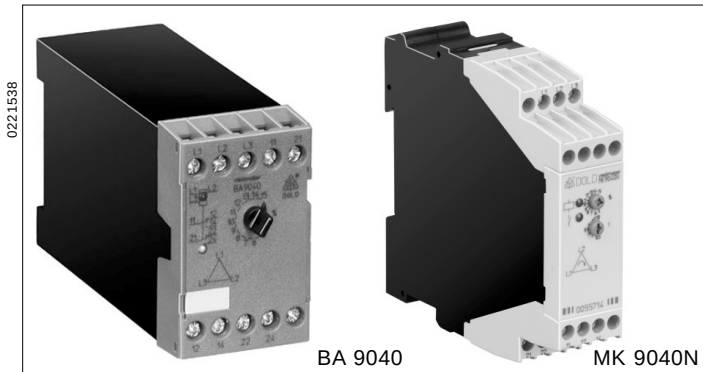
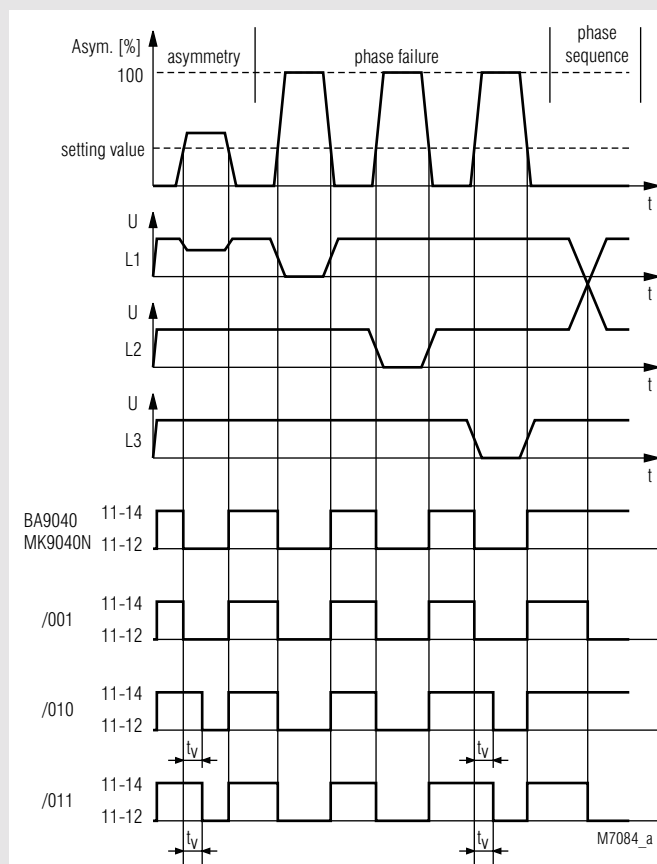


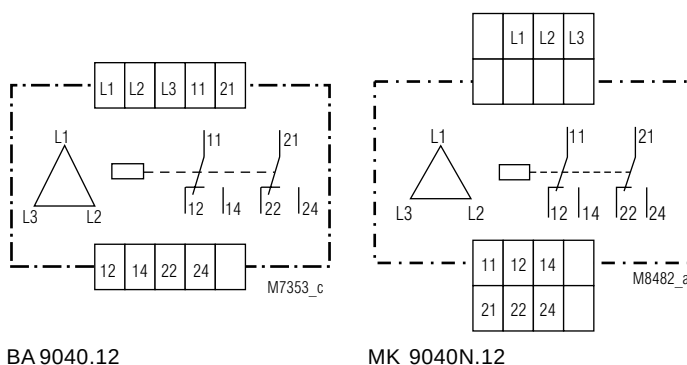


- According to IEC 255, EN 60 255, VDE 0435 part 303
- Recognition of
 - voltage asymmetry
 - phase failure
 - voltage feedback
 - optionally with phase sequence recognition
- Optionally with adjustable response delay
- Insensitive against
 - symmetric harmonics up to K-factor K 20 %
- 2 LED displays for power supply and state of contact
- BA 9040: width 45 mm
- MK 9040N: width 22,5 mm

Function diagram



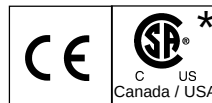
Circuit diagram



BA 9040.12

MK 9040N.12

Approvals and marking



* only for BA 9040 (see variants)

Applications

Monitoring three-phase mains for voltage asymmetry, phase failure or incorrect phase sequence, e.g. in elevators, escalators, crane systems etc.

Indications

upper LED: on when supply voltage connected
lower LED: on when output relay energized

Technical data

Input

Nominal voltage U_N : 3 AC 400 V
Voltage range: 0,8 ... 1,1 U_N
Nominal consumption:
BA 9040: approx. 4,8 VA
MK 9040N: 7 VA
Nominal frequency: 50 / 60 Hz
Frequency range: 45 ... 65 Hz
Temperature influence: < 0,05 % / K
Frequency influence: < 0,02 % / Hz
Resistance of harmonics symmetric: K-factor K 20 %

Setting ranges

Setting range: 5 ... 15 % voltage asymmetry
Repeat accuracy: ≤ 0,5 %
Release ratio: < 4 % U_N
Voltage feedback recognition: up to 100 % - setting value, e.g. when setting value = 5 % asymmetry, 100 % - 5 % = 95 %
Recognition of voltage feedback up to 95 %

Time delay t_v

BA 9040: 0,5 ... 5 s
MK 9040N: 0,5 ... 10 s

Output

Contacts 2 changeover contacts
Response/release time:
BA 9040: ≤ 1 s / ≤ 250 ms
MK 9040N: ≤ 1,5 s / ≤ 250 ms
Thermal current I_{th} : 6 A (see continuous current limit curve)

Technical data		
Switching capacity		
to AC 15		
NO contact:	3 A / AC 230 V	IEC/EN 60 947-5-1
NC contact:	1 A / AC 230 V	IEC/EN 60 947-5-1
Electrical life:		
to AC 15 at 3 A, AC 230 V:		
Permissible switching frequency:	10 ⁵ switching cycles	IEC/EN 60 947-5-1
Short circuit strength max. fuse rating:	6 000 switching cycles / h	
General data	4 A gL	IEC/EN 60 947-5-1
Operating mode:		
Continuous operation		
Temperature range:		
- 20 ... + 60 °C		
Clearance and creepage distances		
overvoltage category /		
contamination level:		
	4 kV / 2	IEC 60 664-1
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation:	10 V/m	IEC/EN 61 000-4-3
Fast transients:	2 kV	IEC/EN 61 000-4-4
Surge voltages between		
wires for power supply:	2 kV	IEC/EN 61 000-4-5
between wire and ground:	4 kV	IEC/EN 61 000-4-5
Interference suppression:	Limit value class B	EN 55 011
Degree of protection:		
Housing: IP 40		
Terminals: IP 20		
Housing:		
Thermoplast with V0 behaviour according to UL subject 94		
Vibration resistance:		
Frequency 10 ... 55 Hz, Amplitude 0,35 mm		
Climate resistance:		
Wire connection:		
20 / 060 / 04 IEC/EN 60 068-1		
2 x 2,5 mm ² solid or 2 x 1,5 mm ² stranded wire with sleeve		
DIN 46 228-1/-2/-3/-4		
Wire fixing:		
BA 9040:		
Flat terminals with self-lifting clamping piece		
IEC/EN 60 999-1		
MK 9040N:		
Box terminal with wire protection		
Mounting:		
DIN rail		
IEC/EN 60 715		
Weight:		
325 g		
Dimensions		
Width x height x depth:		
BA 9040:		
45 x 74 x 133 mm		
MK 9040N:		
22,5 x 90 x 100 mm		

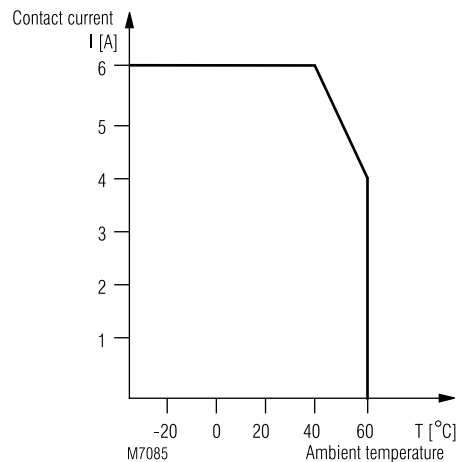
Standard type		
BA 9040.12/001 3 AC 400 V 50/60 Hz		
Article number:	0043764	stock item
- With phase sequence detection - Without operate delay - Output: 2 changeover contacts - Nominal voltage U_N: 3 AC 400 V - Width: 45 mm		
MK 9040N.12/001 3AC 400 V 50/60 Hz		
Article number:	0055712	stock item
- With phase sequence detection - Without operate delay - Output: 2 changeover contacts - Nominal voltage U_N: 3 AC 400 V - Width: 22,5 mm		

Variants		
BA 9040.12/60:		
CSA/UL approval		
BA 9040.12/0 _ 0:		
without phase sequence detection		
BA 9040.12/0 _ 1:		
with phase sequence detection		
BA 9040.12/00 _:		
without time delay		
BA 9040.12/01 _:		
with adjustable time delay		
t _v : 0 ... 5 s		
MK 9040N.12/0 _ 0:		
without phase sequence detection		
MK 9040N.12/0 _ 1:		
with phase sequence detection		
MK 9040N.12/00 _:		
without time delay		
MK 9040N.12/01 _:		
with adjustable time delay		
t _v : 0 ... 10 s		

Ordering example for variants

<u>MK 9040N.12</u>	<u>/0</u>	<u>3 AC 400 V</u>	<u>50 / 60 Hz</u>	
				Nominal frequency
				Nominal voltage
				On request BA 9040:
				3 AC 230 V
				3 AC 440 V
				3 AC 660 V
				MK 9040N:
				3 AC 400 V
				0: without phase
				sequence recognition
				1: with phase
				sequence recognition
				0: without t _v
				1: with t _v
				Contacts
				Type

Characteristics



Continuous current limit curve