



pronutec
gorlan



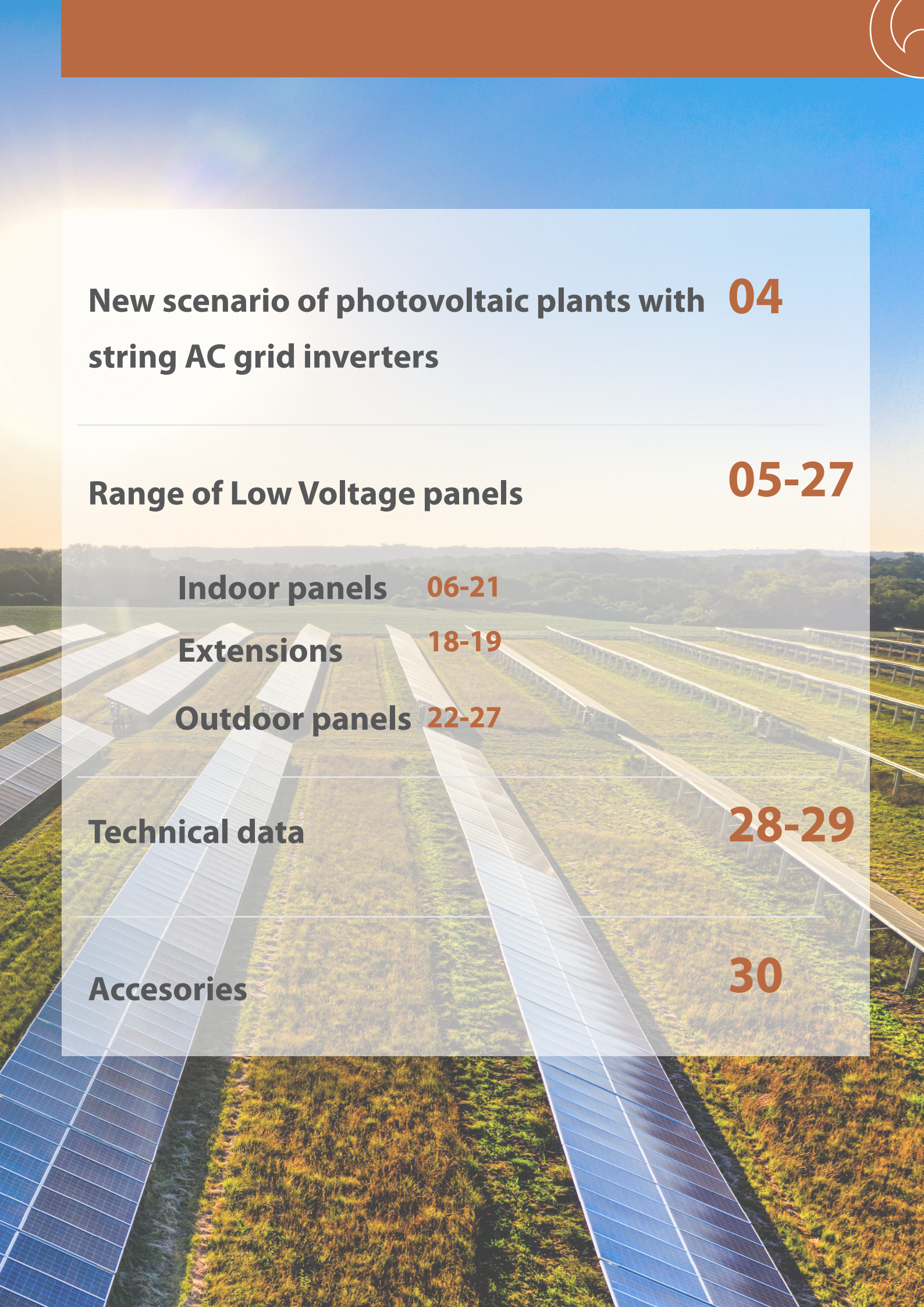
Photovoltaic plants in AC grids

AC Combiner Panels



gorlan





New scenario of photovoltaic plants with string AC grid inverters **04**

Range of Low Voltage panels

05-27

Indoor panels **06-21**

Extensions **18-19**

Outdoor panels **22-27**

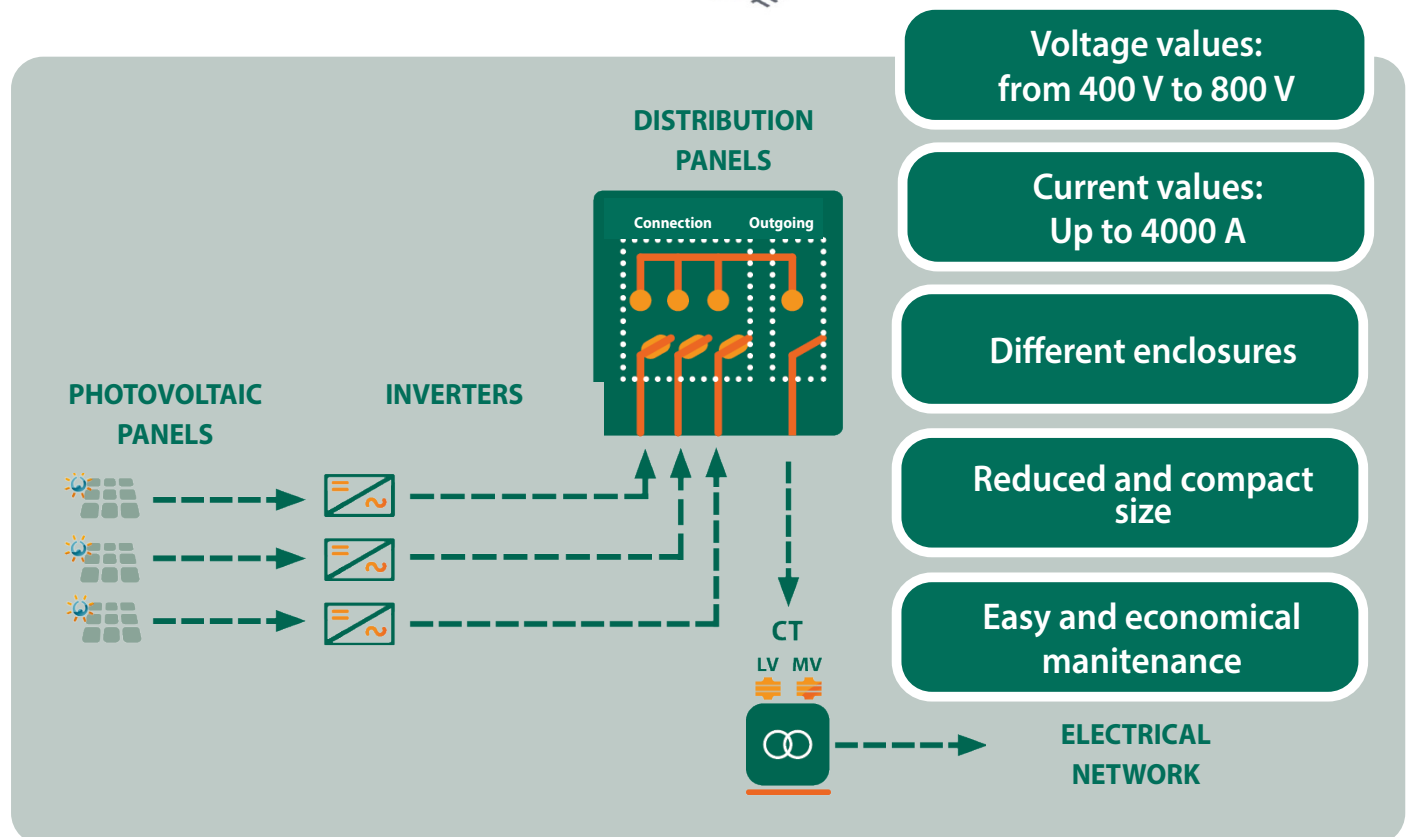
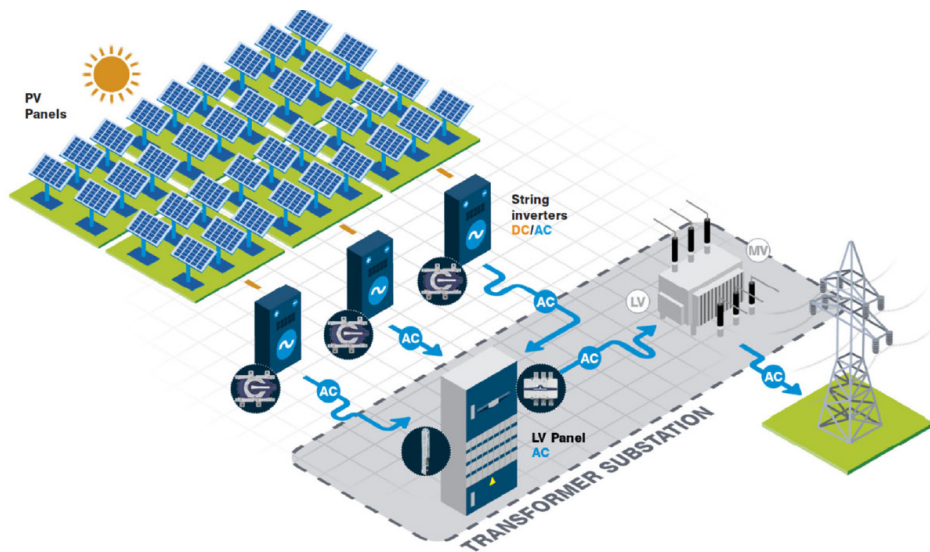
Technical data

28-29

Accessories

30

► NEW SCENARIO OF PHOTOVOLTAIC PLANTS WITH AC STRING INVERTERS



Pronutec presents its new Inverter AC Combiner Panels range. Working voltages from 400 V to 800 V in AC grids, both in indoor and outdoor installations. Wide range of: currents, number of inputs, different switching devices, surge protection and auxiliary services. Suitable for TN-C and IT systems.

These panels are the ones that are different connected to the transformer in the Transformer Station. The panel collects the cables from the inverter, through the bottom from by means of fuse switch NH 00/1/3. These fuse switches have been tested and are capable for working at voltages up to 800 V AC, with moulded case circuit breaker or load break switch.

Its compact and reduced size, together with the reduced cost of maintenance, make this range of panels the best solution for photovoltaic applications.

► WIDE RANGE OF LOW VOLTAGE PANELS

METALLIC INDOOR PANELS

From 4 to 14 feeders Bottom incoming - Top outgoing.
Maximum 14 incomings BTVC-DT NH 1/3 or 28 incomings BTVC-DT NH 00. Load break switch or automatic circuit breaker.

Extensions Bottom incoming - Top outgoing.
Expandable maximum 12 incomings BTVC-DT NH 1/3.

INDOOR PANEL - FRAME VERSION

Frame Version Bottom incoming to the fuse switches - Lateral outgoing to the transformer through wiring.
Maximum 10 incomings BTVC-DT NH 1.

POLYESTER OUTDOOR PANEL

Insulating 6 feeders Bottom incoming - Top and rear outgoing.
Maximum 6 incomings BTVC-DT NH 1/3 or 12 incomings BTVC-DT NH 00.

Insulating DIN 5 feeders Bottom incoming - Bottom outgoing.
Maximum 5 incomings BTVC-DT NH 1/3 or 10 incomings BTVC-DT NH 00.

METALLIC OUTDOOR PANEL

Metallic 6 feeders Bottom incoming - Top and rear outgoing.
Maximum 6 incomings BTVC-DT NH 1/3 or 12 incomings BTVC-DT NH 00.

Indoor panels

From 4 to 14 feeders	Up to 4000 A for 400/500/690 V Up to 4000 A for 800 V
Frame version	Up to 4000 A for 400/500/690 V Up to 4000 A for 800 V

Outdoor panels

Insulating 6 feeders	Up to 1600 A for 400/500/690 V Up to 1250 A for 800 V
Insulating DIN 5 feeders	Up to 1600 A for 400/500/690 V Up to 1250 A for 800 V
Metallic 6 feeders	Up to 1600 A for 400/500/690 V Up to 1250 A for 800 V

Outgoing devices

Load break switch or automatic circuit breaker

Protections

Auxiliary circuits, metering devices, surge arresters, IMD, etc.

Bottom Incoming - Top Outgoing | Unesa type 4 feeders

DESCRIPTION

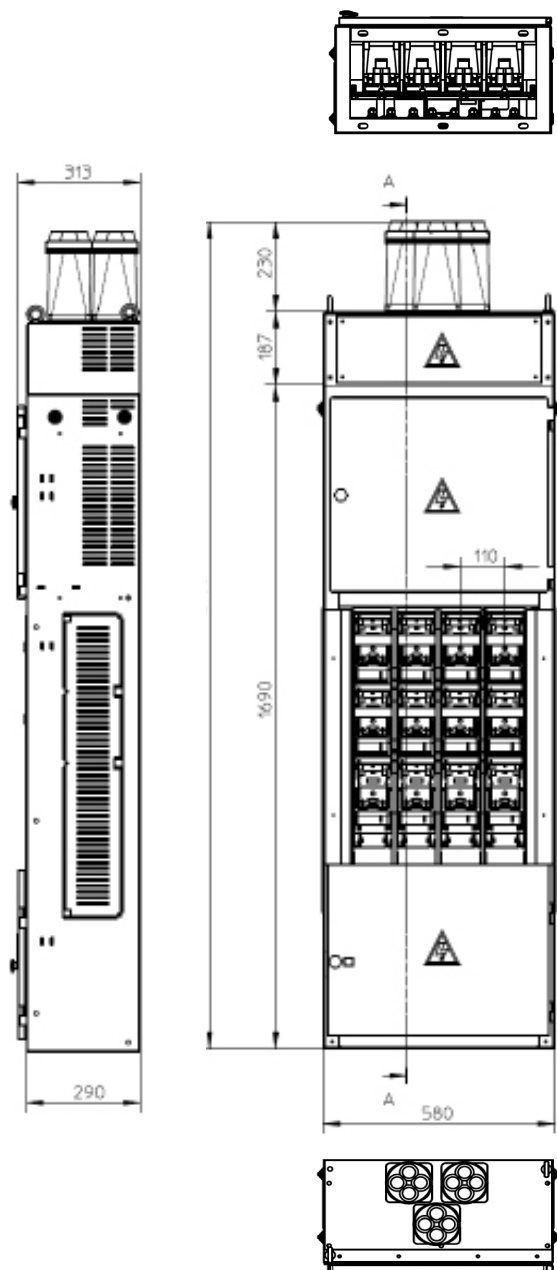
Protected outgoing with	Description	Rated operational voltage U_e	Maximum current	Size	Maximum n° of incomings	Accessories
LBS Telergon	LVCP U 4H LBS	800 V	1600 A (* ¹)	NH 00	8	Up to 3
				NH 1	4	Up to 3
				NH3	4	Up to 3
MCCB	LVCP U 4H MCCB	690 V	1600 A (* ¹)	NH00	8	Up to 3
		800 V	1250 A (* ²)	NH 1	4	Up to 3

According to standard IEC-61439 (*¹) Up to 1600 A for 690 V (*²) Up to 1250 A for 800V

LBS= Load Break Switch

MCCB = Moulded Case Circuit Breaker

DIMENSIONAL DRAWINGS



Bottom Incoming - Top Outgoing | Unesa type 4 feeders

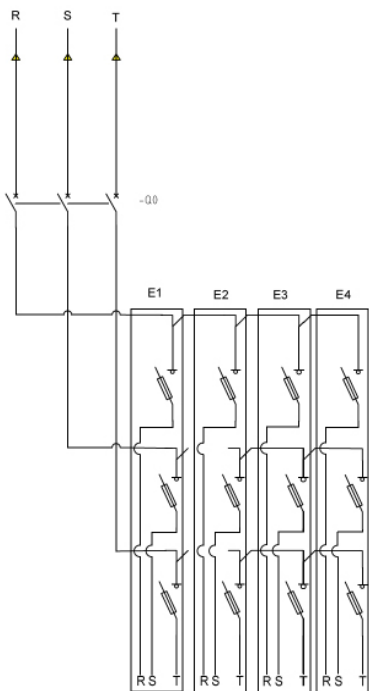
ACCESORIES

	Accesories	Compatibility
	Kit of BTHC + Surge Arrester	✓
	Insulation Monitor Device (IMD)*	✓
	BTHC for protection of auxiliary transformer	✓
	BTHC for Smart Logger Protection	✓

Up to three accesories in the door. To add more accesories, a vertical fuse switch would be used. For special combinations, consult with commercial department.

* Obligatory for IT regime LV panels

WIRING DIAGRAM



Bottom Incoming - Top Outgoing | Unesa type 6 feeders

DESCRIPTION

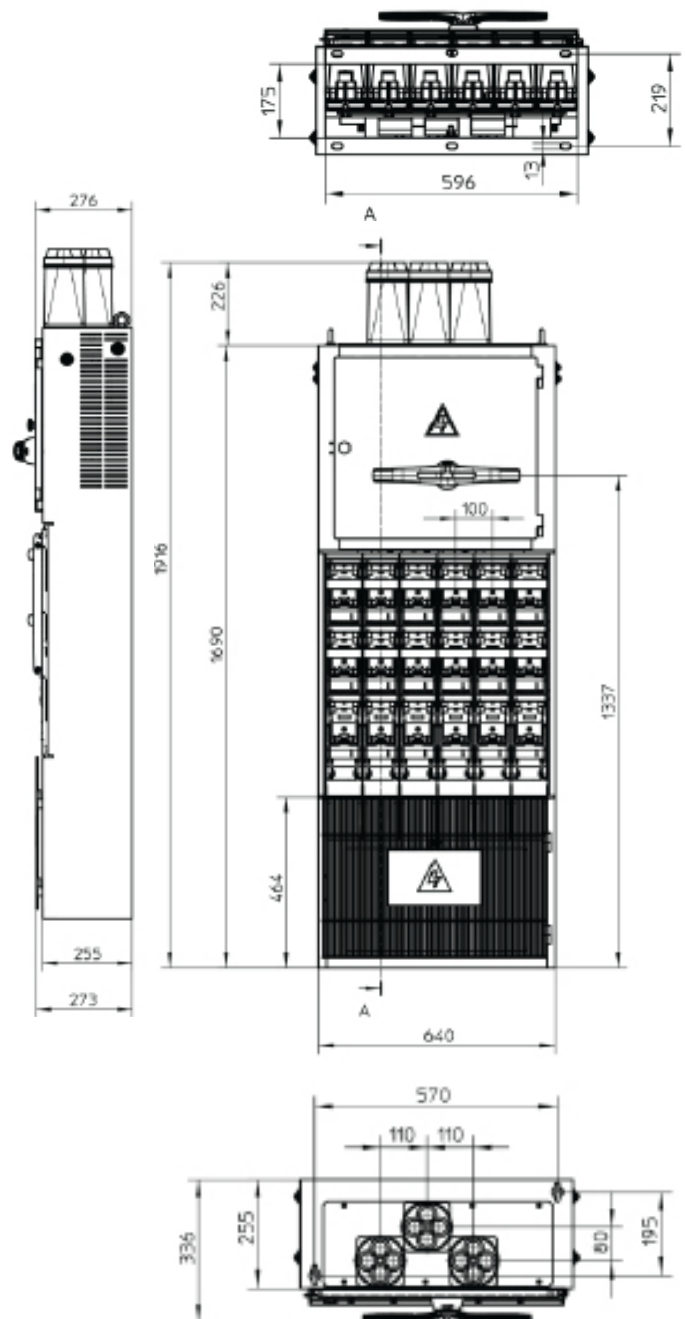
Protected outgoing with	Description	Rated operational voltage U_e	Maximum current	Size	Maximum n° of incomings	Accessories
LBS Telergon	LVCP 6H LBS	800 V	1600 A	NH 00	12	Up to 3
				NH 1	6	Up to 3
				NH3	6	Up to 3
MCCB	LVCP 6H MCCB	690 V	1600 A (*1)	NH00	12	Up to 3
		800V	1250 A (*2)	NH 1	6	Up to 3

According to standard IEC-61439 (*1) Up to 1600 A for 690 V (*2) Up to 1250 A for 800 V

LBS = Load Break Switch

MCCB = Moulded Case Circuit Breaker

DIMENSIONAL DRAWINGS



Bottom Incoming - Top Outgoing | Unesa type 6 feeders

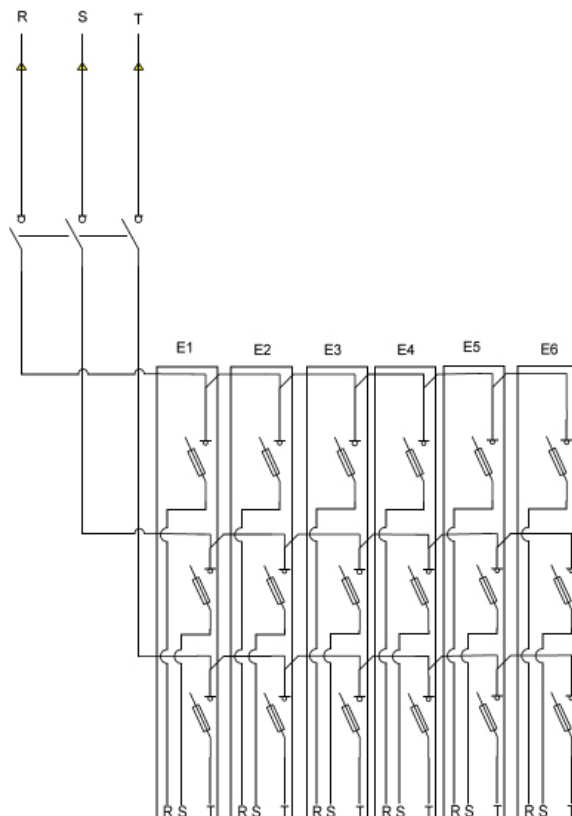
► ACCESSORIES

	Accessories	Compatibility
	Kit of BTHC + Surge Arrester	✓
	Insulation Monitor Device (IMD)*	✓
	BTHC for protection of auxiliary transformer	✓
	BTHC for Smart Logger Protection	✓

Up to three accessories in the door. To add more accessories, a vertical fuse switch would be used. For special combinations, consult with commercial department.

* Obligatory for IT regime LV panels

► WIRING DIAGRAM



Bottom Incoming - Top Outgoing | 8 feeders

► DESCRIPTION

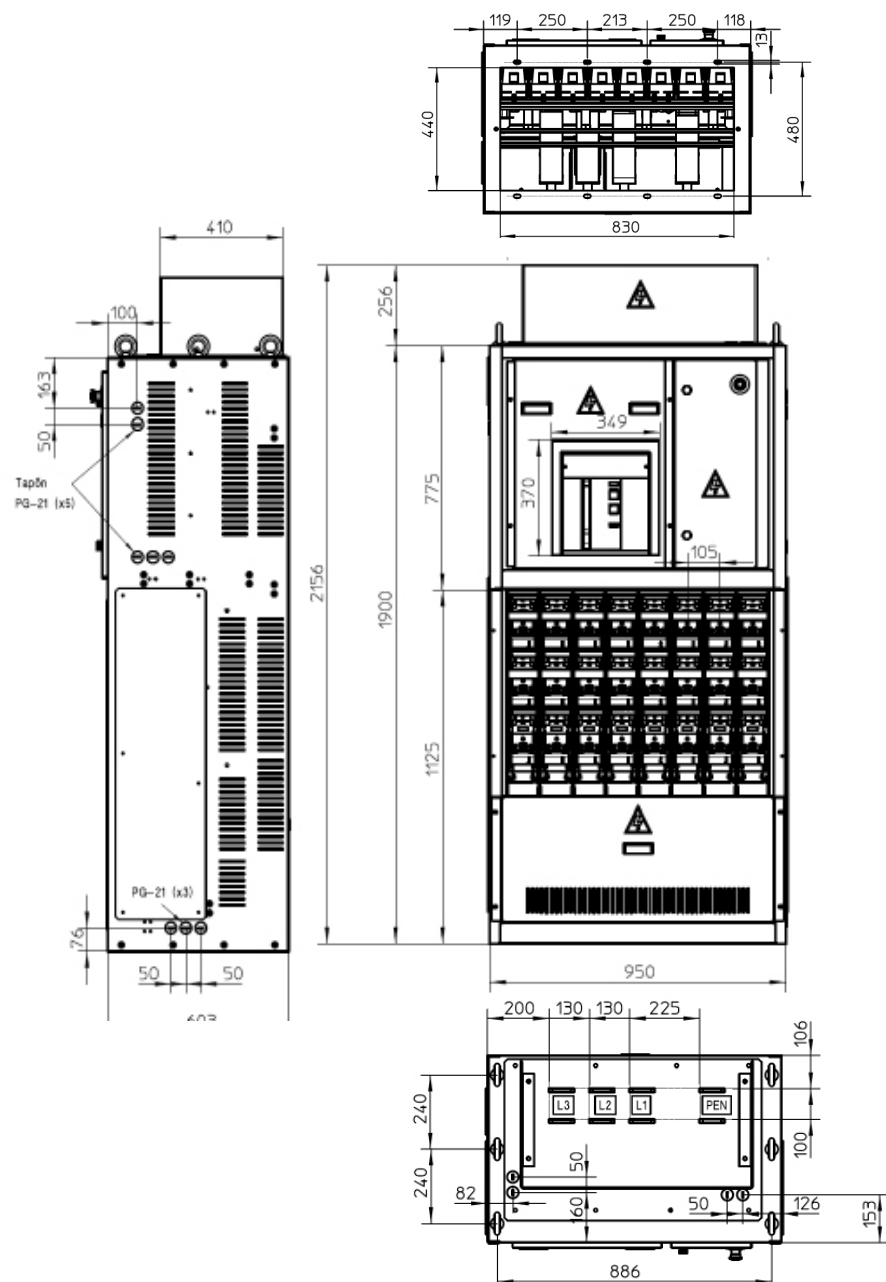
Protected outgoing with	Description	Rated operational voltage U _e	Maximum current	Size	Maximum nº of incomings	Accessories
LBS Telergon	LVCP 8H LBS	up to 800 V	3200 A	NH 00	16	Up to 3
				NH 1	8	Up to 3
				NH3	8	Up to 3
ACB	LVCP 8H ACB	up to 800 V	3200 A	NH00	16	Up to 3
				NH 1	8	Up to 3
				NH3	8	Up to 3

According to standard IEC-61439

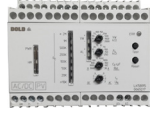
LBS = Load Break Switch

ACB= Air Circuit Breaker

► DIMENSIONAL DRAWINGS



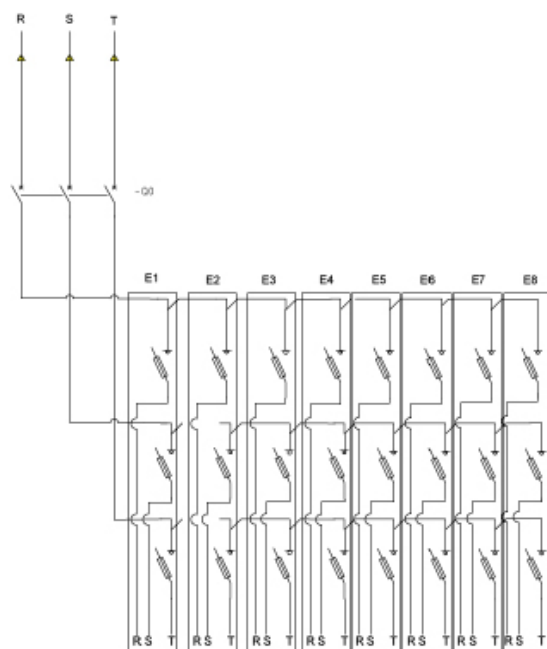
► ACCESSORIES

	Accessories	Compatibility
	Kit of BTHC + Surge Arrester	✓
	Insulation Monitor Device (IMD)*	✓
	BTHC for protection of auxiliary transformer	✓
	BTHC for Smart Logger Protection	✓

Up to three accessories in the door. To add more accessories, a vertical fuse switch would be used. For special combinations, consult with commercial department.

* Obligatory for IT regime LV panels

► WIRING DIAGRAM



Bottom Incoming - Top Outgoing | 10 feeders

DESCRIPTION

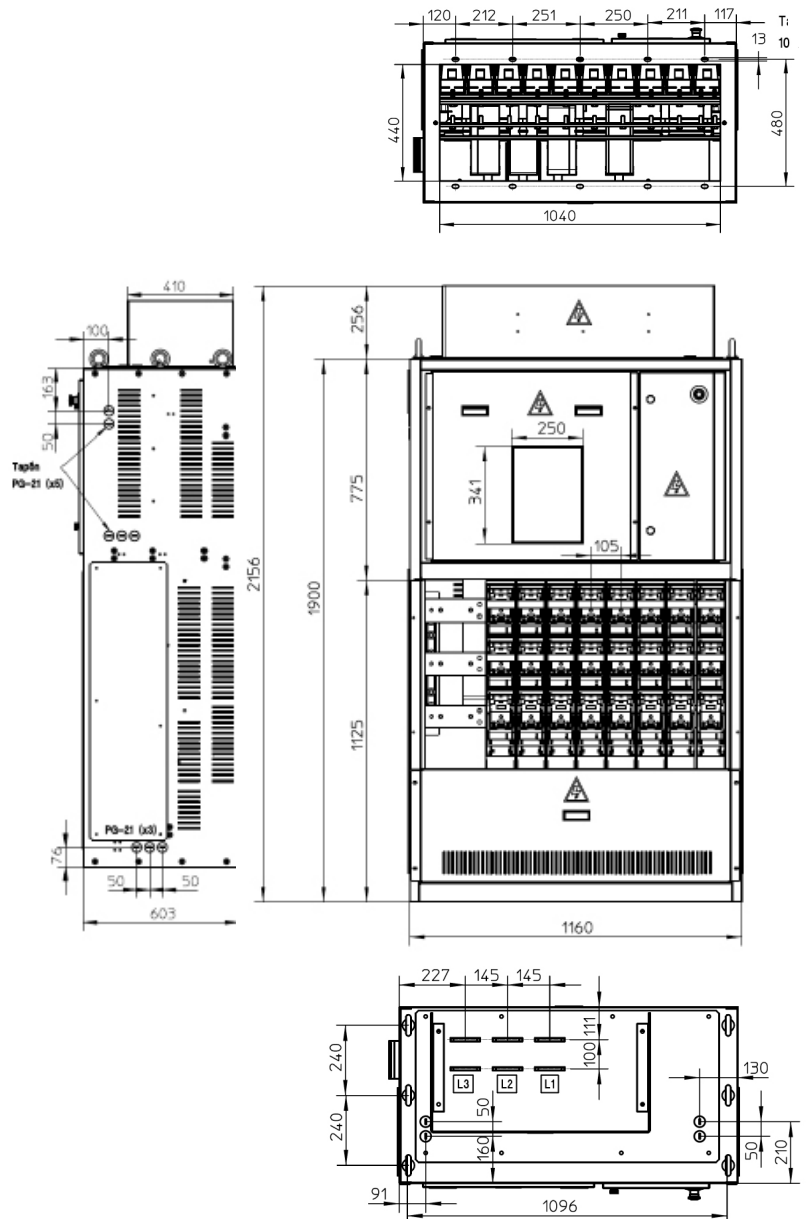
Protected outgoing with	Description	Rated operational voltage U_e	Maximum current	Size	Maximum n° of incomings	Accessories
LBS Telergon	LVCP 10H LBS	up to 800 V	3200 A	NH 00	20	Up to 4
				NH 1	10	Up to 4
				NH3	10	Up to 4
ACB	LVCP 10H ACB	up to 800 V	4000 A	NH00	20	Up to 4
				NH 1	10	Up to 4
				NH3	10	Up to 4

According to standard IEC-61439

LBS = Load Break Switch

ACB = Air Case Circuit Breaker

DIMENSIONAL DRAWINGS



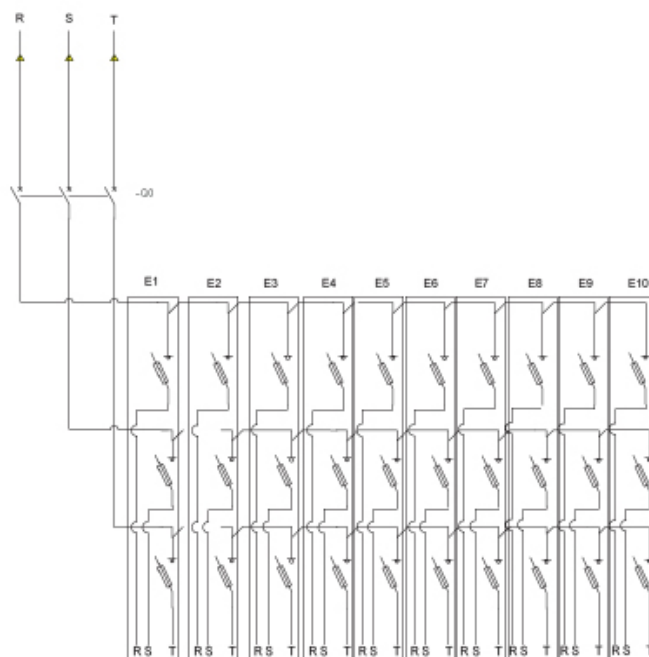
► ACCESSORIES FOR AUXILIARY CUBICLE

	Accessories	Compatibility
	Kit of BTHC + Surge Arrester	✓
	Insulation Monitor Device (IMD)*	✓
	BTHC for protection of auxiliary transformer	✓
	BTHC for Smart Logger Protection	✓

Up to four accessories in the door. To add more accessories, a vertical fuse switch would be used. For special combinations, consult with commercial department.

* Obligatory for IT regime LV panels

► WIRING DIAGRAM



Bottom Incoming - Top Outgoing | 12 feeders

DESCRIPTION

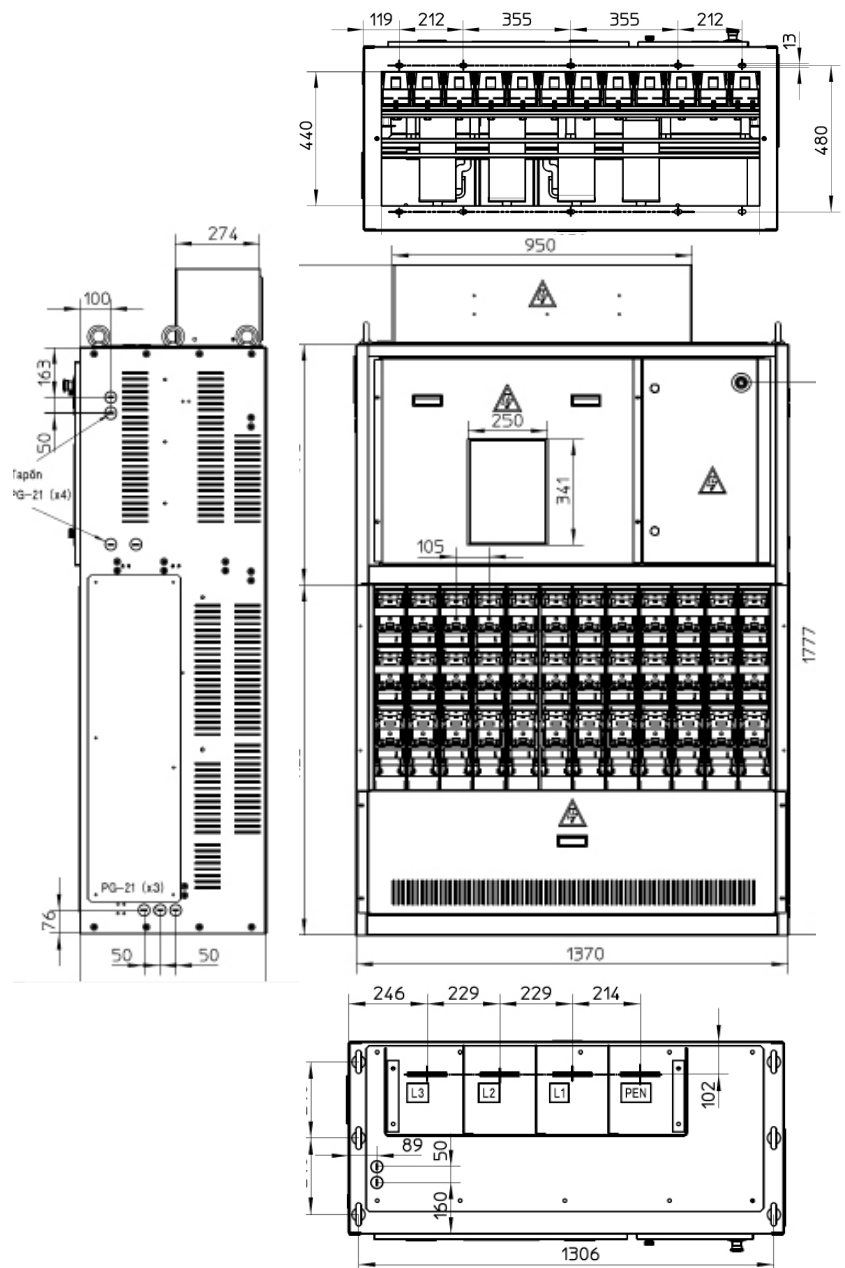
Protected outgoing with	Description	Rated operational voltage U_e	Maximum current	Size	Maximum n° of incomings	Accessories
LBS Telergon	LVCP 12H LBS	up to 800 V	3200 A	NH 00	24	Up to 4
				NH 1	12	Up to 4
				NH3	12	Up to 4
ACB	LVCP 12H ACB	up to 800V	4000 A	NH00	24	Up to 4
				NH 1	12	Up to 4
				NH3	12	Up to 4

According to standard IEC-61439

LBS = Load Break Switch

ACB= Air Circuit Breaker

DIMENSIONAL DRAWINGS



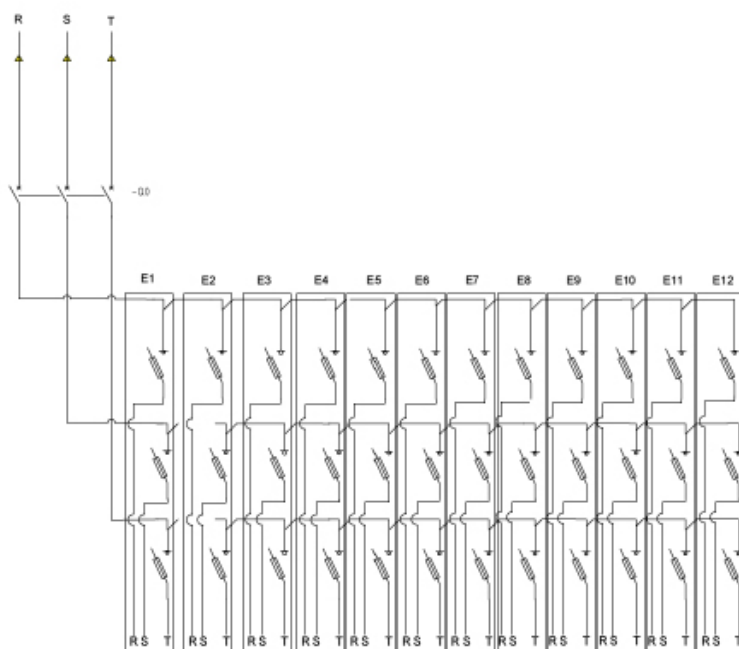
► ACCESSORIES FOR AUXILIARY CUBICLE

	Accessories	Compatibility
	Kit of BTHC + Surge Arrester	✓
	Insulation Monitor Device (IMD)*	✓
	BTHC for protection of auxiliary transformer	✓
	BTHC for Smart Logger Protection	✓

Up to four accessories in the door. To add more accessories, a vertical fuse switch would be used. For special combinations, consult with commercial department.

* Obligatory for IT regime LV panels

► WIRING DIAGRAM



Bottom Incoming - Top Outgoing | Unesa type 14 feeders

DESCRIPTION

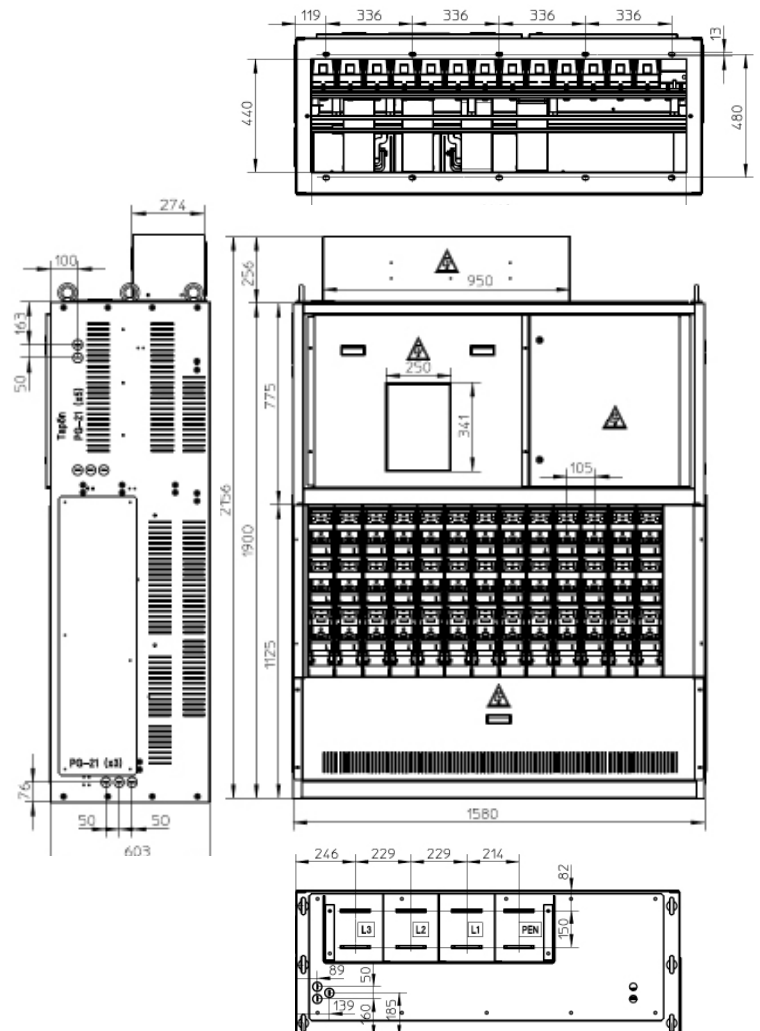
Protected outgoing with	Description	Rated operational voltage U_e	Maximum current	Size	Maximum n° of incomings	Accessories
LBS Telergon	LVCP 14H LBS	up to 800 V	3200 A	NH 00	28	Up to 5
				NH 1	14	Up to 5
				NH3	14	Up to 5
ACB	LVCP 14H ACB	up to 800 V	4000 A	NH00	28	Up to 5
				NH 1	14	Up to 5
				NH3	14	Up to 5

According to standard IEC-61439

LBS = Load Break Switch

ACB = Air Circuit Breaker

DIMENSIONAL DRAWINGS



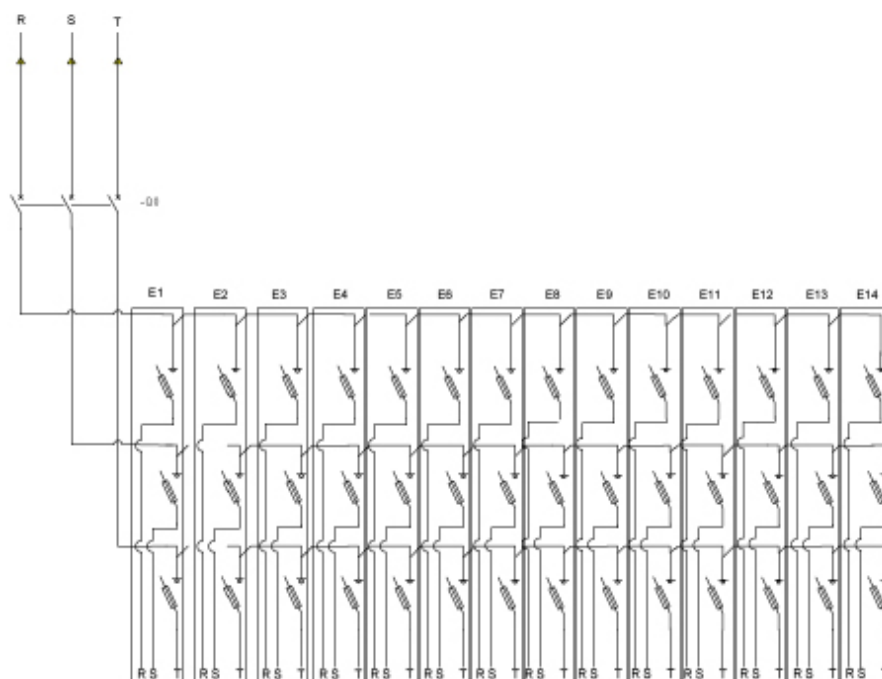
► ACCESSORIES FOR AUXILIARY CUBICLE

	Accessories	Compatibility
	Kit of BTHC + Surge Arrester	✓
	Insulation Monitor Device (IMD)*	✓
	BTHC for protection of auxiliary transformer	✓
	BTHC for Smart Logger Protection	✓

Up to five accessories in the door. To add more accessories, a fuse switch would be used. For special combinations, consult with commercial department.

* Obligatory for IT regime LV panels

► WIRING DIAGRAM



Connection with all the models

► DESCRIPTION

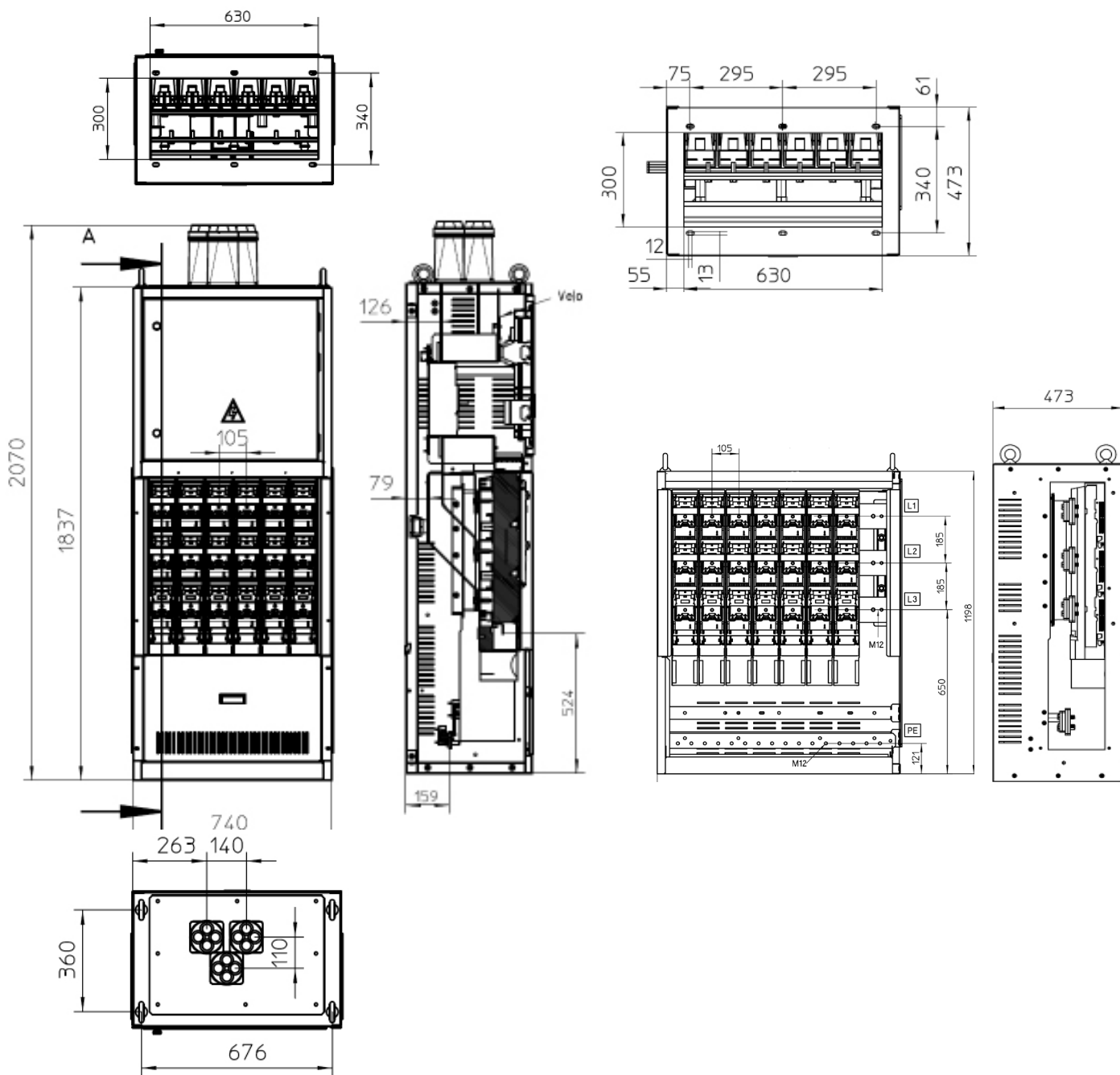
Extensions module	Maximum n° of feeders with NH1/3 fuse switches	Maximum n° of feeders with NH00 fuse switches	Maximum current	Rated operational voltage U_e
LVCP AMP 4H	4	8	From 1600 A to 4000 A	Up to 800 V
LVCP AMP 6H	6	12		
LVCP AMP 8H	8	16		
LVCP AMP 10H	10	20		
LVCP AMP 12H	12	24		



Main features

- Connection both sides (left and right)
- Outgoing through busbar with neutral. From 16000 A to 4000A for 400/500/690/800 V
- From 4 feeders NH1/3 size to 12 NH 1/3 feeders
- Option to combine different size of fuse switches
- Metallic enclosure

► DIMENSIONAL DRAWINGS



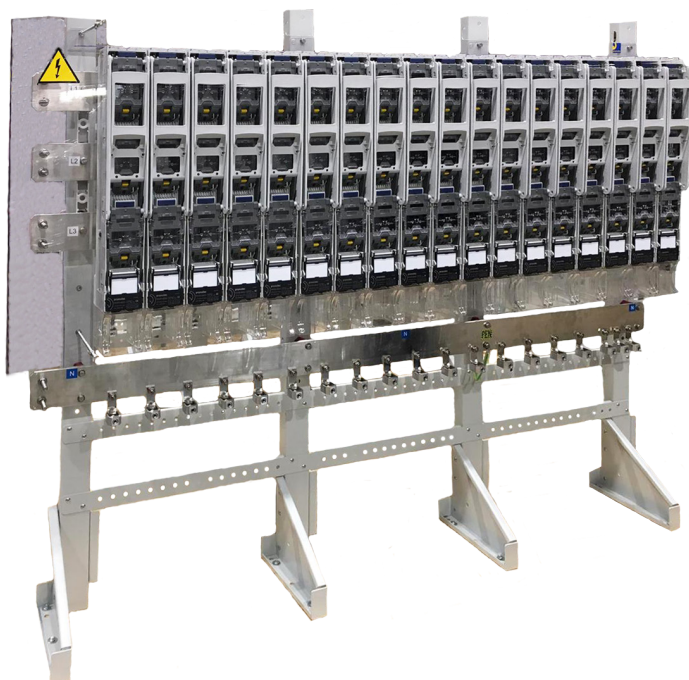
Bottom incoming to the fuse switches

DESCRIPTION

Description	Rated operational voltage U_e	Maximum current	Maximum n° of incomings NH 1/3	Maximum n° of incomings NH 00
CBTM 6 M	Up to 800 V	Up to 2500 A	6	12
CBTM 7 M			7	14
CBTM 8 M			8	16
CBTM 9 M			9	18
CBTM 10 M			10	20
CBTM 11 M		Up to 4000 A	11	22
CBTM 12 M			12	24
CBTM 13 M			13	26
CBTM 14 M			14	28
CBTM 15 M			15	30
CBTM 16 M			16	32
CBTM 17 M			17	34
CBTM 18 M			18	36

According to standard IEC-61439

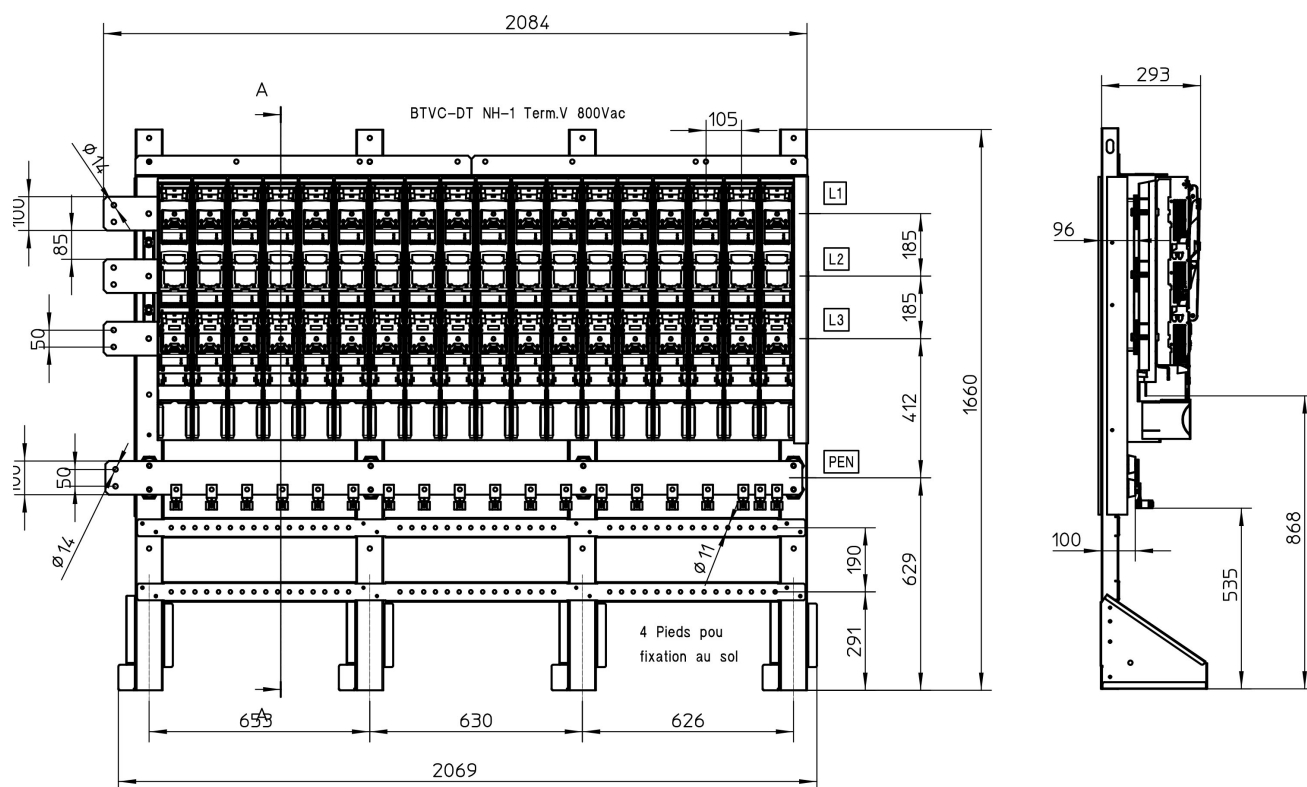
CBTM = Modular Low Voltage Panel



Main features

- Connection both sides
- Option to combine different size of fuse switches
- Option to combine several panels for a single point of connection
- Possibility of customizable panels according to customer needs
- Lateral outgoing to the transformer - circuit breaker through wiring.

► DIMENSIONAL DRAWINGS



Bottom incoming - Rear outgoing | Insulating 6 feeders

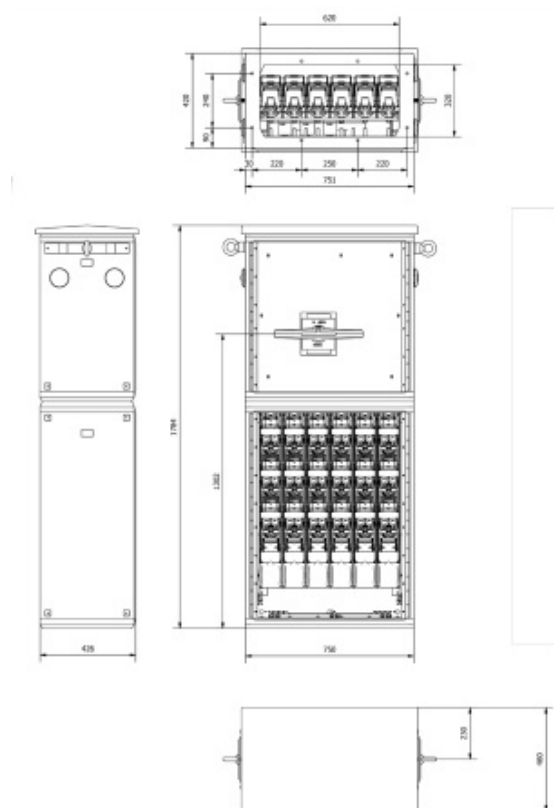
DESCRIPTION

Protected outgoing with	Description	Rated operational voltage U_e	Maximum current	Size	Maximum n° of incomings	Accessories	IP54
LBS Telergon 3P+N. Serie S6000	LVCP EXT POL 6H IC 4P 12E00 SC	400/500/690 V	800 A	NH 00	12	2	✓
	LVCP EXT POL 6H 800 A IC 4P 6E01 SC			NH 1	6	2	✓
	LVCP EXT POL 6H 800 A IC 4P 6E03 SC			NH 3	6	2	✓
LBS Telergon 3P+N	LVCP EXT POL 6H IC 4P 12E00 SC		1600 A	NH 00	12	2	✓
	LVCP EXT POL 6H IC 4P 6E01 SC			NH 1	6	2	✓
	LVCP EXT POL 6H IC 4P 6E03 SC			NH 3	6	2	✓
LBS Telergon 3P 800Vac. Serie S6000	LVCP EXT POL 6H IC 3P 12E00 SC	Up to 800 V	400 A	NH 00	12	2	✓
	LVCP EXT POL 6H IC 3P 6E01 SC			NH 1	6	2	✓
	LVCP EXT POL 6H IC 3P 6E03 SC			NH 3	6	2	✓
LBS Telergon 3P 800Vac	LVCP EXT POL 6H IC 3P 12E00 SC		1250 A	NH 00	12	2	✓
	LVCP EXT POL 6H IC 3P 6E01 SC			NH 1	6	2	✓
	LVCP EXT POL 6H IC 3P 6E03 SC			NH 3	6	2	✓
MCCB 3P+N Type TB2 Moulded case	LVCP EXT POL 6H IA 4P 12E00 SC	400/500/690 V	1600 A	NH 00	12	2	✓
	LVCP EXT POL 6H IA 4P 6E01 SC			NH 1	6	2	✓
	LVCP EXT POL 6H IA 4P 6E01 SC			NH 3	6	2	✓
MCCB 3P Tipo XV Moulded case	LVCP EXT POL 6H IA 3P 12E00 SC	Up to 800 V	1250 A	NH 00	12	2	✓
	LVCP EXT POL 6H IA 3P 6E01 SC			NH 1	6	2	✓
	LVCP EXT POL 6H IA 3P 6E03 SC			NH 3	6	2	✓

According to standard IEC-61439

LBS = Load Break Switch

MCCB = Moulded Case Circuit Breaker



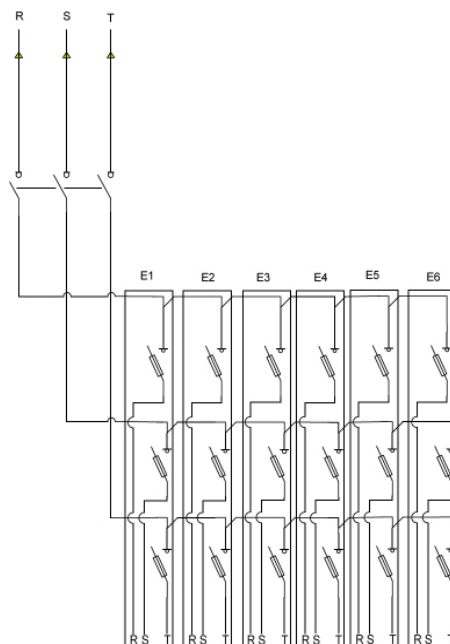
► ACCESSORIES

Accessories		Compatibility
 + 	Kit of BTCH + Surge Arrester	✓
	Insulation Monitor Device (IMD)*	✓
 + 	BTCH for protection of auxiliary transformer	✓
 + 	BTCH for Smart Logger Protection	✓

Up to two accessories in the door. To add more accessories, a vertical fuse switch would be used. For special combinations, consult with commercial department.

* Obligatory for IT regime LV panels

► WIRING DIAGRAM



Bottom incoming - Top outgoing | Insulating DIN 5 feeders

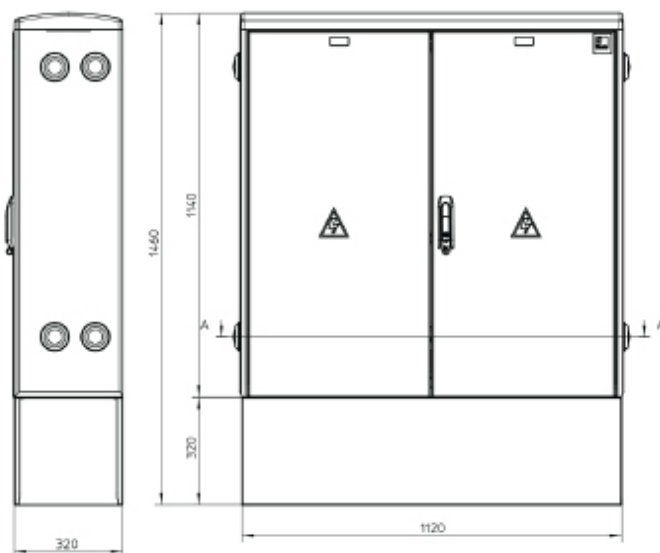
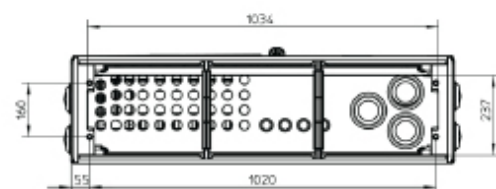
DESCRIPTION

Protected outgoing with	Description	Rated operational voltage U_e	Maximum current	Size	Maximum n° of incomings	Accessories	IP54
LBS Telergon* 3P	LVCP EXT DIN 1600 IC 3P 10E00 SC	400/500/690 V	1600 A	NH 00	10	2	✓
	LVCP EXT DIN 1600 IC 3P 5E01 SC			NH 1	5	2	✓
	LVCP EXT DIN 1600 IC 3P 5E03 SC			NH 3	5	2	✓
LBS Telergon* 3P 800Vac	LVCP EXT DIN 1250 IC 3P 10E00 SC	800 V	1250 A	NH 00	10	2	✓
	LVCP EXT DIN 1250 IC 3P 5E01 SC			NH 1	5	2	✓
	LVCP EXT DIN 1250 IC 3P 5E03 SC			NH 3	5	2	✓

According to standard IEC-61439

LBS = Load Break Switch

DIMENSIONAL DRAWINGS



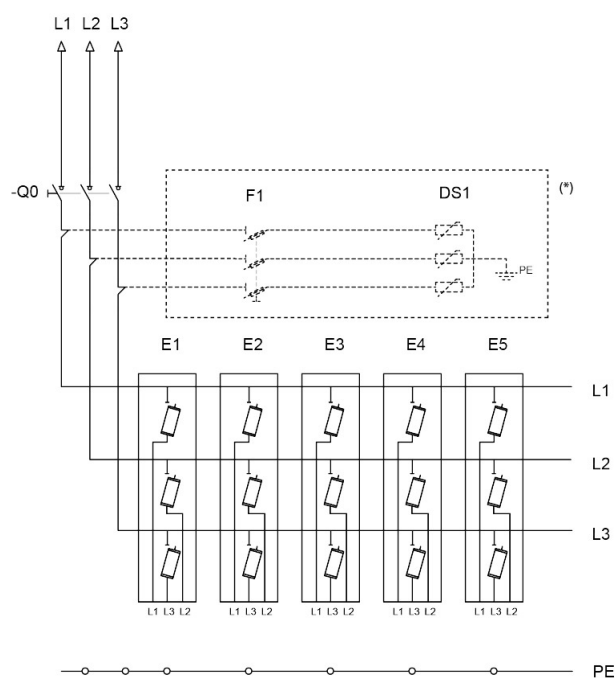
► ACCESSORIES

Accessories		Compatibility
 + 	Kit of BTHC + Surge Arrester	✓
	Insulation Monitor Device (IMD)*	✓
 + 	BTHC for protection of auxiliary transformer	✓
 + 	BTHC for Smart Logger Protection	✓

Up to two accessories in the door. To add more accessories, a vertical fuse switch would be used. For special combinations, consult with commercial department.

* Obligatory for IT regime LV panels

► WIRING DIAGRAM



Bottom incoming - Rear outgoing | Outdoor metallic 6 feeders

DESCRIPTION

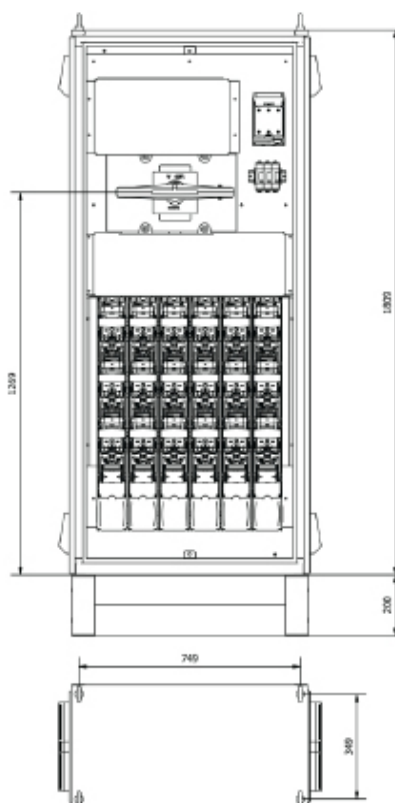
Protected outgoing with	Description	Rated operational voltage U_e	Maximum current	Size	Maximum n° of incomings	Accessories	IP54
LBS Telergon 3P+N	LVCP EXT M 6H IC 4P 12E00 SC	400/500/690 V	1600 A	NH 00	12	2	✓
	LVCP EXT M 6H IC 4P 6E01 SC			NH 1	6	2	✓
	LVCP EXT M 6H IC 4P 6E03 SC			NH 3	6	2	✓
LBS Telergon 3P 800Vac	LVCP EXT M 6H IC 3P 12E00 SC	800 V	1250 A	NH 00	12	2	✓
	LVCP EXT M 6H IC 3P 6E01 SC			NH 1	6	2	✓
	LVCP EXT M 6H IC 3P 6E03 SC			NH 3	6	2	✓
MCCB 3P+N Type TB2 Moulded case	LVCP EXT M 6H IA 4P 12E00 SC	400/500/690 V	1600 A	NH 00	12	2	✓
	LVCP EXT M 6H IA 4P 6E01 SC			NH 1	6	2	✓
	LVCP EXT M 6H IA 4P 6E01 SC			NH 3	6	2	✓
MCCB 3P Type TB2 Moulded case	LVCP EXT M 6H IA 3P 12E00 SC	800 V	1250 A	NH 00	12	2	✓
	LVCP EXT M 6H IA 3P 6E01 SC			NH 1	6	2	✓
	LVCP EXT M 6H IA 3P 6E03 SC			NH 3	6	2	✓

According to standard IEC-61439

LBS = Load Break Switch

MCCB = Moulded Case Circuit Breaker

DIMENSIONAL DRAWINGS



Bottom incoming - Rear outgoing | Outdoor metallic 6 feeders

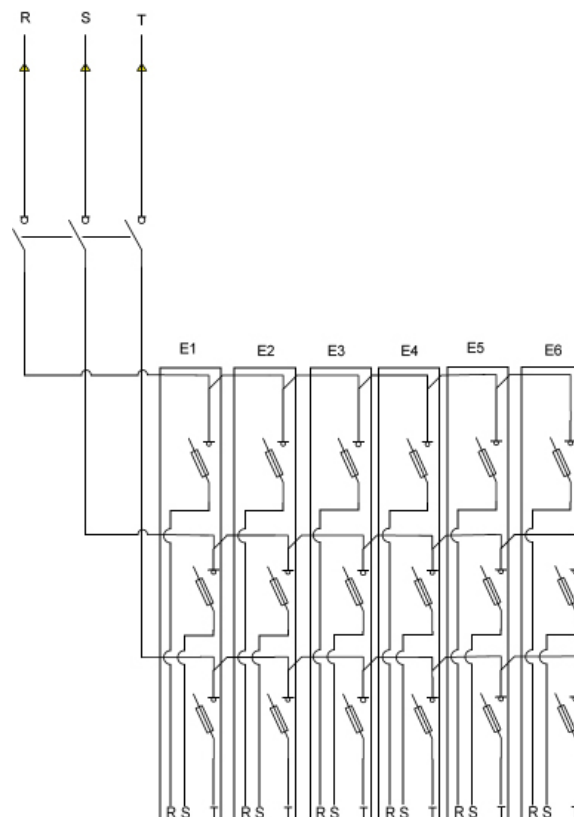
► ACCESSORIES

	Accessories	Compatibility
	Kit of BTHC + Surge Arrester	✓
	Insulation Monitor Device (IMD)*	✓
	BTHC for protection of auxiliary transformer	✓
	BTHC for Smart Logger Protection	✓

Up to two accessories in the door. To add more accessories, a vertical fuse switch would be used. For special combinations, consult with commercial department.

* Obligatory for IT regime LV panels

► WIRING DIAGRAM



► INDOOR PANELS | TECHNICAL DATA

			INDOOR PANELS					
			4 feeders	6 feeders	8 feeders	10 feeders	12 feeders	14 feeders
Electrical characteristics	Rated operational voltage	U_e (V)	400/500/690/800 Vac	400/500/690/800 Vac	400/500/690/800 Vac	400/500/690/800 Vac	400/500/690/800 Vac	400/500/690/800 Vac
	Rated operational current	I_e (A)	630/800/1000/1250/1600 A	630/800/1000/1250/1600 A	1250/1600/1000/2500/3200 A	1600/2000/2500/3200/4000 A	1600/2000/2500/3200/4000 A	1600/2000/2500/3200/4000 A
	Rated permissible 1 second short circuit duration	(kA)	To be specified according to voltage and breaker model	To be specified according to voltage and breaker model	To be specified according to voltage and breaker model	To be specified according to voltage and breaker mode	To be specified according to voltage and breaker model	To be specified according to voltage and breaker model
	Incomers from inverters	NH 1/3 width 100 mm	4	6	8	10	12	14
		NH 00 width 50 mm	8	12	16	20	24	28
	Incoming cable section (incomers from inverters)	NH 00*	Max. 120 mm ²	Max. 120 mm ²	Max. 120 mm ²	Max. 120 mm ²	Max. 120 mm ²	Max. 120 mm ²
		NH 1/3	Max. 300 mm ²	Max. 300 mm ²	Max. 300 mm ²	Max. 300 mm ²	Max. 300 mm ²	Max. 300 mm ²
	N° and section of outgoing cables to transformer		mm ²	Maximum 4x240 mm ²	Maximum 4x240 mm ²	Maximum 8x240 mm ²	Maximum 8x240 mm ²	Maximum 8x240 mm ²
	Rated insulation voltage	Phase-Phase	kV	2,5 kV	2,5 kV	2,5 kV	2,5 kV	2,5 kV
		Phase-Ground		10 kV	10 kV	10 kV	10 kV	10 kV
Protection degree	Rated impulse withstand voltage	Phase-Ground	kV	8 kV	8 kV	8 kV	8 kV	8 kV
	IP		IP2X	IP2X	IP2X	IP2X	IP2X	IP2X
Protection degree	IK		IK08	IK08	IK08	IK08	IK08	IK08

*Extendable to 185 mm² using an additional accessory. Consult with the commercial department

OUTDOOR PANELS | TECHNICAL DATA

			OUTDOOR PANELS		
			Cabinet Rear outgoing 6 feeders	Cabinet Bottom outgoing 5 feeders	Metallic panel Rear outgoing 6 feeders
Electrical characteristics	Rated operational voltage	U_e (V)	400/500/ 690/800 Vac	400/500/ 690/800 Vac	400/500/ 690/800 Vac
	Rated operational current	I_e (A)	1600/1600/1600/1250 A	1600/1600/1600/1250 A	1600/1600/1600/1250 A
	Rated permissible 1 second short circuit duration	(kA)	To be specified according to voltage and breaker model	To be specified according to voltage and breaker model	To be specified according to voltage and breaker model
	Incomers from inverters	NH 1/3 width 100 mm	6	5	6
		NH 00 width 50 mm	12	10	12
	Incoming cable section (incomers from inverters)	NH 00*	Max. 120 mm ²	Max. 120 mm ²	Max. 120 mm ²
		NH 1/3	Max. 300 mm ²	Max. 300 mm ²	Max. 300 mm ²
	Nº and section of outgoing cables to transformer	mm ²	Maximum 4x240 mm ²	Maximum 4x240 mm ²	Maximum 4x240 mm ²
	Rated insulation voltage	Phase-Phase	2,5 kV	2,5 kV	2,5 kV
		Phase-Ground	10 kV	10 kV	10 kV
Protection degree	Rated impulse withstand voltage	Phase-Ground	8 kV	8 kV	8 kV
	IP		IP55	IP54	IP55
	IK		IK10	IK10	IK10

*Extendable to 185 mm² using an additional accessory. Consult with the commercial department

► ACCESSORIES | TECHNICAL DATA

Measuring instruments - Panel meters

Description	Rated operational voltage U_e
Current transformer + Panel meter PNT MASTER 3840	400/500/690 V
Current transformer + Panel meter for 800 V AC	800 V



Surge arresters

Description	Rated operational voltage U_e
Arrester set 400/500/690 V (BTHC+arrester+fuses)	400/500/690 V
Arrester set 800 V AC (BTHC+arrester+fuses)	800 V



Step-down voltage transformers

Description	Rated operational voltage U_e
Single-phase Isolation transformer IP00	230 V
Three-phase Isolation transformer IP23	230/400 V AC





Handwriting practice lines consisting of 25 horizontal dotted lines, each preceded by a small brown dash on the left margin.

