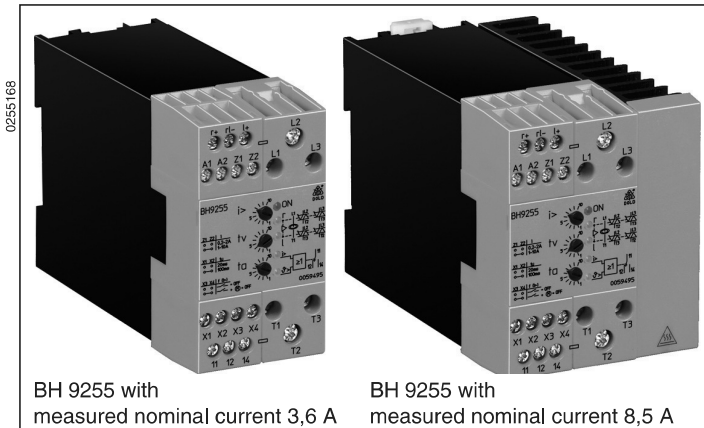
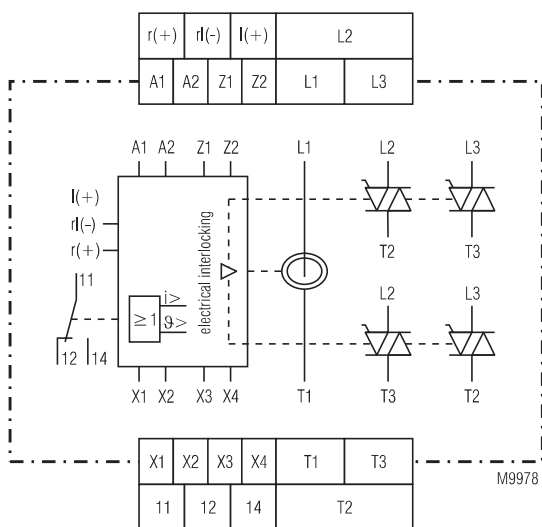


Reversing contactor BH 9255 with current monitor
POWERSWITCH



- According to IEC/EN 60 947-1, IEC/EN 60 947-4-2
- Switching at zero crossing
- To reverse 3 phase squirrel cage motors up to 5,5 kW at 400 V, 7,5 kW at 500 V
- Electrical interlocking of both directions
- Temperature monitoring to protect the power semiconductors
- Measured nominal current up to 11,5 A
- LEDs for status indication
- Galvanic separation between control circuit and power circuit
- With current monitor
- 45 mm; 67,5 mm; 112,5 mm width

Circuit diagram



Approvals and marking

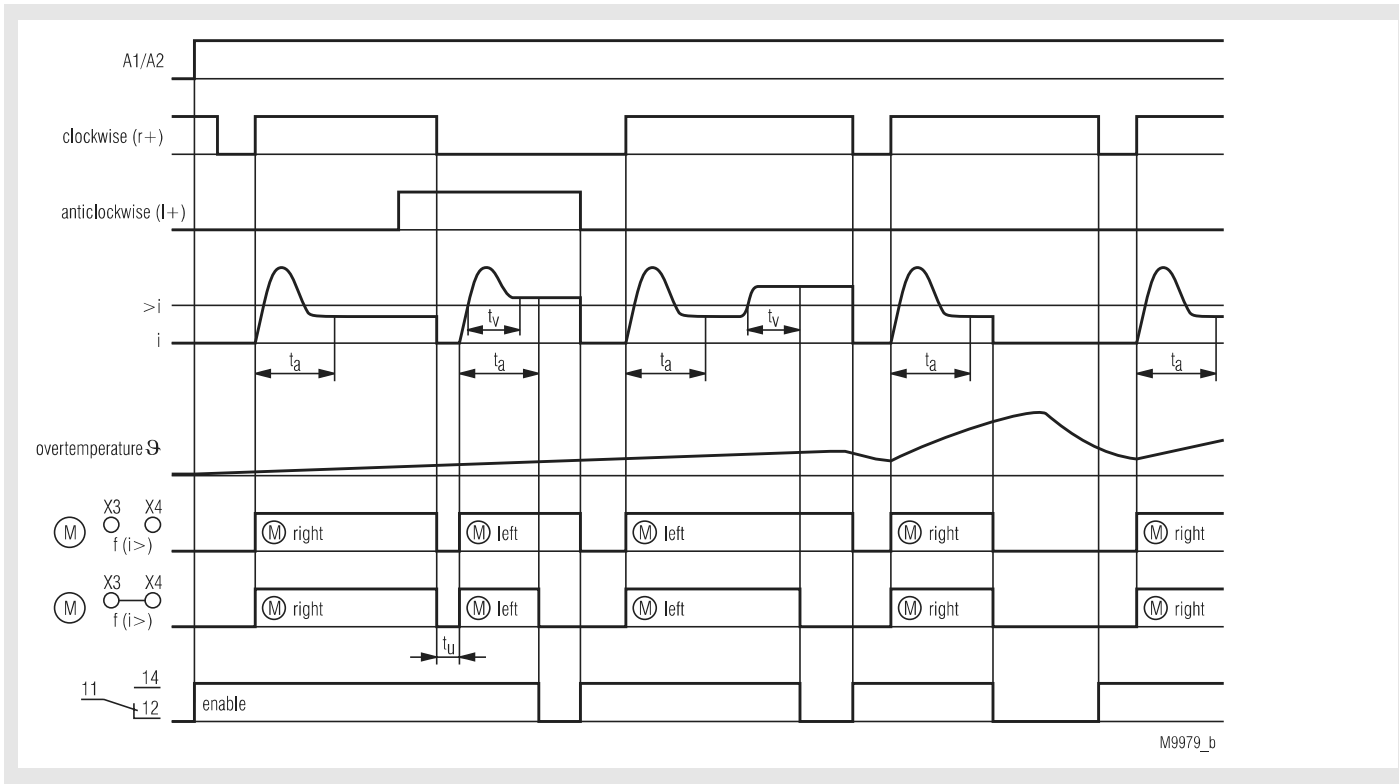


Function

The reversing contactor BH 9255 is used to reverse the direction of 3-phase squirrel cage motors by switching 2 phases (L1 and L2). An electrical interlocking disables the control of both directions at the same time. The reversing contactor has a short on and off delay time. When reversing the phases a switchover delay is guaranteed.

The motor current is monitored in phase L1. If the current rises above the tripping value the device is able to switch off the motor

Function diagram



Function

Without bridge x3-x4 (plc control)

After connecting the power supply to A1/A2 the enabling contact 11-14 closes. The motor is now started with a positive edge of the signal on control input r+/r- (clockwise) or l+/l- (anti-clockwise).

The start up delay runs. If the start up delay is finished and the current is still over the adjusted value the relay contacts switch back to 11-12. This state is stored. It resets by switching off the motor on the control input.

If the motor current rises above the adjusted value during operation the time t_v (switching delay) runs down. If the switching delay is finished and the current is still over the adjusted value the relay contacts switch back to 11-12. This state is stored. It resets by switching off the motor on the control input.

With bridge x3-x4 (preferred for manual control)

Same function as without bridge, but in addition to the relay contact 11-12 also the motor is switched off at the same time.

Temperature sensing

To protect the power semiconductors the unit incorporates temperature monitoring. When overtemperature is detected e.g. because of reversing to often the power semiconductors switch off and an the enabling relay switches back in position 11-12. This state is stored. When the temperature is back to normal the semiconductors can be activated again by switching off and on the control voltage.

Indication

green LED „ON“	on when auxiliary supply connected
yellow LED „t“	flushes if „t _a “ abläuft
yellow LED „l“	on, when right direction active
yellow LED „i“	on, when left direction active
red LED „i>“	on, when overtemperature and flushes during time elapse of „t _v “
red LED „v>“	on, when overtemperature
both red LEDs „i> + v>“	flushes if a system fault is detected. A motor current is measured and while the semiconductors are off. The motor cannot be started.

Technical Data

Input		
Auxiliary voltage U_H:	AC/DC 24 V; AC 110 ... 127 V, AC 230 V, AC 288 V, AC 400 V	
Voltage range:	AC: 0,8 ... 1,1 U _H DC: 0,8 ... 1,25 U _H	
Nominal consumption		
at AC 230 V:	5 VA, 1,1 W	
at DC 24 V:	0,6 W	
Nominal frequency:	50 / 60 Hz	
Control input		
„r+/r-“, „l+/l-“:	DC 24 V preferred for plc control (short response time) AC/DC 24 ... 80 V AC/DC 80 ... 230 V	
Input		
	DC 24 V	AC/DC 24 ... 80 V AC/DC 80 ... 230 V
Start up delay:	≤ 10 ms + max. 1 half-wave	≤ 15 ms + max. 1 half-wave
Release delay:	≤ 10 ms + max. 1 half-wave	≤ 60 ms + max. 1 half-wave
Switchover delay t_v:	programmable via bridge on terminals X1 - X2	
without bridge:	20 ms	
with bridge:	100 ms	
Start up delay t_a:	0,1 ... 5 s, adjustable via potentiometer	
Switching delay t_v:	0,1 ... 5 s, adjustable via potentiometer	
Current measuring range:	2 ranges programmable via bridge on terminals Z1 -Z2	

Technical Data

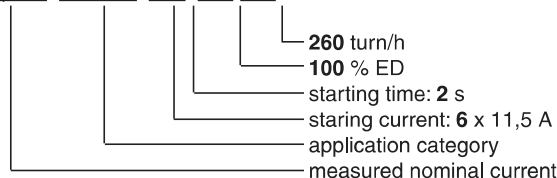
Unit for measured nominal current	3,6 A	8,5 A	
11,5 A			
without bridge Z1 - Z2:	0,2 ... 2 A	0,4 ... 4 A	0,8 ... 8 A
with bridge Z1 - Z2:	1 ... 10 A	2 ... 20 A	4 ... 40 A
	other measuring ranges on request		

Load output

Motor power:	max. 5,5 kW at 400 V, 7,5 kW at 500 V start max. 2 s		
Device without heat sink	Measured thermal current ¹⁾ : 5 A		
Example for operation mode for motor with 1,5 kW / 400 V:	3,6 A: AC 53a: 6-2: 100-140 ²⁾ according to IEC/EN 60 947-4-2		
Device with heat sink	Measured thermal current ¹⁾ : 10 A		
width 67,5 mm	Example for operation mode for motor with 4 kW / 400 V: 8,5 A: AC 53a: 6-2: 100-160 ²⁾ according to IEC/EN 60 947-4-2		
Device with heat sink	Measured thermal current ¹⁾ : 20 A		
width 112,5 mm	Example for operation mode for motor with 5,5 kW / 400 V: 11,5 A: AC 53a: 6-2: 100-260 ²⁾ according to IEC/EN 60 947-4-2		

¹⁾ The measured thermal current is the arithmetic mean of starting and measured nominal current of the motor in a turn cycle.

²⁾ Def.: **11,5 A: AC 53a: 6-2: 100-260**



The max. starting current of 100A for 1s, 70 A for 2s and 60A for 5s should not be passed.

Load voltage range:	AC 24 ... 500 V
Peak inverse voltage:	1 200 Vp
Frequency range:	50 / 60 Hz
Surge current 10 ms:	350 A
Semiconductor fuse:	610 A ² s
Varistor voltage:	AC 510 V

Monitoring output

Contacts		
BH 9255.11:	1 changeover contact	
Thermal current I_{th}:	5 A	
Switching capacity		
at AC 15		
NO:	3 A / AC 230 V	IEC/EN 60 947-5-1
NC:	1 A / AC 230 V	IEC/EN 60 947-5-1
Short circuit strength		
max. fuse rating:	4 A gL	IEC/EN 60 947-5-1

General Data

Operating mode:	Continuous operation	
Temperature range:	- 20 ... + 40 °C	
Clearance and creepage distances		
rated impuls voltage / pollution degree:	4 kV / 2	IEC 60 664-1
EMC		
Surge voltages:	5 kV / 0,5 J	
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	4 kV	IEC/EN 61 000-4-4
Surge voltages between wires for power supply:		
	1 kV	IEC/EN 61 000-4-5
HF wire guided:	10 V	IEC/EN 61 000-4-6
Interference suppression:	Limit value class B	EN 55 011

Technische Daten

Degree of protection:

Housing: IP 40 IEC/EN 60 529
 Terminals: IP 20 IEC/EN 60 529

Housing: Thermoplastic with V0 behaviour according to UL subject 94

Vibration resistance: Amplitude 0,35 mm IEC/EN 60 068-2-6 frequency 10 ... 55 Hz

Climate resistance: 20 / 040 / 04 IEC/EN 60 068-1

Terminal designation: EN 50 005

Wire connection

Load terminals: 1 x 10 mm² solid or
 1 x 6 mm² stranded ferruled
 Control terminals: 2 x 2,5 mm² solid or
 2 x 1,5 mm² stranded ferruled
 DIN 46 228-1/-2/-3/-4

Wire fixing: terminal screws M3,5; box terminals with self-lifting wire protection
 DIN rail IEC/EN 60 715

Mounting:

Weight:
 BH 9255 with 3,6 A: 460 g
 BH 9255 with 8,5 A: 700 g
 BH 9255 with 11,5 A: 1160 g

Dimensions

Width x height x depth:
 45 x 84 x 121 mm
 67,5 x 84 x 121 mm
 112,5 x 84 x 121 mm

Standard type

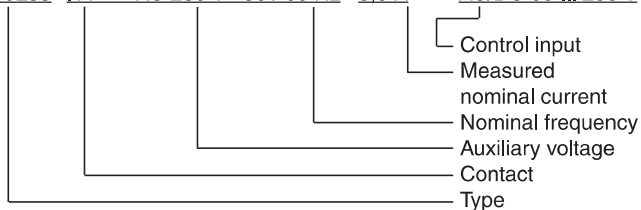
BH 9255.11 AC 230 V 50 / 60 Hz 3,6 A AC/DC 80 ... 230 V

Article number: 0059495

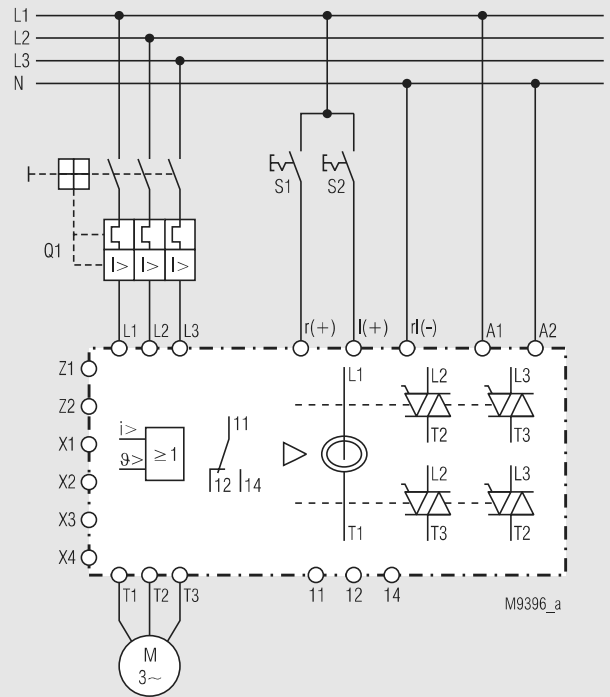
- Output: 1 changeover contact
- Auxiliary voltage U_H : AC 230 V
- Control input: AC/DC 80 ... 230 V
- Width: 45 mm

Ordering example

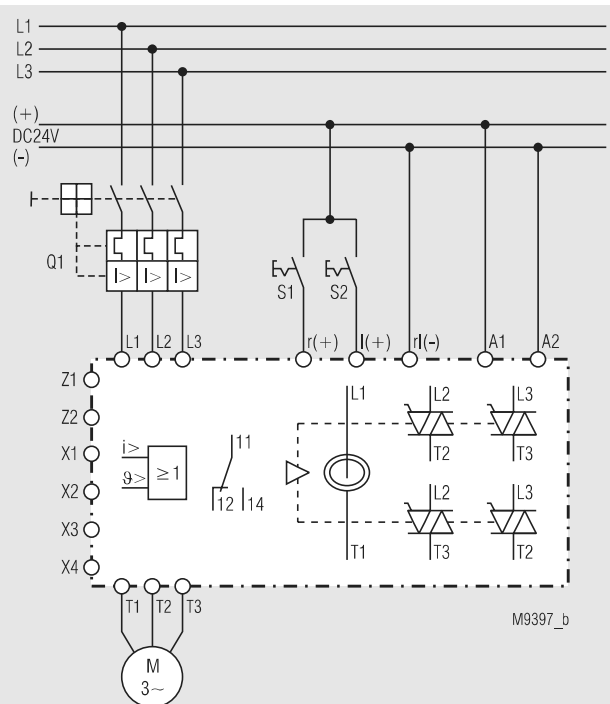
BH 9255 .11 AC 230 V 50 / 60 Hz 3.6 A AC/DC 80 ... 230 V



Application example



BH 9255 with A1/A2 = AC 230 V and control input AC/DC 80 ... 230 V



BH 9255 with A1/A2 = AC/DC 24 V and control input AC/DC 24 V or DC 24 V

