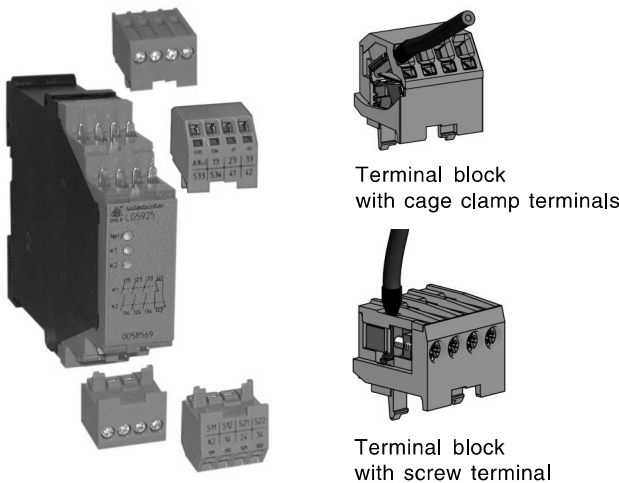


- According to IEC 255, EN 60 255, VDE 0435 part 303
- Recognition of
  - voltage asymmetry
  - phase failure
  - voltage feedback
  - optionally with phase sequence recognition
- Optionally with adjustable response delay
- 2 LED displays for power supply and state of contact
- Wire connection: also 2 x 1.5 mm<sup>2</sup> stranded ferruled, or 2 x 2.5 mm<sup>2</sup> solid DIN 46 228-1/-2/-3/-4
- As option with pluggable terminal blocks for easy exchange of devices
  - with screw terminals
  - or with cage clamp terminals
- BA 9040: width 45 mm
- MK 9040N: width 22,5 mm

### Options with pluggable terminal blocks



### 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

#### 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 %

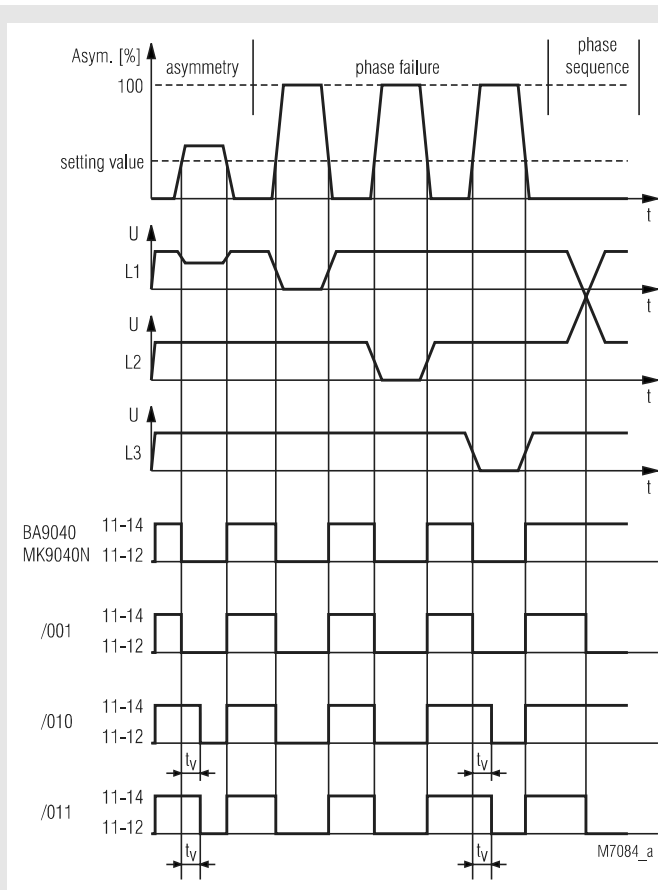
#### Time delay $t_V$

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

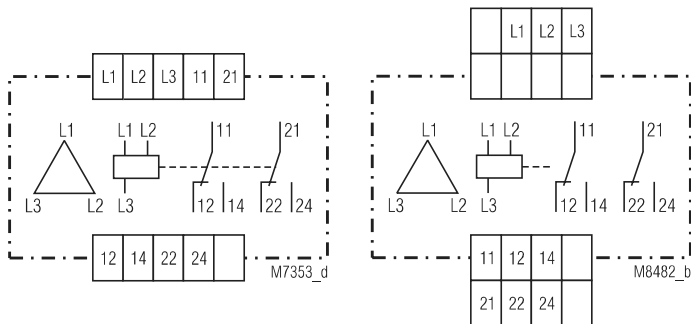
#### Output

**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)

### Function diagram



## Circuit diagram



BA 9040.12

MK 9040N.12

## 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: 10<sup>5</sup> switching cycles IEC/EN 60 947-5-1

### Permissible switching frequency:

6 000 switching cycles / h

### Short circuit strength

max. fuse rating: 4 A gL IEC/EN 60 947-5-1

### General data

### 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 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

**Housing:** Thermoplast with V0 behaviour

according to UL subject 94

**Vibration resistance:** Frequency 10 ... 55 Hz,

Amplitude 0,35 mm IEC/EN 60 068-2-6

**Climate resistance:** 20 / 060 / 04 IEC/EN 60 068-1

**Wire connection:** 2 x 2,5 mm<sup>2</sup> solid or

2 x 1,5 mm<sup>2</sup> 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<sub>N</sub>: 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<sub>N</sub>: 3 AC 400 V
- Width: 22,5 mm

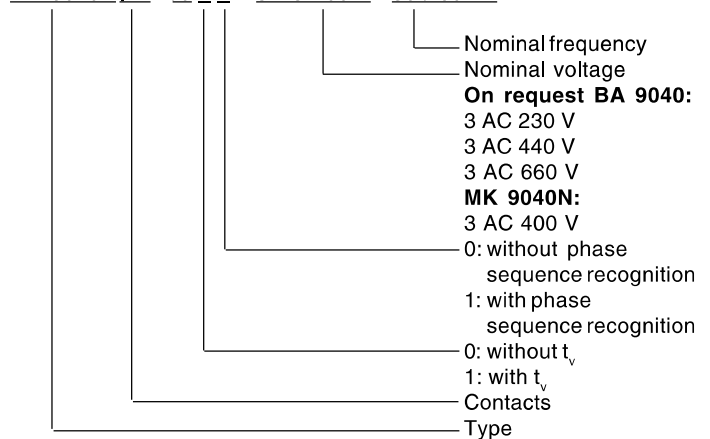
## Variants

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\_0: without time delay  
 BA 9040.12/01\_0: with adjustable time delay  
 t<sub>v</sub>: 0 ... 5 s

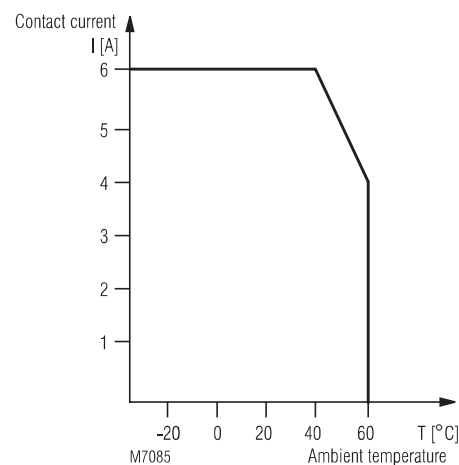
MK 9040N.12/0\_0: without phase sequence detection  
 MK 9040N.12/0\_1: with phase sequence detection  
 MK 9040N.12/00\_0: without time delay  
 MK 9040N.12/01\_0: with adjustable time delay  
 t<sub>v</sub>: 0 ... 10 s

## Ordering example for variants

MK 9040N.12 /0\_0\_ 3 AC 400 V 50 / 60 Hz



## Characteristics



Continuous current limit curve