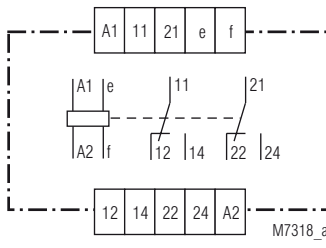


Now available with
new features

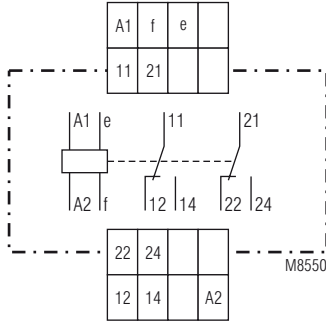


- According to IEC/EN 60 255, DIN VDE 0435-303
- to monitor DC and AC voltage
- Measuring ranges from 15 mV to 500 V
- High overload possible
- **Input frequency up to 5 kHz**
- with time delay
- LED indicators for operation and contact position
- BA 9054 optionally with galvanic separated DC auxiliary supply
- MK 9054 optionally with remote potentiometer for adjustment of response value
- **BA 9054 as option with start-up delay**
- **BA 9054 as option with manual reset**
- Width MK 9054N: 22.5 mm
- Width BA 9054: 45 mm

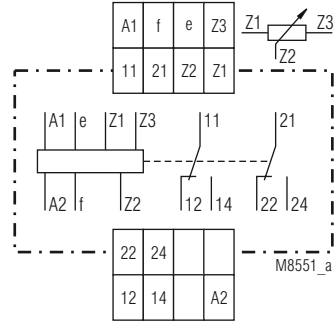
Circuit diagrams



BA 9054

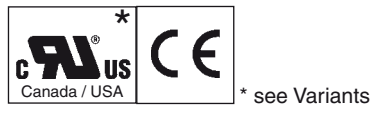


MK 9054N



MK 9054N/1

Approvals and marking



Applications

Monitoring voltage in AC or DC systems

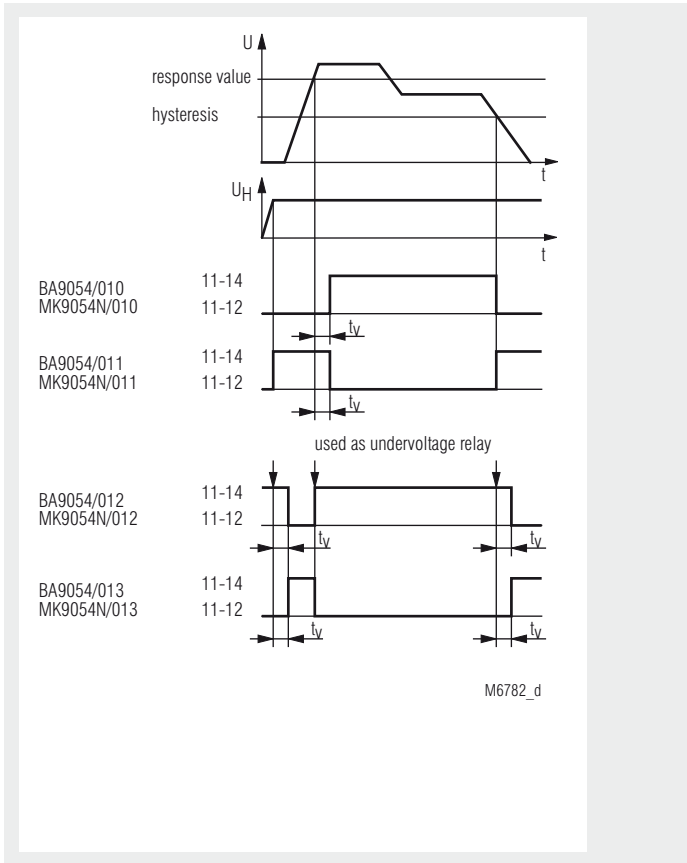
Function

The relays measure the arithmetic mean value of the rectified measuring voltage. The AC units are adjusted to the r.m.s value. They have settings for response value and hysteresis. The units work as overvoltage relays but can also be used for undervoltage detection. The hysteresis is dependent on the response value.

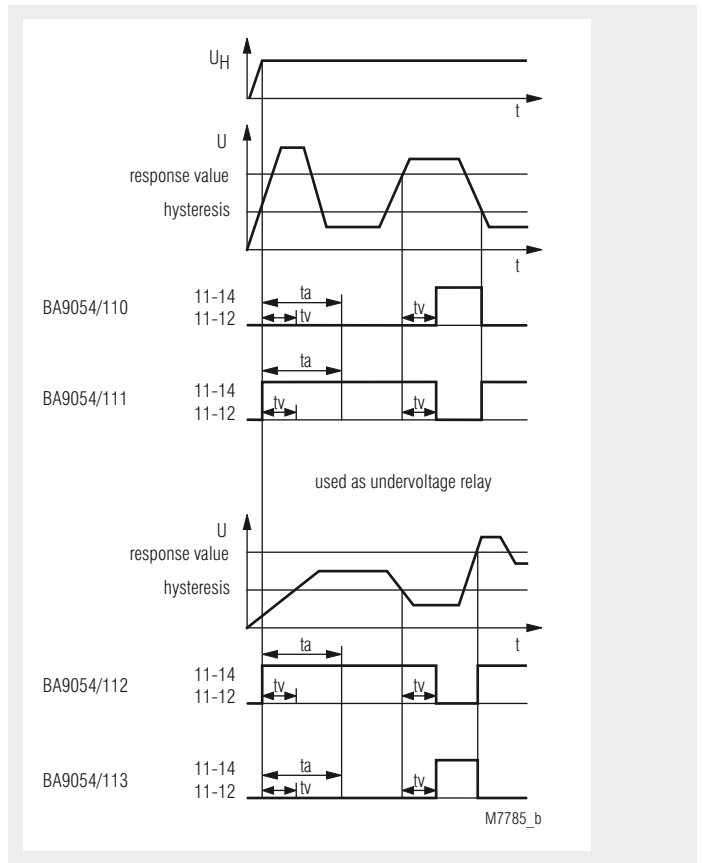
Indicators

- green upper LED: on, when auxiliary supply connected
- yellow lower LED: on, when output relay activated

Function diagram without start-up delay



Function diagram with start-up delay



On model BA 9054/6__ with manual reset the contacts remain in the fault state after detecting a fault or after t_{lv} has elapsed. The contacts are

reset by disconnecting the supply voltage.

Technical Data

Input

BA 9054 with 1 Measuring range for AC and DC			
Measuring range ¹⁾		internal resistance	max. permissible continuous voltage
AC	DC		
15 ... 150 mV	13.5 ... 135 mV	40 kΩ	100 V
50 ... 500 mV	45 ... 450 mV	270 kΩ	250 V
0.5 ... 5 V	0.45 ... 4.5 V	500 kΩ	300 V
1 ... 10 V	0.9 ... 9.0 V	1 MΩ	300 V
5 ... 50 V	4.5 ... 45 V	2 MΩ	500 V ²⁾
25 ... 250 V	22.5 ... 225 V	2 MΩ	500 V ²⁾
50 ... 500 V	45 ... 450 V	2 MΩ	500 V ²⁾
70 ... 700 V ³⁾	63 ... 630 V	3 MΩ	700 V ⁴⁾
100 ... 1000 V ³⁾	90 ... 900 V	3 MΩ	1000 V ⁴⁾

¹⁾ DC or AC voltage 50 ... 5000 Hz
(Other frequency ranges of 10 ... 5000 Hz, e. g. 16 ²/₃ Hz, on request)

²⁾ at Overvoltage category II: 600 V

³⁾ only with BA 9054/ _20; / _21; / _22; / _23; / _24
(model: 1 changeover contact)

⁴⁾ at overvoltage category II: 1000 V

MK 9054 with 1 Measuring range for AC and DC			
Measuring range ¹⁾		internal resistance	max. permissible continuous voltage
AC	DC		
15 ... 150 mV	13.5 ... 135 mV	40 kΩ	100 V
50 ... 500 mV	45 ... 450 mV	270 kΩ	250 V
0.5 ... 5 V	0.45 ... 4.5 V	500 kΩ	300 V
1 ... 10 V	0.9 ... 9.0 V	1 MΩ	300 V
5 ... 50 V	4.5 ... 45 V	2 MΩ	500 V ²⁾
25 ... 250 V	22.5 ... 225 V	2 MΩ	500 V ²⁾
50 ... 500 V	45 ... 450 V	2 MΩ	500 V ²⁾

¹⁾ DC or AC voltage 50 ... 60 Hz
(to be ordered)

²⁾ not for 400 / 690 V-(systems)

Please note:

To avoid measuring mistakes, on units with mV input the input must always be terminated. In addition screened wires should be used.

Technical Data	
Measuring principle:	arithmetic mean value
Adjustment:	The AC-devices can also monitor DC-voltage. The scale offset in this case is: ($\bar{U} = 0.90 U_{eff}$)
Temperature influence:	$< 0.05 \% / K$
Setting ranges	
Setting:	
Response value:	infinite variable $0.1 U_N \dots 1 U_N$ relative scale
Hysteresis:	infinite variable $0.5 \dots 0.98$ of setting value
Accuracy:	$\leq \pm 0.5 \%$
Time delay t_d:	infinite variable at logarithmic scale from 0 - 20 s, 0 - 30 s, 0 - 60 s, 0 - 100 s Setting 0 s = without time delay
Start-up delay	
BA 9054/1_ _:	1 ... 20 s; 1 ... 60 s; 1 ... 100 s, adjustable on logarithmic scale. t_a is started by connecting the auxiliary supply. During start-up time the contact is in "good" state.
Auxiliary circuit	
Auxiliary voltage U_H (A1, A2)	
BA 9054:	AC 24, 110, 127, 230, 400 V AC/DC 24 ... 80 V, AC/DC 80 ... 230 V, DC 12 V
MK 9054N:	AC 24, 42, 110, 127, 230 V, DC 12 V
Voltage range:	0.8 ... $1.1 U_H$
DC (battery operated):	0.8 ... $1.3 U_H$
Nominal consumption:	
BA 9054:	approx. 2.5 VA
MK 9054N:	approx. 2.0 VA
Nominal frequency:	50 / 60 Hz
Frequency range:	$\pm 5 \%$
Output	
Contacts	
BA 9054:	2 changeover contacts
MK 9054N:	2 changeover contacts
Thermal current I_{th}:	2 x 5 A or 1 x 8 A
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	IEC/EN 60 947-5-1
BA 9054	
to AC 15 at 3 A, AC 230 V:	5×10^5 switching cycles
MK 9054N:	
to AC 15 at 3 A, AC 230 V:	10^5 switching cycles
Short-circuit strength	
max. fuse rating:	6 AgL IEC/EN 60 947-5-1
Mechanical life	
BA 9054:	50×10^6 switching cycles
MK 9054N:	30×10^6 switching cycles

Technical Data	
General Data	
Operating mode:	Continuous operation
Temperature range:	
BA 9054:	- 40 ... + 60°C
MK 9054N:	- 20 ... + 60°C
Clearance and creepage distances	
BA 9054:	6 kV / 2 IEC 60 664-1
MK 9054N:	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:	4 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:	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 / 060 / 04 IEC/EN 60 068-1
Terminal designation:	EN 50 005
Wire connection	
BA 9054:	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
MK 9054N:	1 x 4 mm ² solid or 1 x 2.5 mm ² stranded wire with sleeve or 2 x 1.5 mm ² stranded wire with sleeve DIN 46 228-1/-2/-3/-4
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1
Mounting:	DIN rail IEC/EN 60 715
Weight:	
BA 9054:	AC-device: 280 g AC/DC-device: 200 g
MK 9054N:	175 g
Dimensions	
Width x height x depth	
BA 9054:	45 x 75 x 120 mm
MK 9054N:	22.5 x 90 x 97 mm

