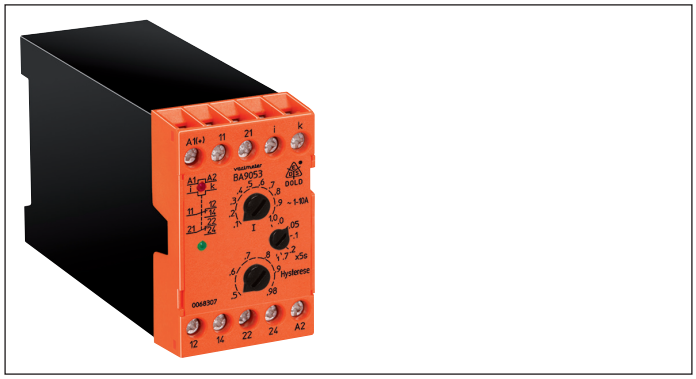
VARIMETER
Current Relay
BA 9053/040, BA 9053/041, BA 9053/042

Translation of the original instructions

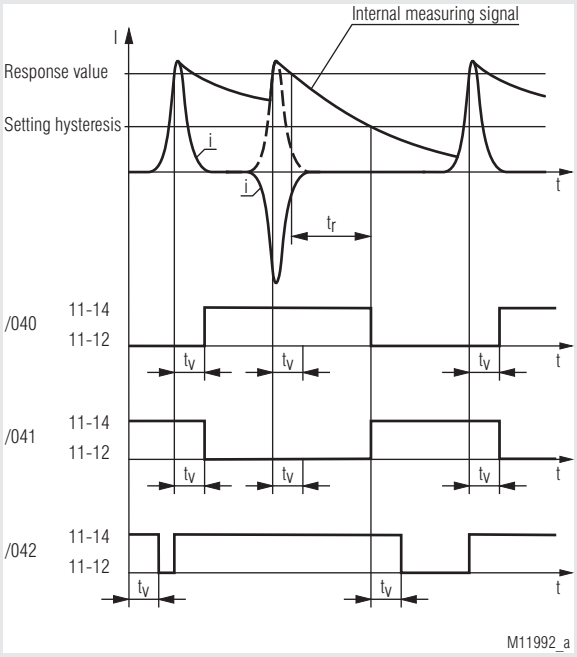
DOLD



Your Advantages
- Preventive maintenance
- For better productivity
- Quicker fault locating
- Precise and reliable

Features
- According to IEC/EN 60255-1, IEC/EN 60947-1
- To monitor AC
- Measuring range from 1 ... 10 A (others on request)
- High overload possible
- Galvanic separation between auxiliary circuit - measuring ciruit
- Auxiliary supply AC/DC
- With time delay, up to max. 100 sec
- LED indicators for operation and contact position
- Width 45 mm

Function Diagram



Approvals and Markings

CE

Applications

- Monitoring of short pulse currents
- For industrial and railway applications

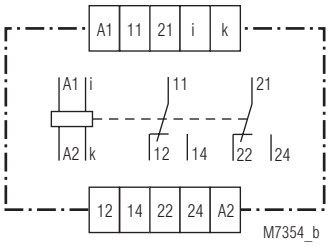
Function

The current relay measures the peak of the rectified measuring current. The AC units are adjusted to the r.m.s value. They have settings for response value and hysteresis. The release time t_r depends on the hysteresis setting (see function diagram)
The response delay t_v is active after exceeding the setting value.

Indicators

Green LED:	On, when auxiliary supply connected
Yellow LED:	On, when output relay is acitvated

Circuit Diagrams



Connection Terminals

Terminal designation	Signal description
A1, A2	Auxiliary voltage
i, k	Current measuring input
11, 12, 14	1st changeover contact
21, 22, 24	2nd changeover contact

Technical Data

Input (i, k)

Measuring range	RM (internal measuring resistor (shunt))	Max. perm. cont. current	Max. permiss. current 3 s On, 100 s Off
AC		Device mounted without distance	
1 ... 10 A	3 mΩ	20 A	40 A

Measuring principle: Peak value measurement
Adjustment: The AC-devices can also be calibrated for true rms measurement at 50 Hz.
Temperature influence: < 0.05 % / K

Setting Ranges

Setting
Response value: Infinite variable 0.1 I_N ... 1 I_N relative scale
Hysteresis at AC: Infinite variable 0.5 ... 0.98 of setting value
Accuracy:
Response value at
Potentiometer right stop (max): 0 .... + 8 %
Potentiometer left stop (min): - 10 .... + 8%
Repeat accuracy: ≤ ± 0.5 %
Response time,
Impulse detection: ≤ 10 ms
Contact pick-up delay: Typ. 12 ms
Time delay t_v: Infinite variable at logarythmic scale from 0 ... 5 s; 0 ... 20 s
setting 0 s = without time delay
Release delay t_r: Depending on hysteresis setting
Hysteresis potentiom. 0.98: Approx. 1 s
Hysteresis potentiom. 0.5: Approx. 15 s

Auxiliary Circuit

Auxiliary voltage U_H (A1, A2)

Nominal voltage	Voltage range	Frequency range
AC/DC 24 ... 80 V	AC 18 ... 100 V	45 … 400 Hz; DC 48 % W
	DC 18 ... 130 V	W ≤ 5 %
AC/DC 80 ... 230 V	AC 40 ... 265 V	45 … 400 Hz; DC 48 % W
	DC 40 ... 300 V	W ≤ 5 %

Nominal consumption: 4 VA; 1.5 W at AC 230 V Rel. energized
1 W at DC 80 V Rel. energized

Output

Contacts: 2 changeover contacts
Thermal current I_{th}: 2 x 5 A
Switching capacity
to AC 15:
NO contact: 2 A / AC 230 V IEC/EN 60947-5-1
NC contact: 1 A / AC 230 V IEC/EN 60947-5-1
to DC 13: 1 A / DC 24 V IEC/EN 60947-5-1
Electrical life
to AC 15 at 3 A, AC 230 V: 5 x 10^5 switch. cycl. IEC/EN 60947-5-1
Short-circuit strength
max. fuse rating: 6 A gG / gL IEC/EN 60947-5-1
Mechanical life: 50 x 10^6 switching cycles

Technical Data

General Data

Operating mode: Continuous operation
Temperature range
Operation:
≤ 10 A: - 40 ... + 60 °C
≥ 15 A: - 40 ... + 50 °C
(higher temperature with limitations on request)
Storage: - 40 ... + 70 °C
Altitude: ≤ 2000 m
Clearance and creepage distances
Rated impulse voltage / pollution degree
Measuring range ≤ 10 A: 6 kV / 2 IEC 60664-1
Measuring range ≥ 15 A: 4 kV / 2 IEC 60664-1
EMC
Electrostatic discharge: 8 kV (air) IEC/EN 61000-4-2
HF irradiation
80 MHz ... 1 GHz: 20 V/m IEC/EN 61000-4-3
1 GHz ... 2.7 GHz: 10 V/m IEC/EN 61000-4-3
Fast transients: 4 kV IEC/EN 61000-4-4
Surge voltages between
wires for power supply: 2 kV IEC/EN 61000-4-5
between wire and ground: 4 kV IEC/EN 61000-4-5
HF wire guided: 10 V IEC/EN 61000-4-6
Interference suppression: Limit value class B EN 55011
Degree of protection
Housing: IP 40 IEC/EN 60529
Terminals: IP 20 IEC/EN 60529
Housing: Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance: Amplitude 0.35 mm IEC/EN 60068-2-6
frequency 10 ... 55 Hz
Climate resistance
≤ 10 A: 40 / 060 / 04 IEC/EN 60068-1
≥ 15 A: 40 / 050 / 04 IEC/EN 60068-1
Terminal designation: EN 50 005
Wire connection: 2 x 2.5 mm² solid or
2 x 1.5 mm² stranded wire with sleeve
Insulation of wires or sleeve length: 8 mm
Wire fixing: Plus-minus terminal screws M3.5 with self-lifting clamping piece IEC/EN 60999-1
Fixing torque: 0.8 Nm
Mounting: DIN-rail IEC/EN 60715
Weight
AC-device: 280 g
AC/DC-device: 200 g

Dimensions

Width x height x depth: 45 x 75 x 120 mm

Classification to DIN EN 50155

Vibration and shock resistance:	Category 1, Class B	IEC/EN 61373
Ambient temperature:	OT1, OT2 compliant OT3 and OT4 with operational limitations	
Protective coating of the PCB:	No	

Standard Types

BA 9053/040 AC 1 ... 10 A AC/DC 24 ... 80 V 0 ... 5 s
Article number: 0068307
- For overcurrent monitoring
- Energized on trip
- Measuring range: AC 1 ... 10 A
- Auxiliary voltage U_H: AC/DC 24 ... 80 V
- Time delay by I_{an}: 0 ... 5 s
- Width: 45 mm

- BA 9053/041 AC 1 ... 10 A AC/DC 80 ... 230 V 0 ... 5 s
- Article number: 0069297
- For overcurrent monitoring
- De-energized on trip
- Measuring range: AC 1 ... 10 A
- Auxiliary voltage U_H: AC/DC 80 ... 230 V
- Time delay by I_{an}: 0 ... 5 s
- Width: 45 mm

BA 9053/042 AC 1 ... 10 A AC/DC 80 ... 230 V 0 ... 5 s
Article number: 0069248
- For undercurrent monitoring
- De-energized on trip
- Measuring range: AC 1 ... 10 A
- Auxiliary voltage U_H: AC/DC 80 ... 230 V
- Time delay by I_{an}: 0 ... 5 s
- Width: 45 mm