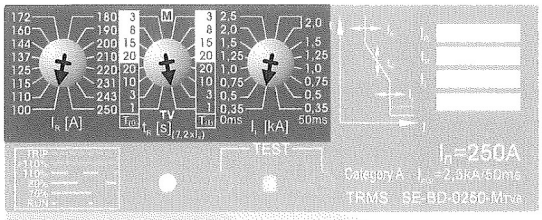
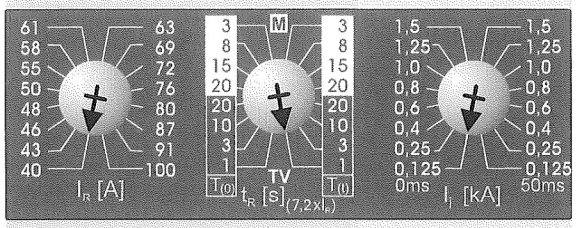
OVERCURRENT RELEASES - MTV8, TV mode

3P 4P

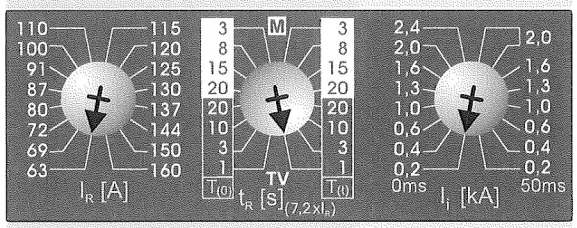


Reduced current | Thermal release delay | Short-circuit release

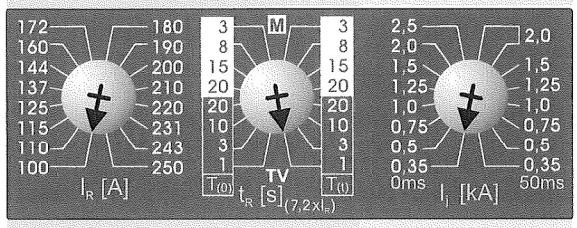
I_n = 100 A
SE-BD-0100-MTV8

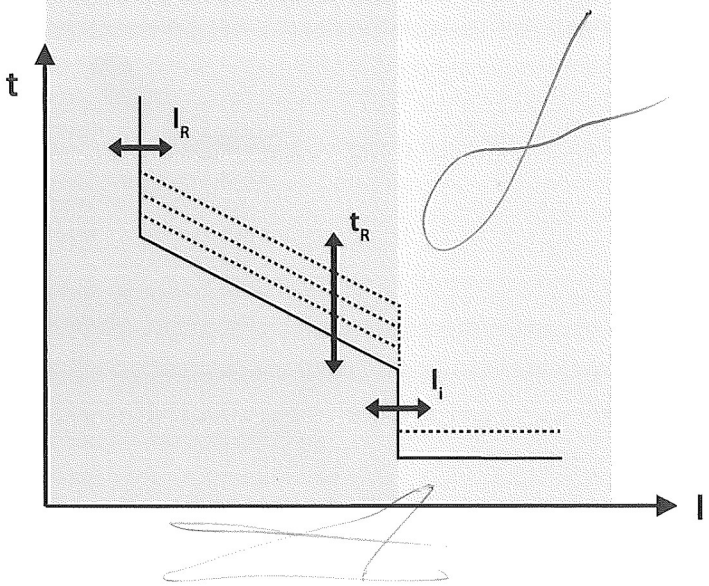


I_n = 160 A
SE-BD-0160-MTV8



I_n = 250 A
SE-BD-0250-MTV8





Properties

- TV mode - suitable for protection of lines, distribution transformers and generators
- protects against both overcurrent and short circuit
- reduced current setting $I_R = 0.4 \div 1\ I_n$
- thermal memory can be switched on/off (ON = $T_{(i)}$, OFF = $T_{(0)}$)
- in TV mode the undercurrent release is inactive
- setting of delay of the thermal release t_R 1 s, 3 s, 10 s and 20 s
- setting of the value of short-circuit release I_i in 8 steps and possibility of switching the short-circuit release off with a delay of 50 ms
- setting of I_R, t_R and I_i by means of the rotary switches is stepwise
- the overcurrent release indicates operating state and the value of the passing current by means of LED
- the values of parameters of the overcurrent release are set by the manufacturer to minimum

Data for the project

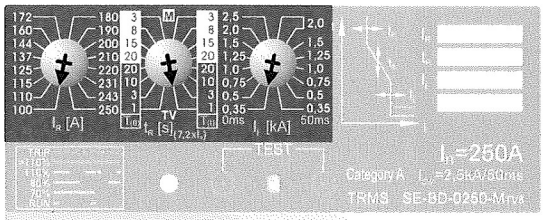
Switching unit		BD250...
Overcurrent release		SE-BD-...
Overcurrent release setting		
Reduced current	I_R	....A
Mode		TV
Thermal memory	T	....
Thermal release delay	t_R	....s
Short-circuit release current	I_i	....A
Setting of short-circuit release		....ms

IMPORTANT

- the set value of current of the short-circuit release must correspond to the impedance loop - conditions must be fulfilled for **automatic disconnection from power supply in case of failure**

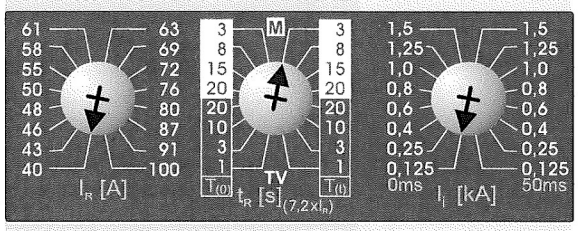
OVERCURRENT RELEASES - MTV8, M mode

3P 4P

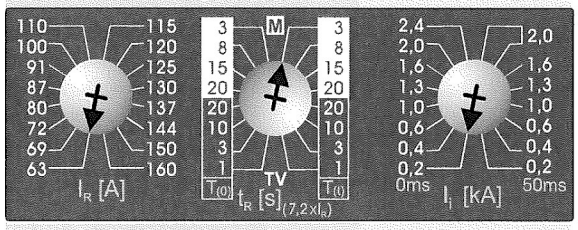


Reduced current | Motor starting | Short-circuit release

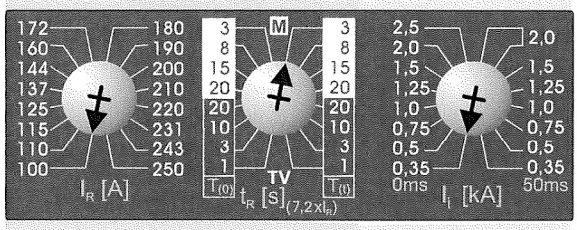
I_n = 100 A
SE-BD-0100-MTV8



I_n = 160 A
SE-BD-0160-MTV8



I_n = 250 A
SE-BD-0250-MTV8

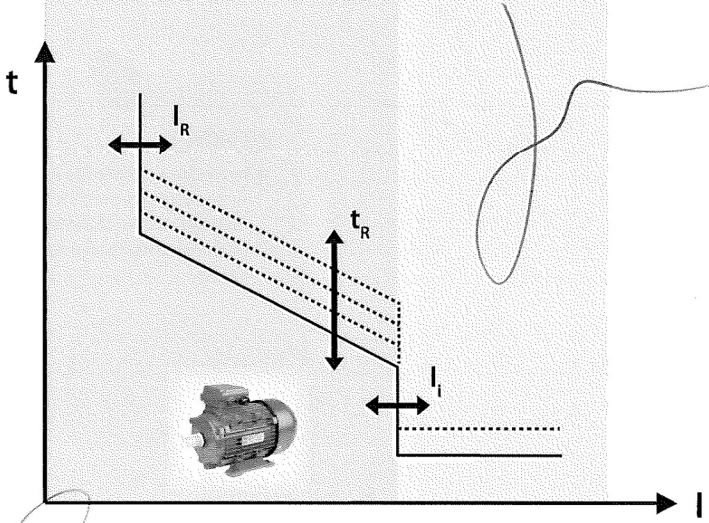


Properties

- M mode - suitable for protection of motors
- protects against both overcurrent and short circuit
- reduced current setting $I_R = 0.4 \div 1\ I_n$
- thermal memory can be switched on/off (ON = $T_{(I)}$, OFF = $T_{(0)}$)
- in M mode the undercurrent release is active
- setting of delay of the thermal release t_R 3 s, 8 s, 15 s and 20 s according to the motor starting class
- setting of the value of short-circuit release I_i in 8 steps and possibility of switching the short-circuit release off with a delay of 50 ms
- setting of I_R, t_R and I_i by means of the rotary switches is stepwise
- the overcurrent release indicates operating state and the value of the passing current by means of LED
- the values of parameters of the overcurrent release are set by the manufacturer to minimum

Data for the project

Switching unit		BD250...
Overcurrent release		SE-BD-...
Overcurrent release setting		
Reduced current	I_R	....A
Mode		M
Thermal memory	T	....
Thermal release delay	t_R	....s
Short-circuit release current	I_i	....A
Setting of short-circuit release		....ms



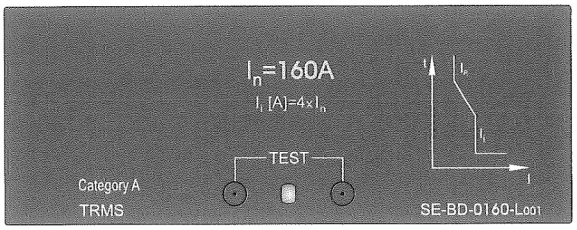
IMPORTANT

- M mode must be selected in protection of motors - the motor will be protected in phase failure
- thermal release delay t_R must correspond to the motor starting class
- in protection of motors it is suitable to set the delay of the short-circuit release at 50 ms

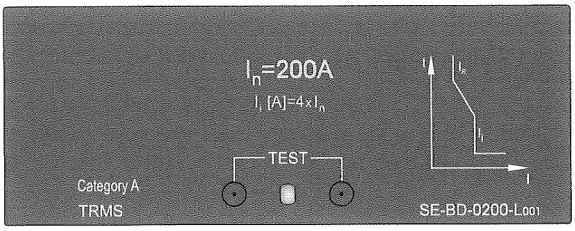
OVERCURRENT RELEASES - L001

3P 4P

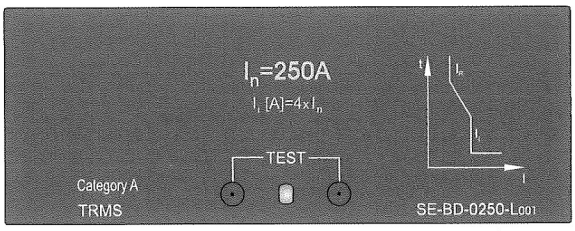
I_n = 160 A
SE-BD-0160-L001

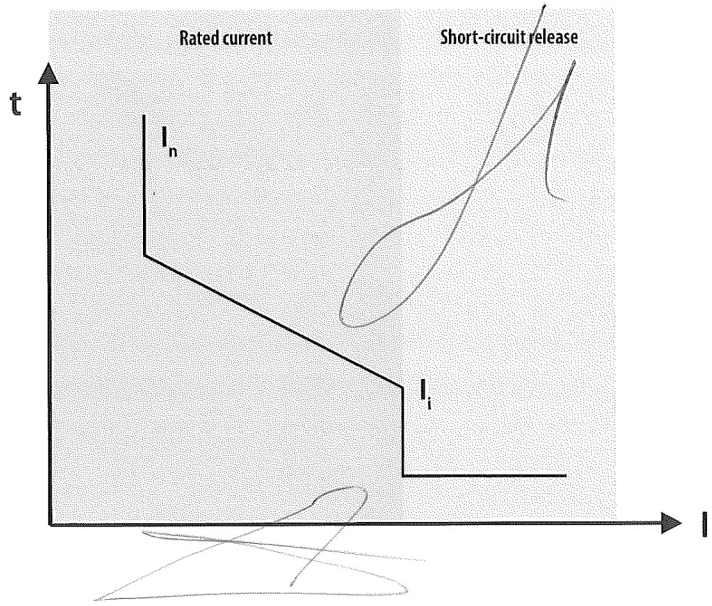


I_n = 200 A
SE-BD-0200-L001



I_n = 250 A
SE-BD-0250-L001





Properties

- suitable for protection of lines with low impulse currents
- protects against both overcurrent and short circuit
- reduced current cannot be set
- thermal release cannot be switched off
- short-circuit release is fixed at 4 I_n

Data for the project

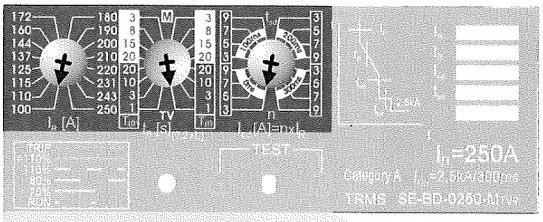
Switching unit		BD250...
Overcurrent release		SE-BD-...
Overcurrent release values		
Rated current	I_n	....A
Short-circuit release current	I_i	....A (4 x I_n)

IMPORTANT

- high impulse current must not be in the circuit - undesirable breaking would take place, because the current of the short-circuit release is fixed at 4 I_n

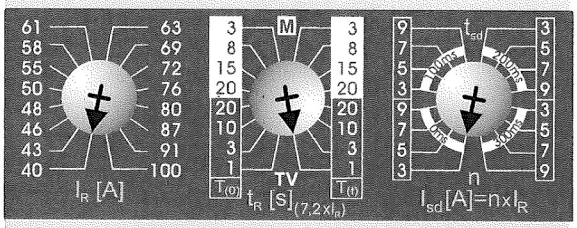
OVERCURRENT RELEASES - MTV9, TV mode

3P 4P

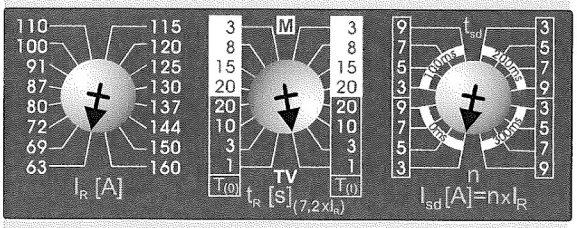


Rated current | Motor starting | Selective release

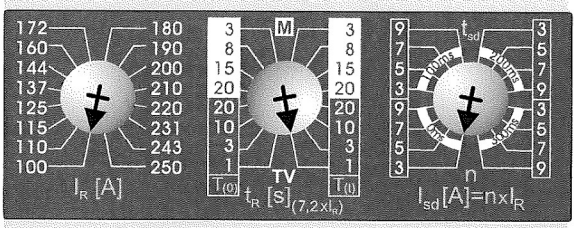
I_n = 100 A
SE-BD-0100-MTV9



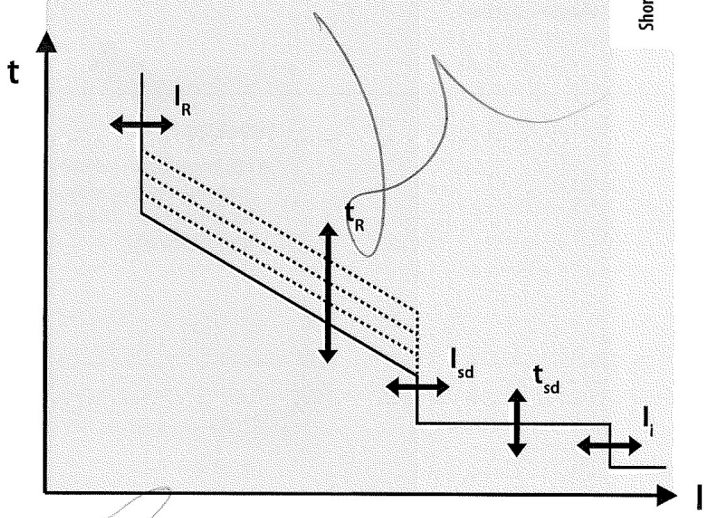
I_n = 160 A
SE-BD-0160-MTV9



I_n = 250 A
SE-BD-0250-MTV9



Short-circuit release



Properties

- TV mode suitable for protection of lines, distribution transformers and generators – enables setting of time selectivity
- protects against both overcurrent and short circuit
- reduced current setting $I_R = 0.4 \div 1\ I_n$
- thermal memory can be switched on/off (ON = $T_{(t)}$, OFF = $T_{(\omega)}$)
- in TV mode the undercurrent release is inactive
- setting of delay of the thermal release t_R 1 s, 3 s, 10 s and 20 s
- setting of the value of selective release I_{sd} in 4 steps (independent time-delayed release)
- setting of delay of the selective release t_{sd} 0 ms, 100 ms, 200 ms or 300 ms
- setting of I_R, t_R, I_{sd} and t_{sd} by means of rotary switches is stepwise
- the overcurrent release indicates operating state and the value of the passing current by means of LED
- the values of parameters of the overcurrent release are set by the manufacturer to minimum

Data for the project

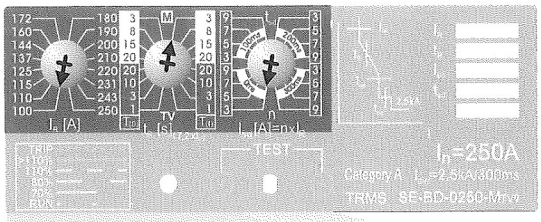
Switching unit		BD250...
Overcurrent release		SE-BD-...
Overcurrent release setting		
Reduced current	I_R	.... A
Mode		TV
Thermal memory	T	....
Thermal release delay	t_R	.... s
Selective release value	I_{sd}	.... A (... x I_R)
Selective release delay	t_{sd}	.... ms

IMPORTANT

- the set value of current of the short-circuit release must correspond to the impedance loop - conditions must be fulfilled for **automatic disconnection from power supply in case of failure**

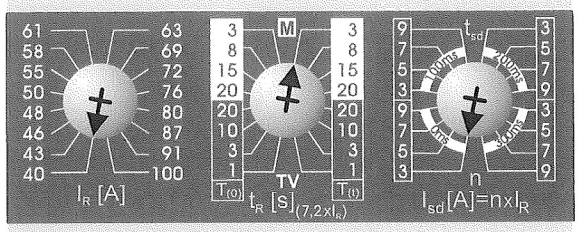
OVERCURRENT RELEASES - MTV9, M mode

3P 4P

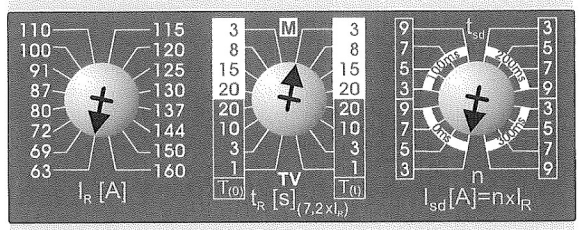


Rated current | Motor starting | Selective release

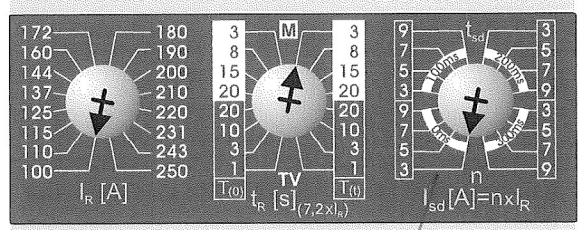
I_n = 100 A
SE-BD-0100-MTV9



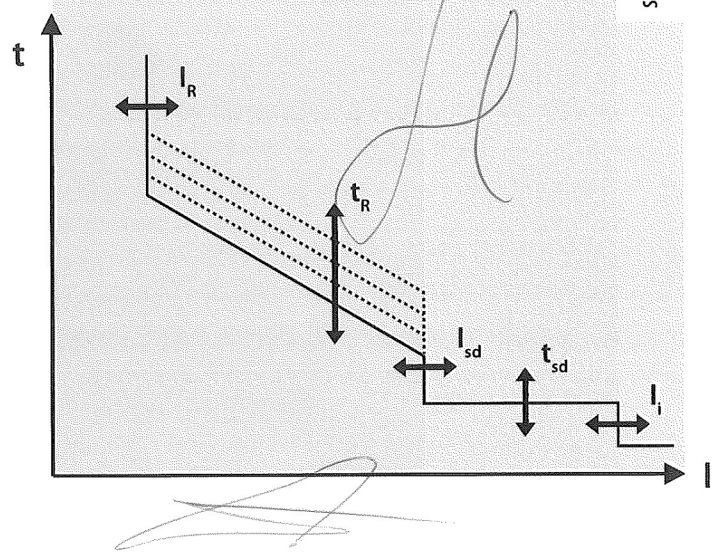
I_n = 160 A
SE-BD-0160-MTV9



I_n = 250 A
SE-BD-0250-MTV9



Short-circuit release



Properties

- M mode suitable for protection of motors – enables setting of time selectivity
- protects against both overcurrent and short circuit
- reduced current setting $I_R = 0.4 \div 1\ I_n$
- thermal memory can be switched on/off (ON = $T_{(t)}$, OFF = $T_{(0)}$)
- in M mode the undercurrent release is active
- setting of delay of the thermal release t_R 3 s, 8 s, 15 s and 20 s according to the motor starting class
- setting of the value of selective release I_{sd} in 4 steps (independent time-delayed release)
- setting of delay of the selective release t_{sd} 0 ms, 100 ms, 200 ms or 300 ms
- setting of I_R, t_R, I_{sd} and t_{sd} by means of rotary switches is stepwise
- the overcurrent release indicates operating state and the value of the passing current by means of LED
- the values of parameters of the overcurrent release are set by the manufacturer to minimum

Data for the project

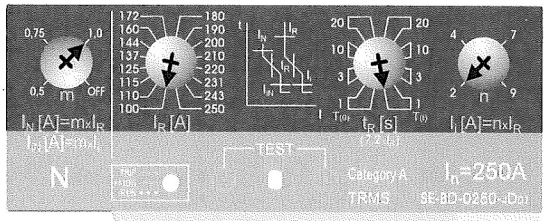
Switching unit		BD250...
Overcurrent release		SE-BD-...
Overcurrent release setting		
Reduced current	I_R	....A
Mode		M
Thermal memory	T	....
Thermal release delay	t_R	....s
Selective release value	I_{sd}	....A (...x I_R)
Selective release delay	t_{sd}	....ms

IMPORTANT

- M mode must be selected in protection of motors - the motor will be protected in phase
- failure thermal release delay t_R **must correspond to the motor starting class**

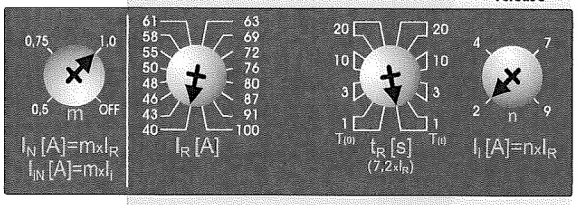
OVERCURRENT RELEASES - 4D01

3P 4P

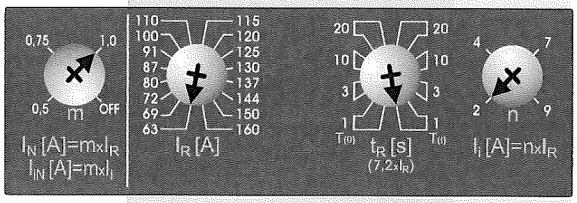


Rated current | Motor starting | Short-circuit release

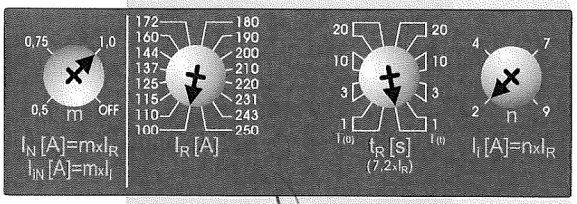
I_n = 100 A
SE-BD-0100-4D01

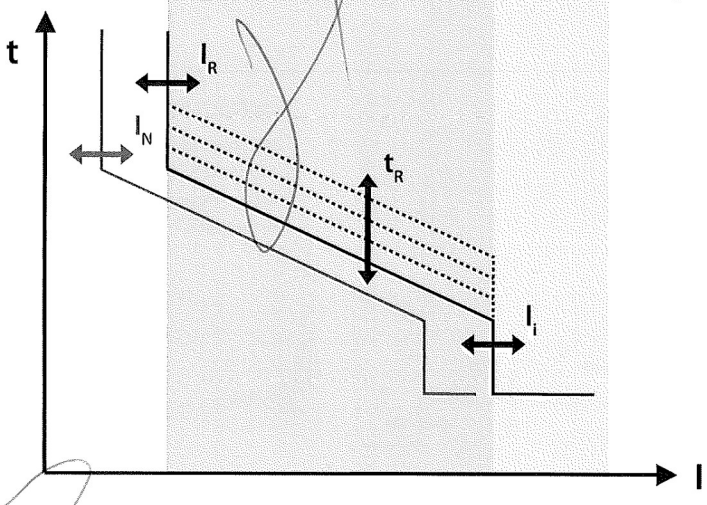


I_n = 160 A
SE-BD-0160-4D01



I_n = 250 A
SE-BD-0250-4D01





Properties

- it is appropriate for protection of lines and distribution transformers with protected „N" conductor in TN-C-S and TN-S networks
- protects against both overcurrent and short circuit
- reduced current setting $I_R = 0.4 \div 1\ I_n$
- thermal memory can be switched on/off (ON = $T_{(i)}$, OFF = $T_{(0)}$)
- setting of delay of the thermal release t_R 1 s, 3 s, 10 s and 20 s
- setting of the value of the short-circuit release I_I in 4 steps $(2 \div 9)\ I_R$
- setting of the value of reduced current I_N and short-circuit current I_{IN} in the 4th pole
- setting of I_R, t_R, I_N and I_{IN} by means of rotary switches is stepwise
- the overcurrent release indicates operating state and the value of the passing current by means of LED
- the values of parameters of the overcurrent release are set by the manufacturer to minimum

Data for the project

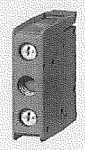
Switching unit		BD250...
Overcurrent release		SE-BD-...
Overcurrent release setting		
Reduced current	I_R	.... A
Thermal memory	T	....
Thermal release delay	t_R	.... s
Level of reduced current in the 4th pole	I_N	.... A (... x I_R)
Level of reduced current in the 4th pole	I_{IN}	... A (... x I_I)

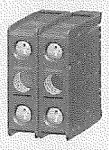
IMPORTANT

- the set value of current of the short-circuit release must correspond to the impedance loop - conditions must be fulfilled for **automatic disconnection from power supply in case of failure**

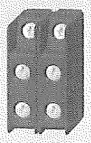
SWITCHES

3P 4P

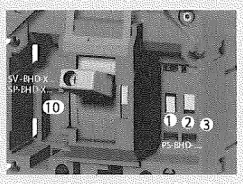

PS-BHD-1000


PS-BHD-1100


PS-BHD-0010


PS-BHD-0020


SP-BHD-0002



Cavities in BD250... switching unit

Specification

Type		PS-BHD-..00	PS-BHD-..00-Au[1]
Rated operating voltage	U_e	AC 60 ÷ 500 V DC 60 ÷ 500 V	AC 5 ÷ 60 V DC 5 ÷ 60 V
Rated insulation voltage	U_i	500 V	500 V
Rated frequency	f_n	50/60 Hz	50/60 Hz
Rated operating current	I_e/U_e AC-15 I_e/U_e DC-13	6 A/240 V, 4 A/400 V, 2 A/500 V 0.4 A/240 V, 0.3 A/400 V, 0.2 A/500 V	AC-12, DC-12 0.004 ÷ 0.5 A/5 V, 0.004 ÷ 0.01/60 V
Thermal current	I_{th}	10 A	0.5 A
Arrangement of contacts		01, 10, 02, 11, 20	01, 10, 02, 11, 20
Connection cross-section	S	0.5 ÷ 1 mm²	0.5 ÷ 1 mm²
Degree of protection of terminals (connected switch)		IP20	IP20
Ambient temperature range		-25 °C ÷ +55 °C	-25 °C ÷ +55 °C

Type		SP-BHD-0002	PS-BHD-0010/0020	PS-BHD-0010-Au/0020-Au[1]
Rated operating voltage	U_e	AC 250 V -	AC 60 ÷ 250 V DC 60 ÷ 250 V	AC 5 ÷ 60 V DC 5 ÷ 60 V
Rated insulation voltage	U_i	250 V	250 V	250 V
Rated frequency	f_n	50/60 Hz	50/60 Hz	50/60 Hz
Rated operating current	I_e/U_e I_e/U_e	1 A / AC 250 V -	AC-15 1.5 A / AC 250 V DC-13 0.2 A / DC 250 V	AC-12, DC-12 0.004 ÷ 0.5 A / 5 V, 0.004 ÷ 0.01 / 60 V
Thermal current	I_{th}	-	6 A	0.5 A
Arrangement of contacts		02, 11, 20	001/002	001/002
Connection cross-section	S	0.5 ÷ 1 mm²	0.5 ÷ 1 mm²	0.5 ÷ 1 mm²
Degree of protection of terminals (connected switch)		IP20	IP20	IP20
Ambient temperature range		-25 °C ÷ +55 °C	-25 °C ÷ +55 °C	-25 °C ÷ +55 °C

[1] PS-BHD-....- Au is not suitable to control electromagnetic loads

Type designation, number and type of contacts according to contact arrangement

Arrangement of contacts	Type	Number of contacts	Contact types
10	PS-BHD-1000 (-Au)	1	make
20	PS-BHD-2000 (-Au)	2	make
01	PS-BHD-0100 (-Au)	1	break
02	PS-BHD-0200 (-Au)	2	break
11	PS-BHD-1100 (-Au)	1+1	break+make
001	PS-BHD-0010 (-Au)	1	make-and-break
002	PS-BHD-0020(-Au)	2	make-and-break

Function and names of switches according to their location in cavities

Position of switch	Switch name	Switch function
Cavity 1	Signal	signals tripping of circuit breaker by overcurrent release
Cavity 2	Relative	signals tripping of circuit breaker/switch-disconnector by releases, TEST push button or by the switch off button on the motor drive
Cavity 3 (4, 5, 6)[2]	Auxiliary	switch signals position of circuit breaker/switch-disconnector's main contacts
Cavity 10	Early	makes/breaks in advance before making the main contact of circuit breaker/switch-disconnector

[2] cavities 4, 5, 6 are only for 4-pole design

States of switches in the circuit breaker cavities

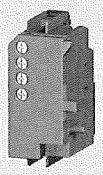
Cavity			1		2		3 (4, 5, 6)[1]		10		2 and 3	2 and 3	2 and 3	1	2	3
State of circuit breaker		Circuit breaker lever position	PS-BHD-1000	PS-BHD-0100	PS-BHD-1000	PS-BHD-0100	PS-BHD-1000	PS-BHD-0100	SP-BHD-0002	SP-BHD-....-0001	PS-BHD-2000	PS-BHD-1100	PS-BHD-0200	PS-BHD-0010	PS-BHD-0010	PS-BHD-0010
Switched on		I	1	0	0	1	1	0	1	0	1	1	0	1	0	0	1	0	0	1	1	0
Switched off manually or by motor drive electrically (loaded state)		◎	0	1	0	1	0	1	0	1	0	0	1	0	1	1	0	1	0	1	0	1
Switched off by overcurrent release		▽	0	1	1	0	0	1	0	1	0	0	1	0	1	1	0	1	1	0	0	1
Switched off from switched on state: by auxiliary release, or by TEST push button or by the switch off button on the motor drive		▽	0	1	1	0	0	1	0	1	0	0	1	0	1	1	0	1	1	0	0	1

note: 0 - contact open, 1 - contact closed

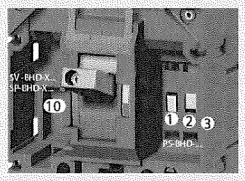
[1] cavities 4, 5, 6 are only for 4-pole design

SHUNT TRIPS

3P 4P



SV-BHD-X230



Cavities in BD250... switching unit

Specifications

Type		SV-BHD-X...
Rated operating voltage	U_e	AC 24, 40, 48, 110, 230, 400, 500 V DC 24, 40, 48, 110, 220 V
Rated frequency	f_n	50/60 Hz
Input power at 1.1 U_e AC DC		< 3 VA < 3 W
Characteristic		$U \geq 0.7\ U_e$ the circuit breaker must trip
Time to switching off		20 ms
Loading time		∞
Connection cross-section	S	0.5 ÷ 1 mm²
Degree of protection of terminals	(connected release)	IP20
Position in cavity No.		10
Ambient temperature range		-25 °C ÷ +55 °C

Type designation according to rated operating voltage

U_e	Type
AC/DC 24, 40, 48 V	SV-BHD-X024
AC/DC 110 V	SV-BHD-X110
AC 230, 400, 500 V / DC 220 V	SV-BHD-X230

The specific rated operating voltage of the release is set up by jumpers directly on the release. It is always set to the maximum value by default (see fig. 1).

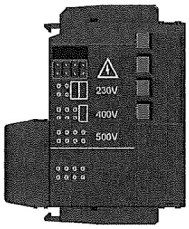
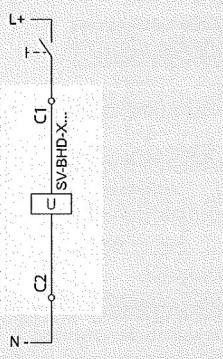
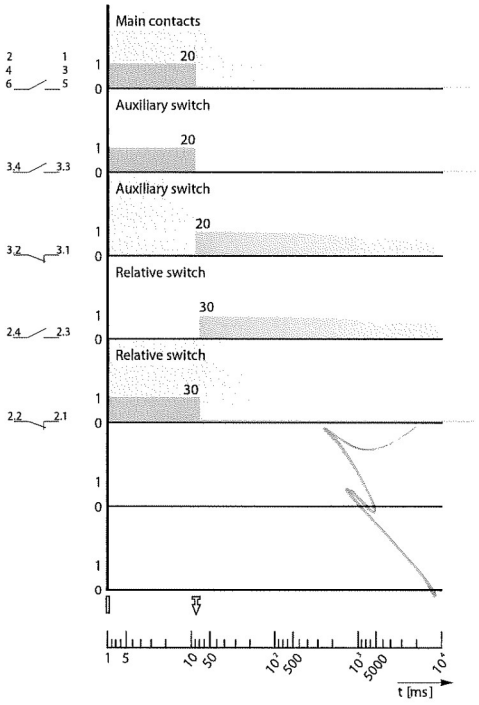


Fig. 1 - The rated operating voltage setting



Circuit breaker/switch-disconnector switching off by shunt trip



States and positions of circuit breaker/switch-disconnector lever

States of circuit breaker/switch-disconnector	Lever position of circuit breaker/switch-disconnector
Switched on	▯
Switched off by releases, TEST or by switch off button on the motor drive	▽
Switched off manually or by motor drive electrically (loaded state)	◯

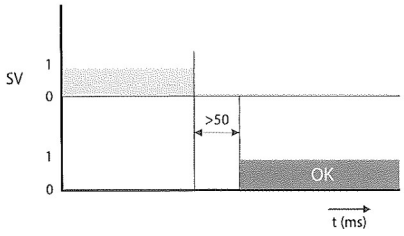
SHUNT TRIPS

3P 4P

Specifications

Reaction time of the auxiliary releases

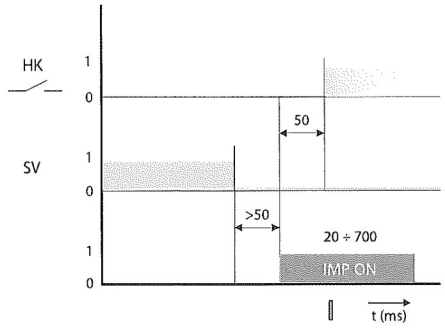
Shunt trip



Cooperation of motor drive and shunt trip

It is necessary to keep time delay when the control of the circuit breaker is done by motor drive and shunt trip or undervoltage release. The following time delays have to be kept between the disconnection of voltage from the shunt trip or bringing the voltage to the undervoltage release and the control impulse for switch on of the motor drive:

Shunt trip



States and positions of circuit breaker/switch-disconnector lever

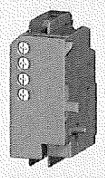
States of circuit breaker/switch-disconnector	Lever position of circuit breaker/switch-disconnector
Switched on	
Switched off by releases, TEST or by switch off button on the motor drive	
Switched off manually or by motor drive electrically (loaded state)	

Description of graphs

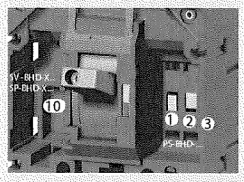
Symbol	Description
HK	Main contacts
OK	Circuit breaker is ready for further handling
IMP ON	Make impulse for the motor drive
SV	Control voltage on the shunt trip
SP	Control voltage on the undervoltage release

UNDERVOLTAGE RELEASES

3P 4P



SP-BHD-X230



Cavities in BD250... switching unit

Specifications

Type			SP-BHD-X...	SP-BHD-X...-0001 [2]
Rated operating voltage		U_e	AC 24, 40, 48, 110, 230, 400, 500 V DC 24, 40, 48, 110, 220 V	AC 24, 40, 48, 110, 230, 400, 500 V DC 24, 40, 48, 110, 220 V
Rated frequency		f_n	50/60 Hz	50/60 Hz
Input power at 1.1 U_e	AC DC		< 3 VA < 3 W	< 3 VA < 3 W
Characteristic [1]			$U \geq 0.85\ U_e$ - it is possible to switch on the circuit breaker $U \leq 0.35\ U_e$ - the circuit breaker must trip	
Time to switching off			20 ms	20 ms
Loading time			∞	∞
Connection cross-section		S	0.5 ÷ 1 mm²	0.5 ÷ 1 mm²
Degree of protection of terminals		(connected release)	IP20	IP20
Position in cavity No.			10	10
Ambient temperature range			-25 °C ÷ +55 °C	-25 °C ÷ +55 °C
Early switch			-	
Rated operating voltage		U_e	-	AC 250 V
Rated frequency		f_n	-	50/60 Hz
Rated operating current		I_e / U_e	-	1 A / AC 250 V
Arrangement of contacts			-	10, 01
Connection cross-section		S	-	0.5 ÷ 1 mm²
Degree of protection of terminals		(connected release)	-	IP20

[1] tripping of the undervoltage release can be delayed using the delay unit BZ-BX-X230-A, for more detailed information see page P2

[2] cannot be used in combination with motor drive MP-BD-X....

Number and type of contacts according to contact arrangement

Arrangement of contacts	Number of contacts	Contact types
01	1	break
10	1	make

Type designation according to rated operating voltage

U_e	Type
AC 24, 40, 48 V	SP-BHD-X024
AC/DC 110 V	SP-BHD-X110
AC 230, 400, 500 V / DC 220 V	SP-BHD-X230

The specific rated operating voltage of the release is set up by jumpers directly on the release. It is always set to the maximum value by default (see fig. 1).

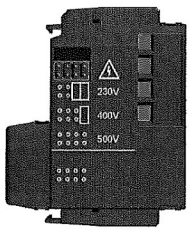
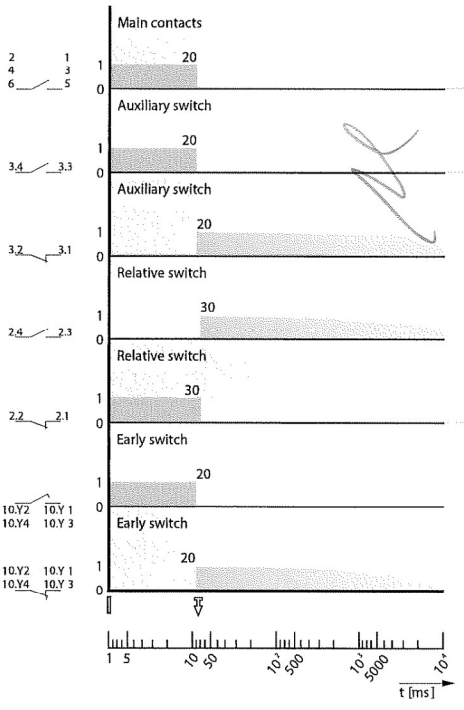


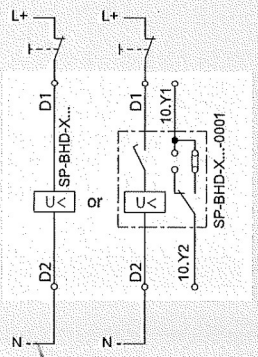
Fig. 1 - The rated operating voltage setting

Circuit breaker/switch-disconnector switching off by undervoltage release



States and positions of circuit breaker/ switch-disconnector lever

States of circuit breaker/switch-disconnector	Lever position of circuit breaker/ /switch-disconnector
Switched on	
Switched off by releases, TEST or by switch off button on the motor drive	
Switched off manually or by motor drive electrically (loaded state)	



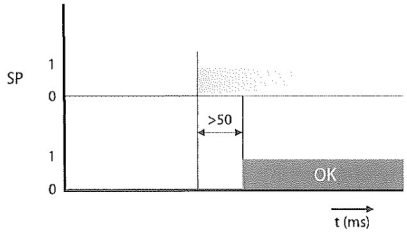
UNDERVOLTAGE RELEASES

3P 4P

Specifications

Reaction time of the auxiliary releases

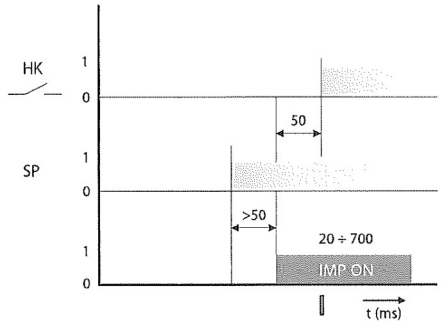
Undervoltage release



Cooperation of motor drive and undervoltage release

It is necessary to keep time delay when the control of the circuit breaker is done by motor drive and shunt trip or undervoltage release. The following time delays have to be kept between the disconnection of voltage from the shunt trip or bringing the voltage to the undervoltage release and the control impulse for switch on of the motor drive:

Undervoltage release



States and positions of circuit breaker/switch-disconnector lever

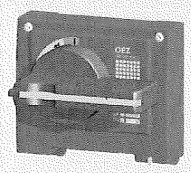
States of circuit breaker/switch-disconnector	Lever position of circuit breaker/switch-disconnector
Switched on	
Switched off by releases, TEST or by switch off button on the motor drive	
Switched off manually or by motor drive electrically (loaded state)	

Description of graphs

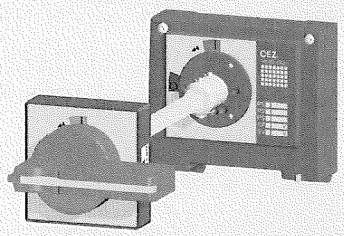
Symbol	Description
HK	Main contacts
OK	Circuit breaker is ready for further handling
IMP ON	Make impulse for the motor drive
SV	Control voltage on the shunt trip
SP	Control voltage on the undervoltage release

HAND DRIVES

3P 4P



RP-BD-CK10 + RP-BHD-CP20



RP-BD-CK21 + RP-BHD-CH10 + RP-BHD-CN41 + RP-BHD-CP21

Description

The hand drive permits control the circuit breaker/switch-disconnector by turning the lever, e.g. to switch machines on and off. Modular conception of the drives enables simple mounting on the switching unit (also additionally) after the cover of cavities is removed. The fixed drive can be sealed. The drive and its accessories are ordered separately according to your choice, see page E12.

■ The hand drive makes possible to control the circuit breaker:

a) from the front panel (fig. 1)

Hand drive unit RP-BD-CK..
+ Hand drive lever RP-BHD-CP..

b) through the switchboard door (fig. 2)

Hand drive unit RP-BD-CK..
+ Extension shaft RP-BHD-CH..
+ Hand drive bearing PR-BHD-CN..
+ Hand drive lever + RP-BHD-CP..

■ The hand drive unit is fixed directly to switching unit of the circuit breaker

■ The hand drive bearing is fixed to the switchboard door and it provides degree of protection IP40 or IP66.

■ Hand drive lever is fixed on the hand drive unit or on the hand drive bearing.

■ The extension shaft is supplied in two options, standard (length 365 mm - can be shortened) and telescopic (adjustable length 252 ÷ 416 mm).

Enhanced safety for operator:

■ The hand drive unit and hand drive lever are also supplied with the possibility to lock the circuit breaker in position „switched off manually". The unit and lever of the hand drive can be locked using three padlocks with shank diameter max. 6 mm.

■ Each hand drive bearing prevents the door from opening when the circuit breaker is switched on or in a state of being switched off by releases and in the circuit breaker state „switched off manually" and hand drive lever is locked up.

■ Two circuit breakers with hand drives can be fitted also with reciprocal mechanical interlocking or mechanical parallel switching, see page E67.

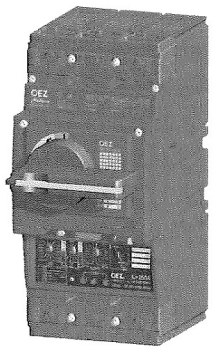


Fig. 1 - DIMENSIONS, see page E29

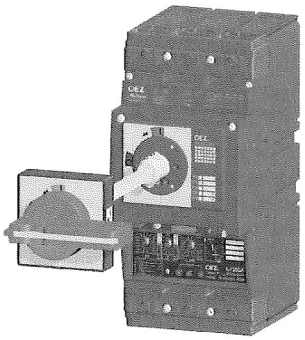
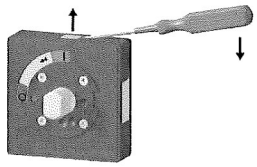


Fig. 2 - DIMENSIONS, see page E29

By a screwdriver it is possible to unlock the mechanism blocking the switchboard door opening with the circuit breaker switched on (for bearing RP-BHD-CN40 and RP-BHD-CN41).



Specification

Type	Description	Colour	Locking while the circuit breaker is in OFF state	Degree of protection	Locking of the switchboard door opening in the circuit breaker state: Switched on	Locking of the switchboard door opening in the circuit breaker state: „switched off manually" and locked	Switchboard door opening with the circuit breaker switched on	Length [mm]
RP-BD-CK10	Hand drive unit	blue	no	-	-	-	-	-
RP-BD-CK20	Hand drive unit	blue	yes	-	-	-	-	-
RP-BD-CK21	Hand drive unit	yellow	yes	-	-	-	-	-
RP-BD-CK30	Hand drive unit - right side	blue	-	-	-	-	-	-
RP-BD-CK31	Hand drive unit - left side	blue	-	-	-	-	-	-
RP-BHD-CP10	Hand drive lever	black	no	-	-	-	-	-
RP-BHD-CP20	Hand drive lever	black	yes	-	-	-	-	-
RP-BHD-CP21	Hand drive lever	red	yes	-	-	-	-	-
RP-BHD-CN40	Hand drive bearing	black	-	IP40	yes	yes	yes	-
RP-BHD-CN41	Hand drive bearing	yellow	-	IP40	yes	yes	yes	-
RP-BHD-CN60	Hand drive bearing	black	-	IP66	yes	yes	no	-
RP-BHD-CN61	Hand drive bearing	yellow	-	IP66	yes	yes	no	-
RP-BHD-CH10	Extension shaft	-	-	-	-	-	-	365 (can be shortened)
RP-BHD-CH20	Extension shaft - telescopic	-	-	-	-	-	-	252 ÷ 416

MECHANICAL INTERLOCKING AND PARALLEL SWITCHING

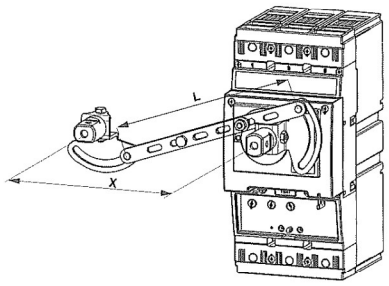
3P 4P

RP-BHD-CB10

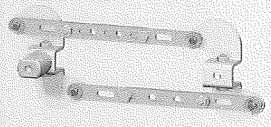
RP-BHD-CB10 Mechanical interlocking

Provides mechanical interlocking of two circuit breakers/ /switch-disconnectors so that they cannot both be tripped simultaneously, but only one of them at a time. Both circuit breakers may be switched off simultaneously. Interlocking can be used between two BD250 circuit breakers or between BD250 and BH630 circuit breakers. Both circuit breakers must be equipped with a hand drive (at least one with a hand drive unit and hand drive lever), see page E66.

In order to use the interlocking, it is absolutely necessary to comply with the dimensions that are shown in the figure and given in the table.



		Right switching unit							
		BD250..3..		BD250..4..		BH630..3..		BH630..4..	
	Dimension [mm]	X	L	X	L	X	L	X	L
Left switching unit	BD250..3..	105	112	140	145.5	122.5	128.5	181	185.5
	BD250..4..	105	112	140	145.5	122.5	128.5	181	185.5
	BH630..3..	122.5	128.5	157.5	162.5	140	145.5	185	189
	BH630..4..	122.5	128.5	157.5	162.5	140	145.5	185	189

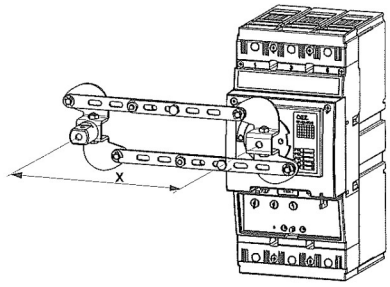


RP-BHD-CD10

RP-BHD-CD10 Mechanical parallel switching

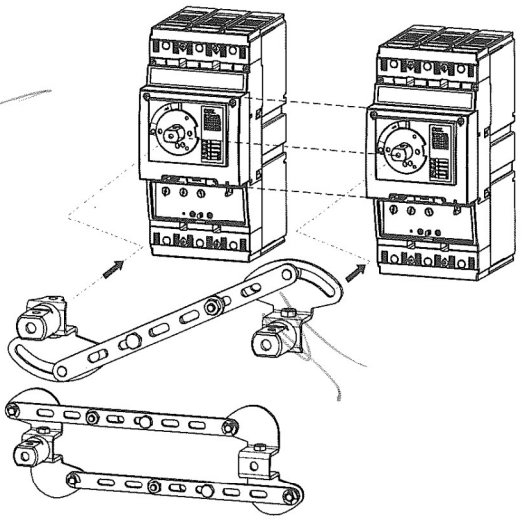
Enables for simultaneous switching of two circuit breakers/switch-disconnectors. Parallel switching can be used between two BD250 circuit breakers or between BD250 and BH630 circuit breakers. Both circuit breakers must be equipped with a hand drive unit and with a hand drive lever, see page E66.

In order to use parallel switching, it is absolutely necessary to comply with the dimensions that are shown in the figure and given in the table. Cannot be used in combination with extension shaft (RP-BHD-CH10 and RP-BHD-CH20).



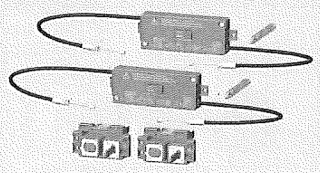
		Right switching unit							
		BD250..3..		BD250..4..		BH630..3..		BH630..4.. [1]	
	Dimension [mm]	X^{min}	X^{max}	X^{min}	X^{max}	X^{min}	X^{max}	X^{min}	X^{max}
Left switching unit	BD250..3..	105^{+7}	164.5^{-7}	122.5^{+7}	164.5^{-7}	122.5^{+7}	164.5^{-7}	x	x
	BD250..4..	105^{+7}	164.5^{-7}	122.5^{+7}	164.5^{-7}	122.5^{+7}	164.5^{-7}	x	x
	BH630..3..	122.5^{+7}	164.5^{-7}	140^{+7}	164.5^{-7}	140^{+7}	164.5^{-7}	x	x
	BH630..4..	122.5^{+7}	164.5^{-7}	140^{+7}	164.5^{-7}	140^{+7}	164.5^{-7}	x	x

[1] Switching unit BH630..4.. (4-pole design) can only be on the left side



MECHANICAL INTERLOCKING

3P 4P

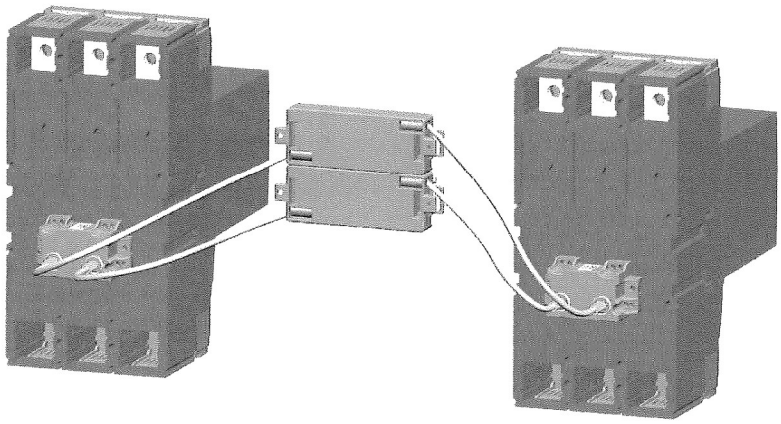


MB-BD-PV05

Mechanical interlocking
MB-BD-PV05
MB-BHD-PV03

- Provides mechanical interlocking of two circuit breakers/ /switch-disconnectors so that they cannot both be tripped simultaneously, but only one of them at a time. Both circuit breakers may be switched off simultaneously.
- Mechanical interlocking MB-BD-PV05 is intended for two BD250 circuit breakers. Interlocking MB-BHD-PV03 is intended for one BD250 circuit breaker and one BH630.
- Circuit breakers may be in fixed, plug-in and withdrawable designs.

Type of circuit breakers	BD250 BD250	BD250 BH630
Type of mechanical interlocking	MB-BD-PV05	MB-BHD-PV03



Circuit breaker placement in switchboard
Detailed information can be found in the instructions for use, which you may download from our website www.oez.com.

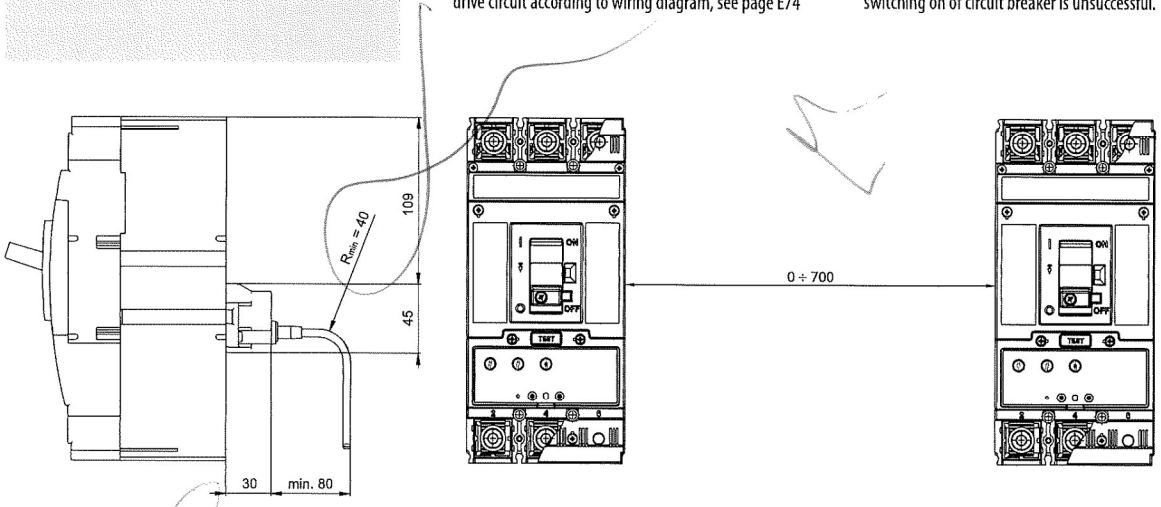
Recommended circuit breaker manipulation

During the manipulation with circuit breaker with mechanical interlocking and motor drive, the circuit breaker may reach the state, in which the first attempt at switching on by motor drive is unsuccessful. Switching on is executed after repeated make impulse. To avoid this effect, some of the following steps may be done:

1) To keep the process of manipulation with the circuit breaker, see „Recommended circuit breaker manipulation" below
2) To connect OD-BHD-R... control relay into the motor drive circuit according to wiring diagram, see page E74

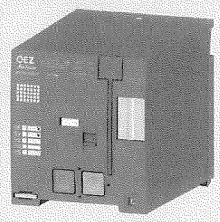
Recommended process of manipulation

1) Shunt trip/undervoltage release must be used to switch off the circuit breaker. Circuit breaker switching off cannot be made by motor drive
2) Circuit breaker can be stored and switched on only if the second circuit breaker is in switch-off mode. Circuit breaker status indicator on motor drive is in „0" position. Between storing and switching on the circuit breaker, it is necessary to keep the time interval min. 100 ms. Switch „S" must be disconnected.
3) In case of infringement of these principles, the first switching on of circuit breaker is unsuccessful.

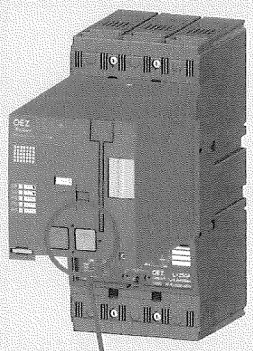


MOTOR DRIVES

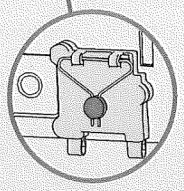
3P 4P



MP-BD-X230



DIMENSIONS, see page E30



OD-BHD-KT01

OD-BHD-KA02

Description

- It is used for remote control of the circuit breaker (switch OFF/ON).
- Simple mounting on the circuit breaker after the circuit breaker cover of cavities is removed.
- Usage in industrial applications e.g. switching of stand by units etc. or wherever the automatic operation of electric devices is needed.
- In order to speed up the circuit breaker's switch off (e.g. safety STOP button) the undervoltage release or shunt trip can be used.
- On the motor drive front panel there is a change-over switch to select the drive modes AUTO/MANUAL:
  - AUTO mode – remote control. The circuit breaker is controlled by buttons for remote switch off/on, furthermore in this position mechanical control can be used on the front panel of the motor drive
  - MANUAL mode – manual control. Control voltage is not needed. The circuit breaker can be switched on using the green switch on button and switched off using the red switch off button on the front part of the drive cover. Electric switch on is blocked. Electric switch off is functional. The accumulation of energy can be done by means of hinged lever.
- Possibility to indicate remotely the state of the AUTO/MANUAL switch.
- Switch S (external switch – has to be bought separately) enables the choice of automatic accumulation of energy (circuit breaker loading).
  - automatic accumulation of energy is on (S switch switched on): after tripping of the circuit breaker by the overcurrent release, by auxiliary release, or by TEST push button or by the switch off button on the motor drive motor drive immediately accumulates energy (circuit breaker loading), motor drive is then ready to switch on the circuit breaker
  - automatic accumulation of energy is switched off (S switch open): after tripping of the circuit breaker by the overcurrent release, by auxiliary release, or by TEST push button or by the switch off button on the motor drive both motor drive and circuit breaker stay in position „ switched off by releases". In this position motor drive waits for the impulse from switch S. When the impulse is brought in the motor drive accumulates energy (turn on the circuit breaker) and after this loading the motor drive is ready to switch on the circuit breaker. It is not possible to switch on the circuit breaker when motor drive is not loaded.
- Front panel state indicating device of the stored energy signals the state of motor drive storage devices. The state can be signalled from a distance.
- The drive may be furnished with an electromechanical counter of cycles.
  - internal design on the motor drive cover
  - external design OD-BHD-PP01 for mounting on the switchboard's door or inside the switchboard by means of metal holder, that is part of the delivery
- Motor drive can be sealed by means of bolt sealing insert (OD-BD-VP01).
- Drive can be locked in off position by up to three padlocks (shank diameter max. 4.3 mm).
- Switch on button can be covered and sealed (OD-BHD-KT01).
- Drive is connected by multi-pole connector with cavities (in order to connect cables special tongs have to be used).
- Drive can be furnished with cable (OD-BHD-KA02), that has on one side connector to the motor drive and on the other side free terminals for connection to etc. switchboard's terminal block.

Specifications

Type		MP-BD-X..., MP-BD-X...-P
Operating voltage	U_e	AC 24, 48, 110, 230 V DC 24, 48, 110, 220 V
Rated frequency	f_n	50 / 60 Hz
Control impulse length for storage		400 ms ÷ ∞ [1]
Control impulse length for switching on for switching off		20 ms ÷ 700 ms [1] 400 ms ÷ ∞ [1]
Time to switching on		< 50 ms
Time to switching off		800 ms
Frequency of cycles ON/OFF		3 cycles/min
Frequency of cycles - instant successive ON/OFF		10 cycles
Mechanical endurance		30 000 cycles
Input power	AC DC	100 VA 100 W
Protection	AC 24, 48, 110 V; AC 230 V DC 24, 48, 110 V; DC 220 V	LTN-4C-1; LTN-2C-1 LTN-UC-4C-1; LTN-UC-2C-1
Rated operating current of the change-over switch AUTO/MANUAL	I_e / U_e	5 A / AC 250 V 0.5 A / DC 250 V
Ambient temperature range		-25 °C ÷ +55 °C
Type		**OD-BHD-KA02**
Number of conductors		12
Conductor cross-section	S	0.35 mm²
Conductor lengths		0.6 m

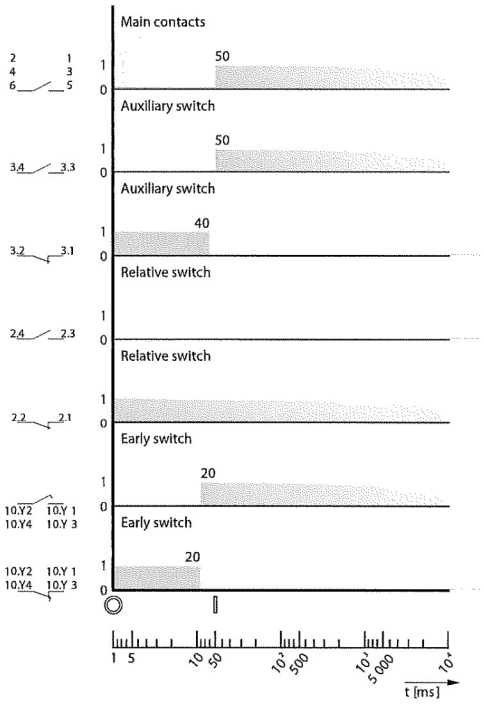
[1] for sequence of control impulses, see page E72

MOTOR DRIVES

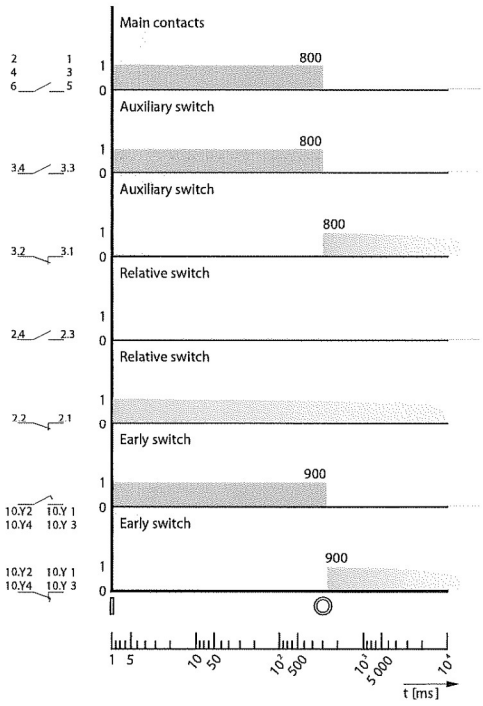
3P 4P

Specifications

Circuit breaker switching on by motor drive - electrically by ON push button

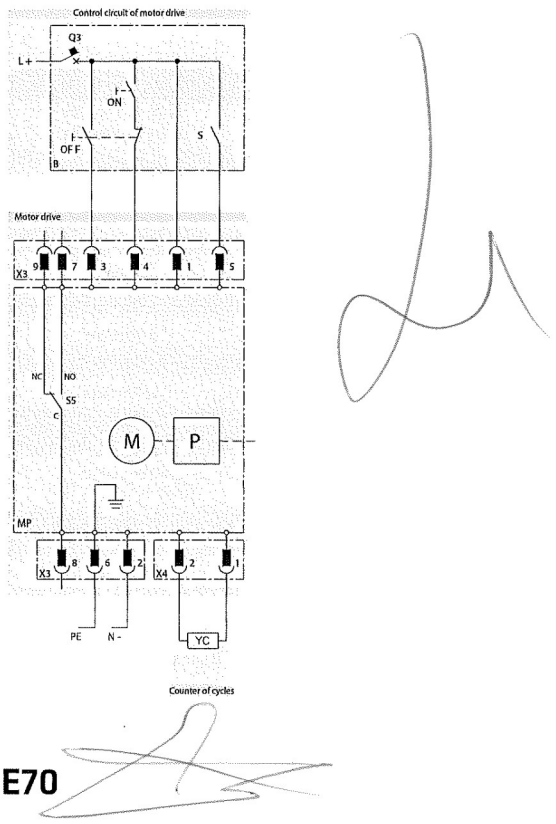


Circuit breaker switching off by motor drive - electrically by OFF push button



Diagram

Circuit breaker switching on and off by motor drive - electrically by ON and OFF push button



States and positions of circuit breaker/switch-disconnector lever

States of circuit breaker/switch-disconnector	Lever position of circuit breaker/switch-disconnector
Switched on	
Switched off by releases, TEST or by switch off button on the motor drive	
Switched off manually or by motor drive electrically (loaded state)	

Wiring diagram description

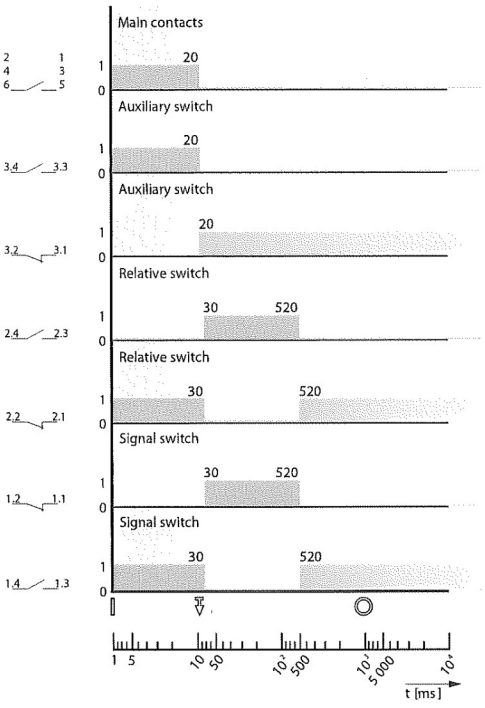
Symbol	Description
MP	motor drive MP-BD-X...
M	motor
P	storage device
X3	connector for connection of control circuits
X4	connector for external counter of cycles
S5*)	switch to indicate AUTO (NO-C)/MANUAL (NC-C) modes
YC	external counter of cycles OD-BHD-PP01
B	recommended wiring of the control circuits (not included in motor drive order)
ON	switch off button
OFF	switch off button
S	switch for energy storage (switched on = automatic storage, may be continuously switched on)
Q3	motor drive circuit breaker - see page E68

MOTOR DRIVES

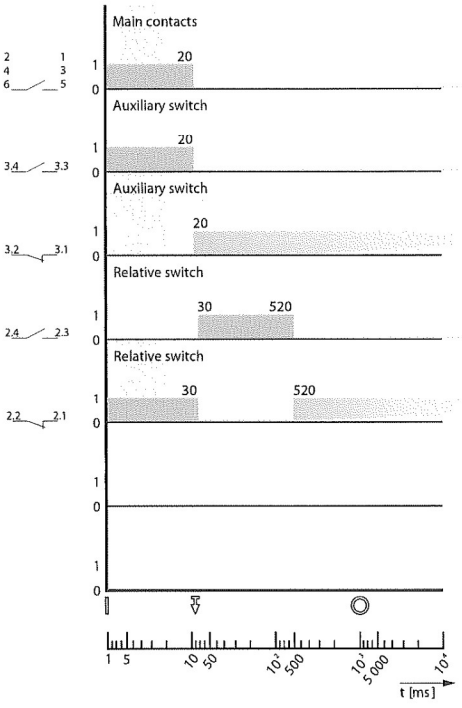
3P 4P

Specifications

Switching off of the circuit breaker with motor drive by overcurrent release (S switch in switched on state-automatic storage)

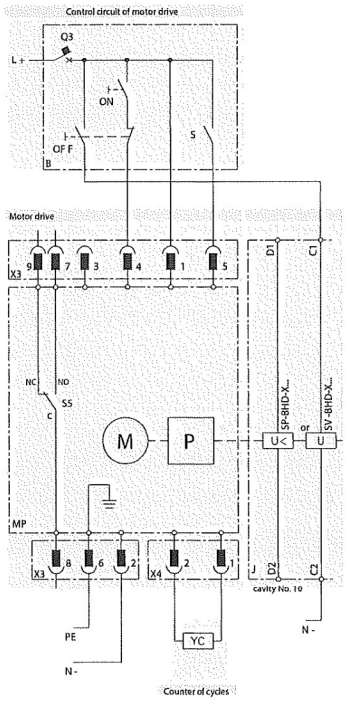


Switching off of the circuit breaker with motor drive by shunt trip or undervoltage release (switch s in switched on state-automatic storage)

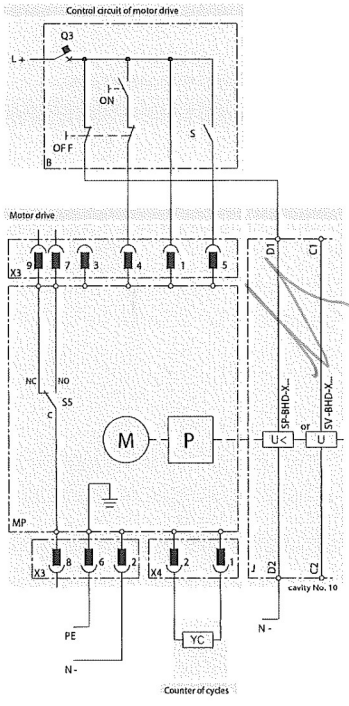


Diagram

Circuit breaker switching on by motor drive (electrically by ON push button) and tripping by shunt trip



Circuit breaker switching on by motor drive (electrically by ON push button) and tripping by undervoltage release



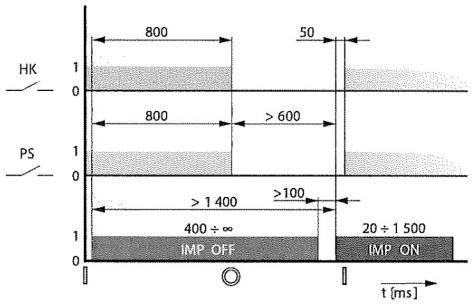
MOTOR DRIVES

3P 4P

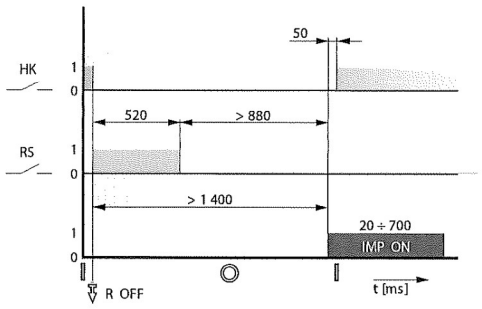
Specifications

Recommended control impulses

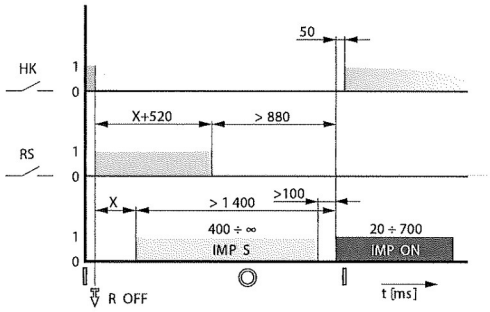
Circuit breaker switching on and off by motor drive
- S switch permanently switched on (automatic storage) or open



Circuit breaker switching off by overcurrent or auxiliary release and switching on by motor drive - S switch permanently switched on (automatic storage)



Circuit breaker switching off by overcurrent or auxiliary release and switching on by motor drive - S switch switched on only for storing up



Description of graphs

Symbol	Description
HK	main contacts
PS	auxiliary switch
RS	relative switch
R OFF	circuit breaker closing instant by release of circuit breaker
IMP S	impulse to store up motor drive energy (generated by S switch)
IMP ON	make impulse for the motor drive
IMP OFF	break impulse for the motor drive
X	random segment of time

States and positions of circuit breaker/switch-disconnector lever

States of circuit breaker/switch-disconnector	Lever position of circuit breaker/switch-disconnector
Switched on	
Switched off by releases, TEST or by switch off button on the motor drive	
Switched off manually or by motor drive electrically (loaded state)	

MOTOR DRIVES

3P 4P

Diagram

Recommended wiring diagram of connecting the circuit breaker control circuits in withdrawable/plug-in design with motor drive

- connecting with control relays
- operating voltage U_e AC/DC 24 V, AC/DC 48 V, AC 110 ÷ 230 V, DC 110 V

Switching off by motor drive

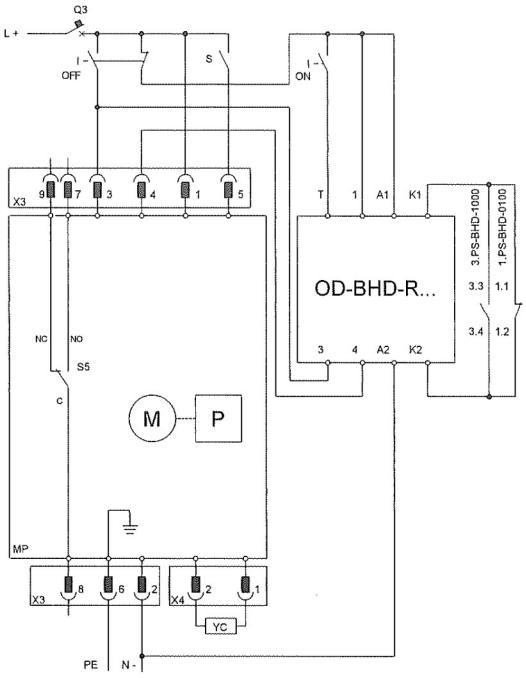


Diagram description

Symbol	Description
MP	motor drive - U_e of drive must be the same as U_e of control relay
M	motor
P	storage device
X3	connector for connection of control circuits
X4	connector for external counter of cycles
S5	switch to indicate AUTO (NO-C) / MANUAL (NC-C) modes
YC	external counter of cycles OD-BHD-PP01 (not included in motor drive order)
OFF	switch off button
S	switch for energy storage
Q3	motor drive circuit breaker for AC 24 V LTN-4C-1 for AC 48 V LTN-4C-1 for AC 110 V LTN-4C-1 for AC 230 V LTN-2C-1 for DC 24 V LTN-UC-4C-1 for DC 48 V LTN-UC-4C-1 for DC 110 V LTN-UC-4C-1 for DC 220 V LTN-UC-2C-1
OD-BHD-R...	control relay for for AC/DC 24 V for AC/DC 48 V for AC 110 ÷ 230 V for DC 110 V
3.PS-BHD-1000	auxiliary switch
1.PS-BHD-0100	signal switch

- impulse on T terminal reacts to trailing edge

MOTOR DRIVES

3P 4P

Diagram

Recommended wiring diagram of connecting the circuit breakers control circuits with mechanical interlocking and motor drive (applicable for any circuit breaker)

- connecting with control relays
- operating voltage U_e AC/DC 24 V, AC/DC 48 V, AC 110 ÷ 230 V, DC 110 V

Switching off is possible only by undervoltage release or shunt trip

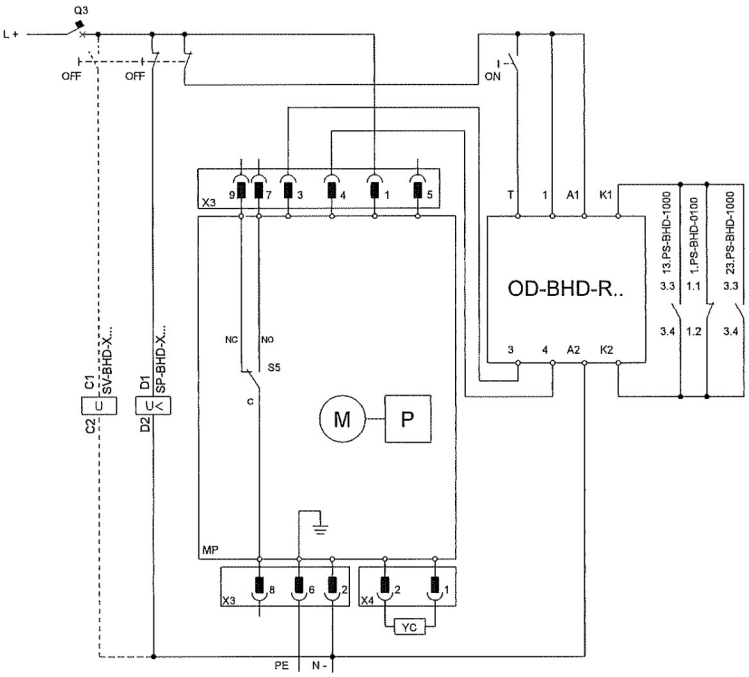


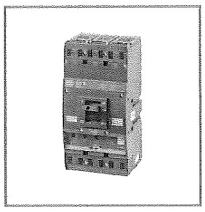
Diagram description

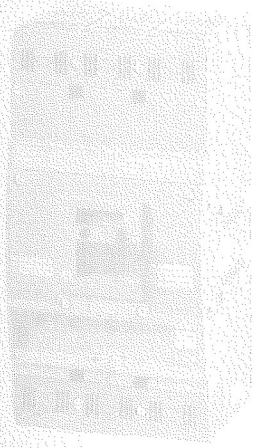
Symbol	Description
MP	motor drive - U_e of drive must be the same as Ue of control relay
M	motor
P	storage device
X3	connector for connection of control circuits
X4	connector for external counter of cycles
SS	switch to indicate AUTO (NO-C) / MANUAL (NC-C) modes
YC	external counter of cycles OD-BHD-PP01
OFF	switch off button
Q3	motor drive circuit breaker for AC 24 V LTN-4C-1 for AC 48 V LTN-4C-1 for AC 110 V LTN-4C- for AC 230 V LTN-2C-1 for DC 24 V LTN-UC-4C- for DC 48 V LTN-UC-4C-1 for DC 110 V LTN-UC-4C-1 for DC 220 V LTN-UC-2C-1
OD-BHD-R...	control relay for AC/DC 24 V for AC/DC 48 V for AC 110 ÷ 230 V for DC 110 V
1.PS-BHD-0100	signal switch
13.PS-BHD-1000	switch inserted in cavity 3 (first circuit breaker) - auxiliary switch
23.PS-BHD-1000	switch inserted in cavity 3 (second circuit breaker) - auxiliary switch
SP-BHD-X...	undervoltage release - U_e of release must be the same as U_e of control relay
SV-BHD-X...	shunt trip - U_e of release must be the same as U_e of control relay

- impulse on T terminal reacts to trailing edge

На основание чл. 2 ал. 1 от ЗОП

MOULDED CASE CIRCUIT BREAKERS **BH630N, BH630S**



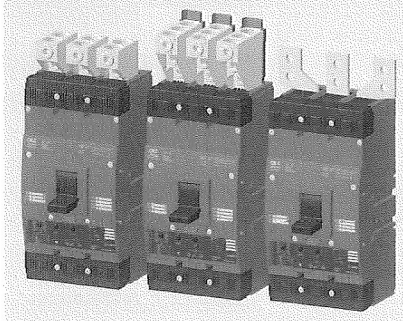


COMMERCIAL INFORMATION

3P 4P

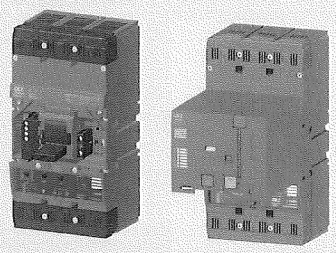
TECHNICAL INFORMATION

PROPERTIES OF BH630 CIRCUIT BREAKERS



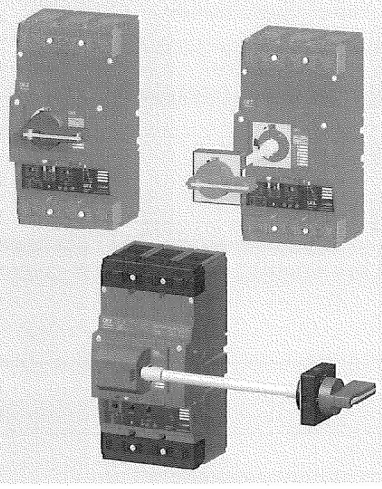
Easy connection

- Circuit breakers can be connected by means of busbars, flexibars and cables directly or via cable lugs.
- Besides the standard connection directly to the circuit breaker, it is possible to select from a wide range of connecting sets as needed.
- Connection of Cu/Al cable of cross section 16 to 240 mm².
- Connection of 3 cables of cross section up to 240 mm².
- Direct connection of all conductors can be done by one electrician.
- Connecting sets for quick solution of replacements of previously manufactured OEZ circuit breakers.



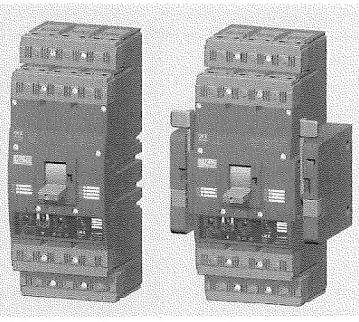
Remote control and signalling

- Signalling of all circuit breaker states for use in automation.
- Fast and safe circuit breaker switching off by the undervoltage release in 20 ms - suitable for switching off by the STOP button.
- Quick remote switching on of the circuit breaker via motor drive in 60 ms - trouble-free solution of standby operation.
- Control voltage range AC/DC 24 ÷ 230 V.



Local control

- For manual control of circuit breakers especially in working machines.
- Black or red lever locked in the off position.
- Black or yellow bearing - possible combination of yellow bearing and red lever as the main switch.
- Safe control from the front on the switchboard door or from the side of the switchboard.

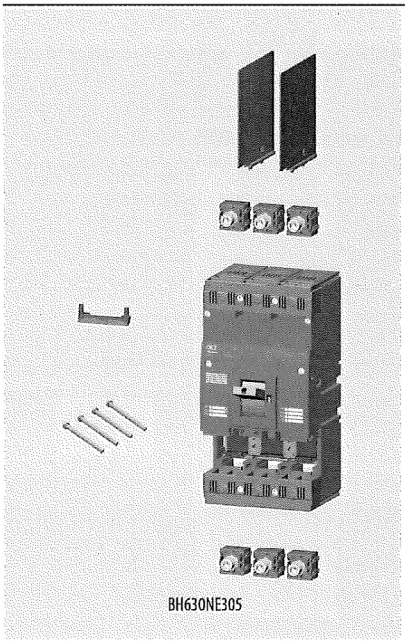


Plug-in and withdrawable design

- The possibility of a quick and easy replacement of the circuit breaker.
- In the case of the withdrawable design, a secure visible disconnection of the main circuit.
- The inspection position of the withdrawable design is intended for the inspection of the auxiliary circuits (revisions).

SWITCHING UNITS

3P



BH630NE305

Type	Order code	I_u [A]	I_{cu} [kA]	Weight [kg]	Package [pc]
BH630NE305	OEZ:14412	630	36	5.3	1
BH630SE305	OEZ:14413	630	65	5.3	1

- TECHNICAL INFORMATION, see page F15

- the method of power circuit connection must observe recommendations, see page F18 as well as deionization space, see page F22

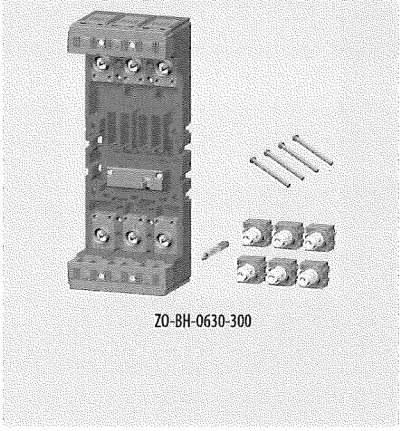
- Switching unit: includes - 2 CS-BH-A011 connecting sets - for connecting busbars or cable lugs [1)]
- insulating barriers OD-BHD-KS02
- mounting bolts set OD-BH-MS01 (4x M5x35)
- conductor holder OD-BH-DV01

must be fitted with - by overcurrent release SE-BH-....-.... (circuit breaker)
or switch-disconnector unit SE-BH-0630-V001 (switch-disconnector)

[1)] - for connecting in another way, it is necessary to use CS-BH-... connecting sets, see page F8

PLUG-IN DEVICE

3P



ZO-BH-0630-300

Type	Order code	Name	Weight [kg]	Package [pc]
ZO-BH-0630-300	OEZ:14556	Plug-in device	2.61	1

- TECHNICAL INFORMATION, see page F48

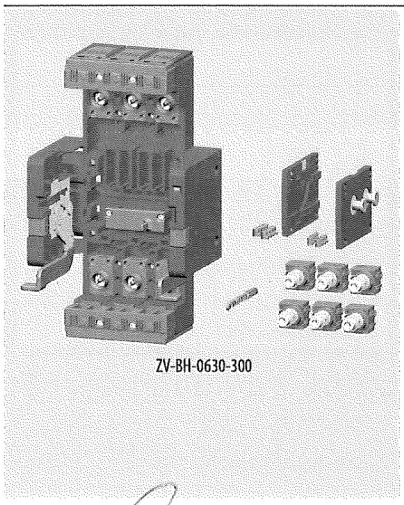
- Plug-in device: includes - complete accessories for assembly circuit breakers/switch-disconnectors in plug-in design
- mounting bolts set (4x M5x45) for affixing switching unit to plug-in device

must be fitted with - switching unit BH630..305

- for connecting plug-in device with busbars or cable lugs, connecting sets CS-BH-A011 can be used, that are included in the package of the BH630..305 switching unit - for connecting in another way, it is necessary to use CS-BH-... connecting sets, see page F8

WITHDRAWABLE DEVICE

3P



ZV-BH-0630-300

Type	Order code	Name	Weight [kg]	Package [pc]
ZV-BH-0630-300	OEZ:14553	Withdrawable device	3.664	1

- TECHNICAL INFORMATION, see page F50

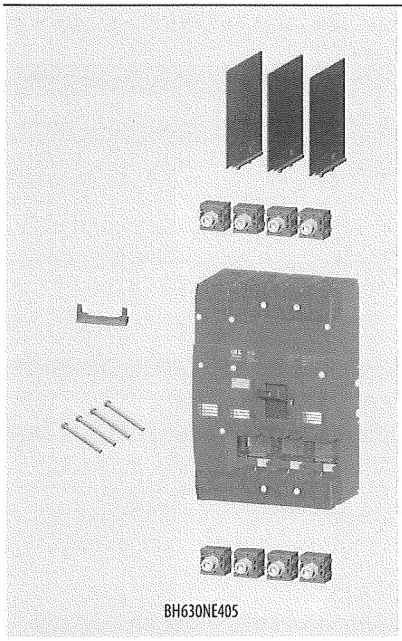
- Withdrawable device: includes - complete accessories for assembly circuit breakers/switch-disconnectors in withdrawable design

must be fitted with - switching unit BH630..305

- for connecting withdrawable device with busbars or cable lugs, connecting sets CS-BH-A011 can be used, that are included in the package of the BH630..305 switching unit - for connecting in another way, it is necessary to use CS-BH ... connecting sets, see page F8

SWITCHING UNITS

4P



BH630NE405

Type	Order code	I_u [A]	I_{cu} [kA]		Weight [kg]	Package [pc]
BH630NE405	OEZ:19583	630	36	3P + N - conductor switching	6.65	1
BH630SE405	OEZ:19585	630	65	3P + N - conductor switching	6.65	1
BH630NE406	OEZ:19584	630	36	4P - conductor protection	7	1
BH630SE406	OEZ:19586	630	65	4P - conductor protection	7	1

- TECHNICAL INFORMATION, see page F15
- **the method of power circuit connection must observe recommendations, see page F18 as well as deionization space, see page F22**

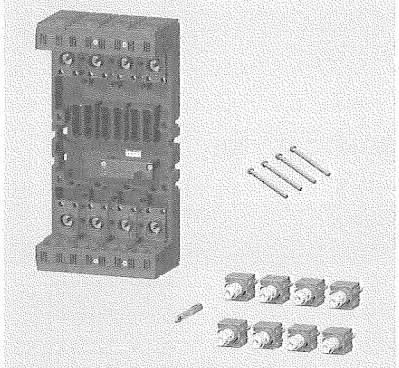
- Switching unit: includes - 2 connecting sets - for connecting busbars or cable lugs [1)]
- insulating barriers
- mounting bolts set OD-BH-MS01 (4x M4x35)
- conductor holder OD-BH-DV01

must be fitted with - by overcurrent release SE-BH-....-.... (circuit breaker)
or switch-disconnector unit SE-BH-0630-V001 (switch-disconnector)

[1)] for connecting in another way, it is necessary to use CS-BH-... connecting sets, see page F8

PLUG-IN DEVICE

4P



ZO-BH-0630-400

Type	Order code	Name	Weight [kg]	Package [pc]
ZO-BH-0630-400	OEZ:20649	Plug-in device	3.4	1

- TECHNICAL INFORMATION, see page F48

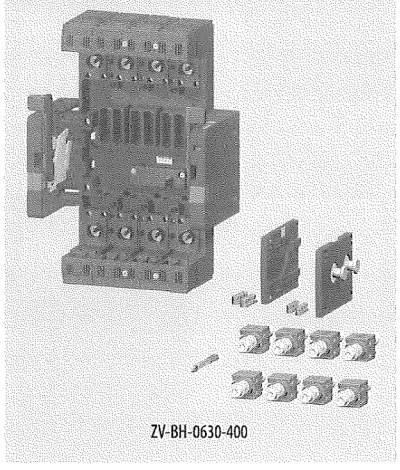
- Plug-in device: includes - complete accessories for assembly circuit breakers/switch-disconnectors in plug-in design
- mounting bolts set (4x M4x45) - for affixing switching unit to plug-in device

must be fitted with - switching unit BH630..405 or BH630..406

- for connecting plug-in device with busbars or cable lugs, connecting sets can be used, that are included in the package of the BH630..40... switching unit - for connecting in another way, it is necessary to use CS-BH-... connecting sets, see page F8

WITHDRAWABLE DEVICE

4P



ZV-BH-0630-400

Type	Order code	Name	Weight [kg]	Package [pc]
ZV-BH-0630-400	OEZ:20650	Withdrawable device	4.5	1

- TECHNICAL INFORMATION, see page F50

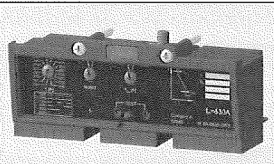
- Withdrawable device: includes - complete accessories for assembly circuit breakers/switch-disconnectors in withdrawable design

must be fitted with - switching unit BH630..405 or BH630..406

- for connecting withdrawable device with busbars or cable lugs, connecting sets can be used that are included with the BH630..40... switching unit - for connecting in another way, it is necessary to use CS-BH-... connecting sets, see page F8

OVERCURRENT RELEASES

3P 4P



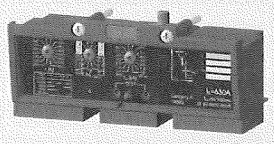
SE-BH-0630-DTV3

DTV3 - characteristic D - distribution

- protection lines and transformers

I_n [A]	Type	Order code	Description	Weight [kg]	Package [pc]
250	**SE-BH-0250-DTV3**	OEZ:25300	I_R setting = 100 ÷ 250 A	0.345	1
400	**SE-BH-0400-DTV3**	OEZ:25200	I_R setting = 160 ÷ 400 A	0.345	1
630	**SE-BH-0630-DTV3**	OEZ:25100	I_R setting = 250 ÷ 630 A	0.345	1

- TECHNICAL INFORMATION, see page F52



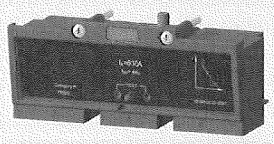
SE-BH-0630-MTV8

MTV8 - characteristic M - motor

- direct protection for motors and generators
- possibility of protection lines and transformers

I_n [A]	Type	Order code	Description	Weight [kg]	Package [pc]
250	**SE-BH-0250-MTV8**	OEZ:25310	I_R setting = 100 ÷ 250 A	0.345	1
400	**SE-BH-0400-MTV8**	OEZ:25210	I_R setting = 160 ÷ 400 A	0.345	1
630	**SE-BH-0630-MTV8**	OEZ:25110	I_R setting = 250 ÷ 630 A	0.345	1

- TECHNICAL INFORMATION, see page F53



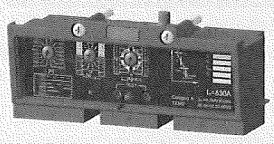
SE-BH-0630-L001

L001 - characteristic L - lines

- protection lines with low starting currents
- without I_R setting

I_n [A]	Type	Order code	Description	Weight [kg]	Package [pc]
250	**SE-BH-0250-L001**	OEZ:20614	Without I_R setting	0.345	1
315	**SE-BH-0315-L001**	OEZ:20615	Without I_R setting	0.345	1
400	**SE-BH-0400-L001**	OEZ:20616	Without I_R setting	0.345	1
500	**SE-BH-0500-L001**	OEZ:20617	Without I_R setting	0.345	1
630	**SE-BH-0630-L001**	OEZ:20618	Without I_R setting	0.345	1

- TECHNICAL INFORMATION, see page F55



SE-BH-0630-MTV9

MTV9 - characteristic M - motor with adjustable timing selectivity

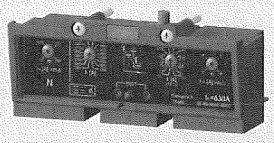
- direct protection for motors and generators
- possibility of protection lines and transformers
- enables setting delay of independent release to 0, 100, 200 or 300 ms

I_n [A]	Type	Order code	Description	Weight [kg]	Package [pc]
250	**SE-BH-0250-MTV9**	OEZ:19566	I_R setting = 100 ÷ 250 A	0.345	1
400	**SE-BH-0400-MTV9**	OEZ:19567	I_R setting = 160 ÷ 400 A	0.345	1
630	**SE-BH-0630-MTV9**	OEZ:19568	I_R setting = 250 ÷ 630 A	0.345	1

- TECHNICAL INFORMATION, see page F56

OVERCURRENT RELEASES

4P



SE-BH-0630-4D01

4D01 - characteristic D - distribution with N-pole protection

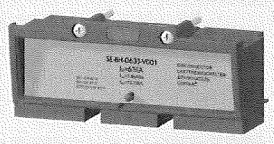
- protection lines and transformers in TN-C-S and TN-S networks

I_n [A]	Type	Order code	Description	Weight [kg]	Package [pc]
250	**SE-BH-0250-4D01**	OEZ:33426	I_R setting = 100 ÷ 250 A	0.355	1
400	**SE-BH-0400-4D01**	OEZ:33427	I_R setting = 160 ÷ 400 A	0.355	1
630	**SE-BH-0630-4D01**	OEZ:33428	I_R setting = 250 ÷ 630 A	0.355	1

- TECHNICAL INFORMATION, see page F58
- intended for BH630..406 switching unit

SWITCH-DISCONNECTOR UNIT

3P 4P



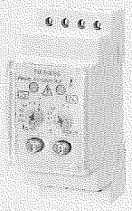
SE-BH-0630-V001

I_e [A]	Type	Order code	Name	Weight [kg]	Package [pc]
630	**SE-BH-0630-V001**	OEZ:25120	Switch-disconnector unit	0.295	1

- TECHNICAL INFORMATION, see page F15

RESIDUAL CURRENT MONITOR

3P 4P



5SV8000-6KK

Type	Order code	Description	Weight [kg]	Package [set]
5SV8000-6KK	OEZ:42658	Analogue design, $I_{\Delta n}$ and $t_{\Delta n}$ setting	0.18	1

- TECHNICAL INFORMATION, see page P4

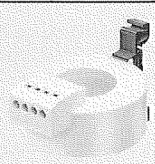
5SV8001-6KK

Type	Order code	Description	Weight [kg]	Package [set]
5SV8001-6KK	OEZ:42659	Digital design, $I_{\Delta n}$ and $t_{\Delta n}$ setting	0.26	1
5SV8200-6KK	OEZ:42660	Digital design, $I_{\Delta n}$ and $t_{\Delta n}$ setting, 4 channels	0.26	1

- TECHNICAL INFORMATION, see page P4

CURRENT TRANSFORMERS FOR RESIDUAL CURRENT MONITOR

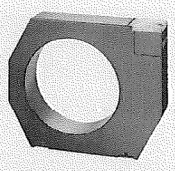
3P 4P



5SV8701-0KK

Type	Order code	Description	Weight [kg]	Package [set]
5SV8700-0KK	OEZ:42661	Internal diameter 20 mm, including holder on "U" rail according to EN 60715 wide 35 mm	0.09	1
5SV8701-0KK	OEZ:42662	Internal diameter 30 mm, including holder on "U" rail according to EN 60715 wide 35 mm	0.11	1

- TECHNICAL INFORMATION, see page P4



5SV8706-0KK

Type	Order code	Description	Weight [kg]	Package [set]
5SV8702-0KK	OEZ:42663	Internal diameter 35 mm, including holder on the panel	0.2	1
5SV8703-0KK	OEZ:42664	Internal diameter 70 mm, including holder on the panel	0.31	1
5SV8704-0KK	OEZ:42665	Internal diameter 105 mm, including holder on the panel	0.6	1
5SV8705-0KK	OEZ:42666	Internal diameter 140 mm, including holder on the panel	1.35	1
5SV8706-0KK	OEZ:42667	Internal diameter 210 mm, including holder on the panel	1.25	1

- TECHNICAL INFORMATION, see page P4

5SV89000-1KK

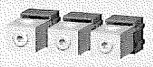
Type	Order code	Description	Weight [kg]	Package [set]
5SV8 900-1KK	OEZ:42668	Holder on "U" rail according to EN 60715 wide 35 mm, for current transformers with internal diameter up to and including 105 mm	0.01	2

- TECHNICAL INFORMATION, see page P4

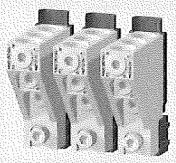
CONNECTING SETS

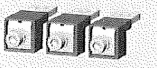
3P 4P

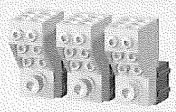

CS-BH-T011


CS-BH-B011

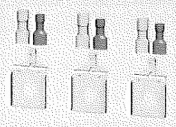

CS-BH-B021


CS-BH-B031


CS-BH-A021


CS-BH-B014


CS-BH-A011


CS-BH-PS01


CS-BH-T411


CS-BH-B411


CS-BH-B421

3 terminals

Type	Order code	Description	S [mm²]	Method of connection	Weight [kg]	Package [set][1]
CS-BH-T011	OEZ:24820	Clamp terminals	35 ÷ 240	Cu cables, flexibars	0.433	1

- TECHNICAL INFORMATION, see page F19

CS-BH-B011	OEZ:24761	Block terminals	150 ÷ 240	Cu/Al cables	0.279	1
CS-BH-B012	OEZ:24762	Block terminals	25 ÷ 150	Cu/Al cables	0.302	1

- TECHNICAL INFORMATION, see page F19

CS-BH-B021	OEZ:24781	Double block terminals	2x (150 ÷ 240)	Cu/Al cables	0.721	1
CS-BH-B022	OEZ:15816	Double block terminals	2x (25 ÷ 150)	Cu/Al cables	0.750	1

- TECHNICAL INFORMATION, see page F19
- using the OD-BH-KS03 cover the degree of protection IP20 is fulfilled

CS-BH-B031	OEZ:36604	Block terminals	3x (150 ÷ 240)	Cu/Al cables	0.9	1
CS-BH-B032	OEZ:42691	Block terminals	3x (25 ÷ 150)	Cu/Al cables	0.9	1

- TECHNICAL INFORMATION, see page F19
- using the OD-BH-KS03 cover the degree of protection IP20 is fulfilled
- conductor cross-section for potential terminal is 1.5 ÷ 6 mm²

CS-BH-A021	OEZ:24780	Rear connection		Cu/Al busbars, cable lugs	0.567	1

- TECHNICAL INFORMATION, see page F19

CS-BH-B014	OEZ:20121	Block terminals - for 6 cables	6x (6 ÷ 35)	Cu/Al cables	0.3	1

- TECHNICAL INFORMATION, see page F19
- using the OD-BH-KS03 cover the degree of protection IP20 is fulfilled

CS-BH-A011	OEZ:24760	Front connection		Cu/Al busbars, cable lugs, flexibars	0.186	1

- TECHNICAL INFORMATION, see page F19
- included in every supply of switching units

CS-BH-PS01	OEZ:13683	Potential terminals	1.5÷2.5;4÷6	Cu flexible conductor	0.021	1

- TECHNICAL INFORMATION, see page F19

1 terminal

Type	Order code	Description	S [mm²]	Method of connection	Weight [kg]	Package [set]
CS-BH-T411	OEZ:19589	Clamp terminal	35 ÷ 240	Cu cables, flexibars	0.148	1

- TECHNICAL INFORMATION, see page F19

CS-BH-B411	OEZ:19593	Block terminal	150 ÷ 240	Cu/Al cables	0.093	1
CS-BH-B412	OEZ:19588	Block terminal	25 ÷ 150	Cu/Al cables	0.101	1

- TECHNICAL INFORMATION, see page F19

CS-BH-B421	OEZ:19590	Double block terminal	2x (150÷240)	Cu/Al cables	0.24	1
CS-BH-B422	OEZ:19591	Double block terminal	2x (25÷150)	Cu/Al cables	0.25	1

- TECHNICAL INFORMATION, see page F19

[1] one set provides for connecting one side of the circuit breaker (set includes three terminals with necessary coupling elements)

CONNECTING SETS

3P

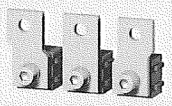
REPLACEMENT OF FORMERLY PRODUCED CIRCUIT BREAKERS

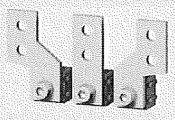

CS-BH-B431

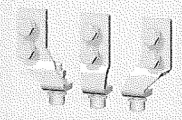

CS-BH-B414

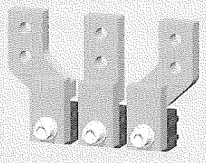

CS-BH-A421

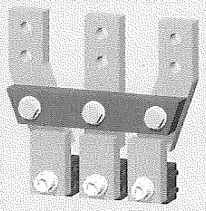

CS-BH-PS41


CS-BH-A037


CS-BH-A039


CS-BH-Z039


CS-BH-JX75


CS-BH-JT75

1 terminal

Type	Order code	Description		Method of connection	Weight [kg]	Package [pc]
CS-BH-B431	OEZ:36605	Block terminals	3x (150 ÷ 240)	Cu/Al cables	0.3	1
CS-BH-B432	OEZ:42692	Block terminals	3 x (25 ÷ 150)	Cu/Al cables	0.3	1

- TECHNICAL INFORMATION, see page F19
- conductor cross-section for potential terminal is 1.5 ÷ 6 mm²

CS-BH-B414	OEZ:21169	Block terminal - for 6 cables	6x (6 ÷ 35)	Cu/Al cables	0.1	1

- TECHNICAL INFORMATION, see page F19

CS-BH-A421	OEZ:19592	Rear connection		Cu/Al busbars, cable lugs	0.189	1

- TECHNICAL INFORMATION, see page F19

CS-BH-PS41	OEZ:36032	Potential terminal	1.5 ÷ 2.5/4 ÷ 6		0.005	1

- TECHNICAL INFORMATION, see page F19

3 terminals

Type	Order code	Description	Method of connection	Weight [kg]	Package [pc]
CS-BH-A037	OEZ:24783	Reduction for BA...*37-50 - front connection	Cu/Al busbars, cable lugs, flexibars	0.47	1

- TECHNICAL INFORMATION, see page F19

CS-BH-A039	OEZ:24782	Reduction for BA...*39-50 and J2UX50 - front connection	Cu/Al busbars, cable lugs, flexibars	0.628	1

- TECHNICAL INFORMATION, see page F19
- for total replacement of BA . . .*39-50 or J2UX50 circuit breaker with front connection OD-BHD-MS39 connecting set is necessary

CS-BH-Z039	OEZ:18202	Reduction for BA...*39 a J2UX - rear connection	Cu/Al busbars, cable lugs	0.954	1

- TECHNICAL INFORMATION, see page F19
- for total replacement of BA. . .*39 or J2UX circuit breaker with rear connection OD-BH-MZ39 and CS-BH-A021 connecting sets are necessary

CS-BH-JX75	OEZ:14562	Reduction for BA...*39-75 and J2UX75 - front connection, withdrawable design	Cu/Al busbars, flexibars, cable lugs	1.924	1

- TECHNICAL INFORMATION, see page F19
- for total replacement of BA. . .*39-75 or J2UX75T circuit breakers with front connection in withdrawable design OD-BHD-MS75 connecting set and ZO-BH-0630-300 plug-in device or ZV-BH-0630-300 withdrawable device are necessary

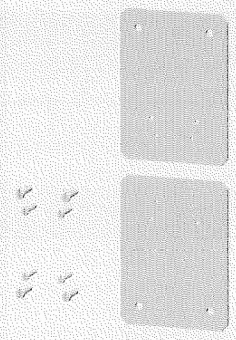
CS-BH-JT75	OEZ:14561	Reduction for J2UX75T - front connection, withdrawable design	Cu/Al busbars, flexibars, cable lugs	2.64	1

- TECHNICAL INFORMATION, see page F19
- for total replacement of J2UX75T circuit breaker with front connection in withdrawable design OD-BHD-MS75 connecting set and ZO-BH-0630-300 plug-in device or ZV-BH-0630-300 withdrawable device are necessary

MOUNTING SETS

3P

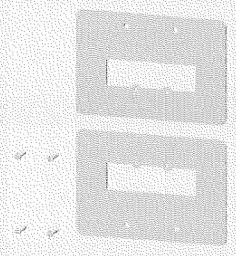
REPLACEMENT OF FORMERLY PRODUCED CIRCUIT BREAKERS



OD-BHD-MS39

Type	Order code	Description	Weight [kg]	Package [set][1)]
OD-BHD-MS39	OEZ:24741	Reduction for BA...*39-50 and J2UX50 - front connection	0.7	1

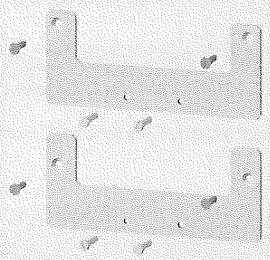
- DIMENSIONS see page F27
- for total replacement of BA . . . *39-50 or J2UX50 circuit breaker with front connection 2 connecting sets CS-BH-A039 are necessary



OD-BH-MZ39

OD-BH-MZ39	OEZ:18204	Reduction for BA...*39 and J2UX - rear connection	1.195	1

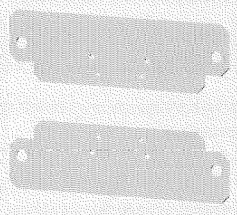
- DIMENSIONS see page F27
- for total replacement of BA . . . *39 or J2UX circuit breaker with rear connection also 2 connecting sets CS-BH-Z039 and CS-BH A021 are necessary



OD-BH-MT75

OD-BH-MT75	OEZ:33331	Reduction for J2UX75T - front connection, withdrawable design		1

- DIMENSIONS see page F33, F37
- for total replacement of J2UX75T circuit breaker with front connection in withdrawable design 2 connecting sets CS-BH-JT75 and ZO-BH-0630-300 plug-in device or ZV-BH-0630-300 withdrawable device are necessary



OD-BHD-MS75

OD-BHD-MS75	OEZ:14563	Reduction for BA...*39-75 a J2UX75 - front connection, withdrawable design	0.446	1

- DIMENSIONS see page F33, F37
- for total replacement of BA...*39-75 or J2UX75 circuit breaker with front connection in withdrawable design 2 connecting sets CS-BH-JT75 and ZO-BH-0630-300 plug-in device or ZV-BH-0630-300 withdrawable device are necessary

[1)] one set provides for replacing one circuit breaker (set includes coupling elements necessary to assemble circuit breaker and mounting set)

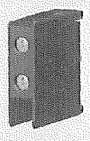
AUXILIARY SWITCHES

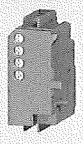
3P 4P


PS-BHD-1000


PS-BHD-0100


PS-BHD-1100


PS-BHD-0010


SP-BHD-0002

Single make contacts

Type	Order code	Operating voltage	Contacts	Weight [kg]	Package [pc]
PS-BHD-1000	OEZ:24700	AC/DC 60 ÷ 500 V		0.012	1
PS-BHD-1000-Au	OEZ:24702	AC/DC 5 ÷ 60 V		0.012	1

Single break contacts

Type	Order code	Operating voltage	Contacts	Weight [kg]	Package [pc]
PS-BHD-0100	OEZ:24701	AC/DC 60 ÷ 500 V		0.013	1
PS-BHD-0100-Au	OEZ:24703	AC/DC 5 ÷ 60 V		0.013	1

Double

Type	Order code	Operating voltage	Contacts	Weight [kg]	Package [pc]
PS-BHD-0200	OEZ:13690	AC/DC 60 ÷ 500 V		0.026	1
PS-BHD-0200-Au	OEZ:13693	AC/DC 5 ÷ 60 V		0.026	1
PS-BHD-1100	OEZ:13691	AC/DC 60 ÷ 500 V		0.025	1
PS-BHD-1100-Au	OEZ:13694	AC/DC 5 ÷ 60 V		0.025	1
PS-BHD-2000	OEZ:13689	AC/DC 60 ÷ 500 V		0.024	1
PS-BHD-2000-Au	OEZ:13692	AC/DC 5 ÷ 60 V		0.024	1

Make-and-break

Type	Order code	Operating voltage	Contacts	Weight [kg]	Package [pc]
PS-BHD-0010	OEZ:18021	AC/DC 60 ÷ 250 V		0.013	1
PS-BHD-0010-Au	OEZ:18022	AC/DC 5 ÷ 60 V		0.013	1
PS-BHD-0020	OEZ:35893	AC/DC 60 ÷ 250 V		0.026	1
PS-BHD-0020-Au	OEZ:37467	AC/DC 5 ÷ 60 V		0.026	1

Early

Type	Order code	Description	Contacts	Weight [kg]	Package [pc]
SP-BHD-0002	OEZ:16169	Early switch		0.045	1

- TECHNICAL INFORMATION for all switch, see page F59

SHUNT TRIPS

3P 4P

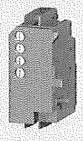

SV-BHD-X230

Type	Order code	Operating voltage	Weight [kg]	Package [pc]
SV-BHD-X024	OEZ:24650	AC/DC 24, 40, 48 V	0.14	1
SV-BHD-X110	OEZ:24630	AC/DC 110 V	0.14	1
SV-BHD-X230	OEZ:24620	AC 230, 400, 500 V / DC 220 V	0.14	1

- TECHNICAL INFORMATION, see page F60

UNDERVOLTAGE RELEASES

3P 4P

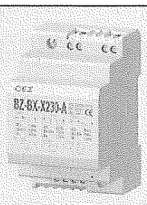

SP-BHD-X230

Type	Order code	Operating voltage	Description	Weight [kg]	Package [pc]
SP-BHD-X024	OEZ:24450	AC/DC 24, 40, 48 V		0.11	1
SP-BHD-X110	OEZ:24430	AC/DC 110 V		0.11	1
SP-BHD-X230	OEZ:24420	AC 230, 400, 500 V / DC 220 V		0.11	1
SP-BHD-X024-0001[1)]	OEZ:24550	AC/DC 24, 40, 48 V	- with early contact	0.12	1
SP-BHD-X110-0001[1)]	OEZ:24530	AC/DC 110 V	- with early contact	0.12	1
SP-BHD-X230-0001[1)]	OEZ:24520	AC 230, 400, 500 V / DC 220 V	- with early contact	0.12	1

- TECHNICAL INFORMATION, see page F62

[1)] cannot be used in combination with motor drive MP-BH-X...

DELAY UNIT

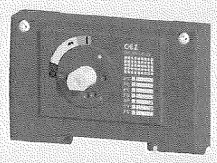

BZ-BX-X230-A

Type	Order code	Description	Weight [kg]	Package [pc]
BZ-BX-X230-A	OEZ:36696	Enables to delay the undervoltage release tripping of circuit breakers Modeion	0.12	1

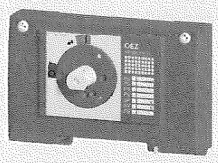
- TECHNICAL INFORMATION, see page P2

HAND DRIVES

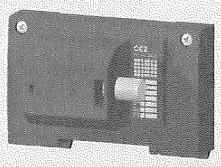
3P 4P



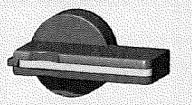
RP-BH-CK10



RP-BH-CK21

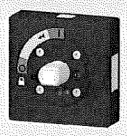


RP-BH-CK30

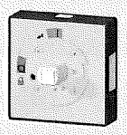


RP-BHD-CP10

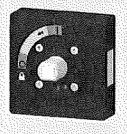
RP-BHD-CP21



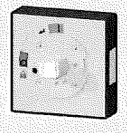
RP-BHD-CN40



RP-BHD-CN41



RP-BHD-CN60



RP-BHD-CN61

Type	Order code	Name - description		Weight [kg]	Package [pc]
RP-BH-CK10	OEZ:13653	Hand drive unit	- without locking	0.223	1
RP-BH-CK20	OEZ:13654	Hand drive unit	- with locking	0.223	1

- TECHNICAL INFORMATION, see page F64

Hand drive unit must be fitted with:
- for control on circuit breaker - with the black hand drive lever RP-BHD-CP10 or RP-BHD-CP20
- for control through the switchboard door - with the extension shaft RP-BHD-CH..
  - with the hand drive bearing RP-BHD-CN..
  - with the hand drive lever RP-BHD-CP..

RP-BH-CK21	OEZ:13685	Hand drive unit - yellow label	- with locking	0.223	1

- TECHNICAL INFORMATION, see page F64

Hand drive unit must be fitted with:
- for control on circuit breaker - with the red hand drive lever RP-BHD-CP21
- for control through the switchboard door - with the extension shaft RP-BHD-CH..
  - with the hand drive bearing RP-BHD-CN..
  - with the hand drive lever RP-BHD-CP..

RP-BH-CK30	OEZ:37252	Hand drive unit for right side control	0.512	1
RP-BH-CK31	OEZ:37253	Hand drive unit for left side control	0.512	1

- TECHNICAL INFORMATION, see page F64

RP-BHD-CP10	OEZ:13655	Hand drive lever - black	- without locking	0.075	1
RP-BHD-CP20	OEZ:13656	Hand drive lever - black	- with locking	0.075	1

- TECHNICAL INFORMATION, see page F64

RP-BHD-CP21	OEZ:13657	Hand drive lever - red	- with locking	0.075	1

- TECHNICAL INFORMATION, see page F64

RP-BHD-CN40	OEZ:37246	Hand drive bearing - degree of protection IP40	0.14	1

- TECHNICAL INFORMATION, see page F64
- is used in combination with the black lever of RP-BHD-CP10, RP-BHD-CP20 hand drives

RP-BHD-CN41	OEZ:37247	Hand drive bearing - yellow label - degree of protection IP40	0.14	1

- TECHNICAL INFORMATION, see page F64
- is used in combination with the red lever of RP-BHD-CP21 hand drive

RP-BHD-CN60	OEZ:37248	Hand drive bearing - degree of protection IP66	0.14	1

- TECHNICAL INFORMATION, see page F64
- is used in combination with the black lever of RP-BHD-CP10, RP-BHD-CP20 hand drives

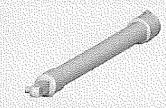
RP-BHD-CN61	OEZ:37249	Hand drive bearing - yellow label - degree of protection IP66	0.14	1

- TECHNICAL INFORMATION, see page F64
- is used in combination with the red lever of RP-BHD-CP21 hand drive

HAND DRIVES

3P 4P

RP-BHD-CH10

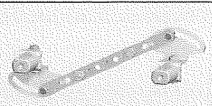


RP-BHD-CH20

Type	Order code	Name - description	Weight [kg]	Package [pc]
RP-BHD-CH10	OEZ:13658	Extension shaft - length 365 mm, can be shortened	0.205	1
- TECHNICAL INFORMATION, see page F64				
RP-BHD-CH20	OEZ:13659	Extension shaft - telescopic, length 252 ÷ 416 mm	0.255	1
- TECHNICAL INFORMATION, see page F64				

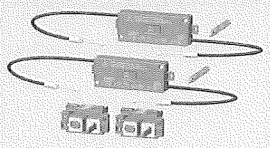
MECHANICAL INTERLOCKING AND PARALLEL SWITCHING

3P 4P



RP-BHD-CB10

RP-BHD-CD10

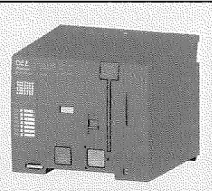


MB-BH-PV04

Type	Order code	Name	Weight [kg]	Package [pc]
RP-BHD-CB10	OEZ:18290	Mechanical interlocking - for fixed design	0.16	1
- TECHNICAL INFORMATION, see page F65 - mechanical interlocking must be fitted with: 2 hand drive units RP-BH-CK.. 2 hand drive levers RP-BHD-CP..				
RP-BHD-CD10	OEZ:18289	Mechanical parallel switching - for fixed design	0.23	1
- TECHNICAL INFORMATION, see page F65 - mechanical parallel switching must be fitted with: 2 hand drive units RP-BH-CK.. with the hand drive lever RP-BHD-CP..				
MB-BH-PV04	OEZ:19611	Mechanical blocking with Bowden cable - for two circuit breakers BH630	0.448	1
MB-BHD-PV03	OEZ:19613	Mechanical blocking with Bowden cable - for one BD250 and one BH630 circuit breaker	0.448	1
- TECHNICAL INFORMATION, see page F66 - mechanical blocking with Bowden cable is intended for fixed, plug-in and withdrawable design				

MOTOR DRIVES

3P 4P



MP-BH-X230

OD-BHD-PP01

OD-BHD-KA02

Type	Order code	Name - description	Operating voltage	Weight [kg]	Package [pc]
MP-BH-X024[1]	OEZ:20590	Motor drive	AC/DC 24V	1.691	1
MP-BH-X048[1]	OEZ:19792	Motor drive	AC/DC 48V	1.691	1
MP-BH-X110	OEZ:13539	Motor drive	AC/DC 110V	1.691	1
MP-BH-X230	OEZ:13536	Motor drive	AC 230V/ DC 220V	1.691	1
MP-BH-X024-P[1]	OEZ:20591	Motor drive - with counter of cycles	AC/DC 24V	1.708	1
MP-BH-X048-P[1]	OEZ:19793	Motor drive - with counter of cycles	AC/DC 48V	1.708	1
MP-BH-X110-P[1]	OEZ:13687	Motor drive - with counter of cycles	AC/DC 110V	1.708	1
MP-BH-X230-P[1]	OEZ:13540	Motor drive - with counter of cycles	AC 230V/ DC 220V	1.708	1
- TECHNICAL INFORMATION, see page F67 - motor drive cannot be used in combination with SP-BHD-X...-0001 [1] custom production					
OD-BHD-PP01	OEZ:13688	Counter of cycles - cable length 1.1 m		0.08	1
- DIMENSIONS see page F67					
OD-BHD-KA02	OEZ:13809	Extension cable - to motor drive, 12 wires, length 0.6 m		0.1	1
- TECHNICAL INFORMATION, see page F67					

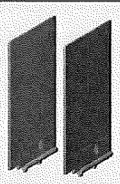
CONTROL RELAY

OD-BHD-RA03

Type	Order code	Specifications	Weight [kg]	Package [pc]
OD-BHD-RX01	OEZ:37425	AC/DC 24V	0.06	1
OD-BHD-RX02	OEZ:37426	AC/DC 48V	0.06	1
OD-BHD-RA03	OEZ:37427	AC 110 ÷ 230V	0.06	1
OD-BHD-RD04	OEZ:37428	DC 110V	0.06	1
- TECHNICAL INFORMATION, see page P3				

ACCESSORIES

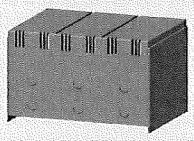
3P 4P



OD-BHD-KS02

Type	Order code	Name - description	Weight [kg]	Package [pc]
OD-BHD-KS02	OEZ:24740	Insulating barriers - set (two pieces), for 3P and 4P design	0.077	1
OD-BHD-KS42	OEZ:19575	Insulating barrier - one piece, for 4P design	0.039	1

- included with each switching unit order
- in case circuit breaker/switch-disconnector connection is reversed (supply to terminals 2, 4, 6) it is necessary in most cases to install these barriers also on the lower side
- for more detailed information see page F22



OD-BH-KS03

OD-BH-KS03	OEZ:13531	Terminal cover - degree of protection IP20, for 3P design	0.144	1
OD-BH-KS43	OEZ:19587	Terminal cover - degree of protection IP20, for 4P design	0.209	1

- increases degree of protection of connection point to IP20 when using B021, B022, B031, B032 a B014 block type terminals
- intended for fixed, plug-in and withdrawable design

OD-BH-UP01

OD-BH-UP01	OEZ:13532	Lever with locking	0.013	1

- enables to lock the circuit breaker in „switched off manually" position (loaded)
- locking is possible using padlock with shank diameter 4 ÷ 6 mm

OD-BH-VP01

OD-BH-VP01	OEZ:15330	Bolt sealing insert	0.001	2

- enables sealing for:
  - cover of cavities
  - terminal cover
  - overcurrent release
  - hand drive unit
  - motor drive

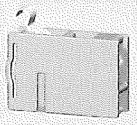
OD-BH-VP02

OD-BH-VP02	OEZ:18216	Additional cover for overcurrent release	0.1	1

- enables sealing for overcurrent releases such as circuit breakers in the main meter switchboard

OD-BHD-KA01

OD-BHD-KA01	OEZ:14555	Connecting cable - to connect the circuit breaker/ /switch-disconnector accessories in the plug-in/ /withdrawable design - 15 wires (it is possible for plug-in design and fixed design)	0.12	1



SO-BHD-0010

SO-BHD-0010	OEZ:14560	Signalling of position - signals circuit breaker position in the plug-in or withdrawable device	0.018	1

- TECHNICAL INFORMATION, see page F48, F50

OD-BH-KK01

OD-BH-KK01	OEZ:14554	Keying set - prevents inserting in the plug-in or withdrawable devices beyond the switching unit	0.005	1

- TECHNICAL INFORMATION, see page F48, F50

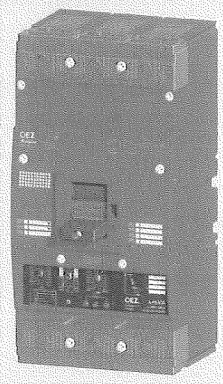
OD-BHD-KT01

OD-BHD-KT01	OEZ:14642	Cover of switch on button - for motor drive, cover can be sealed	0.002	1

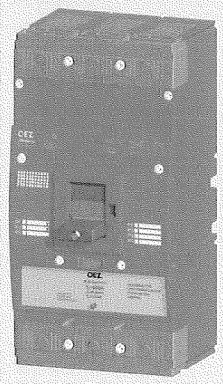
- TECHNICAL INFORMATION, see page F67

CIRCUIT BREAKERS, SWITCH-DISCONNECTORS

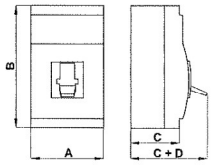
3P 4P



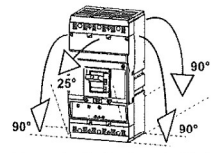
Circuit breaker



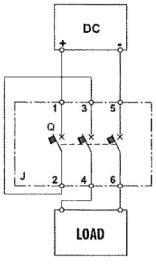
Switch-disconnector



Dimensions



Installation positions - fixed, plug-in and withdrawable design



Connection of switch-disconnector for DC circuits

Specifications

		CIRCUIT BREAKER	SWITCH-DISCONNECTOR
Type		BH630N, BH630S	
Dimensions A x B x C + D (3P/4P design)		140/185 x 275 x 105 + 49 mm	140/185 x 275 x 105 + 49 mm
Weight (3P/4P design)		5.4/7.4 kg	5.4 kg
Standards		EN 60947-2 IEC 60947-2	EN 60947-3 IEC 60947-3
Approval marks		CE EAC	
Number of poles		3, 4	3, 4
Rated current	I_n	250, 315, 400, 500, 630 A	-
Rated normal current	I_u	630 A	630 A
Rated operating current	I_e	-	630 A
Rated operating voltage	U_e	max. AC 690 V -	max. AC 690 V max. DC 440 V
Rated frequency	f_n	50/60 Hz	50/60 Hz
Rated impulse withstand voltage	U_{imp}	8 kV	8 kV
Rated insulation voltage	U_i	690 V	690 V
Utilization category (selectivity)	AC 690 V	A	-
Utilization category (switching mode)	AC 690 V DC 440 V	- -	AC-23B DC-23B
Rated short-time withstand current at U_e = AC 690 V	I_{cw} / t	8 kA / 50 ms, 7 kA / 300 ms, 6.5 kA / 1 s	7.5 kA / 5 s
Series		NORMAL BH630N / SUPERIOR BH630S	-
Rated short-circuit ultimate breaking capacity (rms) [1]	I_{cu}	60 kA / 100 kA AC 230 V 36 kA / 65 kA AC 415 V 20 kA / 35 kA AC 500 V 15 kA / 20 kA AC 690 V	-
Rated short-circuit service breaking capacity (rms)	I_{cs}	40 kA / 75 kA AC 230 V 18 kA / 36 kA AC 415 V 10 kA / 20 kA AC 500 V 8 kA / 15 kA AC 690 V	-
Rated short-circuit making capacity (peak value)	I_{cm} / U_e	75 kA / 140 kA AC 415 V - / -	14 kA / AC 415 V 14 kA / DC 440 V
Application in IT network	U_e	AC 690 V [2]	-
Switching off time at I_{cu}		20 ms	-
Losses per 1 pole fixed/withdrawable design		75 W/85 W	75 W/85 W
Mechanical endurance		20 000 cycles	20 000 cycles
Electrical endurance		5 000 cycles	5 000 cycles
Switching frequency		120 cycles/hr	120 cycles/hr
Control force		110 N	110 N
Degree of protection from front side of the device		IP40	IP40
Degree of protection of terminals		IP20	IP20
Operating conditions			
Reference ambient temperature		40 °C	40 °C
Ambient temperature range		-25 ÷ +55 °C	-25 ÷ +55 °C
Working environment		dry and tropical climate	dry and tropical climate
Climatic resistance		EN 60068	EN 60068
Pollution degree		3	3
Max. sea level		2 000 m	2 000 m
Seismic resistance		3g (8 ÷ 50) Hz	3g (8 ÷ 50) Hz
Design modifications			
Front/rear connection		●/●	●/●
Plug-in design 3P/4P		●/●	●/●
Withdrawable design 3P/4P		●/●	●/●
Accessories			
Switches - auxiliary/relative/signal/early		●/●/●/●	●/●/●/●
Shunt trip		●	●
Undervoltage release/with early switch		●/●	●/●
Front hand drive/with adjustable lever		●/●	●/●
Mechanical interlocking-with Bowden cable/for hand drive		●/●	●/●
Motor drive/with counter of cycles		●/●	●/●
Lever with locking		●	●
Bolt sealing insert/additional cover for overcurrent release		●/●	●/●

● available, – unavailable

[1] in case circuit breaker connection is reversed (input terminals 2, 4, 6, output terminals 1, 3, 5) I_{cu} does not change - protection of Modeion switch-disconnectors, see page R10

[2] deionization spaces for application in IT networks, see page R6

CIRCUIT BREAKERS, SWITCH-DISCONNECTORS

3P

Diagram

Circuit breaker with accessories (3-pole design)

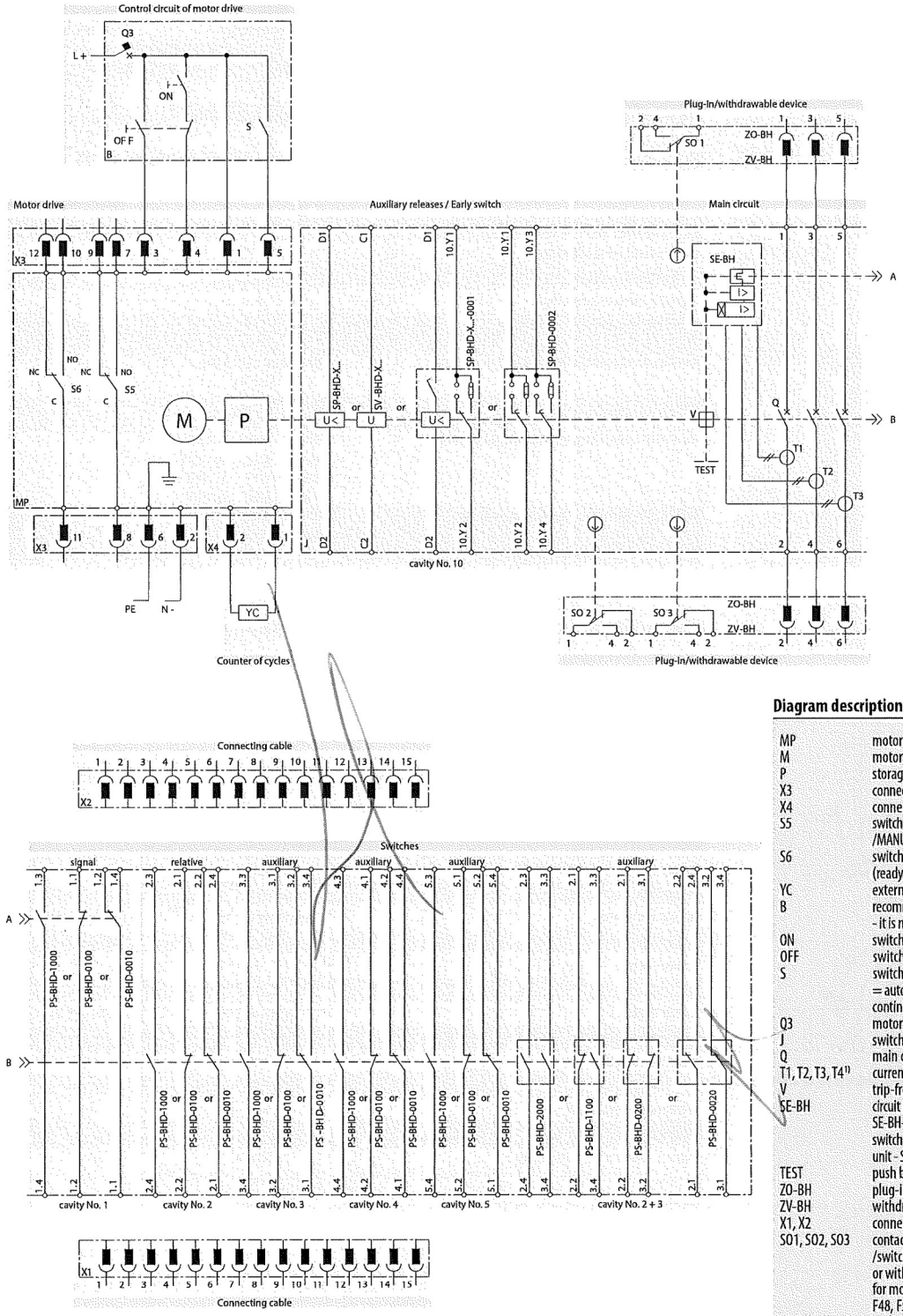


Diagram description (3P and 4P design)

MP	motor drive - MP-BH-X...
M	motor
P	storage device
X3	connector for connection of control circuits
X4	connector for external counter of cycles
S5	switch to indicate AUTO AUTO (NO-C)/ /MANUAL (NC-C)
S6	switch to indicate full storage (ready to switch on: NO-C)
YC	external counter of cycles - OD-BHD-PP01
B	recommended wiring of the control circuits - it is not a part of motor drive
ON	switch on button
OFF	switch off button
S	switch for energy storage (switched on = automatic storage, switch may be continuously switched on)
Q3	motor drive circuit breaker - see page F67
J	switching unit - BH630..
Q	main contacts
T1, T2, T3, T4[1)]	current transformers
V	trip-free mechanism
SE-BH	circuit breaker - overcurrent release - SE-BH-....-.... switch-disconnector - switch-disconnector unit - SE-BH-0630-V001
TEST	push button to test release
ZO-BH	plug-in device - ZO-BH-0630-....
ZV-BH	withdrawable device - ZV-BH-0630-....
X1, X2	connecting cable - OD-BHD-KA01
SO1, SO2, SO3	contacts signalling circuit breaker/ /switch-disconnector position in plug-in or withdrawable device SO-BHD-0010 - for more detailed information see page F48, F50
SP-BHD-X...	undervoltage release
SV-BHD-X...	shunt trip
SP-BHD-X...-0001	undervoltage release with early contact
SP-BHD-0002	early contact

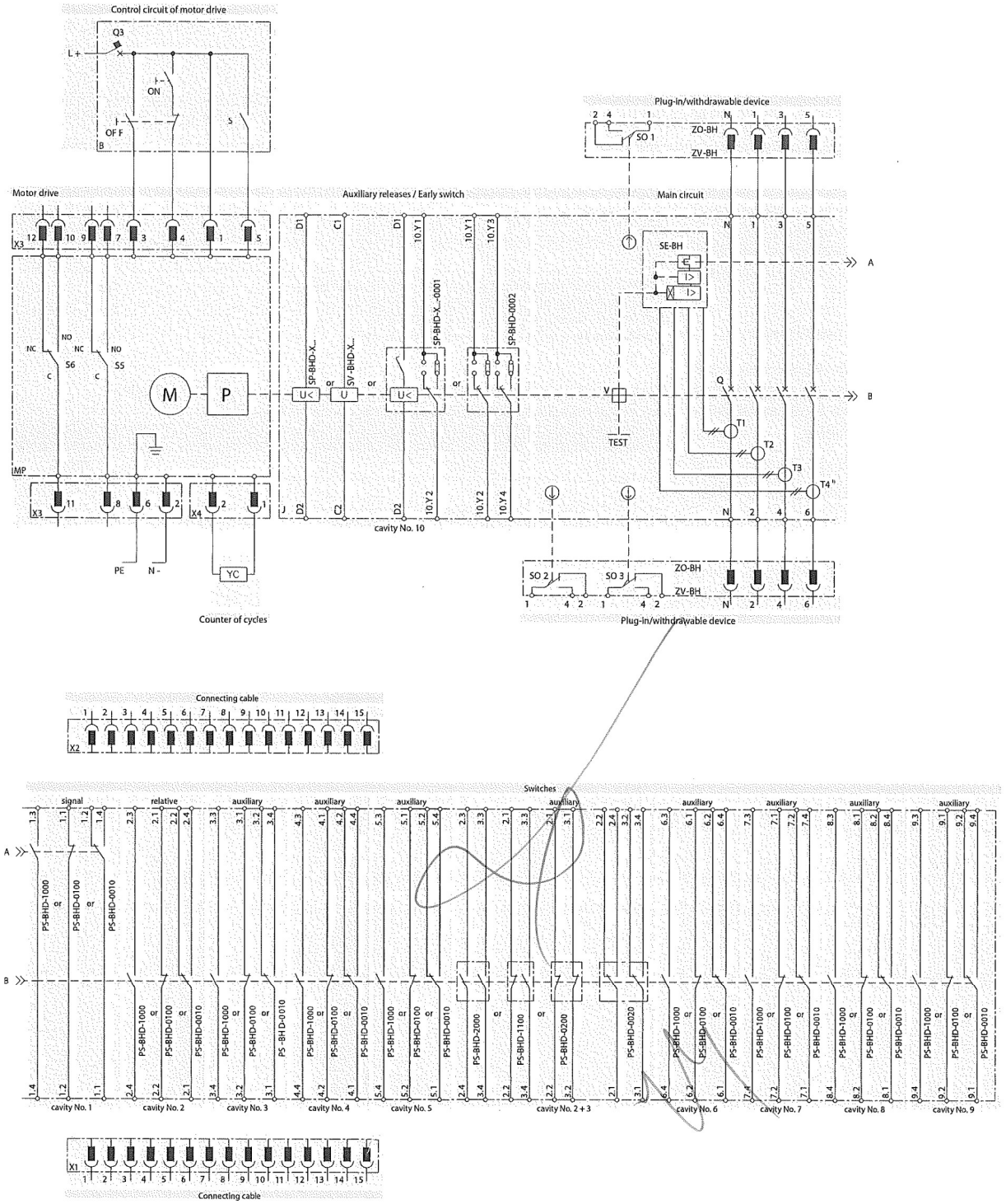
[1)] only for 4-pole design of BH630..406 switching unit

CIRCUIT BREAKERS, SWITCH-DISCONNECTORS

4P

Diagram

Circuit breaker with accessories (4-pole design)



CIRCUIT BREAKERS, SWITCH-DISCONNECTORS

3P 4P

Connecting and installation

Power circuit

■ connected with Cu/Al busbars or cables, and possibly cables with cable lugs

■ connection sets are produced to provide greater connecting options, see page F7

■ generally, conductors from the supply are connected to input terminals 1, 3, 5, (N) and conductors from the load to terminals 2, 4, 6, (N); however, it is possible to reverse the connection (exchanging input and output terminals without limiting rated short-circuit ultimate breaking capacity I_{cu})

■ in case of reversed connection, in the majority of cases, circuit breaker/switch-disconnector must be fitted with OD-BHD-KS02 insulating barriers also on the side of terminals 2, 4, 6, for more detailed information see page F22

■ we recommend painting the connecting busbars

■ input and output conductors/busbars must be mechanically reinforced in order to avoid transferring electrodynamic forces to the circuit breaker/switch-disconnector during short-circuiting

■ the method of connecting the power circuit must observe the deionization space of the circuit breaker see page F23

Auxiliary circuits

■ switches, shunt trips or undervoltage releases are connected using flexible Cu conductors with cross-section 0.5 ÷ 1 mm² directly to terminals on these devices

■ motor drive and auxiliary circuits of the plug-in or withdrawable design are connected using a connector

Recommended min. cross-sections of cables, busbars and flexibars for fixed, plug-in and withdrawable designs

I_R (I_n) [A]	Cables S [mm²]		Busbars W x H [mm]	
	Cu	Al	Cu	Al
100	35	50	20 x 2	25 x 2
125	50	70	25 x 2	25 x 3
160	70	95	25 x 3	32 x 3
200	95	120	25 x 4	25 x 5
250	120	150	25 x 5	32 x 5
315	150	185	32 x 5	32 x 6
400	185	240	32 x 6	32 x 8
500	2x 120	2x 185	32 x 8	32 x 12
630	2x 185 [1]	2x 240 [2]	32 x 12 [3]	32 x 16 [2]

- it is necessary to follow the relevant valid standards when cables are designed
[1] connection of withdrawable and plug-in design by 2x 240 mm² Cu
[2] withdrawable and plug-in design can not be connected by Al
[3] connection of withdrawable and plug-in design by min. 32 x 16 Cu

Maximum circuit breaker/switch-disconnector loads in accordance with ambient temperature

Circuit breaker/switch-disconnector BH630 - connection by cu cable 2x 185 mm² per pole

50 °C	55 °C	60 °C	65 °C	70 °C
630 A	620 A	580 A	540 A	500 A

Mechanical reinforcement of conductors for BH630