

RFVE PV switchboards

Protection of DC lines and inverters with a maximum voltage of 1000V from lightning strikes and PV panels from reverse currents.

These complete certified switchboards for PV power plants are designed for surface mounting. They include a two-pole fuse disconnecter including gPV DC fuses and surge arresters. Installation switch available as an option.

They are used for protection of 1 to 16 strings of PV panels. By series connection, you can achieve the required voltage for the input to the PV inverter.

All devices are mounted on a DIN rail and interconnected, thus saving time and ensuring ease of installation.

Select the type of arrester based on the lightning protection level (LPL) calculation. See standard CLC/TS 51643-32

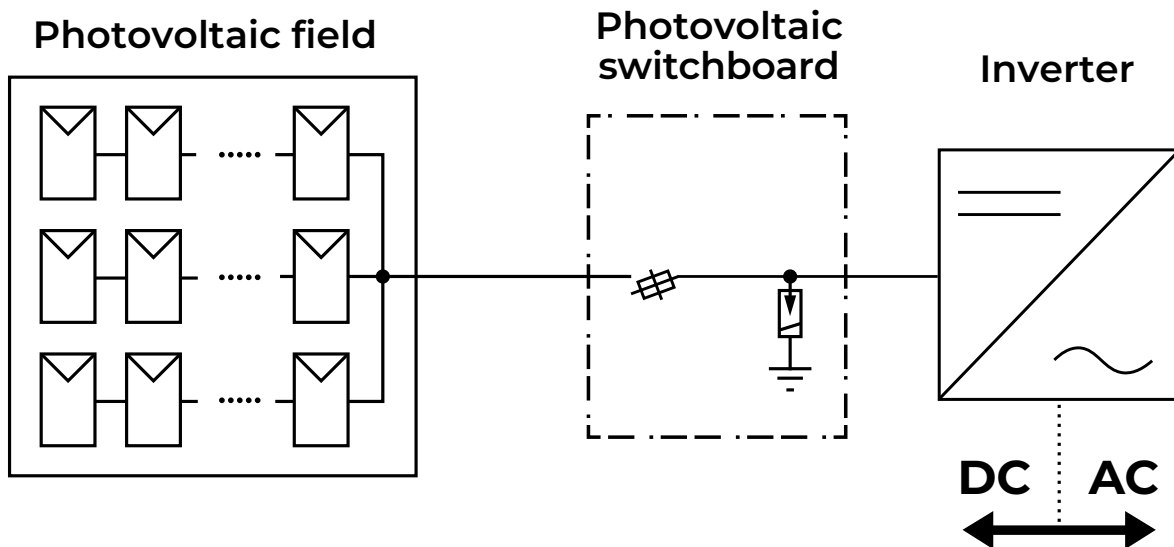
External lightning protection exist ?

YES

NO

Type	I total (10/350)
ETITEC EM T12 PV 1100/6,25 Y	6,25 kA
ETITEC M T12 PV 1100/12,5 Y	12,5 kA

Type	I total (8/20)
ETITEC EM T2 PV 1100/20 Y	40 kA
ETITEC M T2 PV 1100/20 Y	50 kA



Version with plastic enclosure ECH

Switchboard with protection class II, nominal operating voltage 400VAC/1500VDC

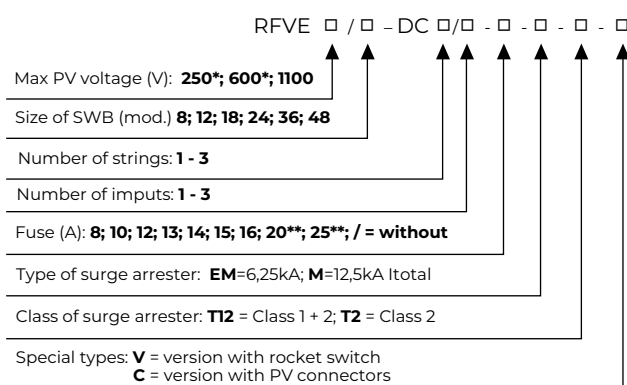
Simple enclosure design:

- 1 to 3 strings as per the needs of the specific project
- Surge arresters: T12 (1+2) or T2
- Fuse disconnectors including gPV fuses
- Possibility of connection via PV connectors or glands
- Versions with rotary switch (parameter V)



Type codes:

Example: RFVE1100/12-DC2/2-16-EMT12

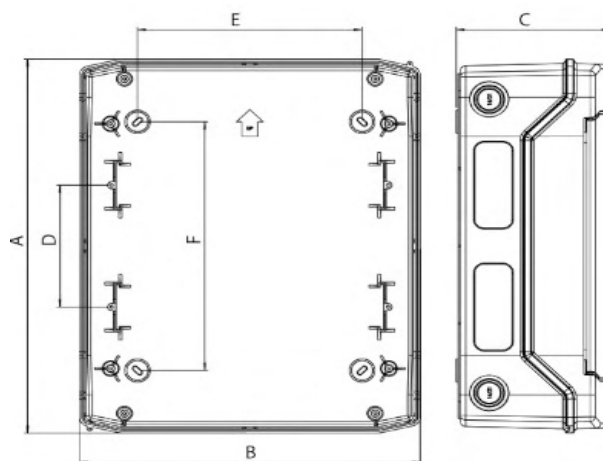


Size of board:

- 8 = for 1 string without switch
- 12 = for 2 strings with arrester without switch
- 18 = for 3 strings with arrester without switch

* 250V and 600V for SPD T2

** valid in agreement between producer and user for RDF = 0,8



Type	Dimensions (mm)					
	A	B	C	D	E	F
RFVEx/8	201	202	120	-	100	140
RFVEx/12	259	319	144	-	210	130
RFVEx/18	259	428	144	-	259	130
RFVEx/24	384	319	144	125	210	255

One string



Arrester Type 1 + Type 2

RFVE1100/8-DC1/1-16-EMT12

Order code: 001105400

1x Surge arrester T12 PV 1100/6.25 Y EM
1x Fuse disconnecter DC 2P
2x Fuse 10x38 gPV 16A/1000V
1x Terminal strip IP65, 8 modules

Type 2

RFVE1100/8-DC1/1-16-EMT2

Order code: 001105401

1x Surge arrester T2 PV 1100/20 Y EM
1x Fuse disconnecter DC 2P
2x Fuse 10x38 gPV 16A/1000V
1x terminal strip IP65, 8 modules

Two strings



RFVE1100/12-DC2/2-16 EMT12

Order code: 001105402

2x Surge arrester T12 PV 1100/6.25 Y EM
2x Fuse disconnecter DC 2P
4x Fuse 10x38 gPV 16A/1000V
1x Terminal strip IP65, 12 modules

RFVE1100/12-DC2/2-16-EMT2

Order code: 001105403

2x surge arrester T2 PV 1100/20 Y EM
2x fuse disconnecter DC 2P
4x fuse 10x38 gPV 16A/1000V
1x terminal strip IP65, 12 modules

Three strings



RFVE1100/18-DC3/3-16-EMT12

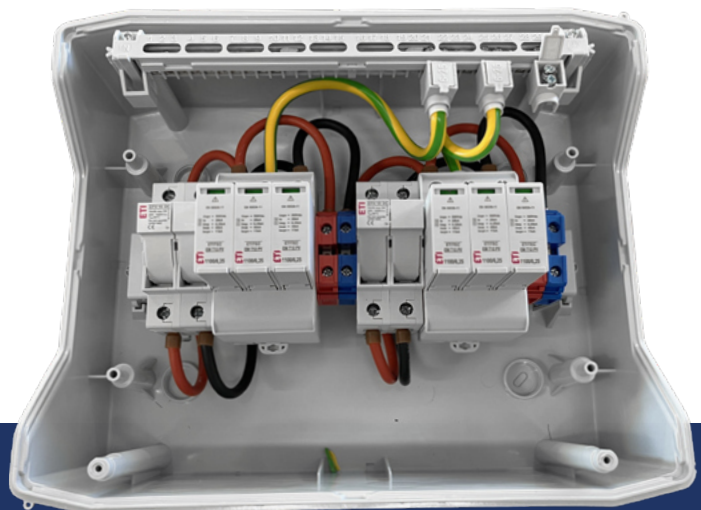
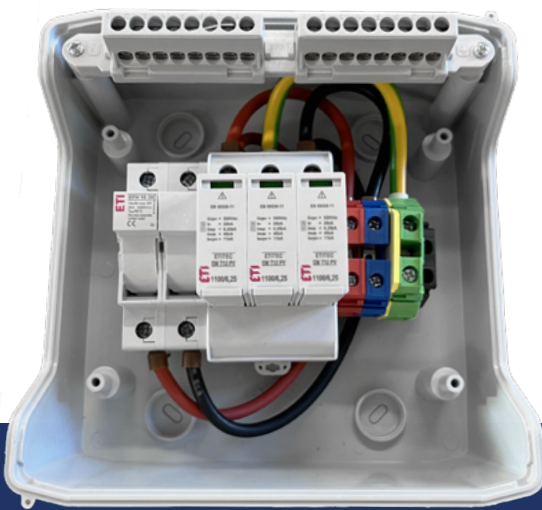
Order code: 001105481

3x surge arrester T12 PV 1100/6.25 Y EM
3x fuse disconnecter DC 2P
6x fuse 10x38 gPV 16A/1000V
1x terminal strip IP65, 18 modules

RFVE1100/18-DC3/3-16-EMT2

Order code: 001105480

3x surge arrester T2 PV 1100/20 Y EM
3x fuse disconnecter DC 2P
6x fuse 10x38 gPV 16A/1000V
1x terminal strip IP65, 18 modules



Version with polyester enclosure **EPC**

Double insulated terminal strip, protection class II,
rated operating voltage 1000VAC - 1500VDC

Perfect solution for outdoor installations and demanding environment - rain,
frost, pollution and chemicals.

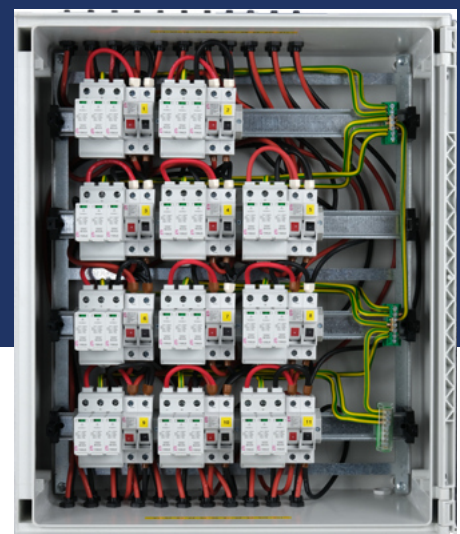
Thermosetting materials do not differ in structure nor are they deformed by climatic changes. They offer a much longer service life than metal enclosures. Fire resistant at 960°, flame retardant material, halogen-free. High mechanical resistance IK-10 for solid doors, IK-07 for doors with windows. **UV-stable material**, colour: RAL 7035. Made completely of non-metallic parts, zero risk of corrosion. IP66 protection, non-hygroscopic materials.

Flexible enclosure design:

- 4 to 16 strings as per the needs of the specific project
- Surge arresters: T12 (1+2) or T2
- Fuse disconnectors including gPV fuses
- Connection via PV connectors or glands

Protection:

- Inverters protected from lightning strikes and PV panels from reverse currents



Example: RFVE1100-65-DC11-11-16-EMT12-C

RFVE □-□-DC □-□-□ □ □ □

Max PV voltage (V): **250***; **600***; **1100**

Size of SWB (mod.): **44**; **54**; **64**; **65**; **86**

Number of strings: **1 - 16**

Number of inputs: **1 - 16**

Fuse (A): **8**; **10**; **12**; **13**; **14**; **15**; **16**; **20****; **25****; / = without

Type of surge arrester: **EM=6,25kA**; **M=12,5kA** ltotal

Class of surge arrester: **T12** = Type 1 + 2; **T2** = Type 2

Special types: **V** = version with rocket switch
C = version with PV connectors

Size of board:

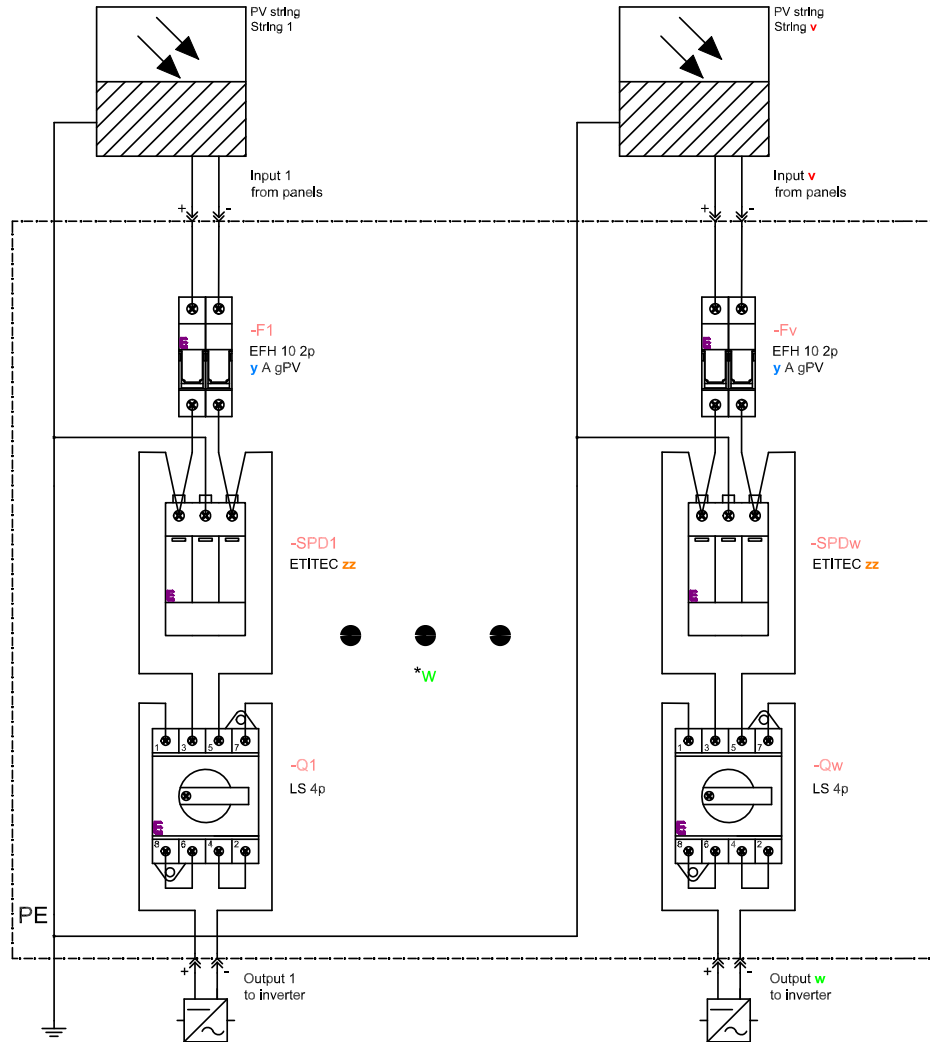
44 = for 1 - 6 strings without switch
54 = for 7 - 10 strings without switch
64 = for 11 - 12 strings without switch
65 = for 12 - 16 strings without switch

** 250V and 600V for SPD T2

** valid in agreement between producer **and user for RDF = 0,8

Properties	RFVExxx/ 44	RFVExxx/ 54	RFVExxx/ 64	RFVExxx/ 65	RFVExxx/ 86
Height (mm)	400	500	600	600	800
Width (mm)	400	400	400	500	600
Depth (mm)	200	200	230	230	300

Version with switch



- v = number of input circuits (strings)
- y = I_{nc} of a circuit (string)
- w = no. of parallel outputs / branches
- zz = production line of SPD: M / EM
SPD type: T12 / T2
(i.e.: MT2)

1: $U_{CPV} = 250/600V$ is possible only for SPD ETITEC M T2 (1100V for all other types)

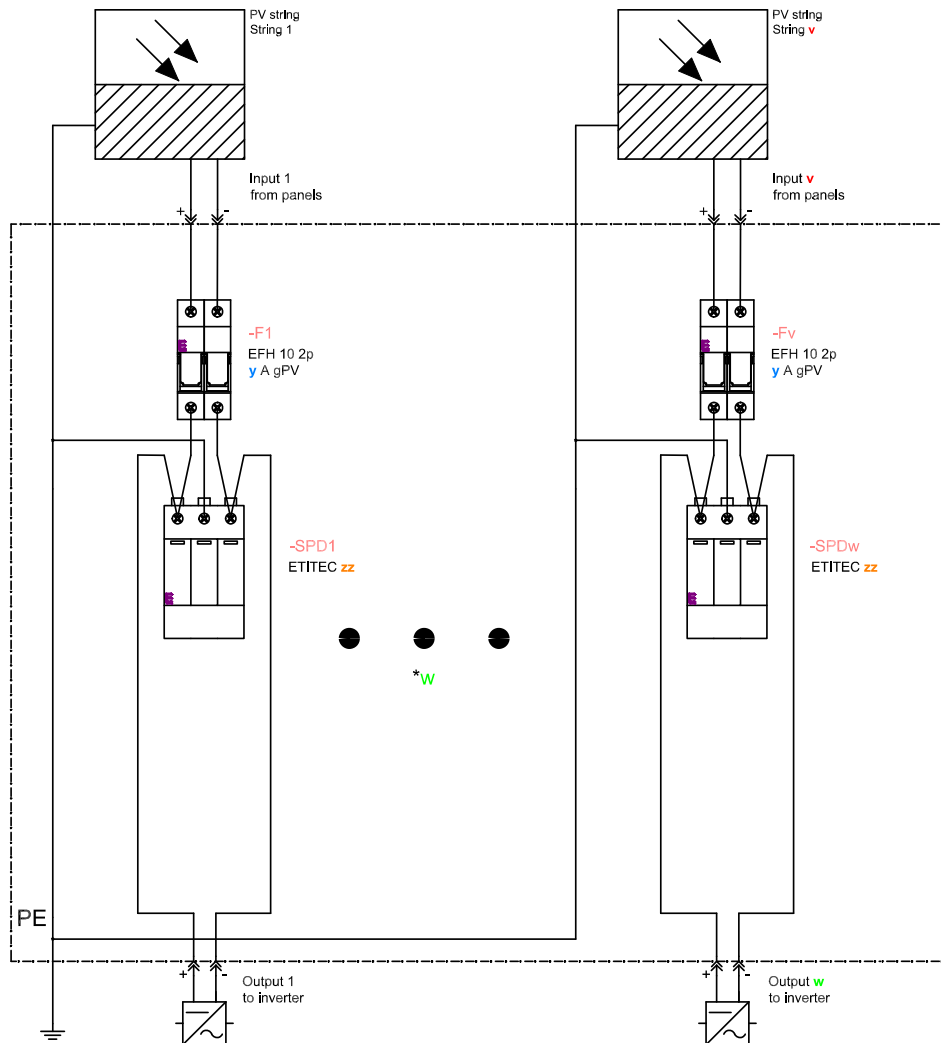
2: 20 and 25A fuses are possible only after agreement with a producer ($RDF \leq 0,8$)

- = "C" connectors
- without "C" the assembly contains cable glands

RFVEx/qW-DCv/w-y-zz-VC							
RFVE	x	q	v	w	y	zz	VC
Switchboard type	U_{CPV} (V DC)	Size of enclosure determining type	No. of strings	No. of outputs/branches	Fuse value (A)	SPD type	Special designation
- photovoltaic assembly	250 ¹⁾	8 / 12 / 18 / 24 / 30 / 48 = ECH	1 to 4 for ECH	1 to 4 for ECH	/ = without protection	EM / M	V = type with LS switch-connectors
	800 ¹⁾	44 / 54 / 64 / 65 / 80 = EPC	1 to 16 for EPC	1 to 16 for EPC	8 / 10 / 12 / 13 / 14 / 15 / 16 / 17 / 20 / 25	T12 / T2	C = type with PV connectors
	1100	W = EPC with window (opaque door = without W)				T2 = Type 2	

¹⁾ grey colored variables in the type key can't be applied to this schematic / enclosure
²⁾ 4 of the switch-connector B determined by a defined configuration (LS 1625/32A)

Version without switch



Universal schematic for PVAs RFVE
 - with fuse protection, configuration 1:1 (v:w), with
 - enclosures ECH and EPC

⁽¹⁾ $U_{CPV}=250/600/1100V$ DC, $I_{nA} = v*y$ A
 IP65/20 (ECH), IP66/00 (EPC)
 IK08 (ECH) / IK10 (EPC) / IK07 (EPCW)
 EN/IEC 61439-2 ed.3

Empty polyester **EPC** enclosures with DIN rail panel

Protection class II, rated operating voltage 1000VAC - 1500VDC

Perfect solution for outdoor installations and demanding environment - rain, frost, pollution and chemicals.

Thermosetting materials do not differ in structure nor are they deformed by climatic changes. They offer a much longer service life than metal enclosures.

Fire resistant at 960°, flame retardant material, halogen-free. High mechanical resistance IK-10 for solid doors, IK-07 for doors with windows. **UV-stable material**, colour: RAL 7035. Made completely of non-metallic parts, zero risk of corrosion. IP66 protection, non-hygroscopic materials.

Material: glass fibre reinforced polyester



For cabinet and DIN rail panel assembly, order **EPC cabinet + CHM inner rail panel**

Order code	Enclosure type	Dimensions (mm)		Order code	Inner panel type	Number of modules with panel (total)	Numbers of row x modules in row
001102600	EPC 30-25-14	300x250x140	➔	001102673	EPC-CHM-325	20	2x10
001102601	EPC 40-30-20	400x300x200		001102674	EPC-CHM-43	24	2x12
001102602	EPC 40-40-20	400x400x200		001102675	EPC-CHM-44	36	2x18
001102603	EPC 50-40-20	500x400x200		001102676	EPC-CHM-54	54	3x18
001102604	EPC 60-40-23	600x400x230		001102677	EPC-CHM-64	72	4x18
001102605	EPC 60-50-23	600x500x230		001102678	EPC-CHM-65	96	4x24
001102606	EPC 80-30-23	800x300x230		001102679	EPC-CHM-83	70	5x14
001102607	EPC 80-60-30	800x600x300		001102680	EPC-CHM-86	145	5x29

Switchboard for backup circuit switching **RPO-H32-SM**

Order code: 001105451

Intended for GOODWE GW8KL/10KL-ET; GW8K/10K-ET inverters

Device assembly:

Protection:

ETIMAT 3p B32 10kA, ETIMAT 3p B16 10kA,
ETIMAT 1p B6 10kA, ETIMAT 3p C2 10kA

Enclosure:

protection class II, surface mounted,
48 modules, IP65 protection level

Other devices:

Monitoring relay HRN-55,

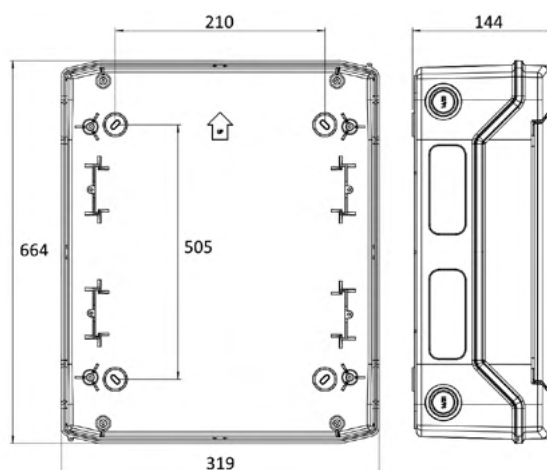
Switch SV 340 3p 40A,

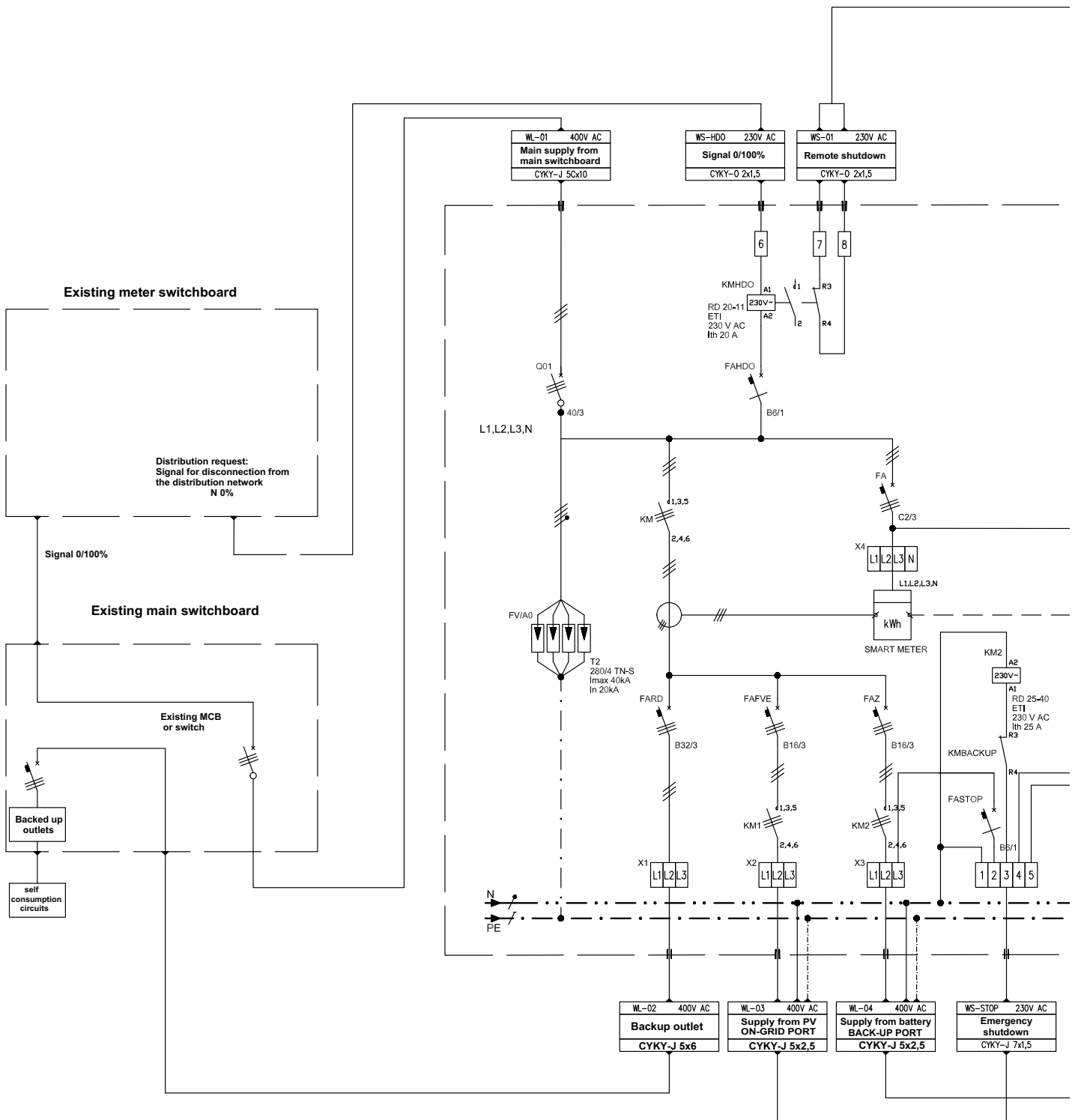
Surge arrester ETITEC C T2 275/20 4+0

prepared for smartmeter
(smartmeter not included)

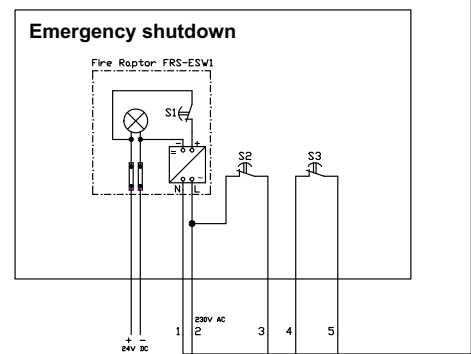
Contactor:

RD 25-40-230V AC/DC, RD 20-11-230V AC/DC,
RD 40-40-230V AC/DC





If the emergency shutdown is not used, terminals 2 and 3 must be connected. And 4 and 5. Do not connect all terminals together!



Protective bonding according to ČSN 33 2000-4-41 ed2 /HD 60364-4-41:2007
 - basic protection is ensured by basic insulation between live and inanimate parts
 - fault protection is provided by automatic disconnection from the power supply
 - supplementary protection is a supplementary protective connection, double insulated

Mount the devices in rows on DIN rails and cover with a type cover panel
Cover unoccupied positions in the cover panel with module plugs
Mark the instruments according to the documentation

RPO

3+N+PE, 3X 230/400V AC, 50Hz, TN-S,
 In=40A, IP 65/20C, ČSN EN 61439-3

Switchboard ECH-48PT, 48modules

