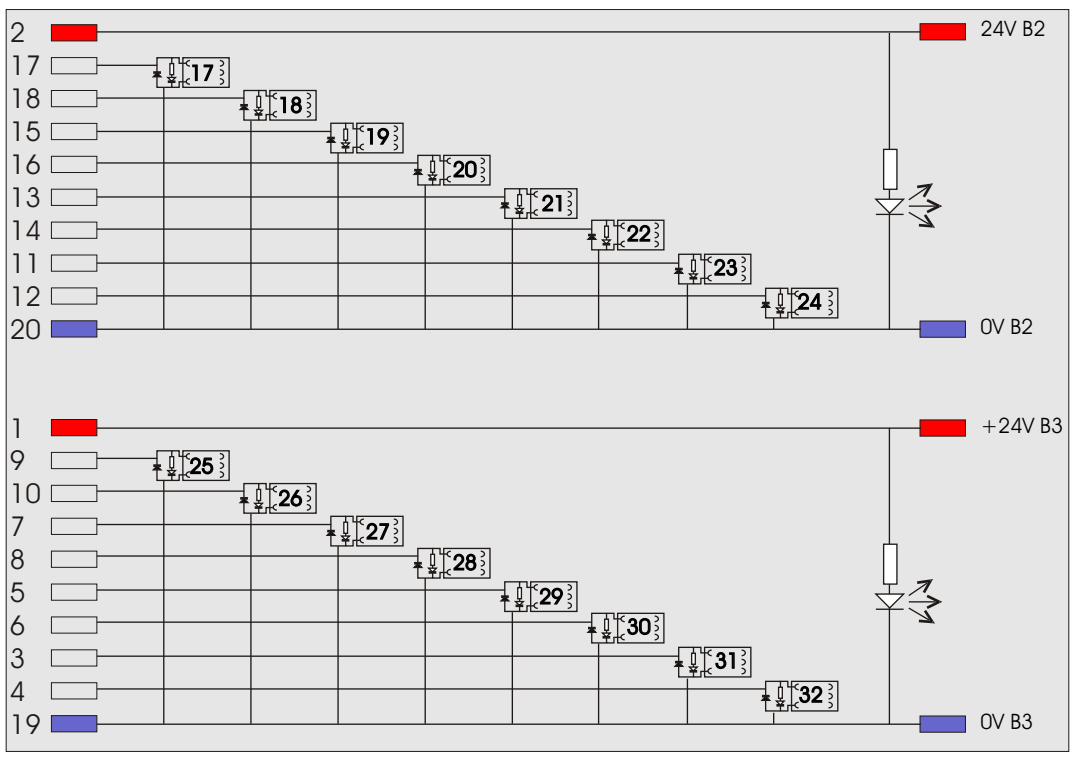


Phoenix contact
FLKM 50-PA S400



Phoenix contact
UMK-16RELS/KSR-G24/21/PLC





Phoenix contact
UMK-16RELS/KSR-G24/21/E/PLC

Q 4.0

TLR-VL101 PRT 2
TLR-VL101 close
TLR-VL101 prt 3
TLR-VL109 prt 2
TLR-VL109 close
TLR-VL109 prt 3
TLR-VL110 open
TLR-VL110 close

Q 5.0

TLR-VL111 open
TLR-VL111 close
Q 5.2 Ready A
Q 5.3 Ready C
Q 5.4 Vent. Inh.
Q 5.5
Q 5.6
Q 5.7

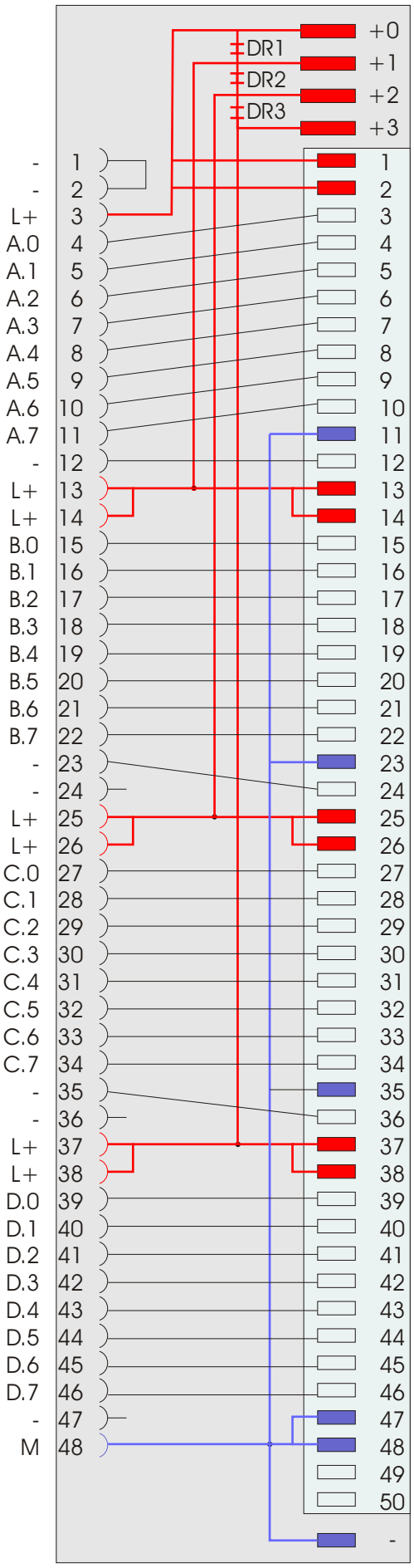
Q 6.0

TL-PM101 on
TR-PM101 on
TLR-PM101 on
SB1-PM101 on
SB2-Fan on
Heater Power off
Q 6.6
Q 6.7

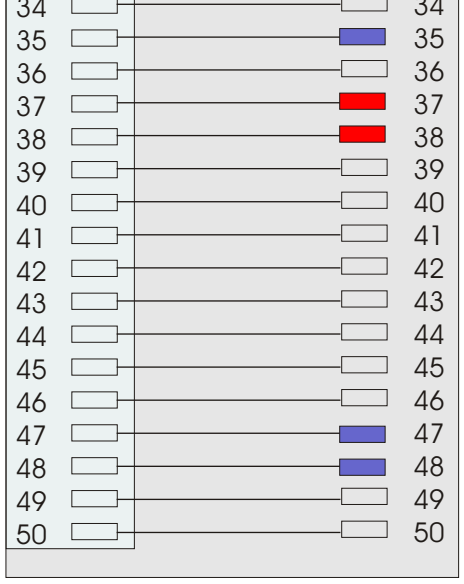
Q 7.0 Br. HTR1
Q 7.1 Br HTR2
Q 7.2
Q 7.3
Q 7.4
Q 7.5
Q 7.6
Q 7.7

Digital Relais-output PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 28-11-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4
		Page: 12 of 13

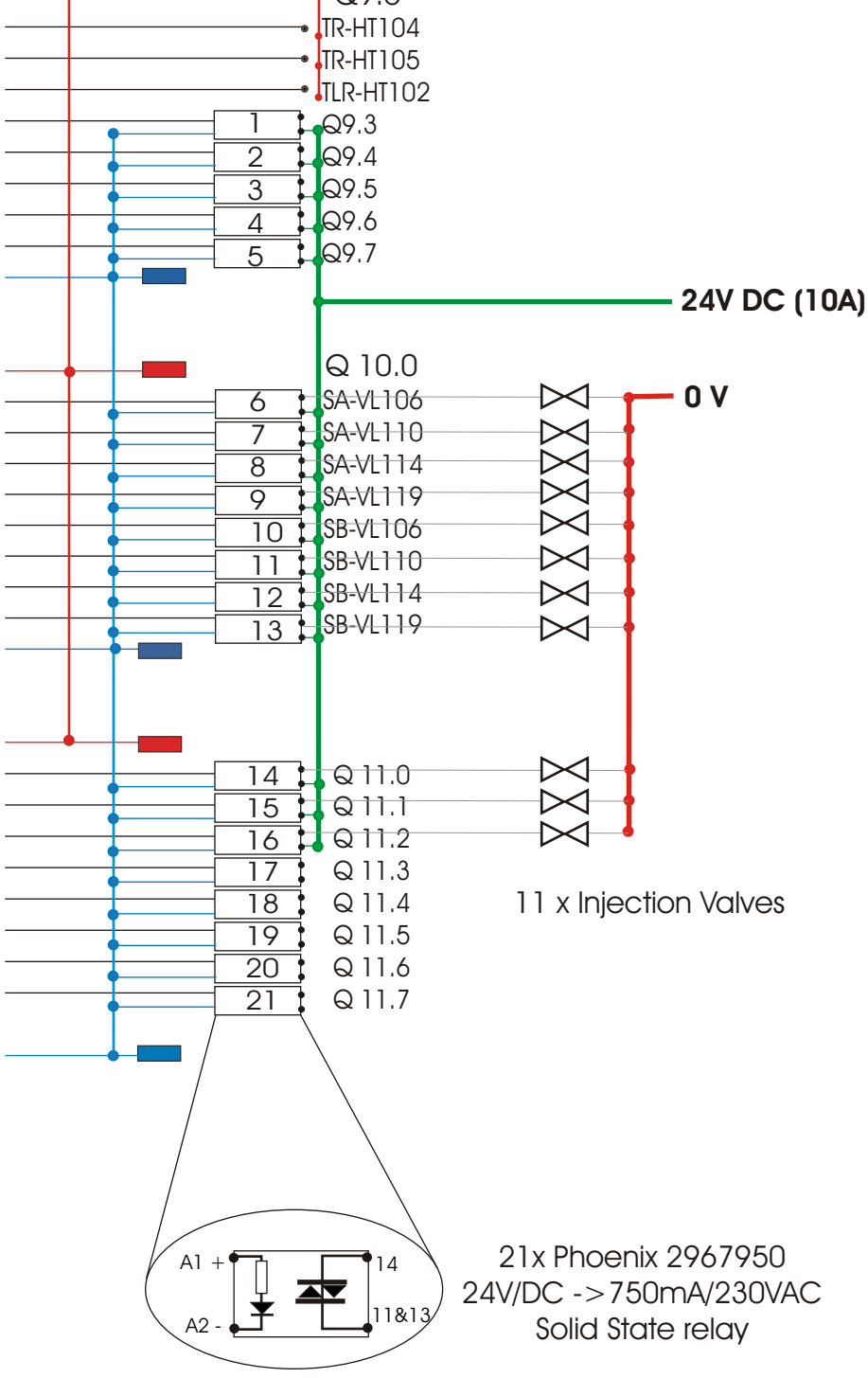
Block No B6
Dig out 8.0-11.7



Phoenix contact
FLKM 50-PA S400



Phoenix contact
FLKM 50
2281089

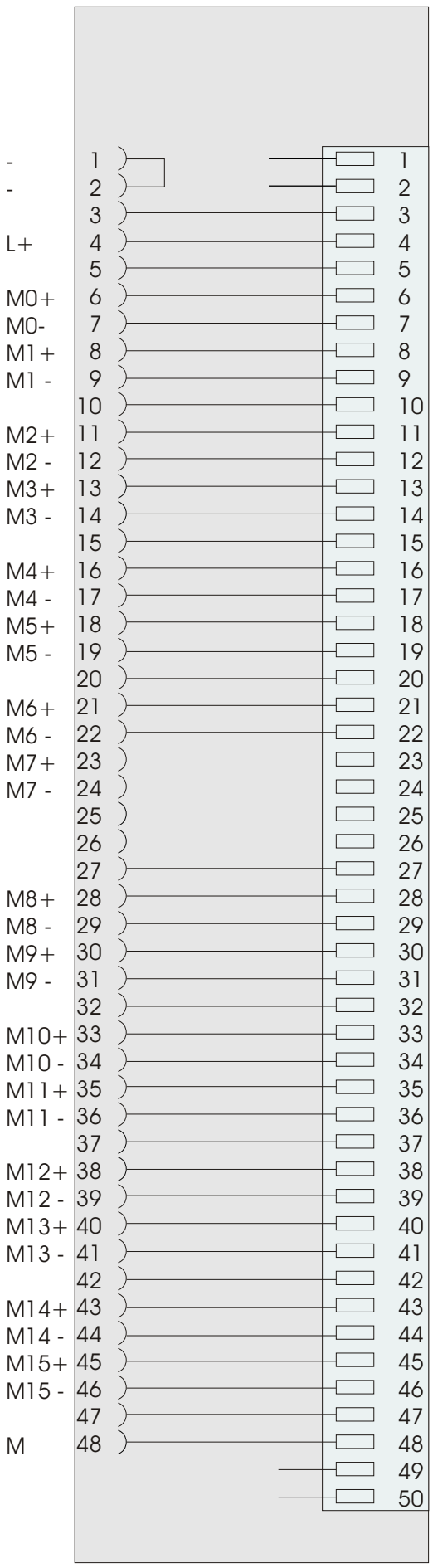


11 x Injection Valves

21x Phoenix 2967950
24V/DC ->750mA/230VAC
Solid State relay

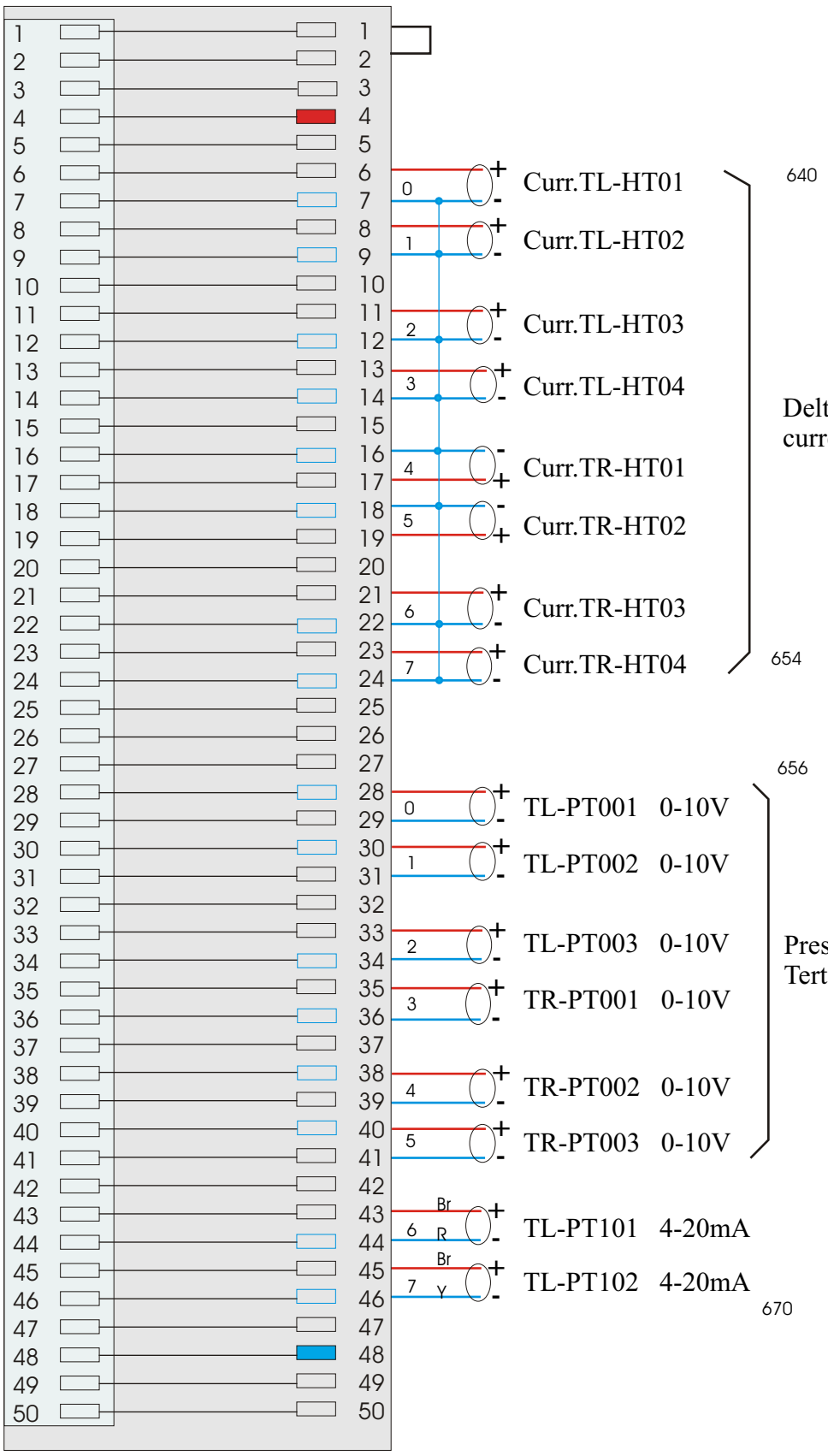
Digital SS relay -output PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 31-07-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4 Page: 12 of 13

Block No B7
Analog in PIW 640 -> PIW670



Phoenix contact
FLKM 50-PA S400 (3-48)

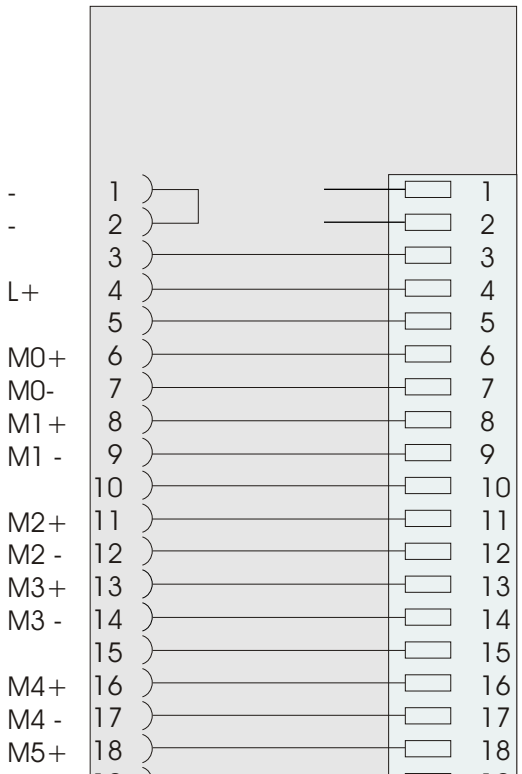
PIW640-670



Phoenix contact
FLKM 50
2281089

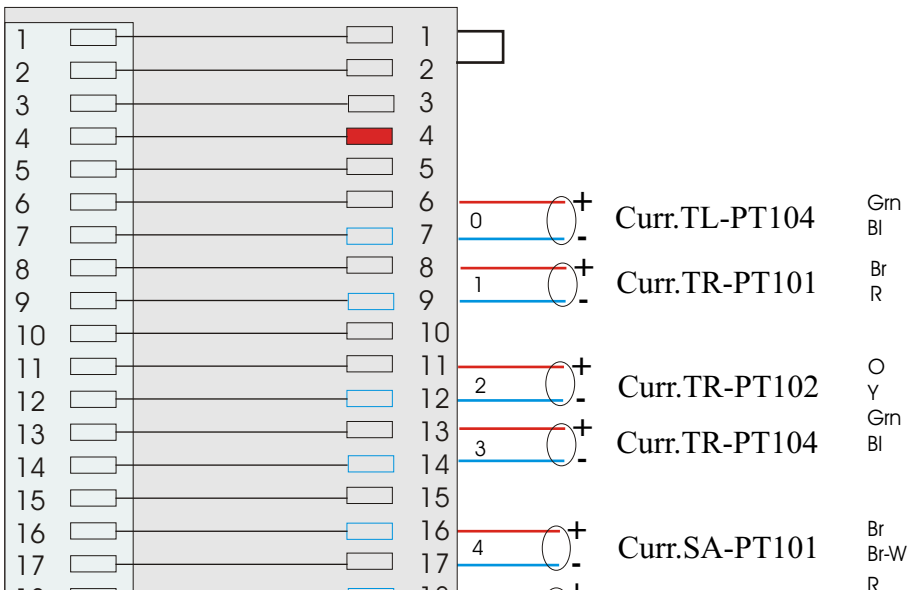
Analog Input/Output PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 21-11-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4
		Page: 12 of 13

Block No B8
Analog in PIW 672 -> PIW702



Phoenix contact
FLKM 50-PA S400 (3-48)

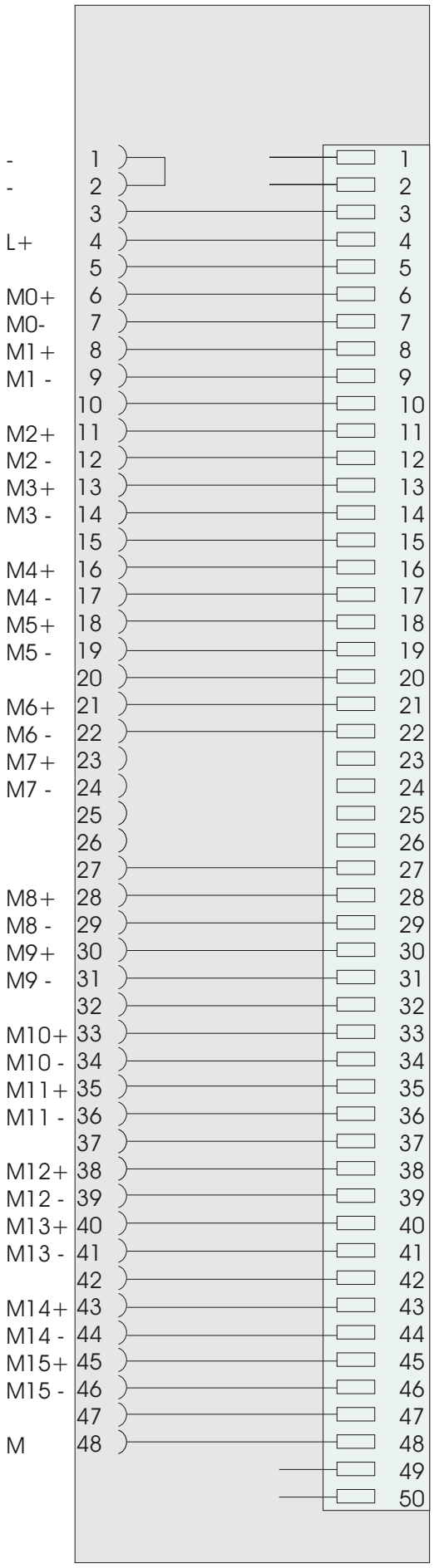
PIW672-702



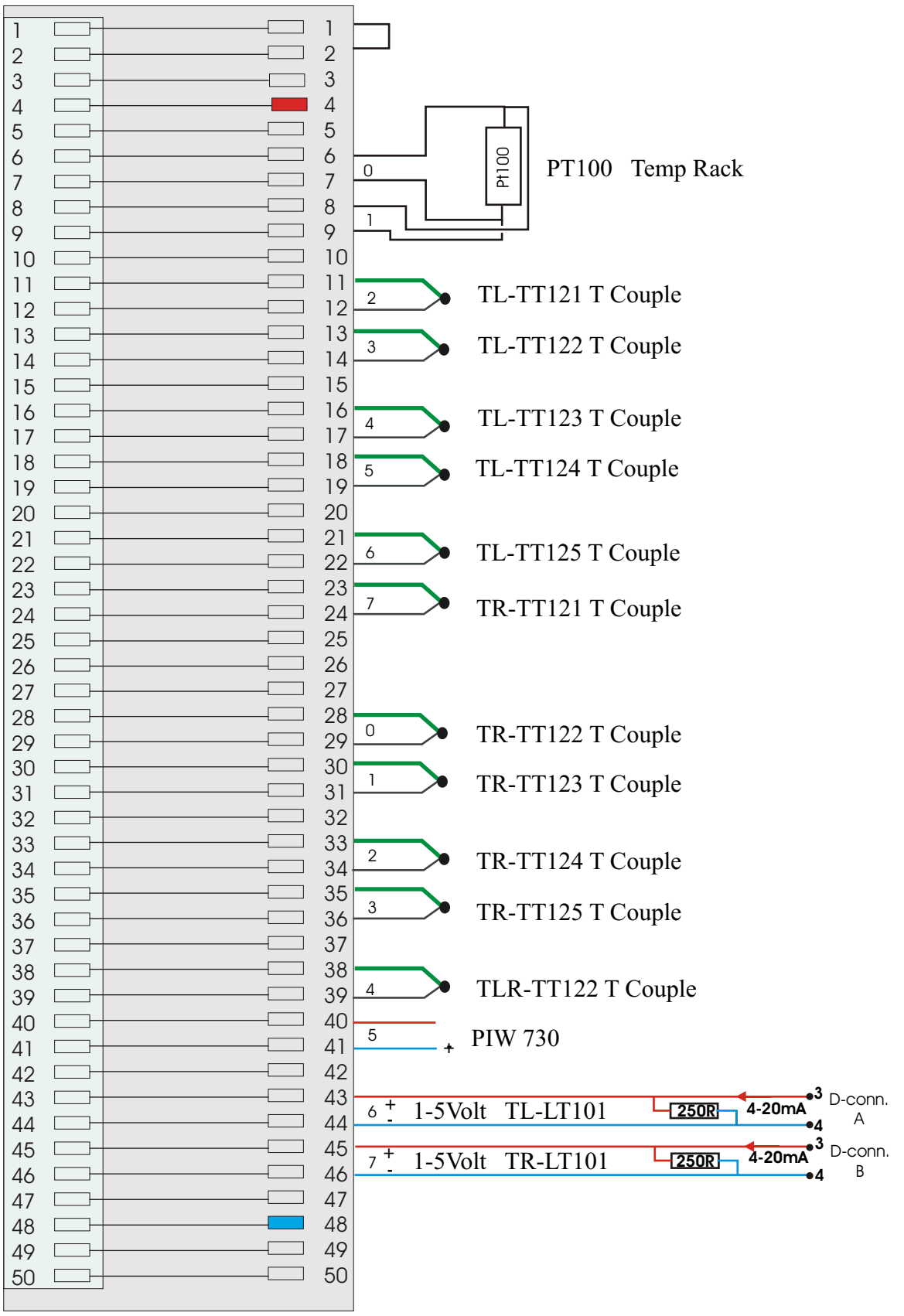
Phoenix contact
FLKM 50
2281089

Analog Input/Output PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 12-02-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4 Page: 3 of 7 Page: 12 of 13

Block No B9
Analog in PIW 704 -> PIW734



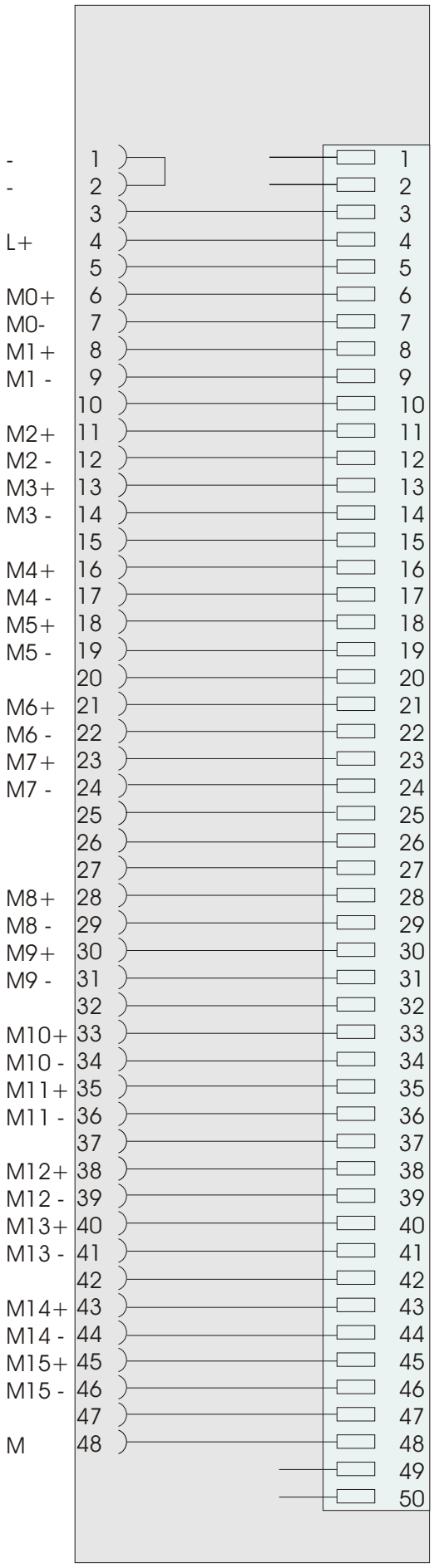
Phoenix contact
FLKM 50-PA S400 (3-48)



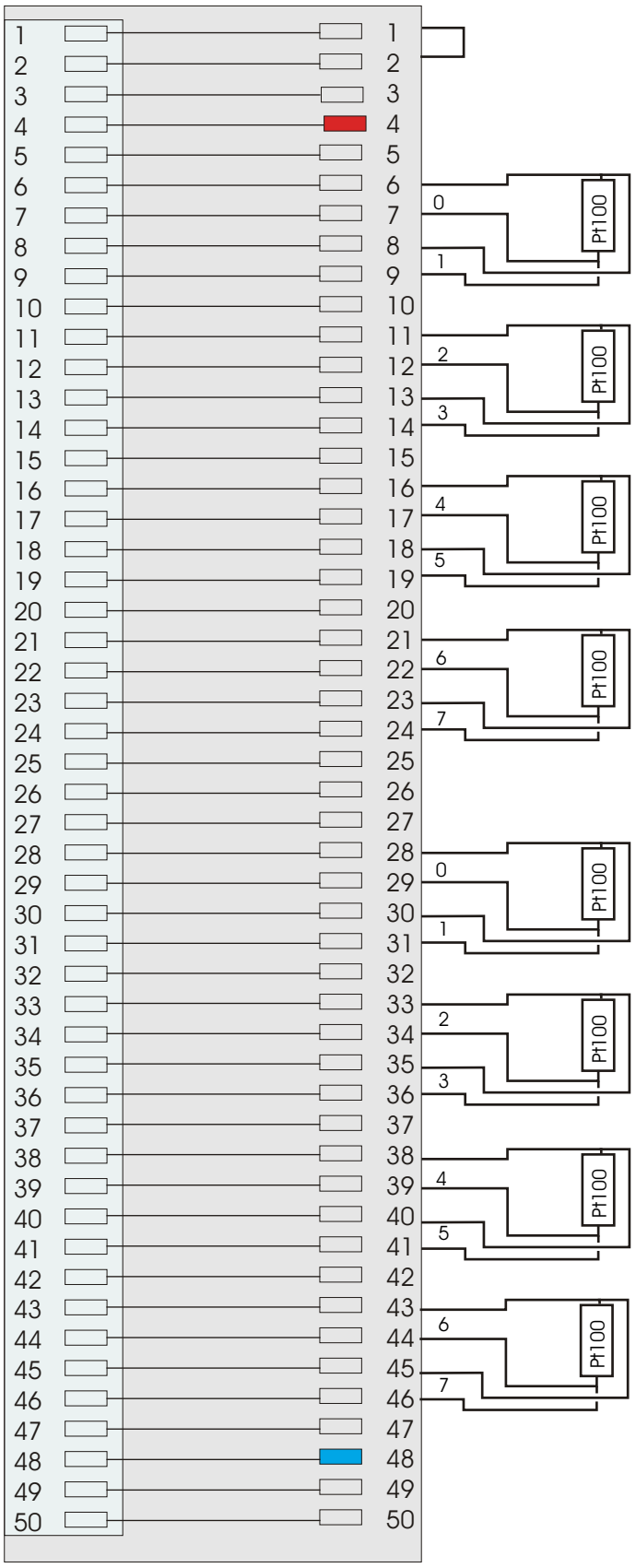
Phoenix contact
FLKM 50
2281089

Analog Input/Output PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 12-02-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4 Page: 11 of 13 Page: 12 of 13

Block No B10
Analog in PIW 736 -> PIW766



Phoenix contact
FLKM 50-PA S400 (3-48)



PT100 Haptas

PT100 Haptas

PT100 Haptas

PT100 Haptas

PT100 Haptas

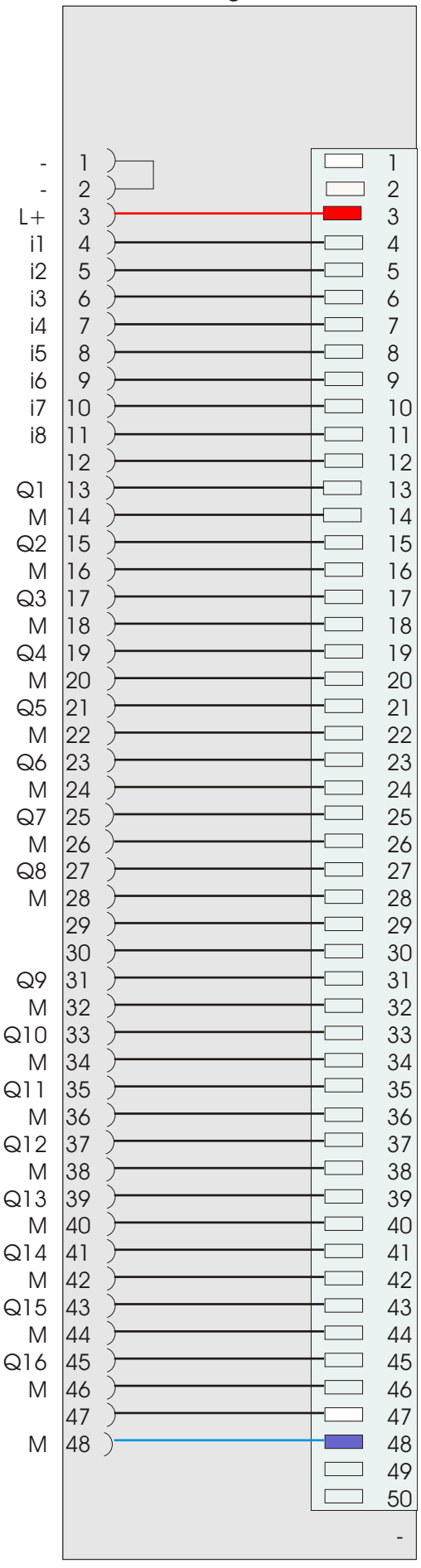
PT100 Haptas

	B10 PLC	Burndy
Blck	6	1
Blck	8	2
R	7	3
Or	9	4
W	11	5
Blck	13	6
Gre	12	7
Bl	14	8
Blck	16	9
W	18	10
W	17	11
O	19	12
W	21	13
W	23	14
Bl	22	15
Gry	24	16
Blck	28	1
Blck	30	2
R	29	3
Or	31	4
W	33	5
Blck	35	6
Grn	34	7
Bl	36	8
Blck	38	9
W	40	10
W	39	11
Or	41	12
W	43	13
W	45	14
Bl	44	15
Gry	46	16

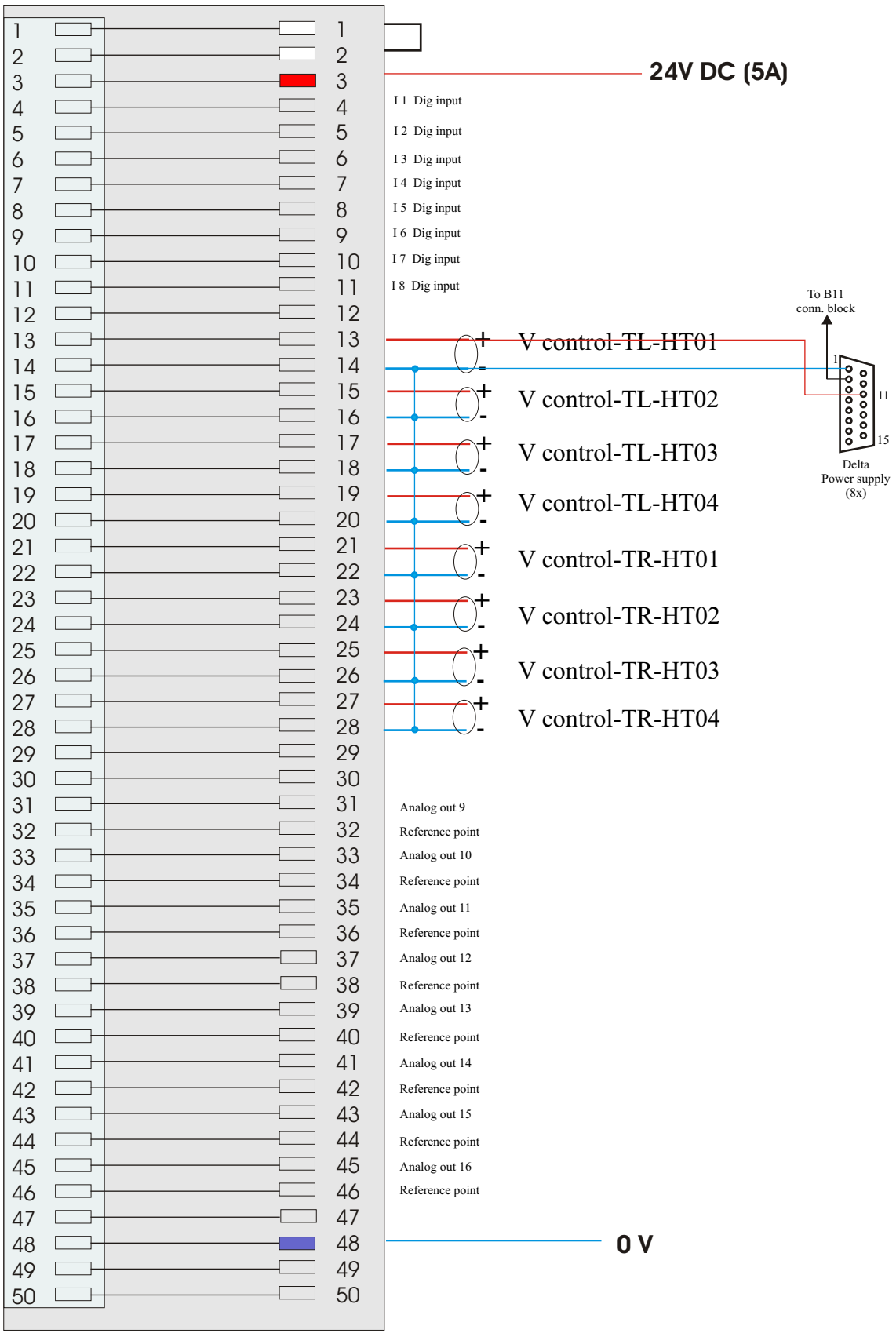
Phoenix contact
FLKM 50
2281089

Analog Input/Output PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 12-02-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4 Page: 11 of 13 Page: 12 of 13

Block No B11
Left hand front connector Fm455
Analog Out



Phoenix contact
FLKM 50-PA S400



Phoenix contact
FLKM 50
2281089

Analoge input PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 12-02-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4
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Block No B12
Analog IN ----- Fm455
right hand front connector

-	1	1
-	2	2
L+	3	3
i1	4	4
i2	5	5
i3	6	6
i4	7	7
i5	8	8
i6	9	9
i7	10	10
i8	11	11
M1+	12	12
M1 -	13	13
M2+	14	14
M2 -	15	15
M3+	16	16
M3 -	17	17
M4+	18	18
M4 -	19	19
M5+	20	20
M5 -	21	21
M6+	22	22
M6 -	23	23
M7+	24	24
M7 -	25	25
M8+	26	26
M8 -	27	27
IC+	28	28
IC -	29	29
Comp +	30	30
Comp -	31	31
M9+	32	32
M9 -	33	33
M10+	34	34
M10 -	35	35
M11+	36	36
M11 -	37	37
M12+	38	38
M12 -	39	39
M13+	40	40
M13 -	41	41
M14+	42	42
M14 -	43	43
M15+	44	44
M15 -	45	45
M16+	46	46
M16 -	47	47
Mana	48	48
		49
		50

-

Phoenix contact
FLKM 50-PA S400

1	1	24V DC (5A)
2	2	
3	3	
4	4	I 9 Dig input
5	5	I 10 Dig input
6	6	I 11 Dig input
7	7	I 12 Dig input
8	8	I 13 Dig input
9	9	I 14 Dig input
10	10	I 15 Dig input
11	11	I 16 Dig input
12	12	+ Current control-TL-HT01 -
13	13	
14	14	+ Current control-TL-HT02 -
15	15	
16	16	+ Current control-TL-HT03 -
17	17	
18	18	+ Current control-TL-HT04 -
19	19	
20	20	+ Current control-TR-HT01 -
21	21	
22	22	+ Current control-TR-HT02 -
23	23	
24	24	+ Current control-TR-HT03 -
25	25	
26	26	+ Current control-TR-HT04 -
27	27	
28	28	IC+
29	29	IC-
30	30	Comp+
31	31	Comp-
32	32	Analog M9+
33	33	Analog M9-
34	34	Analog M10+
35	35	Analog M10-
36	36	Analog M11+
37	37	Analog M11-
38	38	Analog M12+
39	39	Analog M12-
40	40	Analog M13
41	41	Analog M13-
42	42	Analog M14+
43	43	Analog M14-
44	44	Analog M15+
45	45	Analog M15-
46	46	Analog M16+
47	47	Analog M16-
48	48	0 V
49	49	
50	50	

Delta
Power supply
(8x)

1 — 11 — 15

To B11
conn. block

Phoenix contact
FLKM 50
2281089

Analog output PLC connection		Rev: 1
Proj.: LHCb-vertexdet	Proj.no.: 39300	Date: 12-02-2007
NIKHEF Department of Electronic Technology	National Institute for Nuclear physics and High Energy Physics P.O.B 41882, 1009DB Amsterdam	Name: P de Groen Size: A4
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