



INSTALLATION INSTRUCTION

Switch Disconnecter Fuse Slimline XRG1



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04	Busbar overview
06	Manual operation
07	Motor operation
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Use of symbols



Hazardous voltage

Warns about a situation where a hazardous voltage may cause physical injury to a person or damage to equipment.



General warning

Warns about a situation where something other than electrical equipment may cause physical injury to a person or damage to equipment.



Tools

Shows the needed tools for mounting or fastening.



Caution

Provides important information or warns about a situation that may have a detrimental effect on equipment.



Information

Provides important information about the equipment.

Receiving, handling and storage



Warning

HAZARD OF EQUIPMENT OVERTURNING

When moving with a fork lift, do not remove the shipping package until the device is in its final location.

Failure to follow this instruction will result in personal injury or equipment damage.

Receiving and handling

Upon receipt, carefully inspect the switch for damage that may have occurred during transit. If damage is evident, or there is visible indication of rough handling, immediately file a damage claim with the transportation company, and notify your local ABB sales office.

Do not remove the shipping package until ready to install the switch.

Storage

If the unit will not be placed into service immediately, store the switch on its original package in a clean, dry location. To prevent condensation, maintain a uniform temperature. Store the unit in a heated building, allowing adequate air circulation and protection from dirt and moisture. Storing the unit outdoors could cause harmful condensation inside the switch enclosure.

Read these safety instructions carefully before using this product!



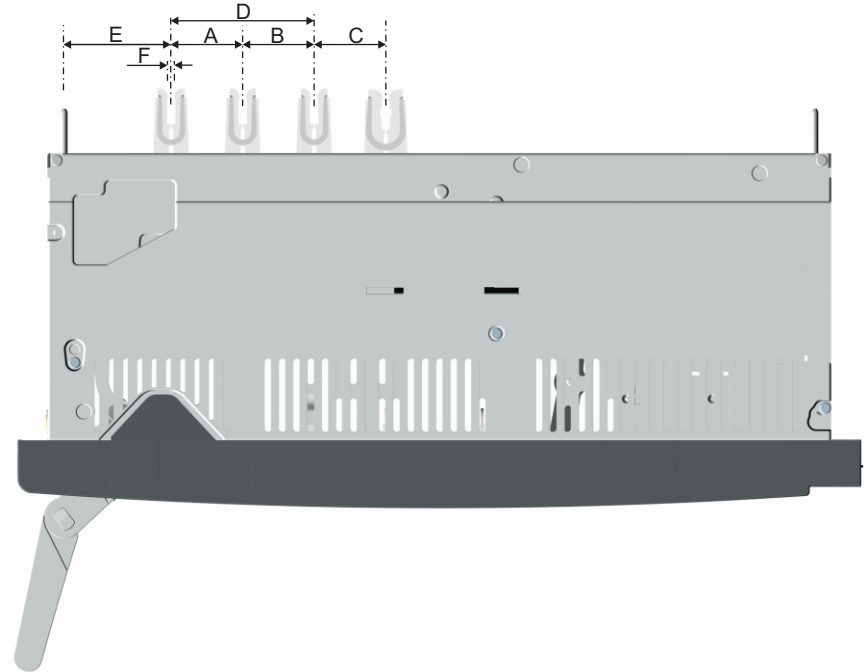
Danger

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment and follow safe electrical work practices.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Before performing visual inspections, tests, or maintenance on the equipment, disconnect all sources of electric power. Assume that all circuits are live unless they are completely deenergized, tested, grounded, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of backfeeding.
- Turn off switch before removing or making load side connections.
- Always use a properly rated voltage sensing device at all line and load to confirm switch is off.
- Turn off power supplying switch before doing any other work on or inside switch.

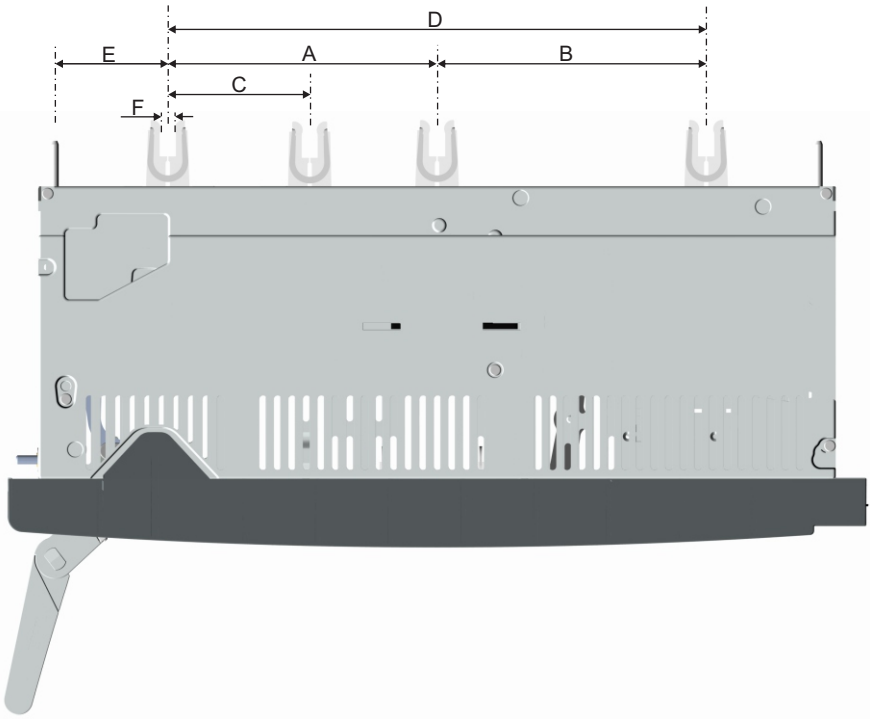
Failure to follow these instructions could result in death or serious injury.

Busbar overview



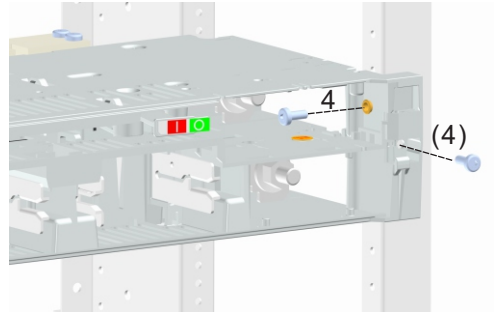
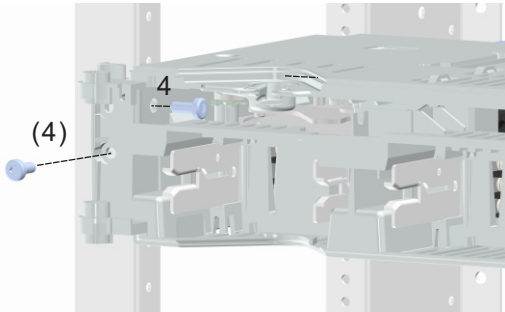
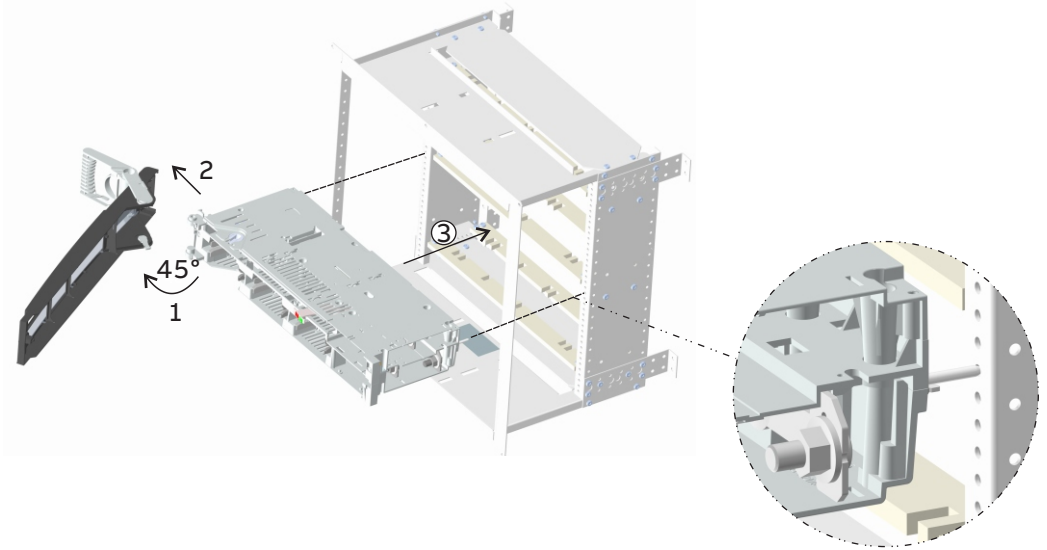
	A	B	C	D	E	F
50/5-2p	-	-	-	100	75	5
50/5-3p	50	50	-	-	75	5
50/5-4p	50	50	50	-	75	5
50/10-2p	-	-	-	100	75	10
50/10-3p	50	50	-	-	75	10
50/10-4p	50	50	50	-	75	10

Busbar overview



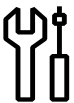
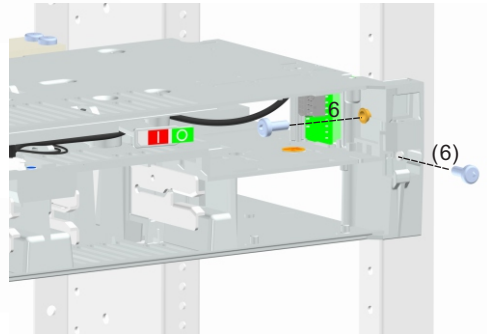
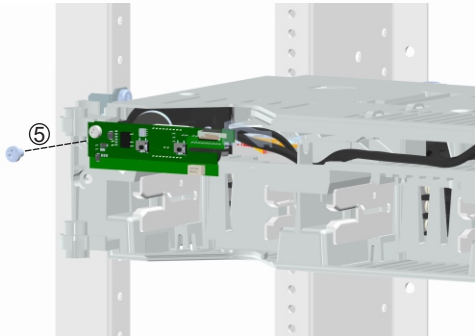
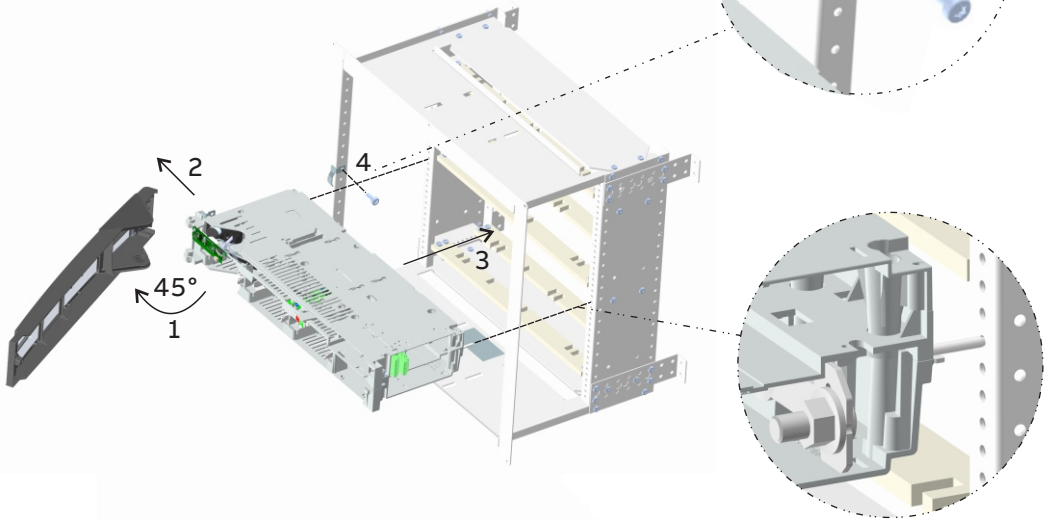
	A	B	C	D	E	F
185/10-2p	-	-	-	370	77.5	10
185/10-3p	185	185	-	-	77.5	10
185/10-4p	185	185	97.5	-	77.5	10

Manual operation



M6 thread forming screw (not included)

Motor operation

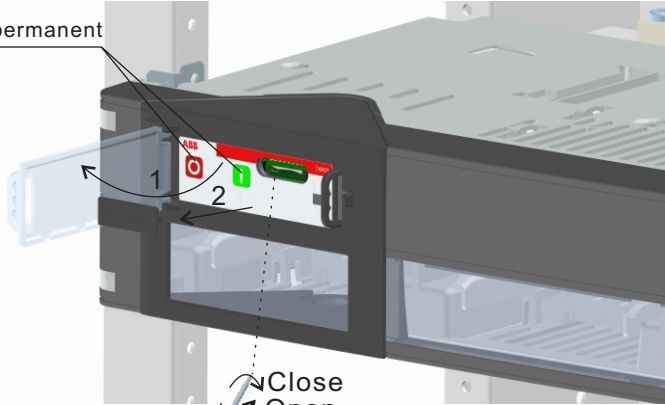


Pos. 4, 6 - M6 thread forming screw (not included)

Pos. 5 - M5X8 thread forming screw with a TX30 head (included)

Motor operation

Signal: >0.5 sec or permanent

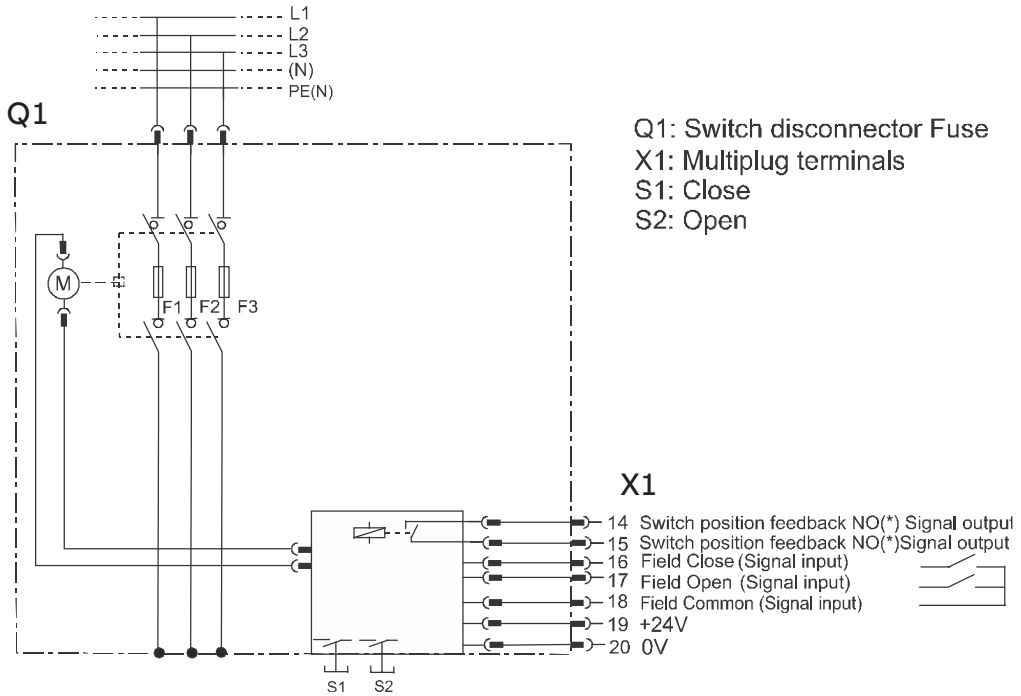


Manual operation: long hexagon bit size 3mm - approx. 40 revolutions



Front cover must be locked before operating

Motor operation



(*) Will go to NO at loss of +24V power supply, even when the XR apparatus is in closed position. For indication purposes only.

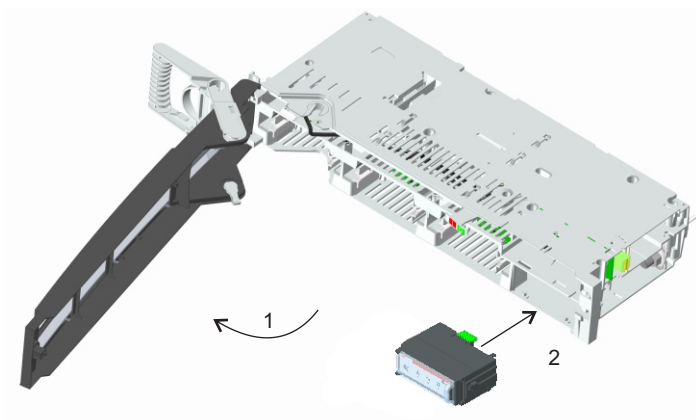
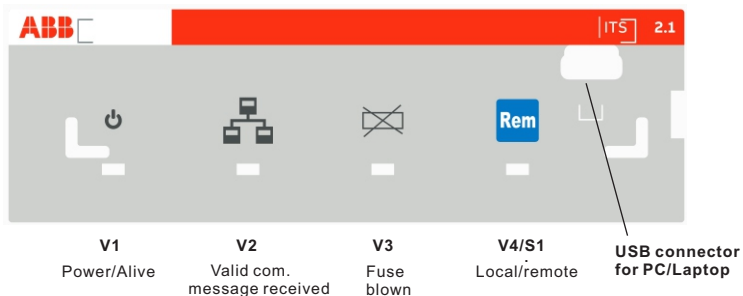
(*) Motor multiplug connect diagram is different from ITS+Motor configurations. Refer to the ITS page of instruction.

*

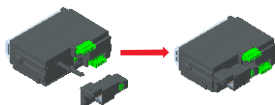
Technical data:	XRG1 MOT
Operational Voltage:	24V DC \pm 1 volt
Operational consumption:	1,3A

ITS

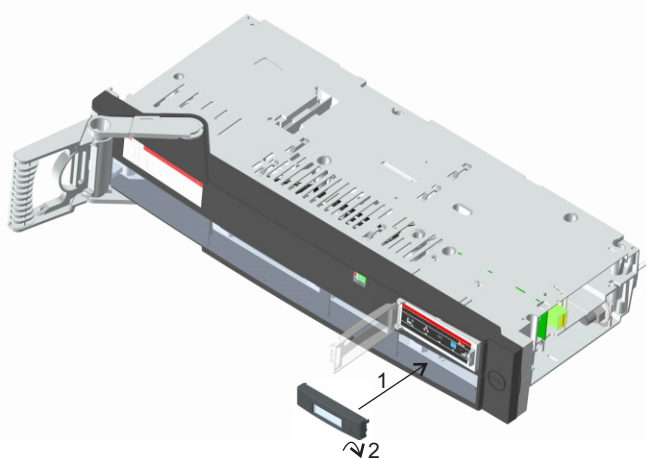
Indicator LED's



ITS with TCP Module



The TCP Module (Order code : 1SDA104052R1) has to use Ethernet cable RJ45, Shielded Twisted Pair, CAT5 or above.

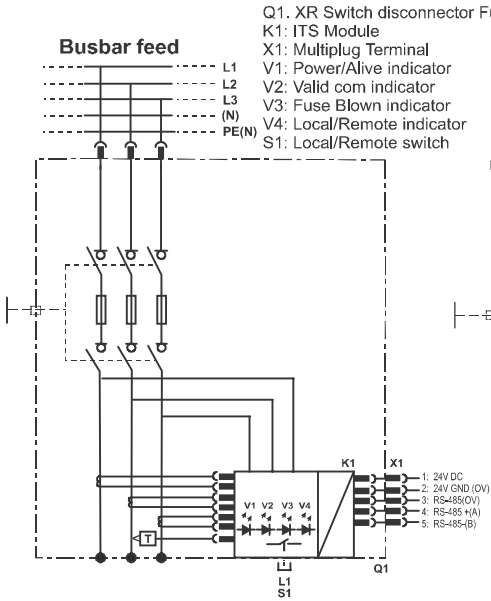


For possible connection to your PC/laptop using the software Ekip Connect, use the USB connector at the bottom side of the Ekip Display.

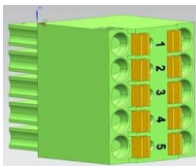
The connection cable has to be the T&P cable kit (Order code : 1SDA066989R1)

The Ekip Connect software tool can be downloaded for free at: <http://library.abb.com>

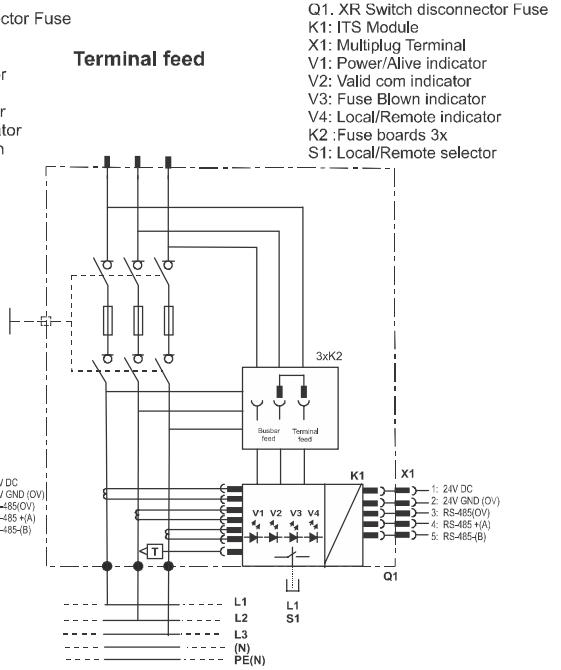
ITS



Terminal	Signal
1	24 VDC
2	24 V GND (0V)
3	RS-485 0V
4	RS-485 + (A)
5	RS-485 -(B)



If a termination resistor is needed, it must be fitted to terminals 4 and 5 in the last ITS2.1 or ITS2.D unit in the multi drop line.



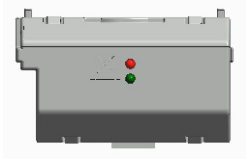
Strap here for Terminal feed

Strap here for Busbar feed

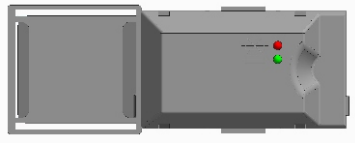
Technical data for XR ITS2.1 and ITS2.D

Input voltage limits	
Power supply	24 VDC ±20%
Power consumption	2W
Functional characteristics	
Voltage measuring range	10 - 900 VAC
Measured current range	0 - 1,3 x I _n
Measuring range temperature	0 - 127 °C
Measuring accuracy (Voltage and current)	±1 %
Electronic Fuse Monitoring detection level	Nominal line to line voltage -20%
Electronic Fuse Monitoring operating time	≥ 1 s
Signaling output terminals (multiplug)	
Conductor cross section stranded min.	0.25 mm ²
Conductor cross section stranded max.	1.5 mm ²
Conductor cross section stranded, with ferrule without plastic sleeve max.	1.5 mm ²
Conductor cross section stranded, with ferrule with plastic sleeve max.	0.75 mm ²
Modbus communication and configuration	
Default setting	19200 E, 8, 1 Default Modbus addr. 247
Baudrates	9600, 19200
Parity, stop-start bits	E, 8, 1 - O, 8, 1 - N, 8, 2 - N, 8, 1
Modbus address range	1 - 247
Configuration tool	Ekip connect <i>SACE Ekip T&P needed when connecting a laptop to the ITS2.1 or ITS2.D unit for configuration</i>
Termination resistor	No internal resistor. If needed, place on terminal 4,5 on last ITS2.1 or ITS2.D unit in multidrop line.
Insulation test	The ITS2.1 or ITS2.D unit must be removed during dielectric test.

EFM



AC



DC

Red LED: One or more fuses are blown
 Green LED: All fuses are OK

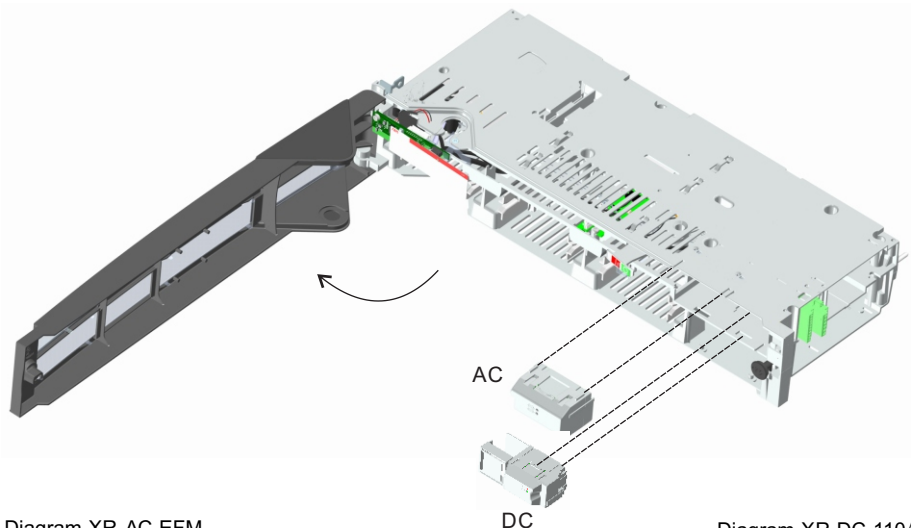
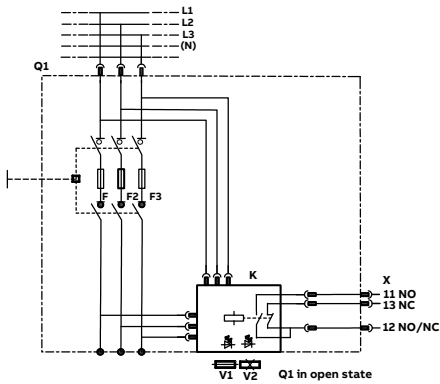
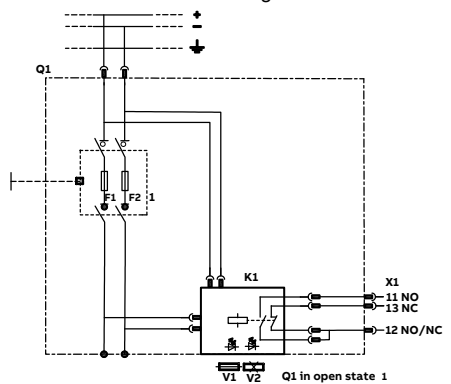


Diagram XR AC EFM



Q1: Switch disconnecter Fuse
 K1: Electronic Fuse Monitor(EFM)
 V1: Fuse OK
 V2: Fuse(s) Blown
 X1: Multiplug Terminals

Diagram XR DC 110/500 EFM



Q1: Switch disconnecter Fuse
 K1: Electronic Fuse Monitor(EFM)
 V1: Fuse OK
 V2: Fuse(s) Blown
 X1: Multiplug Terminals 1

EFM

Technical data for XR EFM













Input voltage limits			
Application AC voltage U_e			280-880V
DC 110: Rated DC voltage U_e			40-140V
DC 500: Rated DC voltage U_e			135-550V
Power consumption			2W
Functional characteristics			
Operating time t_e			≤ 4 s
Measuring accuracy			$\pm 5\%$
Signaling output terminals (multiplug)			
Normally open			Terminals 11 – 12
Normally closed			Terminals 12 - 13
Rated load, inductive	2A at 24 VDC		Utilization category DC-1
Rated load, resistive	4A at 24 VDC		Utilization category DC-13
Wiring capacity [mm ²]		Stranded / solid :	0.08 – 0.5/ 0.08 – 0.75
		Stranded with ferrule, no plastic sleeve :	0.25 – 0.34
		Stranded with twin ferrule, plastic sleeve :	0.5
EFM unit's dielectric properties (IEC 60947-1)			
Rated impulse withstand voltage (U_{imp})			6.0kV
All poles connected together/Earth			1.89 kV/1 min 50 Hz
All poles connected together/Aux. contacts			1.89 kV/1 min 50 Hz
Insulation resistance			1 M Ω , 500 VDC

Insulation test

The EFM unit will survive an insulation test voltage of 1.6kV. However, by insulation test, we recommend that the EFM module can be completely removed by also disconnecting the internal plug to the rear side of the Multiplug. This will also avoid leakage current between the main phases.

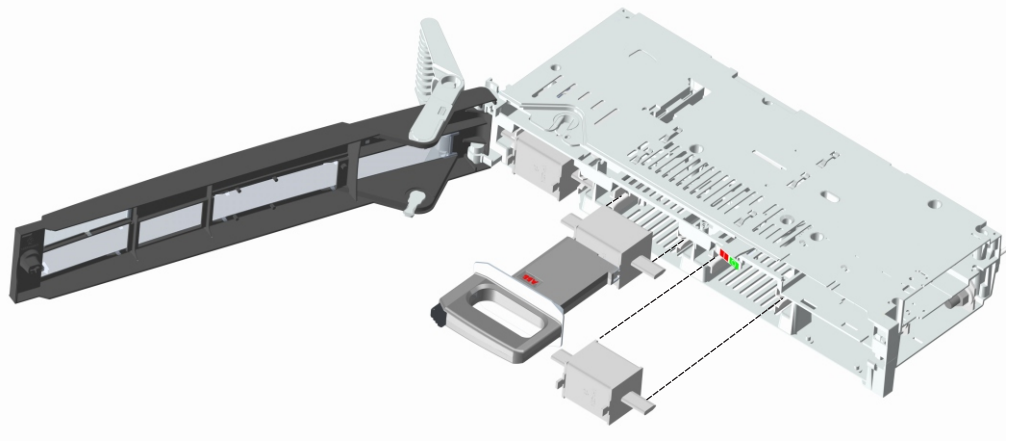
Power supply

EFM is powered by the XR busbar contacts, and it starts to operate once the XR switch is in close position.

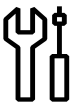
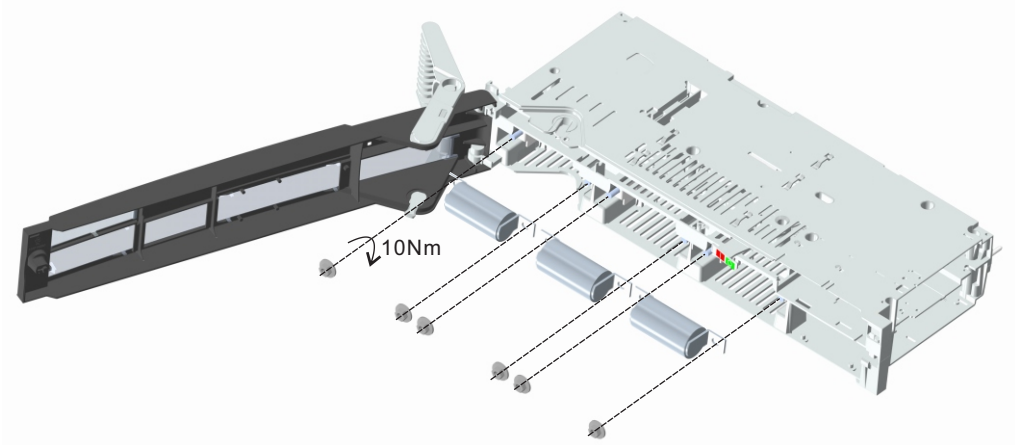
Fuse Status	Green	Red	NO contact 11-12		NC contact 13-12	
	LED	LED	Open	Closed	Open	Closed
1. XR in ON Position:			x			x
Fuses OK			x			x
Fuses BLOWN				x	x	
2. XR in OFF Position:			x			x
Fuses OK			x			x
Fuses BLOWN			x			x

Fuse replacement

NH



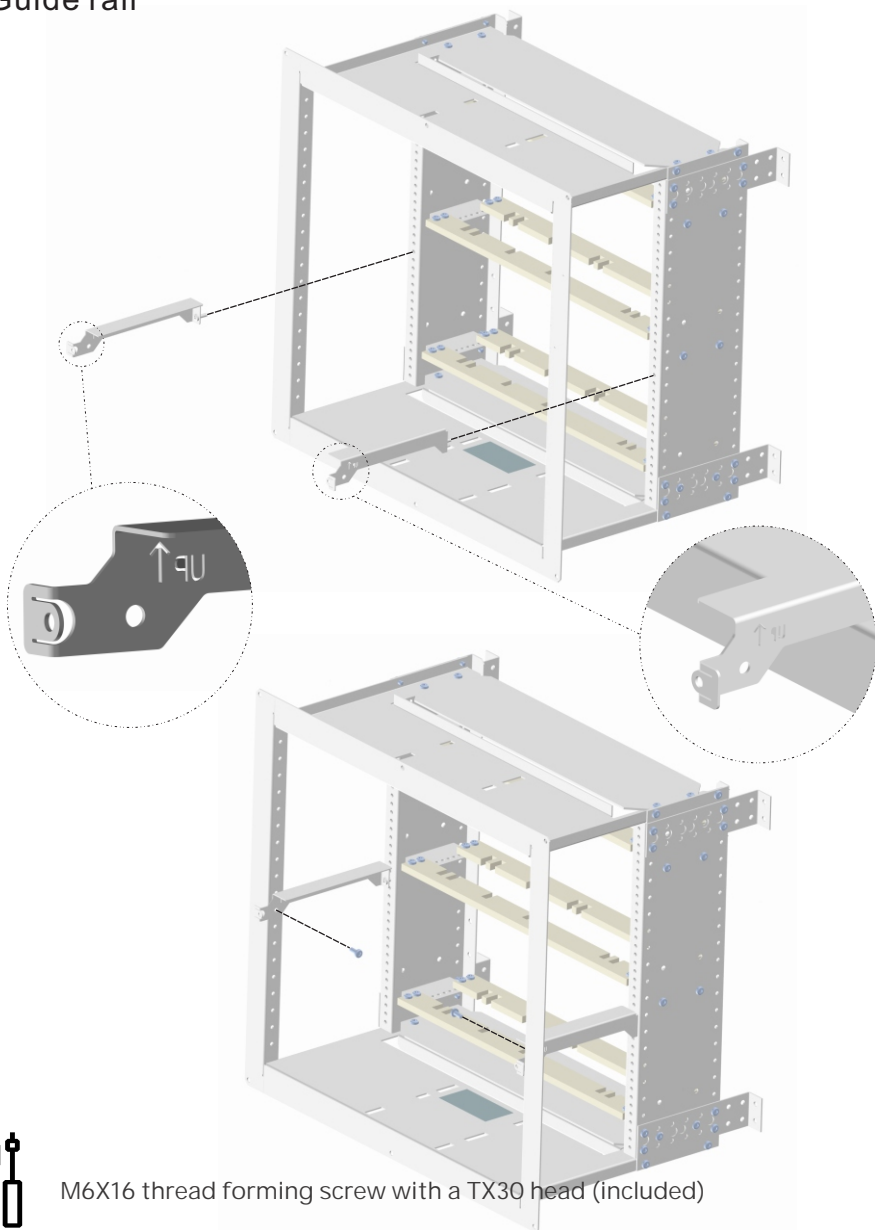
BS



Hex socket 13 mm

Accessory

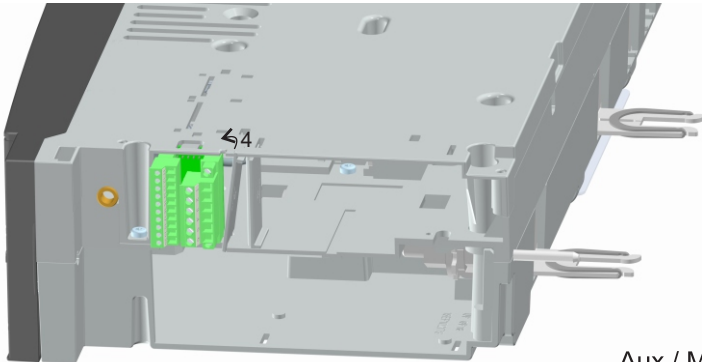
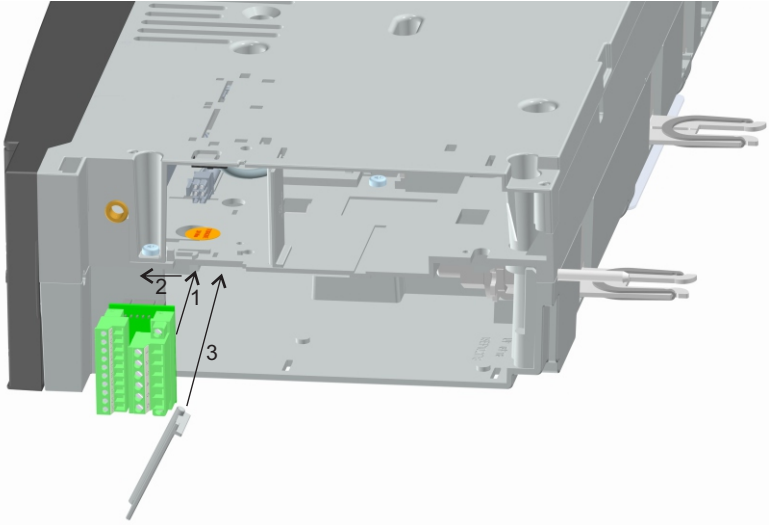
Guide rail



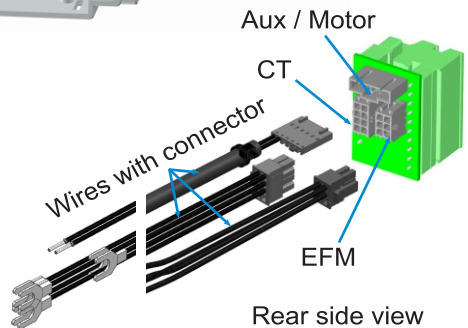
M6X16 thread forming screw with a TX30 head (included)

Accessory

Multiplug

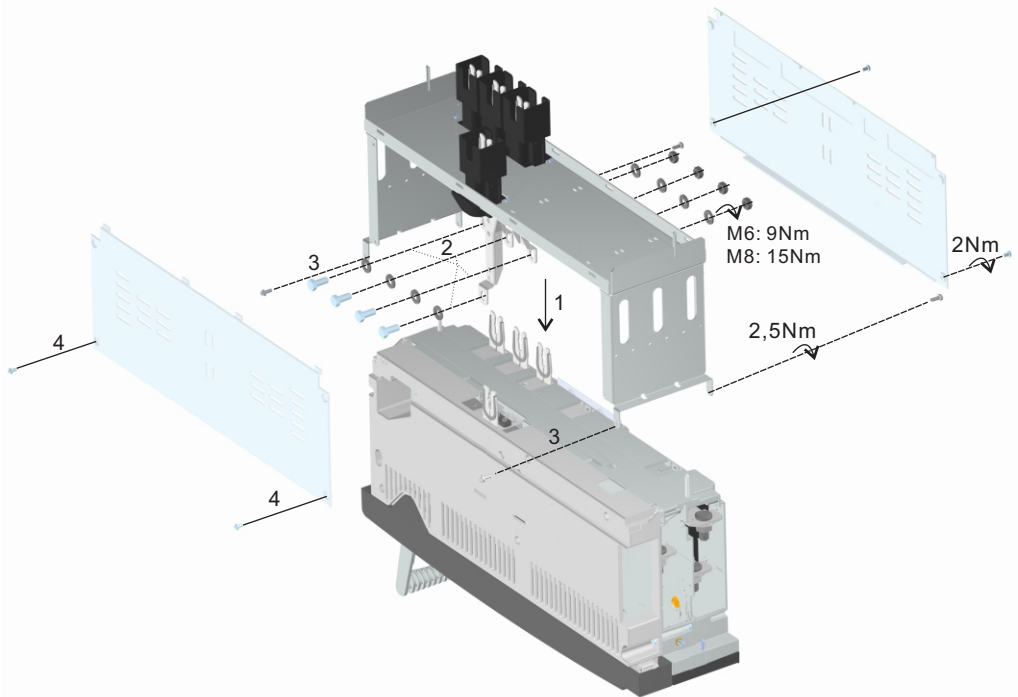


Screw thread	M2	M2.5/M3
Tightening torque Min (Nm)	0.22	0.5
Tightening torque Max (Nm)	0.25	0.6
Connection capacity (mm ²)	1.5	2.5



Accessory

Contact extension

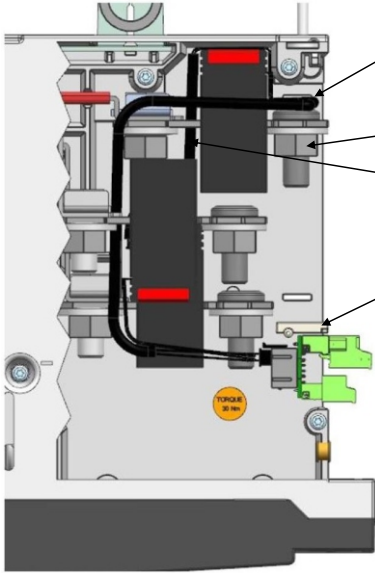


Pos. 2, 4 - TX20 head (fasteners included)

Pos. 3 - bolt and nut hex socket 13 mm (fasteners included)

Accessory

CT



Adjust protection sleeve so it starts close as possible to the transformer

Tightening torque 30 Nm

Protection sleeve

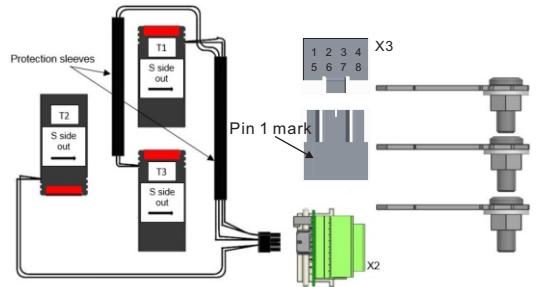
Multiplug protection cover

When installing a single CT:

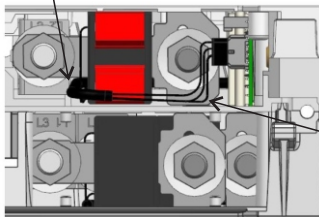
- See wiring connection table below and choose cables to use according to terminal where CT is installed (1,2,3)

- Use pliers to carefully pull out 4 extra wires from the molex plug

Multiplug X3	CT	CT terminal	Wire text	Multiplug X2
1	T1	S1	T1-S1X3:1	1
5	T1	S2	T1-S2X3:5	2
2	T2	k	T2-k-X3:2	3
6	T2	l	T2-l-X3:6	4
3	T3	k	T3-k-X3:3	5
7	T3	l	T3-l-X3:7	6

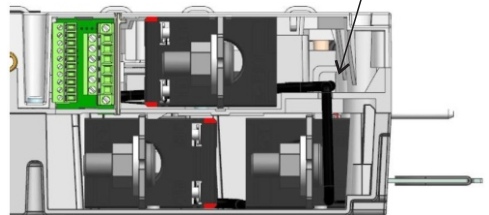


Protection sleeve



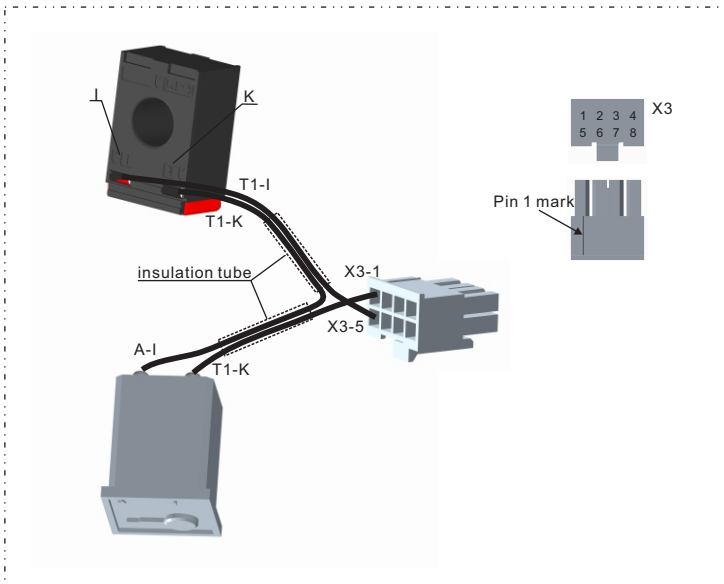
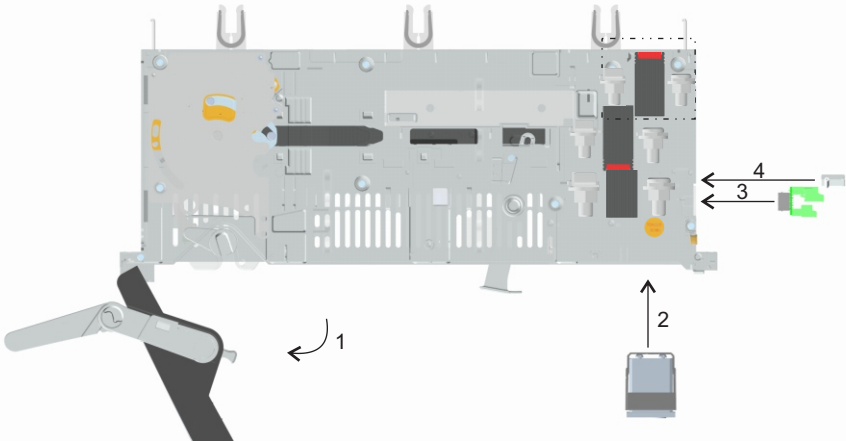
Secure with cable-tie

Protection sleeve, secure with cable tie



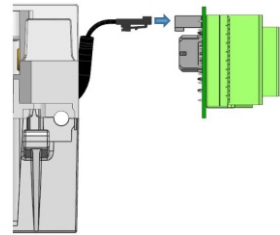
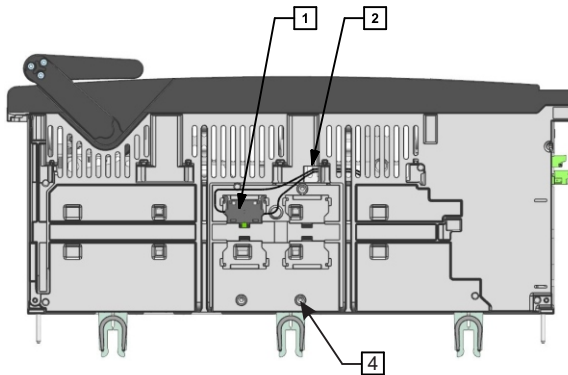
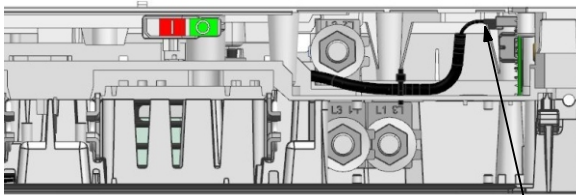
Accessory

A-meter



Accessory

Auxiliary switch



To ease the connection of the connector, snap out and in the multi plug.

- 1: Fasten the two wire ends to the auxiliary switch and install the auxiliary switch in position.
- 2: Run wires with the connector end first, through the cable pass-through hole.
- 3: Grab the connector with a long nosed pliers and drag it gently towards the multi-plug(3) and plug in the connector to the back of the multi-plug.
- 4: Attach transparent cover.(Screw torque:1.5Nm).

Accessory

Auxiliary switch

Diagram for multiplug with motor

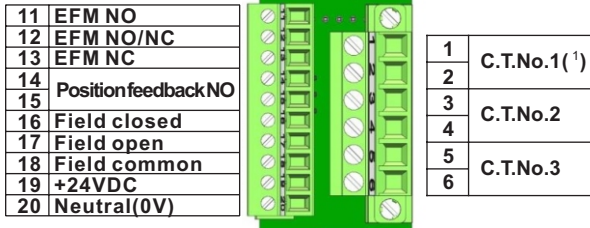
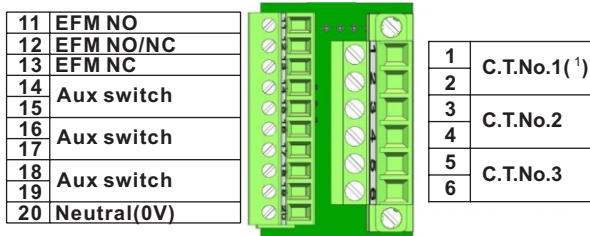


Diagram for multiplug without motor



1 Reserved for current transformers.

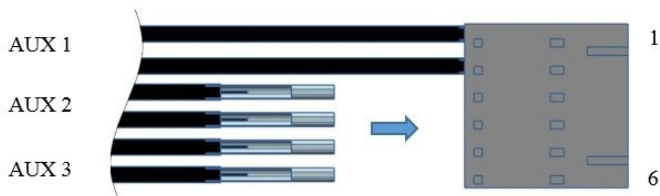
Additional auxiliary switch installation for Slimline XRG1

Take out connector for aux. switch located back on the multi plug. Attach the two wires provided with the additional aux. switch kit by inserting the terminals to the connector for aux. switch 2 and eventually aux. switch 3.

Push the wire terminals into the connector, pull the wires gently to ensure that the terminals are locked to the connector.

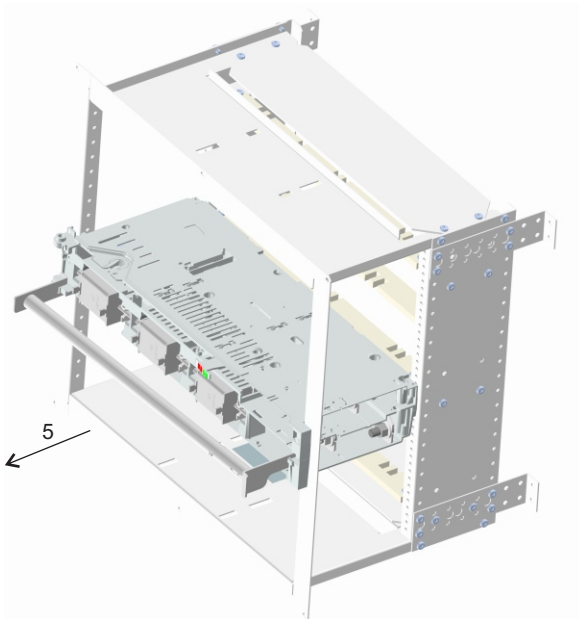
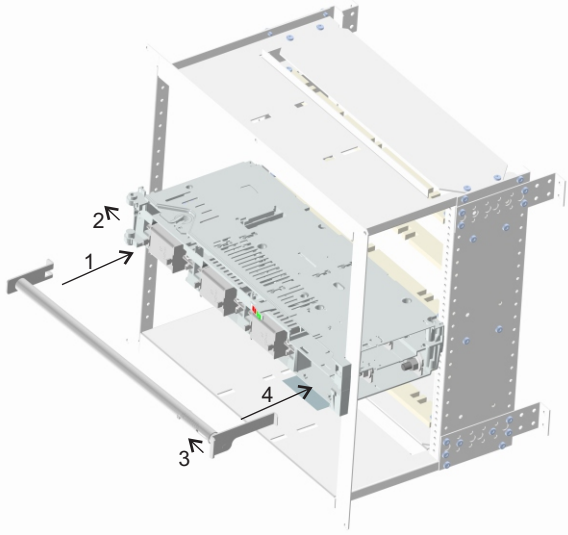
Run the wires through the insulating sleeve and use the same path as the main auxiliary switch, fix with cable-tie.

Insert the auxiliary switch in one of the free position and fasten the wires to the terminals, pull the wires to ensure they are properly attached.



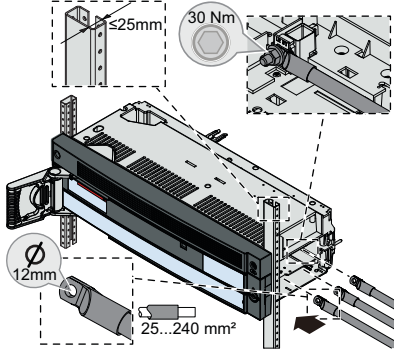
Accessory

Switch replacement tool

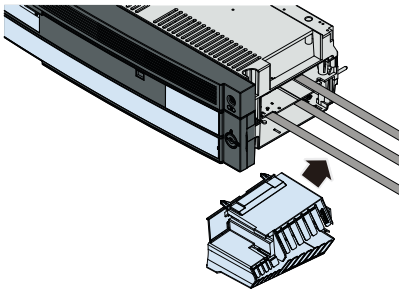


Cable shrouds installation

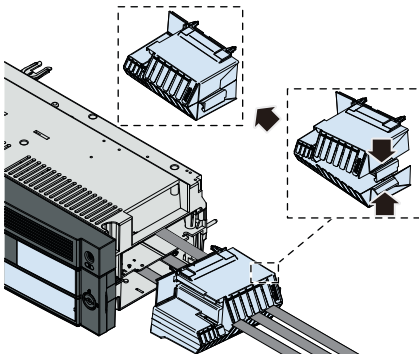
1. Install the cable (the width of right bracket $\leq 25\text{mm}$)(socket 19mm).



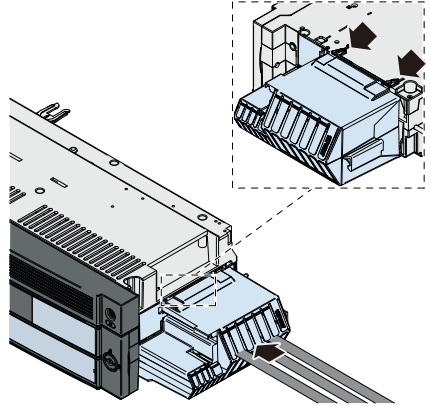
2. Open the 3 pole cable shroud and cover it onto the cables.



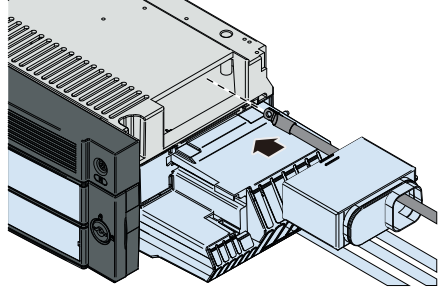
3. Close the 3 pole cable shroud.



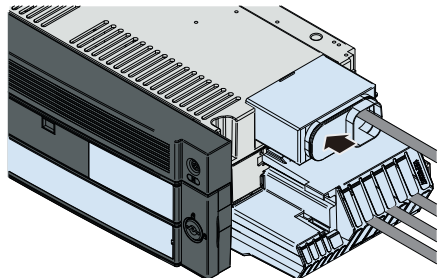
4. Insert the 3 pole cable shroud.



5. Install the 4th pole cable.

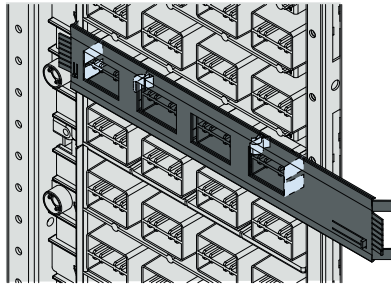
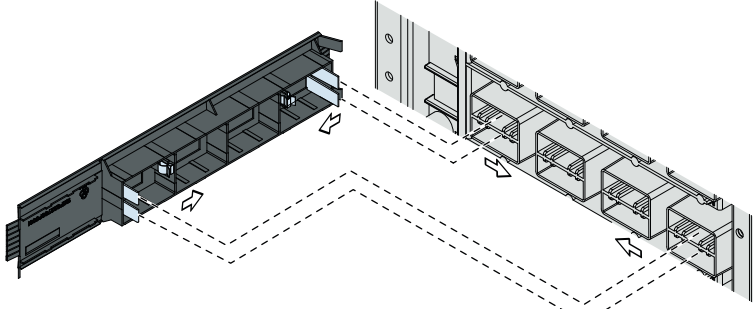


6. Insert the 4th pole cable shroud.

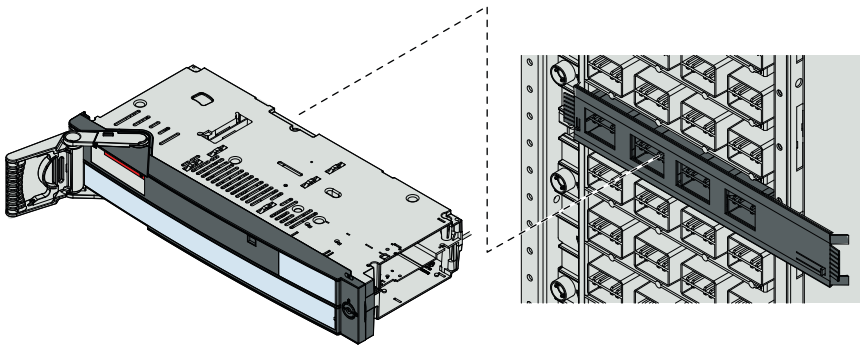


MNS arc protection back cover for XRG

1. Install the MNS arc protection back cover to the electrical cabinet .



2. Install 3 pole switch to the electrical cabinet.

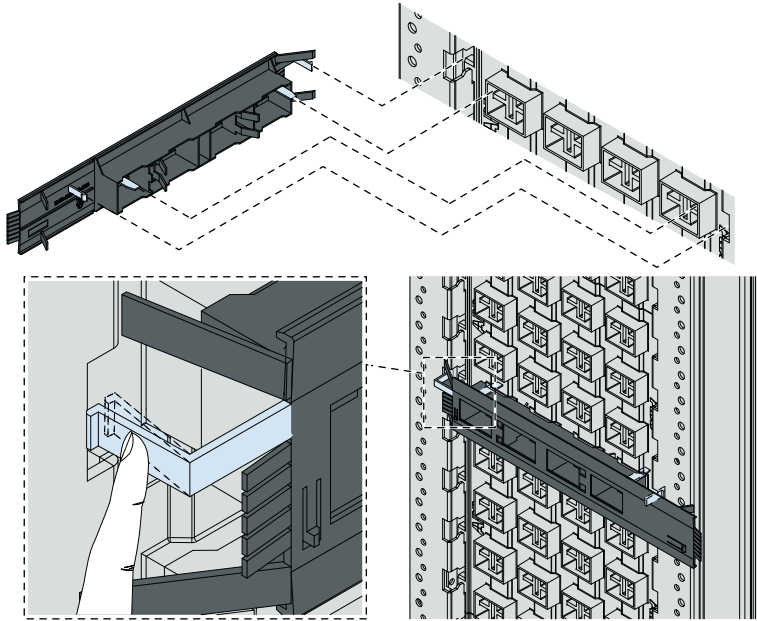


Note:
For XRG1-50/5
3P version
needs to mount one back cover.

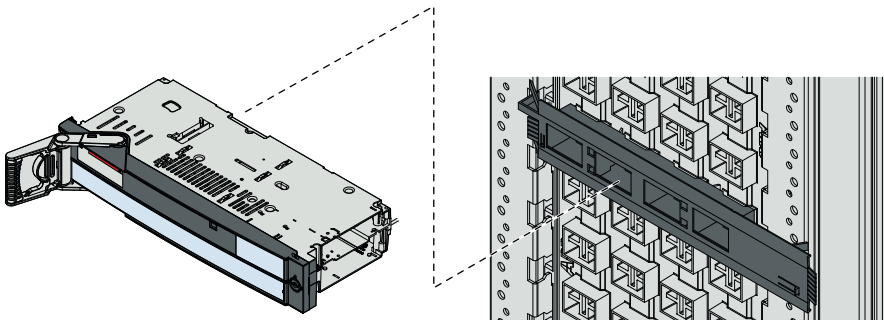
4P version
needs to mount two back covers.

RBBS arc protection back cover for XRG

1. Install the RBBS arc protection back cover for XRG to the electrical cabinet.



2. Install 3 pole switch to the electrical cabinet.



Note:
For XRG1-50/10-3P
mounts one back cover
in Xline 50 mm Compact cabinets.

For XRG1-50/10-3P with contact extensions
mounts one back cover
in Xline 50 mm Enlarged cabinets.



Notes

A series of 20 horizontal dashed lines for writing notes.



BG	Внимание! Опасно напрежение! Да се монтира само от лице с електротехническа квалификация.
FR	Avertissement! Tension électrique dangereuse! Installation uniquement par des personnes qualifiées en électrotechnique.
MT	Twissjal! Voltagg perikoluż! Ghandu jiġi installat biss minn persuna b'kompetenza elettroteknika.
HR	Upozorenje! Opasan napon! Postavljati smije samo elektrotehnički stručnjak.
DE	Warnung! Gefährliche Spannung! Installation nur durch elektrotechnische Fachkraft.
PL	Ostrzeżenie! Niebezpieczne napięcie! Instalacji może dokonać wyłącznie osoba z fachową wiedzą w dziedzinie elektrotechniki.
CZ	Varování! Nebezpečné napětí! Montáž smí provádět výhradně elektrotechnik!
EL	Προειδοποίηση! Υψηλή τάση! Η εγκατάσταση πρέπει να γίνεται μόνο από εξειδικευμένους ηλεκτροτεχνικούς.
PT	Aviso! Tensão perigosa! A instalação só deve ser realizada por um electricista especializado.
DA	Advarsel! Farlig elektrisk spænding! Installation må kun foretages af personer med elektroteknisk ekspertise.
HU	Figyelmeztetés! Vesélyes feszültség! Csak elektrotechnikai tapasztalattal rendelkező szakember helyezheti üzembe.
RO	Avertizare! Tensiune periculoasă! Instalarea trebuie efectuată numai de către o persoană cu experiență în electrotehnică.
NL	Waarschuwing! Gevaarlijke spanning! Mag alleen geïnstalleerd worden door een deskundige elektrotechnicus.
IE	Rabhadh! Voltas guaiseach! Ba chóir do dhuine ag a bhfuil saineolas leictreicniúil, agus an té sin amháin, é seo a shuiteáil.
SK	Varovanie! Nebezpečné napätie! Montáž môže vykonávať iba skúsený elektrotechnik.
EN	Warning! Hazardous voltage! Installation by person with electrotechnical expertise only.
IT	Avvertenza! Tensione pericolosa! Fare installare solo da un elettricista qualificato.
SL	Opozorilo! Nevarna napetost! Vgradnjo lahko opravi le oseba z elektrotehničnim strokovnim znanjem.
ET	Hoiatus! Ohtlik pinge. Paigaldada võib ainult elektrotehnika-alane ekspert.
LV	Uzmanību! Bīstami - elektrība! Montāžas darbus drīkst veikt tikai personas, kurām ir atbilstošas elektrotehnikas zināšanas.
ES	¡Advertencia! ¡Tensión peligrosa! La instalación deberá ser realizada únicamente por electricistas especializados.
FI	Varoitus! Vaarallinen jännite! Asennuksen voi tehdä vain sähköalan ammattihenkilö.
LT	Dėmesio! Pavojinga įtampa! Dirbti leidžiama tik elektrotechniko patirties turintiems asmenims.
SE	Varning! Farlig spänning! Installation får endast utföras av en elektriker.
CN	警告！电压危险！只能由专业电工进行安装。
RU	Осторожно! Опасное напряжение! Монтаж должен выполняться только специалистом-электриком.



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