



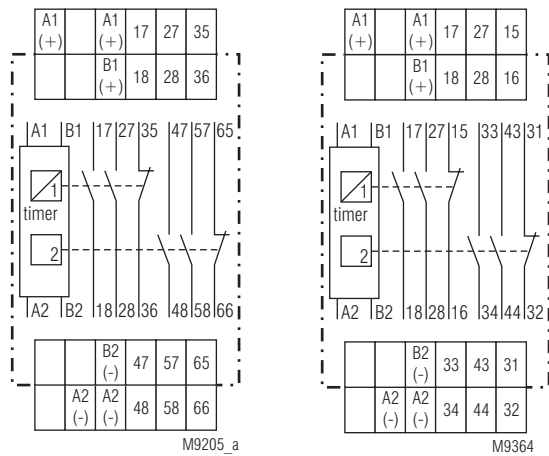
Your Advantages

- Higher flexibility (8 function in one unit)
- To switch high DC-loads (DC 110 V) with mechanical forcibly guided contacts according to EN 50205

Features

- According to IEC/EN 61 812-1
- 8 functions settable via rotational switch:
 - Delay on energisation (AV)
 - Fleeting on make (EW)
 - Delay pulse (IE)
 - Flasher, start with pulse (BI)
 - Delay on de-energisation (RV)
 - Pulse forming function (IF)
 - Fleeting on break (AW)
 - Delay on energisation and de-energisation (AV / RV)
- 8 time ranges from 0.05 s ... 300 h selectable via rotational switches
- Voltage range AC/DC 24 ... 230 V
- High DC switching capacity
- With time interruption / time adding input
- Adjustment aid for quick setting of long time values
- Contacts:
 - 1 NC + 2 NO delayed
 - 1 NC + 2 NO delayed or instantaneous
- LED indicators for operation, contact position and time delay
- DIN rail or screw mounting
- 52.5 mm width

Circuit Diagrams



SN 7920

SN 7920/001

Approvals and Markings



Applications

Time dependent controls for industrial and railway applications.

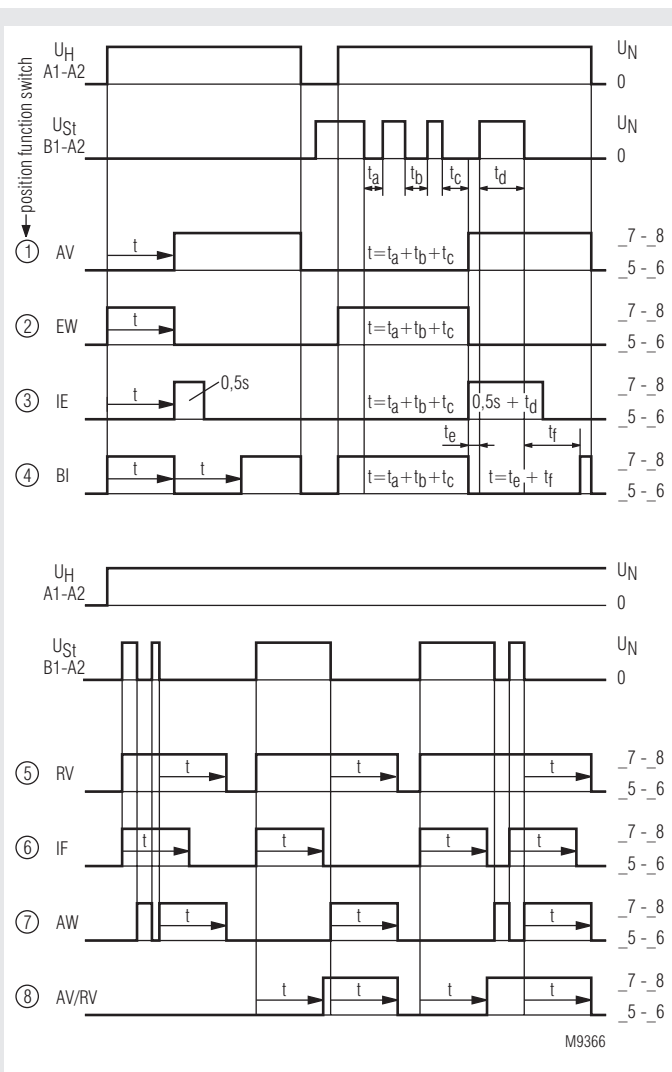
Connection Terminals

Terminal designation	Signal designation
A1(+)/A2(-)	Auxiliary voltage
B1(+)/B2(-)	Control input, dependent of 3 position rotational switch
17, 18 ; 27, 28	Forcibly guided NO contacts Relay 1
35, 36	Forcibly guided NC, Relay 1
47, 48 ; 57, 58	Forcibly guided NO contacts Relay 2
65, 66	Forcibly guided NC, Relay 2

Indicators

green LED:	on, when voltage connected
yellow LED "R/t":	shows status of output relay and time delay:
- Continuously off:	output relay not active;
	no time delay
- Continuously on:	output relay active;
	no time delay
- Flashing (short on, long off)	output relay not active; time delay
- Flashing (long on, short off)	output relay active; time delay
yellow LED (right) 1:	shows status of delayed relay
yellow LED (right) 2:	shows status of delayed/instantaneous relay

Function Diagram for delayed output relay (relay 1)



① ... ⑧ = position of function switch

- | | |
|----------------------------------|---|
| ① AV = Delay on energisation | ⑤ RV = Delay on de-energisation |
| ② EW = Fleeting on make | ⑥ IF = Pulse forming function |
| ③ IE = Delayed pulse | ⑦ AW = Fleeting on break |
| ④ BI = Flasher, start with pulse | ⑧ AV/RV = Delay on energisation and de-energisation |

Function of Relay 2

The function of relay 2 can be altered with the 3position rotational switch:
 Timer: relay 2 has function of relay 1
 A1/A2: relay 2 functions as instantaneous relay controlled by A1/A2
 B1/B2: relay 2 functions as instantaneous relay controlled by B1/B2

Notes

Adjustment assistance

The flashing period of the yellow LED is $1 s \pm 4 \%$ and can be used to adjust the time. Especially on the lower end of scale and for long times it is suitable as the multiplication factors between the different time ranges are exact without tolerance.

Example:

The required time is 40 min. It has to be adjusted within range 3 ... 300 min. The time check takes too long as several timing cycles would be necessary for a precise value. For faster adjustment the setting is made to 0.03 ... 3 min. On this range the potentiometer should be set to 0.4 min (= 24 sec.). With the right potentiometer setting the LED must show 24 flashing cycles. After that the time range is switched over to 3 ... 300 min. and the setting is complete.

Time interruption / time adding

With the functions AV, EW, IE and BI the time delay can be interrupted by controlling input B1 (+) with control voltage. Removing the control signal will continue the timing cycle (time addition).

Control input B1(+) / B2(-) (galvanic separated)

The functions RV, IF, AW, AV / RV have to be controlled via control input B1(+)/B2(-). With external link A2(-) / B2(-) input B1(+) can be operated with positive voltage against A1(+) or with external link A1(+) / B1(+) input B2(-) can be operated with negative voltage against A2(-).

If with function IF the inputs A1 and B1 are controlled simultaneously, a pulse with the adjusted length is started.

Technical Data

Time circuit

Time ranges:	8 time ranges in one unit, settable via rotational switch
	0.05 ... 1 s 0.3 ... 30 min
	0.06 ... 6 s 3 ... 300 min
	0.3 ... 30 s 0.3 ... 30 h
	0.03 ... 3 min 3 ... 300 h

Time setting t: continuous, 1:100 on relative scale

Recovery time:

at DC 24 V:	approx. 15 ms
at DC 110 V:	approx. 50 ms
at AC 110 V:	approx. 80 ms
Repeat accuracy:	$\pm 0.5 \%$ of selected end of scale value + 20 ms

Voltage and

temperature influence: < 1 % with the complete operating range

Input

Auxiliary voltage	
Nominal voltage U_N:	AC/DC 24 ... 230 V
Voltage range:	0.7 ... 1.1 U_N
Frequency at AC voltage:	45 ... 400 Hz
Control input B1 / B1:	galvanic separated
Voltage range:	AC/DC 10 ... 270 V
Control current B1(+) / B1(-):	1 mA
Reverse polarity protection:	1 kV
Min. on/off time of control input B1(+) / B1(-):	
AC 50 Hz:	approx. 15 ms / approx. 30 ms
DC:	approx. 5 ms / approx. 30 ms
Release voltage (B1/B2)	
AC 50 Hz:	approx. 6 V
DC:	approx. 9 V
Nominal power consumption	
AC 24 V:	approx. 2.5 VA
AC 110 V:	approx. 6 VA
DC 24 V:	approx. 3 W
DC 110 V:	approx. 3 W
Nominal frequency:	45 ... 400 Hz

Technical Data

Output

Contacts: 2 NO contacts, 1 NC contact delayed
2 NO contacts, 1 NC contact delayed
or as instantaneous contact
programmable
AgNi

Contact material: AgNi

Measured nominal voltage: AC 250 V

Thermal current I_{th} : max. 6 A
(see quadratic total current limit curve)

Switching capacity to AC 15

NO contacts: 3 A / AC 230 V

NC contacts: 2 A / AC 230 V

nach DC 13: 1 A / DC 110 V IEC/EN 60 947-5-1
6 A / DC 24 V IEC/EN 60 947-5-1

Electrical life

NO contacts

at 3 A, AC 230 V: 1 x 10⁵ switching cycles IEC/EN 60 947-5-1

at 2 A, AC 230 V: 2.5 x 10⁵ switch.cycl. IEC/EN 60 947-5-1

at 1 A, AC 230 V: 1 x 10⁶ switching cycles IEC/EN 60 947-5-1

NC contacts

at 2 A, AC 230 V: 50000 switching cycles IEC/EN 60 947-5-1

at 0.5 A, AC 230 V: 1 x 10⁶ switching cycles IEC/EN 60 947-5-1

at 5 A, AC 230 V resistive load
cos φ = 1: 2 x 10⁵ switching cycles

to DC 1 at 2 A, DC 110 V: 5 x 10⁵ switching cycles IEC/EN 60 947-5-1

to DC 13 at 0.5 A, DC 110 V: 1 x 10⁶ switching cycles IEC/EN 60 947-5-1

Short circuit strength

max. fuse rating: 6 A gL; machine C8 IEC/EN 60 947-5-1

Mechanical life: ≥ 30 x 10⁶ switching cycles

General Data

Operating: Continuous

Temperature range

Operation: - 40 ... + 75 °C

Storage: - 40 ... + 75 °C

Altitude:

< 2.000 m

Clearance and creepage distances

rated impulse voltage /
pollution degree:

Contacts, auxiliary voltage,
control input B1/B2: 4 kV / 2 (basis insulation) IEC 60 664-1
III

Overvoltage category:
Insulation test voltage,
type test:

2.8 kV; 1 min

EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

HF-irradiation

80 MHz ... 1 GHz: 20 V / m IEC/EN 61 000-4-3

1 GHz ... 2.7 GHz: 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

HF-wire guided: 10 V IEC/EN 61 000-4-6

Interference suppression: Limit value class B EN 55011

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,
frequency 10 ... 55 Hz, IEC/EN 60 068-2-6

Climate resistance:

40 / 060 / 04 IEC/EN 60 068-1

Terminal designation:

EN 50 005

Wire connection:

2 x 2.5 mm² solid or
2 x 1.5 mm² stranded wire with
sleeve DIN 46 228/-1/-2/-3/-4

Insulation of wires

or sleeve length: 10 mm

Wire fixing:

Flat terminal with self-lifting
clamping piece IEC/EN 60 999-1

Fixing torque:

0,8 Nm

Mounting:

DIN rail mounting (IEC/EN60715) or
screw mounting M4, 90 mm hole pattern,
with additional clip available as accessory

Weight:

260 g

Dimensions

Width x height x depth: 52.5 x 90 x 98 mm

Classification to DIN EN 50155

Vibration and

shock resistance: Category 1, Class B IEC/EN 61 373

Ambient temperature: T1, T2, T3, TX compliant

Protective coating of the PCB: No

Standard Type

SN 7920 AC/DC 24 ... 230 V

Article number: 0058785

- Output: 2 x 2 NO, 2 NC contacts
- Nominal voltage U_N : AC/DC 24 ... 230 V
- Time ranges: from 0.05 s ... 300 h
- Width: 52.5 mm

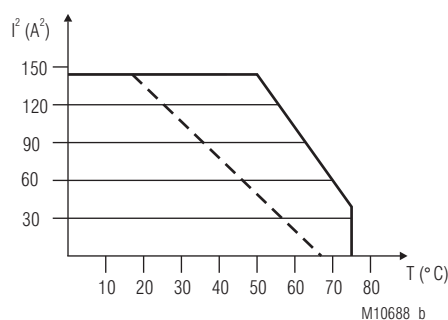
Variant

SN 7920/001 different terminal designation
see Circuit Diagram

Accessories

ET 4086-0-2: Additional clip for screw mounting
Article number: 0046578

Characteristic



— device mounted on distance with air circulation

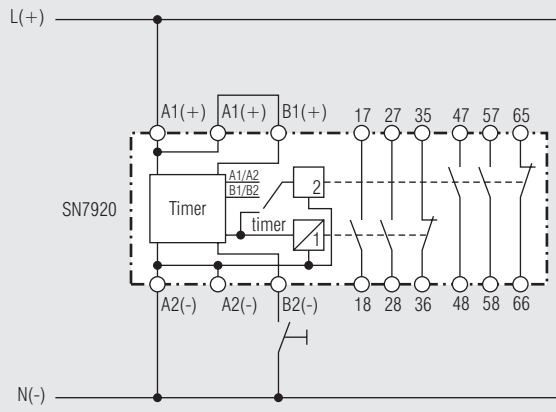
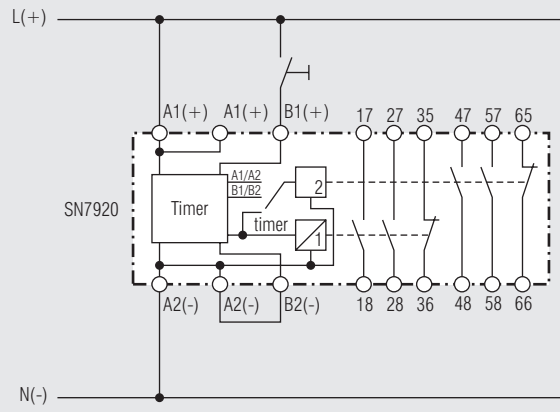
- - - device mounted without distance heated by
devices with same load

$$\sum I_{th}^2 = I_{th1}^2 + I_{th2}^2 + I_{th3}^2 + I_{th4}^2$$

I_{th1} , I_{th2} , I_{th3} , I_{th4} : current in contact paths

Quadratic total current limit curve

Application Examples



M9206