



SWITCHGEARS FOR TUNNELS AND DEPOTS

■ METRO ■

SWITCHGEARS SERIES RU-825 FOR TUNNELS AND DEPOT

Switchgears are applied in metro depot and tunnels for reception and distribution of power with rated voltage 825 V.

Distinctive features:

- / high reliability;
- / small overall dimensions and weight;
- / serviceability;
- / minimum expenditure of servicing time;
- / minimum probability of fire occurrence.

RU-825LR, RU-825PK, RU-825ZK, RU-825PP are manufactured as a separate metal cabinets with one-side servicing.

RU-825PR, RU-825SR and RU-825RS are manufactured as complete devices, consisting of several connected metal cabinets.

Structural elements produced by RITTAL (Germany), as well as components of world's leading manufacturers: ABB, Schneider Electric, Weidmuller, etc., are used in switchgear manufacturing.

Types and composition of switchgear for tunnels and depot

Name of switchgear		Main component
RU-825LR	with line disconnecter	line disconnecter
RU-825PK	cables connection	copper bus bar for feeding circuit connection to contact rail; potential balancing bus bar
RU-825PR	contact rail feeding	feeding circuits switching disconnectors
RU-825ZK	with short-circuiting contactor	contactor for track rail insulated joint short-circuiting
RU-825RS	distribution and sectioning	input disconnecter of +825 V circuit with double break; four output disconnectors with double break
RU-825SR	sectioning with disconnectors	disconnecter of +825 V circuit; disconnecter of minus 825 V circuit
RU-825PP	switching with disconnectors	disconnecter of +825 V circuit with double break

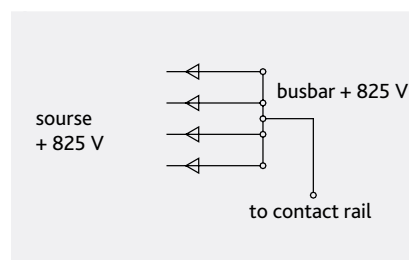
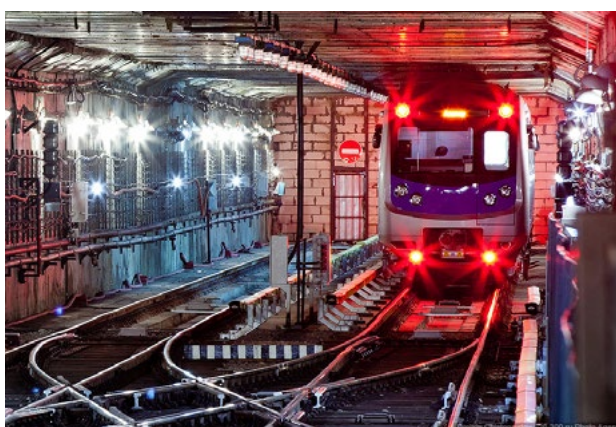
RU-825PK SWITCHGEAR (CABLES CONNECTION)

RU-825PK switchgear is applied at DC metro traction networks with voltage 825 V as cabinets for cables connection in tunnel and depot.

RU-825PK consists of one-side serviced cabinet and foundation. The cabinet is equipped with power busbars to which cables are connected.

The busbars go through the cabinet bottom for connection to contact rail. The foundation is provided for cabinet installation on proper location.

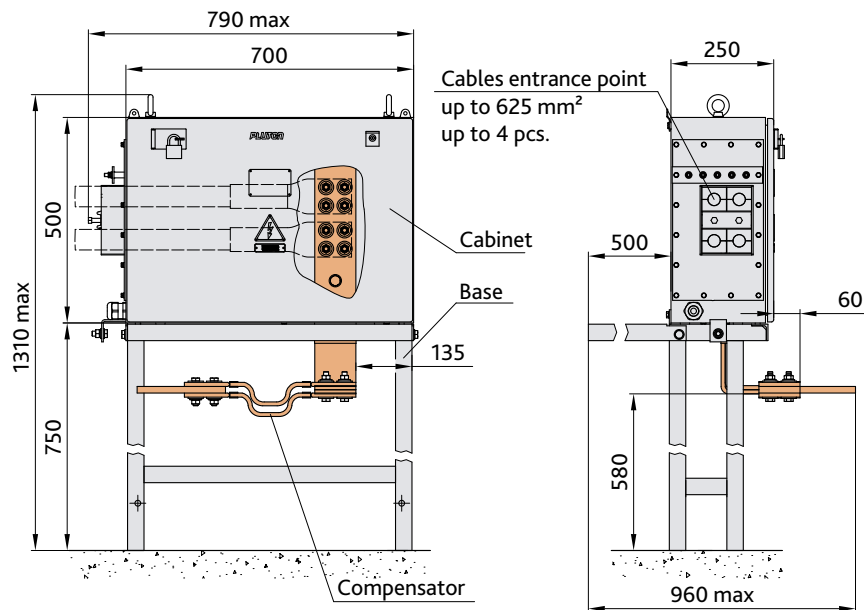
The cabinets are manufactured both for outdoor installation (in depot) and for indoor installation (in tunnel).



Technical details RU-825PK

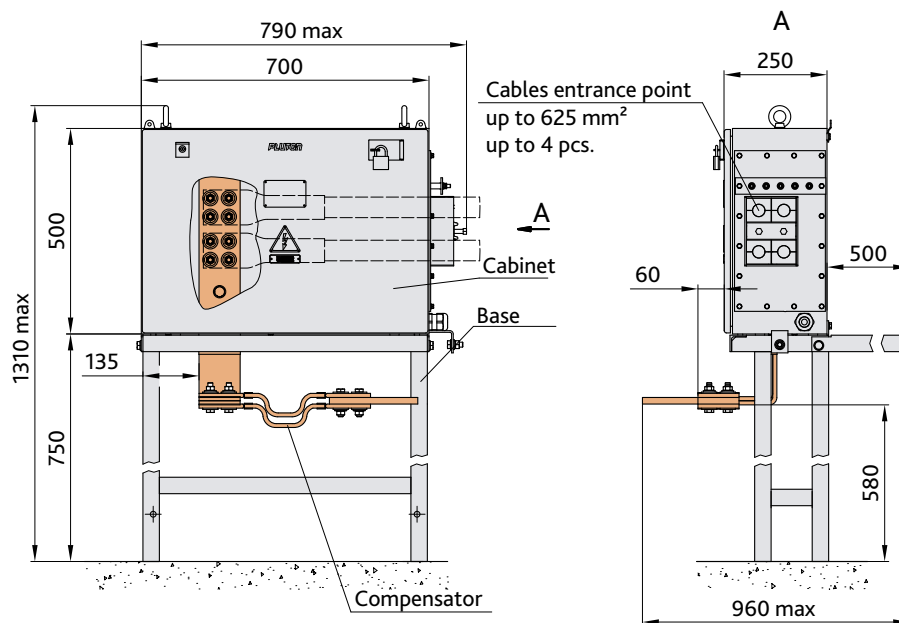
Name of parameter	Unit	Value
Rated voltage of power circuit	V	825
Rated current of power circuit	A	4000
Testing voltage	kV	24
Protection class	-	IP54
Number of connected cables section 625 mm ²	pcs.	4
Modification: RU-825PK-L RU-825PK-P	-	Connection: Left Right
Weight, max.	kg	90

RU-825LR-V (left connection)



Weight, maximum 90 kg

RU-825PK-P (right connection)



Weight, maximum 90 kg

RU-825LR SWITCHGEAR (WITH LINE DISCONNECTOR)

Switchgear with line disconnecter (RU-825LR) is provided for closing and opening of metro contact rail 825 V dead parts in tunnel and depot.

RU-825LR is a complete one-side serviced unit that provides supply line 825 V switching with rated current 4000 A.

RU-825LR consists of two compartments:

- compartment with disconnecter and power busbars;
- control and disconnecter drive compartment.

Overview window for visual observation of disconnecter operation is on control compartment door. A small cabinet with disconnecter control buttons and lighting switch is installed in the top part of the door. The cabinet is equipped with doors with keyed locks. There are several modifications of cabinets depending on the number and location of connected power cables and busbars at input and output.

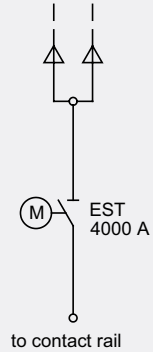
Connection of power cables to disconnecter is done via special marine pressure seals, providing high sealing level in conditions of equipment operation in metro tunnels.

Power busbar is provided for connection to contact rail. It exits from below through a hole in insulation panel of the cabinet bottom. There is a possibility of disconnecter drive control in local or remote modes.

The switchgear is manufactured for both depots (outdoor installation) and tunnels (indoor installation).



from RU-825L, RU-825R

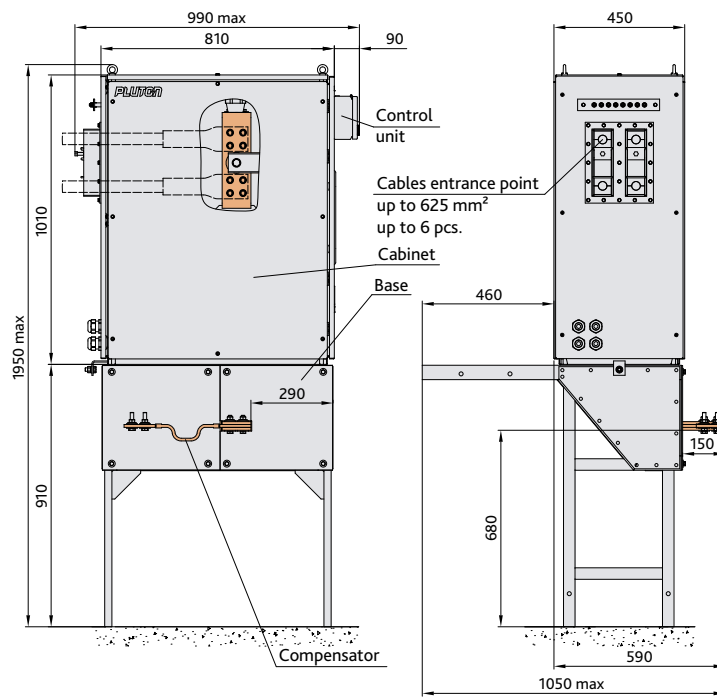


Technical details RU-825LR

Name of parameter	Unit	Value
Disconnecter type	-	EST 4000
Rated voltage of power circuit	V	825
Rated current of power circuit (DC)	A	4000
Dynamic stability current	kA	100
Electric drive signaling and control circuits voltage (DC)*	V	220
Lighting circuits voltage (50 Hz)	V	12
RU-825LR casing protection class (except places of bus bars outgoing to contact rail)	-	IP54
Cyclicity (closing or opening)	1/ h	40
Mechanical stability, min	cycles	30 000
Modification: RU-825LR-L RU-825LR-P RU-825LR-V	-	Connection: Left Right Top
Weight, max.	kg	175

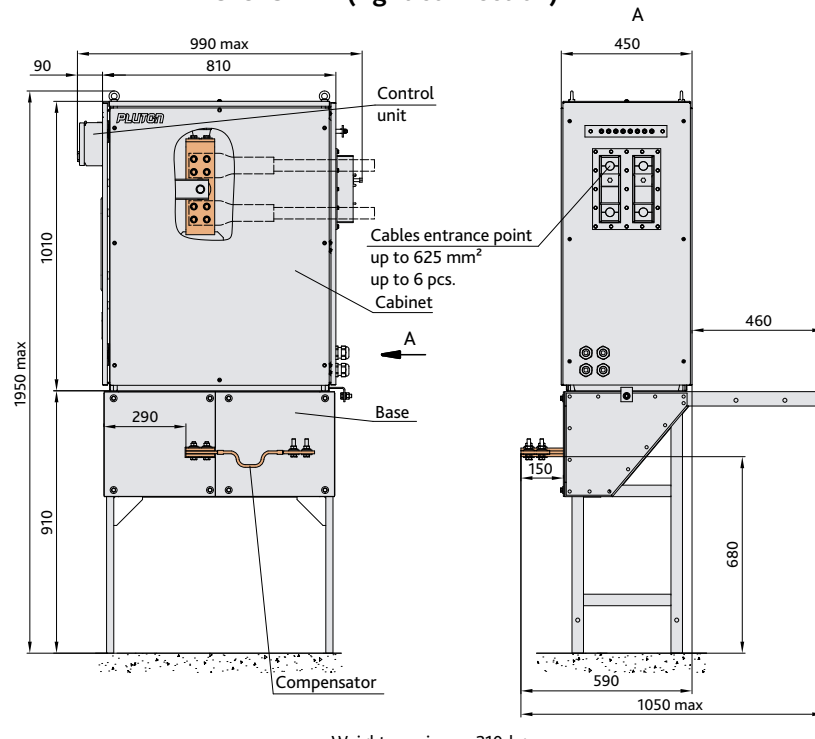
*) Signaling and control circuits voltage can be changed according to the requirements of a particular project

RU-825LR-L (left connection)



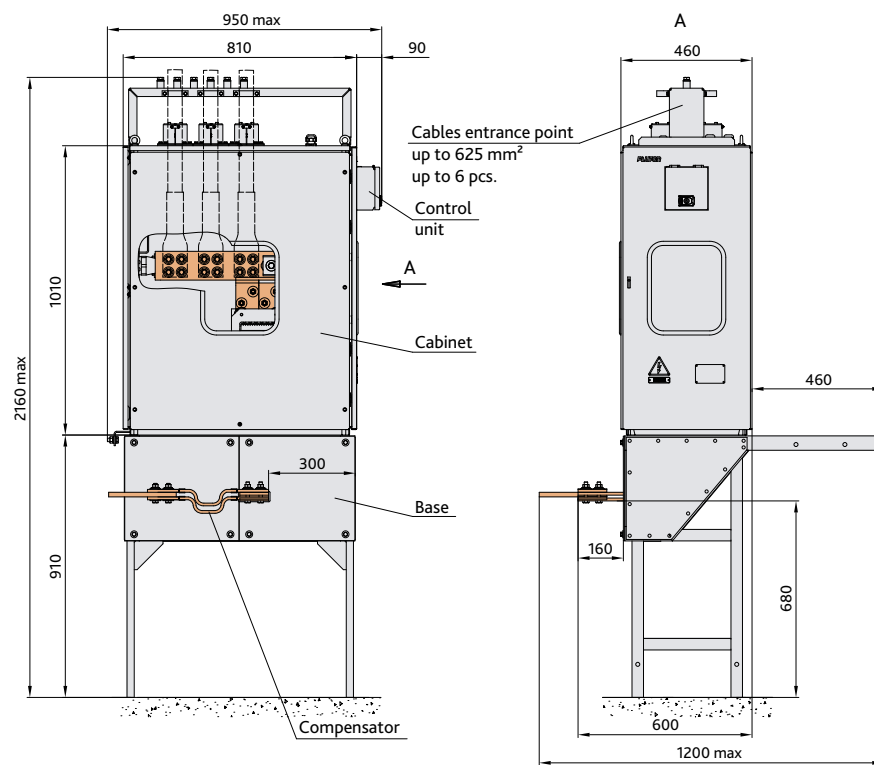
Weight, maximum 210 kg

RU-825LR-P (right connection)



Weight, maximum 210 kg

RU-825LR-V (connection from the top)



Weight, maximum 210 kg



RU-825PR SWITCHGEAR (CONTACT RAIL FEEDING)

Contact rail feeding switchgear (RU-825PR) is provided for dead-end siding with and without ditch contact rail feeding, for switching of circuit, of main-line track orifice plate - dead-end siding orifice plate (maintenance inspection track section).

RU-825PR provide power supply and distribution with 825 V voltage and 4000 A rated current.

RU-825PR is designed as double-side serviced metal cabinets, each of them is a separate section and the number of sections can vary depending on the Customer's requirements.

RU-825PR includes power devices for power distribution (automatic and manual control), control, indication, signaling and protection systems.

Disconnectors power bus bars and switching power part are separated from control zone. There are overview windows on front doors for disconnectors position visual observation.

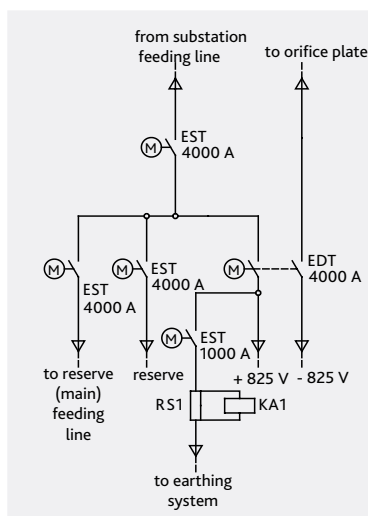
Connection of power cables to disconnector is provided from the top or from the bottom through special pressure seals.



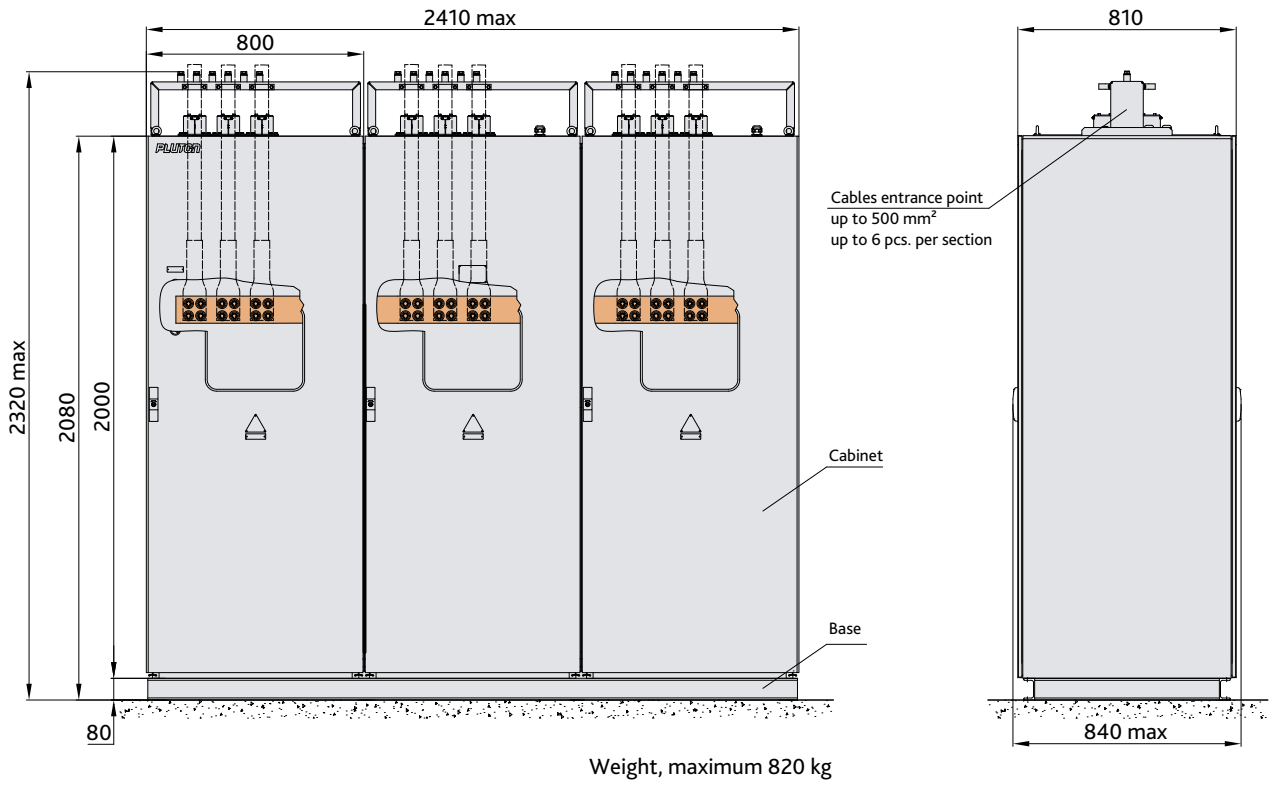
RU-825PR technical specifications

Name of parameter	Unit	Value
Disconnector type	-	EST 4000, EDT 4000, EST 1000
Rated voltage of power circuit	V	825
Rated current of power circuit (DC)	A	4000
Rated current of "minus 825 V" circuit disconnector and earthing disconnector	A	1000
Light signaling circuits voltage (50 Hz)	V	220
Motor drive control circuits voltage, (DC)*	V	220
Lighting circuits voltage (50 Hz)	V	220/12
Protection class	-	IP54
Cyclicity (closing or opening of disconnector with motor drive)	1/h	20
Mechanical stability	cycles	20000
Modification: RU-825PR-V RU-825PR-N	-	Connection: Top Bottom
Weight, without base, max.	kg	780

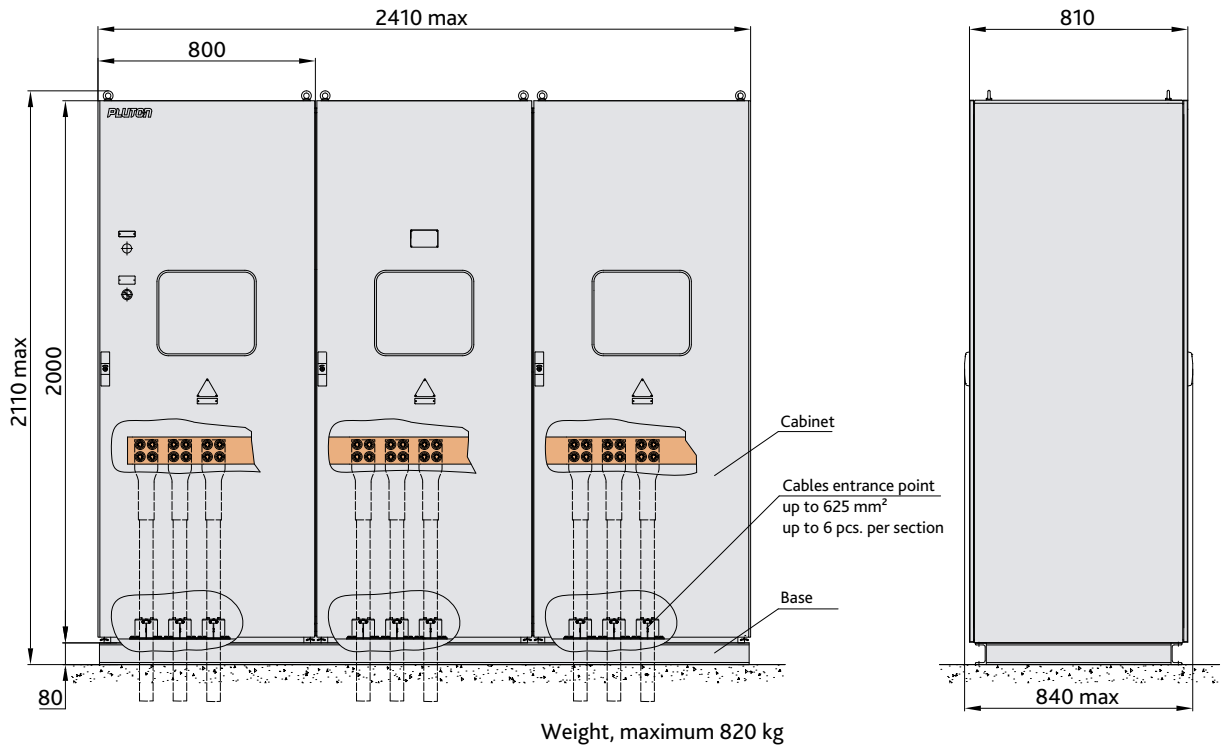
*) Signaling and control circuits voltage can be changed according to the requirements of a particular project



RU-825PR-V (connection from the top)



RU-825PR-N (connection from the bottom)



RU-825ZK SWITCHGEAR (WITH SHORT-CIRCUITING CONTACTOR)

RU-825ZK switchgear is provided for automatic disconnection/connection of track rail joint dead-end siding (rolling stock maintenance inspection section) during voltage removal/supply to contact rail dead-end siding.

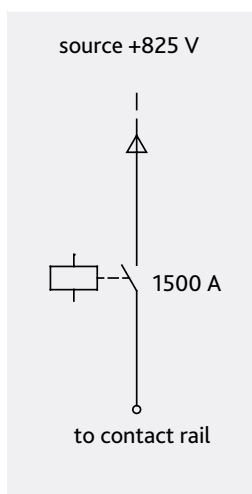
RU-825ZK is a one-side serviced unit, including contactor, protection and lighting devices.

RU-825ZK consists of a cabinet and base. Power contactor and control elements are installed in the cabinet.

The base is provided for cabinet installation on its proper location. Power cables are ingoing into the cabinet from below.

Switching of contactor is done automatically in case of voltage supply from the substation feeding line to contact rail of rolling stock maintenance inspection track section.

Connection of contactor to control system is provided with double-pole automatic circuit-breaker. Power supply to contactor coil is 220 V, 50 Hz.

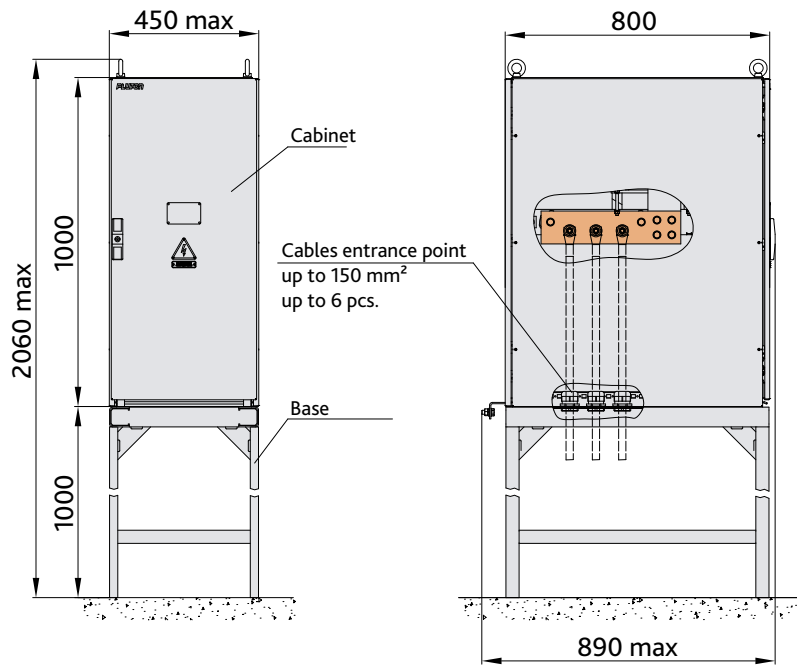


RU-825ZK technical specifications

Name of parameter	Unit	Value
Rated voltage of power circuit	V	400
Rated current of power circuit (DC)	A	400, 1000
Contactor control circuits voltage (50 Hz)	V	220
Lighting circuits voltage (50 Hz)	V	12
Cyclicality (closing-opening)	1/ h	10
Mechanical stability (no-load), minimum	cycles	100000
Protection class	-	IP54
Modification: RU-825ZK-V RU-825ZK-N	-	Connection: Top Bottom
Weight, max.	kg	150

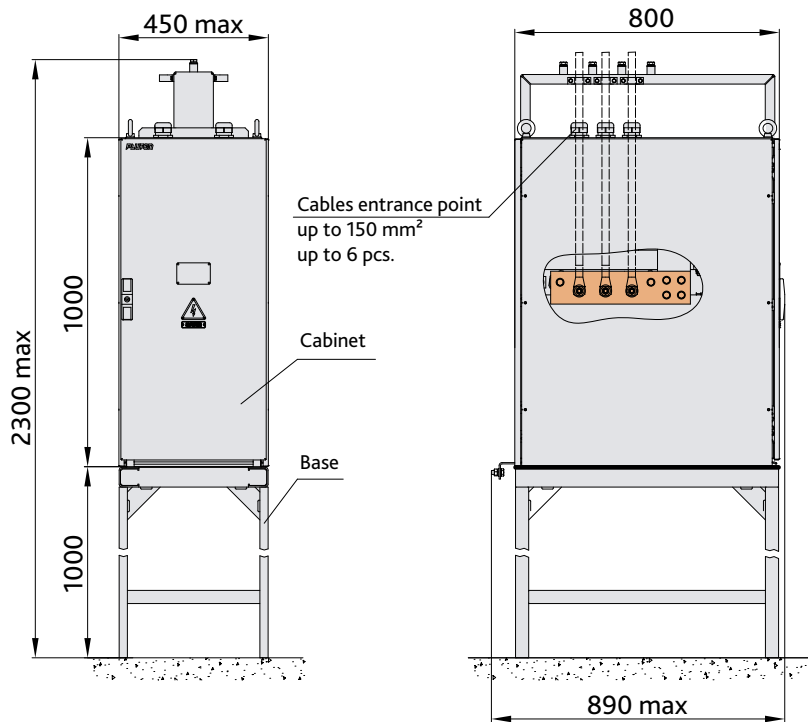
* Base height — 1000 mm.

RU-825ZK-N (connection from the bottom)



Weight, maximum 150 kg

RU-825ZK-V (connection from the top)



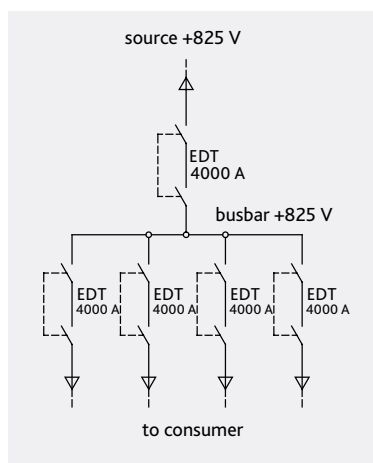
Weight, maximum 150 kg

RU-825RS SWITCHGEAR (DISTRIBUTION AND SECTIONING)

RU-825RS switchgear is provided for operation in metro depot traction network as a switching unit for contact rails power supply circuits. RU-825RS is produced as a set of one-side serviced metal cabinets, each with a separate section. The number of sections can vary depending on the Customer's requirements.

Each compartment is equipped with one disconnecter, type EDT 4000, with visible double-break. Each compartment has an individual key-locked door. The door is equipped with an overview window for disconnecter contacts position control.

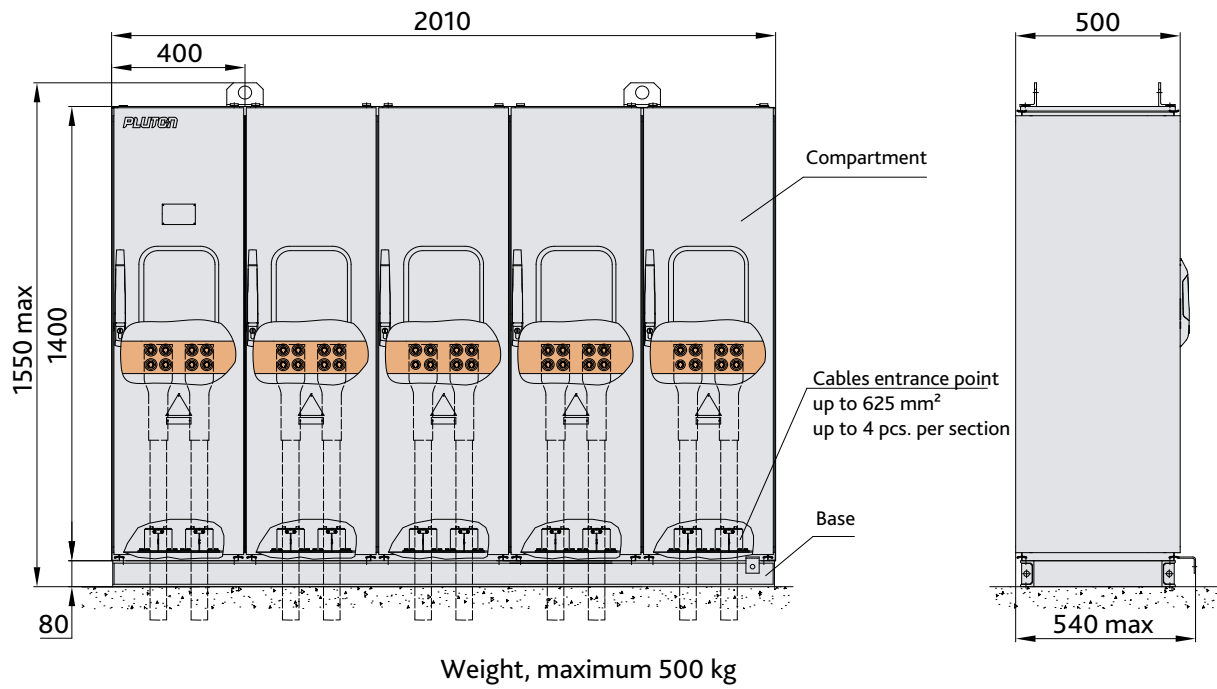
Disconnecters are installed in the rear part of compartment; manual drive is in the front part. Front and rear parts of compartment are divided with a panel with overview window. Each disconnector drive axis is controlled by its own gearbox.



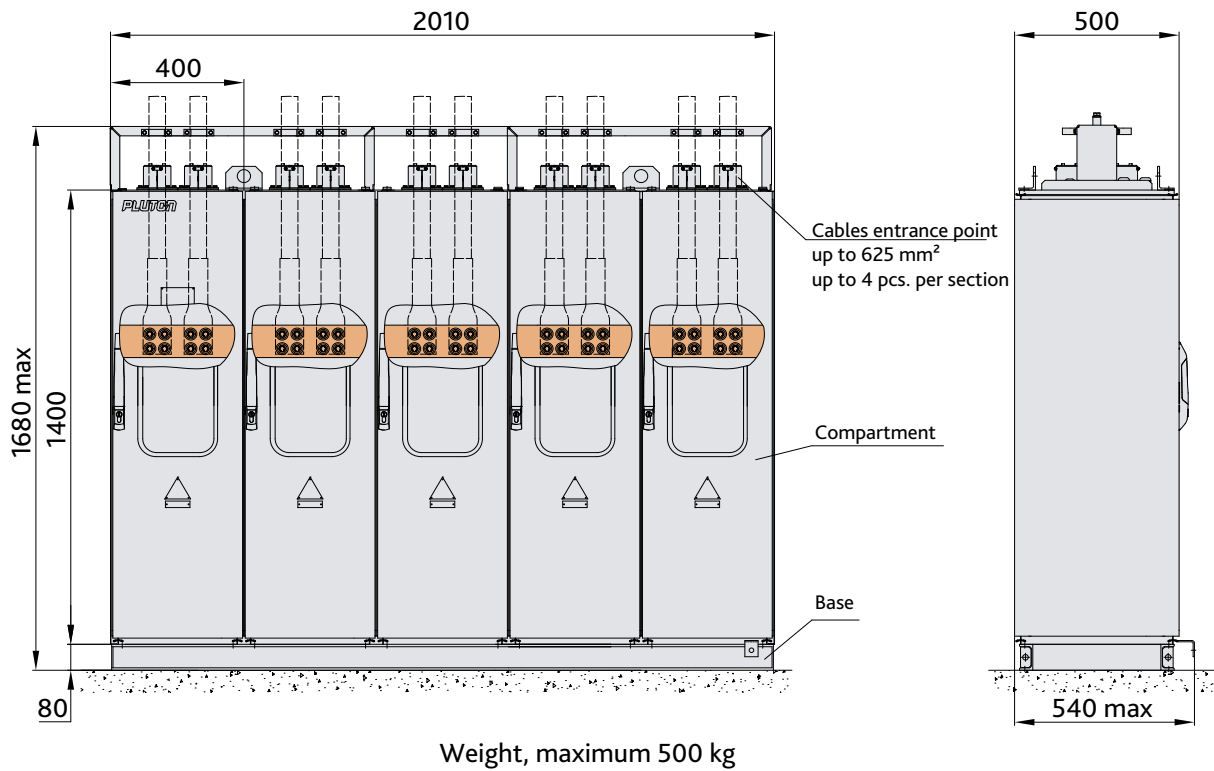
RU-825RS technical specifications

Name of parameter	Unit	Value
Disconnector type	-	EDT 4000
Rated voltage of power circuit	V	825
Rated current of power circuit (DC)	A	4000
Dynamic stability current	kA	100
Electric drive control voltage (DC)	V	220
Lighting circuit voltage (50 Hz)	V	220/12
RU-825RS casing protection class (except places of bus bars going out to contact rail)	-	IP54
Servicing	-	One-side
Mechanical stability, minimum	cycles	20000
Modification: RU-825RS-V RU-825RS-N		Connection: Top Bottom
Weight, max.	kg	600

RU-825RS-N (connection from the bottom)



RU-825RS-V (connection from the top)



RU-825SR SWITCHGEAR (SECTIONING WITH DISCONNECTORS)

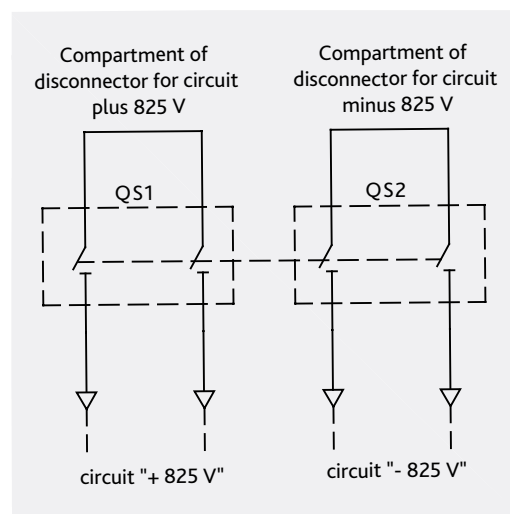
RU-825SR sectioning switchgear with disconnectors are provided for operation in traction network of metro depot as 825 V supply circuit switching devices. The switchgear provides switching of 825 V supply line with 4000 A rated current.

RU-825SR is produced as one-side serviced metal cabinet, divided into two compartments: a compartment of disconnector for plus 825 V circuit and a compartment of disconnector for minus 825 V circuit.

Each compartment is locked with a separate door, and equipped with an overview window for disconnector position defining.

Gearbox control lever is located behind the door of compartment of disconnector for plus 825 V circuit. Overview windows are also in side walls of compartments.

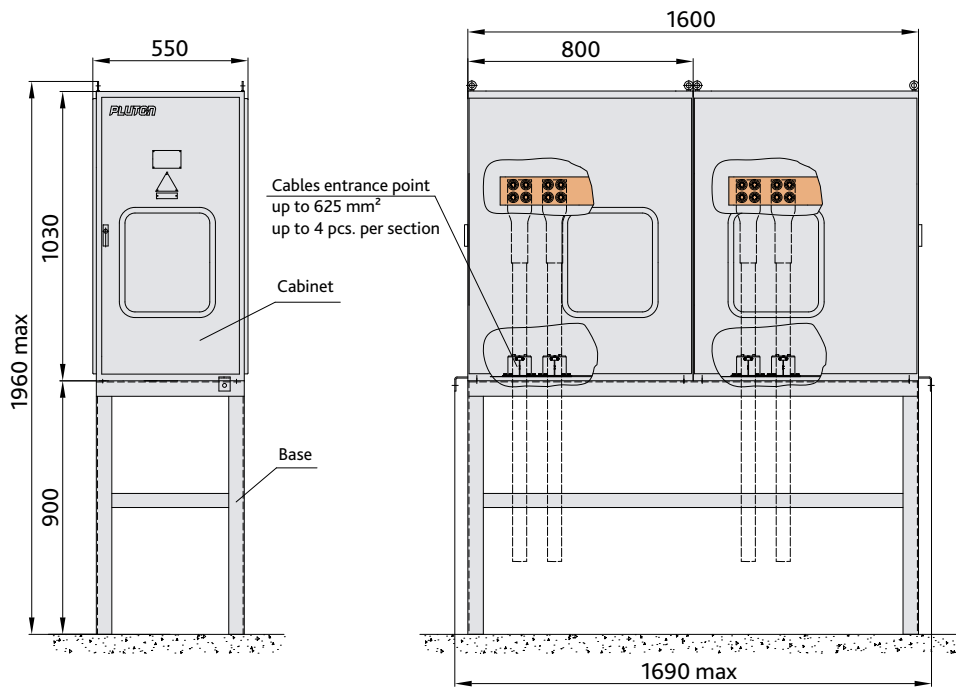
The cabinet is installed on a foundation. Disconnectors drive axes are interlocked in one gearbox, it provides the possibility of disconnectors control from one manual drive.



RU-825SR technical specifications

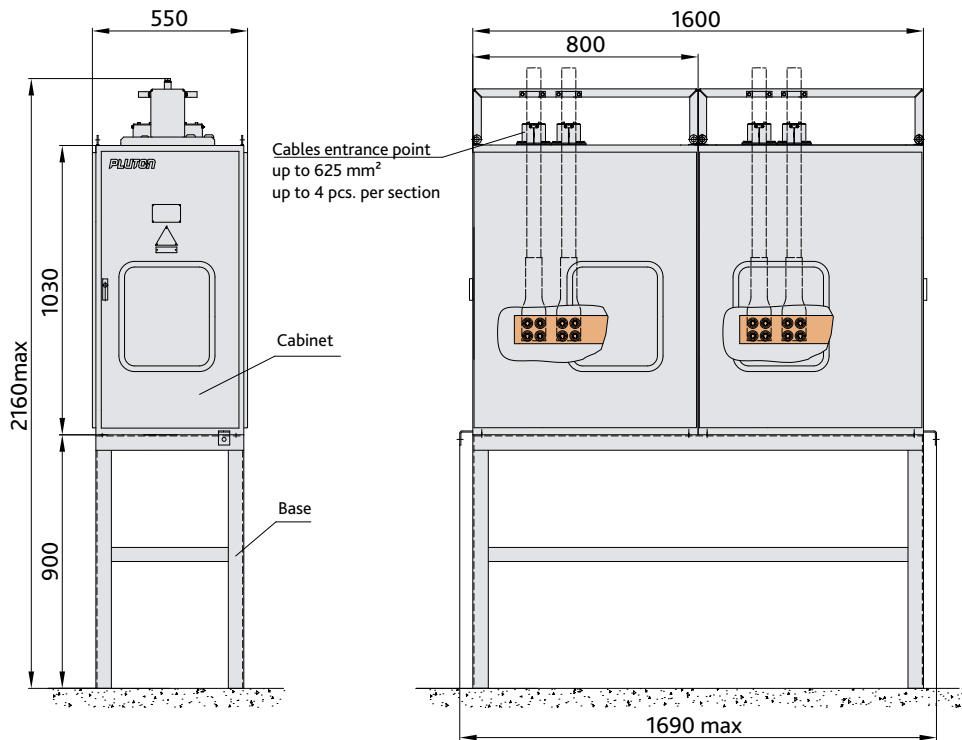
Name of parameter	Unit	Value
Disconnector type	-	EDT 4000
Rated voltage of power circuit	V	825
Rated current of power circuit (DC)	A	4000
Dynamic stability current	kA	100
Electric drive control voltage (DC)	V	220
Lighting circuit voltage (50 Hz)	V	220/12
RU-825SR casing protection class	-	IP54
Servicing	-	One-side
Mechanical stability, minimum	cycles	20000
Modification: RU-825RS-V RU-825RS-N	-	Connection: Top Bottom
Weight, max.	kg	350

RU-825SR-N (connection from the bottom)



Weight, maximum 350 kg

RU-825SR-V (connection from the top)



Weight, maximum 350 kg

RU-825PP SWITCHGEAR (SWITCHING WITH DISCONNECTOR)

RU-825PP is provided for operation in metro depot traction network as contact rails supply circuits switching device. RU-825PP is produced in a form of metal two-sectional double-side serviced cabinet. One EDT 4000 type disconnecter with visible double break is installed in the right section.

Busbar for cables connection is in the left section. The cabinet has key-locked doors. The right section door is equipped with an overview window for disconnecter contacts position observation. The disconnecter is installed in the rear of the cabinet; the manual drive is in front.

The front and rear parts of cabinet are divided with a panel with an overview window. Disconnecter drive axis is controlled from the gearbox. The cabinet is installed on the basis. Up to 6 cables with 625 mm² section can be connected to disconnecter input busbar. The cables are input in the cabinet from below or from the top through pressure seals. Output busbar for connection with contact rail is led out from behind the cabinet.

DC double-pole disconnecter, type EDT 4000, is a power switching device. The disconnecter is used for connection and disconnection of plus 825 V circuits in metro depot traction network contact rails supply circuit. The disconnecter is controlled with a gearbox on the assumption of no-load. The gearbox handle has fixed extreme positions.

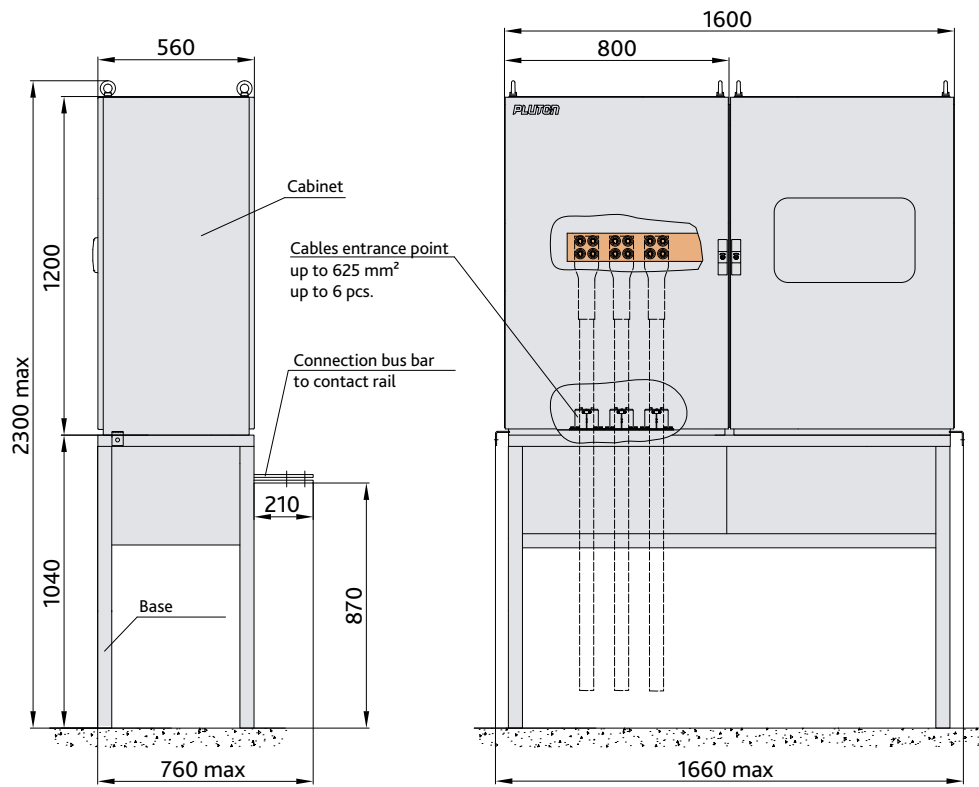
The disconnecter closing (opening) is done by the gearbox handle switching to position «Disconnecter On» («Disconnecter Off»). The disconnecter position (On – Off) is determined through the overview windows by the position of contact fingers.



RU-825PP technical specifications

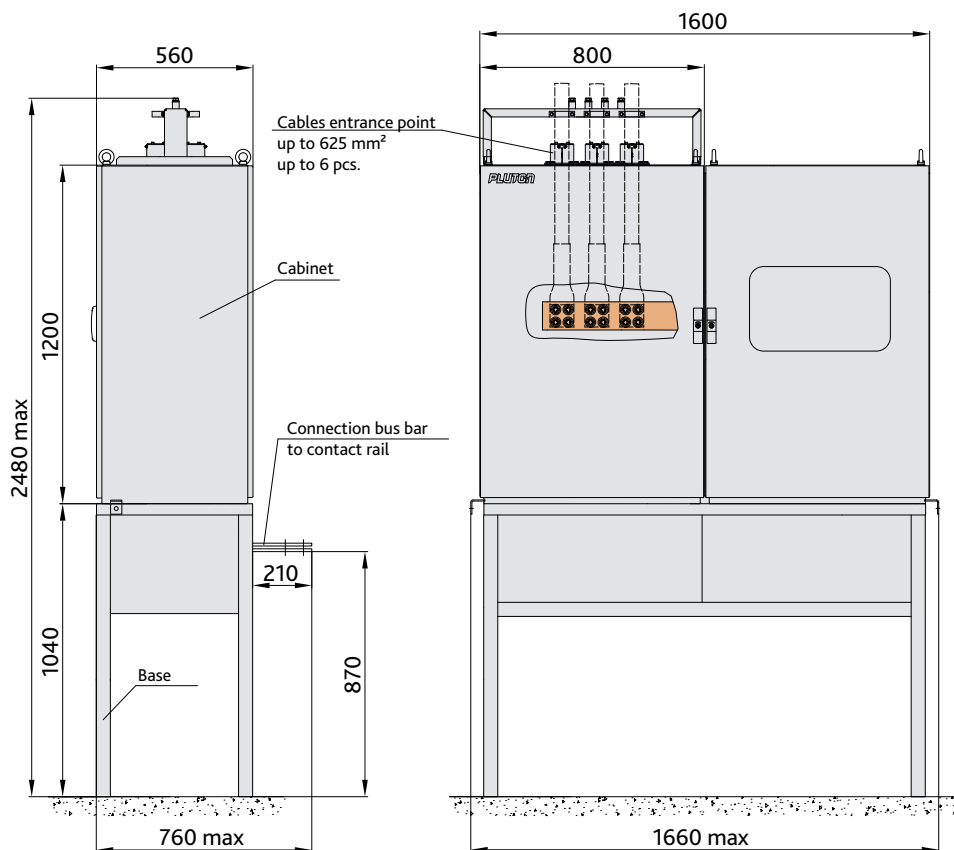
Name of parameter	Unit	Value
Disconnecter type	-	EDT 4000
Rated voltage of power circuit	V	825
Rated current of power circuit	A	4000
Lighting circuit rated supply voltage (50 Hz)	V	220/12
Protection class	-	IP54
Modification: RU-825PP-V RU-825PP-N		Connection: Top Bottom
Weight, max.	kg	400

RU-825PP-N (connection from the bottom)



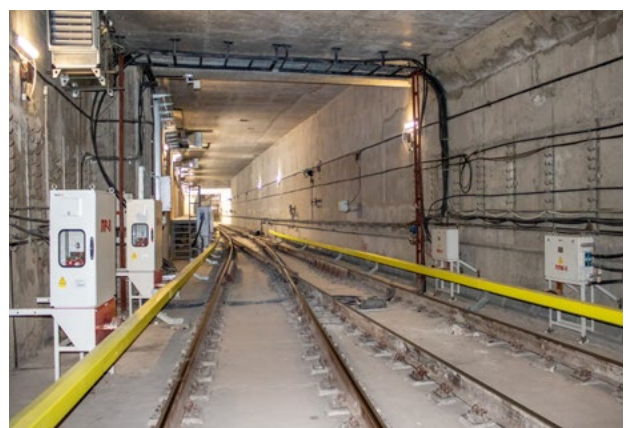
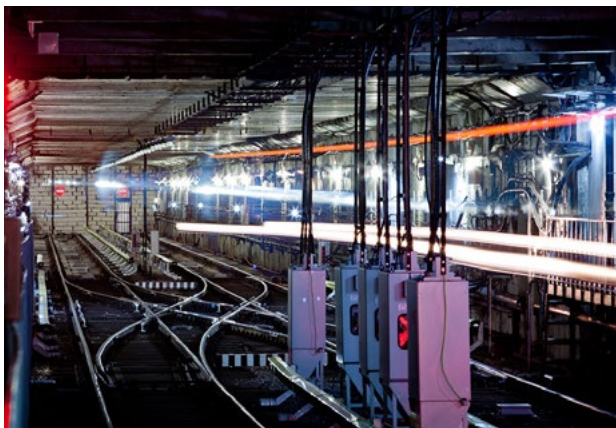
Weight, maximum 380 kg

RU-825PP-V (connection from the top)



IMPLEMENTED PROJECTS

Republic of Kazakhstan	Almaty Metro	RU-825LR - 71 units	RU-825PK - 136 units
Republic of Azerbaijan	Baku Metro	RU-825LR - 52 units	RU-825PK - 50 units
Ukraine	Kyiv Metro	RU-825LR - 116 units RU-825PR - 39 units	RU-825PK - 24 units RU-825PP - 27 units RU-825RS - 7 units
	Kharkiv Metro	RU-825LR - 15 units RU-825PR - 1 units	RU-825PK - 40 units RU-825PP - 20 units RU-825RS - 1 units
Republic of Uzbekistan	Tashkent Metro	RU-825LR - 47 units	RU-825PK - 45 units



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