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C					
B					
A					
Indice Index	Data Date	Modificare Modification/Revision	Proiectant Designer	Aprobat Consultant Approved Consultant	Aprobat CFR Approved CFR



GUVERNUL ROMANIEI
ROMANIAN GOVERNMENT



PROIECT FINANȚAT DE UNIUNEA EUROPEANĂ
EUROPEAN UNION FINANCED PROJECT






C.N.C.F. "C.F.R." - S.A.

CLIENT / CLIENT



CONSULTANT / CONSULTANT

		Șef proiect Project manager	R. Liuzza	Data Date	Semnătură Signature
Aprobat Approved	Proiectant Designer				
Aprobat Approved	Coordonator Section 1 Coordinator		C. Gambelli		
Verificat Checked	Tunel Expert Tunnel Expert		C. Gambelli		
Intocmit Elaborated	Proiectant Designer		P. Amodio		

SUBCONSULTANT / SUBCONSULTANT

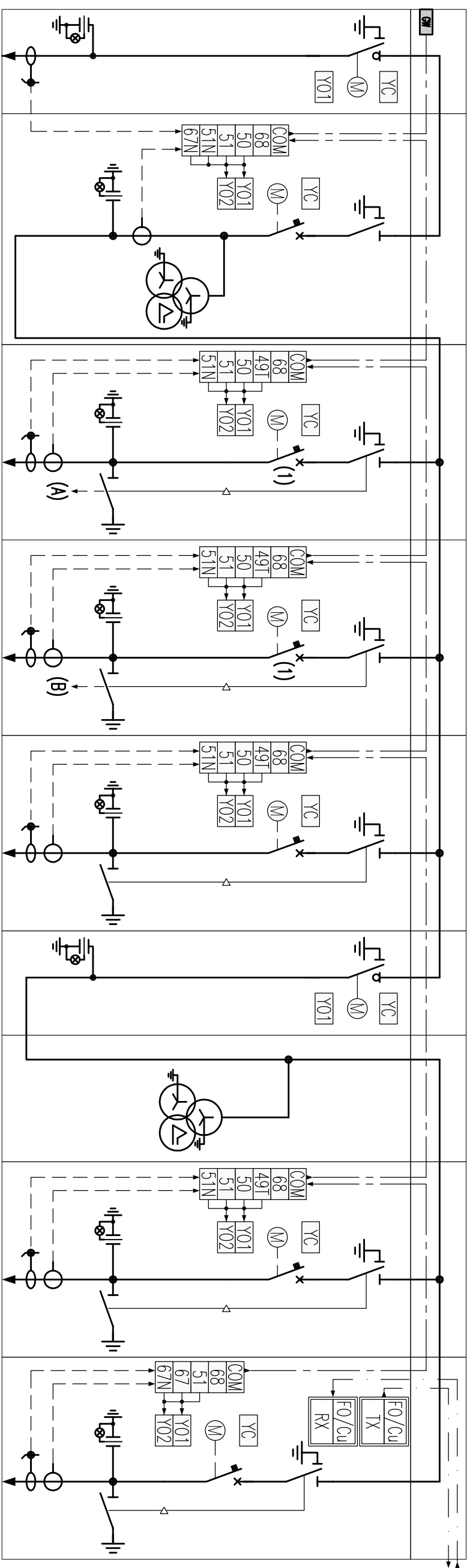
Aprobat Approved	Responsabil Subconsultant Subconsultant Responsible		
Intocmit Elaborated	Proiectant Designer		
Reabilitarea liniei de cale ferata Brașov - Simeria, parte componentă a coridorului IV Pan European, pentru circulația trenurilor cu viteză maximă de 160 km/h. Sectiune 1 Brașov - Sighisoara			Project/Project 2004/RO/16/P/PA/003
Rehabilitation of the railway line Brașov - Simeria, component Part of the IV Pan-European Corridor, for the trains circulation with maximum speed of 160 km/h. Section 1 Brașov - Sighisoara			Faza / Phase: P.Th. / T.D.

Denumire desen / Drawing Title : TUNNEL/TUNELUL ORMENIS
ORMENIS SIDE/INSPRE ORMENIS

Safety Tunnel Power Supply system /Sistem de alimentare de siguranță a tunelului
Single-line diagrams medium-voltage electrical panels Q_MT/PE/Diagrame single-line cadru electrice medie tensiune Q_MT/PE

Codificare / Codification System	Scara / Scale	LOT	Nr. / No
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E A 5 1 0 1 C 1 0 L X T S 1 0 2 6 0 0 2 0



FUNCTIONAL UNIT /UNITATEA FUNCTIONALA N.	1	2	3	4	5	6	7	8	9
UNIT FUNCTIONAL /UNITATEA FUNCTIONALA N.	IMS	SWITCH/LIFT	SWITCH	SWITCH	SWITCH	IMS:	RISALITA	SWITCH	SWITCH
COMMAND/COMANDA	MOTORIZED/MOTORIZAT	MOTORIZED/MOTORIZAT	MOTORIZED/MOTORIZAT	MOTORIZED/MOTORIZAT	MOTORIZED/MOTORIZAT	MOTORIZED/MOTORIZAT	MOTORIZED/MOTORIZAT	MOTORIZED/MOTORIZAT	MOTORIZED/MOTORIZAT
FUSE/FUSE MT	-	50	50	50	50	-	-	50	50
PROTECTIONS - RATINGS/PROTECTII/PUERII	-	67	68	68	68	-	-	68	67
FEATURES/CARACTERISTICI TA	-	N° 3 TA 300/5 A	N° 3 SENSOBI TORCIDUAL - II = S430A - RA/POR/TC = 100A/2,5 mV	N° 3 SENSOBI TORCIDUAL - II = S430A - RA/POR/TC = 100A/2,5 mV	N° 3 SENSOBI TORCIDUAL - II = S430A - RA/POR/TC = 100A/2,5 mV	-	-	N° 3 SENSOBI TORCIDUAL - II = S430A - RA/POR/TC = 100A/2,5 mV	N° 3 SENSOBI TORCIDUAL - II = S430A - RA/POR/TC = 100A/2,5 mV
FEATURES/CARACTERISTICI TOTAT	-	2,5 VA SP30	CI. 0,5-SP250	CI. 0,5-SP250	CI. 0,5-SP250	-	-	CI. 0,5-SP250	CI. 0,5-SP250
FEATURES/CARACTERISTICI TV	100/1A SP20	-	100/1A SP20	100/1A SP20	100/1A SP20	-	20000x3/100x3	100/1A SP20	100/1A SP20
FEATURES TYPE CABLE/CARACTERISTICI TIP DE CABLU	RG7H1M1X - 12/20 KV	30 VA - CI. 0,5 / 50 VA CI. 3P	-	-	-	-	30 VA - CI. 0,5	-	-
TRAINING CABLE/FORMARE CABLE	3x1x120	-	RG7H1M1X	RG7H1M1X	RG7H1M1X	-	-	RG7H1M1X	RG7H1M1X
LENGTH/LUNGIMEA (M)	10	-	3x1x95	3x1x95	3x1x95	-	-	3x1x95	3x1x95
LINE DESTINATION/LINE DESTINATIE	MINUT DE SERVICIU DE APROXIMARE CORPUL DISTRIBUTOR	-	POWER TRANSFORMER/ALIMENTARE TRASFORMATORE TR/1/P	POWER TRANSFORMER/ALIMENTARE TRASFORMATORE TR/1/D	POWER TRANSFORMER/ALIMENTARE TRASFORMATORE TR/PE/1	CONNECTOR/ CONECTOR	-	POWER TRANSFORMER/ALIMENTARE TRASFORMATORE TR/PE/2	TO EXTERNAL SUB STATION SAFE AREA TO RACOS

SOCKETS, ENGINES AND RESISTANCE
FROM ANTICONDENSATION FROM Q.BT
Vn=230 VAC/PRIZE, MOTORARELE SI
REZISTENTA ANTICONDENS DE Q.BT
Vn=230 VAC

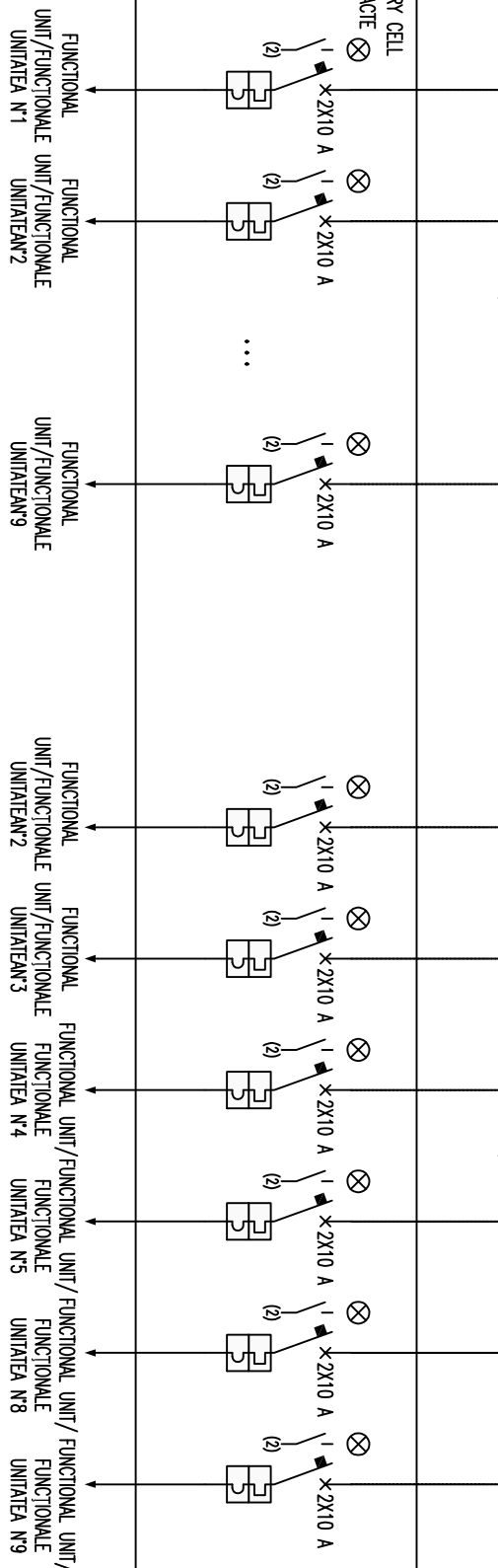
PROTECTION AND
MEASURES FROM Q.BT
Vn=230 VAC/MASURILE
SI PROTECTIE DE Q.BT
Vn=230 VAC

DISCONNECTORS installed in
the FUNCTIONAL UNIT
1/Separatoare instalate in
UNITATEA FUNCTIONALA 1

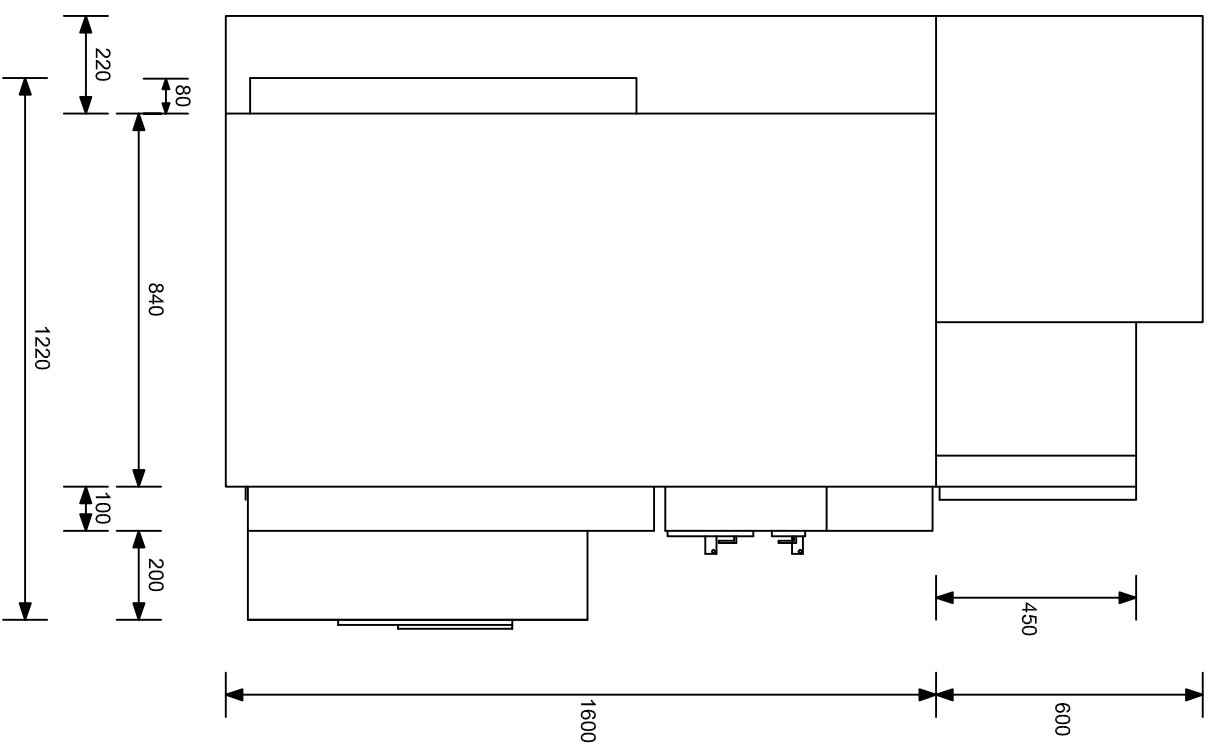
2X32 A

2X32 A

SWITCHES INSTALLED IN AUXILIARY CELL
OF THE CONCERNING BIN/CONTACTE
INSTALATE IN CELA AUXILIARA
PE BIN

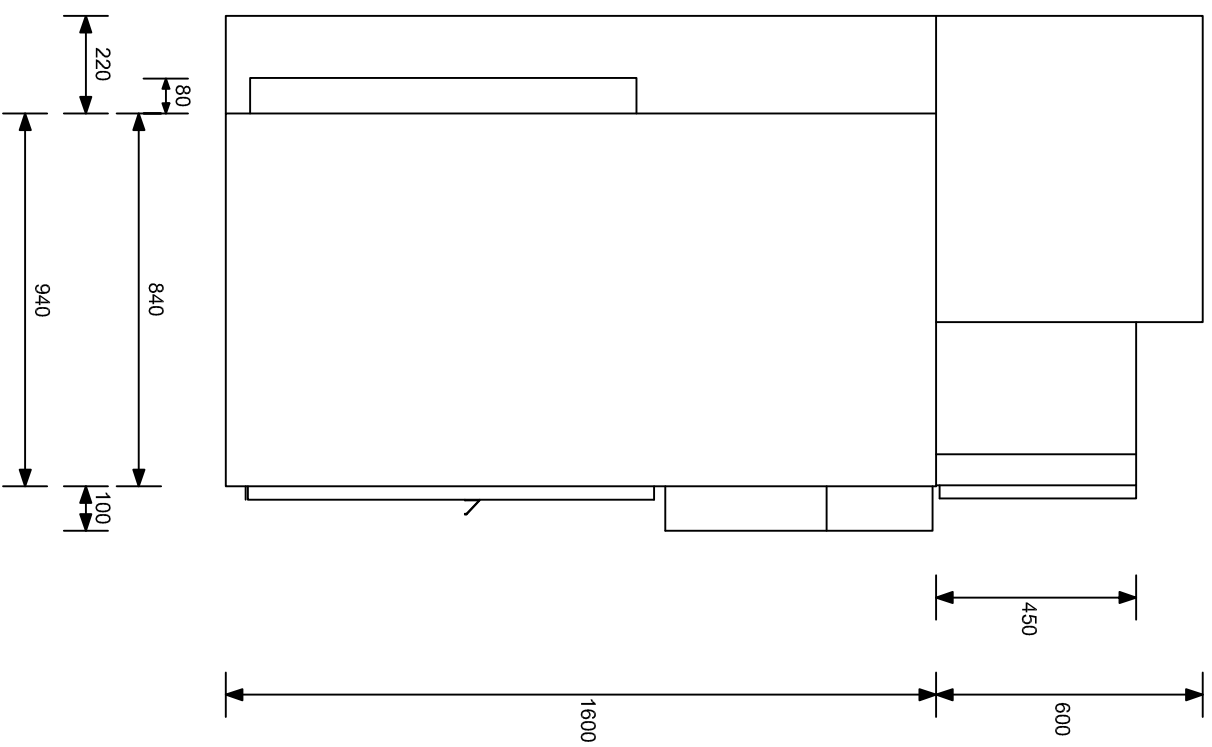


FUNCTIONAL UNIT/
FUNCTIONALE UNITATEA
2-3-4-5-8-9

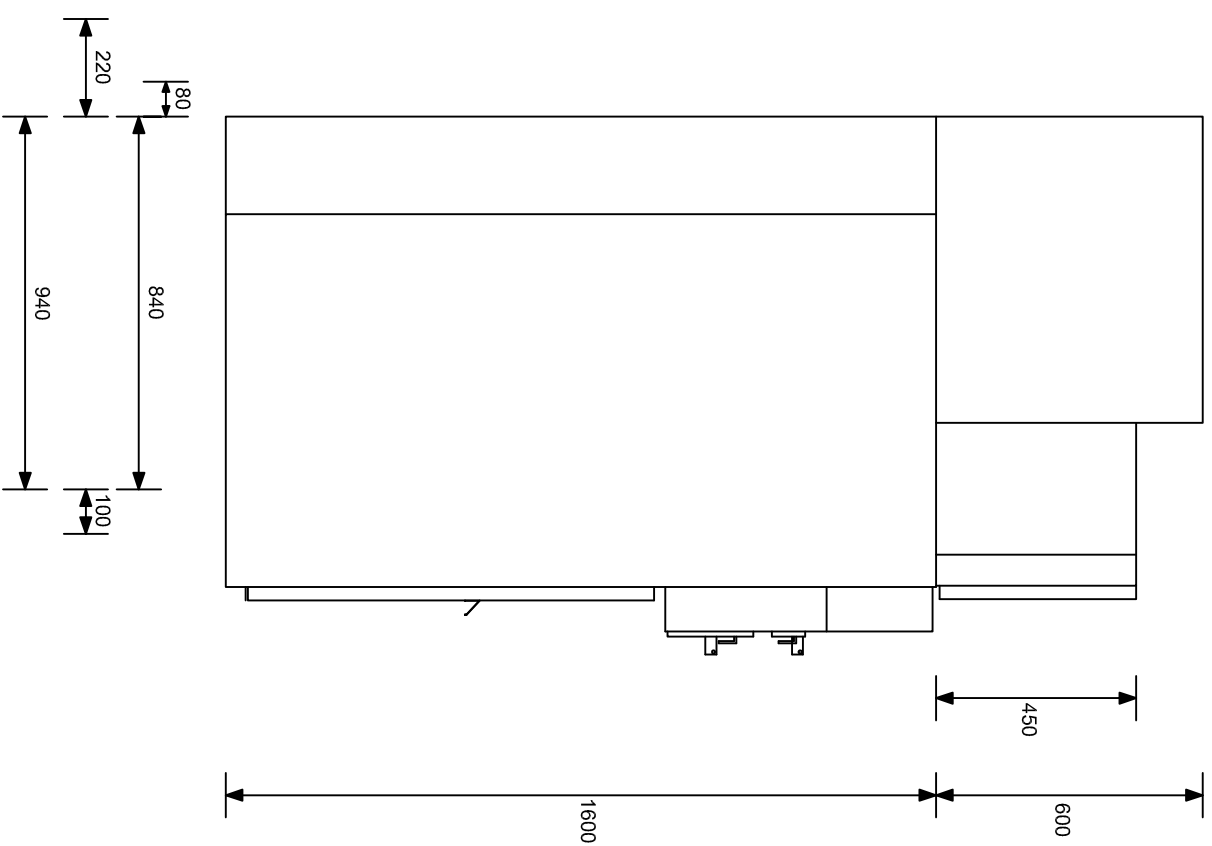


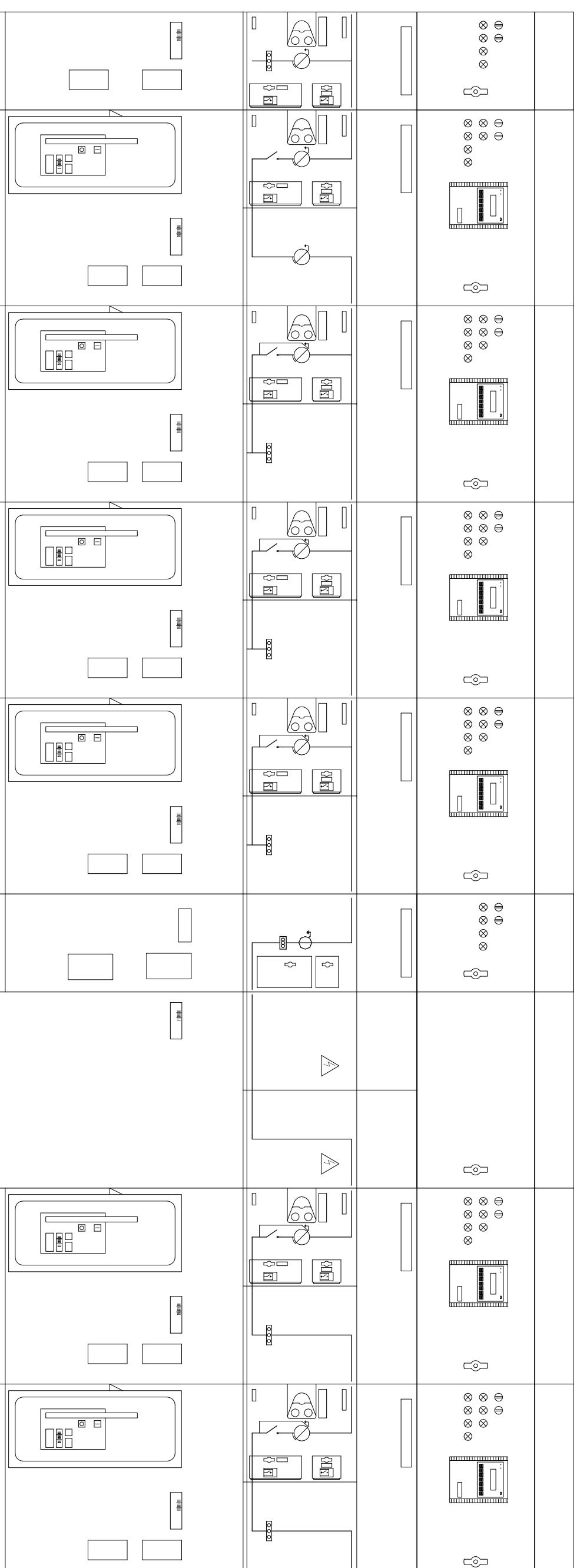
MINIMUM ROOM HEIGHT: 2800 mm

FUNCTIONAL UNIT/
FUNCTIONALE
UNITATEA 7



FUNCTIONAL UNIT/
FUNCTIONALE
UNITATEA 1-6





375 UNIT/UNITATEA 750 UNIT/UNITATEA 750 UNIT/UNITATEA 750 UNIT/UNITATEA 750 UNIT/UNITATEA 375 UNIT/UNITATEA 750 UNIT/UNITATEA 750 UNIT/UNITATEA 750 UNIT/UNITATEA

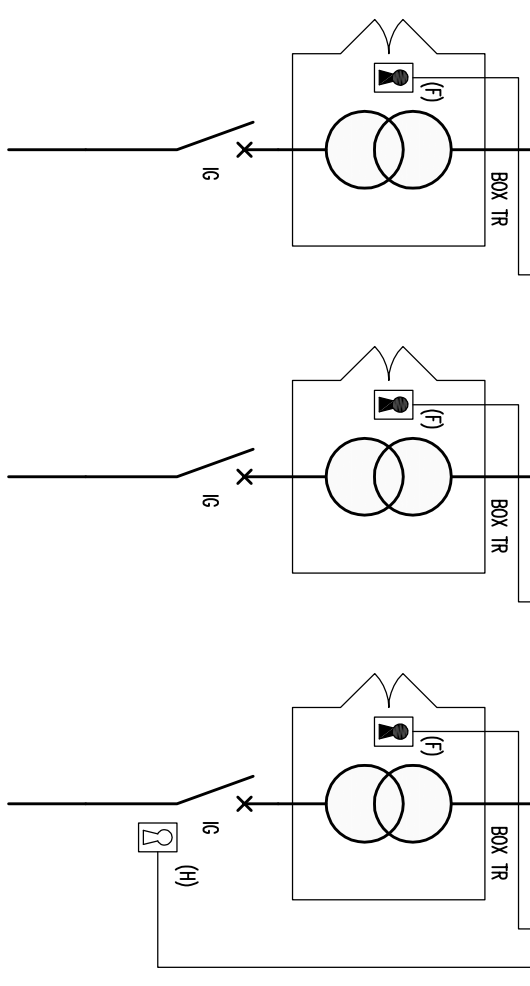
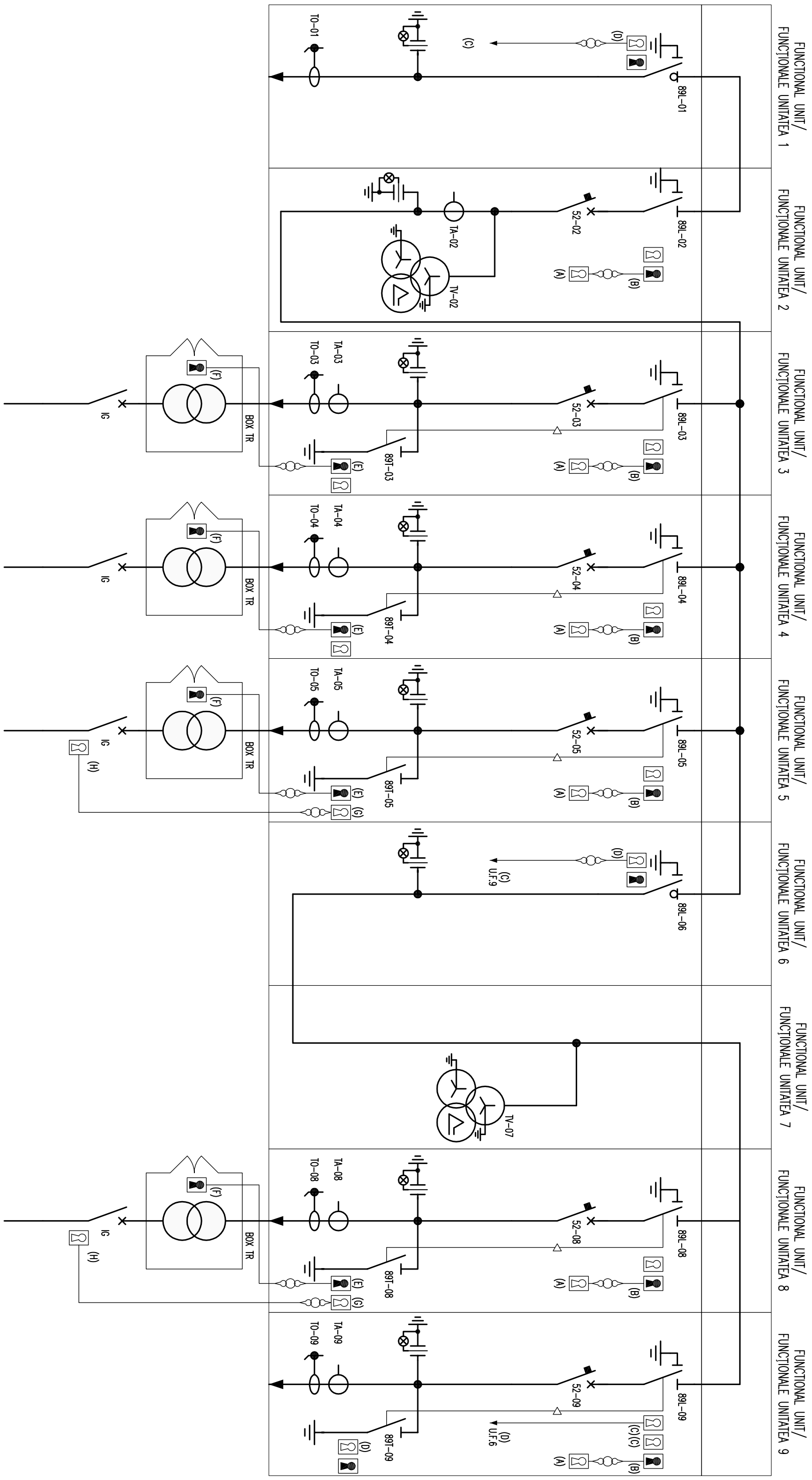
2200
1400
6000

NOTES (SEE NEXT PAGE):

- (A) FREE KEY WITH OPEN SWITCH AND RINGED WITH KEY DISCONNECTOR LINE
- (B) FREE KEY WITH CLOSED LINE DISCONNECTOR AND RINGED WITH KEY SWITCH
- (C) FREE KEY WITH OPEN LINE DISCONNECTOR TO CLOSE THE GROUND
THE FRAMEWORK DISCONNECTOR MT CONNECTED (OR OTHER OF THE SAME FRAMEWORK
F. U. INDICATED LETTER FROM SPECIFIC)
- (D) FREE KEY WITH EARTHING SWITCH OPEN DISCONNECTOR FOR CLOSING OF
LINE PANEL MT CONNECTED (OR OTHER OF THE SAME FRAMEWORK F. U. INDICATED
LETTER FROM SPECIFIC)
- (S) FREE KEY WITH EARTHING SWITCH CLOSED AND RINGED WITH KEY FOR ACCESS TO
BOX TRANSFORMER
- (F) KEY FOR ACCESS TO BOX TRANSFORMER
- (G) KEY FREE WITH EARTHING SWITCH OPEN AND RINGED WITH SWITCH KEY ON THE
SIDE LV TRANSFORMER
- (H) RINGED WITH KEY DISCONNECTOR KEY OF THE LAND FOR BIN CONCERNING MT
- OTHER KEY SHOWN NOT TO BE FUNCTIONAL MOVES BUT THEY ONLY FUNCTION OF
BLOCK EQUIPMENT REPRESENTED IN POSITION

NOTE (A SE VEDEA PAGINA URMĂTOARE):

- (A) CU UN COMUTATOR DE KEY LIBERE ȘI DESCHISE INELAT CU LINIA CHEIE DE SARCINĂ
- (B) LINE GRATUIT CHEIE CU INCHISA SI SEPARATOR INELAT CU ÎNTRERUPĂTOR CU CHEIE
- (C) GRATUIT CU LINIA OPEN CHEIE APROAPE DE SOL SEPARATOR CADRU MT DESCONECTORI
CONNECTED (SAU ALTA DINTRE CADRU ACELAȘI LUCRU SA SCRISOARE DIN INDICAT SPECIFICE)
- (D) CU UN COMUTATOR DE LEGARE LA PĂMANT FĂRĂ CHEIE DESCHIS DESCONECTORI PENTRU
INCHIDEREA MT PANULUI LINE CONNECTED (SAU ALTE ACELAȘI CADRU F. U. SCRISOARE DIN
INDICAT SPECIFICE)
- (S) CU UN COMUTATOR DE LEGARE LA PĂMANT FĂRĂ CHEIE ÎNCHIS ȘI INELE CU CHEIA DE
ACCES LA BOX TRANSFORMER
- (F), CHEIA DE ACCES LA BOX TRANSFORMER
- (G)-CHEIE CU COMUTATOR DE LEGARE LA PĂMÂNT GRATUIT DESCHISE ȘI INELE CU ÎNTRERUPĂTOR
DE PE PARTEA LATERALĂ LV TRANSFORMER
- (H), INELE CU TASTĂA TERENULUI PENTRU SEPARATOR ÎN CEEA CE PRIVEȘTE BIN MT
- NU CHEIE ALTE DOVEDIT A FI FUNCȚIONALE MUTARI DAR EI DOAR AU FUNCȚIA DE BLOC
ECHIPAMENTE REPREZENTATE ÎN POZIȚIA

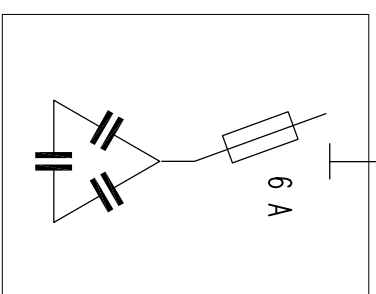


CONNECTION TO QdP/1
CONEXIUNEA A QdP/1

CABLE /CABLU FG10M1 0.6/1 kV
3x(2x240) mmq
LENGHT/LUNGIMEA = 10 m

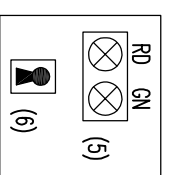
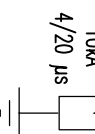
n°4 SCREENED CABLE/CABLU
ECRANAT 2x1mmq

[04-A6]



UNIT FOR FIXED FACTOR/
UNITATE PENTRU FIX FACTOR
Pn = 5 kVAR

TR/1/P
Pn = 200 kVA
V1n = 20 kV
V2n = 1 kV
Dyn11
Vcc = 6%



TO PROTECT THE
QdP/PENTRU A
PROTEJA 51N-50N
DE CADRU QdP

FROM FUNCTIONAL UNIT/DE
FUNCTIONALE UNITATEA 3

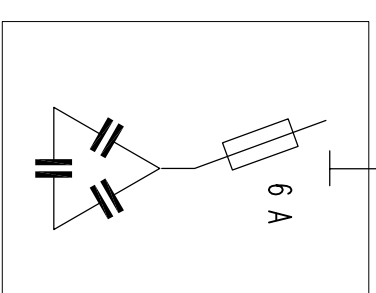
FROM FUNCTIONAL UNIT/DE
FUNCTIONALE UNITATEA 4

CONNECTION/CONEXIUNE
QdP/1

CABLE /CABLU FG10M1 0.6/1 kV
3x(2x240) mmq
LENGHT/LUNGIMEA = 10 m

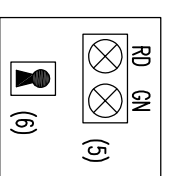
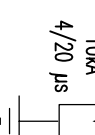
n°4 SCREENED CABLE/CABLU
ECRANAT 2x1mmq

[04-A7]



UNIT FOR FIXED FACTOR/
UNITATE PENTRU FIX FACTOR
Pn = 5 kVAR

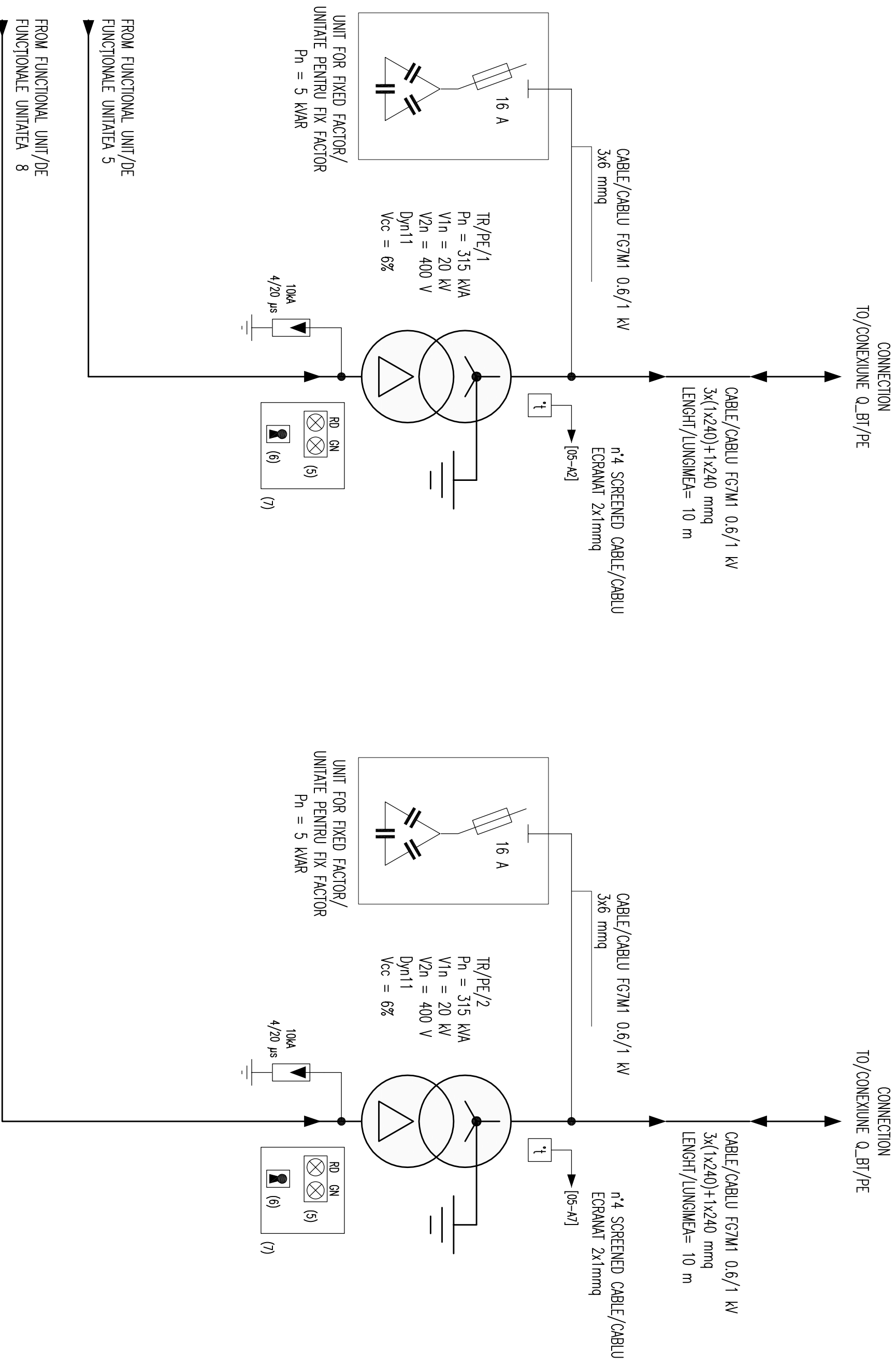
TR/1/D
Pn = 200 kVA
V1n = 20 kV
V2n = 1 kV
Dyn11
Vcc = 6%



TO PROTECT THE
QdP/PENTRU A
PROTEJA 51N-50N
DE CADRU QdP

FROM FUNCTIONAL UNIT/DE
FUNCTIONALE UNITATEA 3

FROM FUNCTIONAL UNIT/DE
FUNCTIONALE UNITATEA 4



FROM FUNCTIONAL UNIT/DE
FUNCTIONALE UNITATEA 5

FROM FUNCTIONAL UNIT/DE
FUNCTIONALE UNITATEA 8

CONNECTION
TO/CONEXIUNE Q_BT/PE

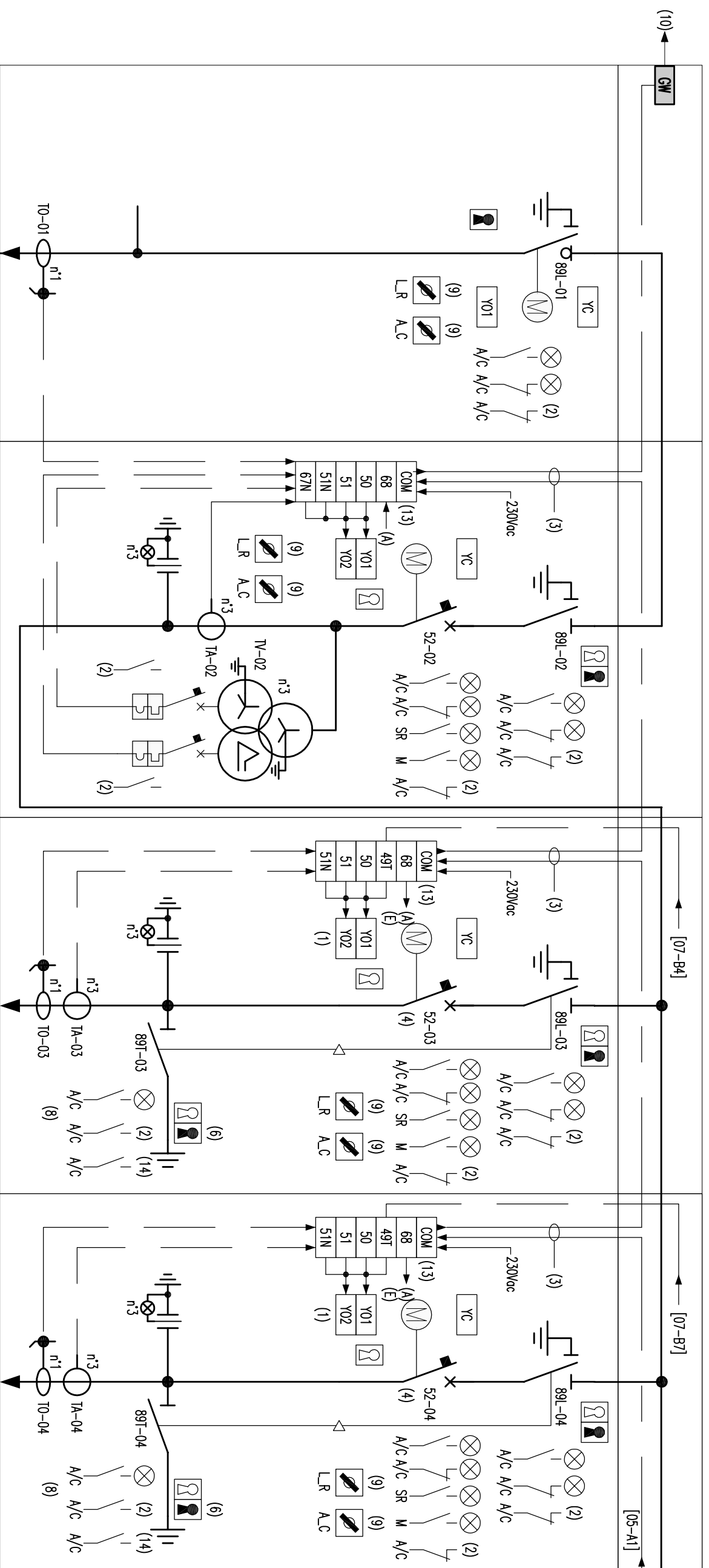
CONNECTION
TO/CONEXIUNE Q_BT/PE

FUNCTIONAL UNIT/
FUNCȚIONALE UNITATEA 1

FUNCTIONAL UNIT/
FUNCȚIONALE UNITATEA 2

FUNCTIONAL UNIT/
FUNCȚIONALE UNITATEA 3

FUNCTIONAL UNIT/
FUNCȚIONALE UNITATEA 4

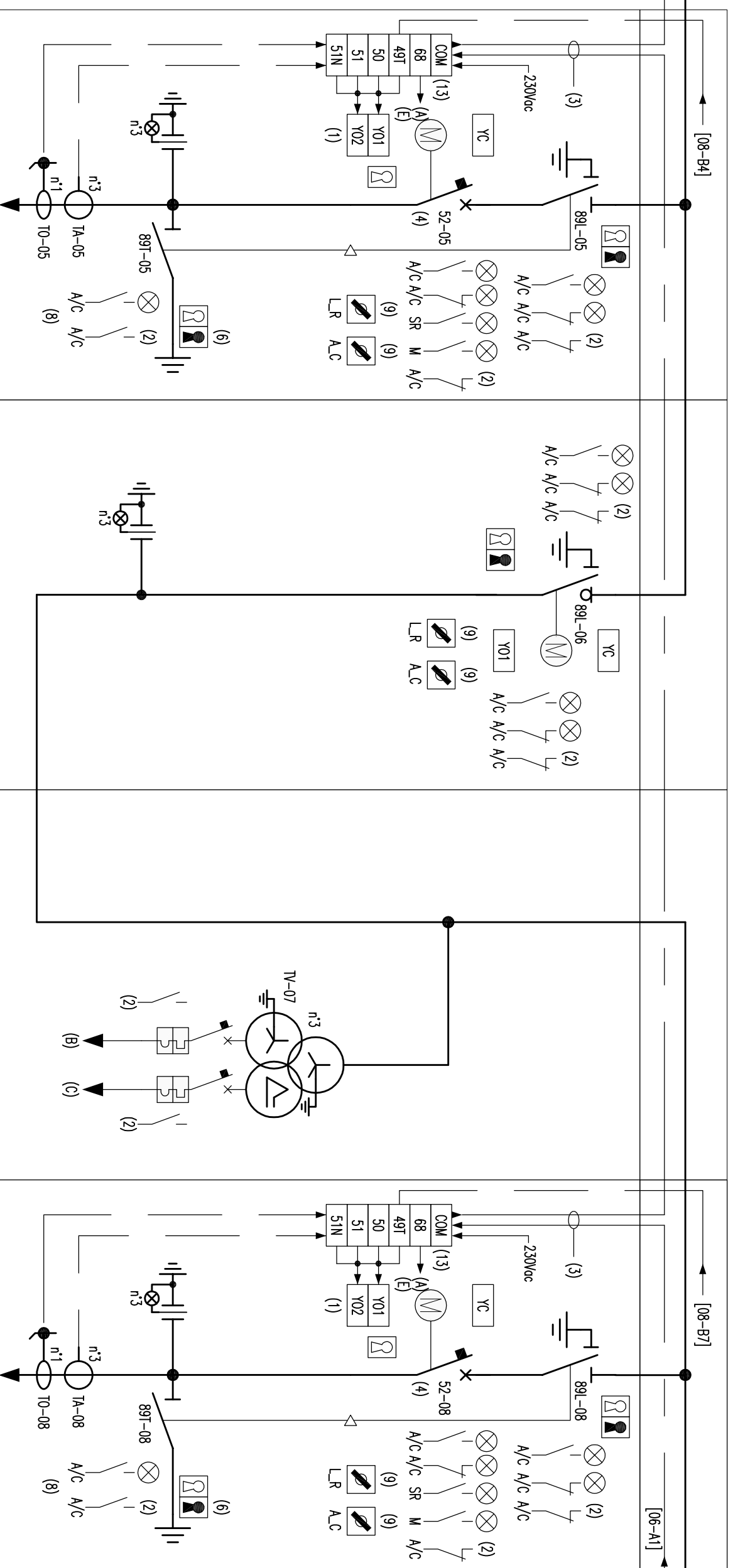


FUNCTIONAL UNIT/
FUNCTIONALE UNITATEA 5

FUNCTIONAL UNIT/
FUNCTIONALE UNITATEA 6

FUNCTIONAL UNIT/
FUNCTIONALE UNITATEA 7

FUNCTIONAL UNIT/
FUNCTIONALE UNITATEA 8



FUNCTIONAL UNIT/
FUNCTIONALE UNITATEA 9

[05-A8]

