

CUSTOMER / Cliente



TITLE / Titolo

**THE FOLLO LINE PROJECT**  
**SUBSTATION "SS290 U1B"**  
 CONTAINERISED SUBSTATION – 1600KVA 22/0,4kV–50Hz  
 WIRING DIAGRAM

GENERAL TECHNICAL DATA / Dati Tecnici Generali					MECHANICAL DATA / Caratteristiche Meccaniche				
JOB No. / Commessa No.			16-1006		ACCESSIBILITY / Accessibilità			FRONT	
DRAWING No. / Disegno No.			16-1006-D71-02		CABLE INLET / Ingresso Cavi			FROM BOTTOM	
STANDARD REFERENCE / Norma di Riferimento			CEI-EN 61439-1/2 CEI-EN 62271-200		DEGREE OF PROTECTION / Grado di Protezione			IP 54	
					PAINT / Colore			RAL 9001	
ELECTRICAL DATA / Dati Elettrici					WEIGHT / Peso				
RATED POWER (Sn) / Potenza Nominale			1600 KVA		OVERALL DIMENSIONS / Dimensioni d'Ingombro				
RATED FREQUENCY (Hz) / Frequenza Nominale			50 Hz		LENGHT / Lunghezza			6051 mm	
MV ELECTRICAL DATA / Dati Elettrici MT					HEIGHT / Larghezza			2591 mm	
RATED VOLTAGE (Ue) / Tensione Nominale			22 kV		DEPTH / Profondità			2438 mm	
RATED INSULATION VOLTAGE (Ui) / Tensione d'isolamento			24 kV		ENVIRONMENTAL DATA / Dati Ambientali				
RATED CURRENT (In) / Corrente Nominale			40,2 A		TEMPERATURE / Temperatura			-20 ÷ +45 °C	
RATED SHORT-CIRCUIT CURRENT (Icw) / Corrente di Corto-Circuito			16 kA		HUMIDITY / Umidità			90 %	
AUXILIARY CIRCUIT VOLTAGE / Tensione circuito ausiliario			230V - 50 Hz		ALTITUDE / Altitudine			<1000 m	
LV ELECTRICAL DATA / Dati Elettrici BT					INSTALLATION / Installazione				
RATED VOLTAGE (Ue) / Tensione Nominale			400 V		NOTE:				
RATED INSULATION VOLTAGE (Ui) / Tensione d'isolamento			690 V						
RATED CURRENT (In) / Corrente Nominale			2.309 A						
RATED SHORT-CIRCUIT CURRENT (Icw) / Corrente di Corto-Circuito			38 kA						
AUXILIARY CIRCUIT VOLTAGE / Tensione circuito ausiliario			230 V - 50 Hz						

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TUTTI I DIRITTI SONO STRETTAMENTE  
 RISERVATI  
 REPRODUZIONE O LA COMUNICAZIONE  
 A TERZI IN QUALSIASI FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE														



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TITOLO TITLE

THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV

TITLE

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	1
FG SUCC NEXT SH	2

### LISTA FOGLI \ INDEX

Foglio Sheet	Descrizione Description	Revisione \ Revision									Foglio Sheet	Descrizione Description	Revisione \ Revision								
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Note :

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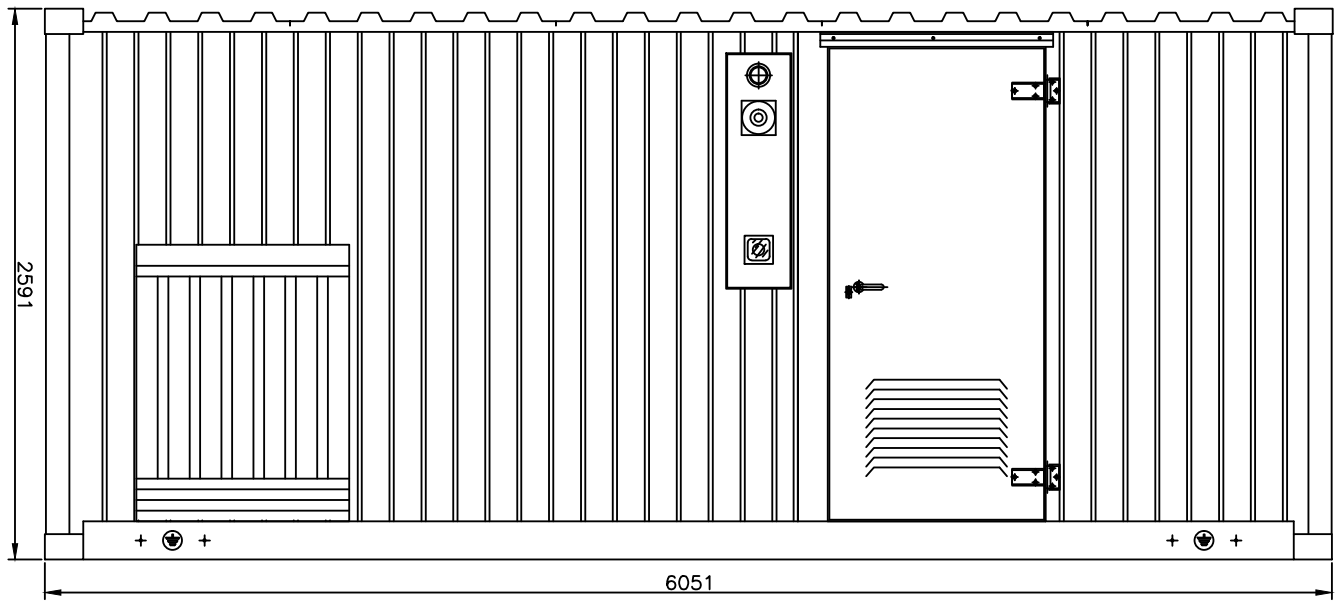
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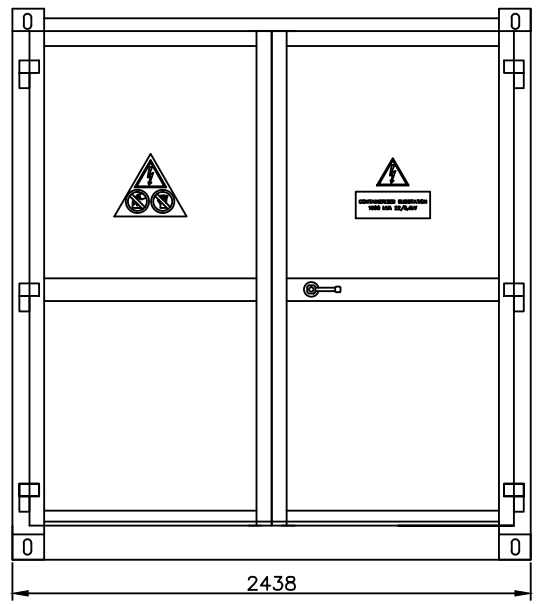
**TITOLO**  
 TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
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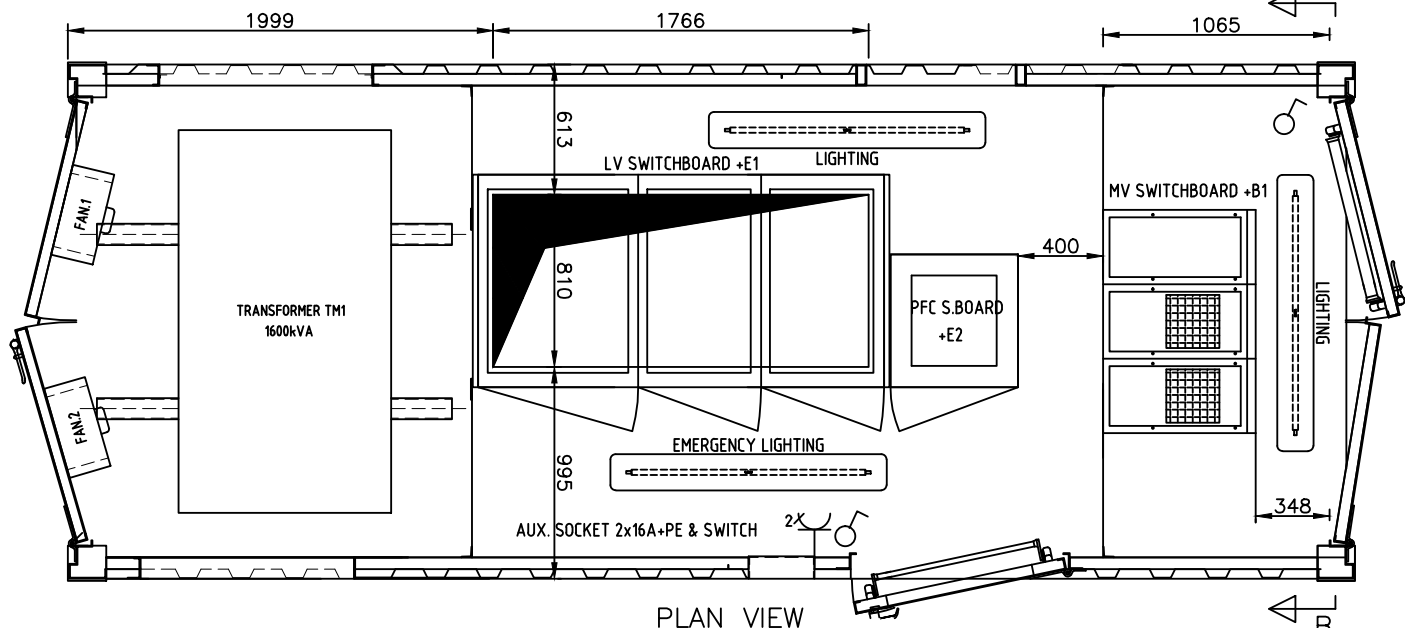
FRONT VIEW



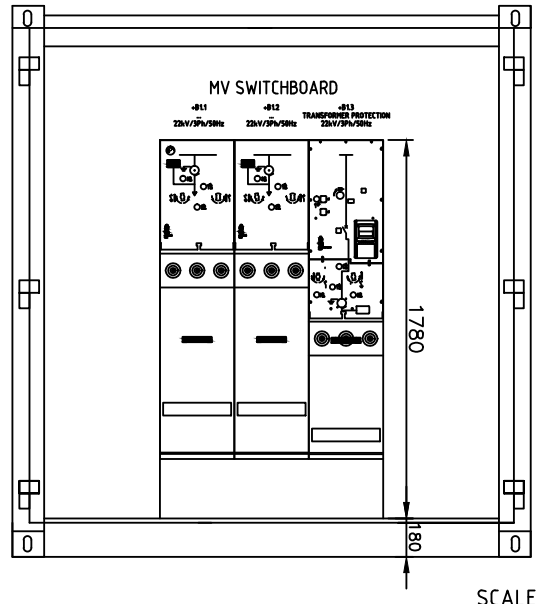
A-A VIEW



PLAN VIEW



B-B VIEW



SCALE 1:25

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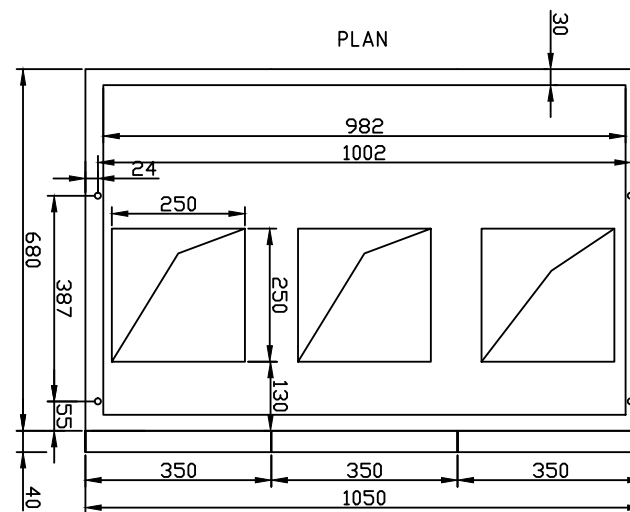
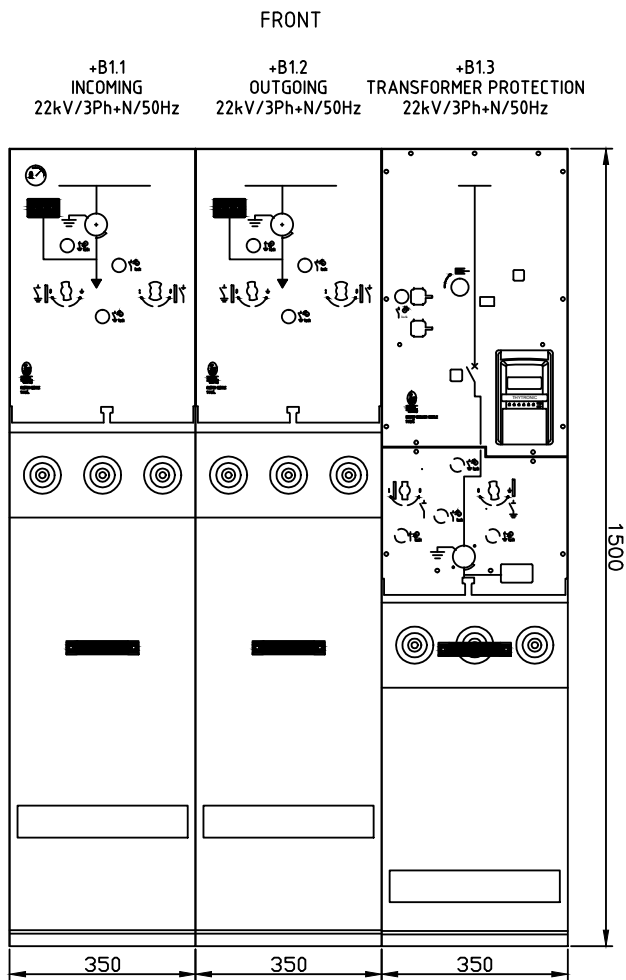
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TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B" CONTAINERIZED SUBSTATION 1600kVA 22/0,4kV  
CONTAINER OVERALL DIMENSIONS

DESIGNO No	16-1006-D71-02
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+B1 MV SWITCHBOARD OVERALL DIMENSIONS



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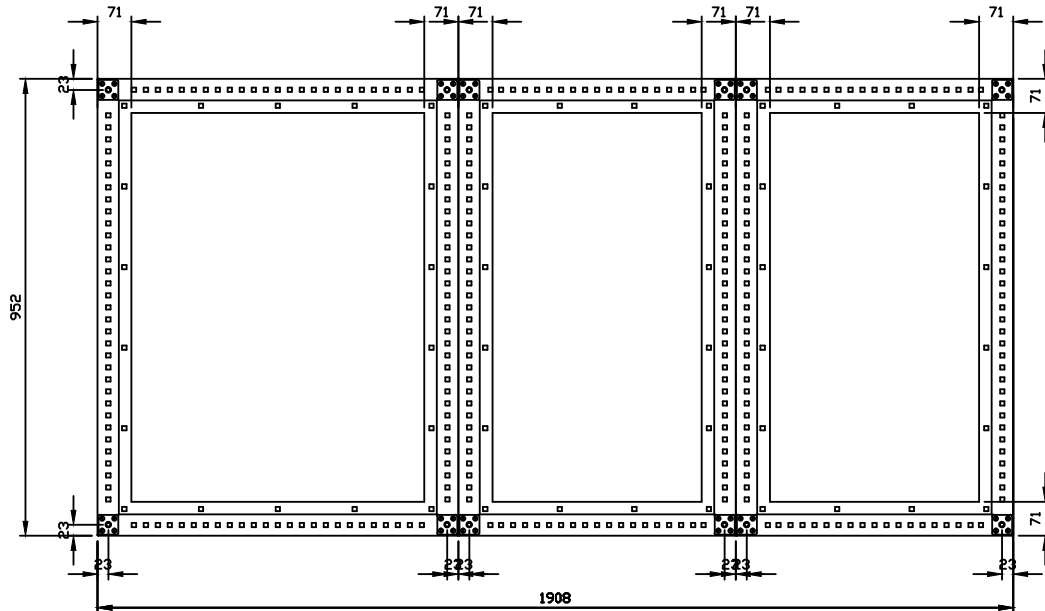
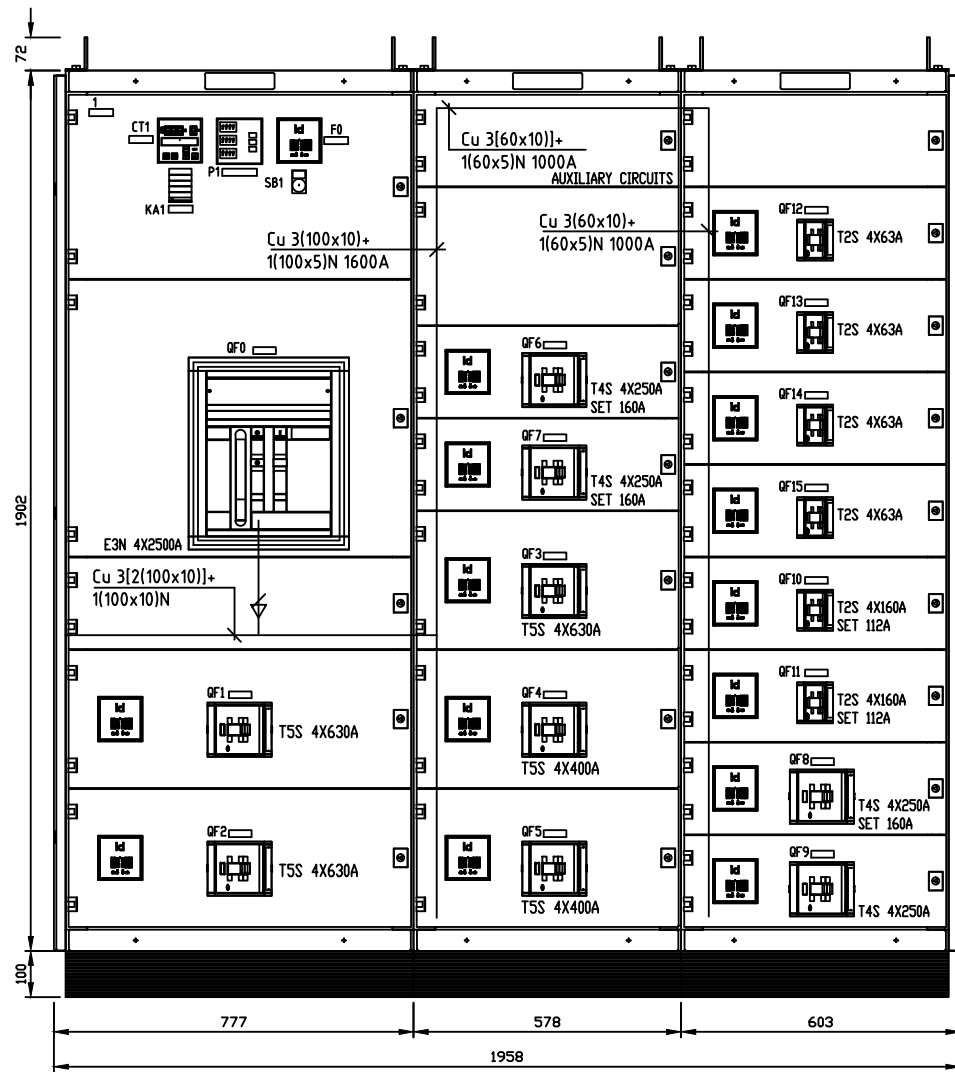


**TITOLO** THE FOLLO LINE PROJECT "SS290 U1B"  
**TITLO** CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 MV SWITCHBOARD +B1 - OVERALL DIMENSIONS

<b>DISEGNO No</b> <b>DRAWING No</b>	16-1006-D71-02
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<b>FG No</b> <b>SH No</b>	<b>4</b>
<b>FG SUCC</b> <b>NEXT SH</b>	<b>5</b>

FRONT VIEW +E1

BOTTOM VIEW +E1



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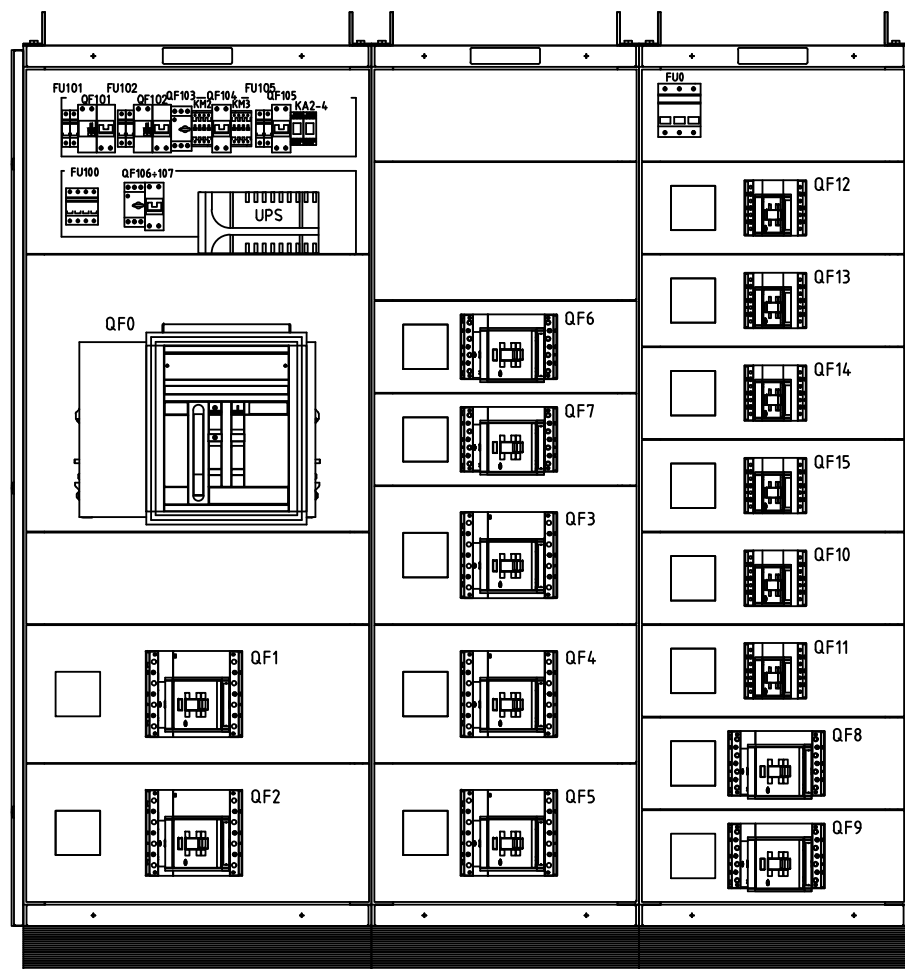
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TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
CONTAINERIZED SUBSTATION  
1600KVA 22/0,4KV  
LV SWITCHBOARD +E1 OVERALL DIMENSIONS

DISEGNO No DRAWING No	16-1006-D71-02
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FG No SH No	5
FG SUCC NEXT SH	6

INTERNAL LAYOUT +E1



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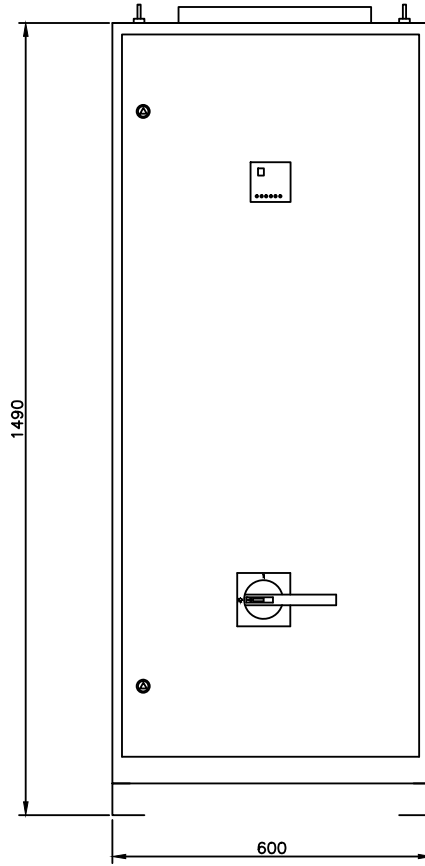
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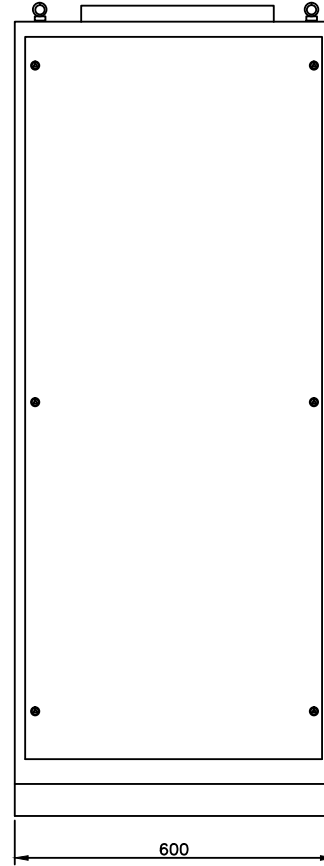
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 1600kVA 22/0,4kV  
 LV SWITCHBOARD +E1 INTERNAL LAYOUT

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FG SUCC NEXT SH	7

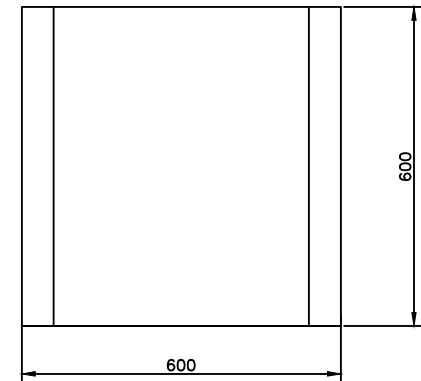
FRONT VIEW +E2



SIDE VIEW +E2



PLANT VIEW +E2



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 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 PFC SWITCHBOARD +E2 OVERALL DIMENSIONS

DISEGNO No DRAWING No	16-1006-D71-02
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FG No SH No	7
FG SUCC NEXT SH	8

# LABELS LIST

MATERIAL		PVC		BOTTOM		WHITE		WRITE		BLACK		FIXING		ADHESIVE	
POS.	Q.TY	TAG		DIMENS. (mm)	WRITE			HIGH (mm)							
					FIRST LINE	SECOND LINE	THIRD LINE								
1	1			50x15	AUX. CIRCUIT / MEASURE	CUBICLE		3							
2	1	F0		50x15	NEUTRAL	GROUND	FAULT RELAY	3							
3	1	P1		70x15	MEASURE			3							
4	1	CT1		50x15	TRANSFORMER TEMPERATURE	CONTROLLER		3							
5	1	KA1		50x15	TEMPERATURE	TRANSFORMER TRIP		3							
6	1	SB1		30x15	ALARM	ACKNOWLEDGE		3							
7	1	QF0		50x15	MAIN CIRCUIT	BREAKER		3							
8	1	QF1		50x15	HEATING CABLE ROAD	ADIT S 1		3							
9	1	QF2		50x15	HEATING CABLE ROAD	ADIT S 2		3							
10	1	QF3		50x15	HEATING CABLE ROAD	ADIT S SPARE		3							
11	1	QF4		50x15	SPARE			3							
12	1	QF5		50x15	SPARE			3							
13	1	QF6		50x15	JET FAN ADIT	SOUTH 4 - AS3		3							
14	1	QF7		50x15	JET FAN ADIT	SOUTH 5 - AS4		3							
15	1	QF8		50x15	JET FAN ADIT	SOUTH 6 - AS5		3							
16	1	QF9		50x15	SPARE			3							
17	1	QF10		50x15	BACK-UP 1			3							
18	1	QF11		50x15	BACK-UP 2			3							
19	1	QF12		50x15	SPARE			3							
20	1	QF13		50x15	SPARE			3							
21	1	QF14		50x15	SPARE			3							
22	1	QF15		50x15	ADIT LIGHTING	SPARE		3							
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**TITULO** CONTAINERIZED SUBSTATION  
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**LABELS LIST**

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<b>SH No</b>	
<b>FG SUCC</b>	9
<b>NEXT SH</b>	

CABLE NOTE / Note di Cablaggio

ALL EQUIPMENTS IN THE WIRING DIAGRAMS ARE SHOWN WITHOUT VOLTAGE.

Tutti i componenti rappresentati nello schema elettrico sono rappresentati a riposo

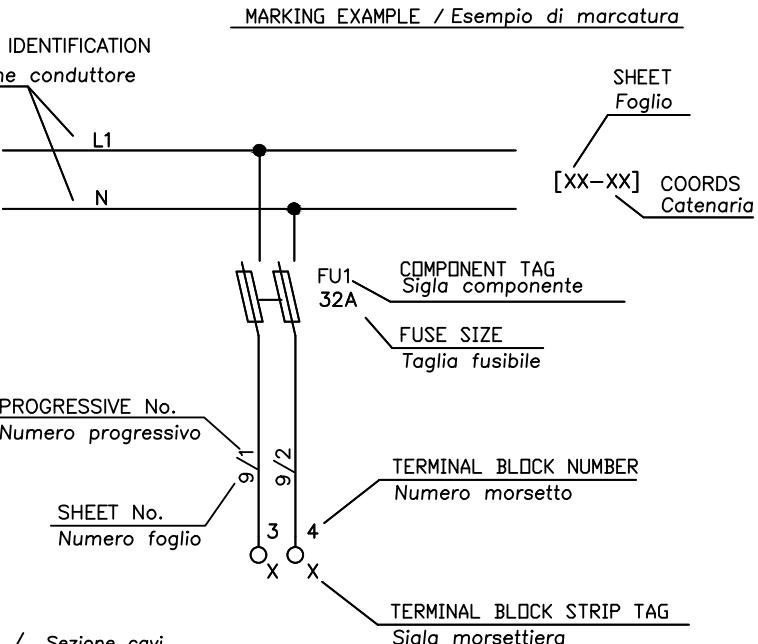
1A ALL THE CONDUCTORS SHALL BE PVC INSULATED, NO FIRE PROPAGATING  
Tutti i conduttori sono in isolati in PVC, non propaganti la fiamma

2A WIRING SHALL BE IDENTIFIED AS FOLLOWS:  
(ON BOTH EXTREMITY OF EACH CONDUCTOR)  
I cavi sono identificati come segue:  
(su entrambe le estremità del conduttore)

N. SHEET + N. CONDUCTOR OR CABLE  
N. foglio + N. conduttore o cablaggio

2B WHEN CONNECTION CONTINUE TO MORE THAN ONE SHEET THE WIRE NUMBER SHALL BE A COMBINATION OF THE SHEET NUMBER WHERE THE CONNECTION STARTS FOLLOWED BY THE WIRE NUMBER SHOWN ON THE SAME SHEET (AS INDICATED ON DIAGRAM).  
Quando la connessione continua su più fogli, viene indicata una coordinata che mostra la destinazione della connessione. Numero di pagina e colonna

- 5 WIRING SHALL RUN IN RACEWAY MAX VALUE OF FILLED SHALL BE 80%  
I cavi all'interno delle canaline devono arrivare all' 80% del loro volume
- 6 EACH CABINET SHALL BE PROVIDED WITH GALVANIZED COPPER EARTH BAR MIN. 20x5 sqmm, FOR TOTAL LENGTH.  
Ogni quadro è provvisto di una barra di terra (rame galvanizzato) con lo spessore minimo di 20x5mmq, fer tutta la lunghezza.
- 7 SHALL BE PROVIDED A PROFILED C o L FOR CABLE FASTENING.  
Il quadro è provvisto di un profilato a C o L per l'ammarrare cavi.
- 8 SHALL BE PROVIDED INDIVIDUAL TERMINAL FOR EACH CONDUCTOR.  
Il quadro è provvisto di un morsetto per ogni conduttore.



9 WIRING SECTION / Sezione cavi		
POWER SUPPLY	Potenza	2,5 sqmm (MINIMUM)
AUXILIARY CONNECTION	Ausiliari	1,5 sqmm (MINIMUM)
PLC & I/O CONNECTION	Connessioni PLC e I/O	1 sqmm
ANALOG SIGNAL	Segnali analogici	0,5 sqmm

TERMINAL BLOCK LEGEND / Legenda Morsettiere		
○	TERMINAL BLOCK LV SWITCHGEAR +E1	Morsettiere quadro BT +E1
∅	TERMINAL BLOCK PLC SWITCHGEAR +E3	Morsettiere quadro PLC +E3
⊕	TERMINAL BLOCK JUNCTION BOX	Morsettiere Cassette di giunzione
□	TERMINAL BLOCK MV SWITCHGEAR +B1	Morsettiere quadro MT +B1

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		COMM. No JOB No	16-1006
		FG No SH No	9 10

CABLE NOTE

3 CONDUCTOR IDENTIFIED:  
Identificazione dei conduttori:

1) 230÷400Vac (POWER CIRCUIT)	PHASE = BLACK NEUTRAL = LIGHT BLUE	Fase = Nero Neutro = Azzurro
2) 230Vac (AUX. CIRCUIT) 115Vac (AUX. CIRCUIT)	BLACK RED	Nero Rosso
3) 0÷48Vdc	+ = LIGHT BLUE - = LIGHT BLUE	+ = Azzurro - = Azzurro
4) 110÷120Vdc	+ = GREEN - = GREEN	+ = Verde - = Verde
5) ANALOG SIGNAL (CABLE WITH SHIELD) Segnali analogici (cablati con schermo)	+ = BROWN - = WHITE	+ = Marrone + = Bianco
6) FREE VOLTAGE CONTACTS, CIRCUITS WITH OUDOOR SUPPLY OR UPSTREAM OF MAIN C.B. CONNECTING Contatti puliti, circuiti alimentati da fonte esterna e/o collegati a monte Interr. generale.	ORANGE	Arancio
7) INTRINSIC SAFETY Barriere di sicurezza	BLUE	Blu
8) UPS	BLACK	Nero
9) GROUND Terra	YELLOW / GREEN	Giallo / Verde






















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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



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TUTTI I DIRITTI SONO STRETTAMENTE  
 RISERVATI  
 REPRODUZIONE O LA COMUNICAZIONE  
 A TERZI IN QUALSIASI FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ

Sim.\Sym.	File	Descrizione\Description	Sim.\Sym.	File	Descrizione\Description
		Ring Transformer			Pushbutton
		Twilight Switch			Selector
		Residual Current Device			Disconnecter
		Multimeter			Cooling Fan
		Emergency Pushbutton			Bar Cooling Fan
		Transformer			Residual Current Device
		UPS			Miniature Circuit Breaker 2 Poles
		Twilight Switch Sensor			Miniature Circuit Breaker 4 Poles
		Capacitor			Differential Miniature Circuit Breaker 2 Poles
		Blinking Lamp			Circuit Breaker 3 Poles
		Horn			Fuse 1 Pole

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














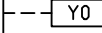
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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



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TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 SYMBOL LEGEND

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	10
FG SUCC NEXT SH	11

Sim.\Sym.	File	Descrizione\Description	Sim.\Sym.	File	Descrizione\Description
		Fuse 3 Poles			Miniature Circuit Breaker 4 Poles
		Fuse 3 Poles with Neutral			Differential Miniature Circuit Breaker 4 Poles
		Door Limit Switch			Fuse 3 Poles
		Temperature Switch			Current Transformer
		Selector			Transformer
		Current Transformer			
		Temperature Controller			
		Service Socket			
		Auxiliary Relay			
		Power Factor Correction			
		Opening Coil			

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 RISERVATI. REPRODUZIONE O LA COMUNICAZIONE  
 A TERZI IN QUALUNQUE FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

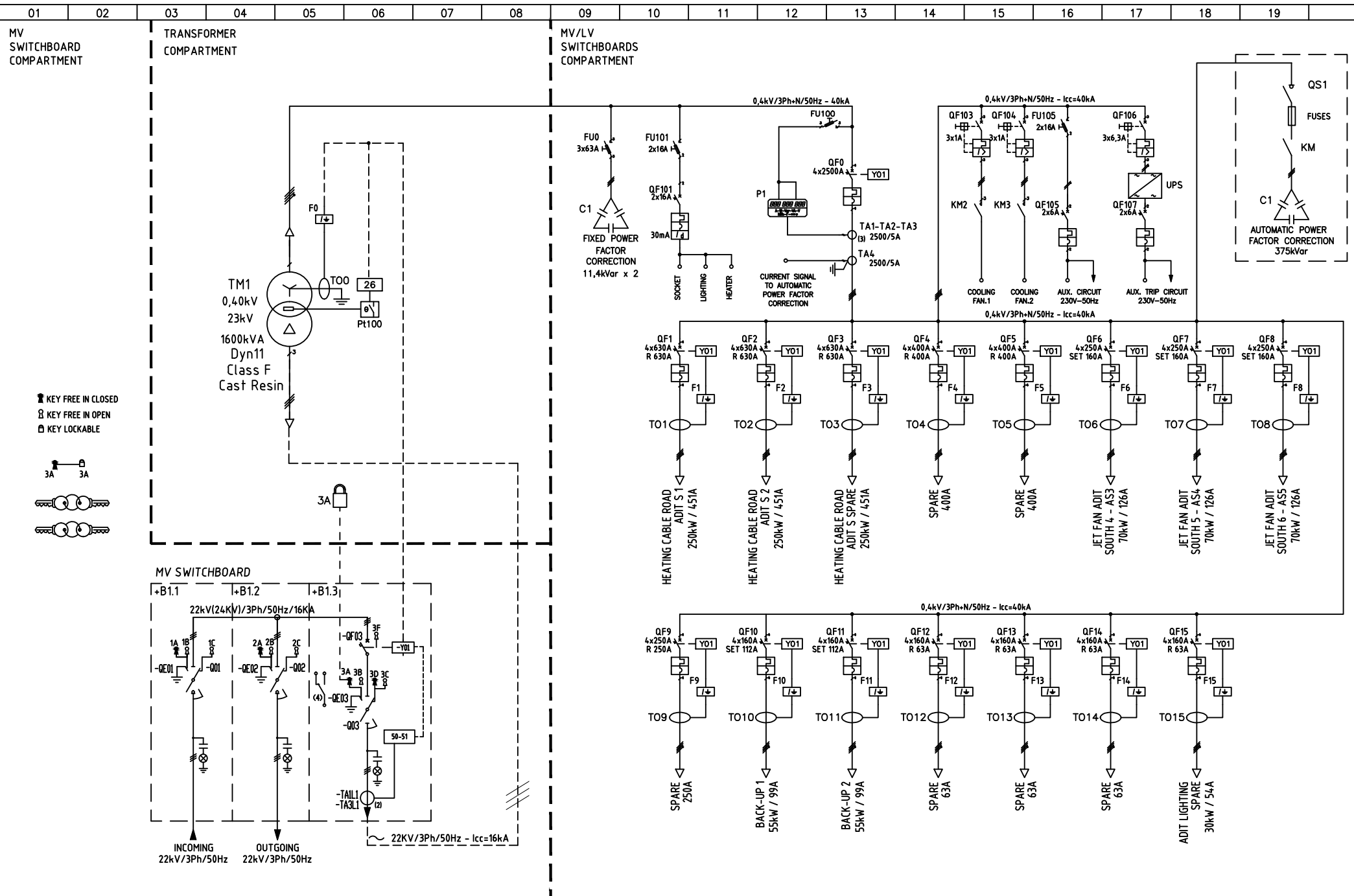


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TITOLO  
 TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV

SYMBOL LEGEND

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	11
FG SUCC NEXT SH	15



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 O LA COMUNICAZIONE  
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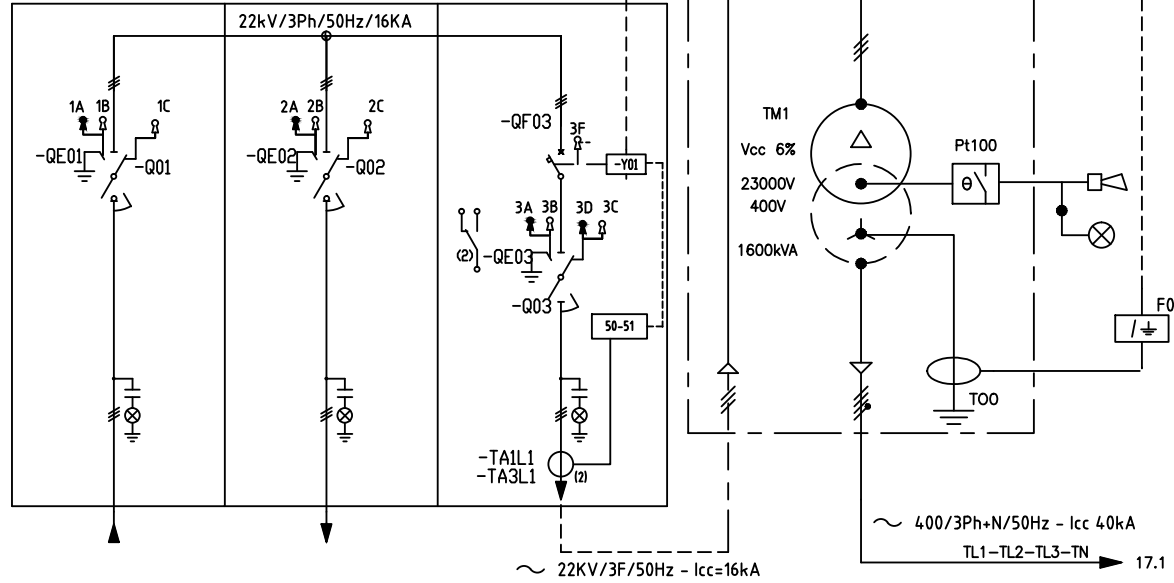
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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

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**TITOLO** THE FOLLO LINE PROJECT "SS290 U1B"  
**TITOLO** CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
**GENERAL SINGLE LINE DIAGRAM**

<b>DISEGNO No</b> <b>DRAWING No</b>	16-1006-D71-02
<b>COMM. No</b> <b>JOB No</b>	16-1006
<b>FG No</b> <b>SH No</b>	<b>15</b>
<b>FG SUCC</b> <b>NEXT SH</b>	<b>16</b>

KEY FREE IN CLOSED  
 KEY FREE IN OPEN



CODE	TIPO				+B1.1	L	+B1.2	L	+B1.3	C	
DESCRIPTION				INCOMING 22kV/3Ph/50Hz		OUTGOING 22kV/3Ph/50Hz		TRANSFORMER PROTECTION 22kV/3F/50Hz - 1600KVA		TRANSFORMER 22kV/3F/50Hz - 1600KVA	
ISOLATOR	TYPE									TPR6	
	In	(A)								630A	
	Icw	(kA)								16KA	
SWITCH	TYPE			TPR6		TPR6					
	In	(A)		630A		630A					
	Icw	(kA)		16KA		16KA					
CIRCUIT BREAKER	TYPE									VACUUM - CB	
	In	(A)								630A	
	Icw	(kA)								16KA	
PROTECTION DEVICES										THYTRONIC	
C.T.	TYPE									NA016	
	RATIO									S.T.E. TCO 100/1_A	
	PERFORMACES									100/1A	
V.T.	TYPE									2VA 5P10	
	RATIO										
	PERFORMACES										
CABLE	TYPE									RG7HM1-18/30 KV	
	Section	(mm <sup>2</sup> )								3(1x50)	
	LENGHT	(m)									
NOTES											

TUTTI I DIRITTI SONO STRETTAMENTE  
 RISERVATI. REPRODUZIONE O LA COMUNICAZIONE  
 A TERZI IN QUALUNQUE FORMA  
 NON E' PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETA'

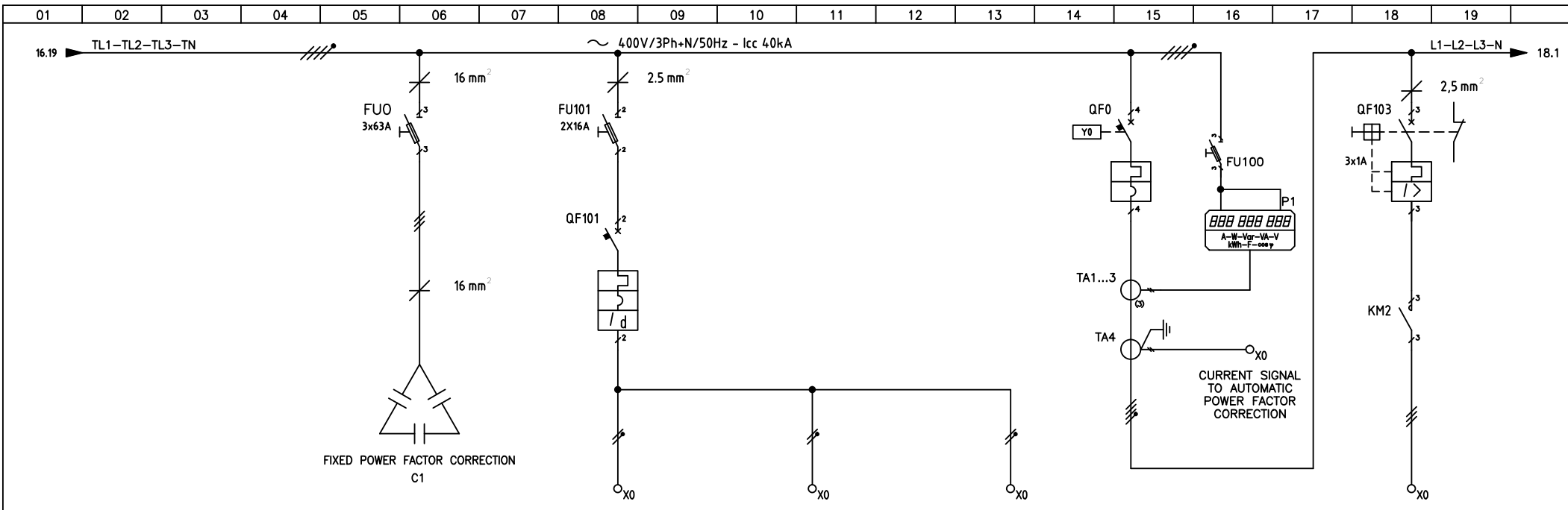


TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600KVA 22/0,4KV  
 MV SINGLE LINE DIAGRAM

DISEGNO No 16-1006-D71-02  
 DRAWING No 16-1006  
 COMM. No 16-1006  
 FG No 16 FG SUCC 17  
 SH No NEXT SH

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0	EMISSIONE/ISSUED	GR	EM	25.03.16	
REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

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ITEM	01	02	03	04	05	06	1						
	COLUMN	CUBICLE	A	1	B	1	B	04	A	2	A	1	2
DESCRIPTION	Fixed Power Factor Correction		Container Socket 230V		Container Lighting 230V		Container Heater 230V		Incoming Line		Cooling Fan.1 Transformer		3
POWER	(kW)		30kVar				2		1.600		0,12		5
CURRENT/VOLTAGE	(A)	(V)	550		230		230		2.309	400	0,65	400	6
CIRCUIT BREAKER/SWITCH	MANUFACTURER		ITALWEBER		ABB				ABB		SIEMENS		7
	TYPE		2303058 (22x58)		S202M				E3N		3RV10 11-0JA10		8
DIFFERENTIAL RELAY	no.POLES		3		2				4		2.500		9
	SETTING (A)				C 16						3		0,7-1
FUSE	MANUFACTURER		SIEMENS		ITALWEBER				ITALWEBER				12
	TYPE		3NW6222-1 (22x58)		2301137 (10x38)				2303137 (10x38)				13
CONTACTOR	no.POLES		3		1+N				3+N		2		14
	SETTING (A)		63		16								15
CURRENT TRANSF.	MANUFACTURER												16
	TYPE												17
VOLTMETER TRANSF.	no.POLES												18
	SETTING (A)												19
VOLT/METER/AMMETER	no.POLES												20
	SETTING (A)												21
LINE	CABLE no.												22
	TYPE												23
TERMINAL BLOCK	SEC. (sqmm)												24
	LENGHT (m)												25
WIRING DIAGRAM	no.												26
	(page)		50		51		51		51		53		

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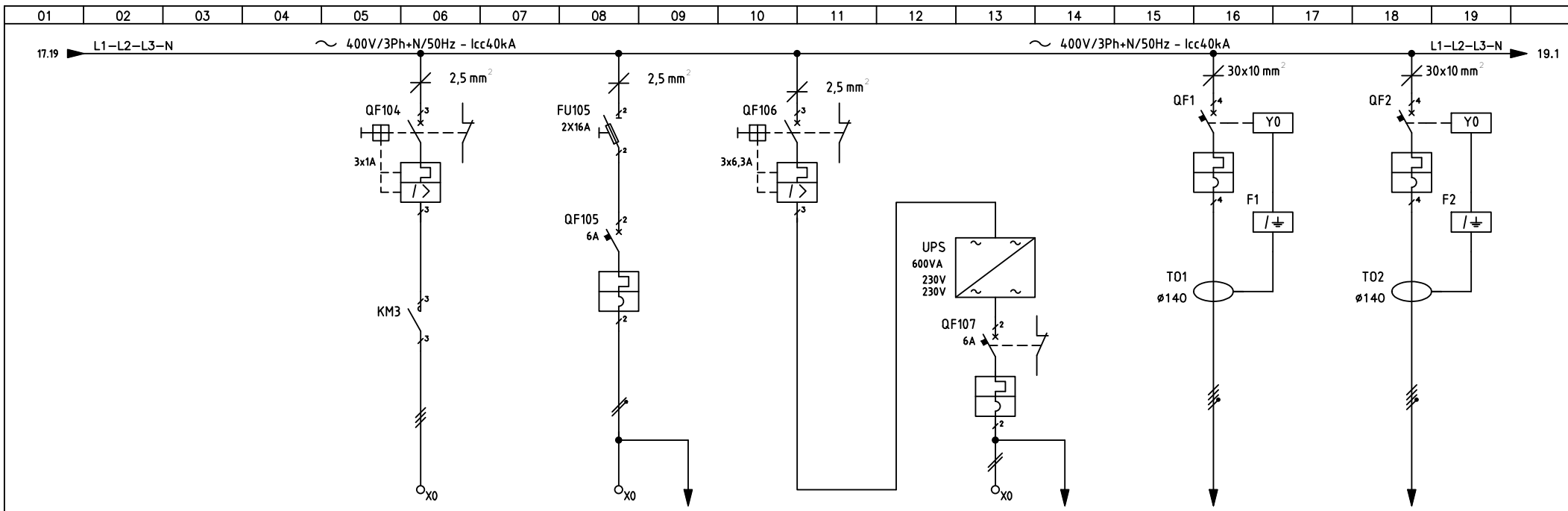


**TITOLO** THE FOLLO LINE PROJECT "SS290 U1B"  
**TITOLO** CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 LV SINGLE LINE DIAGRAM

**DISEGNO No** 16-1006-D71-02  
**DRAWING No**  
**COMM. No** 16-1006  
**JOB No**  
**FG No** 17  
**SH No** 18

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

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ITEM	07		08		09		10		11		12		1
	COLUMN	CUBICLE	A	1	A	1	A	1	A	4	A	5	2
DESCRIPTION			Cooling Fan.2 Transformer		Auxiliary Circuit 230V-50Hz		Auxiliary Circuit 230V-50Hz UPS		HEATING CABLE ROAD ADIT S 1		HEATING CABLE ROAD ADIT S 2		3
POWER		(kW)	0,12						250		250		4
CURRENT/VOLTAGE	(A)	(V)	0,65	400					451	400	451	400	5
CIRCUIT BREAKER/ SWITCH	MANUFACTURER		SIEMENS		ABB		SIEMENS		ABB		ABB		7
	TYPE		3RV10 11-0JA10		S202M		3RV10 11-0GA10		S202M		T5S 630 - PR221DS		8
	no.POLES	SETTING (A)	3	0,7-1	2	C 6	2	4,5 + 6,3	2	C 6	4	630	9
DIFFERENTIAL RELAY	MANUFACTURER								IME		IME		10
	TYPE		Id (A)						RD1G213B		0,03 + 30		11
FUSE	MANUFACTURER				ITALWEBER								12
	TYPE				2301137 (10X38)								13
	no.POLES	SETTING (A)			1+N	16							14
CONTACTOR	MANUFACTURER		SIEMENS										15
	TYPE		3RT1015-1AP01										16
	no.POLES	SETTING (A)	3	7A									17
CURRENT TRANSF.		(A)							IME - TDGE2				18
VOLTMETER TRANSF.		(V)											19
VOLTMETER/AMMETER		(V)											20
		(A)											21
LINE	CABLE no.												22
	TYPE												23
	SEC. (sqmm)	LENGHT (m)											24
TERMINAL BLOCK	TYPE	SECTION (sqmm)	CBD2	2,5	CBD4	4	CBD4	4	CBD4	4			25
	TERMINAL BLOCKS	no.	X0	U2-V2-W2	X0	4-3-4-4	X0	4-1-4-2	X0	4-1-4-2			26
WIRING DIAGRAM	(page)		53		53		53		53		59 - 60		26

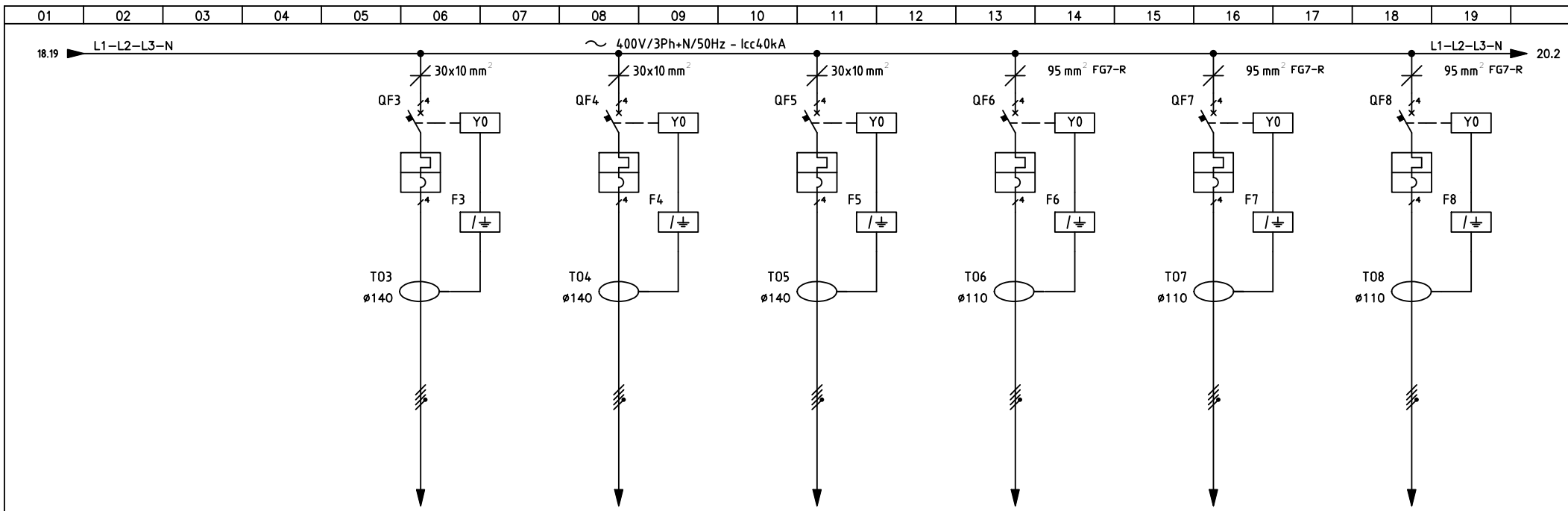
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**TITOLO** THE FOLLO LINE PROJECT "SS290 U1B"  
**CONTAINERIZED SUBSTATION**  
 1600kVA 22/0,4kV  
**LV SINGLE LINE DIAGRAM - OUTGOING**

**DISEGNO No** 16-1006-D71-02  
**DRAWING No**  
**COMM. No** 16-1006  
**JOB No**  
**FG No** 18 **FG SUCC** 19  
**SH No**

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



ITEM	13	14	15	16	17	18	1
DESCRIPTION	HEATING CABLE ROAD ADIT S SPARE	SPARE	SPARE	JET FAN ADIT SOUTH 4 - AS3	JET FAN ADIT SOUTH 5 - AS4	JET FAN ADIT SOUTH 6 - AS5	
POWER (kW)	250			70	70	70	
CURRENT/VOLTAGE (A) (V)	451 400	400	400	126 400	126 400	126 400	
CIRCUIT BREAKER/SWITCH	ABB	ABB	ABB	ABB	ABB	ABB	
TYPE	T5S 630 - PR221DS	T5S 400 - PR221DS	T5S 400 - PR221DS	T4S 250 - PR221DS	T4S 250 - PR221DS	T4S 250 - PR221DS	
no.POLES SETTING (A)	4 630	4 400	4 400	4 250 / SET 160	4 250 / SET 160	4 250 / SET 160	
DIFFERENTIAL RELAY	IME	IME	IME	IME	IME	IME	
TYPE Id (A)	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30	
FUSE							
MANUFACTURER							
TYPE							
no.POLES SETTING (A)							
CONTACTOR							
MANUFACTURER							
TYPE							
no.POLES SETTING (A)							
CURRENT TRANSF.	IME - TDGE2	IME - TDGE2	IME - TDGE2	IME - TDGD2	IME - TDGD2	IME - TDGD2	
VOLTMETER TRANSF.							
VOLTMETER/AMMETER							
LINE							
CABLE no.							
TYPE							
SEC. (sqmm) LENGHT (m)							
TERMINAL BLOCK							
TYPE SECTION (sqmm)							
TERMINAL BLOCKS no.							
WIRING DIAGRAM (page)	59 - 60	59 - 60	59 - 60	59 - 60	59 - 60	59 - 60	59 - 60

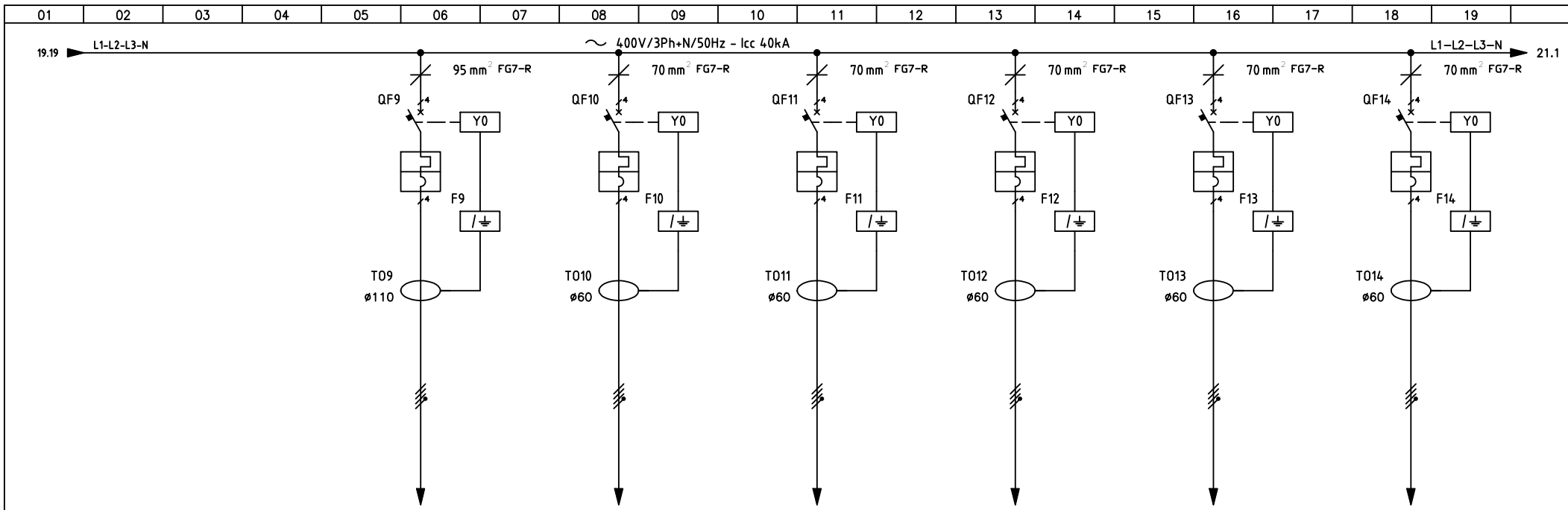
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 RISERVATI. REPRODUZIONE O LA COMUNICAZIONE  
 A TERZI IN QUALUNQUE FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ



**TITOLO** THE FOLLO LINE PROJECT "SS290 U1B"  
**TITULO** CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 LV SINGLE LINE DIAGRAM - OUTGOING

**DISEGNO No** 16-1006-D71-02  
**DRAWING No**  
**COMM. No** 16-1006  
**JOB No**  
**FG No** 19 **FG SUCC** 20  
**SH No** **NEXT SH**

3					
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0	EMISSIONE/ISSUED	GR	EM	25.03.16	
REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



ITEM	19	20	21	22	23	24	1
COLUMN	C	C	C	C	C	C	C
CUBICLE	9	6	7	2	3	4	2
DESCRIPTION	SPARE	BACK-UP 1	BACK-UP 2	SPARE	SPARE	SPARE	3
POWER (kW)		55	55				4
CURRENT/VOLTAGE (A) (V)	400	99 400	99 400	400	400	400	5
CIRCUIT BREAKER/SWITCH MANUFACTURER	ABB	ABB	ABB	ABB	ABB	ABB	6
CIRCUIT BREAKER/SWITCH TYPE	T4S 250 - PR221DS	T2S 160 - TMD	T2S 160 - TMD	T2S 160 - TMD	T2S 160 - TMD	T2S 160 - TMD	7
CIRCUIT BREAKER/SWITCH no.POLES SETTING (A)	4 250	4 160 / SET 112	4 160 / SET 112	4 63	4 63	4 63	8
DIFFERENTIAL RELAY MANUFACTURER	IME	IME	IME	IME	IME	ABB	9
DIFFERENTIAL RELAY TYPE Id (A)	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30	RD1G213B 0,03 ÷ 30A	10
FUSE MANUFACTURER							11
FUSE TYPE							12
FUSE no.POLES SETTING (A)							13
CONTACTOR MANUFACTURER							14
CONTACTOR TYPE							15
CONTACTOR no.POLES SETTING (A)							16
CURRENT TRANSF. (A)	IME - TDGD2	IME - TDGH2	IME - TDGH2	IME - TDGH2	IME - TDGH2	IME - TDGH2	17
VOLTMETER TRANSF. (V)							18
VOLTMETER/AMMETER (V) (A)							19
LINE CABLE no.							20
LINE TYPE							21
LINE SEC. (sqmm) LENGHT (m)							22
TERMINAL BLOCK TYPE SECTION (sqmm)							23
TERMINAL BLOCKS no.							24
WIRING DIAGRAM (page)	59 - 60	59 - 60	59 - 60	59 - 60	59 - 60	59-60	25
3							26
2							
1							
0	EMISSIONE/ISSUED	GR	EM			25.03.16	
REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE		

TUTTI I DIRITTI SONO STRETTAMENTE RISERVATI. REPRODUZIONE O LA COMUNICAZIONE A TERZI IN QUALUNQUE FORMA NON E' PERMESSA SENZA AUTORIZZAZIONE SCRITTA DELLA SOCIETA' RUTHERFORD GLOBAL POWER.



**TITOLO** THE FOLLO LINE PROJECT "SS290 U1B"  
**CONTAINERIZED SUBSTATION**  
 1600kVA 22/0,4kV  
**LV SINGLE LINE DIAGRAM - OUTGOING**

**DISEGNO No** 16-1006-D71-02  
**DRAWING No**  
**COMM. No** 16-1006  
**JOB No**  
**FG No** 20 **FG SUCC** 21  
**SH No** **NEXT SH**



ITEM	25	26	27	28	29	30	1
	C	5					2
DESCRIPTION	ADIT LIGHTING SPARE						3
POWER	(kW) 30						4
CURRENT/VOLTAGE	(A) 54	(V) 400					5
CIRCUIT BREAKER/ SWITCH	MANUFACTURER ABB						6
	TYPE T2S 160 - TMD						7
	no.POLES 4	SETTING (A) 63					8
DIFFERENTIAL RELAY	MANUFACTURER ABB						9
	TYPE RD1G213B	Id (A) 0,03 + 30					10
FUSE	MANUFACTURER						11
	TYPE						12
	no.POLES	SETTING (A)					13
CONTACTOR	MANUFACTURER						14
	TYPE						15
	no.POLES	SETTING (A)					16
CURRENT TRANSF.	(A) IME - TDGH2						17
VOLTMETER TRANSF.	(V)						18
VOLTMETER/AMMETER	(V) (A)						19
LINE	CABLE no.						20
	TYPE						21
	SEC. (sqmm)	LENGHT (m)					22
TERMINAL BLOCK	TYPE	SECTION (sqmm)					23
	TERMINAL BLOCKS no.						24
	(page) 59-60						25
WIRING DIAGRAM							26

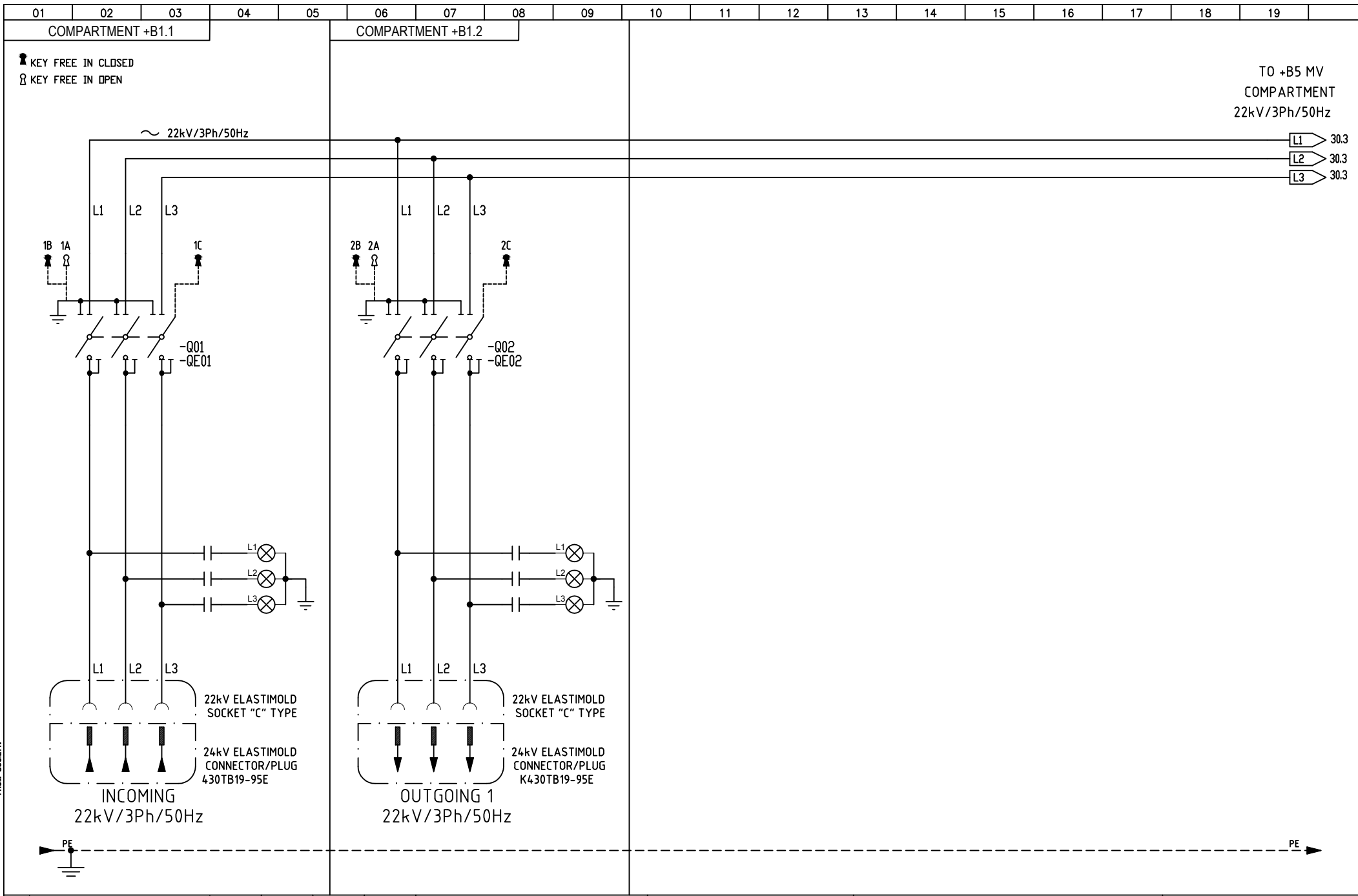
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 VIA S. GIUSEPPE 10, 20122 MILANO  
 TEL. 02 574911 - FAX 02 574912  
 WWW.RUTHERFORDGLOBALPOWER.COM



**TITOLO** THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
**LV SINGLE LINE DIAGRAM - OUTGOING**

**DISEGNO No** 16-1006-D71-02  
**DRAWING No**  
**COMM. No** 16-1006  
**JOB No**  
**FG No** 21 **FG SUCC** 29  
**SH No** **NEXT SH**

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



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 RISERVATI. REPRODUZIONE O LA COMUNICAZIONE  
 A TERZI IN QUALUNQUE FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

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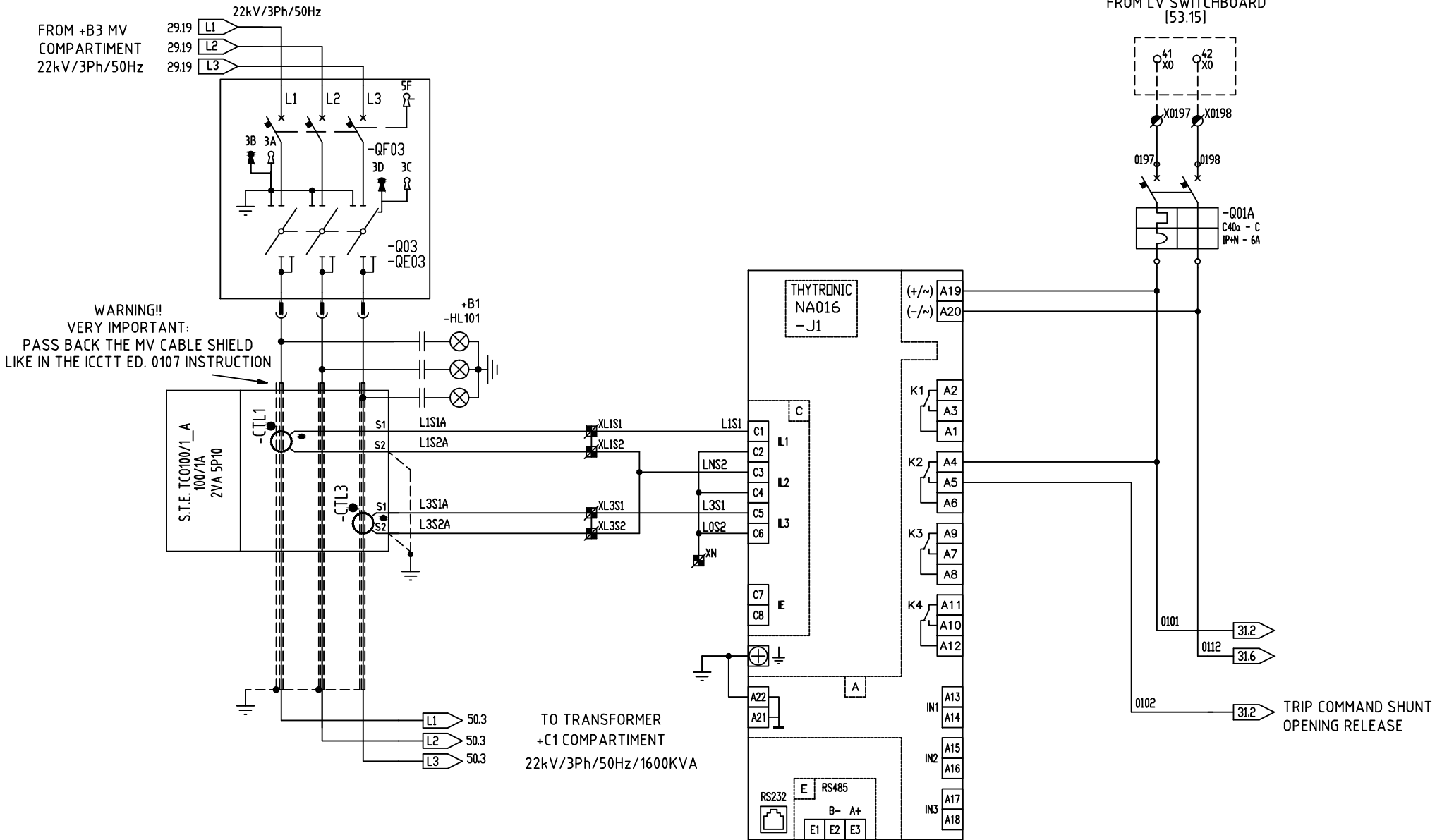
TITOLO THE FOLLO LINE PROJECT "SS290 U1B"  
 TITLE CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 +B1/+B2 MV SWITCHBOARD-INCOMING/OUTGOING LINE

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	29
FG SUCC NEXT SH	30

COMPARTMENT +B1.3

KEY FREE IN CLOSED  
KEY FREE IN OPEN

POWER SUPPLY UPS  
AUX CIRCUIT 230V-50Hz  
FROM LV SWITCHBOARD  
[53.15]



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NON È PERMESSA SENZA  
AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ

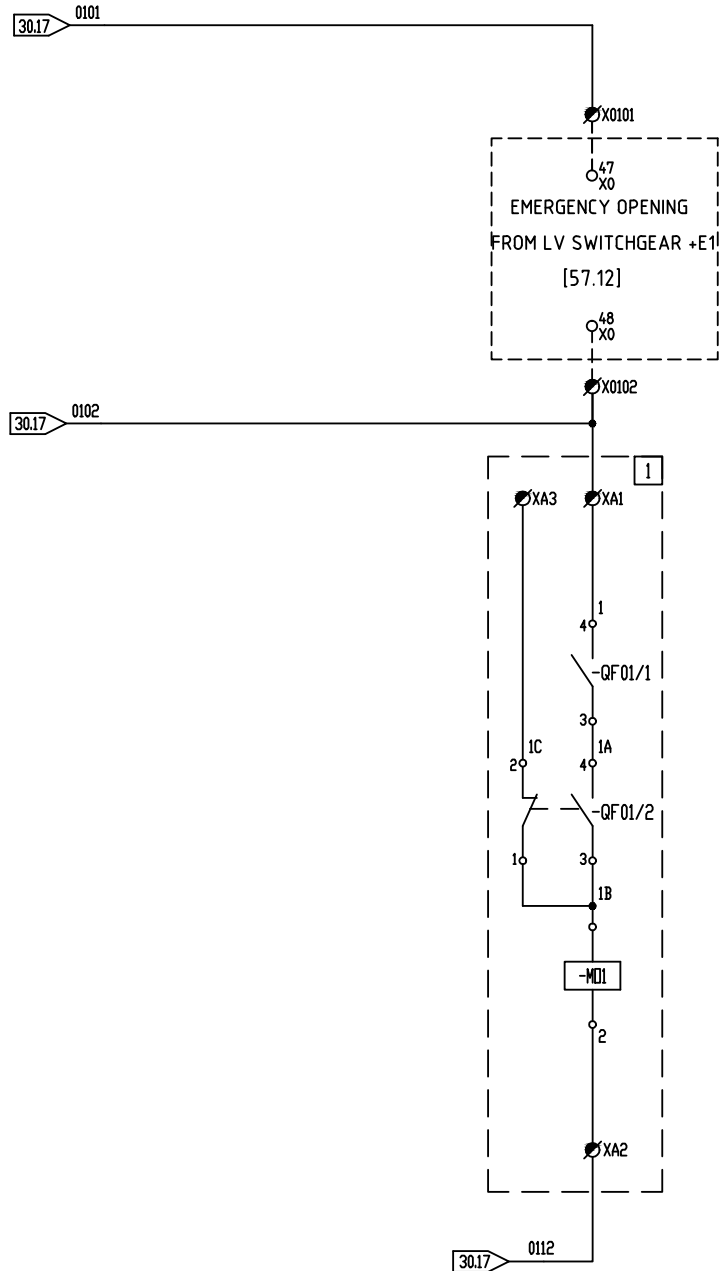
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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

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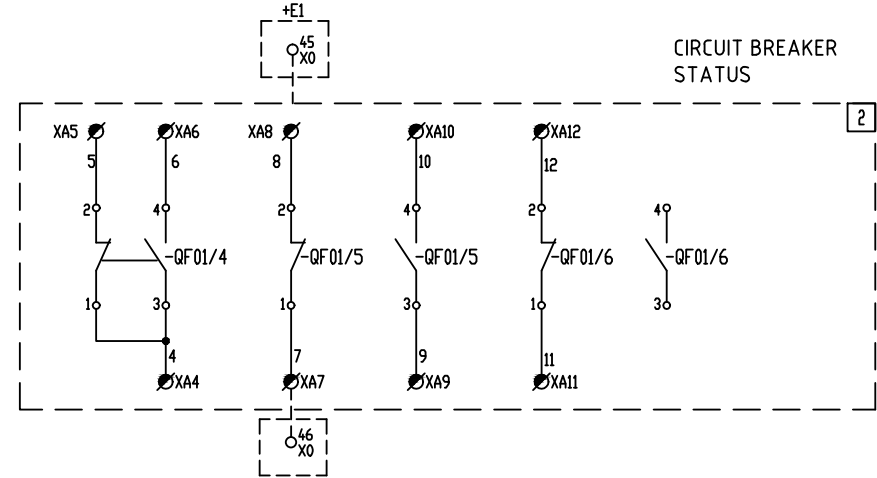
TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
CONTAINERIZED SUBSTATION  
1600KVA 22/0,4KV  
MV - TRANSFORMER PROTECTION WIRING DIAGRAM

DISIGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	30
FG SUCC NEXT SH	31

COMPARTMENT +B3



SHUNT RELE QF0  
TO LV SWITCHGEAR +E1  
[56.4]



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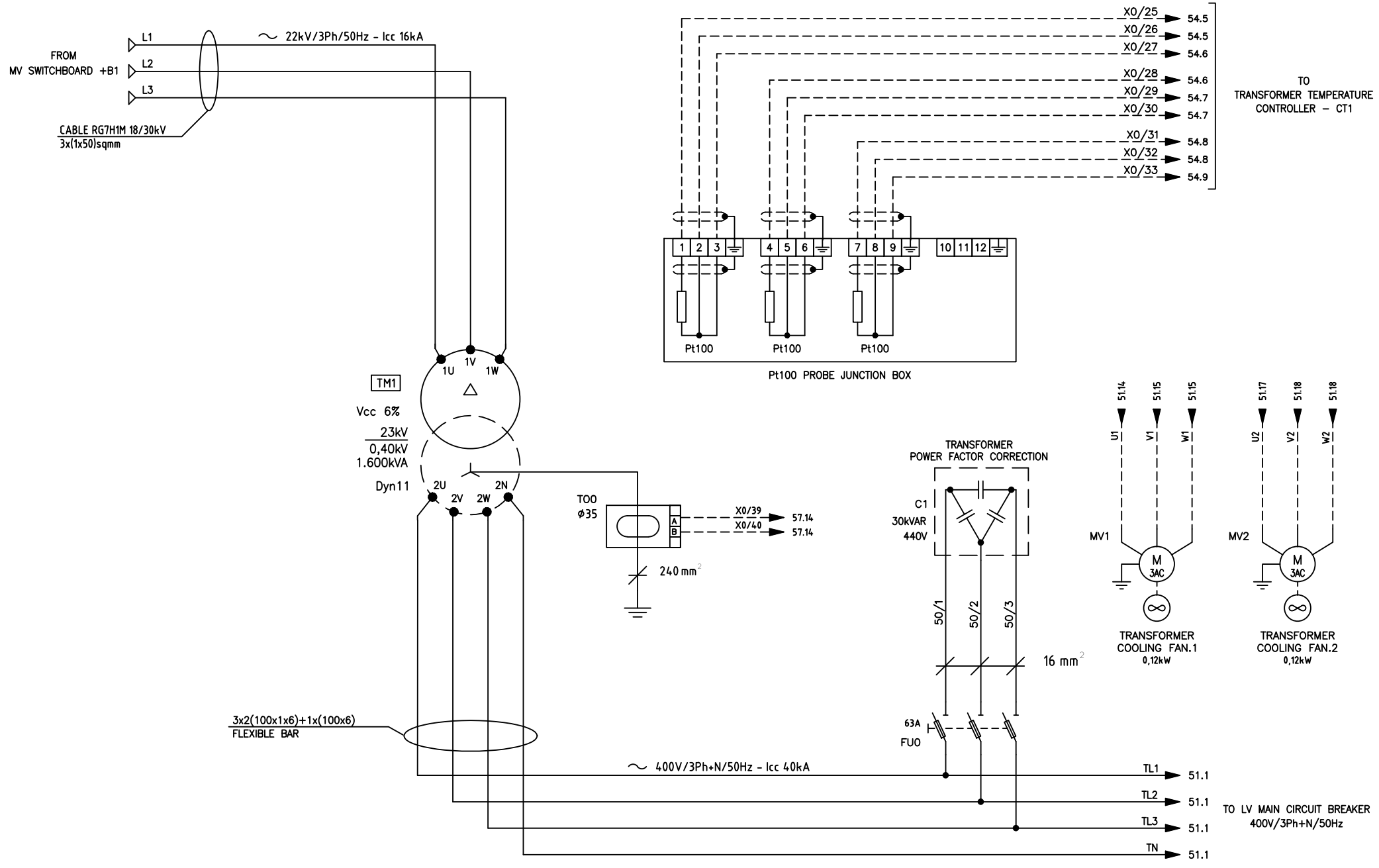
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NON È PERMESSA SENZA  
AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



TITOLO TITLE  
 THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 M.V. SWITCHBOARD +B1 - AUXILIARY CIRCUIT

DISEGNO No DRAWING No 16-1006-D71-02	COMM. No JOB No 16-1006
FG No SH No 31	FG SUCC NEXT SH 50



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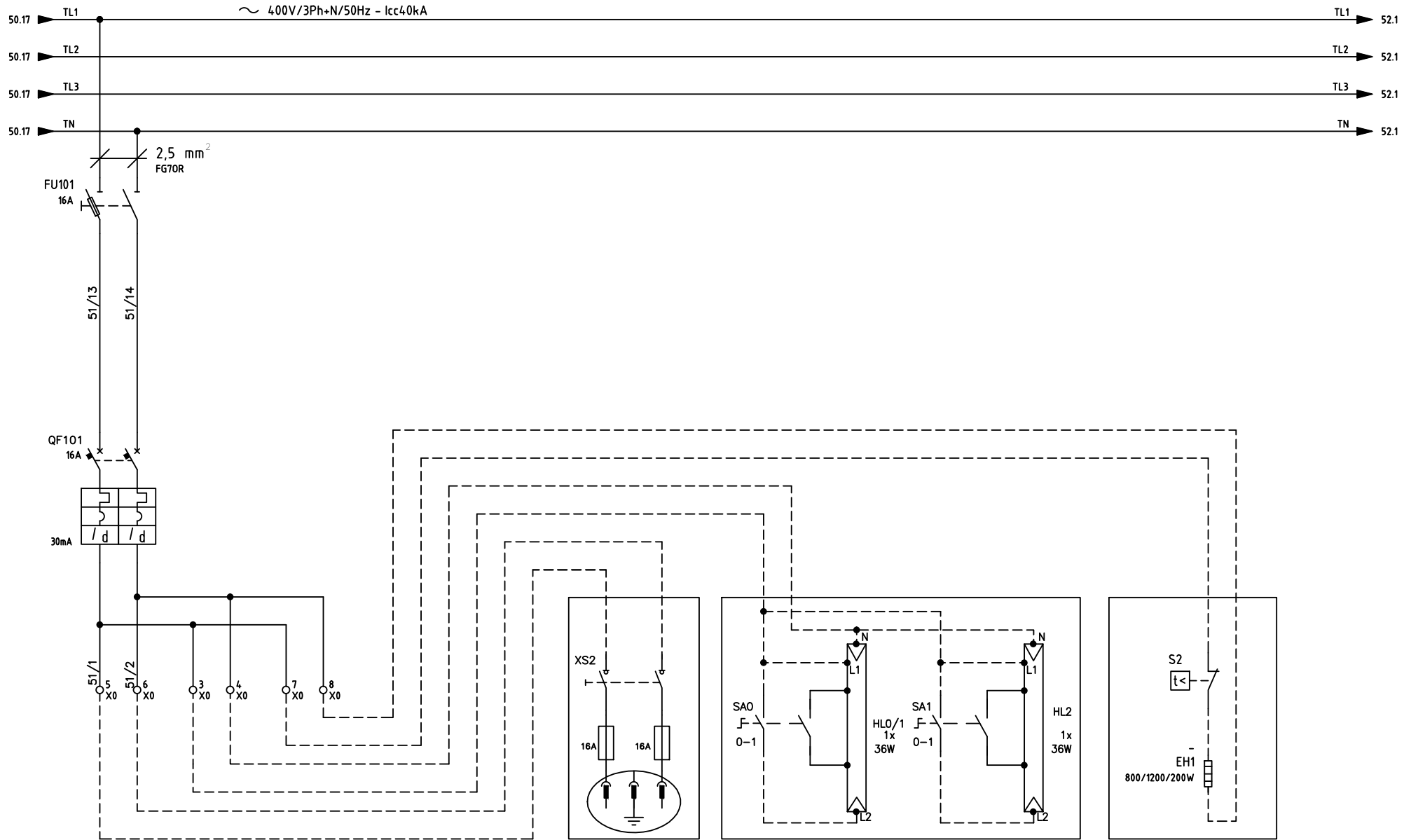
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 A TERZI IN QUALSIASI FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 TRANSFORMER COMPARTMENT +C1

DESIGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	50
FG SUCC NEXT SH	51



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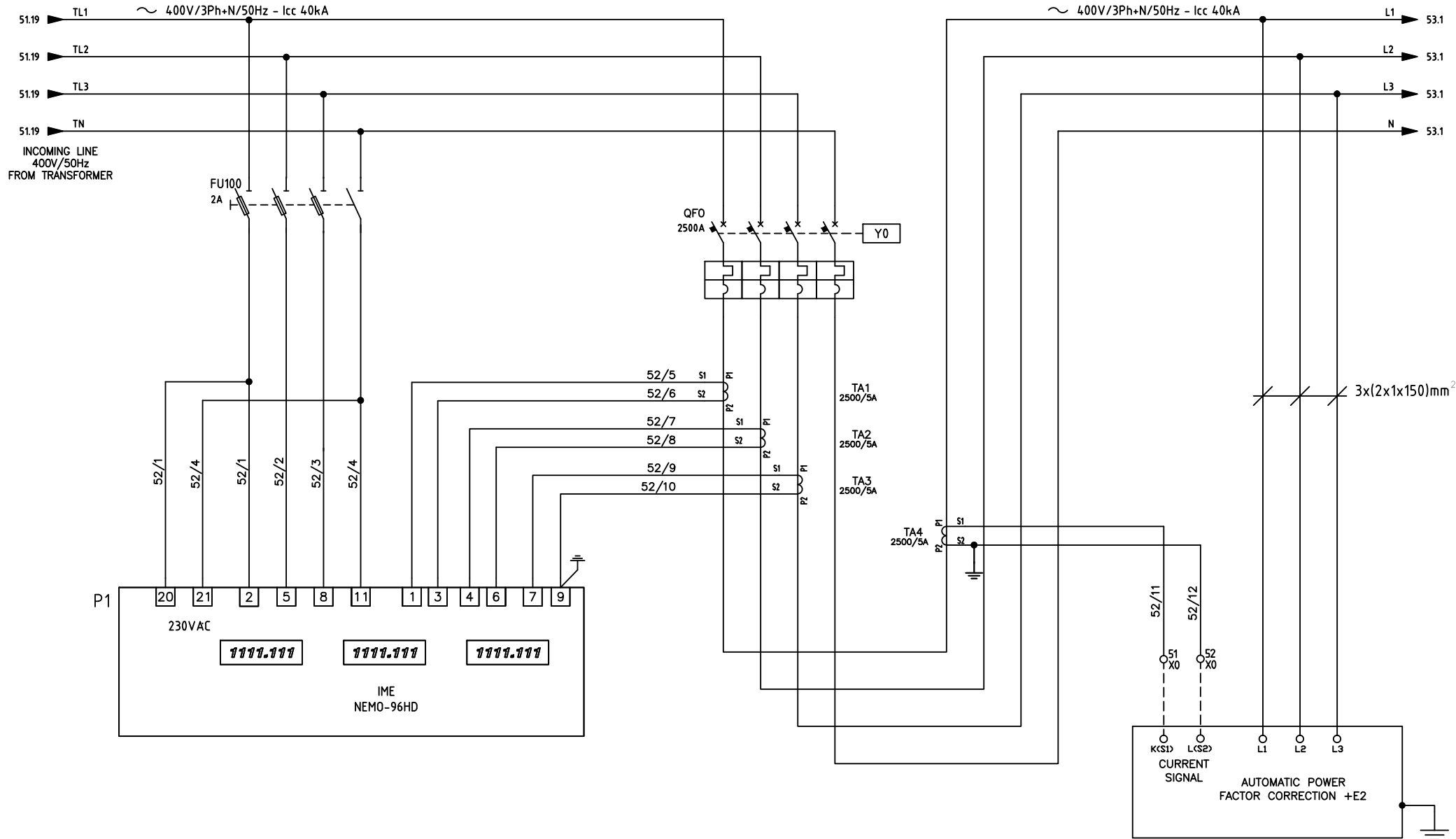
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 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

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TITOLO TITLE  
 THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 CONTAINER SERVICE WIRING DIAGRAM

DISEGNO No DRAWING No 16-1006-D71-02	
COMM. No JOB No 16-1006	
FG No SH No 51	FG SUCC NEXT SH 52



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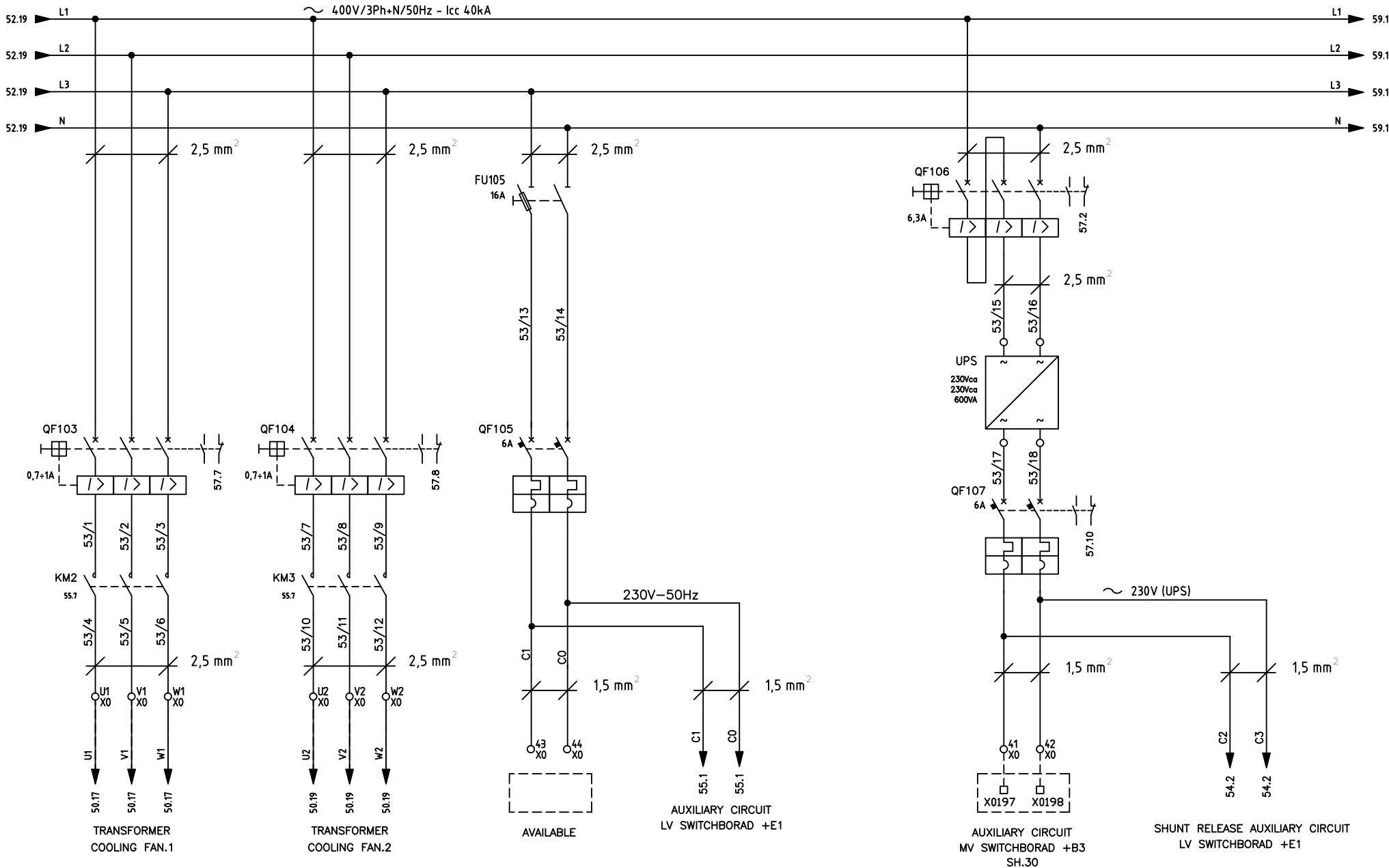
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 A TERZI IN QUALUNQUE FORMA  
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 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 INCOMING LINE 400V/3Ph+N/50Hz

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	52
FG SUCC NEXT SH	53



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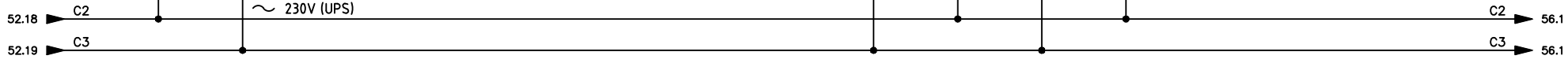
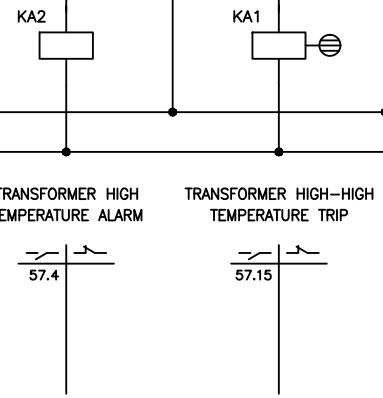
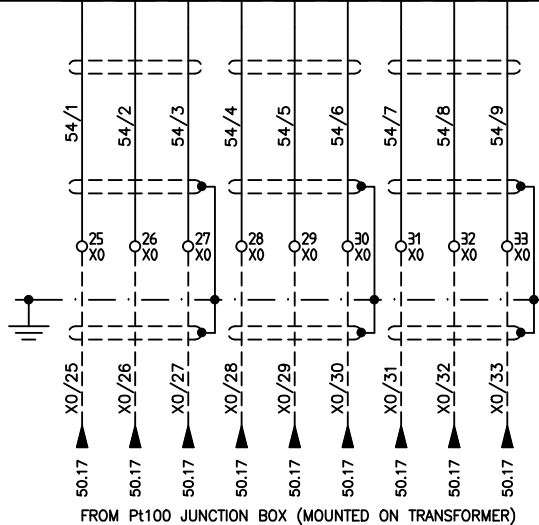
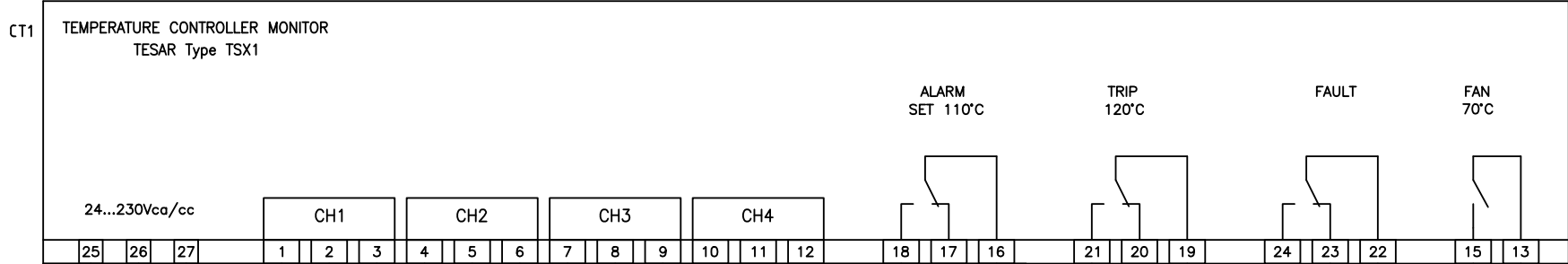
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 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

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TITOLO TITLE  
 THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 AUXILIARY CIRCUIT WIRING DIAGRAM

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	53
FG SUCC NEXT SH	54



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 A TERZI IN QUALSIASI FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

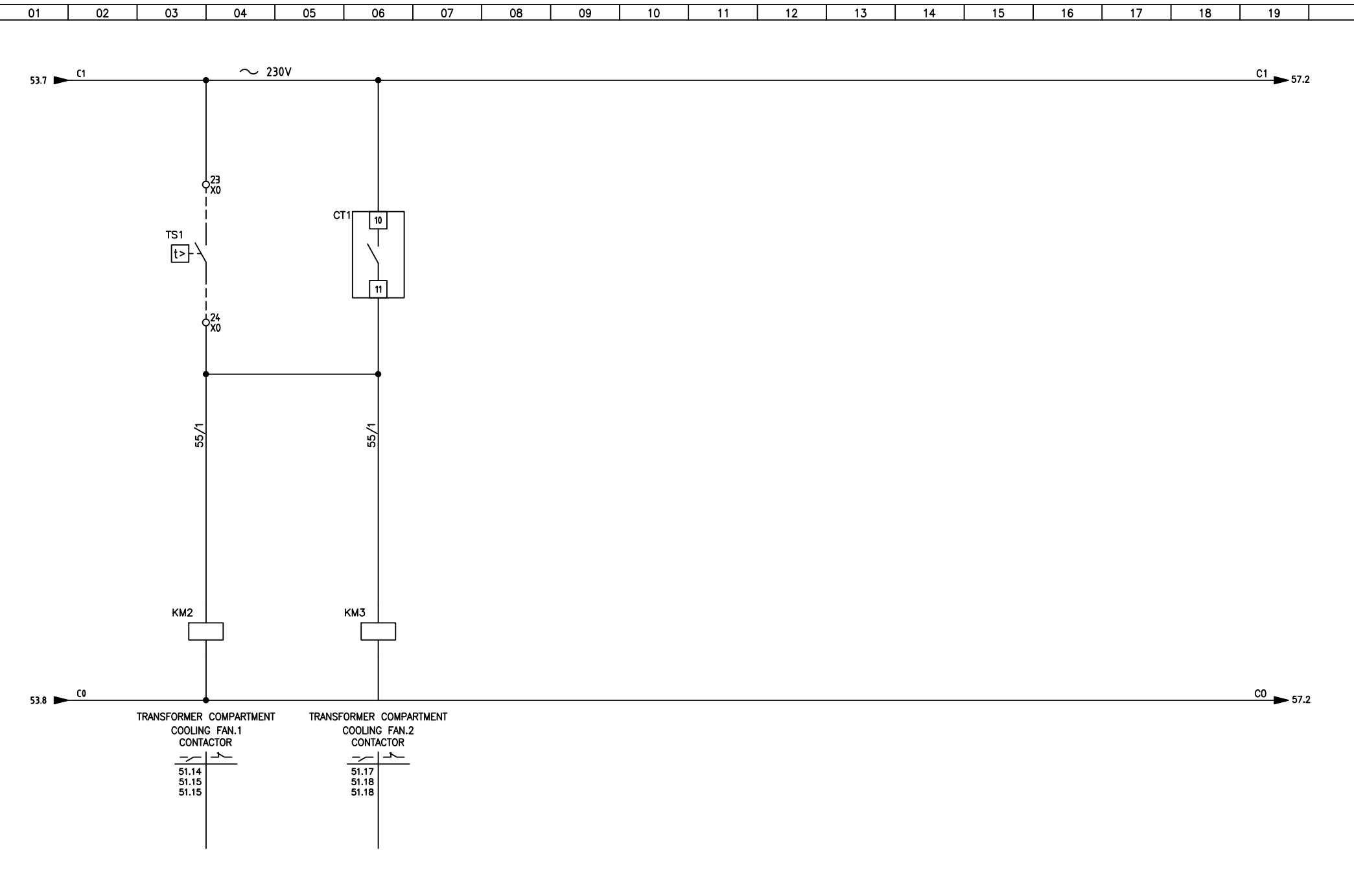


TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 TRANSFORMER TEMPERATURE CONTROLLER

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	54
FG SUCC NEXT SH	55

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 A TERZI IN QUALSIASI FORMA  
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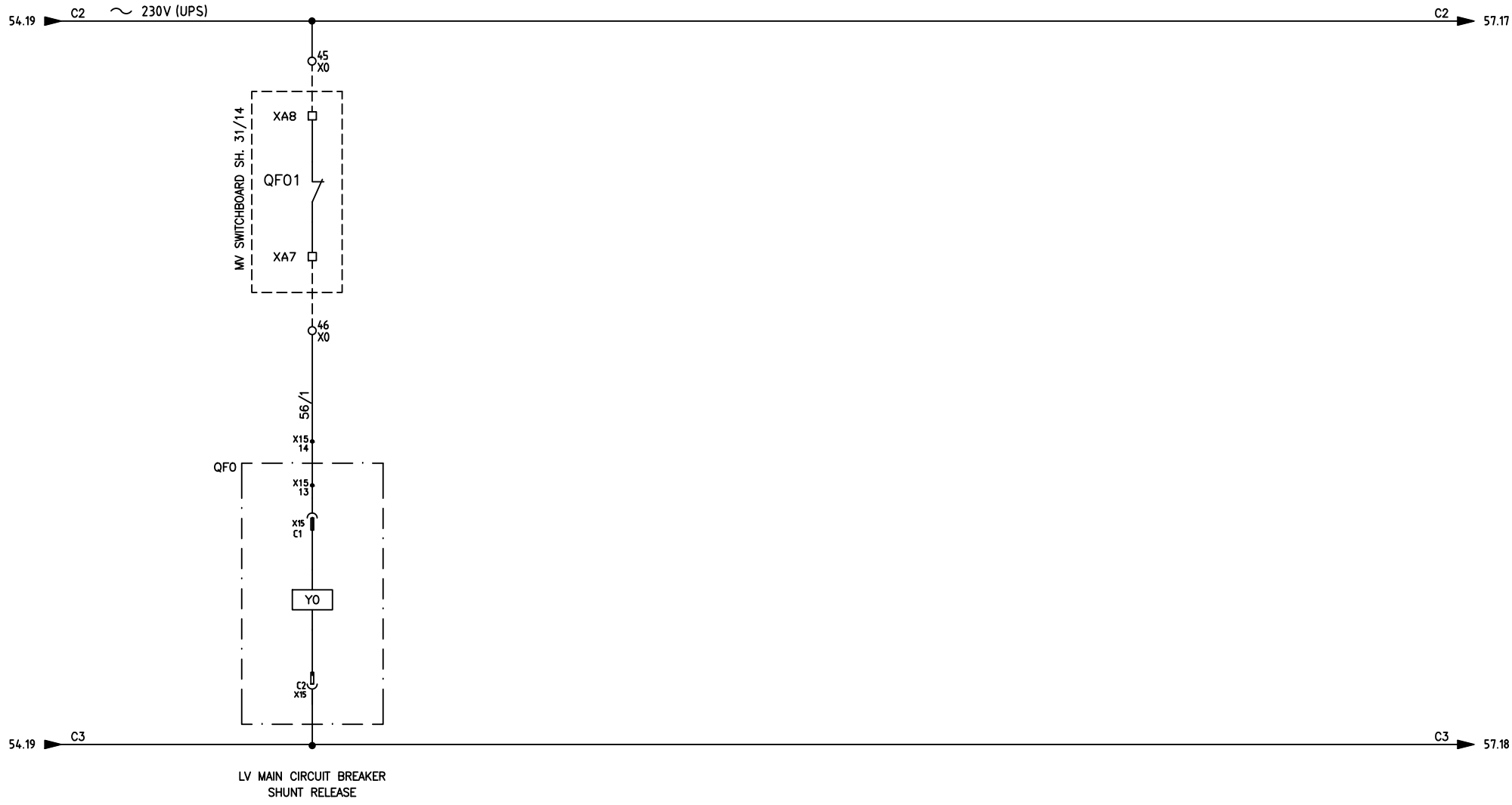


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TITOLO TITLE  
 THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 TRANSFORMER COOLING FANS

DISEGNO No DRAWING No 16-1006-D71-02	COMM. No JOB No 16-1006	FG No SH No 55	FG SUCC NEXT SH 56
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 RISERVATI. REPRODUZIONE O LA COMUNICAZIONE  
 A TERZI IN QUALUNQUE FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

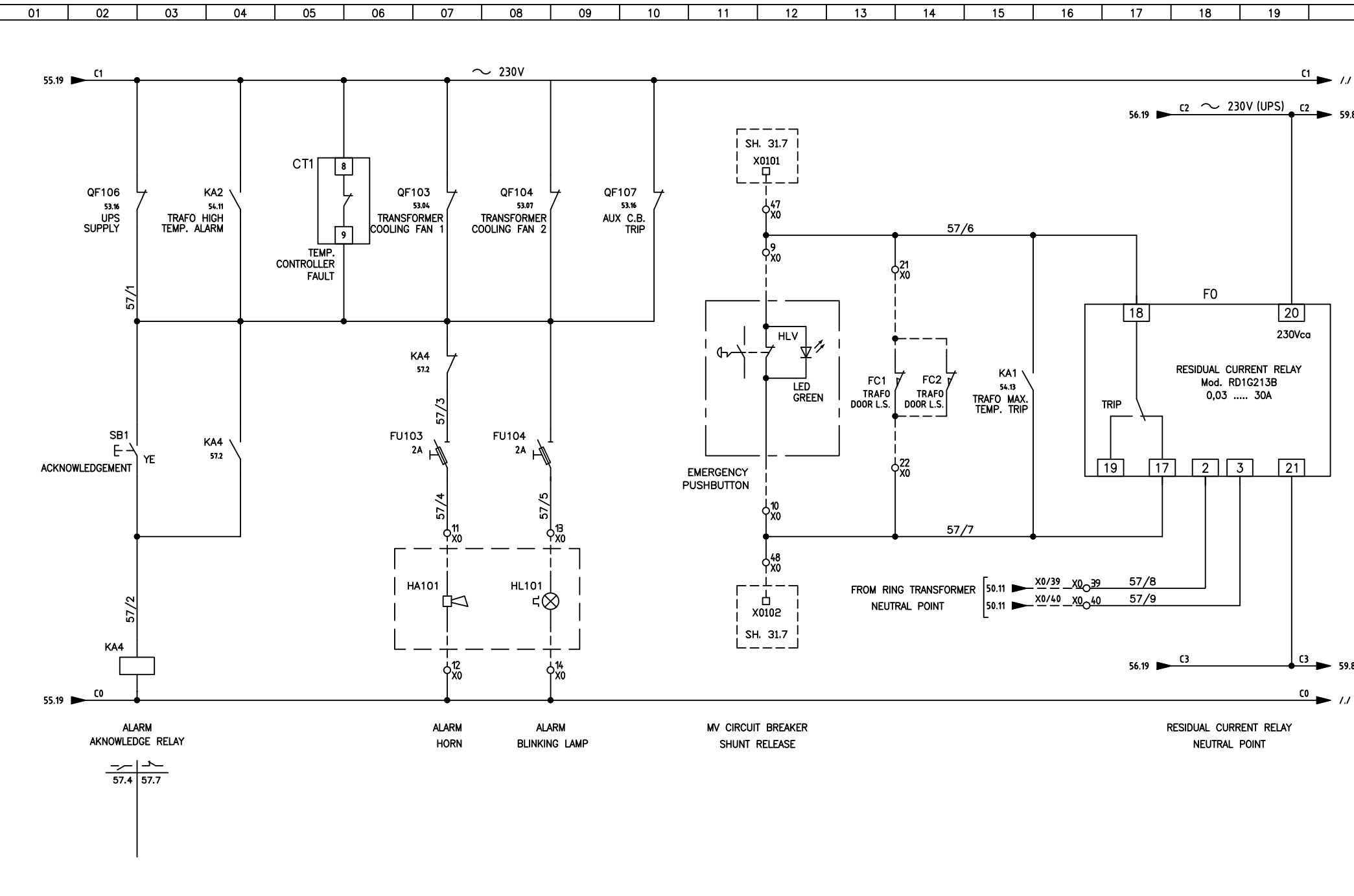


TITOLO TITLE  
 THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 LV MAIN CIRCUIT BREAKER SHUNT RELEASE

DISEGNO No DRAWING No 16-1006-D71-02	
COMM. No JOB No 16-1006	
FG No SH No 56	FG SUCC NEXT SH 57

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 RISERVATI. REPRODUZIONE O LA COMUNICAZIONE  
 A TERZI IN QUALUNQUE FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

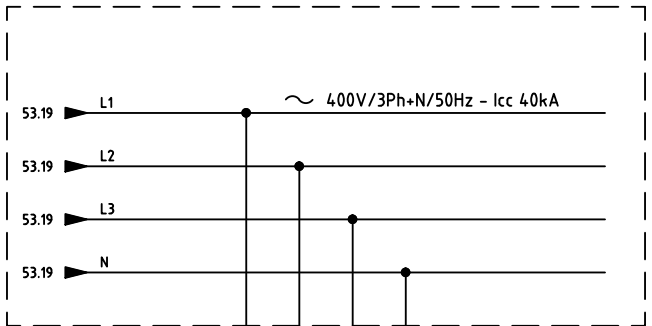


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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 CUMULATIVE ALARM + MV SHUNT RELEASE

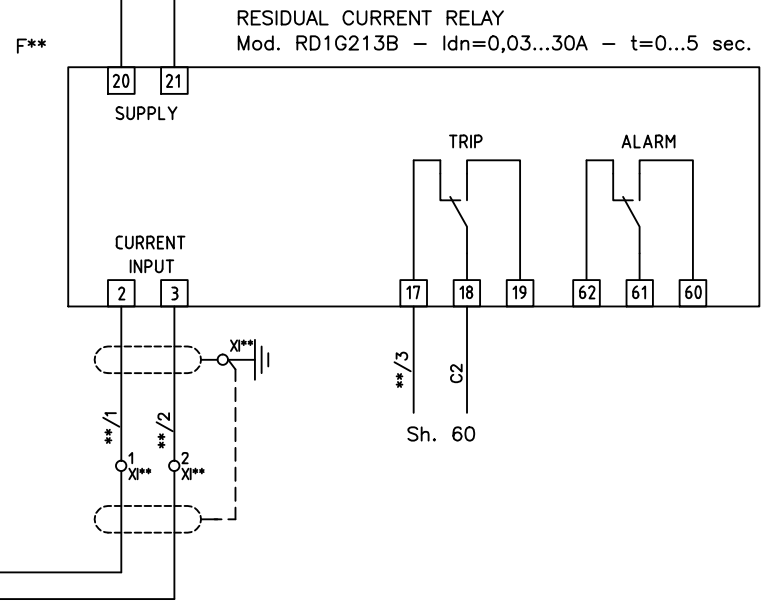
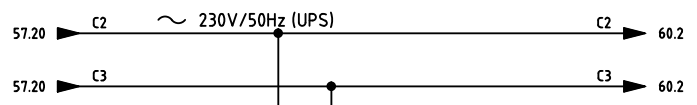
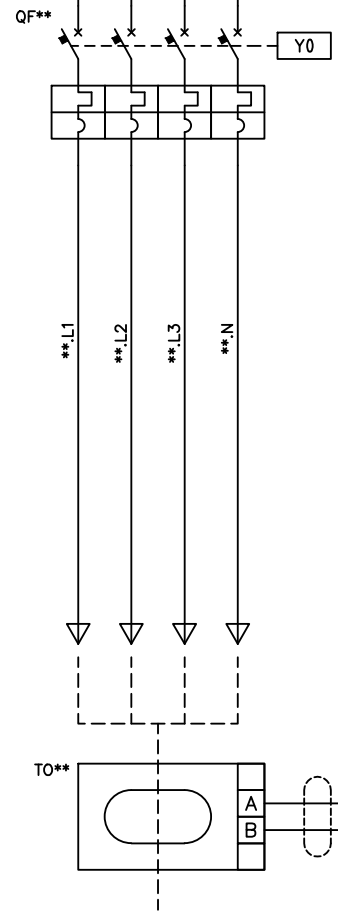
DESIGNO No	16-1006-D71-02
DRAWING No	16-1006
COMM. No	16-1006
JOB No	16-1006
FG No	57
SH No	59



OUTGOING TYPICAL DRAWING  
 QF1/QF2/QF3/QF4/QF5/QF6/QF7/QF8  
 QF9/QF10/QF11/QF12/QF13/QF14/QF15

TO COMBINE THE PRESENT DIAGRAM TO THE DIFFERENT CIRCUIT BREAKERS THE CHARACTERS " \*\* " ASSOCIATED TO THE ELECTRICAL COMPONENTS AND WIRES HAVE TO BE REPLACED WITH NUMBERS SHOWN ON THE FOLLOWING TABLE.

SWITCHG.	**	TO φ
QF1	1	140
QF2	2	140
QF3	3	140
QF4	4	140
QF5	5	140
QF6	6	110
QF7	7	110
QF8	8	110
QF9	9	110
QF10	10	60
QF11	11	60
QF12	12	60
QF13	13	60
QF14	14	60
QF15	15	60



FOR EQUIPMENT DETAIL, REFER TO THE SINGLE LINE DIAGRAM.

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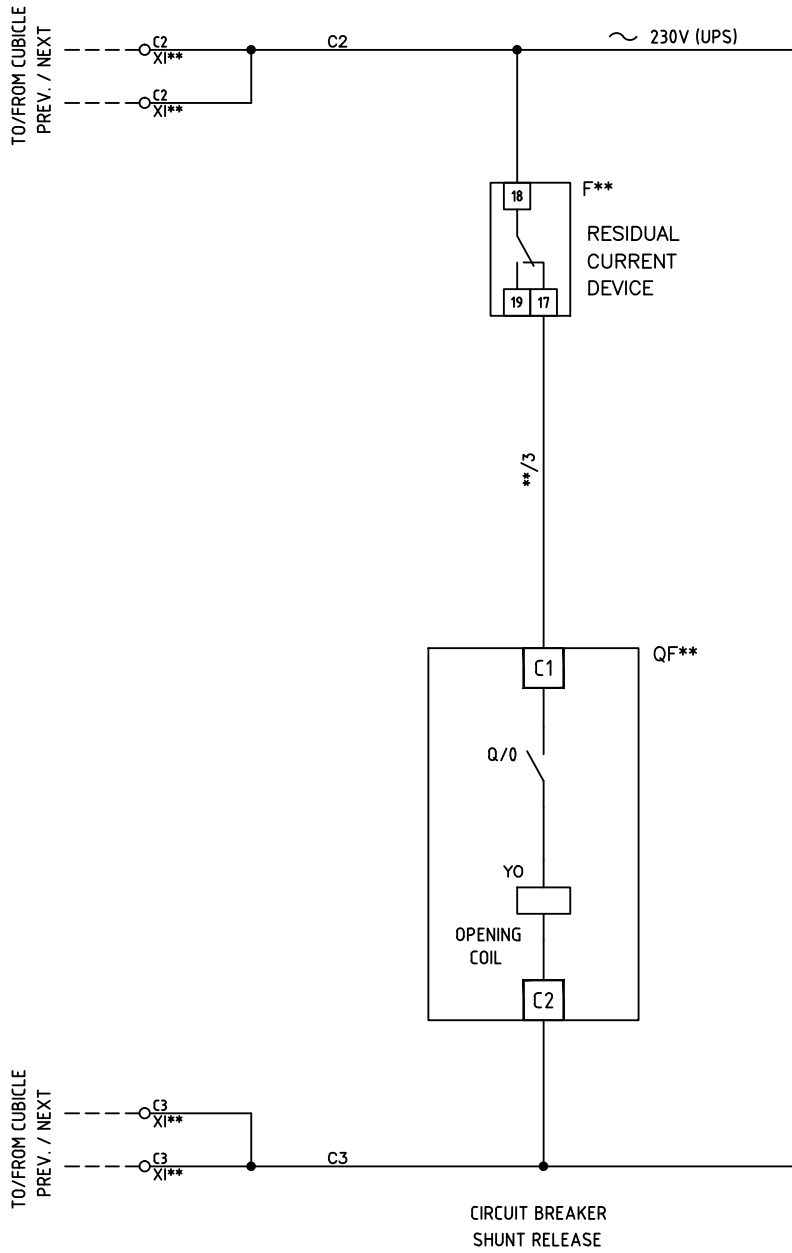
TUTTI I DIRITTI SONO STRETTAMENTE  
 RISERVATI. REPRODUZIONE O LA COMUNICAZIONE  
 A TERZI IN QUALUNQUE FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

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0	EMISSIONE/ISSUED	GR	EM		25.03.16
REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



TITOLO TITLE  
 THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 OUTGOING FEEDERS TYPICAL WIRING DIAGRAM

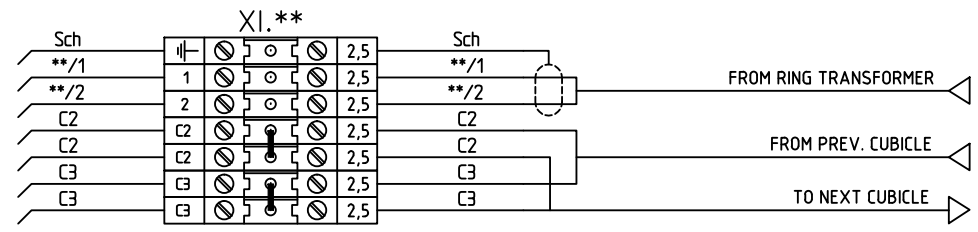
DESIGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	59
FG SUCC NEXT SH	60



OUTGOING TYPICAL DRAWING  
 QF1/QF2/QF3/QF4/QF5/QF6/QF7/QF8  
 QF9/QF10/QF11/QF12/QF13/QF14/QF15

TO COMBINE THE PRESENT DIAGRAM TO THE DIFFERENT CIRCUIT BREAKERS THE CHARACTERS " \*\* " ASSOCIATED TO THE ELECTRICAL COMPONENTS AND WIRES HAVE TO BE REPLACED WITH NUMBERS SHOWN ON THE FOLLOWING TABLE.

SWITCHG.	**	TO φ
QF1	1	140
QF2	2	140
QF3	3	140
QF4	4	140
QF5	5	140
QF6	6	110
QF7	7	110
QF8	8	110
QF9	9	110
QF10	10	60
QF11	11	60
QF12	12	60
QF13	13	60
QF14	14	60
QF15	15	60



FOR EQUIPMENT DETAIL, REFER TO THE SINGLE LINE DIAGRAM.

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 A TERZI IN QUALUNQUE FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

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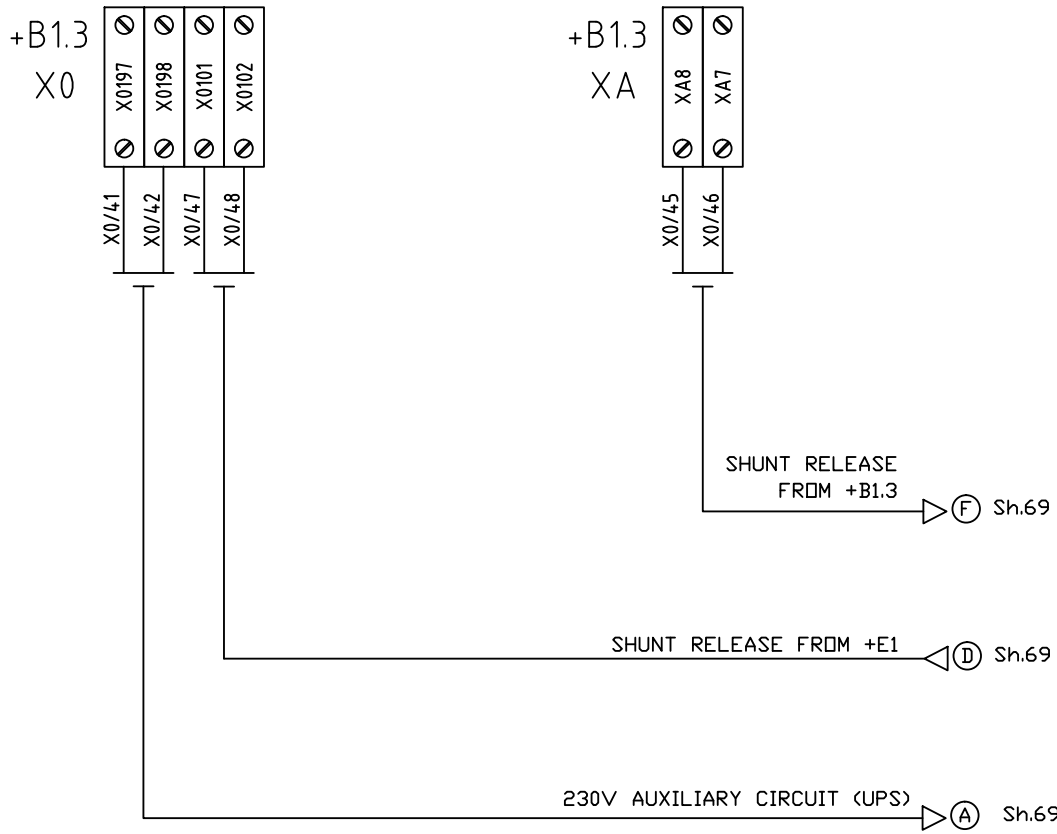
TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 OUTGOING DIAGRAM TYPICAL SCHEMATIC DIAGRAM

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COMM. No JOB No	16-1006
FG No SH No	60
FG SUCC NEXT SH	67

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 A TERZI IN QUALUNQUE FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.

MV SWITCHBOARD +B1



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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

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TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 MV SWITCHBOARD +B1 - TERMINAL BLOCKS

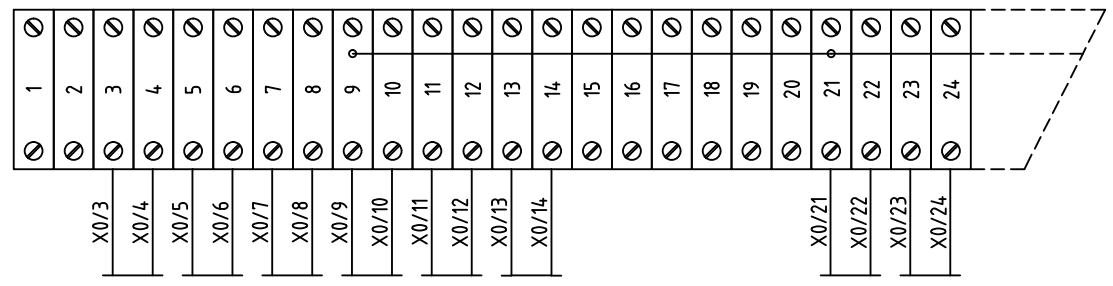
DISEGNO No DRAWING No	16-1006-D71-02	
COMM. No JOB No	16-1006	
FG No SH No	67	FG SUCC NEXT SH 68

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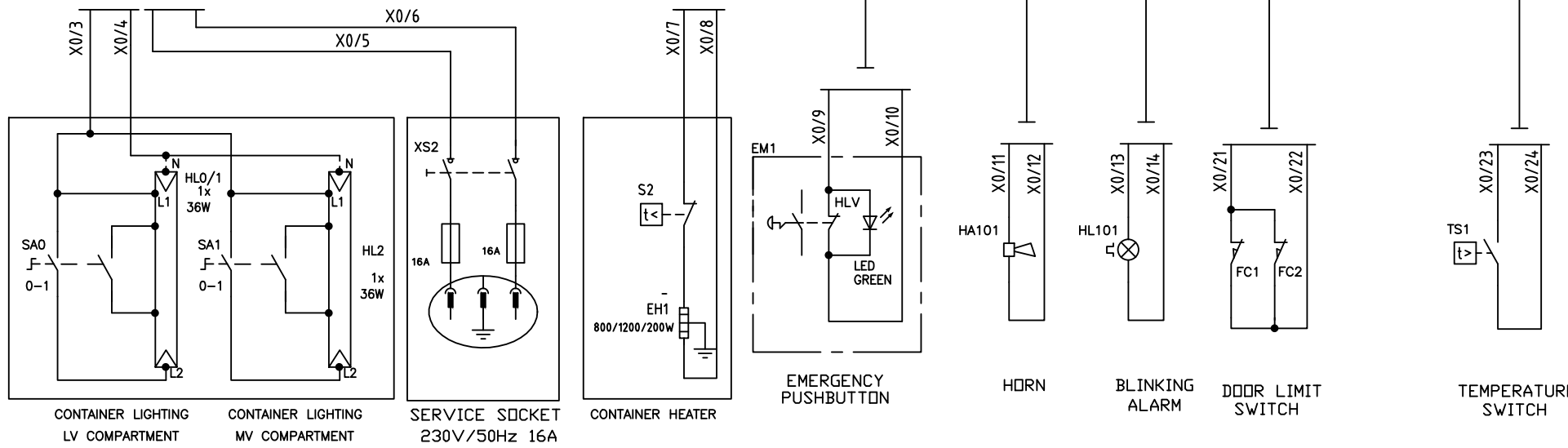
TUTTI I DIRITTI SONO STRETTAMENTE  
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 A TERZI IN QUALUNQUE FORMA  
 NON È PERMESSA SENZA  
 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ

LV SWITCHBOARD +E1

X0



SWITCHBOARDS COMPARTMENT



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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE

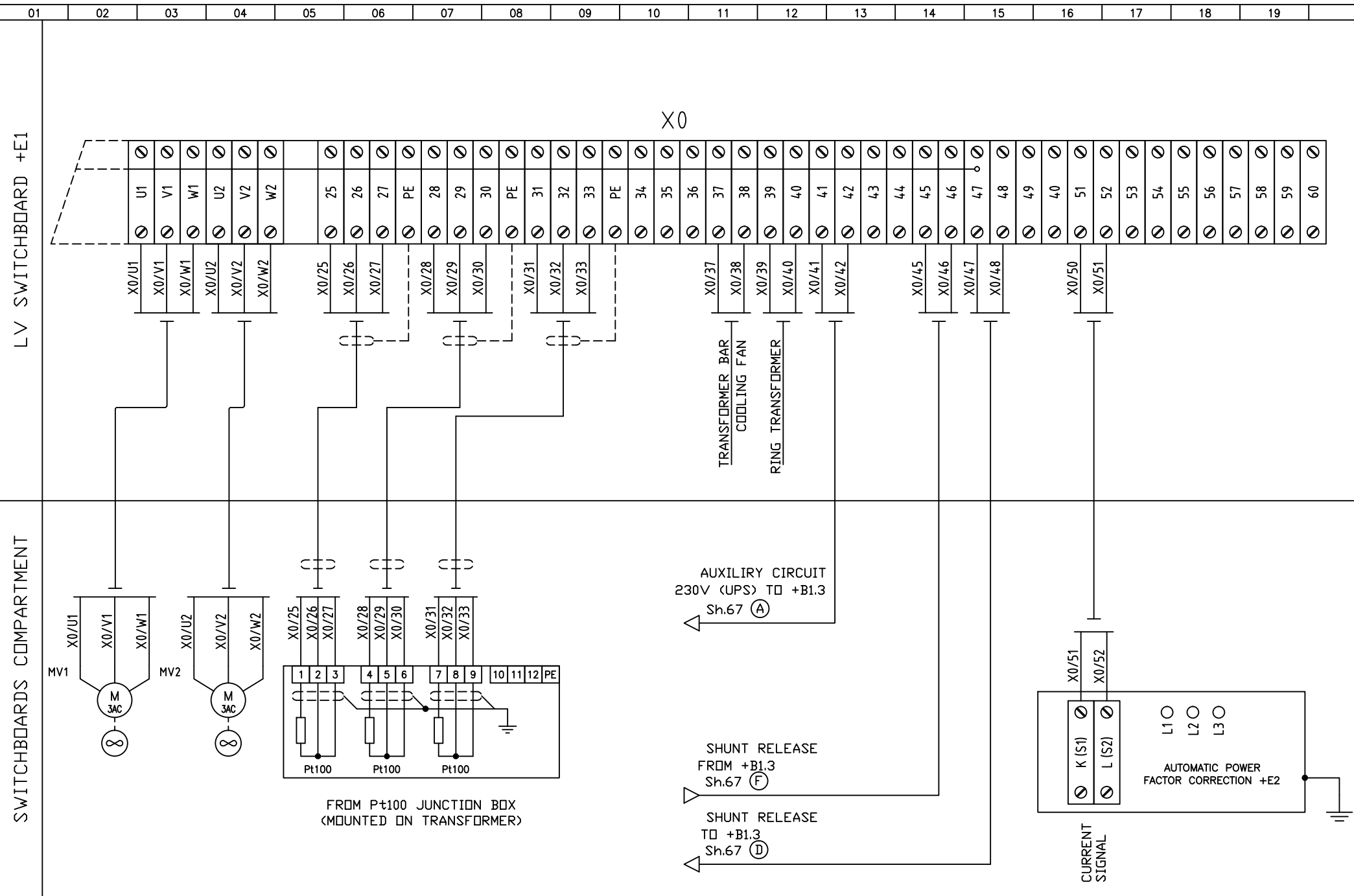
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TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 LV SWITCHBOARD +E1 - TERMINAL BLOCKS X0

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	68
FG SUCC NEXT SH	69

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 A TERZI IN QUALSIASI FORMA  
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 AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ.



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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



TITOLO TITLE  
 THE FOLLO LINE PROJECT "SS290 U1B"  
 CONTAINERIZED SUBSTATION  
 1600kVA 22/0,4kV  
 LV SWITCHBOARD +E1 - TERMINAL BLOCKS X0

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	69
FG SUCC NEXT SH	72

Nome/Item	Tipo/Type	Descrizione/Description	Costruttore/Marke	Quadro/Board	Fg/Sh	Q.ta/Q.ty
CT1	TSX1	TEMPERATURE CONTROLLER MONITOR	TESAR	+E1	54	1
F0	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	57	1
F1	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	18	1
F2	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	18	1
F3	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	19	1
F4	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	19	1
F5	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	19	1
F6	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	19	1
F7	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	19	1
F8	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	19	1
F9	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	20	1
F10	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	20	1
F11	RD1EP13B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	20	1
F12	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	20	1
F13	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	20	1
F14	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	20	1
F15	RD1G213B	RESIDUAL CURRENT DEVICE 96-s 230V 0,03-30A	IME	+E1	21	1
FU0	2303058 3NW6222-1	FUSE HOLDER 3P 22X58 CYLINDRICAL FUSE Size 22X58 63A	ITALWEBER SIEMENS	+E1	50	1 1
FU101	2301137 3NW6005-1	FUSE HOLDER Size 10X38 1P CYLINDRICAL FUSE Size 10X38 16A	ITALWEBER SIEMENS	+E1	51	1 1
FU103	2301038 3NW6002-1	FUSE HOLDER Size 10X38 1P CYLINDRICAL FUSE Size 10X38 2A	ITALWEBER SIEMENS	+E1	57	1 1
FU100	2303137 3NW6002-1	FUSE HOLDER Size 10X38 3P+N CYLINDRICAL FUSE Size 10X38 2A	ITALWEBER SIEMENS	+E1	52	1 3
FU104	2301038 3NW6002-1	FUSE HOLDER Size 10X38 1P CYLINDRICAL FUSE Size 10X38 2A	ITALWEBER SIEMENS	+E1	57	1 1
FU105	2303137 3NW6005-1	FUSE HOLDER Size 10X38 1P+N CYLINDRICAL FUSE Size 10X38 16A	ITALWEBER SIEMENS	+E1	53	1 1
KA1	RC/E230VAC	FLAG RELAY 230VAC	TORRESAN	+E1	54	1
KA2	PT570730 PT78704	AUXILIARY RELAY 4 CONTACTS 230VAC 6A SOCKET FOR AUXILIARY RELAY Type PT	SCHRACK SCHRACK	+E1	54	1 1
KA4	PT570730 PT78704	AUXILIARY RELAY 4 CONTACTS 230VAC 6A SOCKET FOR AUXILIARY RELAY Type PT	SCHRACK SCHRACK	+E1	57	1 1
KM2	3RT1015-1AP01	CONTACTOR S00 3KW 1L 230V 50HZ	SIEMENS	+E1	55	1
KM3	3RT1015-1AP01	CONTACTOR S00 3KW 1L 230V 50HZ	SIEMENS	+E1	55	1
QF0	1SDA056120 1SDA038292	AIR CIRCUIT BREAKER E3N 2500 PR121/P LI IN=2500A 4P F HR OPENING COIL 220...240V	ABB SACE	+E1	52	1 1
QF1	1SDA054408 1SDA054873 1SDA055043	MOULDED CASE CIRCUIT BREAKER T5S 630 PR221DS-LS/I IN=630 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	18	1 1 1

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
CONTAINERIZED SUBSTATION  
1600KVA 22/0,4KV  
MATERIAL LIST

DISEGNO No DRAWING No	16-1006-D71-02		
COMM. No JOB No	16-1006		
FG No SH No	72	FG SUCC NEXT SH	73

Nome/Item	Tipo/Type	Descrizione/Description	Costruttore/Marke	Quadro/Board	Fg/Sh	Q.ta/Q.ty
QF2	1SDA054408 1SDA054873 1SDA055043	MOULDED CASE CIRCUIT BREAKER T5S 630 PR221DS-LS/I IN=630 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	18	1 1 1
QF3	1SDA054408 1SDA054873 1SDA055043	MOULDED CASE CIRCUIT BREAKER T5S 630 PR221DS-LS/I IN=630 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	19	1 1 1
QF4	1SDA054341 1SDA054873 1SDA055043	MOULDED CASE CIRCUIT BREAKER T5S 400 PR221DS-LS/I IN=400 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	19	1 1 1
QF5	1SDA054341 1SDA054873 1SDA055043	MOULDED CASE CIRCUIT BREAKER T5S 400 PR221DS-LS/I IN=400 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	19	1 1 1
QF6	1SDA054035 1SDA054873 1SDA055007	MOULDED CASE CIRCUIT BREAKER T4S 250 PR221DS-LS/I IN=250 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	19	1 1 1
QF7	1SDA054035 1SDA054873 1SDA055007	MOULDED CASE CIRCUIT BREAKER T4S 250 PR221DS-LS/I IN=250 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	19	1 1 1
QF8	1SDA054035 1SDA054873 1SDA055007	MOULDED CASE CIRCUIT BREAKER T4S 250 PR221DS-LS/I IN=250 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	19	1 1 1
QF9	1SDA054035 1SDA054873 1SDA055007	MOULDED CASE CIRCUIT BREAKER T4S 250 PR221DS-LS/I IN=250 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	20	1 1 1
QF10	1SDA05118 1SDA051342 1SDA051473	MOULDED CASE CIRCUIT BREAKER T2S 160 TMD IN=160A 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	20	1 1 1
QF11	1SDA05118 1SDA051342 1SDA051473	MOULDED CASE CIRCUIT BREAKER T2S 160 TMD IN=160A 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	20	1 1 1
QF12	1SDA051022 1SDA051342 1SDA051473	MOULDED CASE CIRCUIT BREAKER T2S 160 TMD IN=63A 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	20	1 1 1
QF13	1SDA051022 1SDA051342 1SDA051473	MOULDED CASE CIRCUIT BREAKER T2S 160 TMD IN=63A 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	20	1 1 1
QF14	1SDA051022 1SDA051342 1SDA051473	MOULDED CASE CIRCUIT BREAKER T2S 160 TMD IN=63A 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	20	1 1 1
QF15	1SDA051022 1SDA051342 1SDA051473	MOULDED CASE CIRCUIT BREAKER T2S 160 TMD IN=63A 4P F F OPENING COIL 220...240V TERMINAL KIT R	ABB SACE	+E1	20	1 1 1

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REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



TITOLO TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
CONTAINERIZED SUBSTATION  
1600kVA 22/0,4kV  
MATERIAL LIST

DISEGNO No 16-1006-D71-02  
DRAWING No  
COMM. No 16-1006  
JOB No  
FG No 73 FG SUCC 74  
SH No NEXT SH

Nome/Item	Tipo/Type	Descrizione/Description	Costruttore/Marke	Quadro/Board	Fg/Sh	Q.ta/Q.ty
QF101	S550307 B427911	MINIATURE CIRCUIT BREAKER S202M C16 2P 10KA RESIDUAL CURRENT DEVICE DDA202 AC 25A 30MA	ABB ELETTROCONDUTT. ABB ELETTROCONDUTT.	+E1 +E1	51	1 1
QF103	3RV1011-0JA10	CIRCUIT BREAKER 3P 0,7+1A	SIEMENS	+E1	53	1
QF104	3RV1011-0JA10	CIRCUIT BREAKER 3P 0,7+1A	SIEMENS	+E1	53	1
QF105	S550260	MINIATURE CIRCUIT BREAKER S202M C6 2P 10KA	ABB ELETTROCONDUTT.	+E1	53	1
QF106	3RV1011-1GA10 3RV1901-1E	MINIATURE CIRCUIT BREAKER 3X4,5..6,3A S0 Class 10 - 100KA AUXILIARY CONTACT 1L+1R	SIEMENS SIEMENS	+E1 +E1	53	1 1
QF107	S550260 A563819	MINIATURE CIRCUIT BREAKER S202M C6 2P 10KA AUXILIARY CONTACT TYPE S2-CS	ABB ELETTROCONDUTT. ABB ELETTROCONDUTT.	+E1 +E1	53	1
SB1	3SB3000-0AA31 3SB3400-0B	YELLOW PUSH-BUTTON AUXILIARY CONTACT 1L	SIEMENS SIEMENS	+E1 +E1	57	1 1
UPS	19242023	UPS EP600S 230-240VAC 600VA	TEIB	+E1	53	1
P1	MF96001	NEMO 96HD NETWORK MONITOR	IME	+E1	52	1
TA1	TASP50D250	CURRENT TRANSFORMER 38x105mm 2500/5A	IME	+E1	52	1
TA2	TASP50D250	CURRENT TRANSFORMER 38x105mm 2500/5A	IME	+E1	52	1
TA3	TASP50D250	CURRENT TRANSFORMER 38x105mm 2500/5A	IME	+E1	52	1
TA4	TASP50D250	CURRENT TRANSFORMER 38x105mm 2500/5A	IME	+E1	52	1
TD1	TDGE2	RING CURRENT TRANSFORMER ø140mm 2 WIRE	IME	+E1	18	1
TD2	TDGE2	RING CURRENT TRANSFORMER ø140mm 2 WIRE	IME	+E1	18	1
TD3	TDGE2	RING CURRENT TRANSFORMER ø140mm 2 WIRE	IME	+E1	19	1
TD4	TDGE2	RING CURRENT TRANSFORMER ø140mm 2 WIRE	IME	+E1	19	1
TD5	TDGE2	RING CURRENT TRANSFORMER ø140mm 2 WIRE	IME	+E1	19	1
TD6	TDGD2	RING CURRENT TRANSFORMER ø110mm 2 WIRE	IME	+E1	19	1
TD7	TDGD2	RING CURRENT TRANSFORMER ø110mm 2 WIRE	IME	+E1	19	1
TD8	TDGD2	RING CURRENT TRANSFORMER ø110mm 2 WIRE	IME	+E1	19	1
TD9	TDGD2	RING CURRENT TRANSFORMER ø110mm 2 WIRE	IME	+E1	20	1
TD10	TDGH2	RING CURRENT TRANSFORMER ø60mm 2 WIRE	IME	+E1	20	1
TD11	TDGH2	RING CURRENT TRANSFORMER ø60mm 2 WIRE	IME	+E1	20	1
TD12	TDGH2	RING CURRENT TRANSFORMER ø60mm 2 WIRE	IME	+E1	20	1
TD13	TDGH2	RING CURRENT TRANSFORMER ø60mm 2 WIRE	IME	+E1	20	1
TD14	TDGH2	RING CURRENT TRANSFORMER ø60mm 2 WIRE	IME	+E1	20	1
TD15	TDGH2	RING CURRENT TRANSFORMER ø60mm 2 WIRE	IME	+E1	20	1

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TITOLO TITLE  
THE FOLLO LINE PROJECT "SS290 U1B"  
CONTAINERIZED SUBSTATION  
1600kVA 22/0,4kV  
MATERIAL LIST

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	74
FG SUCC NEXT SH	75

+C1 TRANSFORMER SECTION

Nome/Item	Tipo/Type	Descrizione/Description	Costruttore/Marke	Quadro/Board	Fg/Sh	Q.ta/Q.ty
FC1	3SE2100-1GW	DOOR LIMIT SWITCH 1L+1R	SIEMENS	+C1	57	1
FC2	3SE2100-1GW	DOOR LIMIT SWITCH 1L+1R	SIEMENS	+C1	57	1
TS1	C04A	CAPILLARY THERMOSTAT Range 10-90°C	FANTINI E COSMI	+B1	55	1
C1	CMR/R30044	3Ph. CAPACITORS 30kvar-440V	ITALFARAD	+C1	50	2
MV1	GAD355D	3Ph. ELECTRIC VENTILATOR 0,12kW-480V/50Hz	CIMME	+C1	50	1
MV2	GAD355D	3Ph. ELECTRIC VENTILATOR 0,12kW-480V/50Hz	CIMME	+C1	50	1
TM1	TM1	RESIN CAST TRANSFORMER 1600kVA Ratio 23kV/400V-50Hz	DCREV	+C1	50	1
TD0	TDGB2	RING CURRENT TRANSFORMER Ø35MM 2 WIRES	IME	+C1	50	1

CONTAINER

Nome/Item	Tipo/Type	Descrizione/Description	Costruttore/Marke	Quadro/Board	Fg/Sh	Q.ta/Q.ty
EH1	70201	HEATER	VORTICE		51	1
	22980	WALL MOUNTING ACCESSORY	VORTICE			1
	9754003750920	AUTOMATIC POWER FACTOR CORRECTION	ITALFARAD		52	1
EM1	42201	EMERGENCY RED PUSH-BUTTON IP55 1NO+1NC	GEWISS		57	1
	0101500	FUSE 500mA DELAYED Size 5X20	ITALWEBER			1
	0900170	FUSE HOLDER Size 5X20 type HK63203	ITALWEBER			1
	SL220	RED LAMP type SIGNALUX 220V	OSRAM			1
HL101	65033	RED BLINKING LAMP LD 85 CTL 600 240Vac	SIRENA		57	1

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TUTTI I DIRITTI SONO STRETTAMENTE  
RESERVATI PER LA COMUNICAZIONE  
A TERZI IN QUALUNQUE FORMA  
NON È PERMESSA SENZA  
AUTORIZZAZIONE SCRITTA DELLA SOCIETÀ

3					
2					
1					
0	EMISSIONE/ISSUED	GR	EM		25.03.16
REV	DESCRIZIONE / DESCRIPTION	COMP PREP'D	VISTO CHK'D	APPR CHK'D	DATA DATE



TITOLO  
TITLE THE FOLLO LINE PROJECT "SS290 U1B"  
CONTAINERIZED SUBSTATION  
1600kVA 22/0,4kV  
MATERIAL LIST

DISEGNO No DRAWING No	16-1006-D71-02
COMM. No JOB No	16-1006
FG No SH No	75
FG SUCC NEXT SH	1