

## OptiMat D Range of automatic molded case circuit breakers



Range of automatic molded case circuit breakers OptiMat D - is a modern generation of 3 pole automatic breakers of fixed, plug-in and retractable design, equipped with a microprocessor trip system designed for electronic circuits protection from overloads and short circuits, including single-phase short circuits. Breakers with the acceptance from Russian Maritime Register of Shipping (RS) (RS further) and with the acceptance from Russian Sea Register (RRR further) are designed to protect ship electronic equipment and port infrastructure.

### Designation

OptiMat D 250 N - MR1 - U3

①      ②      ③      ④      ⑤      ⑥

①	Product range	OptiMat			
②	Configuration	D - automatic molded case circuit breakers			
③	Rated current $I_n$ , A	100	250	400	630
④	Limiting breaking capacity, kA	N - 40 H - 65	N - 40 H - 65	N - 40 H - 65	N - 40 H - 65
⑤	Type of a microprocessor trip system	<sup>1)</sup> MR1 - an electrical circuits protection from overloads and short circuits with a regulated short-time delay in an overload zone (including thermal memory)		<sup>2)</sup> MR2 - an electrical circuit protection from overloads and short circuits including one-phase short circuits with a regulated short-time delay in an overload zone (including thermal memory), a short circuit and set parameters indication	
⑥	Symbol of environment and environmental class of location in compliance with the requirements of GOST 15150	U3 (international T3) - QCD (quality control department) acceptance	U3-REG (international T3)- approved by RRR	OM4-REG (international UM4) - approved by RS	

<sup>1)</sup> For OptiMat D100 and D250 breakers

<sup>2)</sup> For OptiMat D400 and D630 breakers

Basic configuration of Optimat D circuit breakers includes:

- interphase barriers (4 pcs)
- set of attaching screws

## Batch effectiveness

Intellectual microprocessor trip units provide all required types of protection with high measurement accuracy of network parameters.



It's possible to install the breaker in any position, with the supply lead either from above or from under, not damaging technical specifications of the breaker.

Automatic breakers OptiMat D can be used within temperature rate -40 ... +70 °C.



Effective current limitation allows to decrease a short-circuit current impact on network elements and the machine itself significantly.

Tolerance to switching overloads and radio frequency interference.



Warranty 5 years. Each unit undergoes multi-stage quality control from assembling to the finished goods warehouse.

"Dual distribution" system of the main contacts guarantees an instant current shutdown if there is a sort-circuit and significantly decreases wearing of the main contacts, which increases the breaker's service.









The location in the central part of Russia and domestic manufacture allow to fulfill equipment delivery as soon as possible.











## Technical specifications

Range of automatic breakers			OptiMat D100	OptiMat D250	OptiMat D400	OptiMat D630				
General characteristics										
Rated operational voltage, Ue V			690							
Rated insulation voltage Ui, V			800							
Rated sustainable pulsed voltage Uimp, kV			8							
Application category			A			B				
Suitability for isolation			available							
Number of poles			3							
Control										
Manual	control lever		+							
	standard or extended rotary handle		+							
Electrical	motor drive		+							
Design										
Stationary	frontal		+							
	rear		+							
Plug-in			+							
Retractable			+							
Rated and ultimate parameters of a main circuit the breaker										
Rated current In, A			100	250		400		630		
Rated frequency, Hz			50							
Levels of the breaking capacity			N	H	N	H	N	H	N	H
Rated limiting breaking capacity Icu, kA	Ue 400 V		40	65	40	65	40	65	40	65
	Ue 690 V		8	10	8	10	8	10	8	10
Short-circuit making capacity Ics, % of Icu			100							
Rated service short-circuit breaking capacity Icm, kA	Ue 400 V		84	143	84	143	84	143	84	143
	Ue 690 V		13,6	17	13,6	17	13,6	17	13,6	17
Overall wear resistance, cycles			25000		16000		10000			
Electrical wear resistance, cycles			10000		6300		2500			
Devices for protection, indication and measurement										
Microprocessor trip system			MR1			MR2				
Overload protection			+			+				
Short circuit protection	with time delay		+			+				
	instant actuation		+			+				
Ground short circuit protection			-			+				
Measured current indication			-			+				
Apparatus state indication			+			+				
Add-on equipment for protection and indication										
Auxiliary contacts	free auxiliary contacts		+							
	signalling auxiliary contacts		+							
Voltage trip units	shunt trip		+							
	minimum current tripping device		+							
Accessories	terminal cover		+							
	pole spreader		+							
	pole partitions		as a set							
Installation and connection										
Connection of copper and aluminium wires with section, mm			10 - 70			25 - 120				
Connection of copper and aluminium busbars with maximum section, mm			от 2x25 до 6x25			от 3x32 до 2x(6x32)				
Overall dimensions and weight										
Overall dimensions W*H*D, mm			105x162,5x94			140x256x111				
Weight, kg			2,2			6,2				

## Reference (series)

Physical appearance	Rated current, A	Nomenclature (general purpose industrial version)	Reference	Nomenclature (RRR acceptance design)	Reference	Nomenclature (RS acceptance design)	Reference	Accessories	
								Auxiliary contact	Auxiliary terminal shield
OptiMat D100 	40...100	OptiMat D100N-MR1-U3	144412	OptiMat D100N-MR1-U3-REG	244073	OptiMat D100N-MR1-OM4-REG	255731	 	
		OptiMat D100H-MR1-U3	144414	OptiMat D100H-MR1-U3-REG	244072	OptiMat D100H-MR1-OM4-REG	255734		
OptiMat D250 	100...250	OptiMat D250N-MR1-U3	137335	OptiMat D250N-MR1-U3-REG	244075	OptiMat D250N-MR1-OM4-REG	255733	OptiMat D UHL3-4 pcs. ref. 143490 UHL3-REG-4 pcs. ref. 244078 OM4-REG-4 pcs. ref. 255772	OptiMat D100...250 UHL3-2 pcs. ref. 232987 UHL3-REG-2 pcs. ref. 244079 OM4-REG-2 pcs. ref. 255773
		OptiMat D250H-MR1-U3	144411	OptiMat D250H-MR1-U3-REG	244074	OptiMat D250H-MR1-OM4-REG	255732		
OptiMat D400 	160...400	OptiMat D400N-MR2-U3	249225	OptiMat D400N-MR2-U3-REG	on request	OptiMat D400N-MR2-OM4-REG	on request		OptiMat D400...630 UHL3-2 pcs. ref. 251068 UHL3-REG-2 pcs. ref. 255774
		OptiMat D400H-MR2-U3	249226	OptiMat D400H-MR2-U3-REG	on request	OptiMat D400H-MR2-OM4-REG	on request		
OptiMat D630 	250...630	OptiMat D630N-MR2-U3	144413	OptiMat D630N-MR2-U3-REG	244090	OptiMat D630N-MR2-OM4-REG	255727		
		OptiMat D630H-MR2-U3	144415	OptiMat D630H-MR2-U3-REG	244089	OptiMat D630H-MR2-OM4-REG	255730		



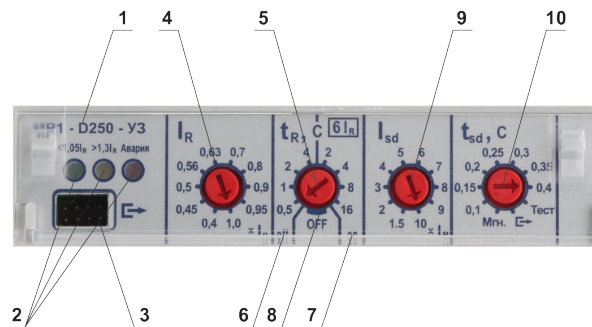
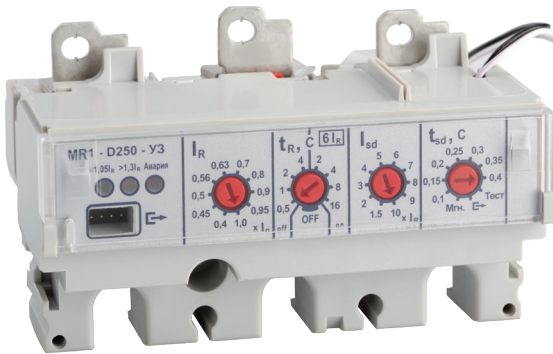
Accessories								
	Shunt trip	Minimum current tripping device	Set for rear attachment	Pole spreader	Motor drive	Manual drive	Set for plug-in attachment	Set for drawout attachment
								
	OptiMat D 24DC-UHL3 ref. 254582 24DC/48AC-UHL3 ref. 143498 48DC/110AC-UHL3 ref. 143495 110DC/230AC-UHL3 ref. 143496 220DC/400AC-UHL3 ref. 143497  OptiMat D 24DC-UHL3-REG ref. 255775 24DC/48AC-UHL3-REG ref. 244086 48DC/110AC-UHL3-REG ref. 244087 110DC/230AC-UHL3-REG ref. 244084 220DC/400AC-UHL3-REG ref. 244085  OptiMat D- 24DC/48AC-OM4-REG ref. 255777 48DC/110AC-OM4-REG ref. 255779 110DC/230AC-OM4-REG ref. 255778 220DC/400AC-OM4-REG ref. 255780	OptiMat D 24DC-UHL3 to develop 24AC-UHL3 to develop 48DC-UHL3 to develop 48AC-UHL3 to develop 110DC-UHL3 to develop 110AC-UHL3 to develop 220DC-UHL3 to develop 230AC-UHL3 ref. 254589 400AC-UHL3 to develop  OptiMat D 24DC-UHL3-REG to develop 24AC-UHL3-REG to develop 48DC-UHL3-REG to develop 48AC-UHL3-REG to develop 110DC-UHL3-REG to develop 110AC-UHL3-REG to develop 220DC-UHL3-REG to develop 230AC-UHL3-REG ref. 255806 400AC-UHL3-REG to develop  OptiMat D 24DC-OM4-REG to develop 24AC-OM4-REG to develop 48DC-OM4-REG to develop 48AC-OM4-REG to develop 110DC-OM4-REG to develop 110AC-OM4-REG to develop 220DC-OM4-REG to develop 230AC-OM4-REG ref. 255807 400AC-OM4-REG to develop	OptiMat D100...250 UHL3 - long ref. 238709 UHL3 - short ref. 234089 UHL3-REG - long ref. 244076 UHL3-REG - short ref. 244077 OM4-REG - long ref. 255810 OM4-REG - short ref. 255811	OptiMat D100...250 - 3 pcs. ref. 255857	OptiMat D100...250 230AC-UHL3 to develop 400AC-UHL3 to develop 230AC-OM4-REG to develop 400AC-OM4-REG to develop	OptiMat D100...250 UHL3 ref. 240958 OM4-REG ref. 244103	OptiMat D100...250 UHL3 ref. 234092 OM4-REG ref. 244096	OptiMat D100...250 UHL3 ref. 239381 OM4-REG ref. 244098
	OptiMat D- 24DC/48AC-OM4-REG ref. 255777 48DC/110AC-OM4-REG ref. 255779 110DC/230AC-OM4-REG ref. 255778 220DC/400AC-OM4-REG ref. 255780	OptiMat D 24DC-OM4-REG to develop 24AC-OM4-REG to develop 48DC-OM4-REG to develop 48AC-OM4-REG to develop 110DC-OM4-REG to develop 110AC-OM4-REG to develop 220DC-OM4-REG to develop 230AC-OM4-REG ref. 255807 400AC-OM4-REG to develop	OptiMat D400...630 UHL3 - long ref. 238710 UHL3 - short ref. 234090 UHL3-REG - long ref. 244094 UHL3-REG - short ref. 244095 OM4-REG - long ref. 255812 OM4-REG - short ref. 255813	OptiMat D400...630 - 3 pcs. to develop	OptiMat D400...630 230AC-UHL3 ref. 233121 400AC-UHL3 to develop 230AC-UHL3-REG ref. 244100 400AC-UHL3-REG to develop 230AC-OM4-REG ref. 255815 400AC-OM4-REG to develop	OptiMat D400...630 UHL3 ref. 240959 OM4-REG ref. 244105	OptiMat D400...630-UHL3 ref. 234091 OM4-REG ref. 244097	OptiMat D400...630 UHL3 ref. 234093* OM4-REG ref. 244099*

\* Using automatic breakers OptiMat D630H-MR2-U3 and OptiMat D630N-MR2-U3 together with a set for plug-in connection OptiMat D400...630-UHL3 and retractable design OptiMat D400...630-UHL3 current-carrying rating is 570 A within permission temperature range according to GOST P 50030.2-2010.

## Microprocessor trip systems

Automatic breakers Optimat D modification N and H are provided with trip systems MR1 and MR2. Trip systems consist of: breaker control block allows to set program defined by the user. Breaker will use it to trip main contacts. Trip system has advantages in comparison with thermal magnetic trip unit: various settings choice, highly accurate program execution; indicators of operability and tripping cause.

### Trip system MR1



1. Marking
2. Color indicators of loading
3. Test connector
4. Protection current from overloads
5. Protection time from overloads
6. Setting at tripping time in overload zone without "thermal memory" function
7. Setting at tripping time in overload zone with "thermal memory" function
8. Switch position to switch off overload protection
9. Selectivity current of current cutoff (only short circuit protection)
10. Selectivity time of current cutoff

Note. "Thermal memory" is an updating program for tripping time depending on current that caused opening of the breaker and time elapsed since the shutdown moment.

"Thermal memory" is work emulation of overload current trip.

Current and time tripping values in short circuit and overload zones:

Name of parameters	Value	Tolerance
Operating current value $I_R$ in multiples to rated current ( $I_R/I_N$ )	0,4; 0,45; 0,5; 0,56; 0,63; 0,7; 0,8; 0,9; 0,95; 1,0	-
Tripping time value at current $6I_R$ ( $t_R$ ), s	0,5; 1; 2; 4 – without "thermal memory" function; 2; 4; 8; 16 – with "thermal memory" function	$\pm 10\%$
Tripping current value in short circuit zone $I_{sd}$ in multiples to operating current ( $I_{sd}/I_R$ )	1,5; 2; 3; 4; 5; 6; 7; 8; 9; 10	$\pm 15\%$
Tripping time value in a short circuit zone ( $t_{sd}$ ), s	0 (without intentional time-delay); 0,1; 0,15; 0,2; 0,25; 0,3; 0,35; 0,4	$\pm 0,02$
Instant tripping current value $I_i$ , A (unregulated)	3000	$\pm 20\%$

#### Signalling

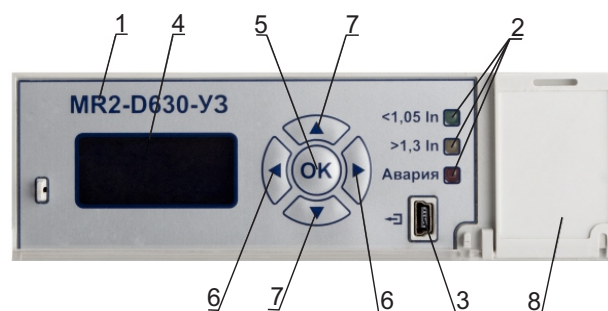
Indication device shows following modes:

- 1) permanent glow of green light diode - the scheme is in an operational mode, current of protected circuit  $I \leq 1,05I_R$ ;
- 2) flickering of green light diode with frequency 0,5...1 Hz - the scheme is in an operational mode, current in a protected circuit  $1,05I_R < I \leq 1,3I_R$ ;
- 3) flickering of orange diode (frequency increases from 0,5 to 3 Hz depending on overload current value) - the scheme is in an operating mode, current in a protected circuit  $I > 1,3I_R$ ;
- 4) permanent glow of red light diode - trip system malfunction.

#### Testing

Frontal panel connector is to plug in testing device or testing system to check the machine servicing state after attachment of the tripping unit and accessories.

## ■ Trip system MR2



1. Name of a semiconducting trip unit
  2. Indicators of protected circuit state and operating mode of the semiconducting block
  3. Test device connector
  4. Digital display
  5. Ok button to switch modes, turn off doze mode, choose parameter ( $I_r$ ,  $t_r$ ,  $I_{sd}$ ,  $t_{sd}$ ,  $I_g$ ,  $t_g$ ,) and save setting after quitting the menu
  6. Buttons left/right to choose from previous/next parameter
  7. Buttons up/down to increase/decrease parameters
  8. Connector for removable Li-ion battery
- Note: you can turn on and off "thermal memory" function, when you choose tripping time value in an overload zone.

Current and time tripping values in short circuit and overload zones:

Name of parameters	Value	Tolerance
Operating current value $I_r$ in amperes	from 250 to 630 with 20 A pitch from 160 to 400 with 20 A pitch (for OptiMat D400)	$\pm 2\%$
Tripping time value at current $6I_r$ ( $t_r$ ), s	0,5; 1; 2; 4 – without thermal memory function; 2; 4; 8; 16 – with thermal memory function	$\pm 10\%$
Tripping current value in short circuit zone $I_{sd}$ in multiples to operating current ( $I_{sd}/I_r$ )	1,5; 2; 3; 4; 5; 6; 7; 8; 9; 10	$\pm 15\%$
Tripping time value in a short circuit zone ( $t_{sd}$ ), s	off (without intentional time-delay); 0,1; 0,15; 0,2; 0,25; 0,3; 0,35; 0,4	$\pm 0,02$
Instant tripping current value $I_i$ , A (not adjustable)	7500	$\pm 20\%$
Tripping current value at a single-phase short circuit in multiples of operating current ( $I_g/I_r$ )	0,4 - 0,6 - 0,8 - 1,0	$\pm 10\%$
Tripping time value at a one-phase short circuit ( $t_g$ ), s	0,1; 0,2; 0,3; 0,4; 0,5; 0,6; 0,7; 0,8; 0,9; 1,0	$\pm 0,02$

### Signalling

Indication device shows following modes:

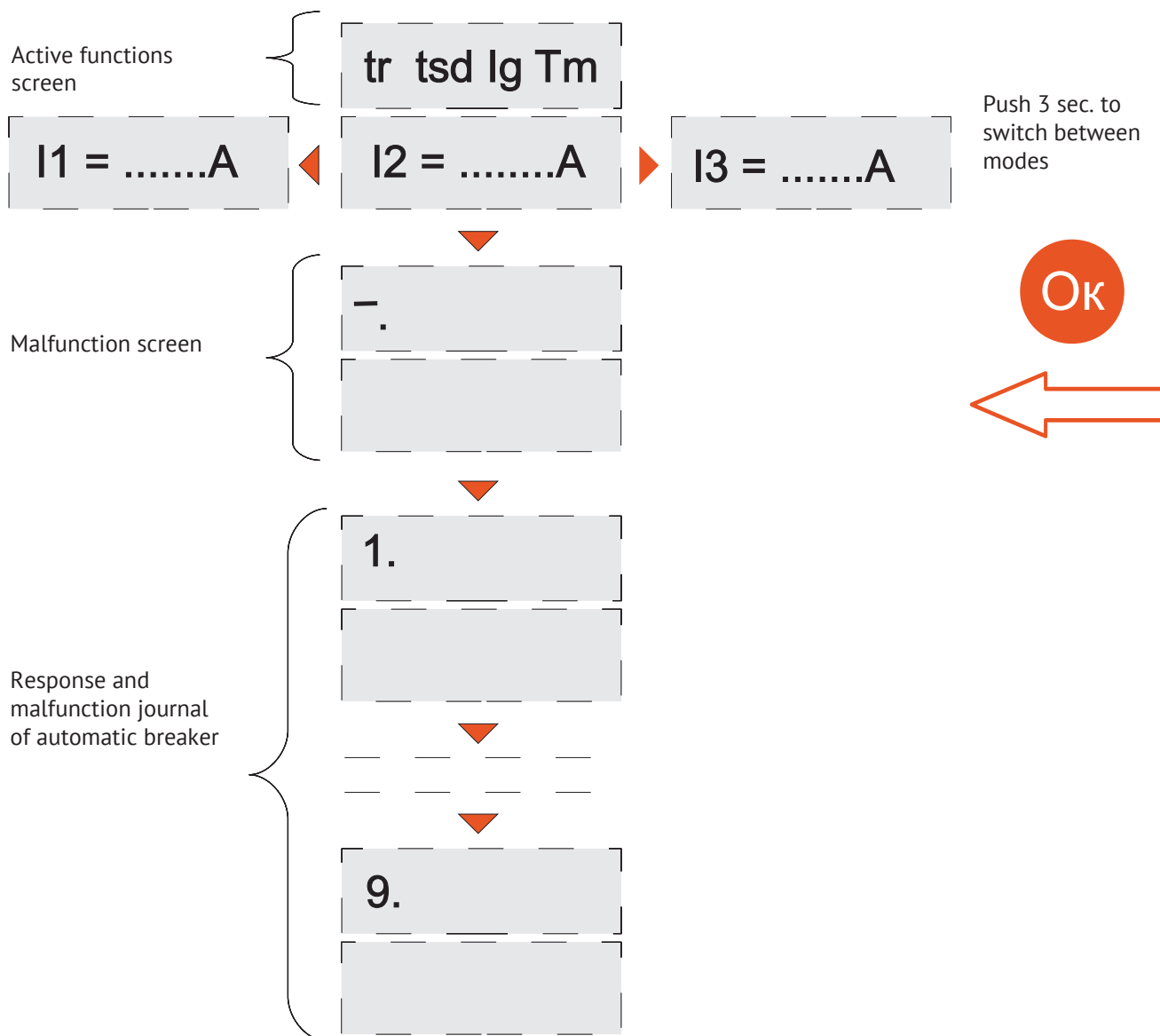
- 1) permanent glow of green light diode - the scheme is in an operational mode, current of protected circuit  $I \leq 1,05I_r$ ;
- 2) flickering of green light diode with frequency 0,5...1 Hz - the scheme is in an operational mode, current in a protected circuit  $1,05I_r < I \leq 1,3I_r$ ;
- 3) flickering of orange diode (frequency increases from 0,5 to 3 Hz depending on overload current value) - the scheme is in an operating mode, current in a protected circuit  $I > 1,3I_r$ ;
- 4) permanent glow of red light diode - trip system malfunction.

### Testing


Frontal panel connector is to plug in testing device or testing system to check the machine servicing state after attachment of the tripping unit and accessories.


## Menu for microprocessor trip unit MR2

Indication mode of measured values and response journal

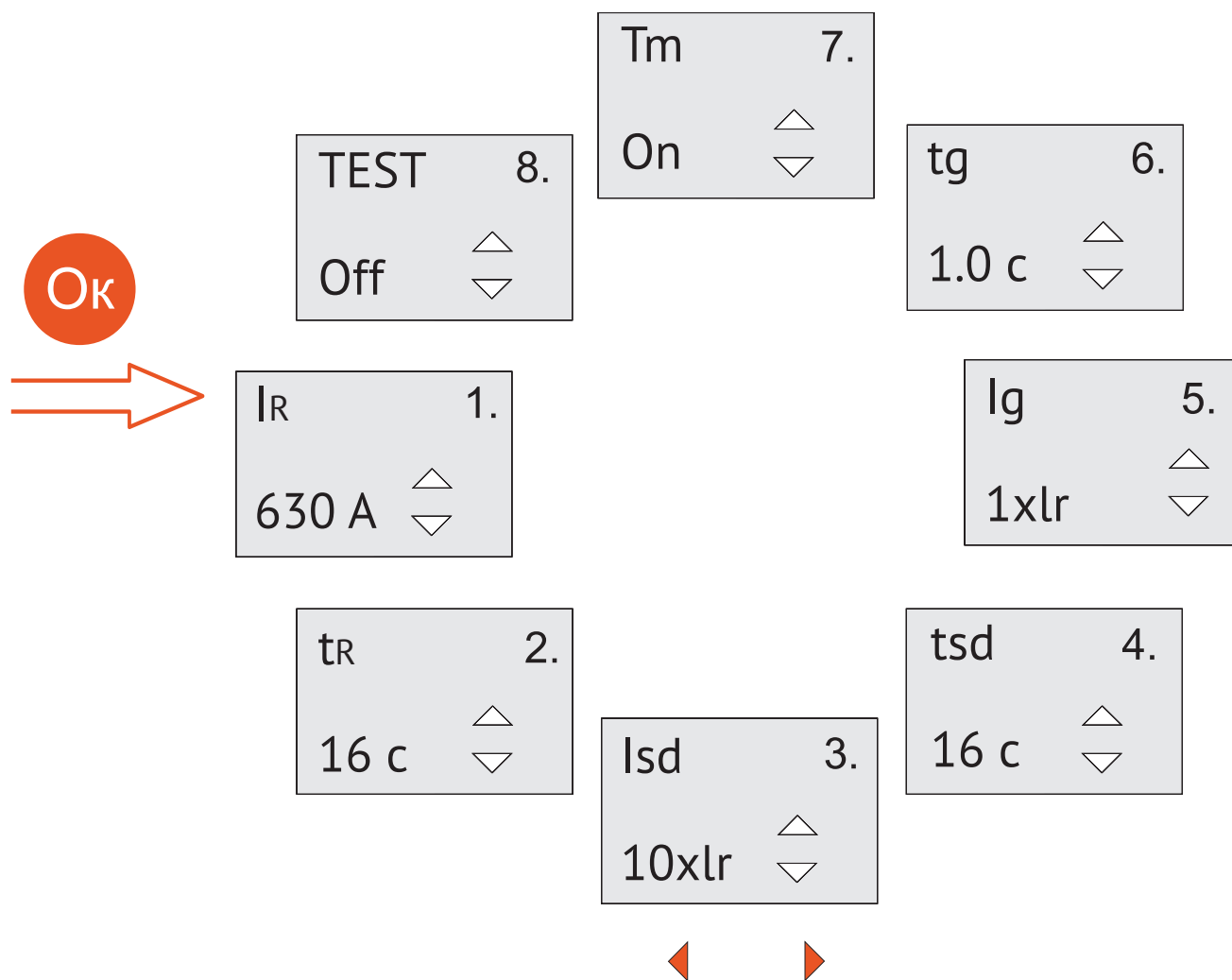


**Malfunction signs:****Isd:** short-circuit**Ig:** one-phase short circuit**Q:** overload
 - current transducer breakout

 - machine is not turned off or control trip breakout

 - temperature in electronic block is over threshold value

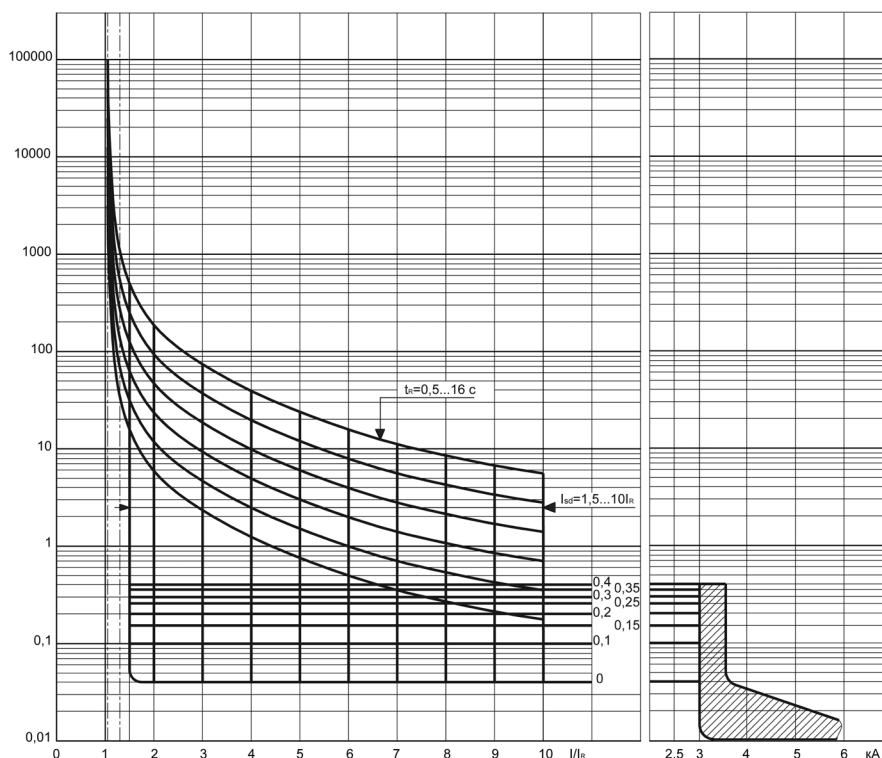
## Mode of settings indication



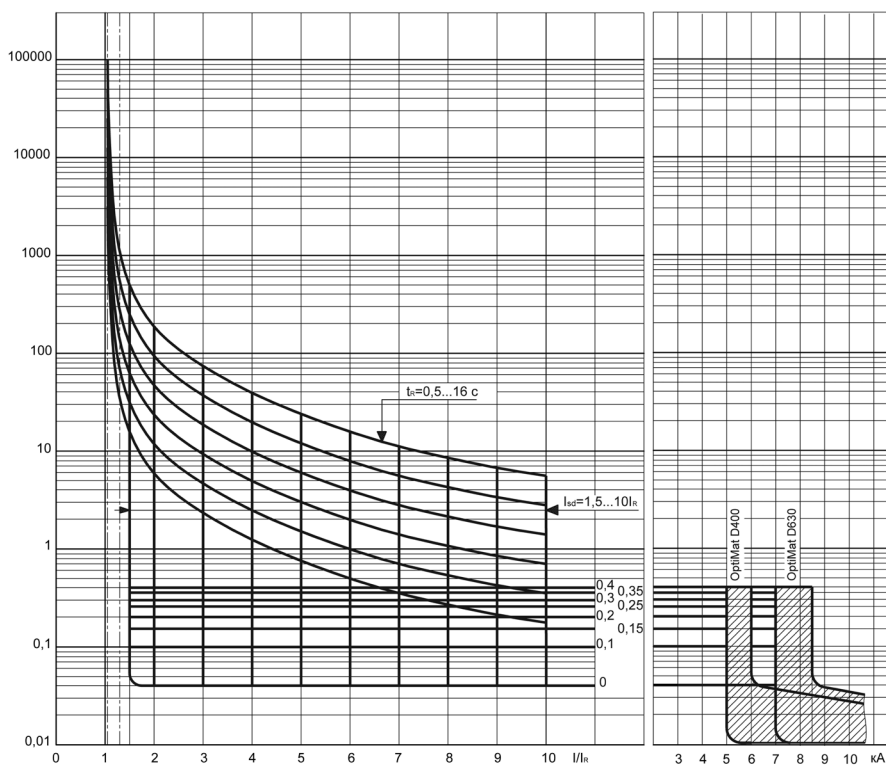
\* More detailed information about microprocessor trip unit MR2 is in an operational manual.

## Time-current characteristics

### Time-current characteristics in short-circuit zone OptiMat D250



### OptiMat D400 и D630

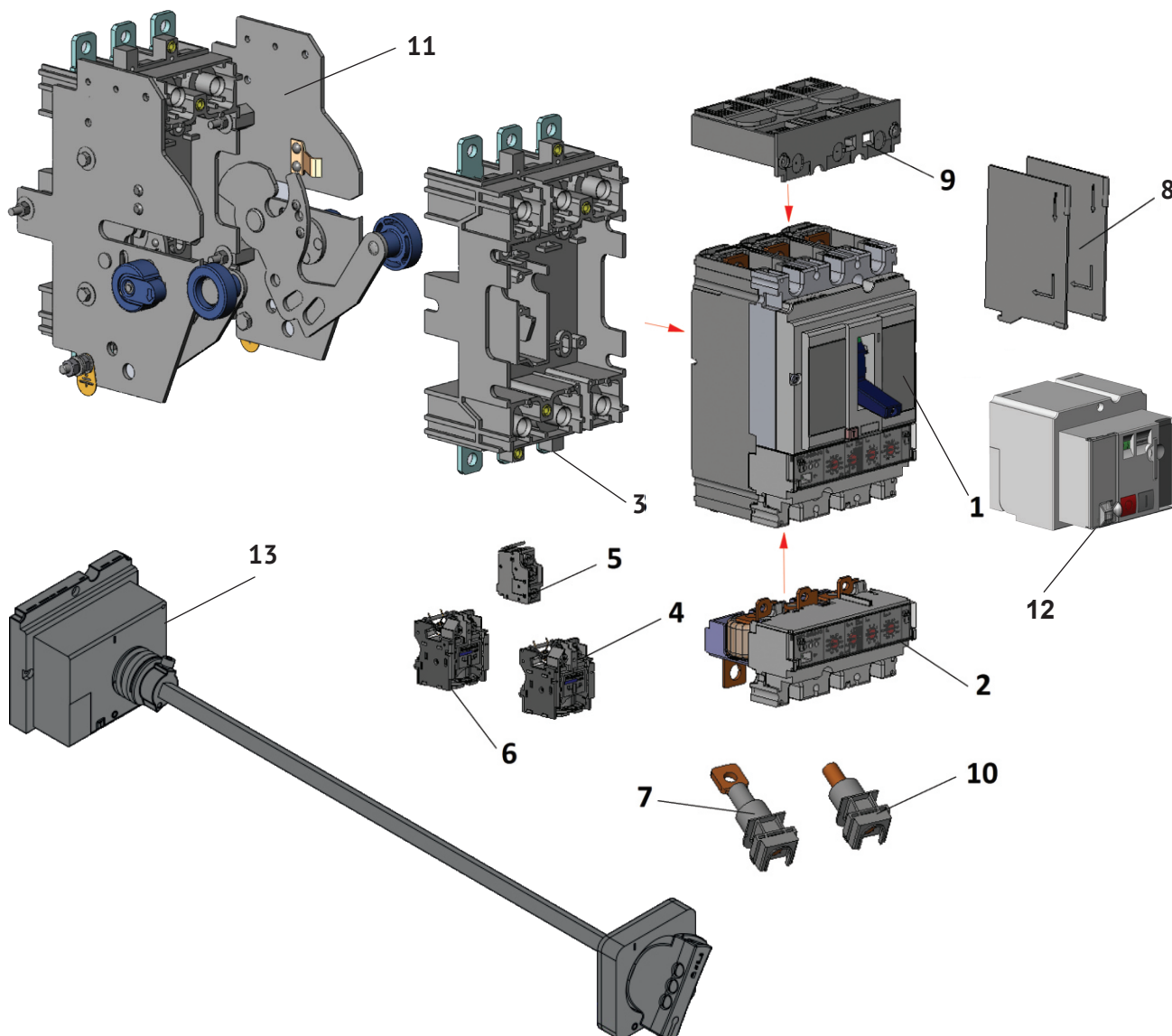


Breaker tripping time with loading on every pole separately by current  $2I_n$  with different  $t_r$  settings are in the chart:

Setting $t_r$ with $6I_n$ , c	0,5	1	2	4	8	16
Breaker tripping time with current $2I_n$ , s	5-7	10-14	21-27	43-53	85-110	170-220

## Configuration

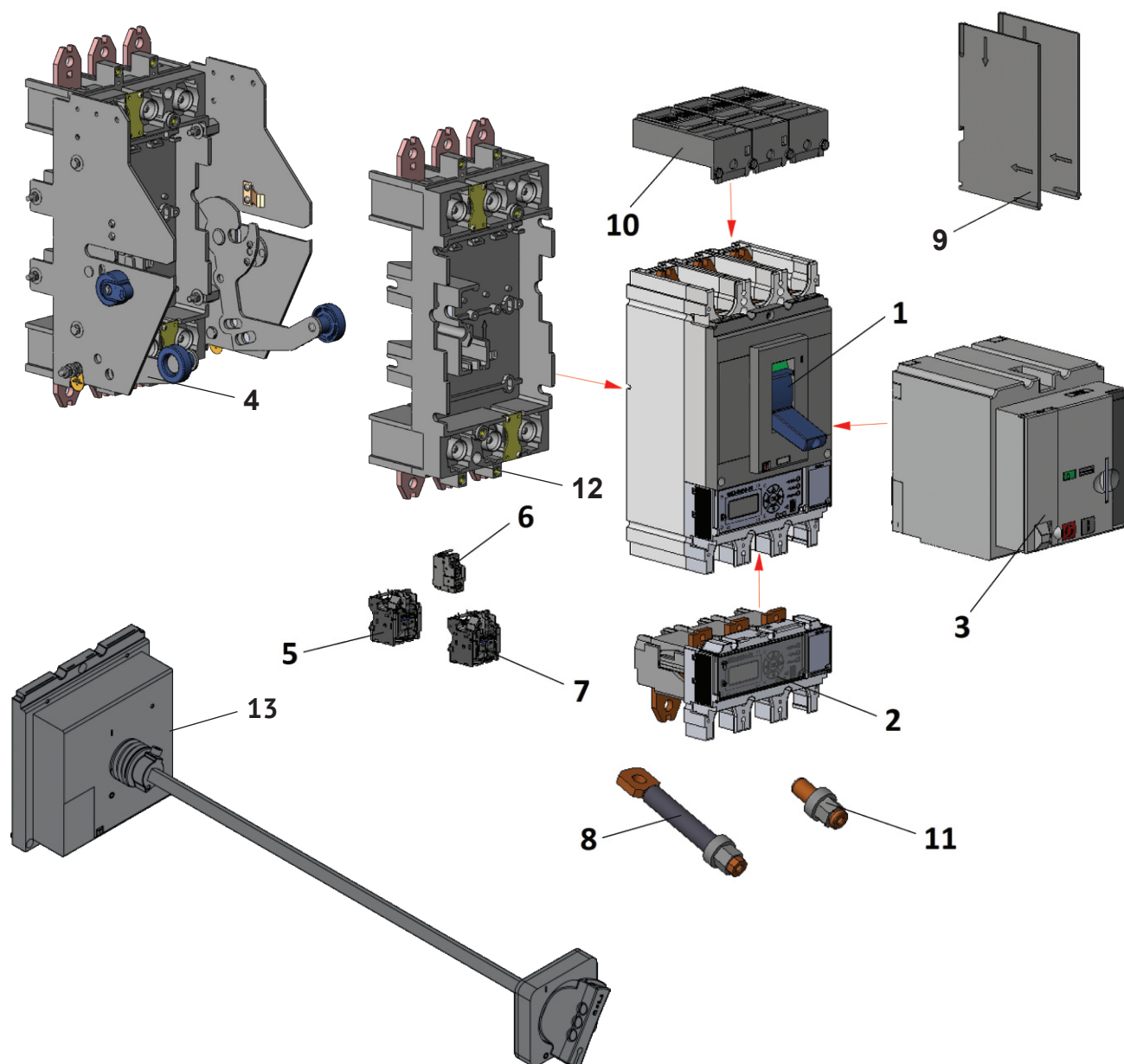
### Configuration OptiMat D100 и D250



- 1 Base unit
- 2 Microprocessor trip system
- 3, 10 Set for plug-in attachment
- 4 Shunt trip
- 5 Auxiliary contacts
- 6 Minimum current tripping unit
- 7 Contacts for rear attachment of the breaker
- 8 Interphase barriers
- 9 Auxiliary terminal shield
- 10, 11 Set of drawout design
- 12 Motor drive
- 13 Remote manual drive



## Configuration OptiMat D400 и D630



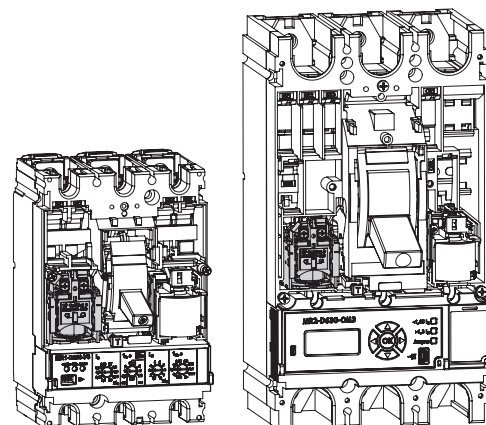
- 1 Base unit (switching)
- 2 Microprocessor trip system
- 3 Motor drive
- 4, 11 Contact of rear attachent
- 5 Minimum current tripping unit
- 6 Auxiliary contacts
- 7 Shunt unit
- 8 Contacts for rear attachment of the breaker
- 9 Interphase barriers
- 10 Auxiliary terminal shield
- 11, 12 Set for plug-in attachment
- 13 Remote manual drive



## Accessories

### Shunt trip

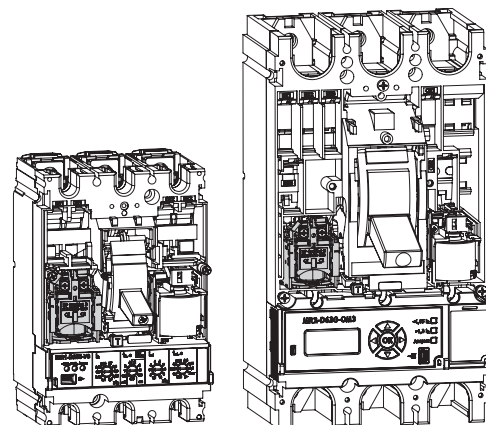
Shunt trip is designed to open the breaker remotely and unified for breakers OptiMat D of all types. The trip unit is used in control circuits for direct and alternating current 50 Hz. Rated control voltage (Uc) and technical specifications are in the table:



Designation		HP 24DC	HP 24DC/48AC	HP 48DC/110AC	HP 110DC/230AC	HP 220DC/400AC
Reference	general purpose industrial design	254582	143498	143495	143496	143497
	RRR acceptance	255775	244086	244087	244084	244085
	RS acceptance	-	255777	255779	255778	255780
Rated voltage for shunt trip control (Uc), V		24DC	24DC/48AC	48DC/110AC	110DC/230AC	220DC/400AC
Operating voltage range		0,7-1,1 Uc				
Consumed voltage, VA or W		30				
Control command		Power supply duration from 0,02 to 3 s				
Maximum consumed current at 110% Uc (~230 V), A		1,0				
Maximum shutdown time before (before opening of power contacts), ms		40				

### Minimum current tripping device

Minimum current tripping device is designed to open the breaker when voltage decreases below required standards. Unified for breakers OptiMat D of all types. Used in alternating and direct current circuits at 50 Hz. Rated control voltage (Uc) and technical specifications are in the table:



Designation		MP 24DC	MP 24AC	MP 48DC	MP 48AC	MP 110DC	MP 110AC	MP 220DC	MP 230AC	MP 400AC
Reference	general purpose industrial design	to develop							254589	to develop
	RRR acceptance	to develop							255806	to develop
	RS acceptance	to develop							255807	to develop
Rated control voltage (Uc), V		24DC	24AC	48DC	48AC	110DC	110AC	220DC	230AC	400AC
Operating range		0,85-1,1 Uc								
Threshold pickup: closing opening		0,35-07Uc 0,85Uc								
Consumed voltage, VA or W		6								
Operate mode		prolonged								

## Auxiliary contact

Auxiliary contacts are designed for indication of a closing state. Auxiliary contacts of the model are installed in connectors, as in the picture below. Functions of auxiliary contacts depend on the contact you install them into. (Look circuit schematics Optimat D breaker):

BK1...BK4 – switching position indication of main contacts (closed/open).

CK1 – opening signal with tripping due to:

- tripping of protective trip;
- tripping of shunt trip or minimum circuit tripping device;
- pushing test button;
- pushing emergency button of a motor drive.

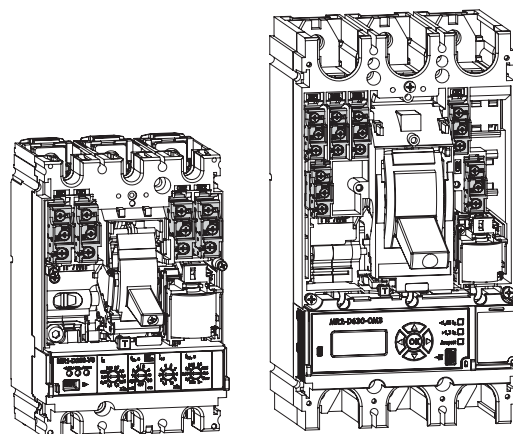
CK2 – opening signal of the breaker due to tripping of overcurrent release.

Maximum amount of contacts are in the table:

Breaker current		Functional design of auxiliary contacts		
		BK	CK1	CK2
Reference	general purpose	143490		
	industrial design			
	RRR acceptance	244078		
Optimat D250	RS acceptance	255772		
		2	1	1
Optimat D630		4	1	1

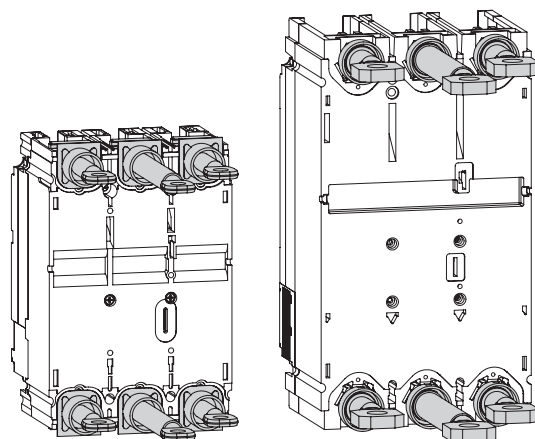
Rated currents ( $I_c$ ) at various voltages ( $U_c$ ):

	Alternating current (AC)					Direct current (DC)				
	24	48	110	230	400	24	48	110	250	
Rated voltage ( $U_c$ ), V	24	48	110	230	400	24	48	110	250	
Rated operating current ( $I_c$ ), A	6	6	5	4	2	3	1,5	0,5	0,2	



## Rear attachment set

The use of terminals for conductors rear attachment allows to use automatic breakers OptiMat D in distribution panel builders and rear opened panels where connection with rear busbars attachment and conductor with end fitting is required there are two designs: long and short.



Designation		RAS OptiMat D100...250-UHL3-long	RAS OptiMat D100...250-UHL3-short	RAS OptiMat D400...630-UHL3-long	RAS OptiMat D400...630-UHL3-short
Reference	general purpose	238709	234089	238710	234090
	industrial design				
	RRR acceptance	244076	244077	244094	244095
Optimat D250	RS acceptance	255810	255811	255812	255813

## Manual remote drive

Manual remote drive allows to control the apparatus, which is installed in the panel, from the frontal panel. It provides following functions:

1) Mechanical door locking - when the device is on.

The manual remote actuator is equipped with a lock integrated with the extension axis, which prevents the door from opening if the circuit breaker is in the "on" or "emergency shutdown" position. To open the door with the automatic circuit breaker actuated, this lock can be neutralized with the tool. This operation is not possible if the handle is locked with padlocks.

2) Forced neutralization of mechanical lock-out of the door.

Rattle field change, allows to cancel door lock-out, including blocking with padlocks. However, door lock-out can be restored where applicable.

If several remote manual drives are installed on one door, this function allows to block the door from one apparatus.

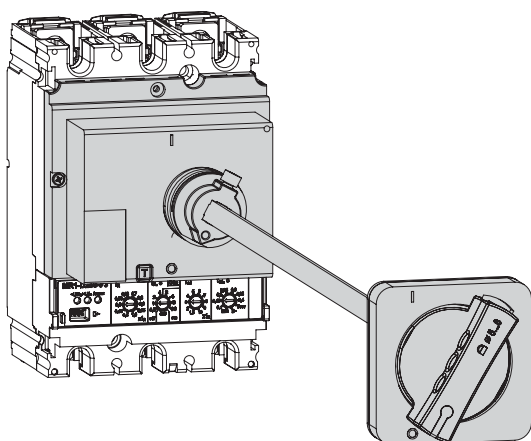
3) Apparatus and door blocking with padlocks.

The control lever can be locked with padlocks, which prevents the door to be opened in off position, with 1-3 padlocks Ø5 - 8 mm (not a part of a standard equipment set).

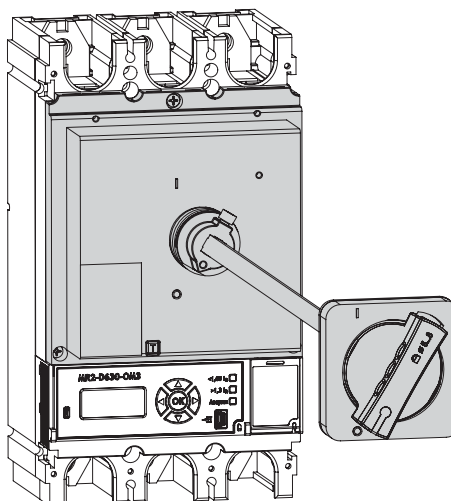
If control of the door was modified to provide forced neutralization of the door lockup, padlocks don't lock the door but the control lever which prevents communication.

Designation		Manual remote drive OptiMat D100...250-UHL3	Manual remote drive OptiMat D400...630-UHL3
Reference	general purpose industrial design	240958	240959
	RS acceptance	244103	244105

OptiMat D100 и D250

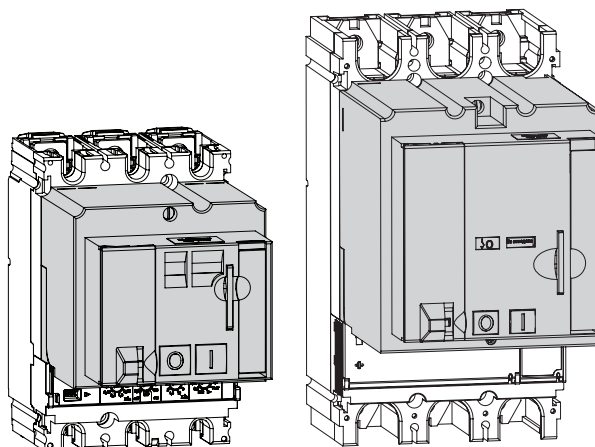


OptiMat D400 и D630



## Motor drive

Automatic breakers Optimat D are equipped with motor drives with accumulators. This ensures breaker closure in any conditions - from rated loading to rating making capacity. Designed to control the breaker remotely. Control modes: electrical (auto) or manual (P). Main characteristics are in the table:

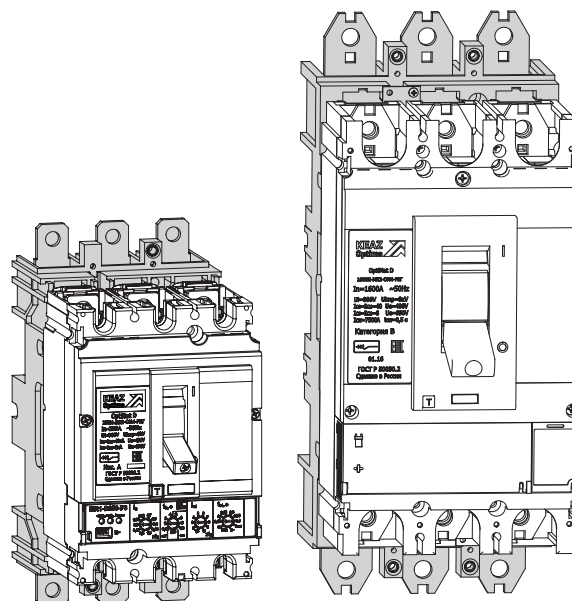


Designation		OptiMat D100...250-230AC-UHL3	OptiMat D100...250-400AC-UHL3	OptiMat D400...630-230AC-UHL3	OptiMat D400...630-400AC-UHL3
Reference	general purpose industrial design	to develop		233121	to develop
	RRR acceptance	-	-	244100	
	RS acceptance	to develop		255815	
Operating voltages range (Us), V		0,85-1,1			
Motor capacity, V·A		250			
Resetting rime, s		not more than 3			
General tripping time, ms		≤80			
General shutdown time, ms		≤1000			
Operation frequency		not more than 3 in a minute			

## Set for a plug-in connection

Fixed part is the base to attach moving element of the plug-in breaker to and it can be installed on a mounting plate in different ways. The breaker is attached to the bottom with leads for a plug-in attachment (part of delivery set).

The set allows to extract the automatic breaker quickly, expect it and replace. Power cables and busbars stay connected to the fixed bottom. There are also an outgoing branch circuit where the automatic breaker will be attached to later. Special lockup opens the apparatus automatically if you install it or extract in a closed position. but it allows to so the switching of an extracted apparatus.



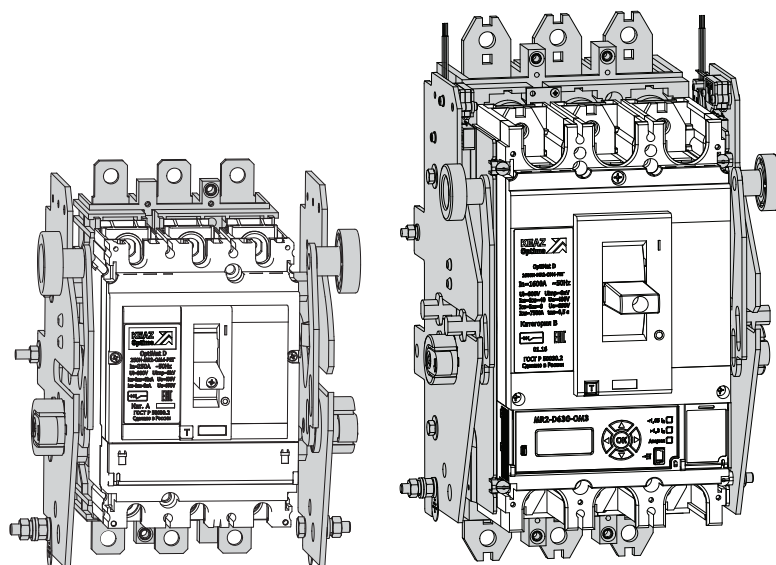
Designation		Set for a plug-in connection OptiMat D100...250-UHL3	Set for a plug-in connection OptiMat D400...630-UHL3
Reference	general purpose industrial design	234092	234091
	RS acceptance	244096	244097

### Set for a retractable design

In addition to functions fulfilled by plug in connection, retractable one, makes control easier. It provides 3 possible positions, jumping from one to another is possible after the mechanic lockup was taken off:

1. "pumped in" the power circuit is on;
2. "pumped out" the power circuit is off, switching to check secondary wiring can be done;
3. "extracted" the apparatus is extracted.

Retractable design in the chassis can be done by installing still parts of the chassis to the base, but moving parts -to the apparatus. retractable design provides visual clearance doing commissioning procedure. Special lockup automatically witches off the apparatus when it is being installed or extracted in operating mode but allows to do switching of the extracted apparatus.

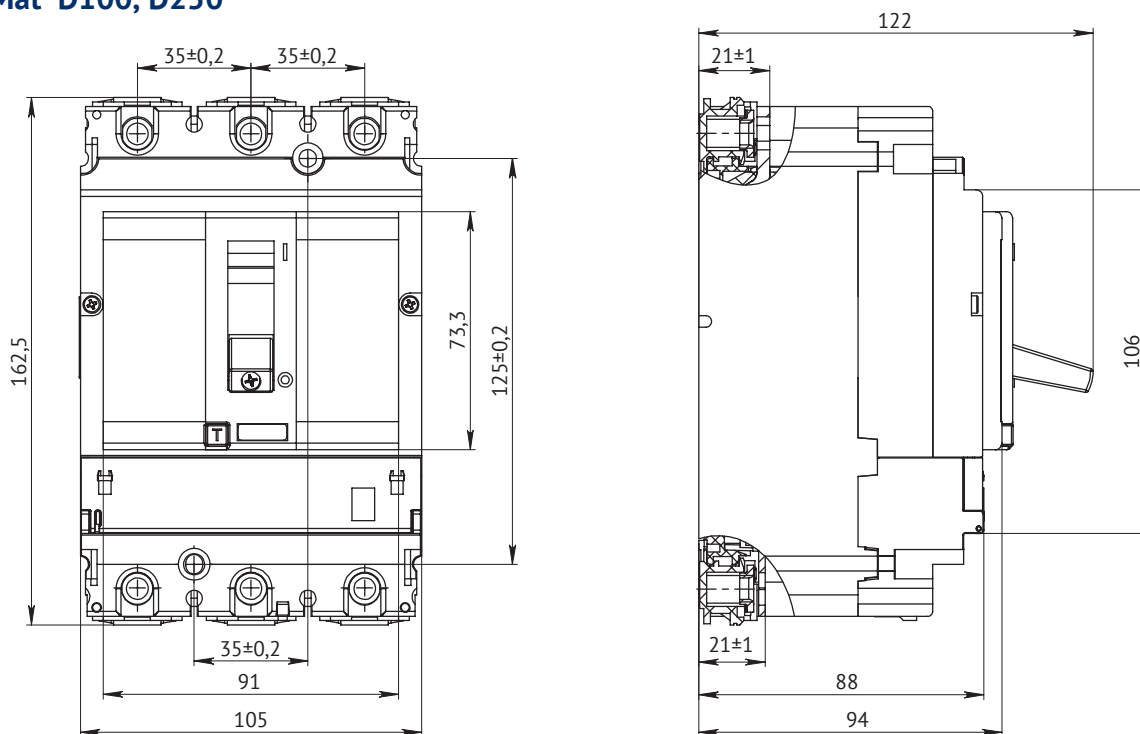


Designation		Set for a retractable design OptiMat D100...250-UHL3	Set for a retractable design OptiMat D400...630-UHL3
Reference	general purpose industrial design	239381	234093*
	RS acceptance	244098	244099*

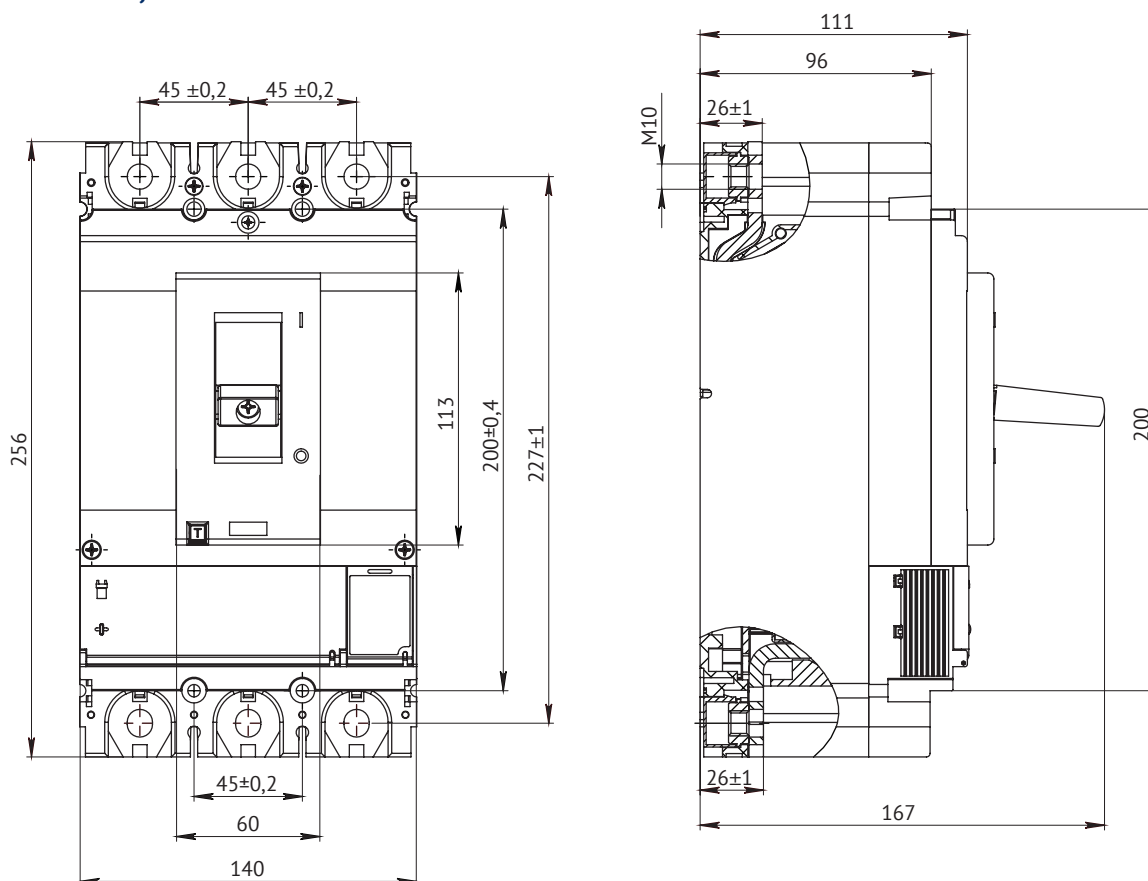
\* Using automatic breakers OptiMat D630H-MR2-U and OptiMat D630N-MR2-U3 together with a set for plug-in connection OptiMat D400...630-UHL3 and retractable design OptiMat D400...630-UHL3 current-carrying rating is 570 A within permission temperature range according to GOST P 50030.2-2010.

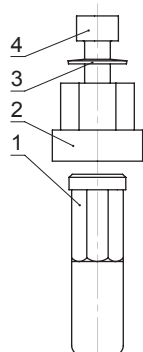
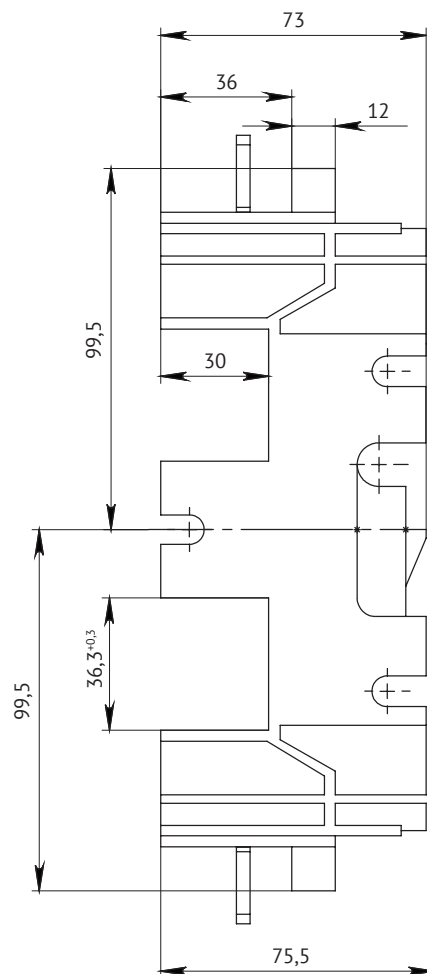
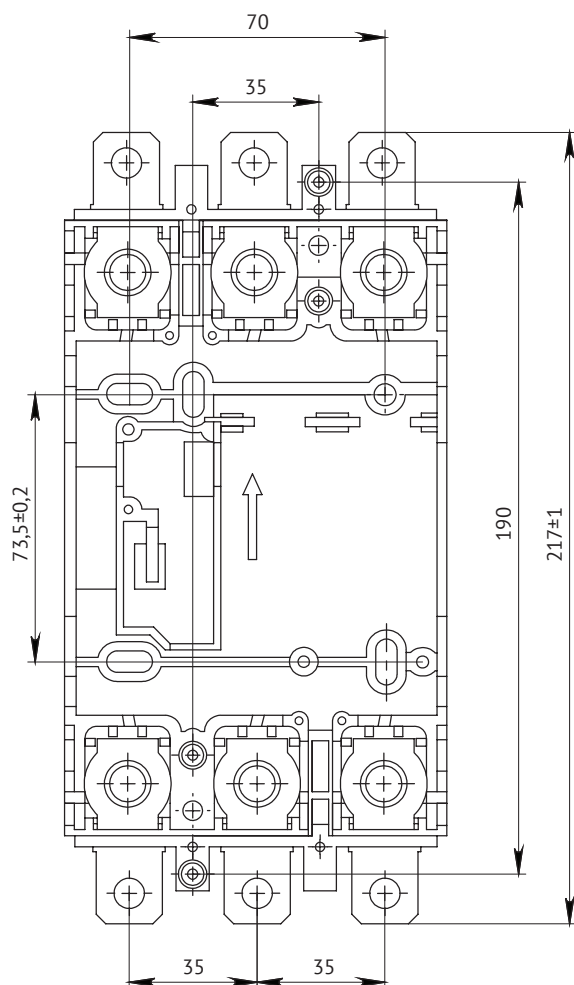
## Overall dimensions (mm)

### OptiMat D100, D250



### OptiMat D400, D630

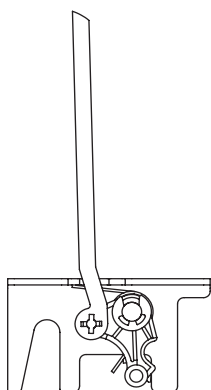


**Set for plug-in attachment and drawout design for breakers OptiMat D100 и OptiMat D250**

**Base for plug-in breaker attachment**

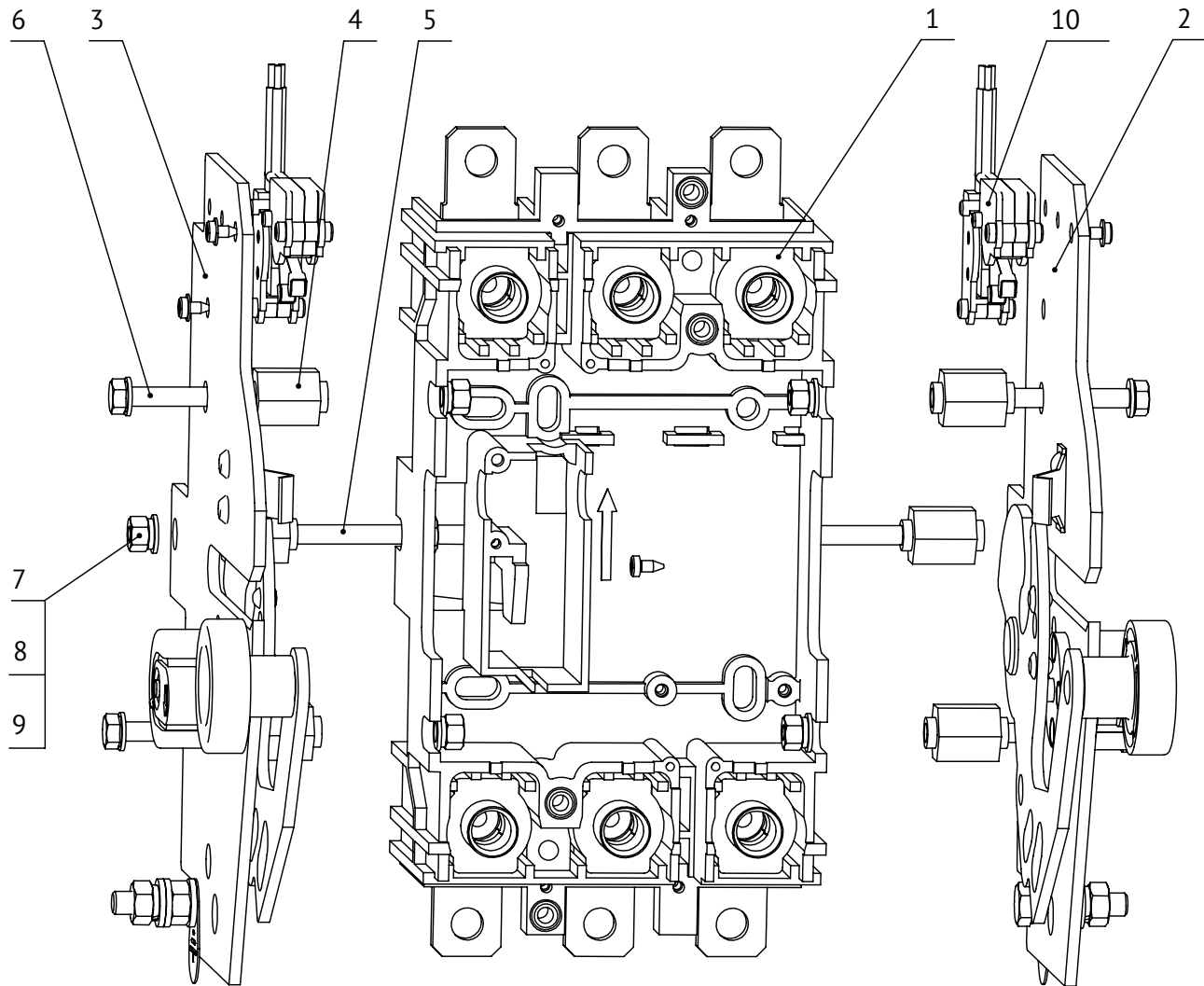
Lead for plug-in attachment and drawout design

1. lead
2. reducer
3. disc spring
4. screw M6x16.

Lead of position 1 is installed in the breaker through frontal detail of position 2 with the help of the screw of position 4 and the spring of position 3.

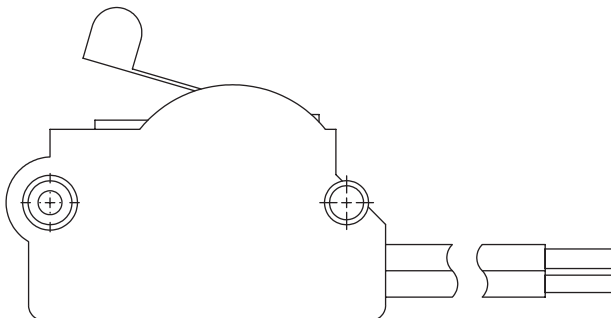


Blocking mechanisms to prevent installation and extraction of the breaker in switching position "on".

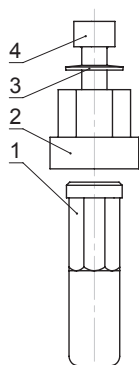
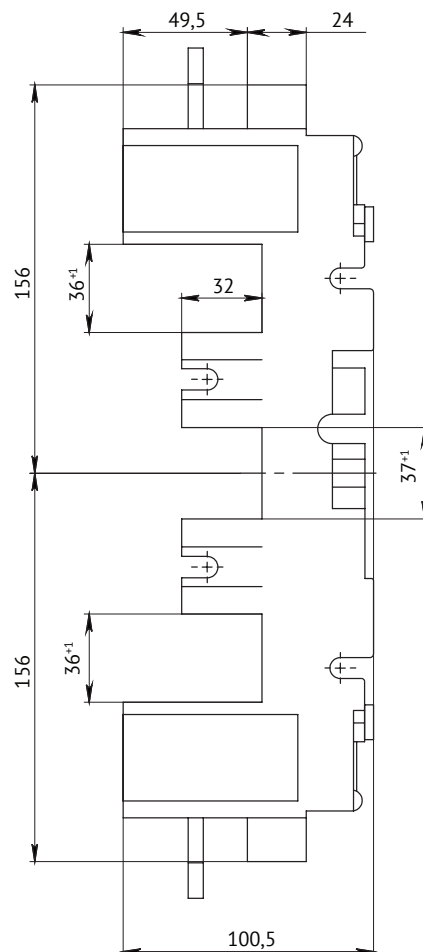
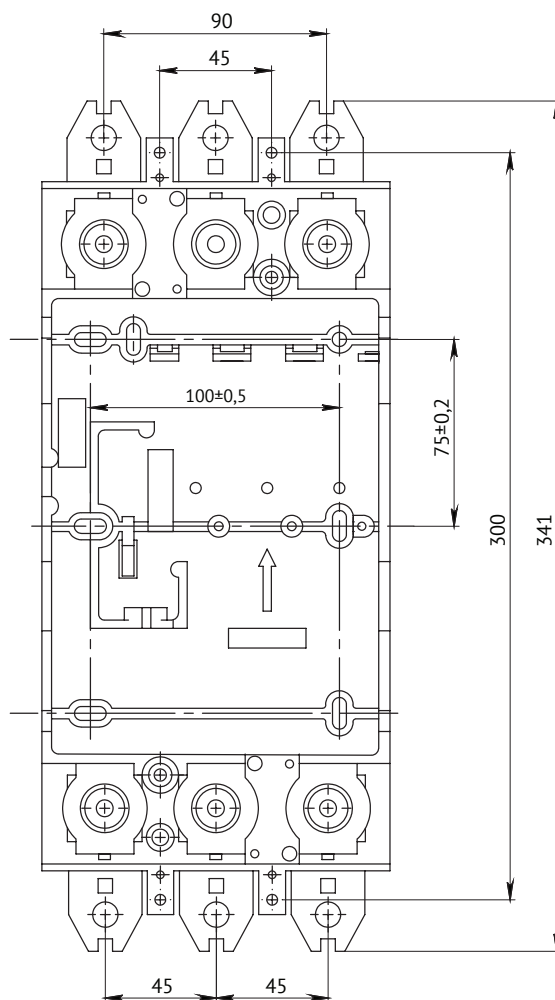

**Breaker chassis**

- 1. base for plug-in attachment
- 2. right hand column
- 3. left hand column
- 4. limiting sleeve
- 5. stud - coupling - 2pieces
- 6. screw M5x35 - 4 pieces
- 7. nut M5 - 8 pieces
- 8. washer - 12 pieces
- 9. split lock washer- 6 pieces
- 10. signalling contact for breaker position in the chassis - 4 pieces

Signalling contact for breaker position in the chassis.





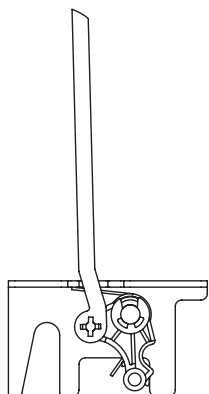
**Set for plug-in attachment and drawout design for breakers OptiMat D400 and OptiMat D630**


Base for plug-in breaker attachment

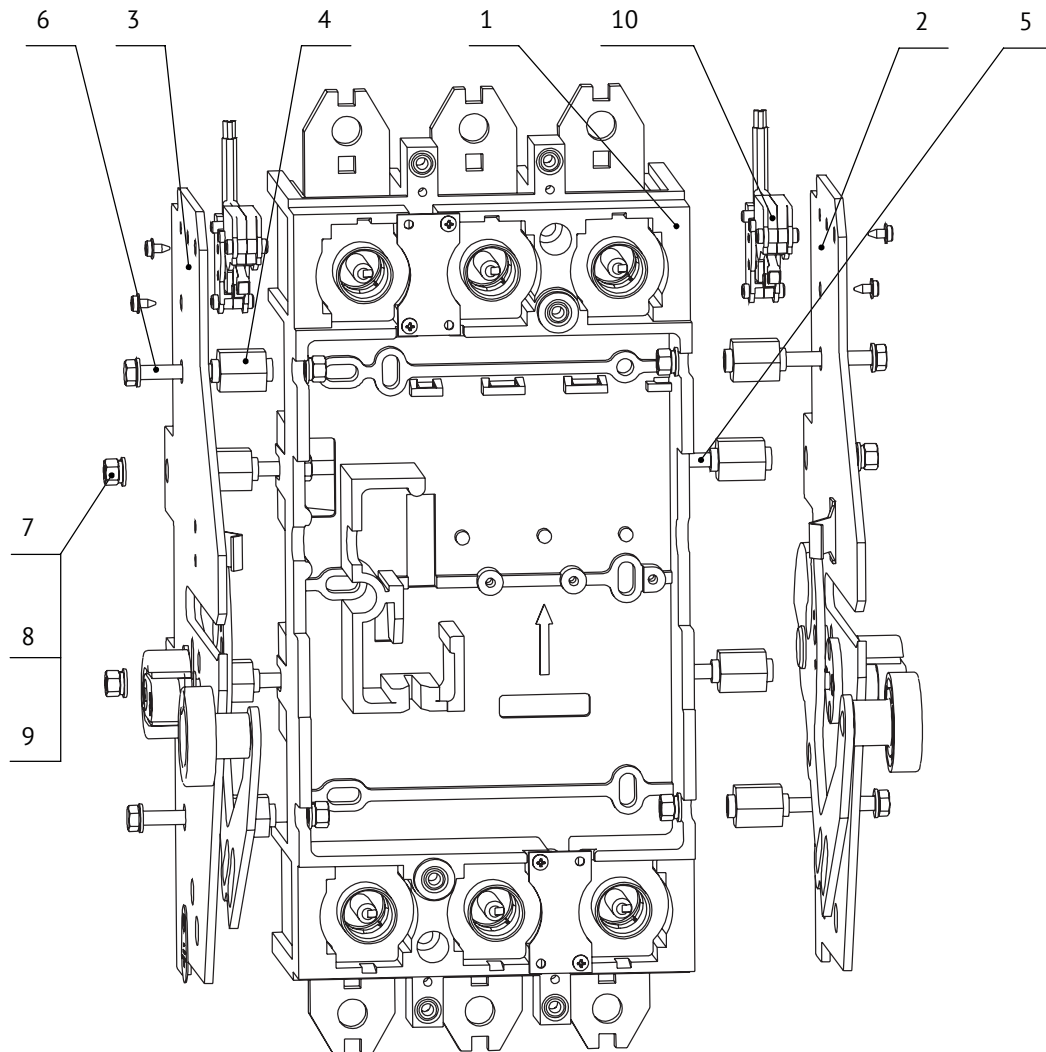
Lead for plug-in attachment and retractable design

1. lead
2. reducer
3. disc spring
4. screw M8x25

Lead of position 1 is installed in the breaker through frontal detail of position 2 with the help of the screw of position 4 and the spring of position 3.



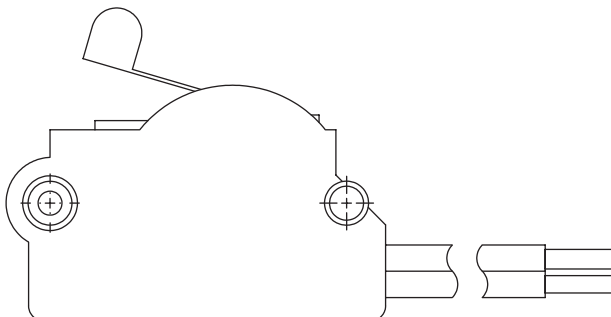
Blocking mechanisms to prevent installation and extraction of the breaker in switching position "on".

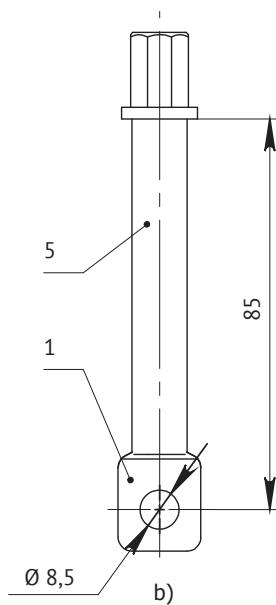
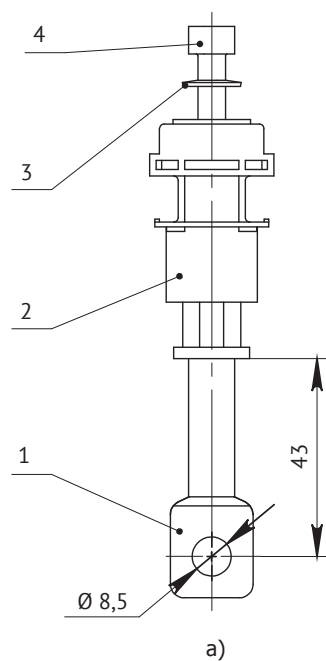


**Breaker chassis**

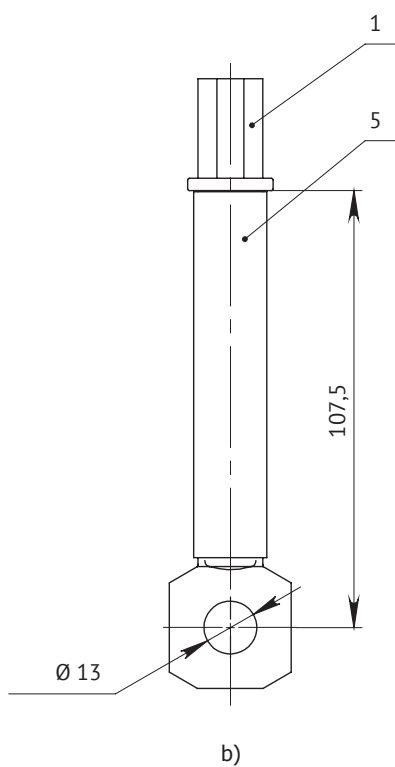
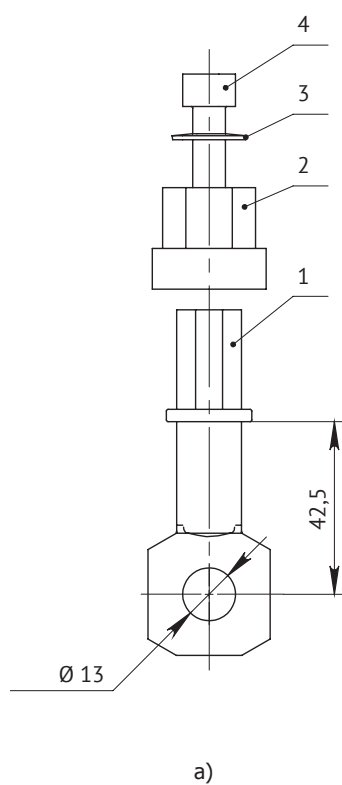
- 1. base for plug-in attachment
- 2. right hand column
- 3. left hand column
- 4. limiting sleeve - 6 pieces
- 5. pin - coupling - 1 piece
- 6. screw M5x35 - 4 pieces
- 7. nut M5 - 8 pieces
- 8. washer - 12 pieces
- 9. split lock washer - 6 pieces
- 10. signalling contact for breaker position in the chassis - 4 pieces

Signalling contact for breaker position in the chassis.



**Insert terminal for rear attachment of OptiMat D100, OptiMat D250, OptiMat D400 and OptiMat D630 breakers**


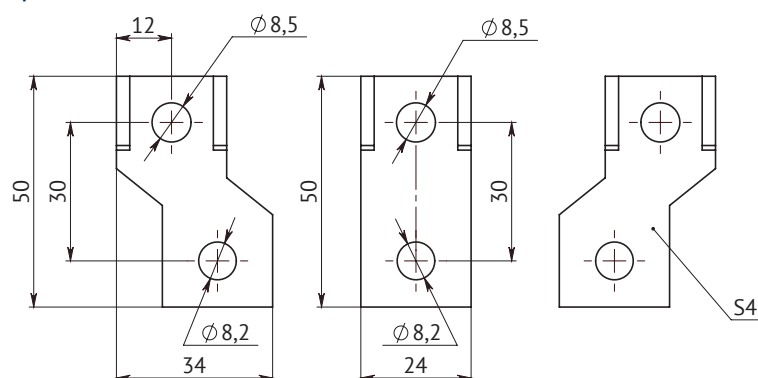
Insert terminal for rear attachment of  
 OptiMat D100 and OptiMat D250 breakers  
 a) short b) long  
 1. insert terminal  
 2. reducer  
 3. disc spring  
 4. screw M6x16  
 5. insulating tube



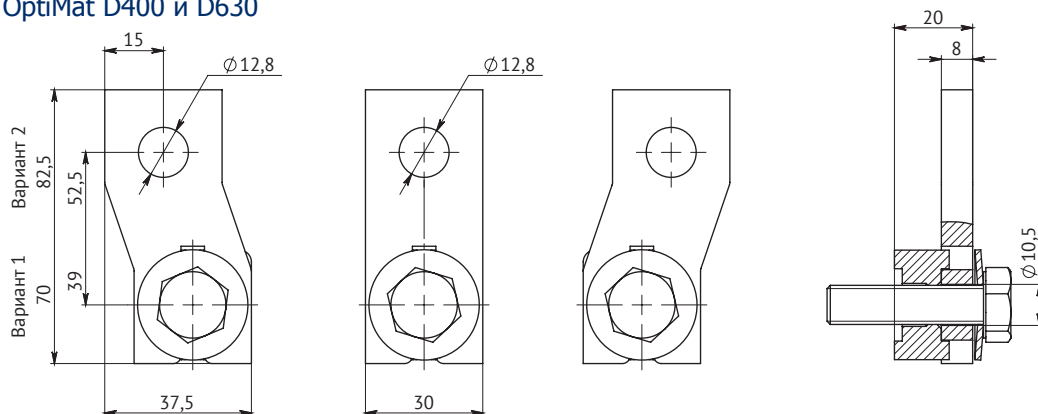
Insert terminal for rear attachment of  
 OptiMat D400 and OptiMat D630 breakers  
 a) short b) long  
 1. insert terminal  
 2. reducer  
 3. disc spring  
 4. screw M8x20  
 5. insulating tube.

## Overall dimensions of pole spreaders

### OptiMat D100 и D250

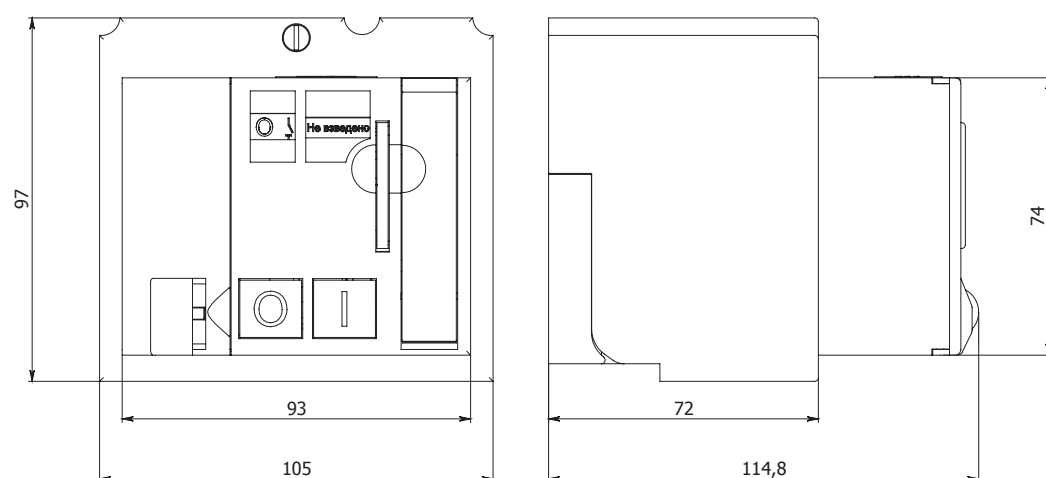


### OptiMat D400 и D630

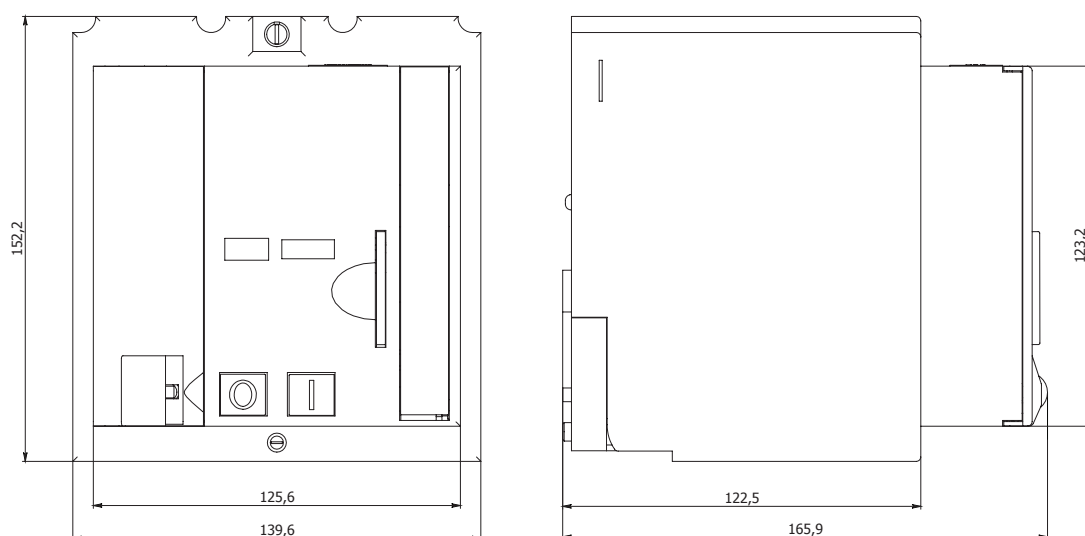


## Overall dimensions of the motor drive

### OptiMat D100 и D250

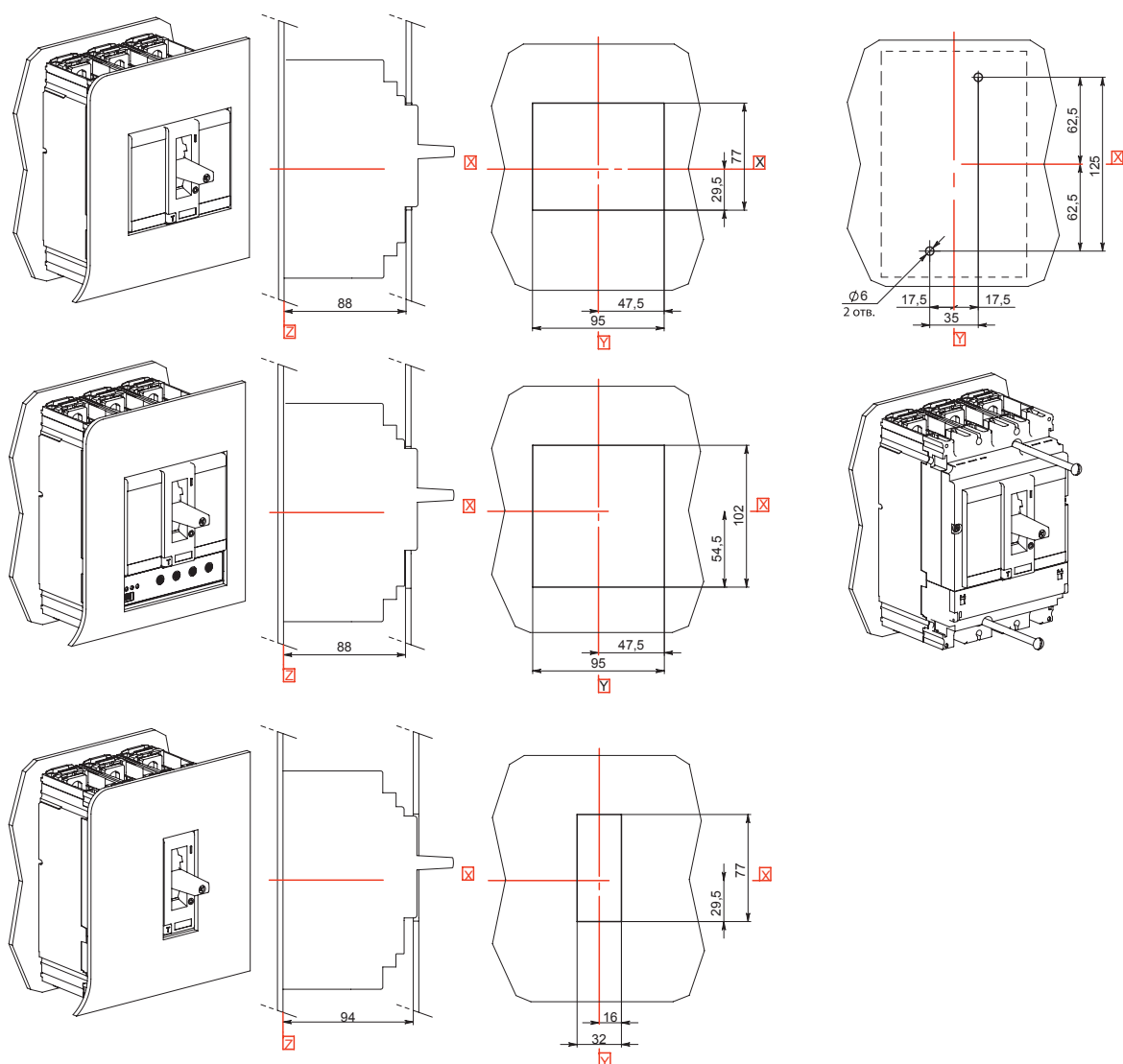


## OptiMat D400 и D630

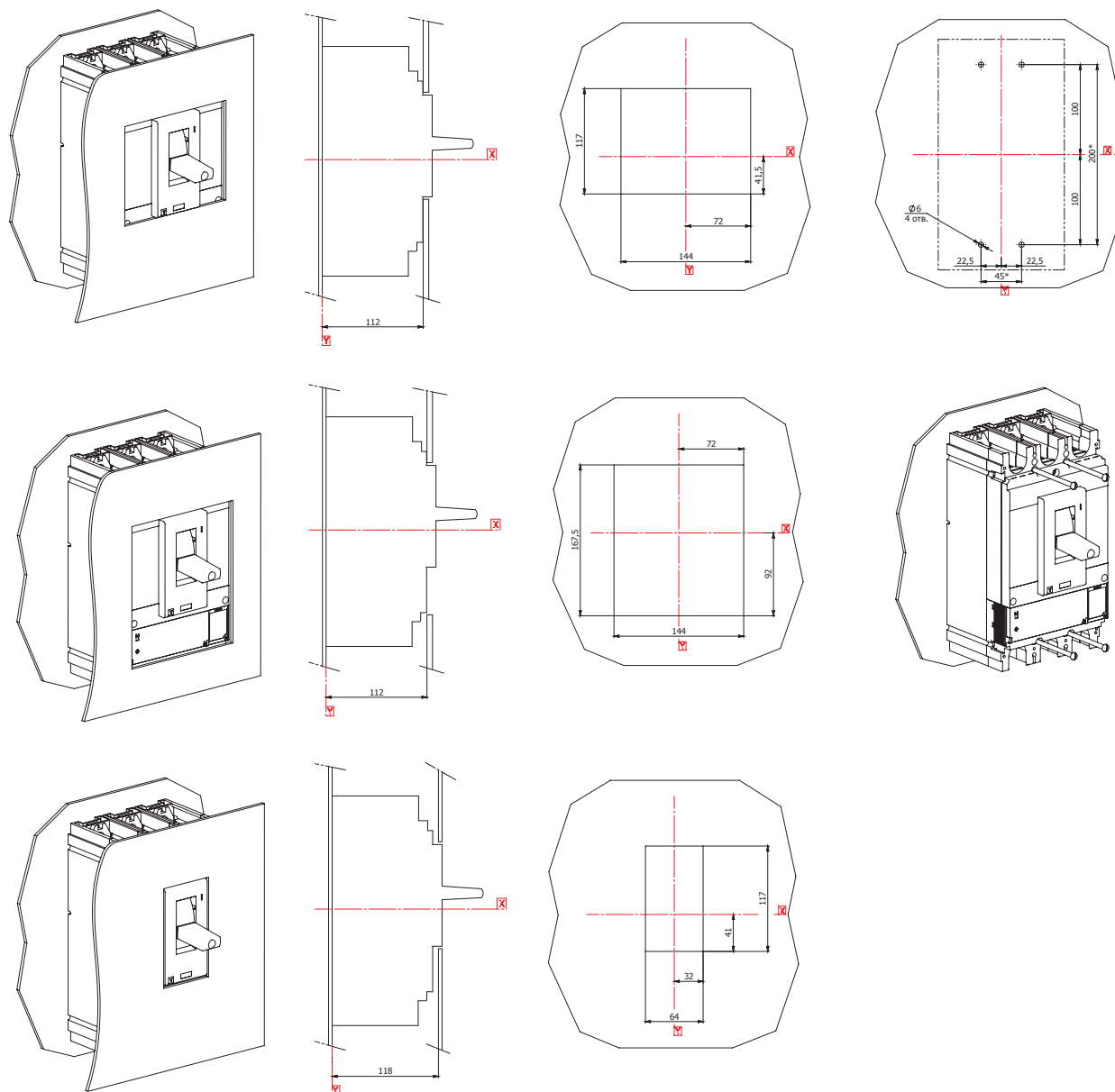


## Models for box marking and drilling

### OptiMat D100 и D250

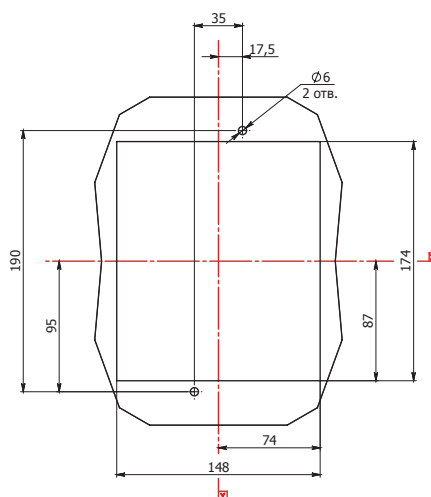
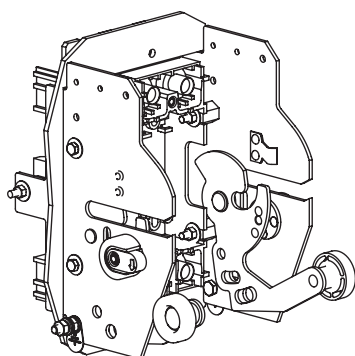
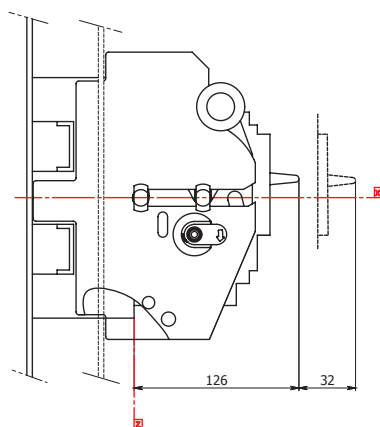
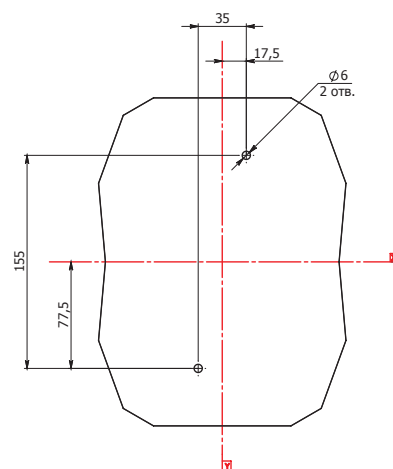
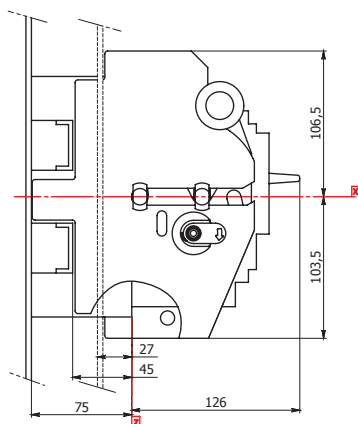
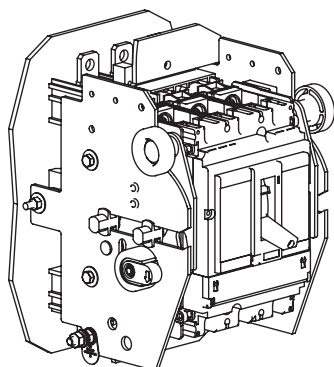


## OptiMat D400 и D630

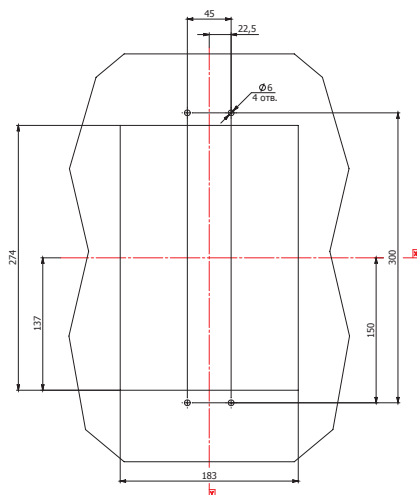
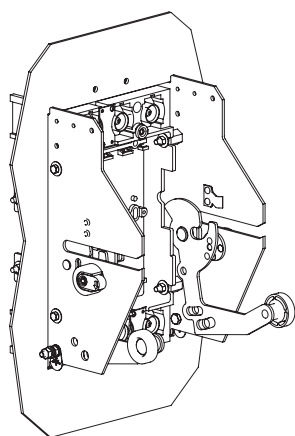
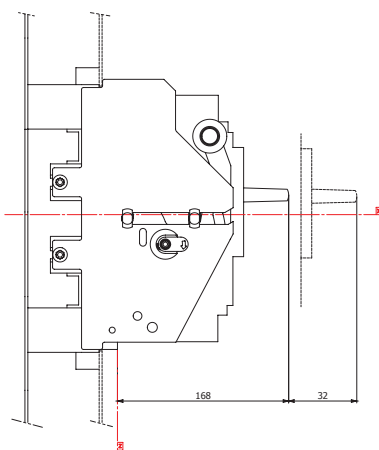
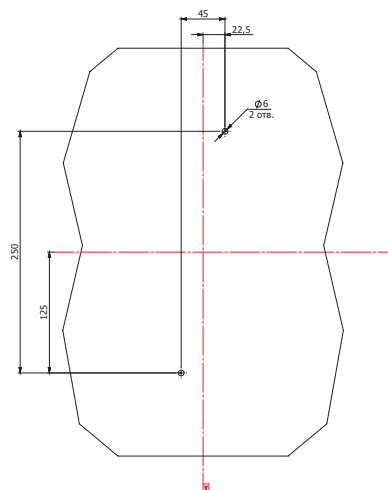
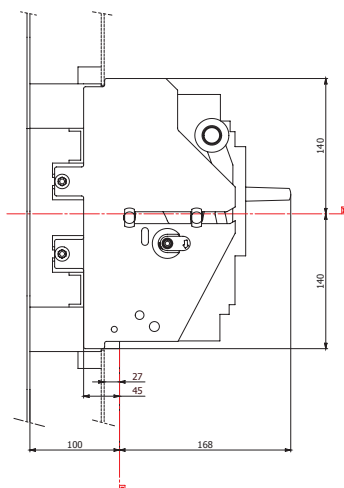
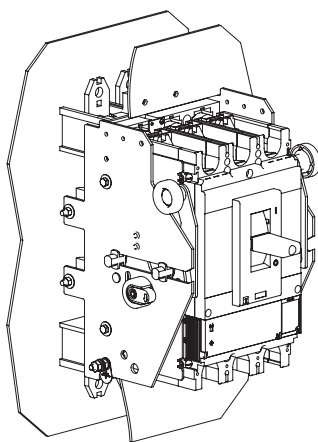


## Plug-in attachment and drawout design

OptiMat D100 и D250



## OptiMat D400 и D630





## Circuit schematics

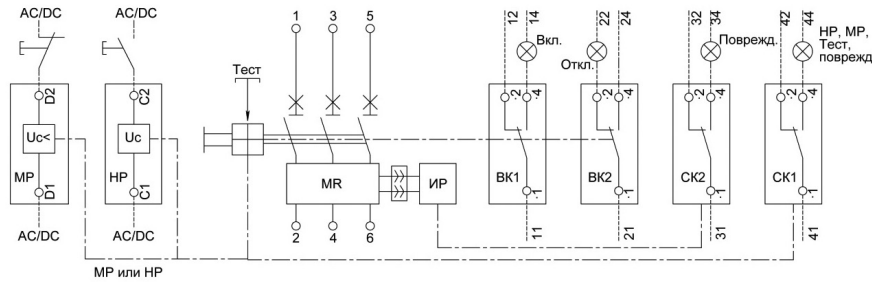
conventional signs  
 Q: automatic breaker  
 MR: semiconducting trip unit  
 MP: minimum circuit tripping unit  
 HP: shunt trip  
 IP: control trip  
 BK1...BK4 auxiliary contacts, showing switching breaker position (close \ open)  
 CK1 : breaker signalling contacts in work mode and emergency switching-off by semiconducting trip unit

CK2: Tripping signal contact of the breaker at emergency shutdown by semiconducting trip unit

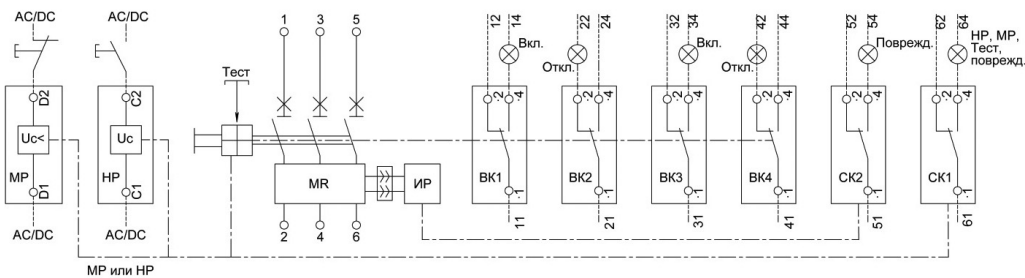
Connections of the dash-line are done by the user.

Schematics are for "off" breaker position. Schematics show maximum amount of auxiliary contacts and tripping units.

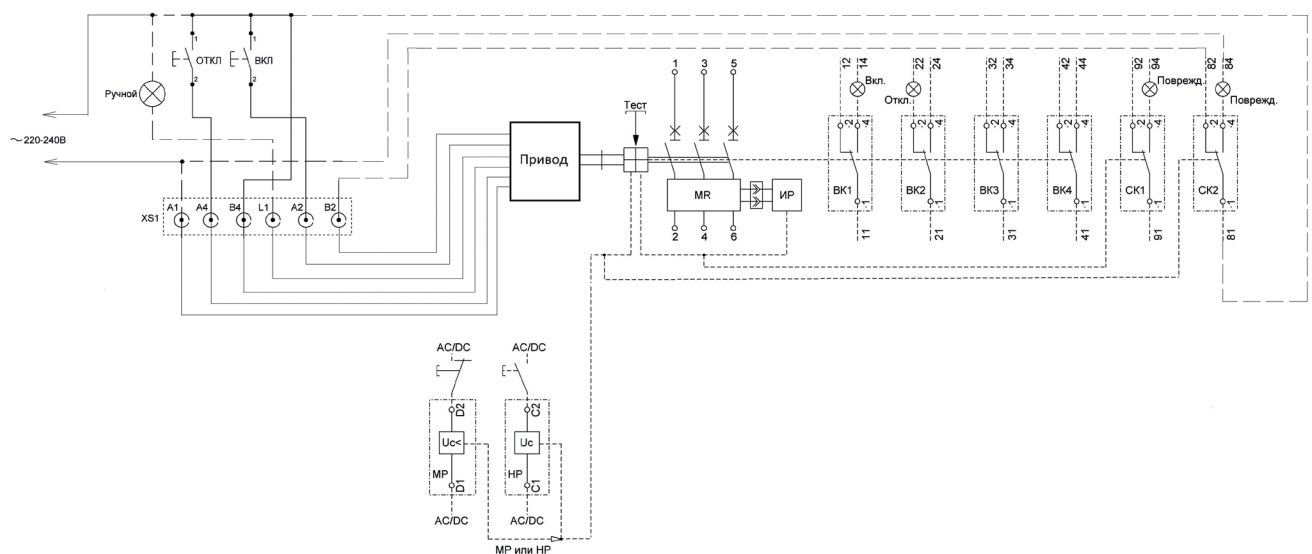
### Circuit schematics for breakers OptiMat D100 and OptiMat D250



### Circuit schematics for breakers OptiMat D400 and OptiMat D630



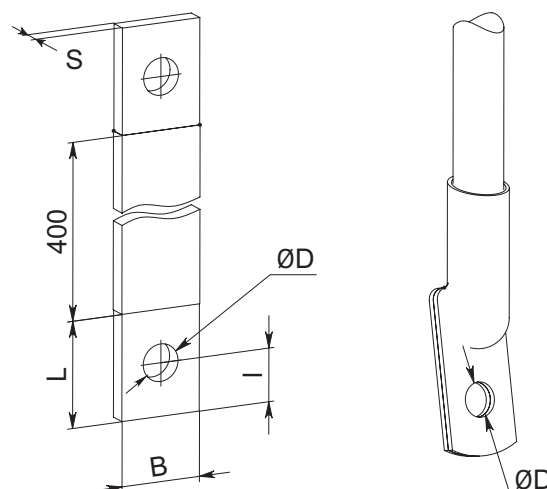
### Circuit schematics for breakers OptiMat D400 and OptiMat D630 with motor drive



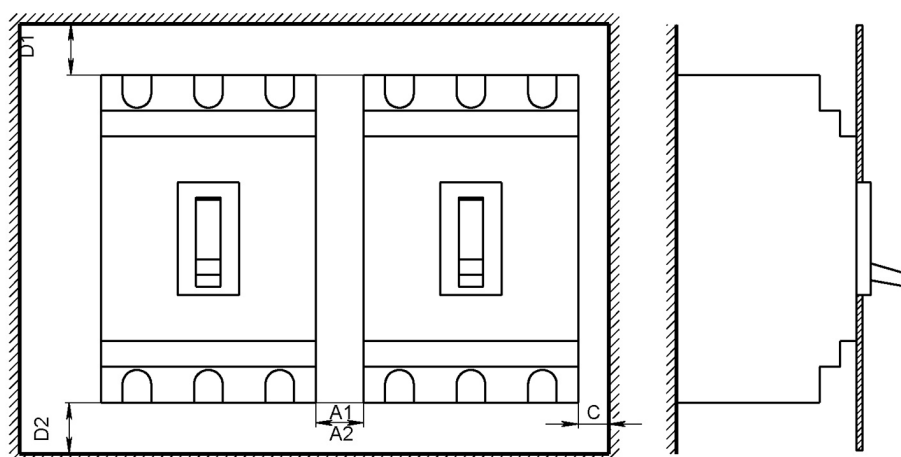
## Size and type of busbar attachment OptiMat D

Main circuit clamps allow attachment of busbars and wires with end fitting. Sizes and sections of attached busbars and wires with end fitting are shown in the picture and mentioned in the table:

Way of attachment	Dimentions		
Screw connection	screw	M8	M10
Busbars	B (mm)	≤25	≤32
	I (mm)	≤10	≤15
	L (mm)	I+10	I+15
	D (mm)	8,5	10,5
	S (mm)	2≤S≤6	3≤S≤12
End fittings according to GOST 7386	B (mm)	≤24	≤31
	D (mm)	8,4-10,5	10,4÷12,5
	cross-section (mm²)	10-70	25-120



## Minimum permissible distance between the breaker and metallic parts of the distribution device OptiMat D



Automatic breaker OptiMat D		Dimensions, mm				
		C	D1	D2	A1 <sup>1</sup>	A2 <sup>2</sup>
100, 250 A	400 V	5	35	35	0	10
	690 V	20	35	35	0	40
400, 630 A	400 V	5	60	60	0	10
	690 V	20	100	100	0	40

1- with terminal cover  
2-without terminal cover.