# Preset counters, electronic

| LCD preset counters | 1 preset – pulse, time (battery) | 901 |
| --- | --- | --- |



**Type 901 is a simple battery-powered preset pulse counter/timer with 12 ... 250 V AC/DC count and reset inputs or with NPN input.**

**The 6-digit, 2-line LCD display shows the current count value, the preset value, the relay state and the active time measurement.**

| Battery powered | AC/DC 12 ... 250 V Sensor supply voltage | max. 30 Hz Max. count frequency | -20°... +65°C Temperature range | IP65 High protection level | DIN 48 x 48 DIN front bezel | Multifunctional | Plug-in screw terminal | ProG Menu-driven programming | Decade key entry | 1 Relay output |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

## Powerful

- Count and reset input electrically separated from the counter: input switching levels 12 ... 250 V AC/DC or NPN input signal.
- 2-line LCD display for count and preset. Displays the switching status of the output and the active time measurement.
- Data retention thanks to exchangeable lithium batteries, battery life approx. 8 years.
- Output: relay, programmable as normally open or normally closed.

## Simple

- Easy to programme.
- Simple preset entry; one key per decade.
- Plug-in screw terminals.
- Replacement for electromechanical preset counters.
- No external supply voltage necessary.
- Clock function.

## Order no.

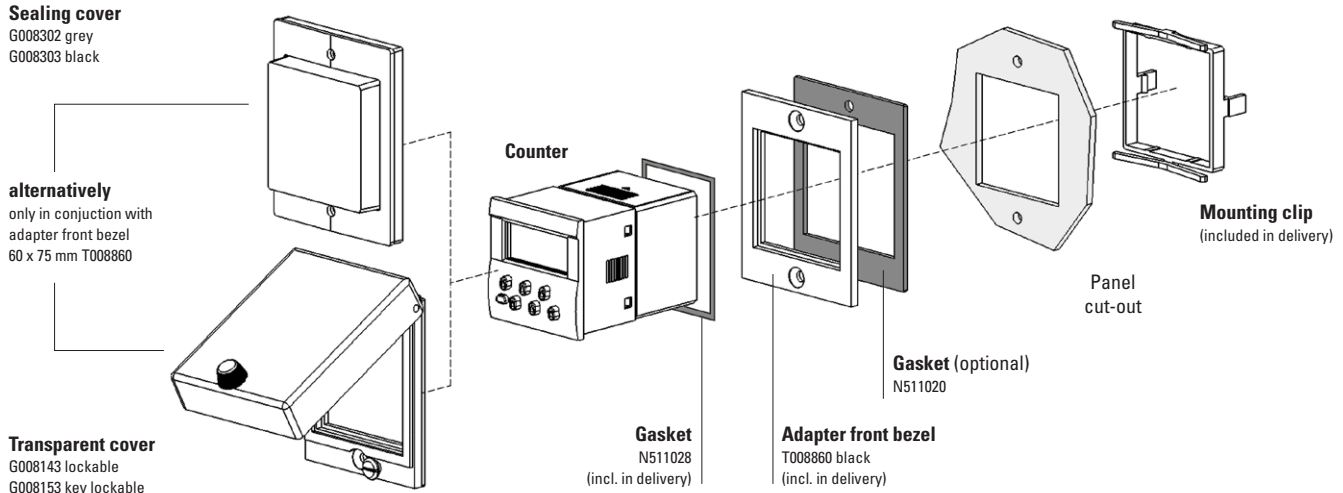| Type of input | Order no. |
| --- | --- |
| **12 ... 250 V AC/DC** | **6.901.010.820** [1] |
| **NPN input** | **6.901.010.850** [1] |

*Delivery specification*

- Counter 901
- 2 lithium batteries
- 1 screw terminal
- 1 mounting clip
- 1 operating instructions
- 1 front bezel for screw mounting, panel cut-out 50 x 50 mm [1.97 x 1.97"], T008860
- 1 front bezel for spring clip mount, panel cut-out 50 x 50 mm [1.97 x 1.97"], T008853
- 1 template for panel cut-out

[1] Stock types.

# Preset counters, electronic

## Accessories / Mounting examples

**Sealing cover**
G008302 grey
G008303 black

**alternatively**
only in conjuction with
adapter front bezel
60 x 75 mm T008860

**Transparent cover**
G008143 lockable
G008153 key lockable

**Counter**

**Gasket**
N511028
(incl. in delivery)

**Gasket** (optional)
N511020

**Adapter front bezel**
T008860 black
(incl. in delivery)

Panel
cut-out

**Mounting clip**
(included in delivery)

| | | Type / size | Description | | Order no. | suitable gasket |
|---|---|---|---|---|---|---|
| **Adapter front bezel** | | **55 x 55 mm** [2.17 x 2.17] | for cut-out 50 x 50 mm [1.97 x 1.97"] or ø 50,5 mm [1.99"] to cut-out 45 x 45 mm [1.77 x 1.77"] | grey / black | T008170 / T008171 | N511017 |
| | | **55 x 55 mm** [2.17 x 2.17] | for cut-out 50 x 50 mm [1.97 x 1.97"] to cut-out 45 x 45 mm [1.77 x 1.77"] | black | T008853 | N511004 |
| | | **60 x 75 mm** [2.36 x 2.95] | for cut-out 50 x 50 mm [1.97 x 1.97"] to cut-out 45 x 45 mm [1.77 x 1.77"] | black | T008860 | N511020 |
| | | **72 x 72 mm** [2.83 x 2.83] | for cut-out 68 x 68 mm [2.68 x 2.68"] to cut-out 45 x 45 mm [1.77 x 1.77"] | grey / black / Mating clip | T008176 / T008177 / T009420 | N511016 |
| | | **ø 72 mm** [2.83] | for cut-out ø 60 mm [2.36"] to cut-out 45 x 45 mm [1.77 x 1.77"] | black | N510226 | – |
| **Sealing cover IP65** | | K2 | only in conjuction with adapter front bezel 60 x 75 mm T008860 | transparent / grey / transparent / black | G008302 / G008303 | – |
| **Transparent cover IP65** | | 2 Dv (mounted on bezel) | cover lockable, for cut-out 50 x 50 [1.97 x 1.97], only in conjuction with adapter front bezel 60 x 75 mm T008860 | transparent / black | G008143 | – |
| | | 2 Dvs (mounted on bezel) | cover key lockable, for cut-out 50 x 50 [1.97 x 1.97], only in conjuction with adapter front bezel 60 x 75 mm T008860 | transparent / black | G008153 | – |
| **Gasket counter** | | | 48 x 48 mm (for installation in adapter front bezel) | | N511028 | |
| | | | 49 x 49 mm | | N511033 | |
| **Mounting frame** | | cut-out **50 x 50 mm** [2.36 x 2.36] | for snap-on mounting on 35 mm [1.38"] top-hat DIN rail | chromated | G300003 | |
| **Screw terminal** (replacement part) | | | 1 ... 7, pitch 5,08 | 7-pin | N100548 | |

incl. in delivery

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|---|---|---|

## Technical data

### General technical data

| | |
|---|---|
| Display | 2 line LCD display, 6 digits 999999; 7 or 4.5 mm [0.28 or 0.18"] high |
| Operating temperature | -20 °C ... +65 °C  [-4 °F ... +149 °F] (non-condensing) |
| Storage temperature | -25 °C ... +70 °C [-13 °F ... +158 °F] |
| Relative humidity | < 85 % (non-condensing) |
| Altitude | up to 2000 m [6562'] |

### Electrical characteristics

| | | |
|---|---|---|
| Supply voltage | | 2 pcs user exchangeable lithium-batteries type 1/2 AA lithium 3.6 V |
| Data retention | | min. 8 years at $5 \times 10^6$ power operations of the output relay and an operating temperature of 25 °C [+104 °F] |
| Device safety | designed to protection class application area | EN 61010-1, EN 61010-2-201 2 (front side) pollution level 2 |

### Mechanical characteristics

| | |
|---|---|
| Protection | IP65 (front side) |
| Weight | approx. 80 g |

### Outputs

| | |
|---|---|
| Output | bistable relay with potential free contact (programmable as normally closed or normally opened contact) |
| Max. switching voltage | 250 V AC / 30 V DC |
| Max. switching current | 2 A |
| Max. switching capacity | 60 VA / 30 W |
| Output response time | < 20 ms, max. 4 Hz |
| Insulation coordination | basic insulation |

### Inputs

| | | |
|---|---|---|
| Inputs | | reset, count and key lock inputs |
| Polarity of the inputs (for reset and count/start input) | 12 ... 250 V AC/DC | bidirectional optocoupler input |
| | NPN | NPN input activated by transistor or contact |
| Keyboard lock input | | connected to +3 V DC (terminal 1) |
| Min. pulse duration of the inputs | reset input | 50 ms |
| | keyboard lock input | 15 ms |
| Switching levels of the inputs | 12 ... 250 V AC/DC | LOW:   < 1 V AC/DC |
| | | HIGH:  12 ... 250 V AC/DC |
| | NPN | LOW:   0 ... 0.8 V DC |
| | | HIGH:  2.5 ... 5 V DC |
| Input frequency | | max. 30 Hz |
| Input resistance | | 110 kΩ |

### Approvals

| | | |
|---|---|---|
| UL compliant in accordance with | | File no. E128604 |
| CE compliant in accordance with | EMC Directive | 2014/30/EU |
| | RoHS Directive | 2011/65/EU |
| | Low Voltage Directive | 2014/35/EU |
| UKCA compliant in accordance with | EMC Regulations | S.I. 2016/1091 |
| | RoHS Regulations | S.I. 2012/3032 |
| | Low Voltage  Regulations | S.I. 2016/1101 |

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|---|---|---|

## Programming

The counter is programmed using the keys on the front. The user is guided by plain text on the display.

The following modes are programmable:

1. Function: pulse preset counter or preset timer
2. Count mode (adding or subtracting)
3. Output: permanent signal or timed signal in case of automatic repetition (loop)
4. Output (normally open or normally closed)
5. Timed signal duration (Delay) in case of automatic repetition 0.1 … 99.9 seconds
6. Decimal point up to max. 5 decimal places (pulse counter) or up to max. 2 decimal places (preset timer)
7. Time range for the preset timer: seconds minutes, hours

## Function of the output

- Adding:
  Relay is active , when actual value $\geq$ preset
- Subtracting:
  Relay is active , when actual value $\leq$ 0

In case of automatic repetition, the output signal is a timed signal programmable in 100 ms steps from 0.1 to 99.9 seconds.

A colon is displayed on the lower display line when the relay is activated.

An indicator flashes at one-second intervals when timing is active.

## Operating the counter

- Setting or resetting:
  Press the red SET button or apply a pulse to the reset input to set the counter to zero in the adding mode or to the preset in the subtracting mode.
- Presetting:
  The preset value is indicated on the lower row of digits. To set it, use the 6 presetting buttons assigned to each decade. The set value will be accepted with the next set or reset operation.
- Overflow and underflow:
  In the adding mode the overflow is 999 999 to 0; in the subtracting mode it is 0 to 999 999. The output signal remains unaffected.
- Lo-bat-indicator:
  When the battery charge is too low, Lo-bat appears in the lower display. This flashes on a two second cycle. When lo-bat is indicated, the battery should be changed as soon as possible. If the charge goes on decreasing, the device switches to (noFunc) "no function" mode and must be reprogrammed.
- Changing the battery:
  The unit retains the programmed values if the batteries are replaced within 2 minutes. Otherwise, the device must be re-parameterized.
- Counting:
  By means of positive pulses (12 … 250 VAC) or by a NPN input pulse. Time counting remains active as long as the counter input is active (preset timer).

## Terminal assignment 12 ... 250 V AC/DC

| Pin | Inputs / outputs |
|---|---|
| 1 | +3 V DC for terminal 2 |
| 2 | Keyboard lock-input |
| 3 | Relay contact |
| 4 | Relay contact |
| 5 | AC/DC optocoupler count input |
| 6 | AC/DC optocoupler reset input |
| 7 | Common AC/DC input for terminal 6 and 5 |
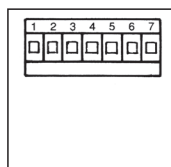


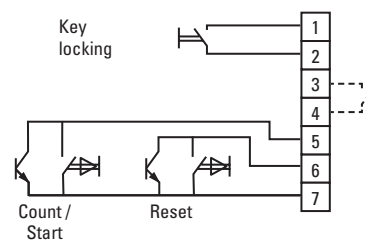## Example of connection 12 ... 250 V AC/DC
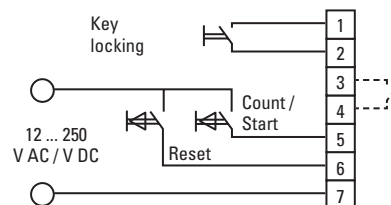


## Terminal assignment NPN

| Pin | Inputs / outputs |
|---|---|
| 1 | +3 V DC for terminal 2 |
| 2 | Keyboard lock-input |
| 3 | Relay contact |
| 4 | Relay contact |
| 5 | NPN count/start input |
| 6 | NPN reset input |
| 7 | Common AC/DC input for terminal 6 and 5 |
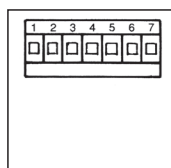


## Example of connection NPN

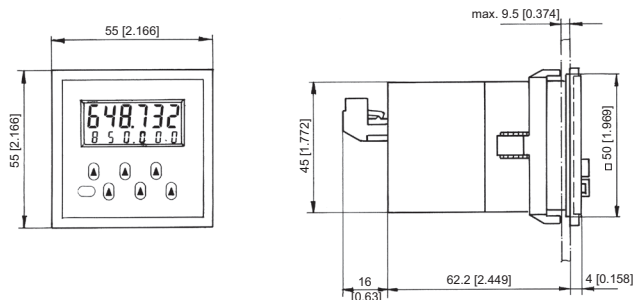| LCD preset counters | 1 preset – pulse, time (battery) | 901 |
|---|---|---|

### Dimensions

Dimensions in mm [inch]

**Panel cut-out 45 x 45 [1.77 x 1.77]**
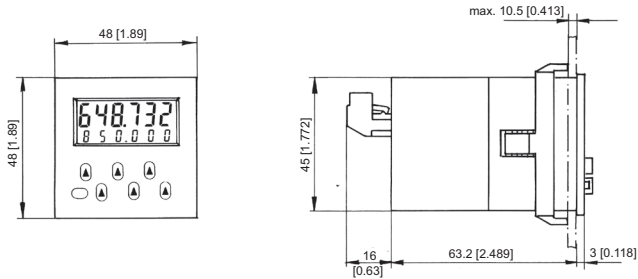


**With front bezel 55 x 55 [2.17 x 2.17], panel cut-out 50 x 50 [1.97 x 1.97]**



**With front bezel 60 x 75 [2.36 x 2.95], panel cut-out 50 x 50 [1.97 x 1.97]**



Flush Bf4
DIN74