


Electrical drawings

Power cubicle FCTIR-00115

Building 2828
 LHCb common chiller
 Underground cavern UX85
 Tandem N°1, 2 & 3

1	09/05/2019	Guillaume.V	Modification according to CERN plan		
0	04/03/2019	Guillaume.V	First broadcast		
REV.	DATE	NAME	CHANGES		
		 33, route de Frangy Meythet - 74960 Annecy Tel: +33(0)4.50.24.24.75	CERN		REVISION 1
			CONTRACT : DO-31677		SCHEME 001

1-Power cubicle FCTIR-00115

Drawing	Description	Revision	Date
001	Cover page	0	04/03/2019
002	Drawings list	0	04/03/2019
003	Facade labels	0	02/04/2019
004	Cubicle Layout	0	08/03/2019
005	Bill Of Materials grouped by manufacturer	0	08/03/2019
006	Bill Of Materials grouped by manufacturer	0	08/03/2019
007	Bill Of Materials grouped by manufacturer	0	08/03/2019
009	Legend	0	27/03/2019
100	Power wiring diagram	0	04/03/2019
101	Power wiring diagram	0	04/03/2019
102	Power wiring diagram	0	29/04/2019
103	Power wiring diagram	0	04/03/2019
104	Power wiring diagram	0	29/04/2019
105	Power wiring diagram	0	04/03/2019
106	Power wiring diagram	0	29/04/2019
107	Informations report control cubicle	0	08/03/2019
900	XC-(1/5)	0	08/03/2019
901	XC-(2/5)	0	08/03/2019
902	XC-(3/5)	0	09/05/2019
903	XC-(4/5)	0	09/05/2019
904	XC-(5/5)	0	09/05/2019
905	XCANA-(1/2)	0	08/03/2019

-> 1-Power cubicle FCTIR-00115

Drawing	Description	Revision	Date
906	XCANA-(2/2)	0	08/03/2019
907	XP-(1/1)	0	08/03/2019
908	List of the cables	0	27/03/2019

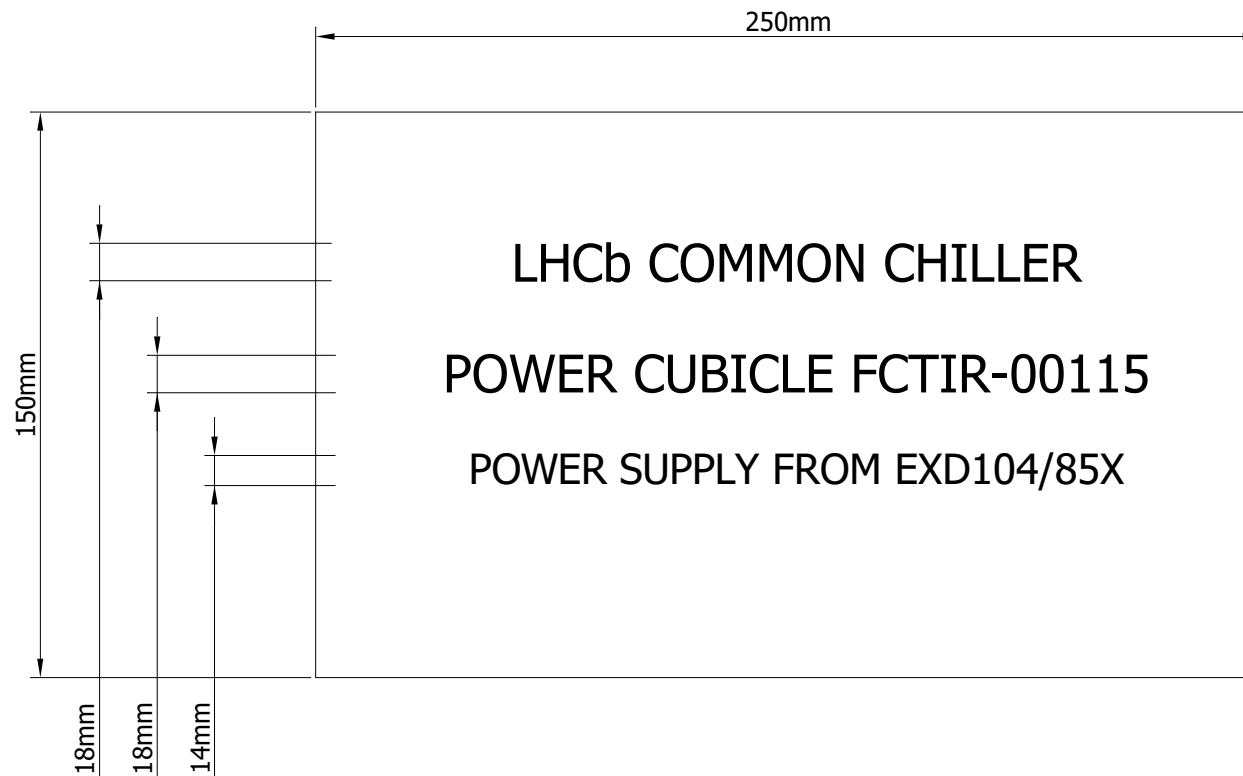



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Power cubicle FCTIR-00115
Drawings list

REV.	DATE	NAME	CHANGES	REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	04/03/2019	Guillaume.V	First broadcast	
User data 1				SCHEME
User data 2				002

52mm	Alimentation / Power Supply :	400VAC - 50Hz
	Courant Nominal / Nominal Current (In) :	400A
	Courant de cout-circuit / Short Circuit Current (Icc) :	?? KA
	Année de montage / Assembly Year :	2019
	Norme de référence / RRef. Rules :	CEI EN 61439-1
	Degré de protection / IP degree :	IP:55



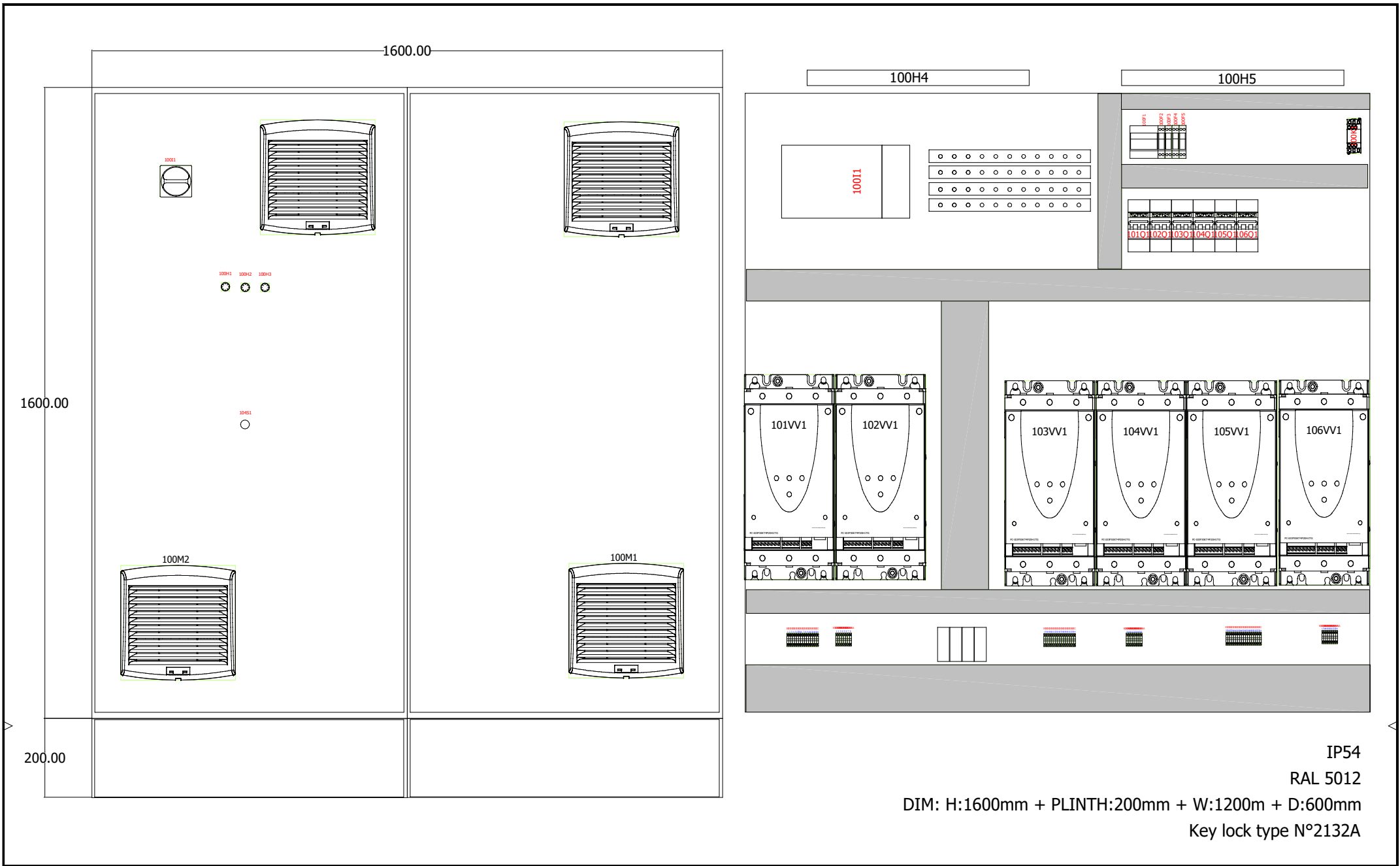

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Power cubicle FCTIR-00115
Facade labels

				REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	02/04/2019	Guillaume.V	First broadcast	
REV.	DATE	NAME	CHANGES	SCHEME
User data 1			User data 2	003

CONTRACT: DO-31677

LOCATION: Power cubicle FCTIR-00115



IP54

RAL 5012

DIM: H:1600mm + PLINTH:200mm + W:1200m + D:600mm

Key lock type N°2132A

eltis
énergie électrique

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Power cubicle FCTIR-00115 Cubicle Layout

LOCATION:

REV.	DATE	NAME	CHANGES
1	09/05/2019	Guillaume.V	Modification according to CERN plan
0	08/03/2019	Guillaume.V	First broadcast

User data 1 User data 2

SCALE
1 / 12.5

REVISION
1


DRAWING
004

Danfoss

Mark	Reference	Description	Quantity
101VV1 , 102VV1 , 103VV1 , 104VV1 , 105VV1 , 106VV1	FC-103P30KT4P20H1TG	VLT Refrigeration Drive FC 103 30KW	6

Schneider Electric

Mark	Reference	Description	Quantity
100F2 , 100F3 , 100F4 , 100F5	A9N15646	FUSEHOLDER 600V, 32AMP, 1POLE+N, 10X38mm	4
100F1	A9N15658	FUSEHOLDER 600V, 32AMP, 3POLE+N, 10X38 mm	1
101Q1 , 102Q1 , 103Q1 , 104Q1 , 105Q1 , 106Q1	GV3L651	Magnetic Motor Circuit Breaker TeSys GV3L - 3P - 65A	6
101Q1 , 102Q1 , 103Q1 , 104Q1 , 105Q1 , 106Q1	GVAE11	TeSys GVAE11 - auxiliary contact - 1 NO + 1 NC	6
100I1	LV432456	Compact NSX400-630- Vigi add-on MB-300mA.....30A - 200...400VAC- 4P	1
100I1	LV432491	Spreader set - flat connection- 4P	1
100I1	LV432594	Insulation accessories Long terminal shield, 45 mm (1 piece), 4P - NSX400...630	1
100I1	LV432598	Extended rotary handle with black - NSX400...630	1
100I1	LV432757	Switch-disconnector Compact NSX400 0.3 NA 4P	1
Power cubicle	NSY2SP166		1
100M1 , 100M2	NSYCAG291LPF	OUTLET GRILLE CUT-OUT 291X29MM	2



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Power cubicle FCTIR-00115
Bill Of Materials grouped by manufacturer

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1	09/05/2019	Guillaume.V	Modification according to CERN plan
0	08/03/2019	Guillaume.V	First broadcast

User data 1: _____ User data 2: _____

REVISION
1
SCHEME
005

CONTRACT: **DO-31677**

LOCATION: **Power cubicle FCTIR-00115**

-> Schneider Electric

Mark	Reference	Description	Quantity
100S1	NSYCCOTH230VID	ELECTRONICAL THERMOSTAT 230V	1
100M1 , 100M2	NSYCVF850M230PF	FILTERFAN 850M3/H 230V IP54	2
Power cubicle	NSYEC861	1 ENTRY CAB GLAND PLA 800X600 SF	2
Power cubicle	NSYIN2132A1	LOCK WITH KEY TYPE 2132A	2
Power cubicle	NSYSF16860P	SF W/MOUNT PLATE 1600X800X600	2
Power cubicle	NSYSFEB	4 LIFTING EYES M12	2
Power cubicle	NSYSIMP16		1
Power cubicle	NSYSPF8200	Front plinth for Spacial SF-SM, 800x200	2
Power cubicle	NSYSPS6200		1
100K1	RM35TF30	Multifunction phase control relay RM35-T - range 194..528 V AC	1
100H1 , 100H2 , 100H3	XB5AVM1	White complete pilot light Ø22 plain lens with integral LED 230...240V	3
107S1	ZB5AS844		1
107S1	ZB5AZ101		1
107S1	ZBZ1605	PB Mushroom Guard Yellow	1

Stego

Mark	Reference	Description	Quantity
100H4 , 100H5	264057	Connector, Female, Ac, White	2
100H4 , 100H5	02541310	LED Lamp Ecoline 230V 5W	2

Wago

Mark	Reference	Description	Quantity
XP 6 , XP 8	2002-1201	2-conductor through terminal block suitable for Ex e II applications	2
XP 5 , XP 7	2002-1204	2-conductor through terminal block suitable for Ex e II applications suitable for Ex i applications	2



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1
SCHEME
006

CONTRACT: DO-31677


LOCATION: Power cubicle FCTIR-00115

User data 1

User data 2

-> Wago

Mark	Reference	Description	Quantity
XC 1 , XCANA 1 , XCANA 2 , XC 2 , XC 3 , XCANA 3 , XCANA 4 , XC 4 , XC 5 , XCANA 5 , XCANA 6 , XC 6 , XC 7 , XCANA 7 , XCANA 8 , XC 8 , XC 9 , XCANA 9 , XCANA 10 , XC 10 , XCANA 11 , XC 11 , XC 12 , XCANA 12 , XCANA 13 , XC 13 , XCANA 14 , XC 14 , XC 15 , XCANA 15 , XCANA 16 , XC 16 , XC 17 , XCANA 17 , XCANA 18 , XC 18 , XC 19 , XCANA 19 , XCANA 20 , XC 20 , XC 21 , XCANA 21 , XCANA 22 , XC 22 , XC 23 , XCANA 23 , XCANA 24 , XC 24 , XC 25 , XC 26 , XC 27 , XC 28 , XC 29 , XC 30 , XC 31 , XC 32 , XC 33 , XC 34 , XC 35 , XC 36 , XC 37 , XC 38 , XC 39 , XC 40 , XC 41 , XC 42 , XC 43 , XC 44 , XC 45 , XC 46 , XC 47 , XC 48 , XC 49 , XC 50 , XC 51 , XC 52 , XC 53 , XC 54 , XC 55 , XC 56 , XC 57 , XC 58	2002-1301	3-conductor through terminal block suitable for Ex e II applications	82



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User data 1: _____ User data 2: _____

REVISION
1
SCHEME
007

CONTRACT: DO-31677

LOCATION: Power cubicle FCTIR-00115

WIRE COLOR

400VAC

PHASE 1	=	Brown
PHASE 2	=	Black
PHASE 3	=	Grey
NEUTRAL CONDUCTOR	=	Light Blue

230VAC

PHASE	=	Brown, Black or Grey (according to the origin)
NEUTRAL CONDUCTOR	=	Light Blue

24VDC and 48VDC

+48VDC	=	Red
+24VDC	=	Red
0VDC	=	Dark Blue
24VAC	=	White

ALL VOLTAGE LEVELS

GROUND CONDUCTOR	=	Green / Yellow
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EXTERNAL TENSION

UPSTREAM THE MAIN SWITCH	=	Orange
230VAC	=	Orange
120VAC	=	Orange
FREE CONTACT	=	Orange

WIRING SIZES

EXTERNAL TENSION / FREE CONTACT

1sqmm

230-400VAC

=160A	=125A	=100A	=63A	=50A
50sqmm	35sqmm	25sqmm	16sqmm	10sqmm
=32A	=25A	=16A	=10A	=6A
6sqmm	4sqmm	2,5sqmm	1,5sqmm	1sqmm

GROUND CONDUCTOR

2,5-6sqmm

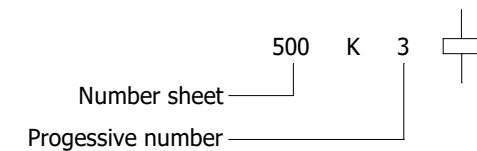
DIGITAL INPUT/OUTPUT

0,5sqmm

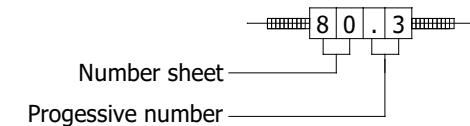
ANALOG INPUT/OUTPUT

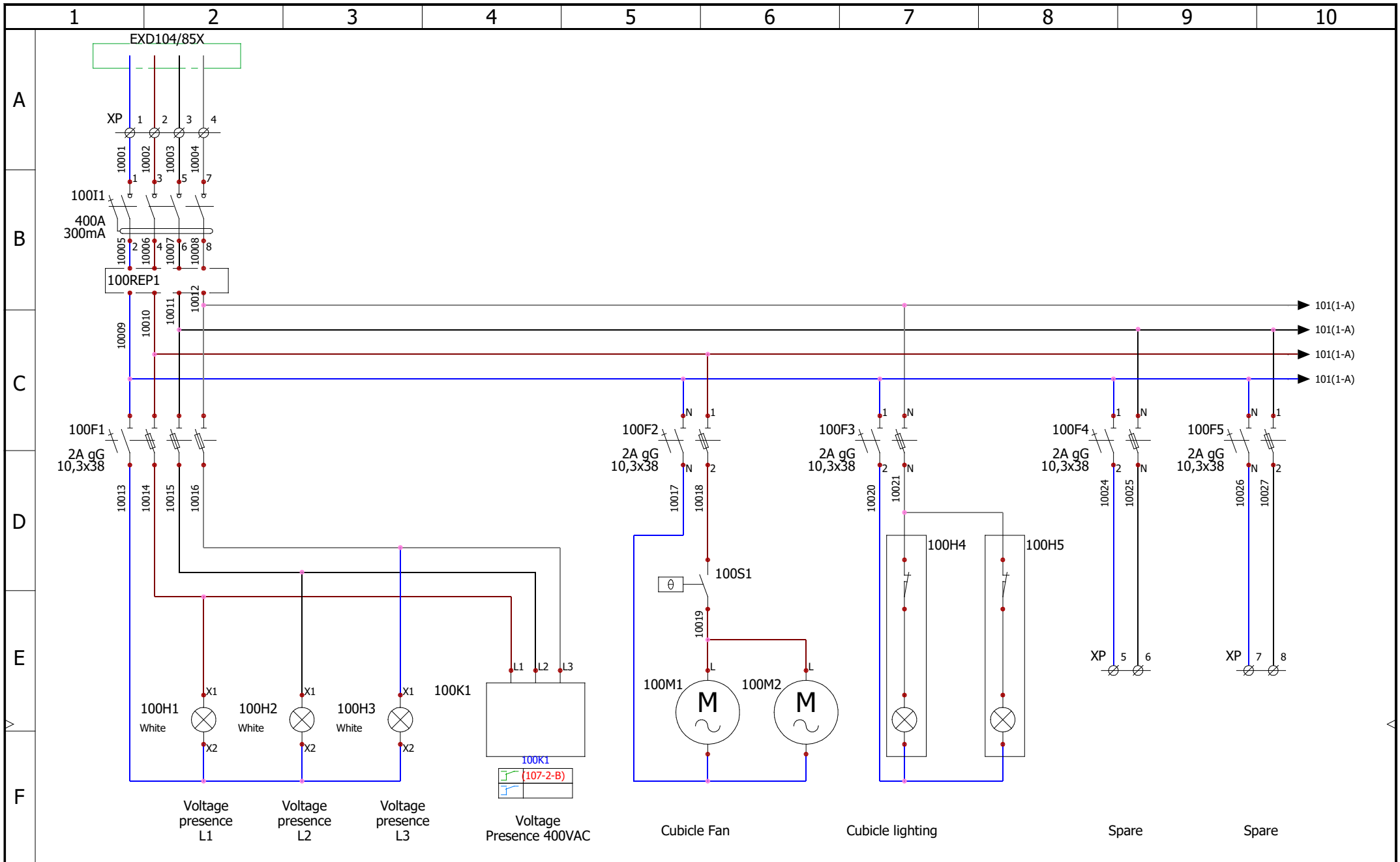
0,5sqmm


MARKING OF THE RELAYS



WIRING NOTES





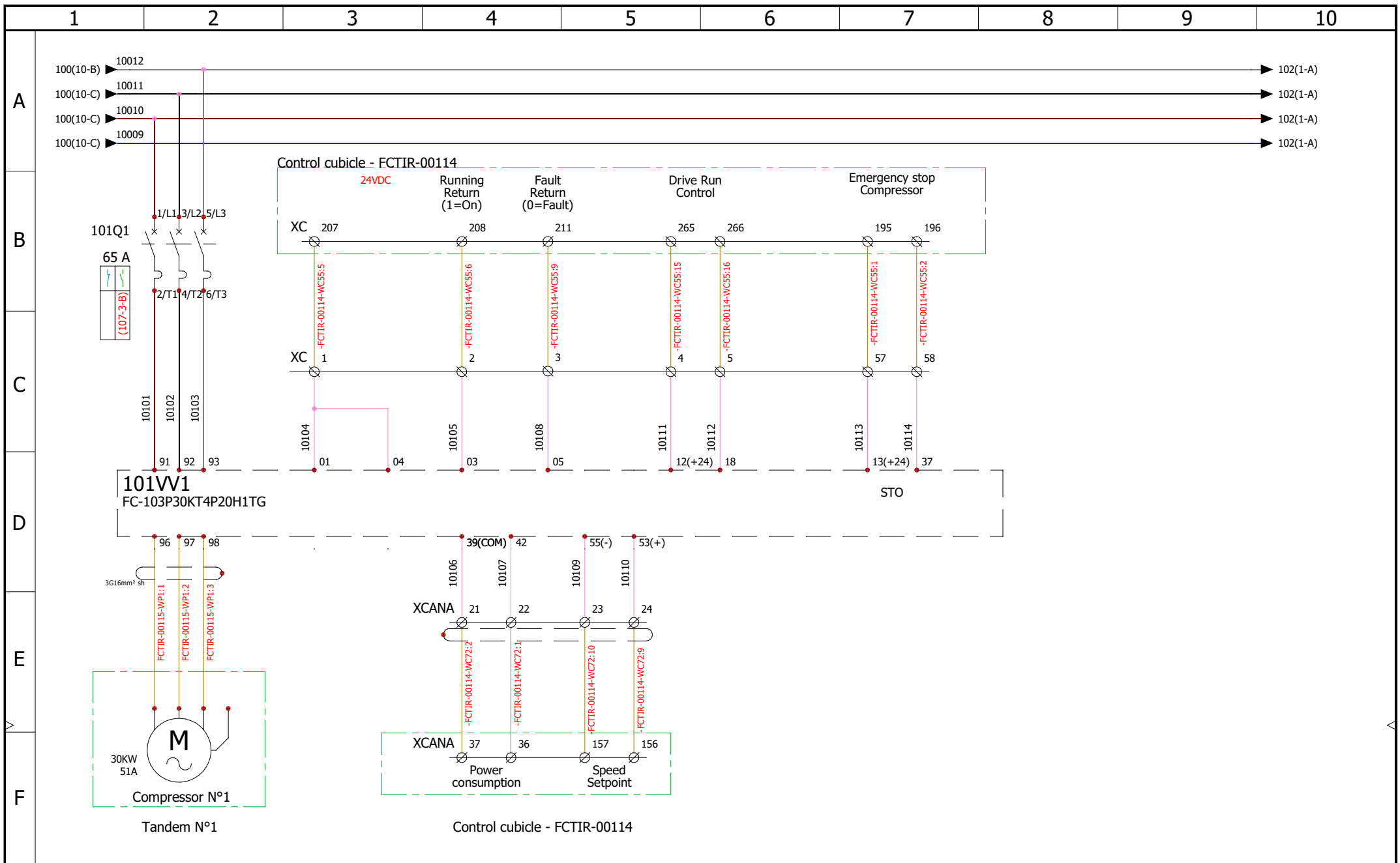



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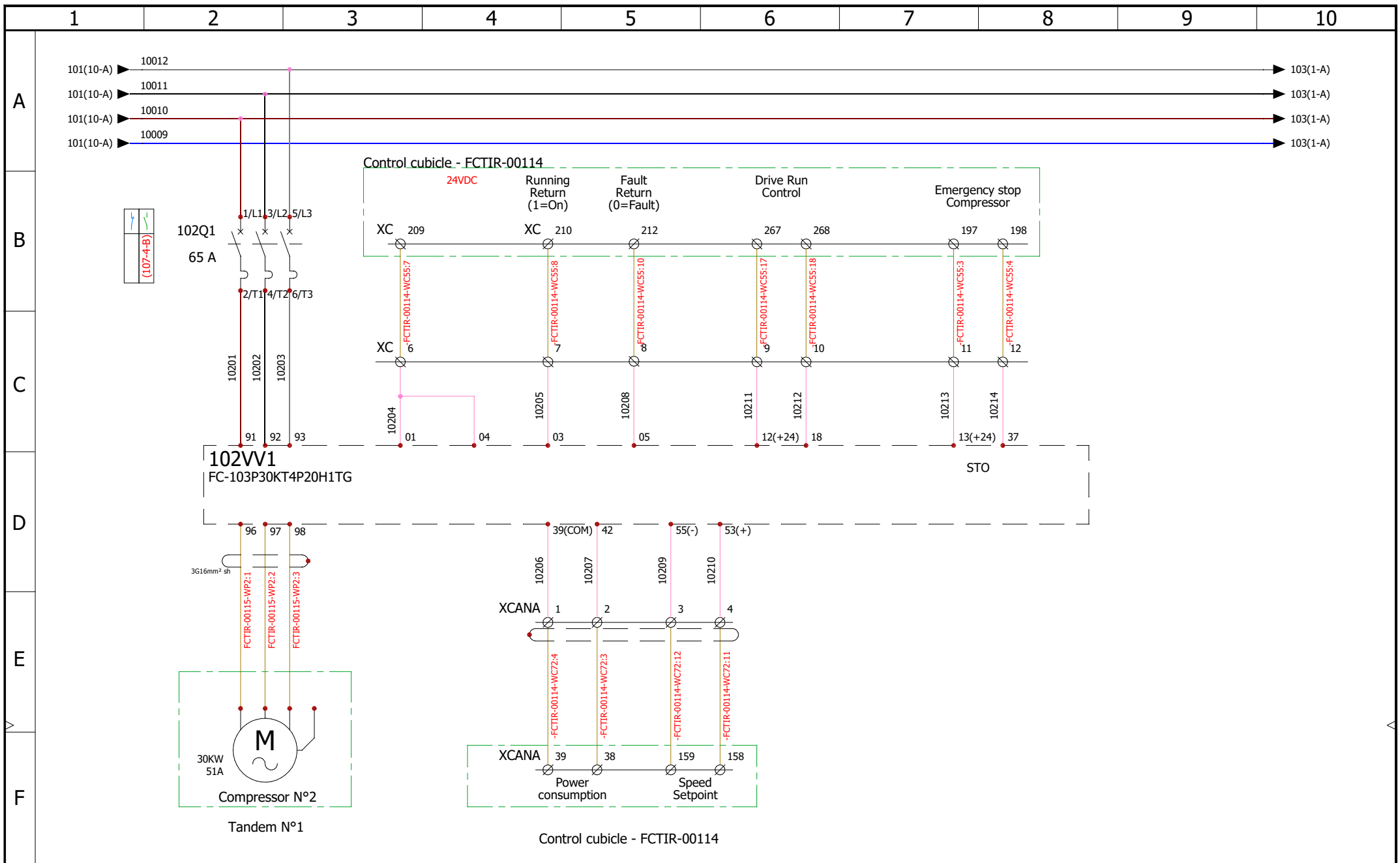
Power cubicle FCTIR-00115
 Power wiring diagram


LOCATION: Power cubicle FCTIR-00115

REV.	DATE	NAME	CHANGES	REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	04/03/2019	Guillaume.V	First broadcast	
User data 1			User data 2	
				SCHEME 100



 <p>33, route de Frangy Meythet - 74960 Annecy Tel: +33(0)4.50.24.24.75</p>	Power cubicle FCTIR-00115 Power wiring diagram Tandem N°1, Compressor N°1				REVISION 1
	1	09/05/2019	Guillaume.V	Modification according to CERN plan	SCHEME 101
	0	04/03/2019	Guillaume.V	First broadcast	
	REV.	DATE	NAME	CHANGES	
CONTRACT: DO-31677				LOCATION: Power cubicle	FCTIR-00115
User data 1				User data 2	



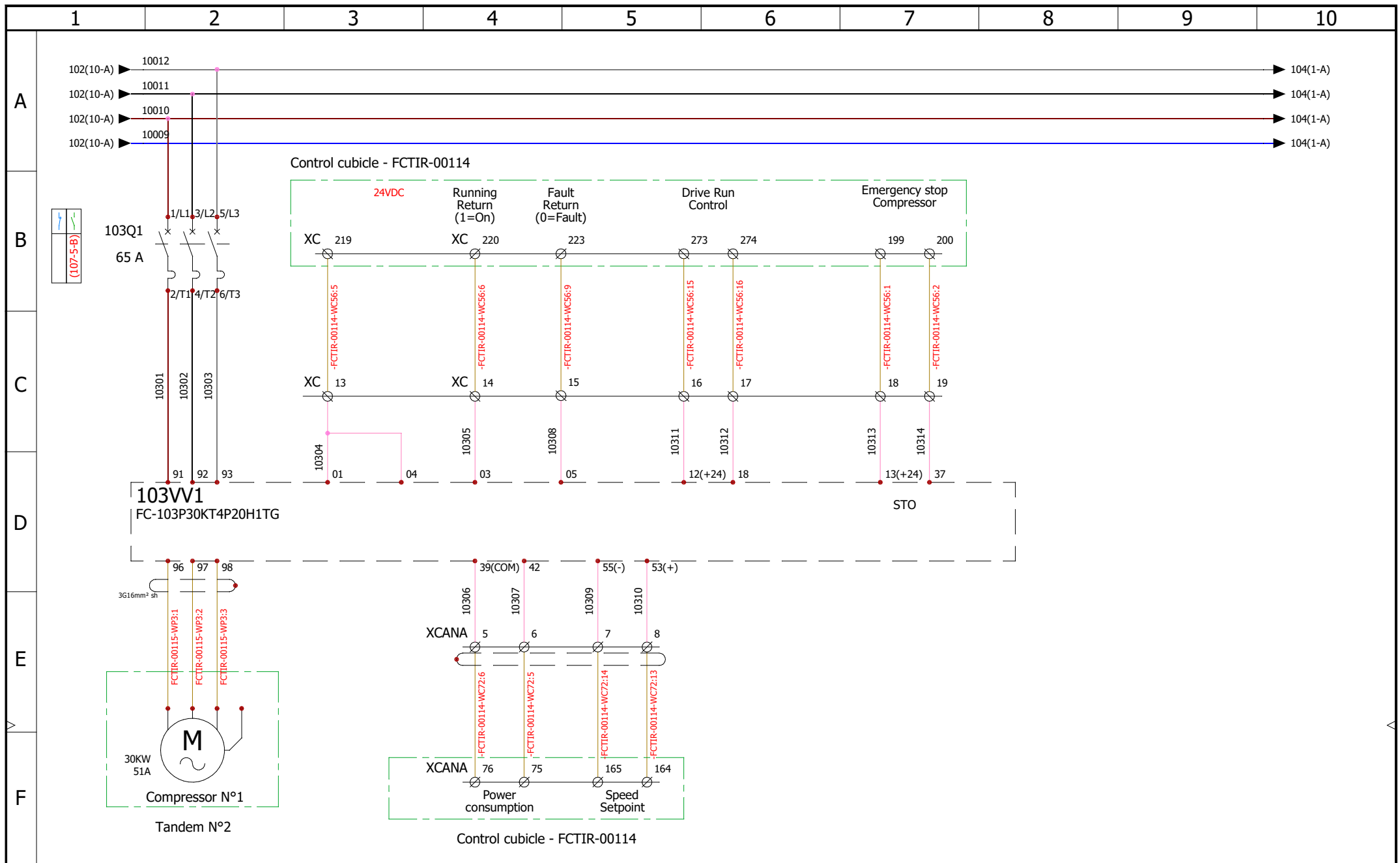

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CONTRACT: DO-31677

Power cubicle FCTIR-00115
 Power wiring diagram
 Tandem N°1, Compressor N°2

LOCATION: Power cubicle FCTIR-00115

REV.	DATE	NAME	CHANGES	REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	29/04/2019	Guillaume.V	First broadcast	
User data 1			User data 2	SCHEME
				102





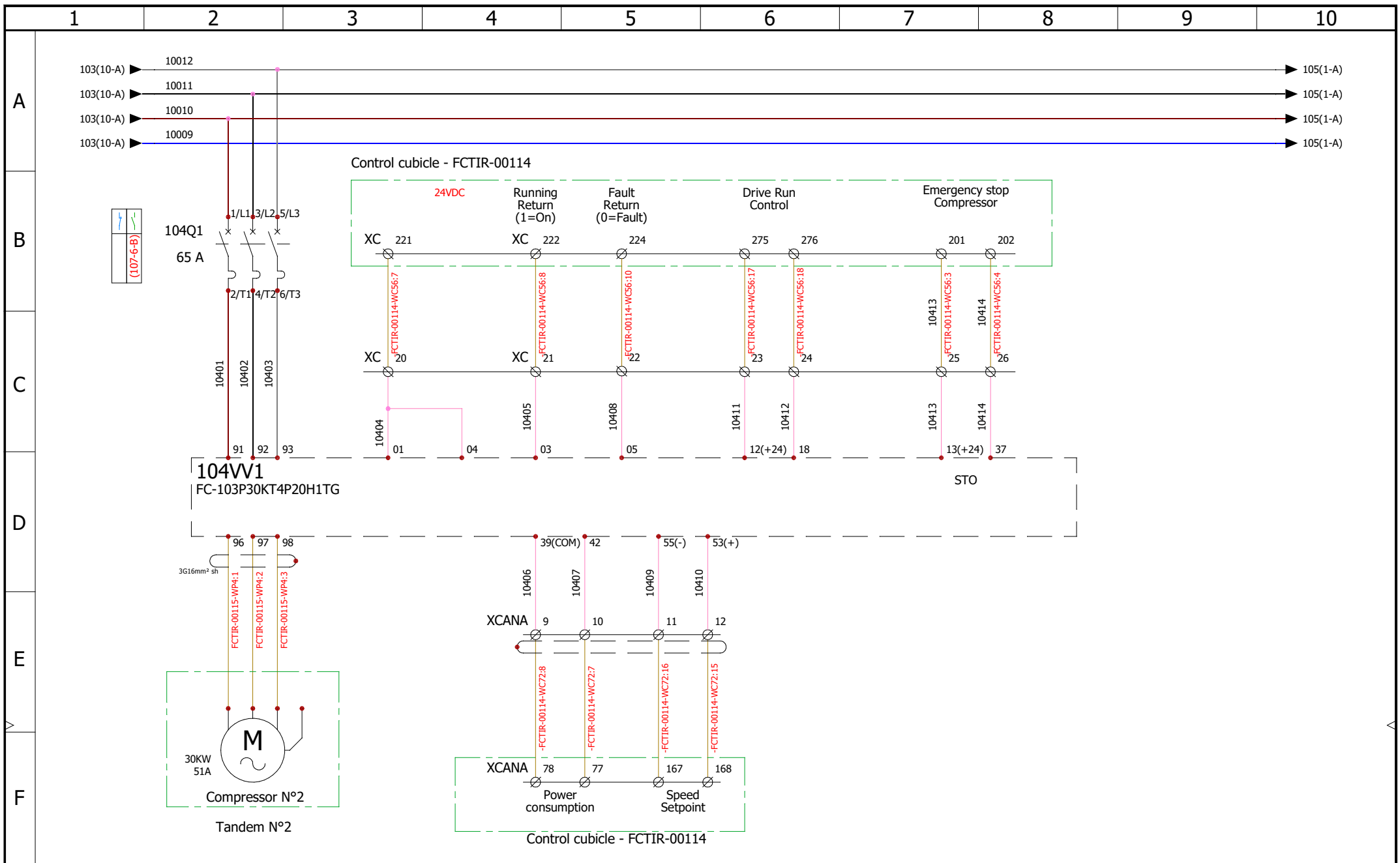
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Power cubicle FCTIR-00115
Power wiring diagram
Tandem N°2, Compressor N°1

CONTRACT: DO-31677 LOCATION: Power cubicle FCTIR-00115

REV.	DATE	NAME	CHANGES	SCHEME
1	09/05/2019	Guillaume.V	Modification according to CERN plan	103
0	04/03/2019	Guillaume.V	First broadcast	
User data 1			User data 2	

REVISION
1
 SCHEME
103



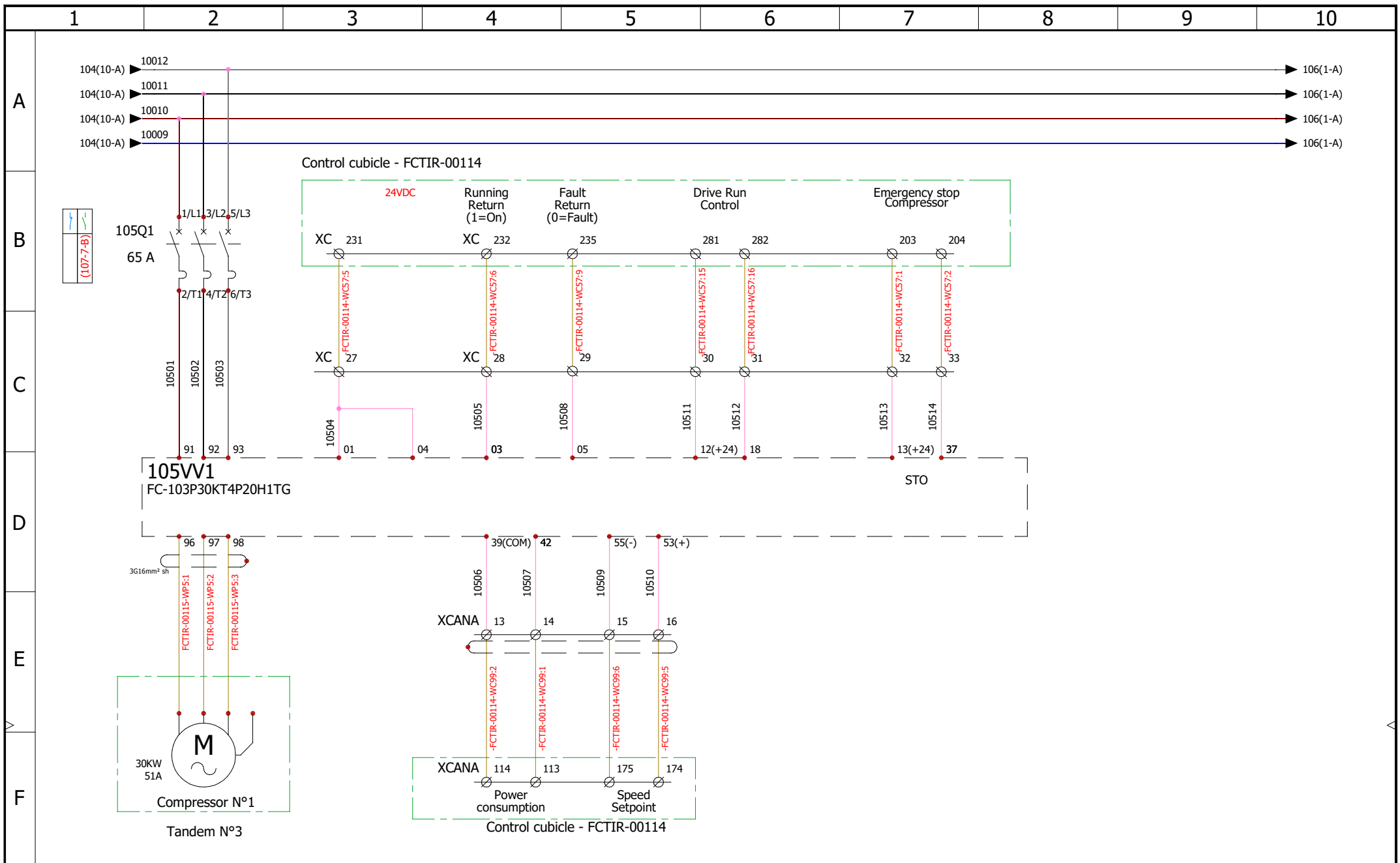

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CONTRACT: DO-31677

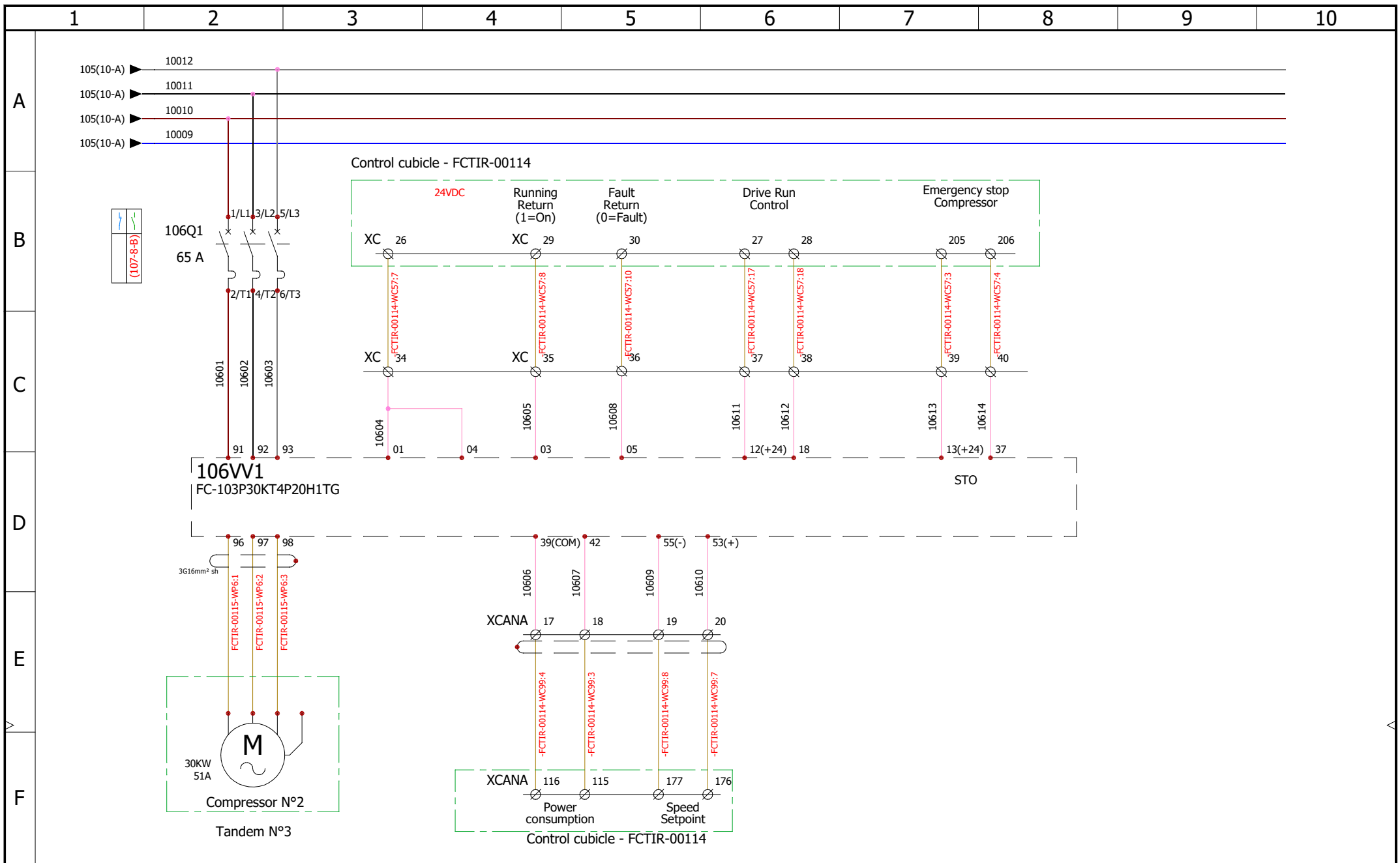
Power cubicle FCTIR-00115
Power wiring diagram
Tandem N°2, Compressor N°2


LOCATION: Power cubicle FCTIR-00115

REV.	DATE	NAME	CHANGES	REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	29/04/2019	Guillaume.V	First broadcast	
User data 1				SCHEME
User data 2				104



 <p>33, route de Frangy Meythet - 74960 Anney Tel: +33(0)4.50.24.24.75</p>	Power cubicle FCTIR-00115 Power wiring diagram Tandem N°3, Compressor N°1				REVISION 1	
	CONTRACT: DO-31677	LOCATION: Power cubicle	FCTIR-00115	User data 1	User data 2	SCHEME 105
	REV. DATE NAME CHANGES		1 09/05/2019 Guillaume.V Modification according to CERN plan 0 04/03/2019 Guillaume.V First broadcast			



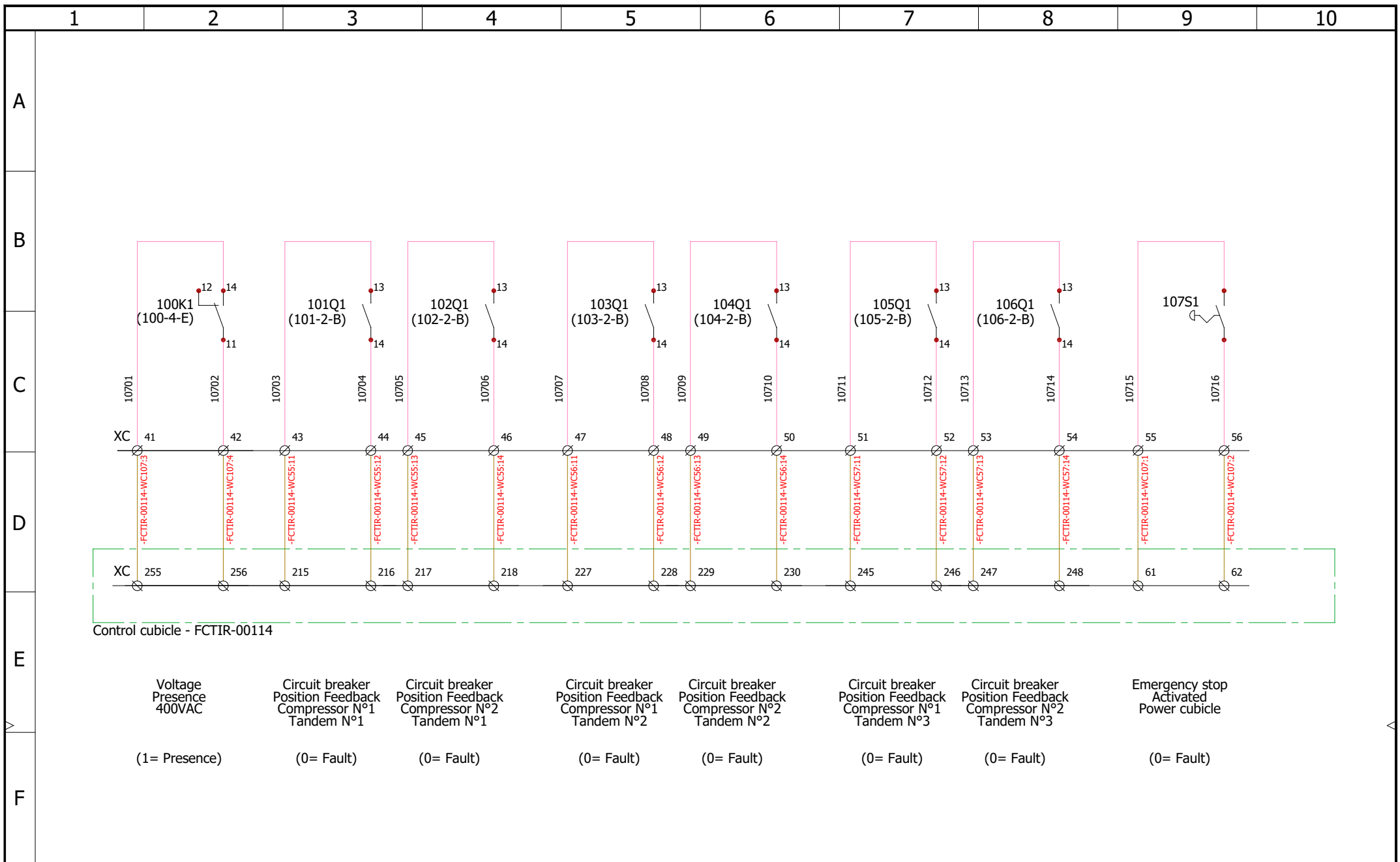

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CONTRACT: DO-31677
 LOCATION: Power cubicle

Power cubicle FCTIR-00115
Power wiring diagram
Tandem N°3, Compressor N°2

FCTIR-00115

REV.	DATE	NAME	CHANGES	REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	29/04/2019	Guillaume.V	First broadcast	
User data 1				SCHEME
User data 2				106





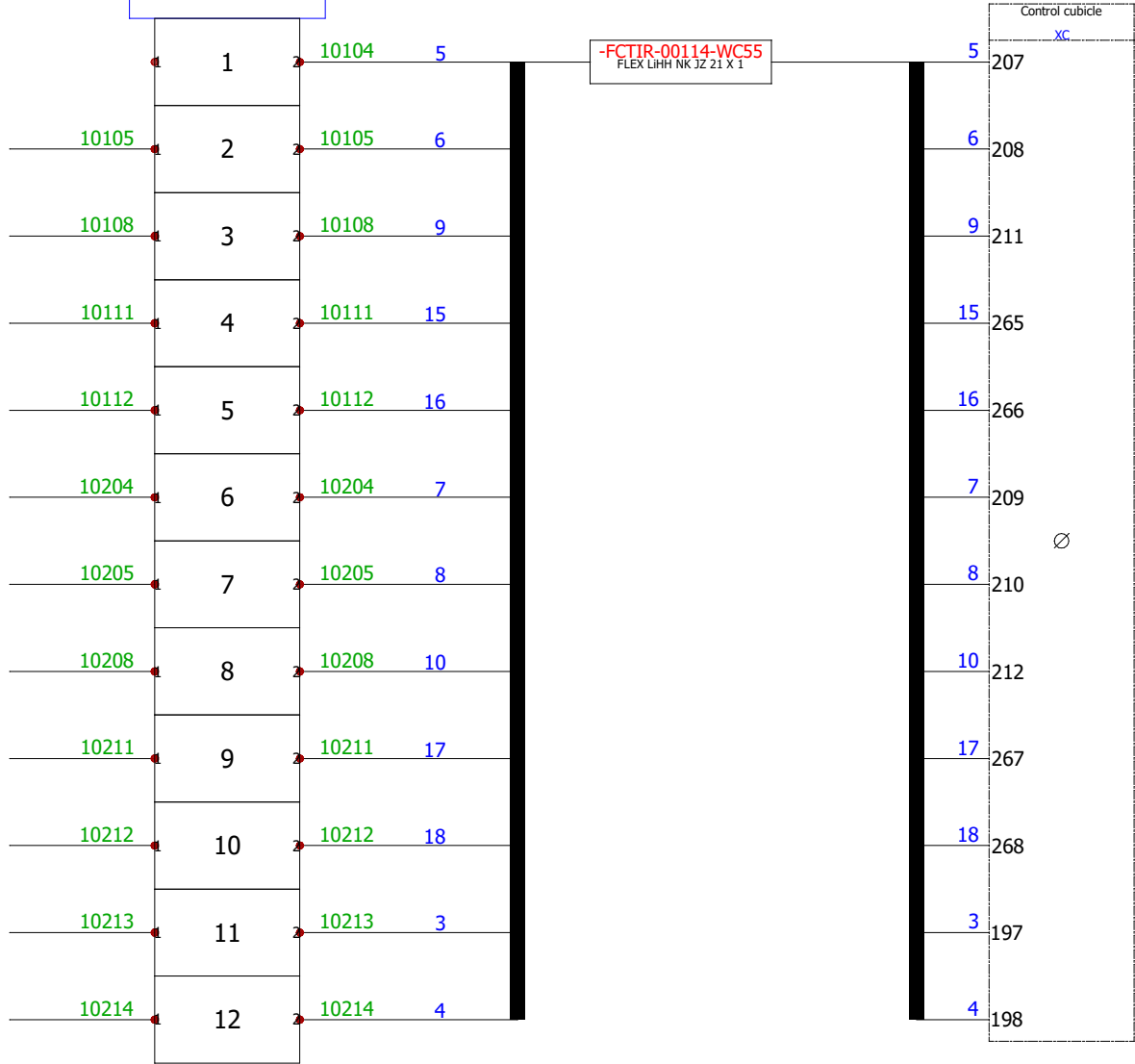
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Power cubicle FCTIR-00115
Informations report control cubicle

CONTRACT: DO-31677 LOCATION: Power cubicle FCTIR-00115

				REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	08/03/2019	Guillaume.V	First broadcast	
REV.	DATE	NAME	CHANGES	SCHEME
User data 1			User data 2	107

XC



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Power cubicle FCTIR-00115
XC-(1/5)

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1	09/05/2019	Guillaume.V	Modification according to CERN plan
0	08/03/2019	Guillaume.V	First broadcast

REVISION
1
SCHEME
900

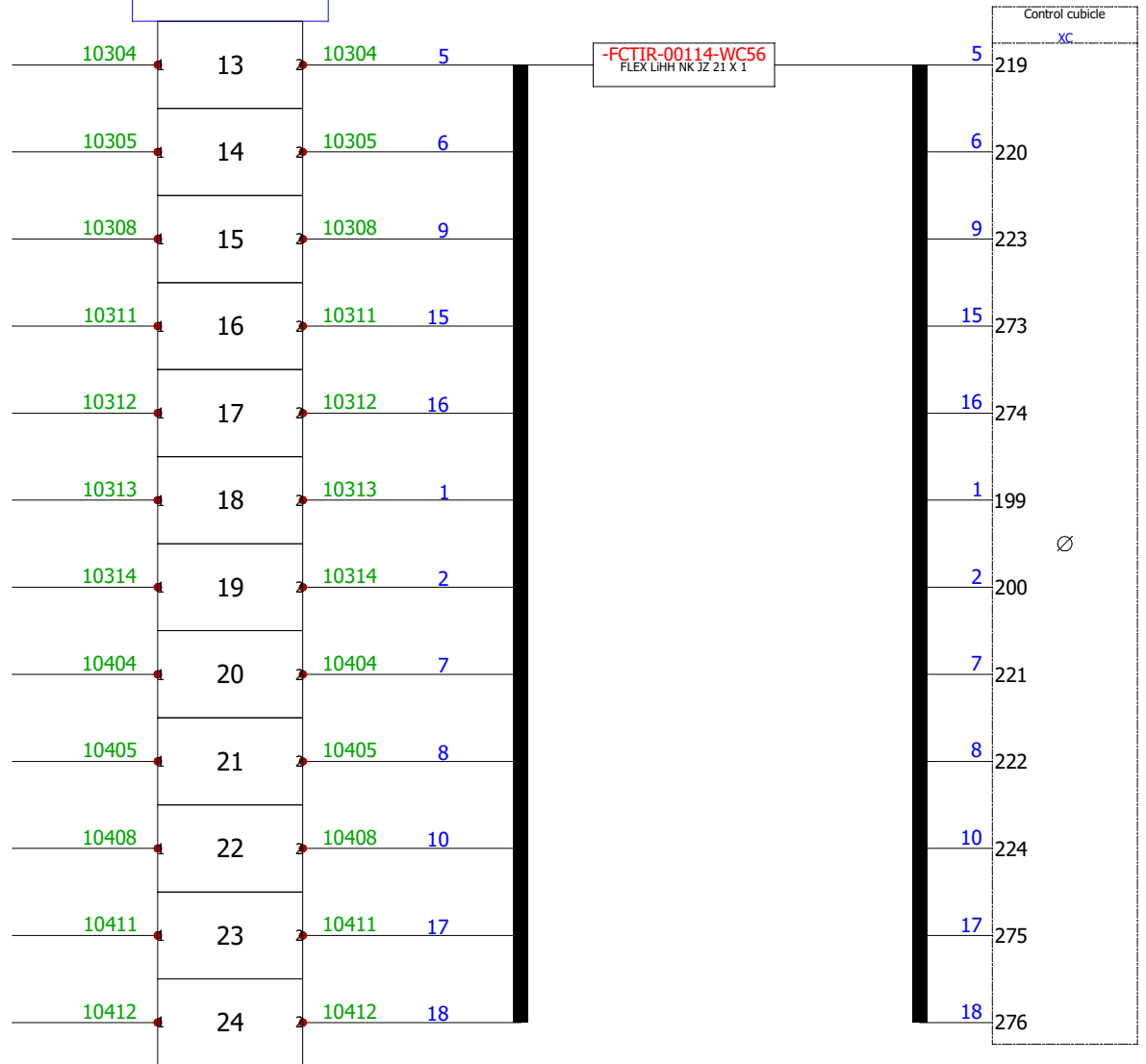
CONTRACT: DO-31677

LOCATION: Power cubicle FCTIR-00115

User data 1

User data 2

XC



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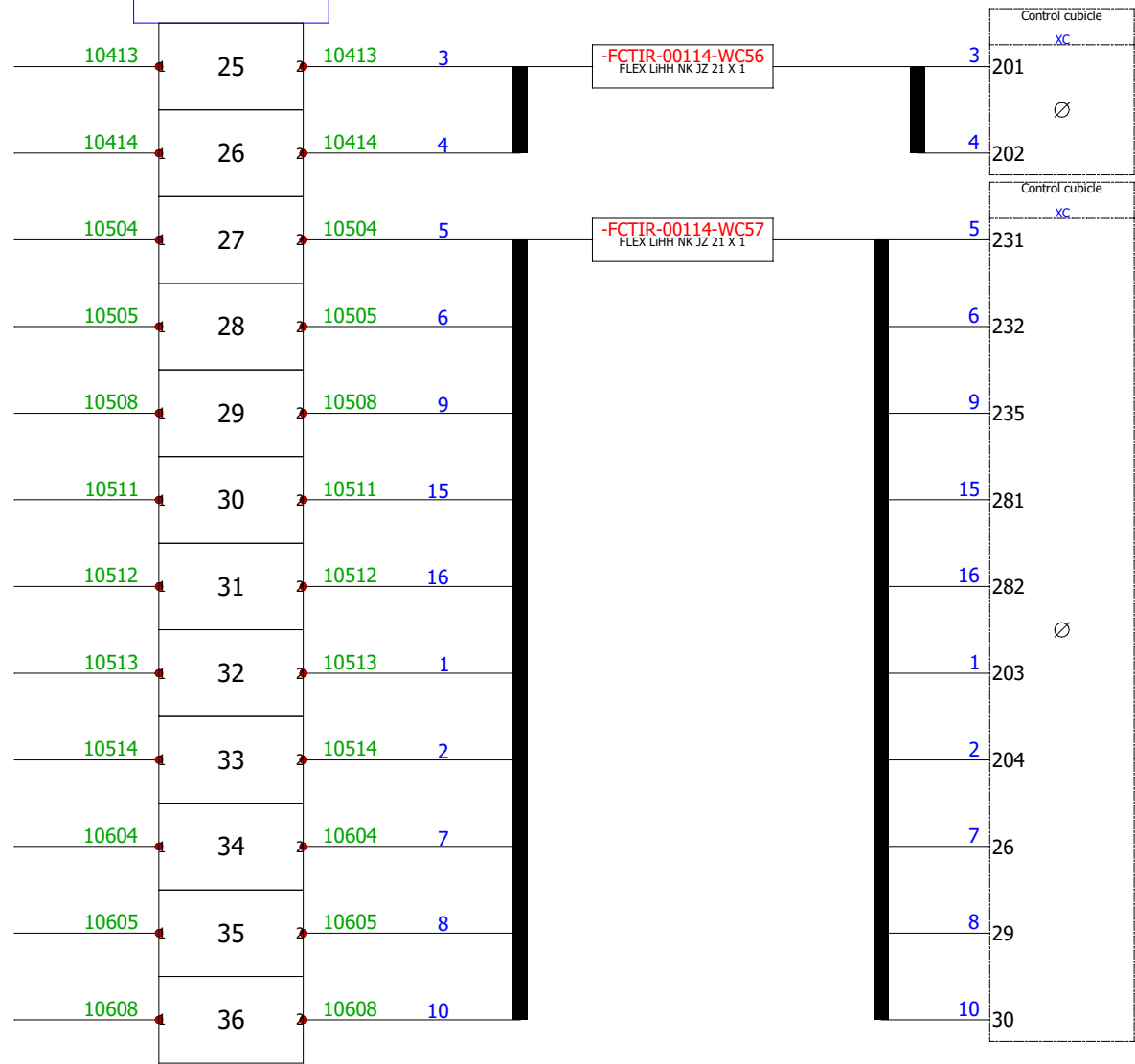
Power cubicle FCTIR-00115
XC-(2/5)

REV.	DATE	NAME	CHANGES	REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	08/03/2019	Guillaume.V	First broadcast	
User data 1				SCHEME
User data 2				901

CONTRACT: DO-31677

LOCATION: Power cubicle FCTIR-00115

XC



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Power cubicle FCTIR-00115
XC-(3/5)

REV.	DATE	NAME	CHANGES
1	09/05/2019	Guillaume.V	Modification according to CERN plan
0	09/05/2019	Guillaume.V	First broadcast

REVISION
1
SCHEME
902

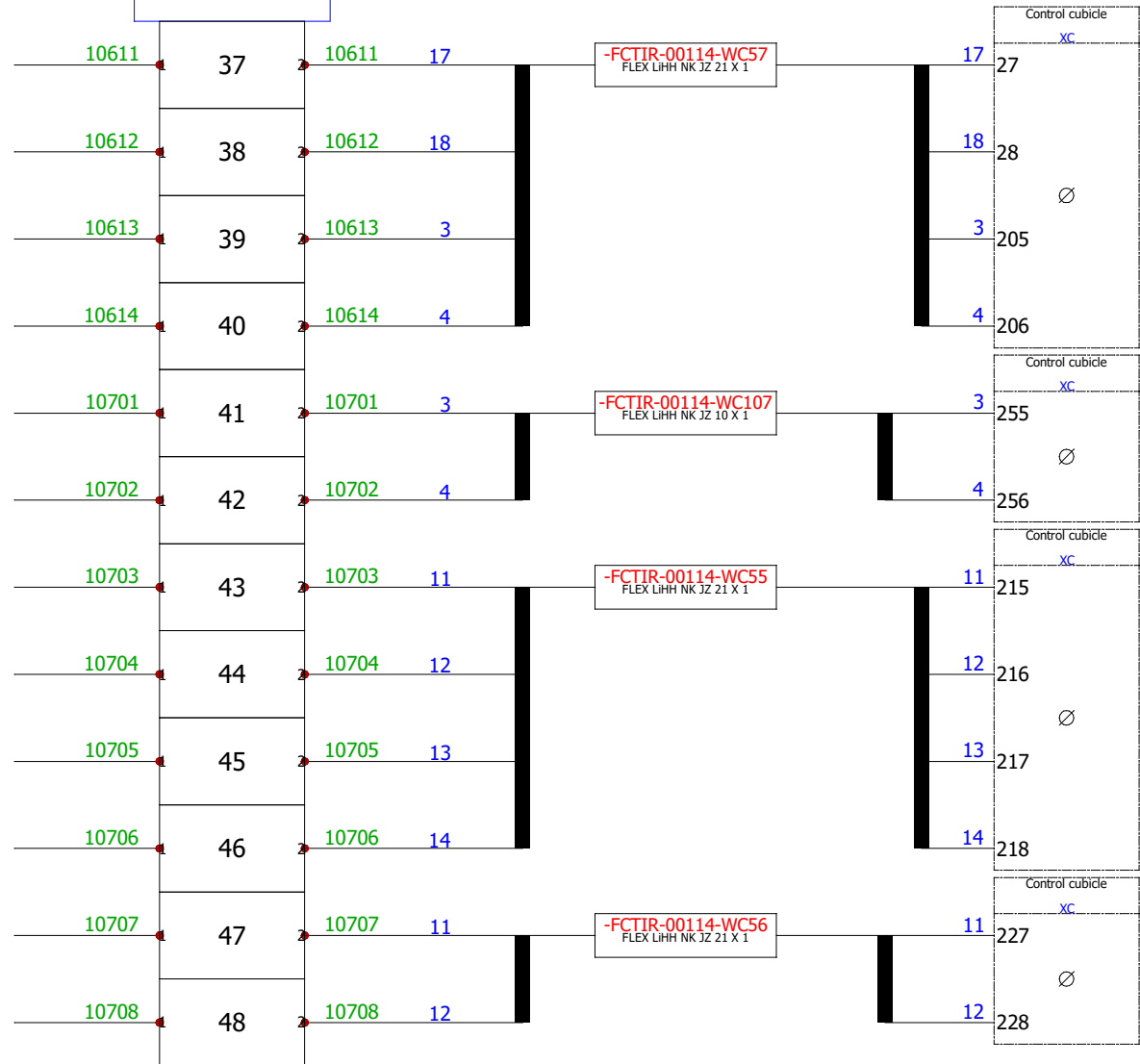
CONTRACT: DO-31677

LOCATION: Power cubicle FCTIR-00115

User data 1

User data 2

XC



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Power cubicle FCTIR-00115
XC-(4/5)

CONTRACT: DO-31677

LOCATION:

Power cubicle

FCTIR-00115

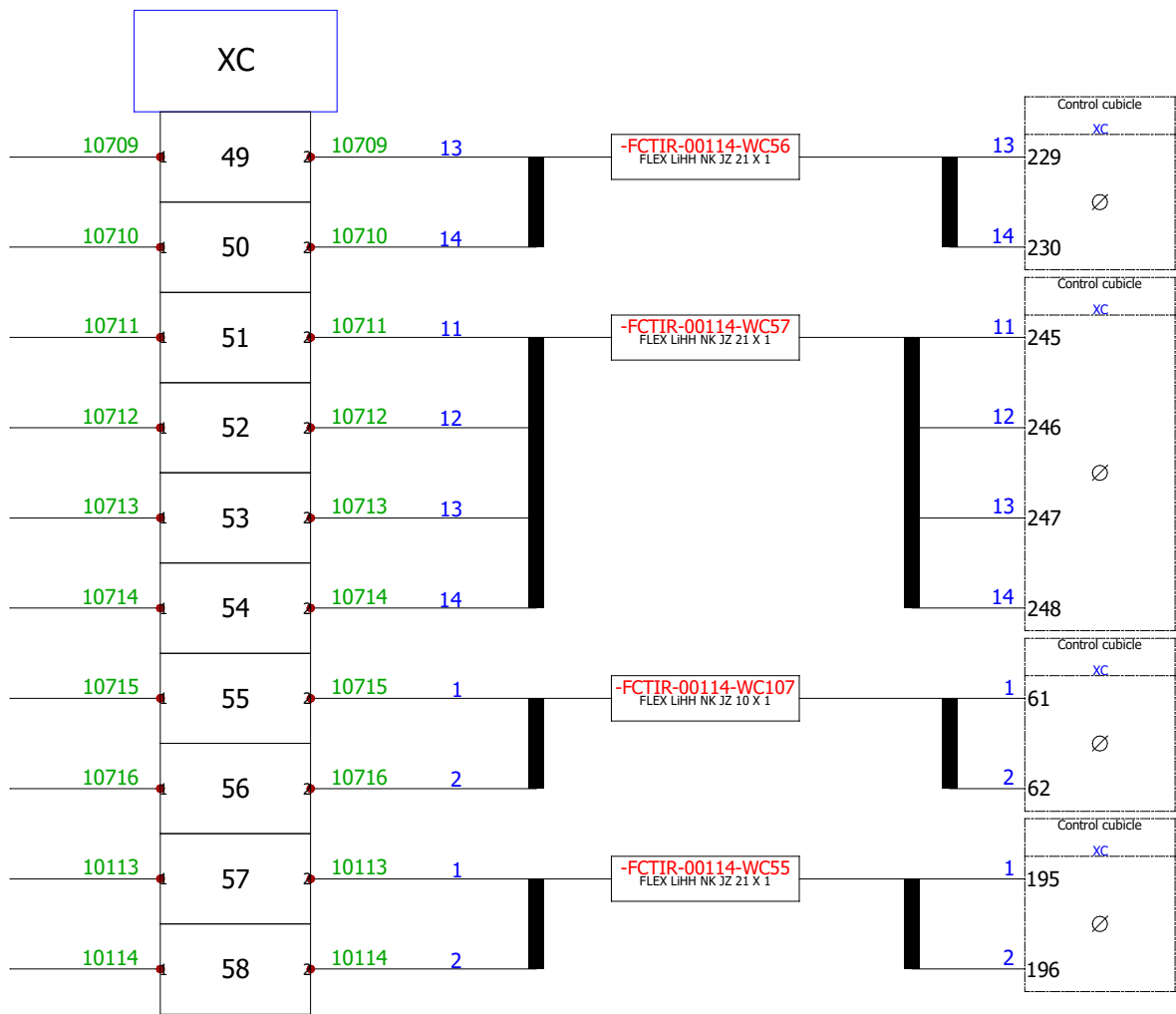
REV.	DATE	NAME	CHANGES
1	09/05/2019	Guillaume.V	Modification according to CERN plan
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REVISION
1

SCHEME
903

User data 1

User data 2



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Power cubicle FCTIR-00115 XC-(5/5)

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1	09/05/2019	Guillaume.V	Modification according to CERN plan
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REVISION
1

CONTRACT: DO-31677

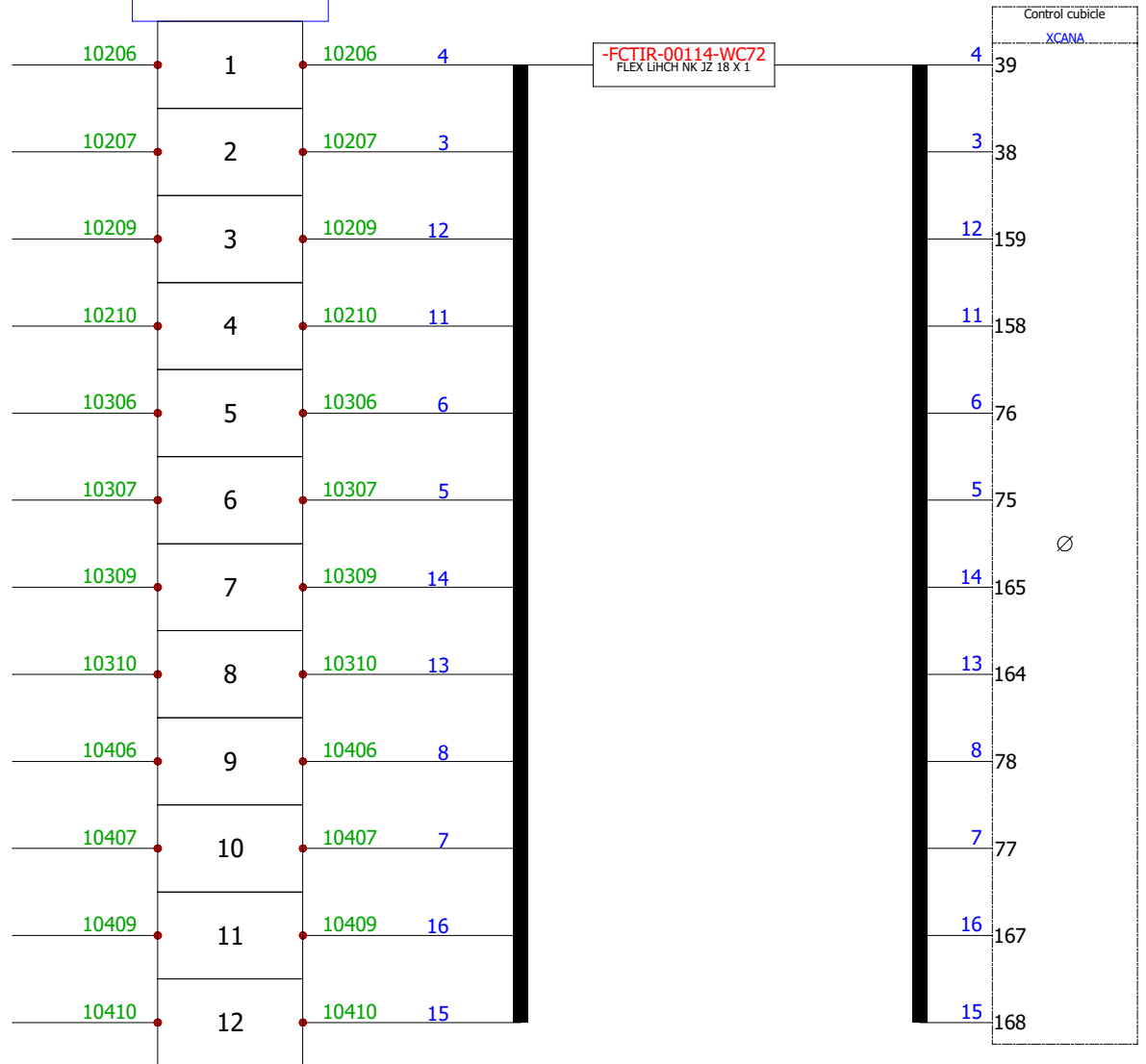
LOCATION: Power cubicle FCTIR-00115

User data 1

User data 2

SCHEME
904

XCANA



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Power cubicle FCTIR-00115 XCANA-(1/2)

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0	08/03/2019	Guillaume.V	First broadcast

REVISION
1
SCHEME
905

CONTRACT: DO-31677

LOCATION:

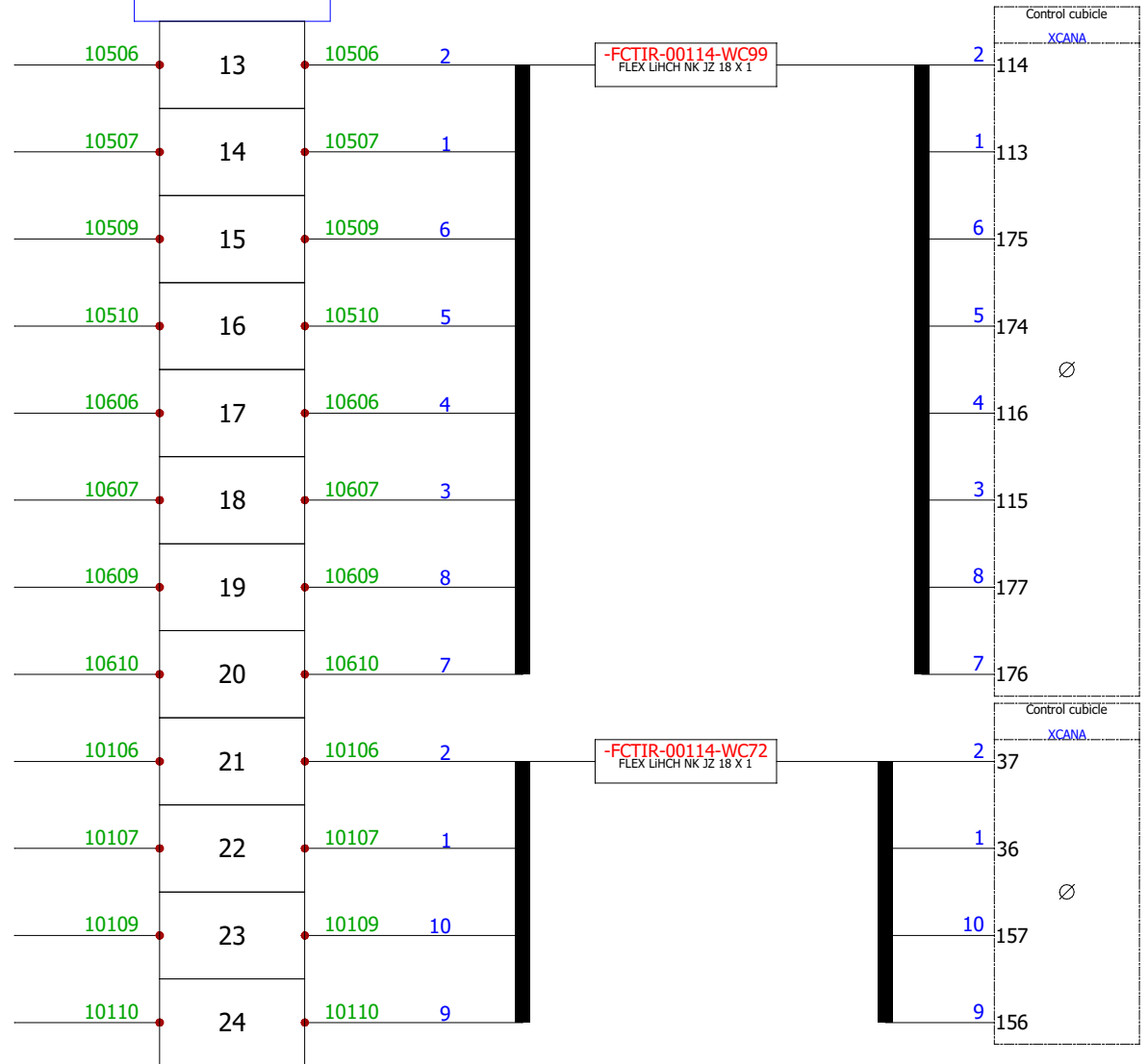
Power cubicle

FCTIR-00115

User data 1

User data 2

XCANA



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Power cubicle FCTIR-00115 XCANA-(2/2)

REV.	DATE	NAME	CHANGES	REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	08/03/2019	Guillaume.V	First broadcast	

CONTRACT: DO-31677

LOCATION:

Power cubicle

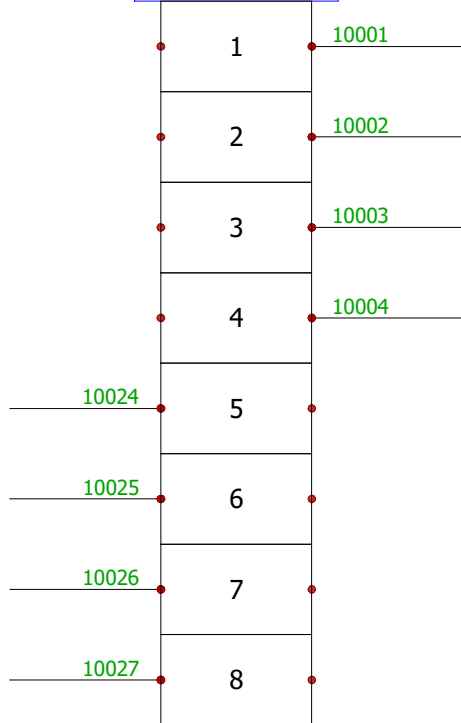
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User data 1

User data 2

SCHEME
906

XP



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Power cubicle FCTIR-00115
XP-(1/1)

REV.	DATE	NAME	CHANGES
1	09/05/2019	Guillaume.V	Modification according to CERN plan
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REVISION
1
SCHEME
907

CONTRACT: DO-31677

LOCATION: Power cubicle FCTIR-00115

User data 1

User data 2

Mark	Description	From location	To location	Reference	Manufacturer	Length (m)
-FCTIR-00114-WC55	Digital informations report Tandem N°1	Power cubicle - FCTIR-00115	Control cubicle - FCTIR-00114	FLEX LiHH NK JZ 21 X 1	Lapp	0
-FCTIR-00114-WC56	Digital informations report Tandem N°2	Power cubicle - FCTIR-00115	Control cubicle - FCTIR-00114	FLEX LiHH NK JZ 21 X 1	Lapp	0
-FCTIR-00114-WC57	Digital informations report Tandem N°3	Power cubicle - FCTIR-00115	Control cubicle - FCTIR-00114	FLEX LiHH NK JZ 21 X 1	Lapp	0
-FCTIR-00114-WC72	Analog Informations report	Power cubicle - FCTIR-00115	Control cubicle - FCTIR-00114	FLEX LiHCH NK JZ 18 X 1	Lapp	0
-FCTIR-00114-WC99	Analog Informations report	Power cubicle - FCTIR-00115	Control cubicle - FCTIR-00114	FLEX LiHCH NK JZ 18 X 1	Lapp	0
-FCTIR-00114-WC107	Digital informations report	Power cubicle - FCTIR-00115	Control cubicle - FCTIR-00114	FLEX LiHH NK JZ 10 X 1	Lapp	0
FCTIR-00115-WP1	Power supply compressor N°1 CP 1101 Tandem N°1	Power cubicle - FCTIR-00115	Tandem N°1	FLEX LIHCH CEE 4 X 16	Lapp	0
FCTIR-00115-WP2	Power supply compressor N°2 CP 1102 Tandem N°1	Power cubicle - FCTIR-00115	Tandem N°1	FLEX LIHCH CEE 4 X 16	Lapp	0
FCTIR-00115-WP3	Power supply compressor N°1 CP 2101 Tandem N°2	Power cubicle - FCTIR-00115	Tandem N°2	FLEX LIHCH CEE 4 X 16	Lapp	0
FCTIR-00115-WP4	Power supply compressor N°2 CP 2101 Tandem N°2	Power cubicle - FCTIR-00115	Tandem N°2	FLEX LIHCH CEE 4 X 16	Lapp	0
FCTIR-00115-WP5	Power supply compressor N°1 CP 3101 Tandem N°3	Power cubicle - FCTIR-00115	Tandem N°3	FLEX LIHCH CEE 4 X 16	Lapp	0
FCTIR-00115-WP6	Power supply compressor N°2 CP 3101 Tandem N°3	Power cubicle - FCTIR-00115	Tandem N°3	FLEX LIHCH CEE 4 X 16	Lapp	0



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Power cubicle FCTIR-00115

List of the cables

REV.	DATE	NAME	CHANGES	REVISION
1	09/05/2019	Guillaume.V	Modification according to CERN plan	1
0	27/03/2019	Guillaume.V	First broadcast	
				SCHEME
				908

CONTRACT: DO-31677

LOCATION:

Power cubicle

FCTIR-00115

User data 1

User data 2