

Protection, Monitoring and Control RE_5__

Installation Manual



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1. About this manual

1.1. General

This document, Installation Manual for RE_ 5__, instructs how to install the products of the RED 500 Platform, including REC 523, REC 501, REJ 51_, REJ 52_, REF 54_, REM 54_, RET 54_, REU 513, REU 523, REA 10_ and REX 521.

1.2. Use of symbols

This publication includes the following icons that point out safety-related conditions or other important information:



The electrical warning icon indicates the presence of a hazard which could result in electrical shock.



The caution icon indicates important information or warning related to the concept discussed in the text. It might indicate the presence of a hazard which could result in corruption of software or damage to equipment or property.



The information icon alerts the reader to relevant facts and conditions.

Although warning hazards are related to personal injury, it should be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process performance leading to personal injury or death. Therefore, comply fully with all warning and caution notices.

1.3. Document revisions

Version	Date	History
K	20.01.2005 30.11.2005	RET 54_ added Contents list updated
L...O		Not in use
P	17.02.2006	Layout changed
Q		Not in use
R	27.05.2010	Small content updates

2. Safety information



Dangerous voltages can occur on the connectors, even though the auxiliary voltage has been disconnected.

Non-observance can result in death, personal injury or substantial property damage.

Only a competent electrician is allowed to carry out the electrical installation.

National and local electrical safety regulations must always be followed.

The frame of the device has to be carefully earthed.



The device contains components which are sensitive to electrostatic discharge. Unnecessary touching of electronic components must therefore be avoided.

Breaking the sealing tape on the rear panel of the device will result in loss of warranty and proper operation will no longer be guaranteed.

3. Introduction

This manual contains instructions for unpacking and handling the RE_5__ protection, monitoring and control products, as well as general information about different mounting kits available.

In addition to this manual, the delivery includes:

- Certificate of verification
- Operator's Manual / User's Guide (REC 5__: Technical Reference Manual)
- multi-pole connectors
- flush mounting kit (1MRS050209).

4. Unpacking

RE_ 5__ products, although of robust construction, require careful handling prior to installation on site. The delivered products should always be examined to ensure that no damage has been sustained during transit.

If a product has been damaged, a claim should be made to the transport contractor and the local representative of ABB should be promptly notified.

Compare the type designation of the product with the ordering information to verify that you have received the right product.

Electrostatic discharge (ESD)

The products contain components that are sensitive to electrostatic discharge. The electronic circuits are well protected by the metal case (tested according to IEC 61000-4-2) and therefore the rear panel should not be removed.

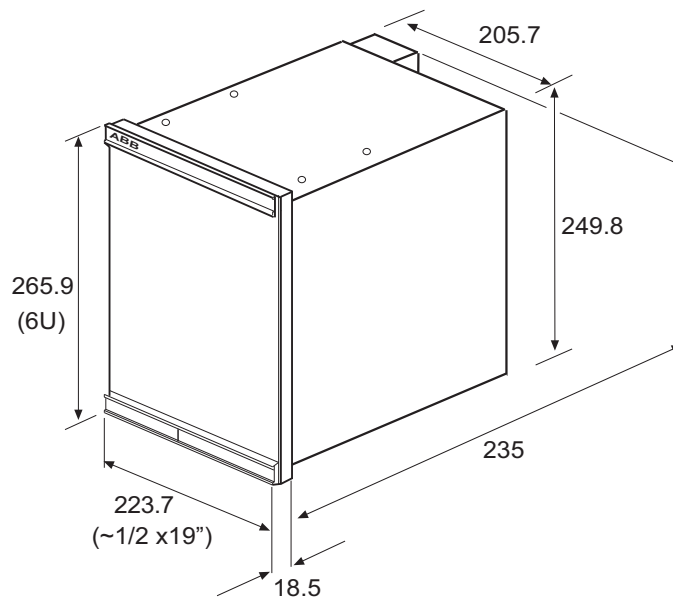
5. Mounting

By using suitable mounting kits, the RED 500 series products can be

- flush mounted,
- semi-flush mounted,
- mounted in a rack or
- mounted on a wall.

5.1. Dimensions of the case

Case size (x 19")	Relay type	Frame width mm	Frame height mm	Frame depth mm
1/4	REJ_/REU_/RTXP	111.4	265.9 (6U)	235
1/3	REX_/REA_	148.8	"	"
1/2	REC_/REF_/REM_/RET_	223.7	"	"



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Fig. 5.1.-1 Overall dimensions of a case (example case size 1/2 x 19")¹

5.2. Mounting system

All cable terminations are done on the rear side of the case. Screw-compression type terminal blocks are used for electrical connections and snap-in ports for optical connections and bus connection modules RER 103, RER 123 and RER 133. Twin BNC connectors are used for sensor inputs. Note that if sensors are used, a minimum depth of 250 mm is required.

1. Figure without the protective cover.

The degree of protection of the device is IP 54 on the front side when the device is flush mounted. The rear side meets the IP 20 requirements.

5.3. **Mechanical mounting**

Special, optional mounting kits including assembly instructions are supplied for each type of mounting. Be careful not to cover the ventilation openings above and below the case to ensure necessary ventilation. The use of a raising frame reduces ventilation and results in a max permissible ambient temperature of 45°C compared to the normal 55 °C. A flush-mounting kit is always supplied.

5.4. **Rack mounting**

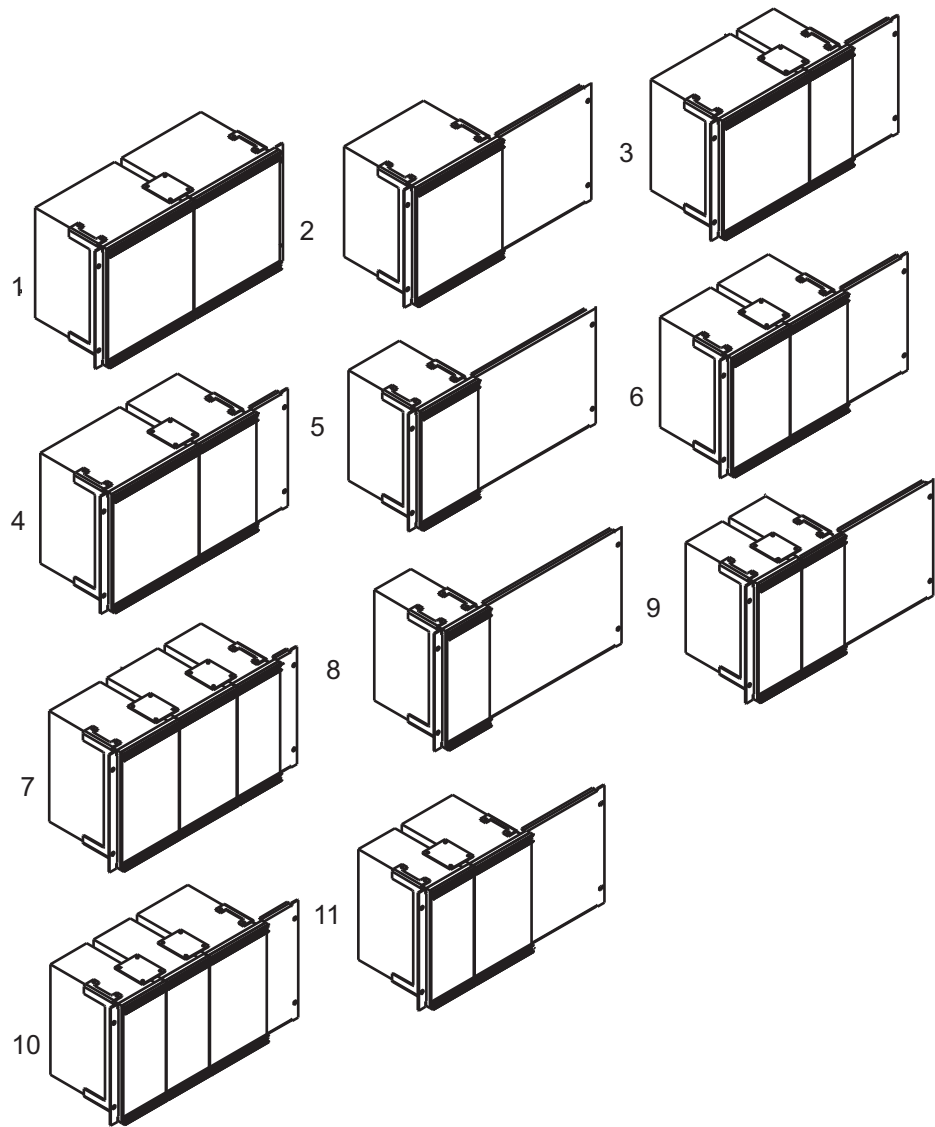
When the case is to be mounted in a 19" rack, mounting brackets are needed. The type of mounting bracket required depends on the size of the case, but at least two mounting brackets are needed (one on each side). If several cases are to be placed in the same rack, a side-by-side mounting kit is needed. The box is provided with prepunched screw holes.



A device equipped with sensors requires a minimum depth of 250 mm.

The 1MRS050xxx codes in the following table refer to the mounting kits and include mounting brackets and screws.

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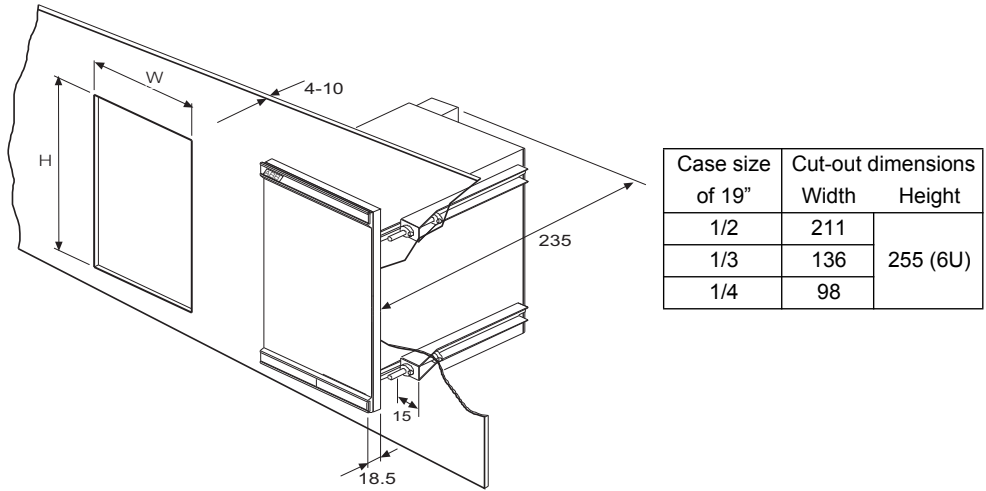
Fig. 5.4.-1 Various possible mounting arrangements in a 19" rack

View	Relay case size ^a	19" Mounting kit
1	1/2 + 1/2	1MRS050243
2	1/2	1MRS050736
3	1/4 + 1/2	1MRS050259
4	1/3 + 1/2	1MRS050737
5	1/3	1MRS050258
6	1/3 + 1/3	1MRS050377
7	1/4 + 1/3 + 1/3	1MRS050381
8	1/4	1MRS050257
9	1/4 + 1/4	1MRS050242
10	1/4 + 1/4 + 1/3	1MRS050382
11	1/4 + 1/3	1MRS050609

a. For more information about the case sizes, please refer to the table in Section 5.1. Dimensions of the case

5.5. Flush mounting

The mounting kit to be used for flush mounting contains four clamps and screws. The clamp is made of preplated steel sheet. The same kit can be used for all case sizes. The standard delivery includes one set of flush mounting kit (1MRS 050209).

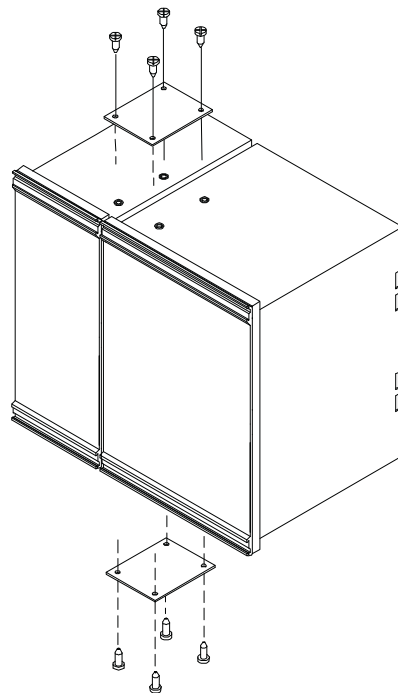


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Fig. 5.5.-1 Flush mounting and cut-out dimensions

Side-by-side mounting kit

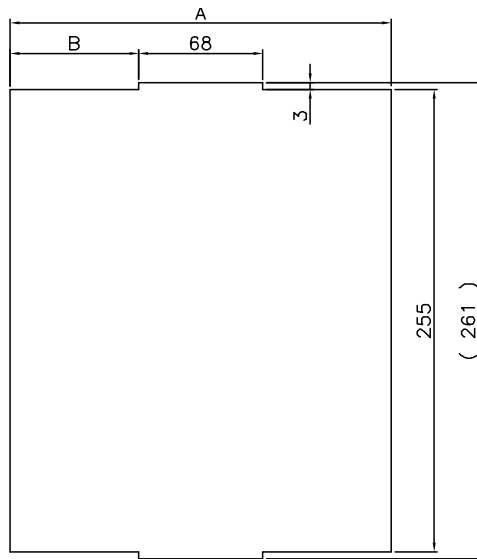
The kit 1MRS050241 is used for mounting cases side by side. The kit includes two fixing plates and screws. The fixing plates are made of steel sheet and painted light beige. The same kit can be used for all case sizes.



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Fig. 5.5.-2 Side-by-side mounting kit

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Fig. 5.5.-3 Cut-out dimensions in side-by-side mounting

Case size	A	B
1/4 + 1/4	210	71
1/4 + 1/3	247	71
1/4 + 1/2	322	71
1/3 + 1/3	286	109
1/3 + 1/2	360	183
1/2 + 1/2	434	183



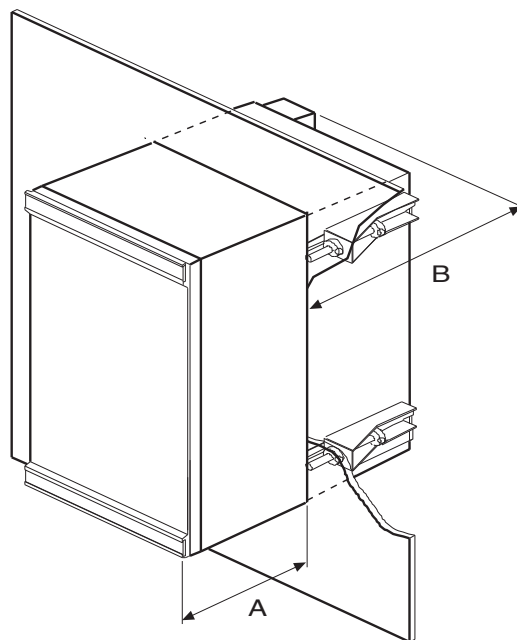
The degree of protection of the device is IP 20 on the front side when the device is flush mounted with a side-by-side mounting kit.

5.6.

Semi-flush mounting

This kit including a raising frame, four clamps, a gasket and screws is needed for the semi-flush mounting of a case. The gasket is used when an IP 54 degree of protection (according to IEC 60529) is required for the front panel. The kit is available in different sizes, depending on the case size.

Case size (x 19")	A	B	Semi-flush mounting kit order number
1/4	90	145	1MRS050253
1/3	90	145	1MRS050254
1/3	120	115	1MRS050682
1/2	90	145	1MRS050239
1/4 + 1/4	90	145	1MRS050740
1/4 + 1/3	90	145	1MRS050666
1/4 + 1/2	90	145	1MRS050728



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Fig. 5.6.-1 Semi-flush mounting



The degree of protection of the device is IP 20 on the front side when the device is flush mounted with a side-by-side mounting kit.

5.7.

Wall mounting

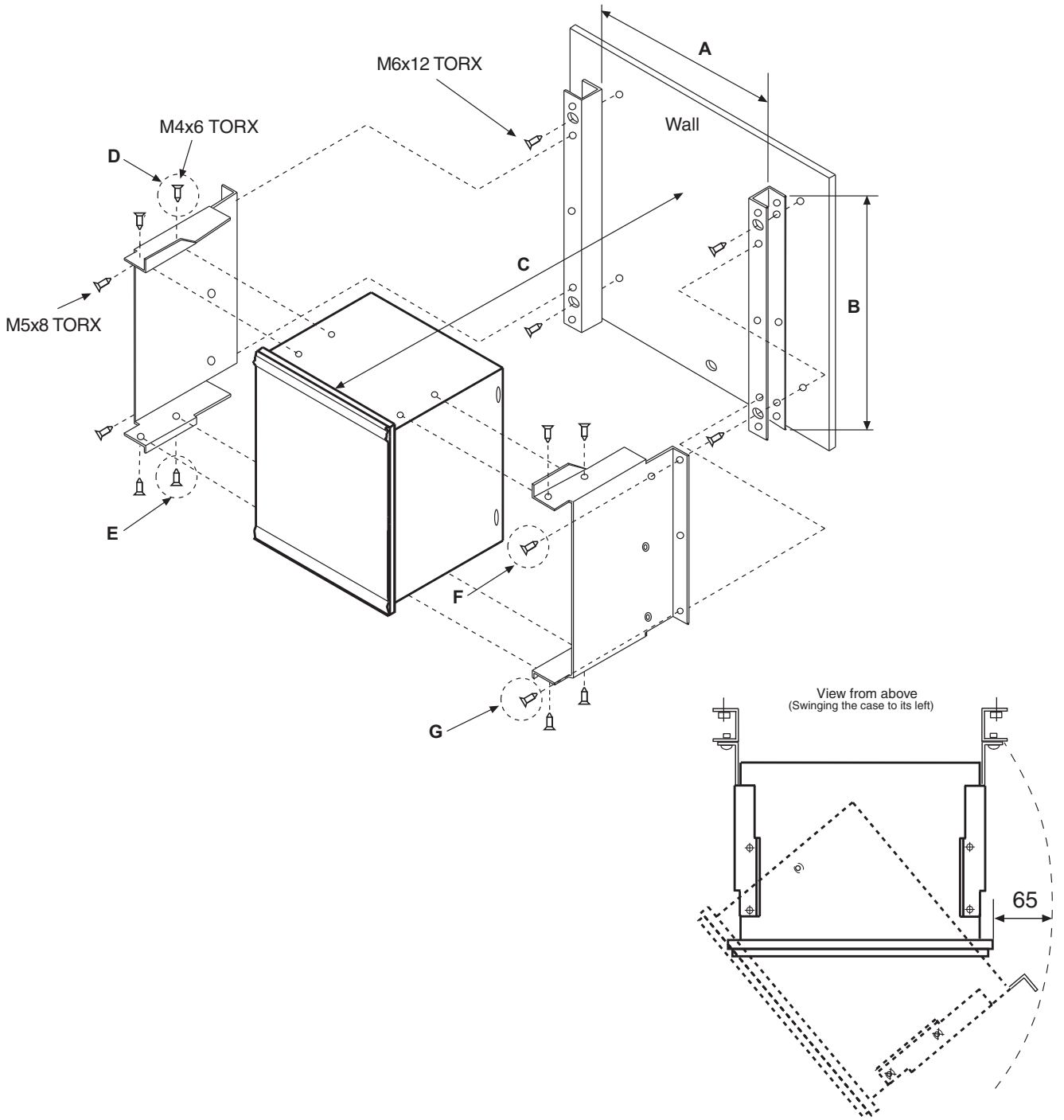
5.7.1.

Wall mounting (excluding REC 523 and RE_ 54_ with external display module)

The kit 1MRS050240 is used for mounting the case on a wall and contains two mounting brackets, two mounting bars and screws. Mounting brackets and bars are made of steel sheet and painted light beige (NCS 1704-Y15R). The same kit is used for all case widths. A wall-mounted case can be swung e.g. to the left after removing the screws D, E, F and G indicated in Fig. 5.7.1.-1. When required, terminals can be added to the terminal bars which are attached to the upper and/or lower part of the mounting bars.

Case size (x 19")	A mm	B mm	C mm
1/4	128.8	272.8	252
1/3	166.2	"	"
1/2	241.1	"	"
3/4	353.4	"	"
1/1	465.1	"	"

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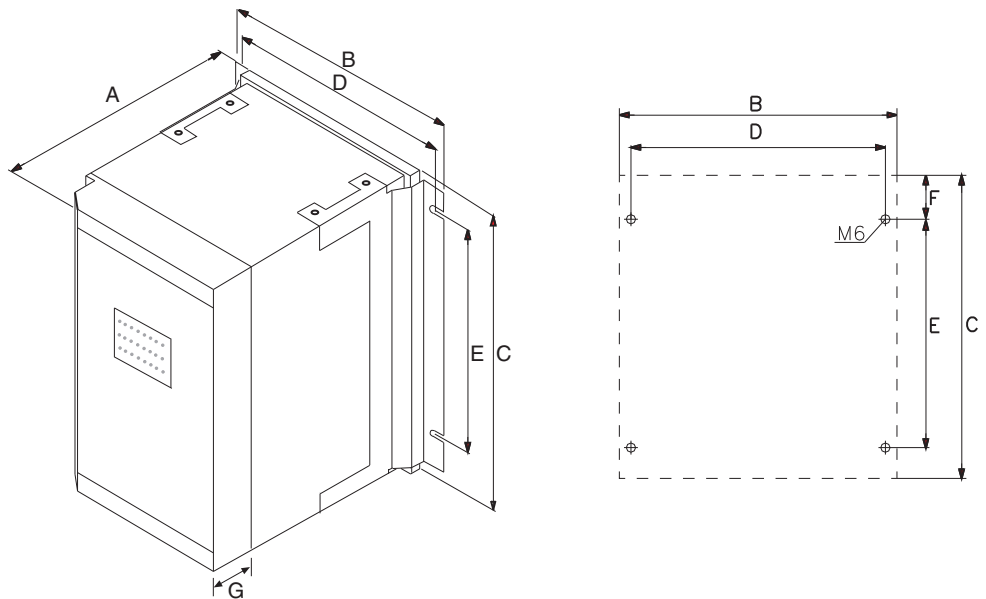
Fig. 5.7.1.-1 Wall mounting of a case

5.7.2. Wall mounting for REC 523

The mounting brackets contain four screw holes for fixing the unit on a wall with M6 screws. A front panel is delivered automatically with the main unit. The front panel is at the same time a protective cover for the cables and connections of the unit.



Since the front panel (see Fig. 5.7.2.-1 and the table below) is provided with hinges and can be opened to its right, a 45 mm space (96 mm with sensors) is required on the right side of the unit when it is mounted on a wall.



A060149

Fig. 5.7.2.-1 Dimensions of a wall-mounted REC 523 unit

Dimensions in mm per case size:

Dimension/Case size	1/4	1/2
A	245	245 296 (with sensors)
B	148	261
C	266	
D	132	244
E	200	
F	33	
G	45 96 (with sensors)	

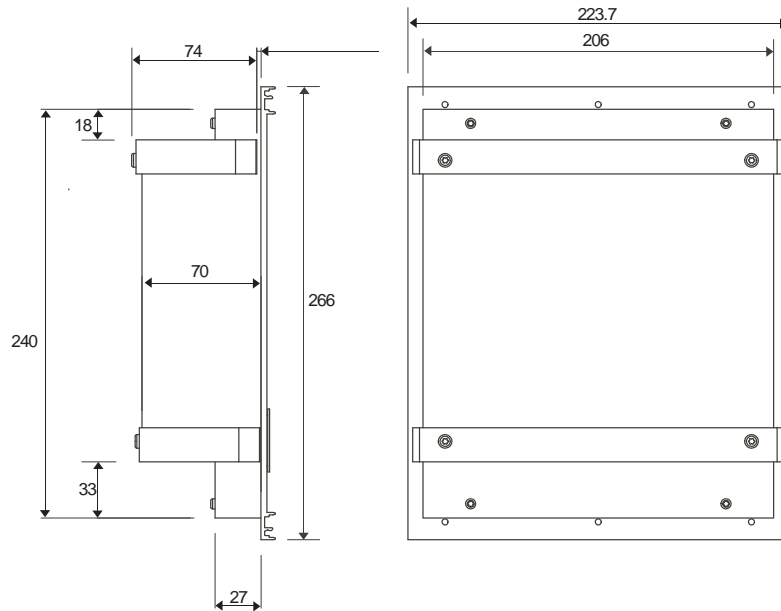
5.7.3. Wall mounting for RE_ 54_ with external display module

The REF 54_, REM 54_ and RET 54_ terminals can be delivered equipped with an external display module.

5.7.3.1.

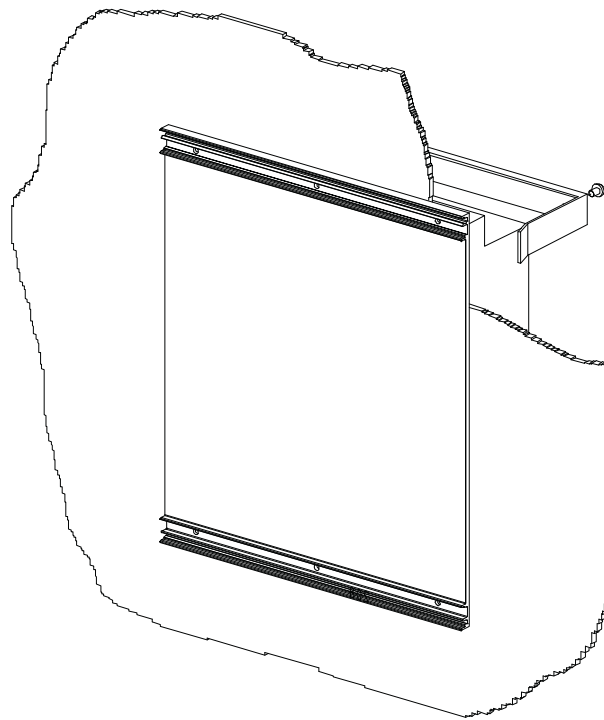
Mounting of the external display module

The mounting kit to be used for flush mounting the external display module is always included in a standard delivery. The mounting kit, which can be found fastened to the module, contains the required clamps and screws. The cut-out dimensions for the external display module are 208 x 242mm (W x H).



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Fig. 5.7.3.1.-1 Dimensions of the external display module



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Fig. 5.7.3.1.-2 Flush mounting of the external display module

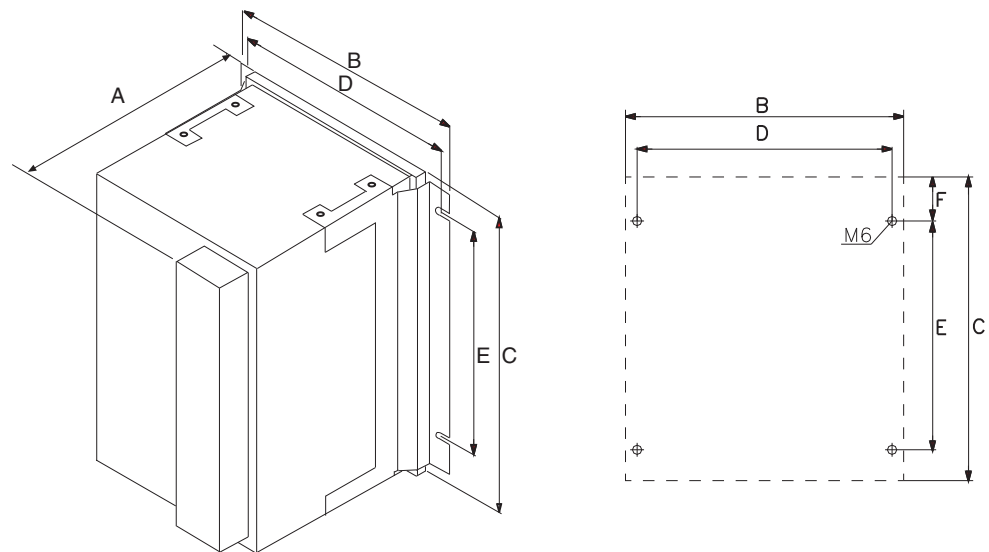
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The display module is connected to the main unit with a 2 m long cable (1MRS120511.002) included in the delivery of the main unit. The cable is connected to the RJ45 connection (connector X3.4) on the rear panel of the main unit and to the corresponding connection (control cable) on the display module.

5.7.3.2.

Mounting of the main unit

The main unit is wall mounted. The units are provided with mounting brackets required for wall mounting. The mounting brackets include four screw holes for fixing the unit on a wall with M6 screws.



A060152

Fig. 5.7.3.2.-1 Dimensions of a wall-mounted main unit

Dimension	mm	Dimension	mm
A	245	D	244
B	261	E	200
C	266	F	33

5.8.

Protective cover

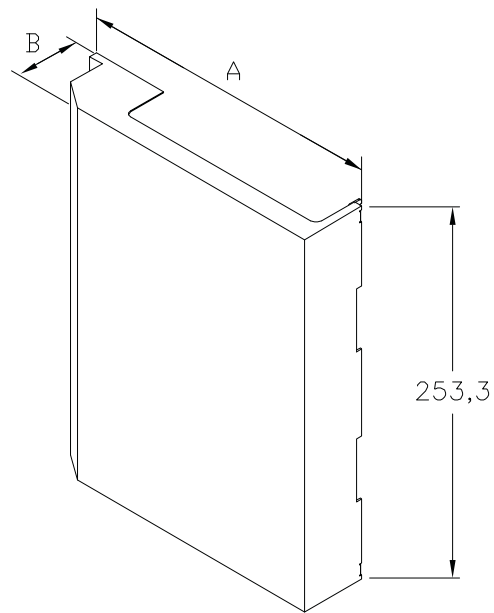
In case the wiring, cables and rear connections in the RE_ 5__ unit need to be protected, a rear protective cover can be ordered separately. The ordering numbers for different relay types are mentioned in Fig. 5.8.-1.



Note that the REC 523 delivery (wall mounted) automatically includes the rear protective cover.

The other side of the rear protective cover is fixed with hooks and the other side with screws on the rear plate of the relay unit.

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Fig. 5.8.-1 Dimensions of a rear protective cover

Relay type	A	B	Order number
REJ_/REU_/REC 501	96,4	45	1MRS060132
REA_	133,8	45	1MRS060196
REF_/REM_/RET_/REC 523 (flush mounted)	108,7	45	1MRS060134

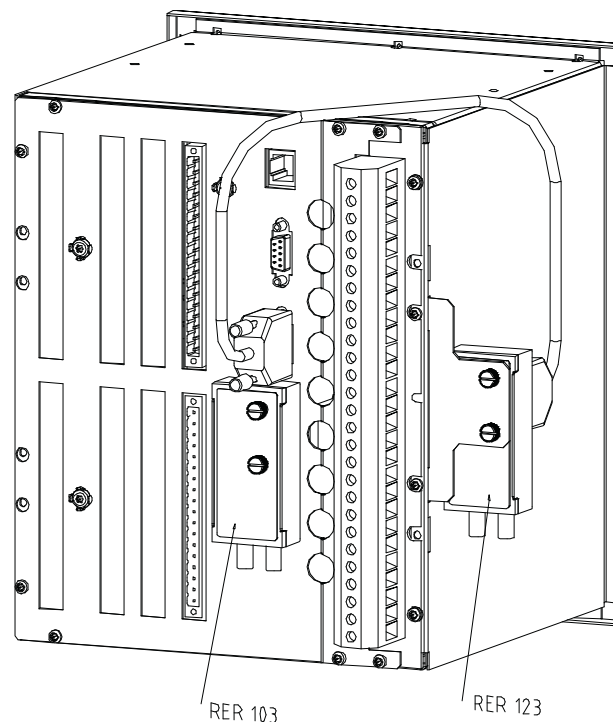
6. Connections

External connections have to be done according to the connection diagram. Each contact has its own identification number, for instance, X2.2. The numbering of the contacts runs from top to bottom, except the connector X1.1 which is numbered from bottom to top. Multi-pole connectors are delivered with the device.

Screw-compression type terminal blocks are used for electrical connections and snap-in ports for optical connections and bus connection modules. Twin BNC connectors are used for sensor inputs.



Do not use any tools when tightening the bus connection module type RER 103 that is used to connect the device to the fibre-optic communication bus (rear connector X3.3). The maximum allowed torque for these connectors is 0,2 Nm and therefore the screws on RER 103 are to be tightened only by hand.



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Fig. 6.-1 A typical mounting of RER 103 and RER 123 connection modules

6.1. Electrical connections

The terminal blocks can be connected before the connectors are attached to the device. Each screw terminal is dimensioned for one 0.2 - 2.5 mm² wire or two 0.2-1.0 mm² wires.

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Wires from the current and voltage transformers should be connected to the right device according to the phase order and the coupling scheme. Each screw terminal for the current/voltage transformer is dimensioned for one max 6 mm² or two max 2.5 mm² wires (0.5-6 mm²). A separate earth lead (2.5 mm²) should be connected from the earth screw to the earth bar. No soldering is needed.

Sensor connectors (twin BNC) delivered with the sensor should be of type AMP 332225, AMPHENOL 31-224 or similar.



Short-circuit connectors (1MRS120515) must be connected to unused sensor inputs.



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