# MINITIMER
## Cyclic Timer
## IK 7854, SK 7854

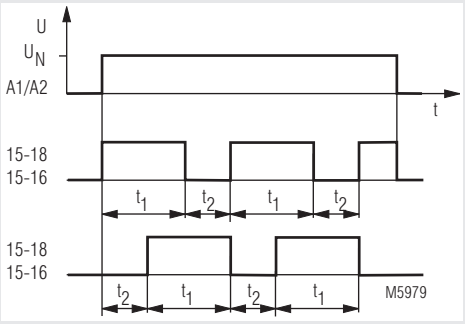
0239762

IK 7854

SK 7854

- According to IEC/EN 61812-1
- 8 time ranges from 0.05 s to 300 h selectable via rotational switches
- Impulse and break time separately adjustable
- Selectable start with impulse or break
- Voltage range AC/DC 12 ... 240 V
- Adjustment aid for quick setting of long time values
- Suitable for 2-wire proximity sensor control
- LED indicators for operation, contact position and time delay
- 1 changeover contact
- As option connection of 2 remote potentiometers 10 kΩ
- Devices available in 2 enclosure versions:
  - IK 7854: depth 59 mm, with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43880
  - SK 7854: depth 98 mm, with terminals at the top for cabinets with mounting plate and cable duct
- 17.5 mm width

## Function Diagram




## Approvals and Markings

CE

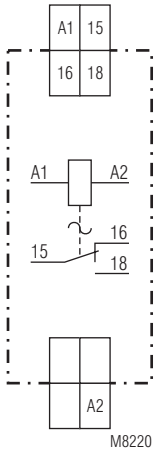
## Application

Time-dependent controllers

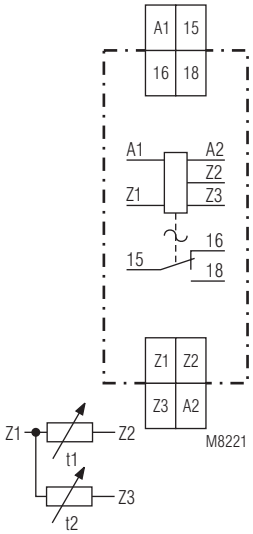
## Indicators

| | |
|---|---|
| green LED: | on when voltage connected |
| yellow LED "R/t": | shows status of output relay and time delay: |
| -Flashing (short on, long off) | output relay not active; time delay t2 (break time) |
| -Flashing (long on, short off) | output relay active; time delay t1 (pulse time) |

## Circuit Diagrams




IK 7854.81
SK 7854.81




IK 7854.81/300
SK 7854.81/300

## Connection Terminals

| Terminal designation | Signal description |
|---|---|
| A1 | L / + |
| A2 | N / - |
| 15, 16, 18 | Changeover contact |
| Z1, Z2, Z3 (only at /300) | Input to connect two remote potentiometer for time setting t1 and t2 |

## Notes

**Control of A1-A2 with proximity sensors**
The input can be controlled by DC 3 wire or AC/DC 2 wire proximity sensors. For operating voltage > 24 V and usage of sensors without built-in short circuit protection a protection resistor on A1 is recommendend to reduce the inrush current. The dimension is as follows:

$R_v \approx$ operating voltage / max. switching current of sensor

The series resistor must not be selected higher than necessary.
Max. values are:

| | | | | | |
|---|---|---|---|---|---|
| Operating voltage: | 48 V | 60 V | 110 V | 230 V | |
| Series resistor $R_v$ max: | 270 Ω | 390 Ω | 680 Ω | 1.8 kΩ | (1 W) |

**Setting**
A change of the settings for time range and time will be valid immediately. Please note, that a change of time range or time setting during elapse of time can lead to unintended switching of the output contacts.

**Adjustment assistance**
The flashing period of the yellow LED is 1 s ± 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 the 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.

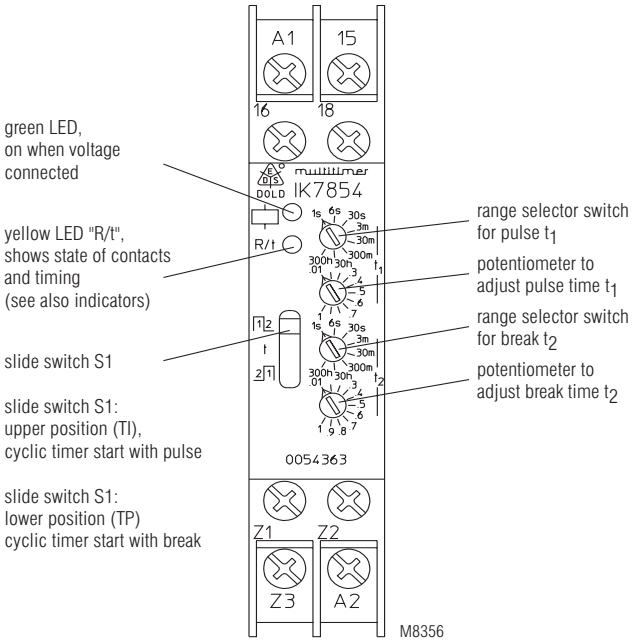
**Remote potentiometers**
With the variant IK/SK 7854.81/300 both time settings can also be made via remote potentiometers of 10 kOhms:
- Terminals Z1-Z2: potentiometer for pulse time (t1)
- Terminals Z1-Z3: potentiometer for break time (t2)

When connecting a remote potentiometer, the corresponding potentiometer has to be set to min. If no remote potentiometers are required the terminals Z1-Z2 resp. Z2-Z3 have to be linked.

The wires to the remote potentiometers should be installed separately from the lines with mains voltage. If this is not possible, a screened cable is recommendet where the shield is connected to Z1.

To terminals Z1, Z2 and Z3 no external voltage must be connected, as the unit might be damaged.
Terminals Z1, Z2 and Z3 do not have a galvanic separation to terminals A1/A2!

## Setting



## Technical Data

### Time circuit

| | |
|---|---|
| **Time ranges:** | 8 time ranges for pulse and break time, 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 t1, t2:** | continuous, 1:100 on relative scale |
| **Recovery time:** | |
| at DC 24 V: | approx. 15 ms |
| at DC 240 V: | approx. 50 ms |
| at AC 230 V: | approx. 80 ms |
| **Repeat accuracy:** | ± 0.5 % of selected end scale value |
| **Voltage and Temperature influence:** | < 1 % with the complete operating range |

### Input

| | |
|---|---|
| **Nominal voltage $U_N$:** | AC/DC 12 ... 240 V |
| **Voltage range:** | 0.8 ... 1.1 $U_N$ |
| **Frequency range (AC):** | 45 ... 400 Hz |
| **Nominal consumption** | |
| at AC 12 V: | approx. 2,5 VA |
| at AC 24 V: | approx. 3 VA |
| at AC 230 V: | approx. 4,5 VA |
| at DC 12 V: | approx. 1,5 W |
| at DC 24 V: | approx. 1,5 W |
| at DC 230 V: | approx. 1,5 W |
| **Release voltage (A1/A2)** | |
| AC 50 Hz: | approx. 7.5 V |
| DC: | approx. 7 V |
| **Max. permitted residual current with 2-wire proximity sensor control (A1-A2)** | |
| up to AC/DC 150 V: | AC resp. DC 5 mA |
| up to AC/DC 264 V: | AC resp. DC 3 mA |

### Output

| | | |
|---|---|---|
| **Contacts:** | | |
| IK/SK 7854.81: | 1 changeover contact | |
| **Contact material:** | AgNi | |
| **Measured nominal voltage:** | AC 250 V | |
| **Thermal current $I_{th}$:** | 4 A (see see quadratic total current limit curve) | |
| **Switching capacity** | | |
| to AC 15 | | |
| NO contact: | 3 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 | |
| **Electrical life** | | |
| at AC 15 to 1 A, AC 230 V: | 1.5 x $10^5$ switching cycles | IEC/EN 60947-5-1 |
| **Permissible switching frequency:** | 36 000 switching cycles / h | |
| **Short circuit strength max. fuse rating:** | 4 A gG / gL | IEC/EN 60947-5-1 |
| **Mechanical life:** | 30 x $10^6$ switching cycles | |

## Technical Data

### General Data

| | | |
|---|---|---|
| **Operating mode:** | Continuous operation | |
| **Temperature range:** | | |
| Operation: | - 40 ... + 60 °C (higher temperature with limitations see quadratic total current limit curve) | |
| Storage: | - 40 ... + 70 °C | |
| **Relative air humidity:** | 93 % at 40 °C | |
| **Altitude:** | < 2000 m | |
| **Clearance and creepage distances** | | |
| rated impulse voltage / pollution degree: | 4 kV / 2 (basis insulation) | IEC 60664-1 |
| Overvoltage category: | III | |
| Insulation test voltage, type test: | 2.5 kV; 1 min | |
| **EMC** | | |
| Electrostatic discharge: | 6 kV (contact) | IEC/EN 61000-4-2 |
| | 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: | | |
| A1/A2: | 4 kV | IEC/EN 61000-4-4 |
| Z1/Z2/Z3: | 2 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 A*) *) The device is designed for the usage under industrial conditions (Class A, EN 55011). When connected to a low voltage public system (Class B, EN 55011) radio interference can be generated. To avoid this, appropriate measures have to be taken | |
| **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, frequency10 ... 55 Hz, | IEC/EN 60068-2-6 |
| **Climate resistance:** | 40 / 060 / 04 | IEC/EN 60068-1 |
| **Terminal designation:** | EN 50005 | |
| **Wire connection:** | DIN 46228-1/-2/-3/-4 | |
| Cross section: | 2 x 2.5 $mm^2$ solid or 2 x 1.5 $mm^2$ stranded wire with sleeve | |
| Stripping length: | 10 mm | |
| **Wire fixing:** | Flat terminals with self-lifting clamping piece | IEC/EN 60999-1 |
| **Fixing torque:** | 0.8 Nm | |
| **Mounting:** | DIN rail | IEC/EN 60715 |
| **Weight:** | | |
| IK 7854: | approx. 65 g | |
| SK 7854: | approx. 84 g | |

### Dimensions

| | |
|---|---|
| **Width x height x depth:** | |
| IK 7854: | 17.5 x 90 x 59 mm |
| SK 7854: | 17.5 x 90 x 98 mm |

## Standard Type

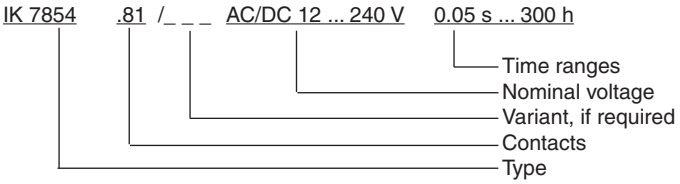
IK 7854.81 AC/DC 12 ... 240 V 0.05 s ... 300 h
Article number: 0054362
- Output: 1 changeover contact
- Nominal voltage $U_N$: AC/DC 12 ... 240 V
- Time ranges: 0.05 s ... 300 h
- Width: 17.5 mm

SK 7854.81 AC/DC 12 ... 240 V 0.05 s ... 300 h
Article number: 0059557
- Output: 1 changeover contact
- Nominal voltage $U_N$: AC/DC 12 ... 240 V
- Time ranges: 0.05 s ... 300 h
- Width: 17.5 mm

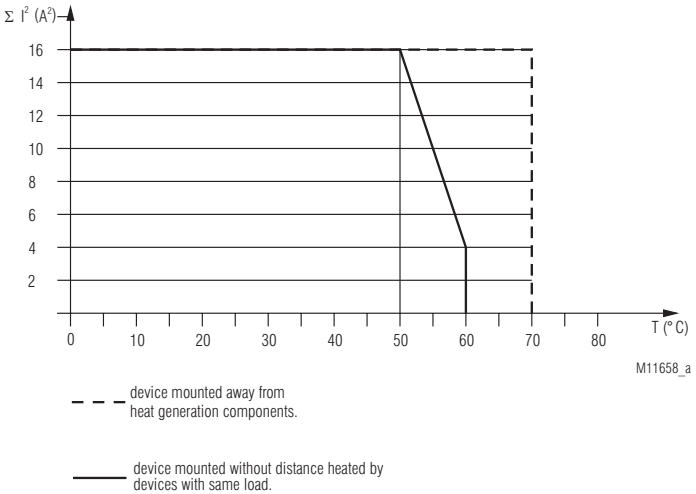
## Variant

IK 7854.81/300: - Connection facility for 2 remote potentiometers 10 kOhms to adjust pulse and break time

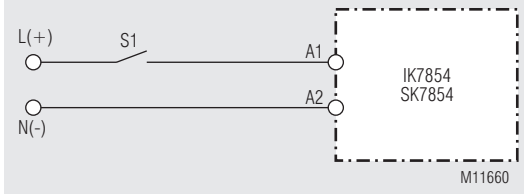
**Ordering example for variant**




## Characteristics




## Connection Example




## Accessories

AD 3: External potentiometer 10 kΩ
Article number: 0028962

The external potentiometer is used for remote setting of the time delay. The internal potentiometer of the timer must be set to min. time delay.

Degree of protection front side: IP 40