

Digital time and pulse counters



type 3800, 3810, 3820, 3830, 3840, 3850, 3860, 3870, 3880, 3890



type 3801, 3811, 3821, 3831, 3841, 3851, 3861, 3871, 3881, 3891

Time and pulse counters (single counter) for AC or DC or with Twin-technology as time, service or pulse counters (double counter) 7 mm digit height, 48 x 24 mm, 48 x 48 mm, Ø 52 mm

Advanced BAUSER technology enables: Even without battery, your information remains registered in the EEPROM records. Further, the digital time- and pulse counters offer a smart design, high quality and reliability. Therefore, ideally suitable for the heavy applications in the industry and vehicles.

With the BAUSER counters, you can count on:

- LC-display with 7 digits, character height - 7 mm
- protection class IP 65 (without reset button)
- plug- and terminal connection

The BAUSER-Twin (double counter) registers cost effectively two different counting values as digital indication in just one counter. So, we offer you two counters in one unit. You decide which value should be indicated permanently and which one in the background. We programme the BAUSER-Twin individually for you, according to your priorities and requirements of service intervals and prewarning times.

Order specifications:

| counting type | housing dimensions | | | reset for the following counter | notes |
|-------------------|--------------------|------------|-------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| | 48 x 24 mm | 48 x 48 mm | Ø 56 mm with glass ring | | |
| HC* | 3800 | 3801 | 3802 | | |
| PC* | 3810 | 3811 | 3812 | | |
| HC with HC (bg)* | 3820 | 3821 | 3822 | HC | HC (bg) not resetable |
| PC with PC (bg)* | 3830 | 3831 | 3832 | PC | PC (bg) not resetable |
| HC with PC (bg)* | 3840 | 3841 | 3842 | HC + PC | both counters are resetable, even PC while appearing on the display (e.g. combination of power-on time and frequency) |
| PC with HC (bg)* | 3850 | 3851 | 3852 | PC + HC | both counters are resetable, even HC while appearing on the display (e.g. combination of power-on time and frequency) |
| HC with STC (bg)* | 3860 | 3861 | 3862 | STC | HC not resetable |
| PC with SPC (bg)* | 3870 | 3871 | 3872 | SPC | PC not resetable |
| STC with HC (bg)* | 3880 | 3881 | 3882 | STC | HC not resetable |
| SPC with PC (bg)* | 3890 | 3891 | 3892 | SPC | PC not resetable |

Choose between the following software configurations

(The background counter appears for approx. 10 seconds every time you switch-on):

- time and service counter (fix values)
- pulse and service counter (fix values)
- periodical and totalising counter
- time and pulse counter



type 3802, 3812, 3822, 3832, 3842, 3852, 3862, 3872, 3882, 3892

* HC = hour counter
 PC = pulse counter
 STC = service time counter,
 SPC = service pulse counter
 bg = background

Further specifications for your order selection

38XX.X.X.X.X.X

connections

- 1 plug connection 6,3 mm x 0,8 mm/bent 90°
- 2 terminal connection

indication time counter

- 0 blank
- 1 1/100 h indication**
- 2 1/10 h indication

max. counting frequency pulse counter

- 0 blank
- 1 30 Hz at DC operation**
- 7 10 Hz at AC or AC/DC operation**

input signal

- 0 blank
- 1 reset input pos./counting input pos.**
- 5 counting input pos.

reset type

- 1 without reset
- 2 with electrical reset
- 3 with el. and man. reset

written fat = preferred variants

Further order specifications:

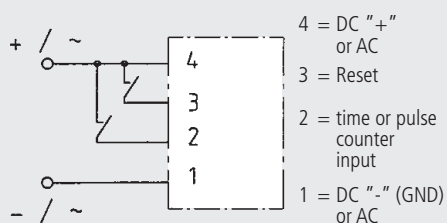
12 - 24 V DC, 24 - 48 V DC, 24 V AC/DC oder 110 - 240 V AC 50/60 Hz

Please indicate your desired service and prewarning times. i.e. The service should happen after 1.000 pulses with a pre-warning after 900 pulses, maximum 4, minimum 1 digit values.

accessories: additional sealing, rubber seal at additional costs.

Our digital hour counters with signal output series 4000... are described on page 10 to 12.

wiring diagram (for positive signal inputs):



Pin 1 + 4 = voltage supply

Technical specifications of the single and double counters

On this page you will find the complete technical specifications and drawings of the digital single and double counters.

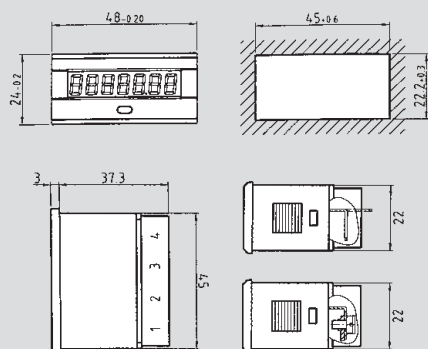
Technical specifications:

| | |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| housing: | black plastic |
| indication: | LC-display with 7 digits (only active while connected) |
| character height: | 7 mm |
| operating voltages: | 12 - 24 V DC / $\pm 25\%$ 110 - 240 V AC 50/60 Hz / $\pm 10\%$ |
| special voltages (at additional cost): | 24 - 48 V DC / $\pm 25\%$ 24 V AC/DC / $\pm 10\%$ |
| current consumption: | 12 - 24 V DC and 24 - 48 V DC / < 5 mA 24 V AC / DC / < 10 mA 110 - 240 V AC 50/60 Hz / < 15 mA |
| ambient temperature: | -30 °C to +70 °C |
| stocking temperature: | -40 °C to +80 °C |
| electrical connection: | plug connection 6,3 x 0,8 mm / 90° bent or terminal connection |
| reset: | without, manual or electrical |
| protection: | without reset button IP 65, with reset button IP 54 |
| vibration resistance: | 20 g according to SAEJ1378, 1 g (10...500 Hz) according to EN 60068-2-34 |
| shock resistance: | 55 g according to SAEJ1378, 30 g (18 ms) according to EN 60068-2-27 25 g (6 ms) according to EN 60068-2-29 |
| EMC: | EN 55011, EN 61000-6-2 |
| industrial norm: | EN 61010, protection class II |
| approval: | CE, UL, cUL |
| counting frequency / pulse counter: | 30 or 200 Hz = DC-counter 10 Hz = AC-counter |
| data storage: | EEPROM (min. 25 years) |
| fixing: | retaining clip |
| weight: | 39, 42 or 57 g. |

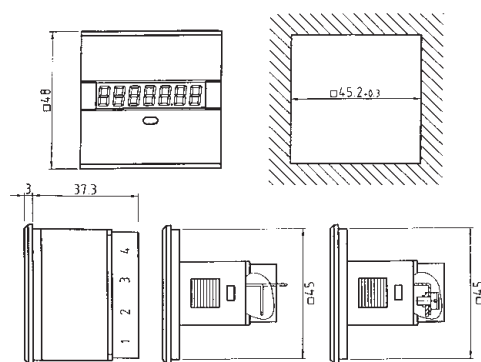
Please note:

On pages 10 to 12 you will find variants with signal- or relay output or with two permanent indications. Voltage-free counters, which operate with a lithium battery, will be shown on pages 7 to 9.

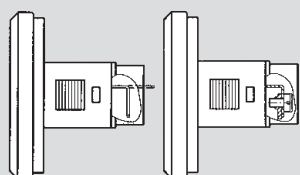
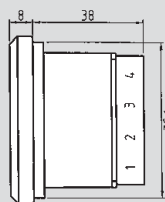
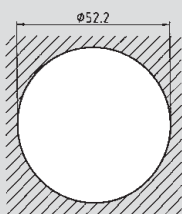
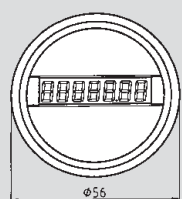
The smart double counters are also available as modules. Find more information on pages 18 to 22.



drawing: 48 x 24 mm



drawing: 48 x 48 mm



drawing:
Ø 56 mm with glass ring



type 4500, 4510, 4550, 4560, 4580, 4590



type 4501, 4511, 4551, 4561, 4581, 4591



type 4502, 4512, 4552, 4562



type 4503, 4513, 4553, 4563

Time and pulse counters, multi voltage 12 - 150 V DC and 24 - 240 V AC or battery-operated units, 5 mm digit height, 36 x 24 mm, 48 x 24 mm, 53 x 31 mm, ø 52 mm

The digital time or pulse counter range 4500 is based on a specially developed by BAUSER ASIC-component. This ASIC features ultra low current consumption, as well as by its integrated temperature compensation for the high visibility LCD.

The digital counters are powered by an external power supply or by an internal lithium battery (life time minimum 10 years). At the external power supply the data are stored by an EEPROM. The battery-operated counters feature a permanently readable indication and can therefore be considered as a real alternative to the traditional electromechanical hour counters.

The wide voltage range and the variety of housing sizes (from minimum to maximum) are the basis for various applications. The design and the quality are further positive aspects for applying these counters in the utility vehicle or industrial sector.

The technical advantages of this product range:

- high visibility LCD with digits height of 5 mm and temperature range of -40 °C to +85 °C
- sealed completely against dirt and humidity, IP66
- battery-operated version (life time of battery: 10 years) is a real alternative to the electromechanical hour or pulse counters, alternatively with voltage-free input
- voltage range 12 - 48 V DC / 12 - 150 V DC and 24 - 240 V AC (in one unit), low current consumption
- pulse counter with input frequency of up to 500 Hz (DC operation)
- 2- or 3-wire connection at hour counter
- high shock and vibration resistant
- operating indication: clock-symbol on the display
- data storage by battery (life time: min. 10 years) or EEPROM (min. 25 years)
- optionally with single reset

Order specifications of range 45XX

| counter | 36 x 24 mm | 48 x 24 mm | Ø 56 mm with front fixing | rectangular with glassring |
|---------------------------------------------------------------------|------------|------------|---------------------------|----------------------------|
| counter with external power supply | | | | |
| time counter | 4500 | 4501 | 4502 | 4503 |
| pulse counter | 4510 | 4511 | 4512 | 4513 |
| counter with internal lithium battery | | | | |
| time counter | 4550 | 4551 | 4552 | 4553 |
| pulse counter | 4560 | 4561 | 4562 | 4563 |
| counter with internal lithium battery and voltage-free input | | | | |
| time counter | 4580 | 4581 | | |
| pulse counter | 4590 | 4591 | | |

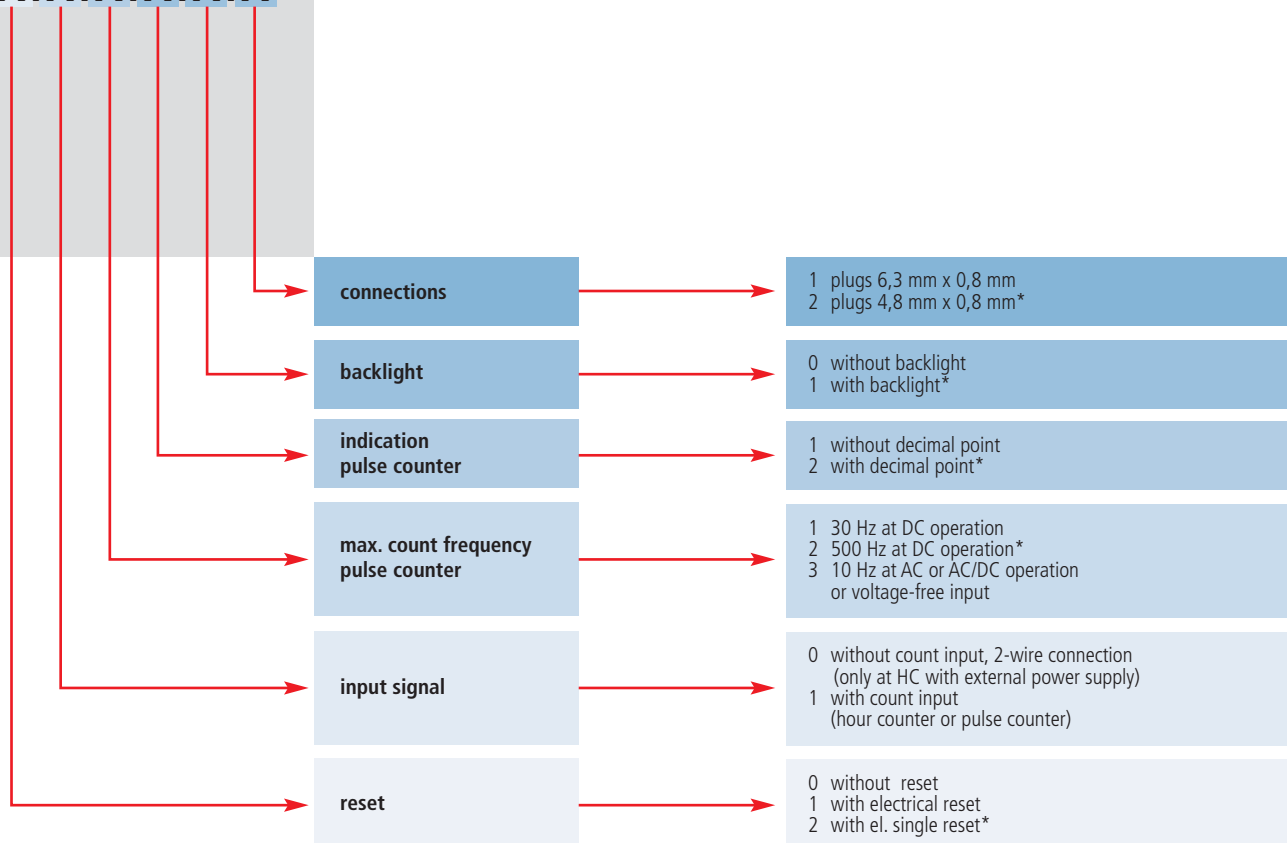
Please note:

For smaller quantities of less than 100 pcs per shipment we recommend the types 3800 on pages 4 to 6.

Our digital counters with signal output, series 40XX are described on page 10 - 12.

Further specifications for your order selection

45XX.X.X.X.X.X



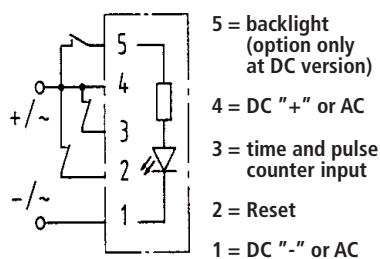
* = no standard version - available on request!

Technical specifications:

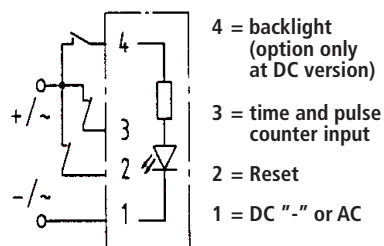
| | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| housing: | black plastic |
| indication: | LC-Display, 7 digits, at battery-operated version permanent indication |
| character height: | 5 mm |
| reset: | without or electrical |
| data storage: | EEPROM (min. 25 years) or battery (min. 10 years) |
| ambient temp.: | -40 °C to +85 °C, -40 °C to +70 °C at battery supply |
| storage temp: | -40 °C to +90 °C, -40 °C to +70 °C at battery supply |
| electr. connection: | plugs 6.3 x 0.8 mm optionally 4.8 x 0.8 mm |
| vibration resistance: | 20 g according to SAEJ1378, 1 g (10..500 Hz) according to EN60068-2-34 |
| shock resistance: | 55 g according to SAEJ1378, 30 g (18 ms) according to EN60068-2-27 25 g (6 ms) according to EN60068-2-29 |
| counting frequency (PC): | maximum 30 Hz or 500 Hz at DC operation / maximum 10 Hz for AC or AC/DC variant |
| operating voltage : | 12 V DC - 150 V DC and 24 V AC - 240 V AC ±10 % |
| current consumption: | 100 µA - 3 mA |
| input resistance: | approx. 120 kOhm (count, reset) |
| life time of battery: | Min. 10 years under the following conditions: <ul style="list-style-type: none"> • 10 Mio. switching cycles of count and reset at 23 °C • mean duty cycle at count and reset: 12 h/day • min. signal rise time at count and reset: 5 ms • signal voltage at count and reset: Ub ±25 %, off: < 0,75V or floating |
| option backlight: | operating voltage: 12 V DC ±25 % 24 V DC ±25 % 36 V DC ±25 % - 48 V DC ±25 % current consumption: ca. 30 mA ca. 15 mA ca. 5 mA - 8 mA |
| EMC: | EN 55011, EN 61000-6-2 |
| industrial norm: | EN 61010, protection class II |
| approval: | CE, UL, cUL |
| protection: | IP66, pins IP00 |
| fixing: | retaining clip or front fixing |

Drawings and wiring diagrams

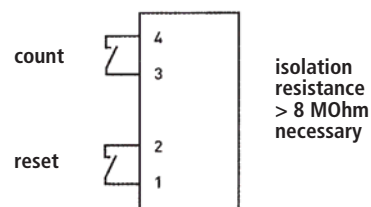
wiring diagram
(external power supply):



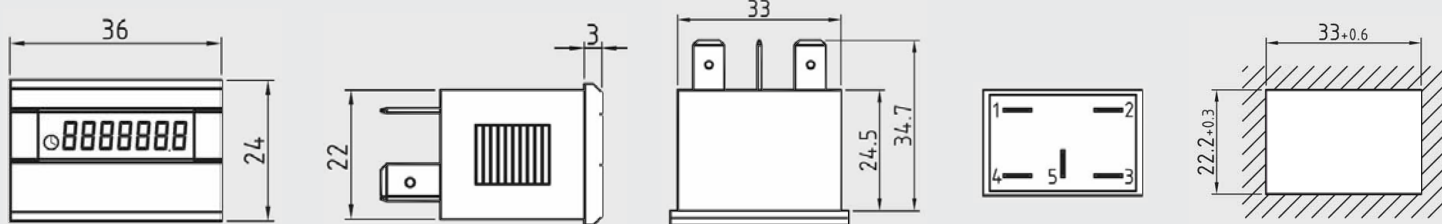
wiring diagram
(battery-operated version):



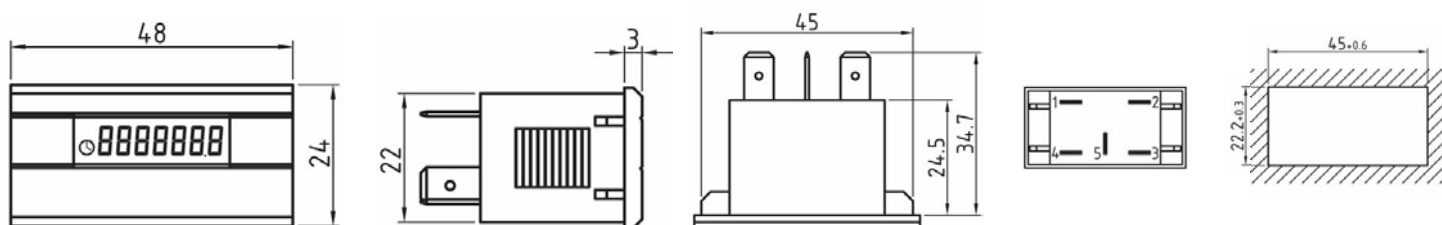
wiring diagram
(battery version voltage-free):



drawing: 36 x 24 mm



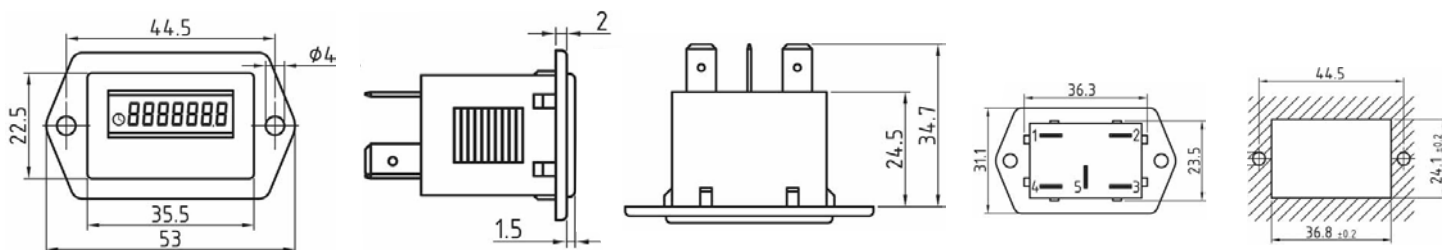
drawing: 48 x 24 mm



drawing: $\varnothing 56$ mm



drawing: front fixing



Digital time and pulse counters

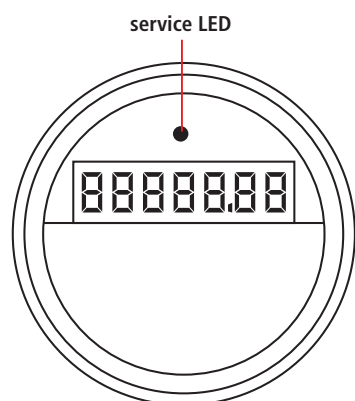


type 4000.0 to 4091.0

Time, service or pulse counters with signal or relay output and service LED, for DC only, 1 or 2 displays, ø 52 mm

Here you will find another multiple solution from BAUSER. With the Twin-service-counter for time and pulses or cycles a counter can operate in the background. The requested service intervals are programmed factory set. The background counter appears for approx. 10 seconds every time you switch-on. Choose your combination, we programme the fix values according to your priorities.

Digital counter with 1 display – on request with background counter



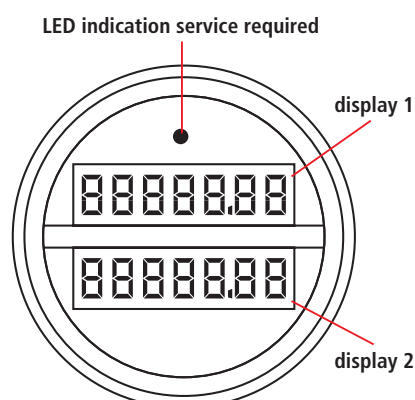
front view



type 4000.1 to 4091.1
type 4000.2 to 4091.2

| counter type | type | reset for the following counters | notes |
|----------------------------------------------|--------|----------------------------------|--------------------------------------------------------------------------|
| HC* without output, without LED | 4000.0 | HC | |
| PC* without output, without LED | 4010.0 | PC | |
| HC with HC (bg)* without output, without LED | 4020.0 | HC | HC (bg) not resetable |
| PC with PC (bg)* without output, without LED | 4030.0 | PC | PC (bg) not resetable |
| HC with PC (bg)* without output, without LED | 4040.0 | HC + PC | both counters are resetable, even PC (bg) while appearing on the display |
| PC with HC (bg)* without output, without LED | 4050.0 | PC + HC | both counters are resetable, even HC (bg) while appearing on the display |
| HC with STC (bg)* with relay output | 4060.0 | STC | HC not resetable |
| HC with STC (bg)* with el. signal output | 4061.0 | STC | HC not resetable |
| PC with SPC (bg)* with relay output | 4070.0 | SPC | PC not resetable |
| PC with SPC (bg)* with el. signal output | 4071.0 | SPC | PC not resetable |
| STC with HC (bg)* with relay output | 4080.0 | STC | HC(bg) not resetable |
| STC with HC (bg)* with el. signal output | 4081.0 | STC | HC (bg) not resetable |
| SPC with PC (bg)* with relay output | 4090.0 | SPC | PC (bg) not resetable |
| SPC with PC (bg)* with el. signal output | 4091.0 | SPC | PC (bg) not resetable |

* HC = hour counter, PC = pulse counter, STC = service time counter,
SPC = service pulse counter, bg = background



front view

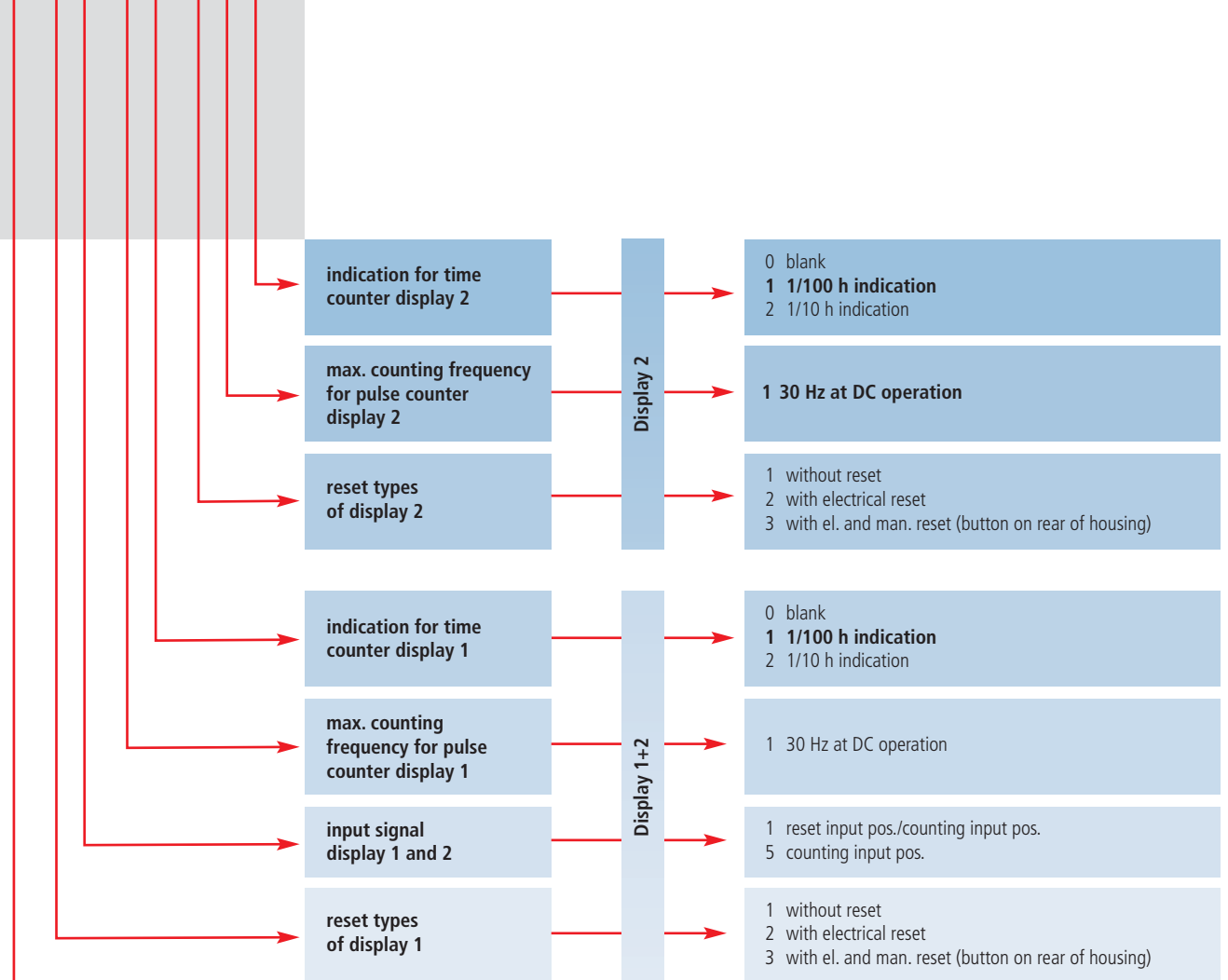
If you require 2 permanent indications, even for this BAUSER has a solution: the 2-display counter. Of course, we are able to offer an additional LED indication for signal and relay output.

The counter type of the second display will be determined according to the following chart. You have to amend the type no. 40XX.0 of the chart above according to the chart beneath. i.e. for a HC in display 2, you have to change type 4060.0 into type 4060.1.

Further counter types for display 2 are available on request.

Further specifications for your order selection

40XX.X.XX.XX.XXX

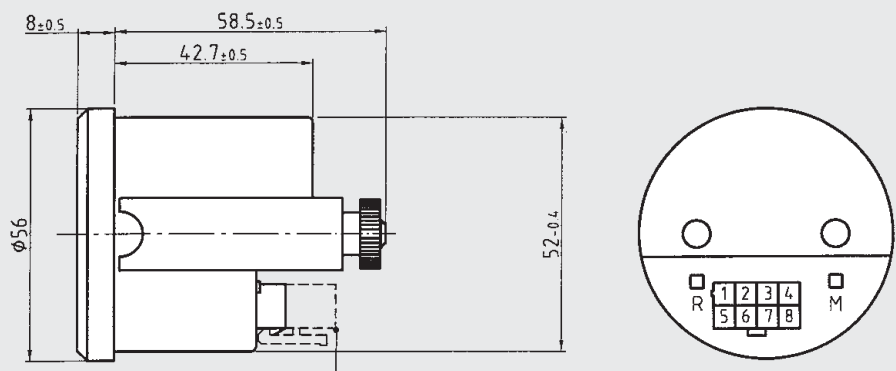


written fat = preferred variants

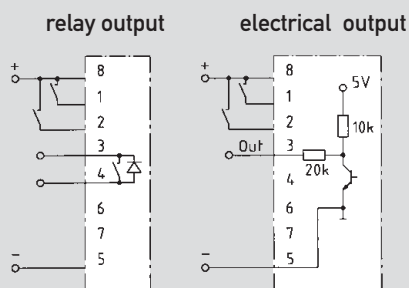
Additionally please specify the operating voltage and the required service and prewarning values. i.e.: The service should happen after 1.000 pulses with a prewarning after 900 pulses.

digital counter with 2 displays – permanent indication

| counter type | type | reset for the following counter |
|--------------|--------|---------------------------------|
| HC | 40XX.1 | HC |
| PC | 40XX.2 | PC |



drawing type 40XX:



wiring diagram type 4060.0 to 4091.0
1 display

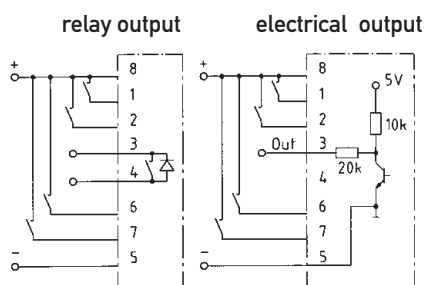
- 1 = count display 1
- 2 = reset display 1
- 3 = relay "+" (or Out)*
- 4 = relay "-" (or not connected)*
- 5 = DC "-"
- 6 = not connected
- 7 = not connected
- 8 = DC "+"

*electrical output version

Technical specifications

Technical specifications:

| | |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| housing: | black plastic with glass and bevelled black chrome-plated bezel |
| indication: | LC-display with 7 digits = 1 or 2 indications (only active while connected) |
| character height: | 7 mm |
| operating voltages: | 12 - 24 V DC / $\pm 25\%$ 24 V DC – with relay output |
| special voltages (at additional cost): | 24 - 48 V DC / $\pm 25\%$ 12, 36, 48 V DC – with relay output |
| current consumption: | 12 - 24 V DC, 24 - 48 V DC / < 10 mA 12 V / < 35 mA – with relay output 24 V / < 25 mA – with relay output 36 V / < 25 mA – with relay output 48 V / < 20 mA – with relay output |
| relay contact: | voltage-free closes at service / breaking capacity 12 V/2 A; 24 V/2 A; 36 V/1,5 A; 48 V/1 A |
| signal output: | high level at service |
| ambient temperature: | -30 °C to +70 °C |
| stocking temperature: | -40 °C to +80 °C |
| electrical connection: | 8 pole compact plug (optionally with cable-glands) |
| protection: | IP 65 (front) |
| reset: | without, manual (button on the rear of the housing) or electrical |
| vibration resistance: | 20 g according to SAEJ1378, 1 g (10...500 Hz) according to EN 60068-2-34 |
| shock resistance: | 55 g according to SAEJ1378, 30 g (18 ms) according to EN 60068-2-27, 25 g (6 ms) according to EN 60068-2-29 |
| EMC: | EN 55011, EN 61000-6-2 |
| industrial norm: | EN 61010, protection class II |
| counting frequ./pulse counter: | 30 or 200 Hz |
| data storage: | EEPROM |
| approval: | |
| fixing: | metal clamp with two nuts |



wiring diagram type 4060.1 to 4091.2
2 displays

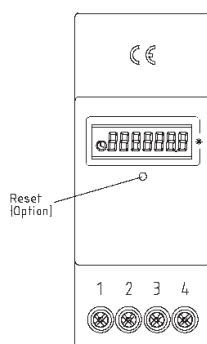
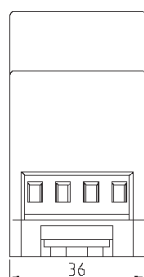
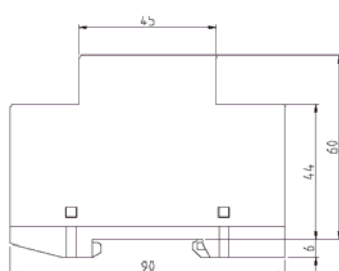
- 1 = count display 1
- 2 = reset display 1
- 3 = relay "+" (or Out)*
- 4 = relay "-" (or not connected)*
- 5 = DC "-"
- 6 = count display 2
- 7 = reset display 2
- 8 = DC "+"

*electrical output version

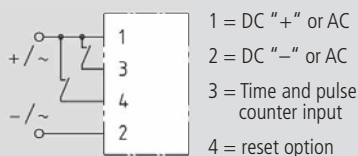
Digital time and pulse counters



type 670.6.X.X



drawings



wiring diagram

Time or pulse counters for DIN-rail mounting, multi voltage 12 - 150 V DC and 24 - 240 V AC, overall height 60 mm

The basis of the digital time and pulse counter is a special ASIC-component which has been developed by BAUSER. The voltage range of 12 - 150 V DC and 24 - 240 V AC in only one unit is very particular to these time and pulse counters. Further advantages are the high visibility 7-digit-LC-display and a reset selection of: without, electrical or manual and electrical.

Order specifications type range 670.6.X.X

670.6.X.X

1 hour counter
2 pulse counter

Reset
type

1 without reset
2 with electrical reset
3 with manual or electrical reset

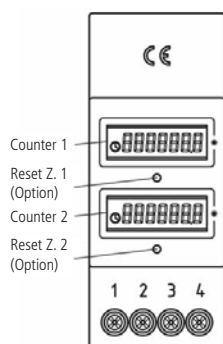
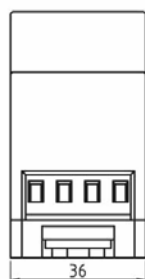
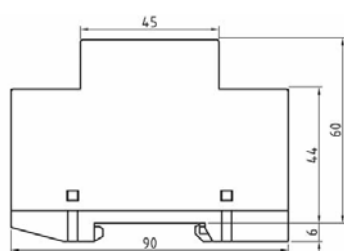
Technical specifications:

| | |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| housing: | plastic light grey RAL 7035 |
| indication: | LC-display, 7 digits (0.1 h resolution for hour counter) |
| character height: | 5 mm |
| operating voltage (U _b): | 12 V DC - 150 V DC und 24 V AC - 240 V AC ±10 % (in one unit) |
| frequency: | 50/60 Hz |
| current consumption: | 100 µA - 3 mA |
| input resistance: | approx. 120 kOhm (Count, Reset) |
| protection (front): | IP65 (without reset button) IP40 (with reset button), screw IP20 |
| ambient temperature: | -10 °C bis +70 °C |
| stocking temperature: | -40 °C bis +80 °C |
| electrical connection: | Terminal Blocks (lift principle) with Philips-Head-Screw (+/- screw) in combination with slotted screw with 3 mm screwdriver size, 0-2.5 mm ² fine wire or 0-4 mm ² single wire |
| max. torque: | 0,5 Nm |
| vibration resistance: | 1 g (10...500 Hz) according to EN 60068-2-34 |
| shock resistance: | 30 g (18 ms) according to EN 60068-2-27 25 g (6 ms) according to EN 60068-2-29 |
| EMC: | EN 55011, EN 61000-6-2 |
| industrial norm: | EN 61010, protection class II |
| approval: | CE, UL, cUL |
| reset: | without, electrical or manual and electrical (sunk button, for example utilisable with ball point pen) |
| weight: | approx. 75 g |
| counting frequency/ pulse counter: | maximum 10Hz for AC signal voltage optionally higher counting frequency at DC-version |
| data storage: | EEPROM (min. 25 years) |
| fixing: | snap-on fixing for DIN-rail according DIN EN 50022 |

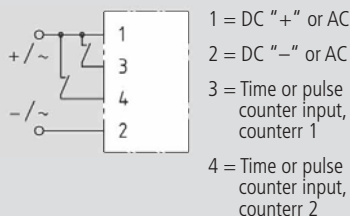
Digital time and pulse counters



type 672.6.X.X.X.X



drawings

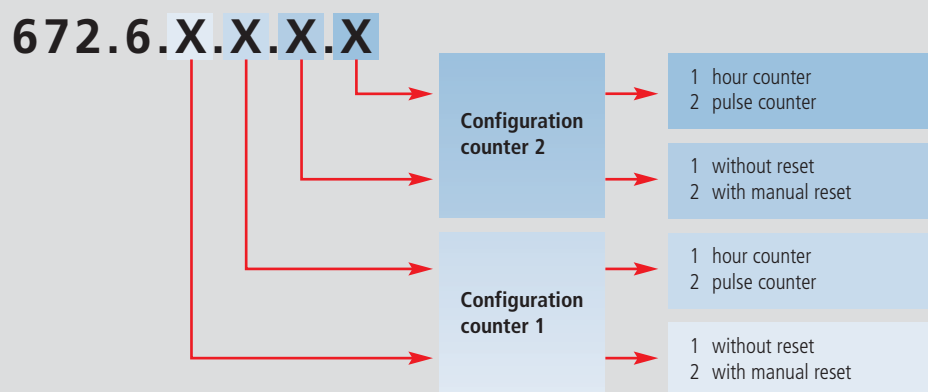


wiring diagram

Time or pulse counters for DIN-rail mounting, 2 displays, multi voltage 12 - 150 V DC and 24 - 240 V AC, overall height 60 mm

Digital time or pulse counters with high visibility 7-digit-LC-display. You decide, which value should be indicated by this double counter. Two times time or pulses or even one time and one pulse indication. The heart of these counters is a new ASIC-component, which has been developed by BAUSER. This component enables a voltage range of 12 - 150 V DC and 24 - 240 V AC in just one unit. The single counters are available without or with a manual reset and with common or separate input.

Order specifications type range 672.6.X.X.X.X

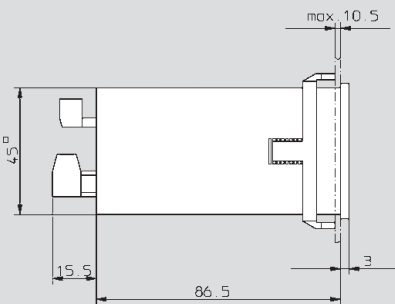
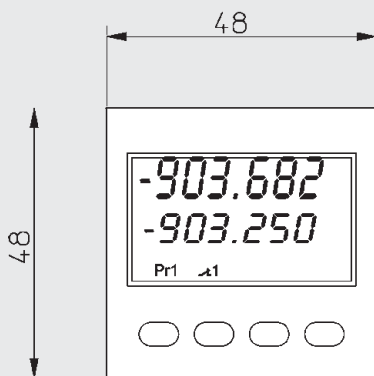


Technical specifications:

| | |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| housing: | plastic light grey RAL 7035 |
| indication: | LC-display, 7 digits (0.1h resolution for hour counter) |
| character height: | 5 mm |
| operating voltage (Ub): | 12 V DC - 150 V DC and 24 V AC - 240 V AC $\pm 10\%$ (in one unit) |
| frequency: | 50/60 Hz |
| current consumption: | 100 μ A - 3 mA |
| input resistance: | approx. 120 kOhm (Count, Reset) |
| protection (front): | IP65 (without reset button) IP40 (with reset button), screw IP20 |
| ambient temperature: | -10 °C bis +70 °C |
| stocking temperature: | -40 °C bis +80 °C |
| electrical connection: | Terminal Blocks (lift principle) with Philips-Head-Screw (+/- screw) in combination with slotted screw with 3 mm screwdriver size, 0-2.5 mm ² fine wire or 0-4 mm ² single wire |
| max. torque: | 0,5 Nm |
| vibration resistance: | 1 g (10...500 Hz) according to EN 60068-2-34 |
| shock resistance: | 30 g (18 ms) according to EN 60068-2-27 25 g (6 ms) according to EN 60068-2-29 |
| EMC: | EN 55011, EN 61000-6-2 |
| industrial norm: | EN 61010, protection class II |
| approval: | CE, UL, cUL |
| reset: | without, electrical or manual and electrical (sunk button, for example utilisable with ball point pen) |
| weight: | approx. 75 g |
| counting frequency/ pulse counter: | maximum 10 Hz for AC signal voltage optionally higher counting frequency at DC-version |
| data storage: | EEPROM (min. 25 years) |
| fixing: | snap-on fixing for DIN-rail according DIN EN 50022 |



type 320, 321



Multifunctional preselection counters, AC or DC, programmable as a pulse, frequency or time counter, 48 x 48 mm

These counters are easily programmable and cover the following application fields: preselection of pulses, cutting into lengths, dosing, time control, speed and rate supervision, flow control.

Description:

- 6 digit LCD preselection counter with polarity sign
- 2-line indication for counter status and preselection value
- symbols for active outputs and current preselection
- programmable as pulse, frequency or time counter
- simple operation and preselection of values via 4 buttons
- factor input of 0,0001 to 9,9999
- two preselections (type 320 one preselection)
- relay output
- voltage: 90-...250 V AC or 11-...30 V DC
- normal housing 48 x 48 mm with adapter for 50 x 50 mm cutout
- electrical connection through plug-in screw terminals

Programmable features are:

- operating mode, polarity of the inputs, input type, factor, decimal point
- output signals as continuous or wiping contact
- automatic repeat
- gate time as frequency counter, while programming
- resolution in sec., min., h or h:min:sec as time counter

Inputs:

INP A, INP B

- Counter input; the maximum counting frequency of these two inputs is for every channel separately settable on 30 Hz or 10 kHz.

Gate

- Static gate input; no counting while this input is activated.

Reset

- Dynamic reset input: has the same function as the red SET button and resets the counter to zero (accumulative counting mode) or to the preselection value (subtractive counting mode).

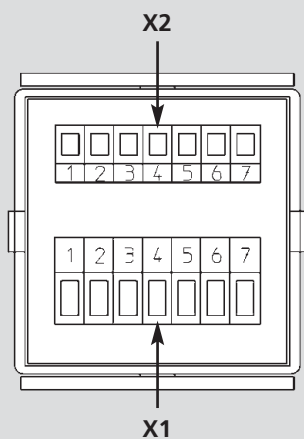
Key

- Static input for locking of the buttons; while this input is activated the buttons in front remain locked for operation.

Outputs

- 2 potential-free outputs (320: 1 output) as relay.

Digital preselection counters



connection diagram type 321

pin AC-version / DC-version

| | |
|---|------------------------------------------------------------|
| 1 | output 1 relay |
| 2 | output 1 relay |
| 3 | output 2 relay common contact (C) |
| 4 | output 2 relay normally open (NO) |
| 5 | output 2 relay normally close (NC) |
| 6 | supply voltage 90 ... 260 V AC / 11 - 30 V (DC-version) |
| 7 | 90 ... 260 V AC / 0 V (DC-version) |

pin connection X1

pin description AC-version / DC-version

| | | |
|---|--------------|------------------------------------------------------------|
| 1 | +24 V DC | transmitter voltage supply / not connected (DC-version) |
| 2 | 0 V DC (GND) | GND / not connected (DC-version) |
| 3 | INP A | count input A |
| 4 | INP B | count input B |
| 5 | Reset | reset input |
| 6 | Gate | gate input |
| 7 | Key | key locking input |

pin connection X2

Programming:

The programming of the counter 320 and 321 takes place via 4 buttons on the front of the unit. A user guidance on the display offers an operation without problems. Here you can effect all adjustments and the corresponding parameters can be selected out of one menu.

Programmable are:

Polarity of the inputs

- Switching positive (PNP) or negative (NPN). The selection is valid for all inputs at the same time.

Operation variants, pulse or time counting

- accumulative with starting to count from zero
- subtractive with starting to count from the preselection value (320)
or preselection value 2 (321)
- accumulative with automatical reset by reaching the preselection value (320)
or the preselection value 2 (321)
- subtractive with automatical setting on the preselection value (320)
or preselection value 2 (321) by reaching of zero
- additional preselection cycle counter (only at type 321)

Input variants, pulse and frequency counter

- E1: 1 counting input, 1 switching input for the counting direction
- E2: 1 counting input upwards, 1 counting input down
- E3: quadrature input
- E4: quadrature input with pulse doubling

Decimals

- The indication can be effected without, with one, two or three decimal places after the decimal point.

Factor

- For an optimal transmitter adjustment the counting values can be preselected with a factor between 0,0001 and 9,9999.

Output signal

- The output signal (at type 321 even separate signal for both outputs) can be preselected as make or break contact, positive or negative wiping signal, duration 0,01 to 99,99 sec.

Gate time at frequency counter

- Programmable from 0,01 sec. to 99,99 sec.

Time counter

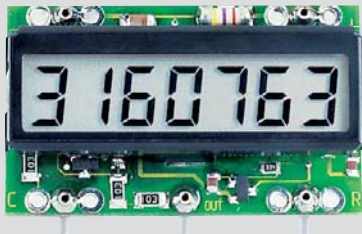
- The counting can be done in h, min. or sec., with a resolution of 0,001; 0,01; 0,1 and 1,0 or in h:min:sec

Included in delivery

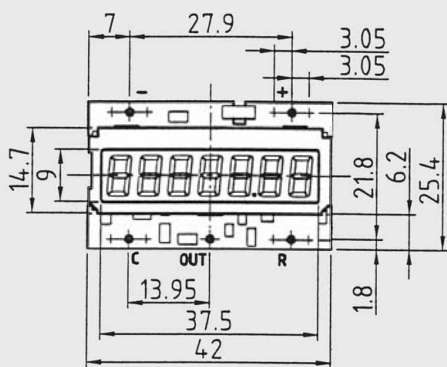
- type 320 = 1 preselection, 1 relay output
- type 321 = 2 preselections, 2 relay outputs
- plug-in screw terminals X1, 7-pole, grid 5,08 mm
- plug-in screw terminals X2, 7-pole, grid 3,81 mm
- frontal frame for screw fixing 60 x 75 mm mounting cross section 50 x 50 mm
- frontal frame for retaining clip fixing 55 x 55 mm mounting cross section 50 x 50 mm
- frontal frame for retaining clip fixing 48 x 48 mm mounting cross section 45 x 45 mm
- retaining clip

Technical specifications:

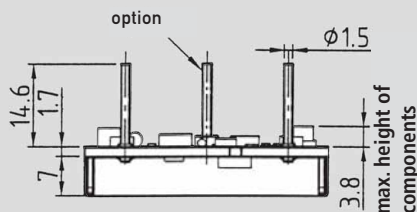
| | |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| indication: | 2 lines, 6 digits, 7 segments LC-display with polarity sign |
| character height: | 9 / 7 mm |
| preselection: | 2 preselections at type 321, 1 preselection at type 320 |
| counting input: | 2 counting inputs, 4 input variants programmable |
| polarity of the inputs: | programmable, switching positive (PNP) or negative (NPN) |
| input resistance: | 10 kOhm |
| max. counting frequency: | 10 kHz, reducable to 30 Hz via DIL switcher |
| min. pulse time of the control inputs: | 5 msec. |
| switching level of the inputs: | at AC supply: Log "0": 0...4 V DC, Log "1": 12...30 V DC at DC supply: Log "0": 0...0,2 x Ub, Log "1": 0,6 x Ub...30 V DC |
| pulse form: | variable, Schmitt-trigger input |
| output: | type 320: 1 relay output, type 321: 2 relay outputs |
| transmitter voltage: | 24 V DC, 100 mA at 90-...260 V AC |
| value recording: | minimum 10 years or 10 ⁶ memory cycles |
| interference resistance: | EN 50082, part 2 |
| interference transmission: | EN 55011, class B |
| operation temperature: | 0 to +50 °C |
| housing: | 48 x 48 mm DIN |
| protection class: | IP 65 (front) |
| operating voltage: | 90 - 250 V AC 11 - 30 V DC |



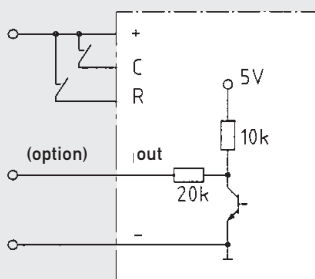
type 6000 to 6090



alternative positions of the connection pins are optionally possible



Pin:
 + = DC "+"
 - = DC "-"
 C = time and pulse counter input
 OUT = service counter output (option)
 R = reset



wiring diagram

LCD modules as time, service or pulse counters, (single or Twin-counters), 7 mm digit height, 12 - 24 V DC

Are you searching for individual solutions for recording time, service or pulses, which are integratable into your equipment or machinery?

Additionally to the digital counter range BAUSER offers also different modules:

- single counter for time and pulses,
 - BAUSER Twin-counters, which supply two indications in one display.
- You decide which value should be indicated permanently and which one in the background. The background counter appears for approx. 10 sec. on the display every time you switch-on.

These smart double counters are also available as counters with housing. See pages 4 to 6.

The fix values for service intervals and prewarning are programmed factory set to your priority. Choose between the following software configurations:

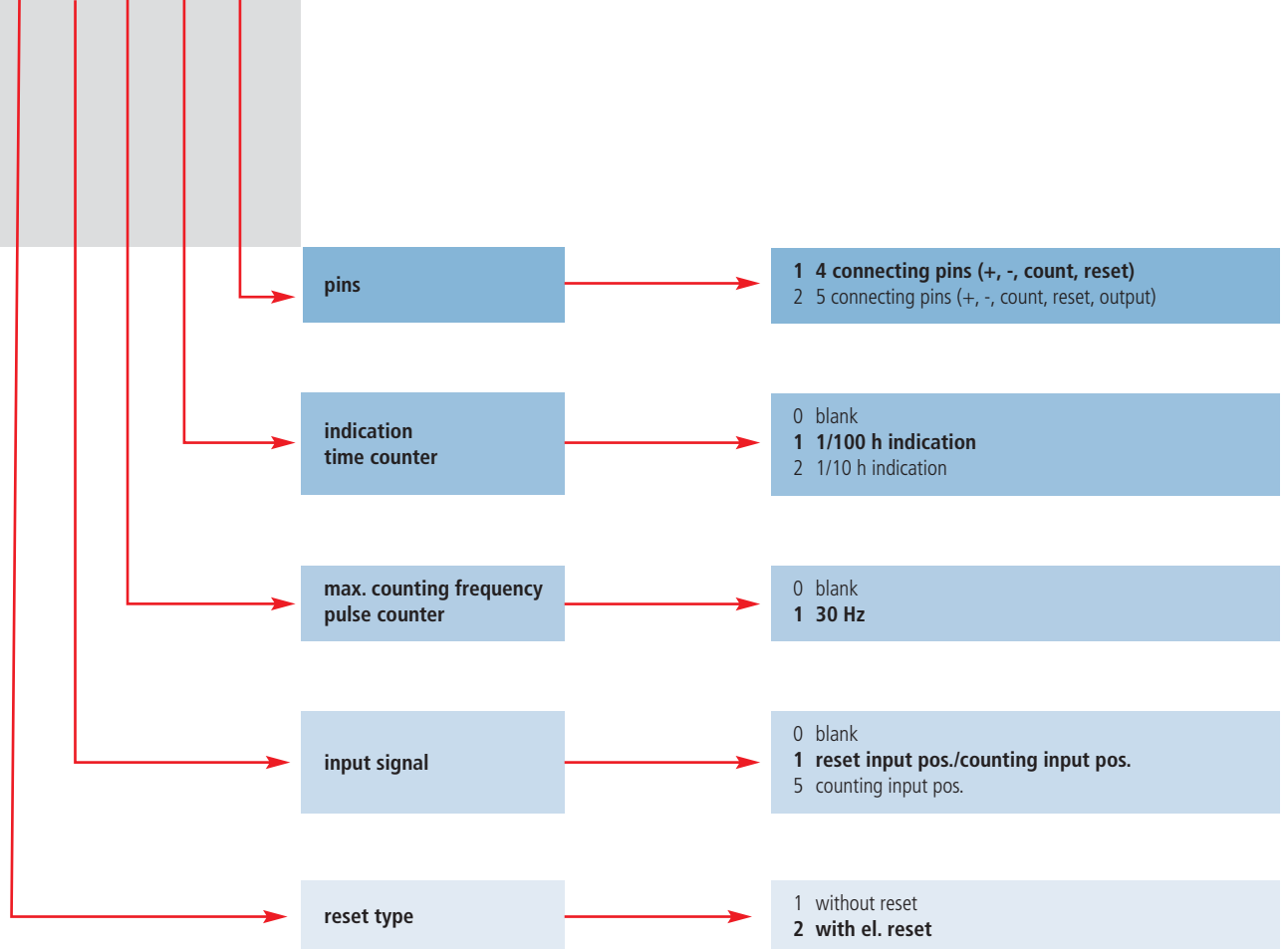
Order specifications

| counter type | LCD module 7 mm | signal output | reset for the following counter | notes |
|-----------------------|-----------------|---------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| single counter | | | | |
| HC* | 6000 | - | HC | |
| PC* | 6010 | - | PC | |
| Twin-counter | | | | |
| HC with HC (bg)* | 6020 | - | HC | HC (bg) not resetable |
| PC with PC (bg)* | 6030 | - | PC | PC (bg) not resetable |
| HC with PC (bg)* | 6040 | - | HC + PC | both counters are resetable, even PC while appearing on the display (e.g. combination of power-on time and frequency) |
| PC with HC (bg)* | 6050 | - | PC + HC | both counters are resetable, even HC while appearing on the display (e.g. combination of power-on time and frequency) |
| HC with SHC (bg)* | 6060 | optionally | SHC | HC not resetable |
| PC with SPC (bg)* | 6070 | optionally | SPC | PC not resetable |
| SHC with HC (bg)* | 6080 | optionally | SHC | HC not resetable |
| SPC with PC (bg)* | 6090 | optionally | SPC | PC not resetable |

* HC = hour counter
 PC = pulse counter
 SHC = service hour counter,
 SPC = service pulse counter
 bg = background

Further specifications for your order selection

60XX.X.X.X.X.X



written fat = preferred variants

Technical specifications:

Further order specifications:

Please state your required service and prewarning time. i.e.: The service should happen after 500 hours and the prewarning time activated after 480 hours through a flashing display, maximum 4 - minimum 1 digit values.

Mounting:

Please note: Setup and operation of the module only according to the current national guide lines and standards!

| | |
|------------------------------------|--------------------------------------------------------------------------------------------|
| indication: | LC-display with 7 digits (only active while connected) |
| character height: | 7 mm |
| version: | display holder black-chromed, optionally brass-blank (on request) |
| operating voltage: | 12 - 24 V DC ±25 % |
| current consumption: | 2-4 mA |
| ambient temp.: | - 30 ° C to + 70° C |
| stocking temp.: | - 40 ° C to + 80° C |
| electr. connection: | pins for soldering |
| reset: | electrical |
| vibration | 20 g acc. to SAEJ1378, |
| resistance: | 1 g (10 ... 500 Hz) acc. to EN 60068-2-34 |
| shock resistance: | 55 g acc. to SAEJ1378, 30 g (18ms) acc. to EN 60068-2-27, 25 g (6ms) acc. to EN 60068-2-29 |
| EMC: | EN 55011, EN 61000-6-2 |
| industrial norm: | EN 61010, protection class II |
| approval: | CE, UL, cUL |
| counting frequency/ pulse counter: | 30 or 200 Hz |
| data storage: | EEPROM |



type 6100, 6110



type 6150, 6160

LCD modules as time or pulse counters, 5 mm digit height, 12 - 48 V DC or battery-operated

For recording time and pulses BAUSER offers you a LCD module family to be integrated in your equipment and machinery. With these modules you are able to realize quite individual solutions.

The basis is an especially developed ASIC component by BAUSER. One of the remarkable features of this ASIC is the very low power consumption as well as an integrated temperature compensation for the high visibility LCD.

The counter modules are powered by an external power supply or by an internal lithium battery (life time of minimum 10 years). For the external power supply the data are stored by an EEPROM. Battery-operated modules feature a permanently readable indication.

The wide voltage range as well as the small dimensions are the basis for various applications. The high quality is an additional feature for applying these modules in utility vehicles and in the industrial sector.

The technical advantages of this Modules:

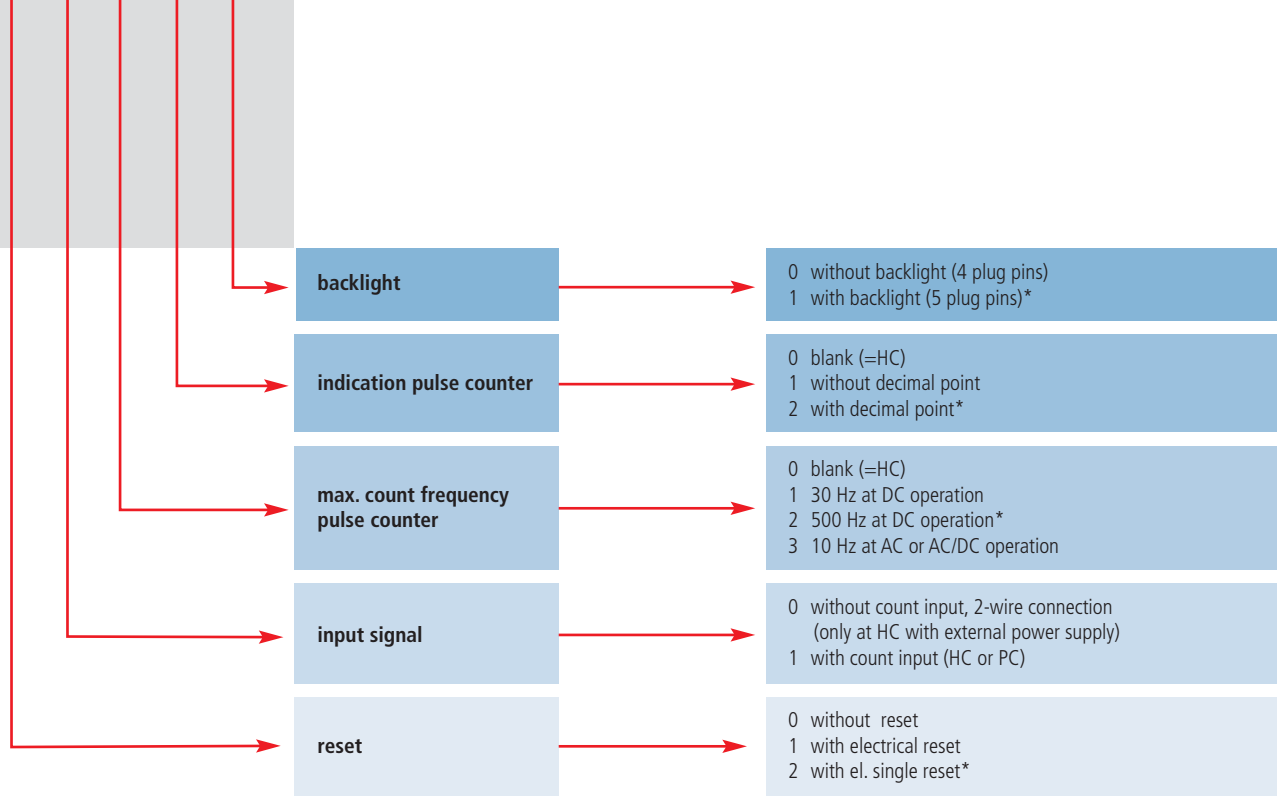
- high visibility LCD with digits height of 5 mm and temperature range of -40 °C to +85 °C
- battery-operated version (life time of battery: 10 years) is a real alternative to the electromechanical hour or pulse counters
- multi voltage from 12 - 48 V DC and low current consumption
- pulse counter with input frequency of up to 500 Hz (DC operation)
- 2- or 3-wire connection for hour counter
- highly shock and vibration resistant
- operating indication: clock-symbol on display
- data storage by battery (life time: min. 10 years) or EEPROM (min. 25 years)
- optionally with single reset
- optionally with decimal point for the pulse counter (for example kilometres counter)

Order specifications of range 61XX

| counter type | module with 5 mm digits height |
|---------------------------------------------|--------------------------------|
| module with external power supply | |
| time counter | 6100 |
| pulse counter | 6110 |
| module with internal lithium battery | |
| time counter | 6150 |
| pulse counter | 6160 |

Further specifications for your order selection

61XX.X.X.X.X.X



HC = hour counter

PC = pulse counter

* = no standard version – available on request!

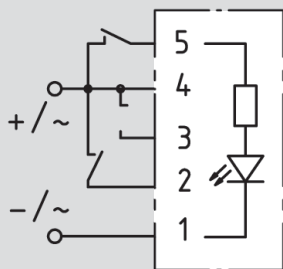
Technical specifications:

Please note:

Setup and operation of the module only according to the current national guide lines and standards!

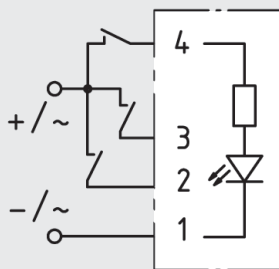
| | | | |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------|
| display holder: | black plastic | | |
| indication: | LC-Display, 7 digits, at battery-operated version permanent indication | | |
| character height: | 5 mm | | |
| reset : | without or electrical | | |
| data storage: | EEPROM (min. 25 years) or battery (min. 10 years) | | |
| ambient temp.: | -40 °C to +85 °C, -40 °C to +70 °C at battery supply | | |
| storage temp: | -40 °C to + 90 °C, -40 °C to +70 °C at battery supply | | |
| electr. connection: | pins for soldering | | |
| vibration resistance: | 20 g according to SAEJ1378, 1 g (10..500 Hz) according to EN60068-2-34 | | |
| shock resistance: | 55 g according to SAEJ1378, 30 g (18 ms) according to EN60068-2-27 25 g (6 ms) according to EN60068-2-29 | | |
| counting frequency (PC): | maximum 30 Hz or 500 Hz at DC operation maximum 10 Hz for AC or AC/DC variant | | |
| operating voltage: | 12 V DC - 48 V DC ±25% | | |
| current consumption: | 1 mA - 5 mA | | |
| input resistance: | approx. 40 kOhm (count, reset) | | |
| life time of battery: | Min. 10 years under the following conditions: • 10 Mio. switching cycles of count and reset at 23 °C • mean duty cycle at count and reset: 12h/day • min. signal rise time at count and reset: 5 ms • signal voltage at count and reset: Ub ±25 %, off: < 0,75V or floating | | |
| option backlight: | operating voltage: 12 V DC ±25 % current consumption: ca. 30 mA | 24 V DC ±25 % ca. 15 mA | 36 V DC ±25 % - 48 V DC ±25 % ca. 5 mA - 8 mA |
| EMC: | EN 55011, EN 61000-6-2 | | |
| industrial norm: | EN 61010 | | |
| approval: | CE, UL, cUL | | |
| protection class: | pins IP00 | | |
| fixing: | print mounting | | |

wiring diagram external power supply:



5 = backlight (option only at DC version)
 4 = DC "+" or AC
 3 = time and pulse counter input
 2 = reset
 1 = DC "-" or AC

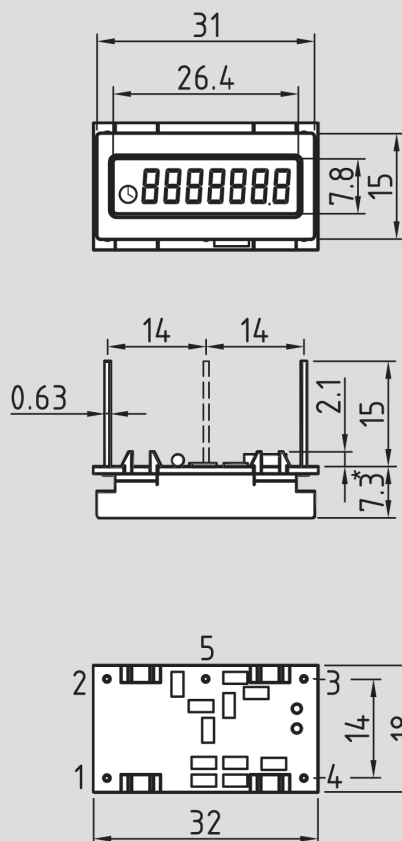
wiring diagram battery version:



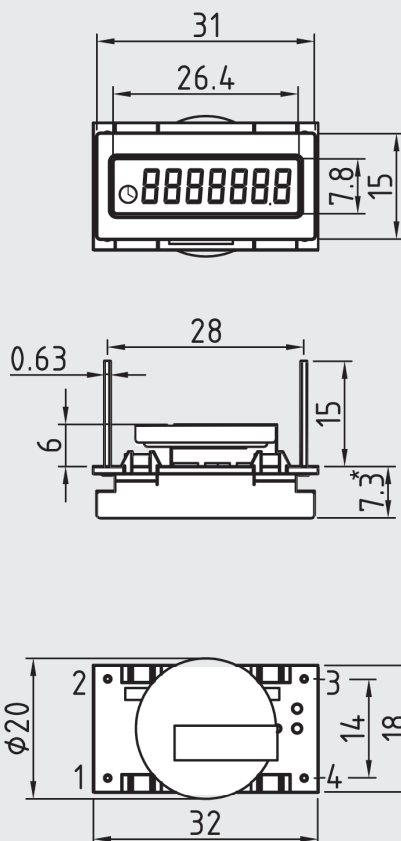
4 = backlight (option only at DC version)
 3 = time and pulse counter input
 2 = reset
 1 = DC "-" or AC

Wiring diagrams type 6100 to 6160:

drawing type 6100, 6110



drawing type 6150, 6160



Drawings type 6100 to 6160:

*optional: 5,9 mm,
 backlight version: 14,8 mm

■ Electromechanical hour counters



type 631, 631.1, 633, 633.1, 629, 629.1, 637, 637.1



type 632, 632.1, 634, 634.1, 630, 630.1, 638, 638.1



type 631.2, 631.3, 633.2, 633.3, 629.2, 629.3, 637.2, 637.3



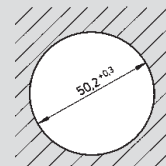
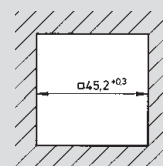
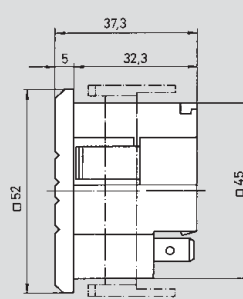
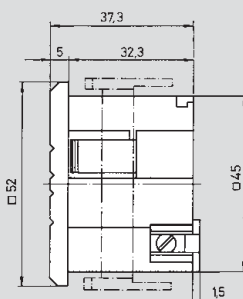
type 632.2, 632.3, 634.2, 634.3, 630.2, 630.3, 638.2, 638.3

Hour counters, for AC or DC, 48 x 48 mm, 52 x 52 mm

The world-wide known BAUSER hour counters can be fast and easily mounted. As the counters are available in all current front dimensions, you do not require additional bezels.

Front frame 52 x 52 mm, cutout $\varnothing 50,2^{+0,3}$ mm or $\square 45,2^{+0,3}$ mm

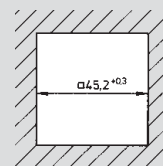
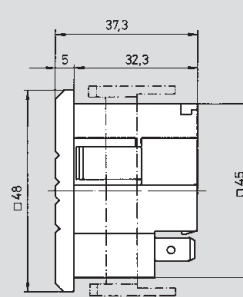
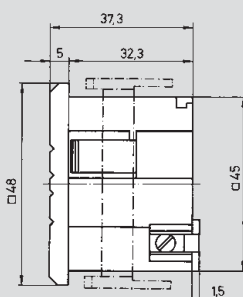
| AC | DC | grey | black | terminal connection | plug connection | protection against accidental contact with | protection against accidental contact without |
|-------|-------|------|-------|---------------------|-----------------|--------------------------------------------|-----------------------------------------------|
| 631 | 629 | ■ | | ■ | | ■ | |
| 632 | 630 | | ■ | ■ | | ■ | |
| 633 | 637 | ■ | | ■ | | | ■ |
| 634 | 638 | | ■ | ■ | | | ■ |
| 631.1 | 629.1 | ■ | | | ■ | ■ | |
| 632.1 | 630.1 | | ■ | | ■ | ■ | |
| 633.1 | 637.1 | ■ | | | ■ | | ■ |
| 634.1 | 638.1 | | ■ | | ■ | | ■ |



with or without protection against accidental contact

Front frame 48 x 48 mm, cutout $\square 45,2^{+0,3}$ mm

| AC | DC | grey | black | terminal connection | plug connection | protection against accidental contact with | protection against accidental contact without |
|-------|-------|------|-------|---------------------|-----------------|--------------------------------------------|-----------------------------------------------|
| 631.2 | 629.2 | ■ | | ■ | | ■ | |
| 632.2 | 630.2 | | ■ | ■ | | ■ | |
| 633.2 | 637.2 | ■ | | ■ | | | ■ |
| 634.2 | 638.2 | | ■ | ■ | | | ■ |
| 631.3 | 629.3 | ■ | | | ■ | ■ | |
| 632.3 | 630.3 | | ■ | | ■ | ■ | |
| 633.3 | 637.3 | ■ | | | ■ | | ■ |
| 634.3 | 638.3 | | ■ | | ■ | | ■ |



with or without protection against accidental contact

■ Electromechanical hour counters



type 631.4, 631.5, 633.4, 633.5, 629.4, 629.5, 637.4, 637.5



type 632.4, 632.5, 634.4, 634.5, 630.4, 630.5, 638.4, 638.5



type 631 A.2, 629 A.2



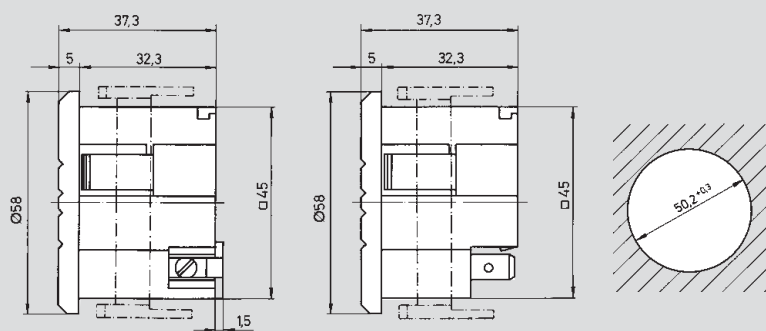
type 632 A.2, 630 A.2
with additional terminal cover type A

Hour counters, for AC or DC, 48 x 48 mm for surface or DIN-rail mounting, front Ø 58 mm

You can obtain the BAUSER counters in the housing colours grey (RAL no. 7032) and black, on request even in light-grey (RAL no. 7035) and with your logo on it (minimum quantity required). Approved to CE, UL/CSA.

Front frame Ø 58 mm, cutout Ø 50,2 + 0,3 mm

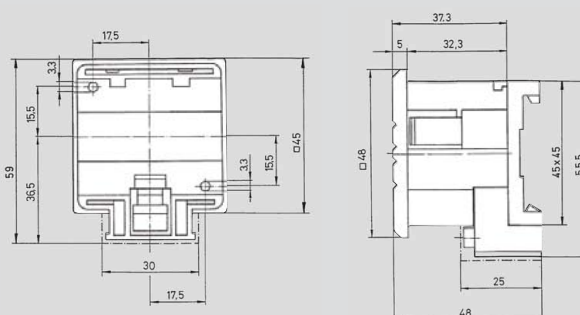
| AC | DC | grey | black | terminal connection | plug connection | protection against accidental contact with | protection against accidental contact without |
|-------|-------|------|-------|---------------------|-----------------|--------------------------------------------|-----------------------------------------------|
| 631.4 | 629.4 | ■ | | ■ | | ■ | |
| 632.4 | 630.4 | | ■ | ■ | | ■ | |
| 633.4 | 637.4 | ■ | | ■ | | | ■ |
| 634.4 | 638.4 | | ■ | ■ | | | ■ |
| 631.5 | 629.5 | ■ | | | ■ | ■ | |
| 632.5 | 630.5 | | ■ | | ■ | ■ | |
| 633.5 | 637.5 | ■ | | | ■ | | ■ |
| 634.5 | 638.5 | | ■ | | ■ | | ■ |



with or without protection against accidental contact

Front frame 48 x 48 mm, surface or DIN rail 35 mm (DIN 46277)

| AC | DC | grey | black | terminal connection | plug connection | protection against accidental contact with | protection against accidental contact without |
|---------|---------|------|-------|---------------------|-----------------|--------------------------------------------|-----------------------------------------------|
| 631 A.2 | 629 A.2 | ■ | | ■ | | ■ | |
| 632 A.2 | 630 A.2 | | ■ | ■ | | ■ | |



with or without protection against accidental contact



counter 48 x 48 mm,
with bezel 55 x 55 mm



counter 48 x 48 mm,
with bezel 72 x 72 mm

Accessories

Beside the standard program BAUSER offers you a range of individual special developments. Inform us about your requirements and ideas – we find a solution for you.

variants for 20 to 100 Hz operation:

order code, i.e. 631/943

bezel 55 x 55 mm:

grey or black, fitting to the counter with front frame 48 x 48 mm

bezel 72 x 72 mm:

grey or black, fitting to the counter with front frame 48 x 48 mm

blind cover 53 x 53 mm:

suited for types with square cutout

terminal cover type A:

fitting for type 631A.2, 632A.2, 629A.2, 630A.2

A later combination to get a DIN-rail counter is possible with types 633... or 634...or 637...or 638... and a mounting socket

additional sealing:

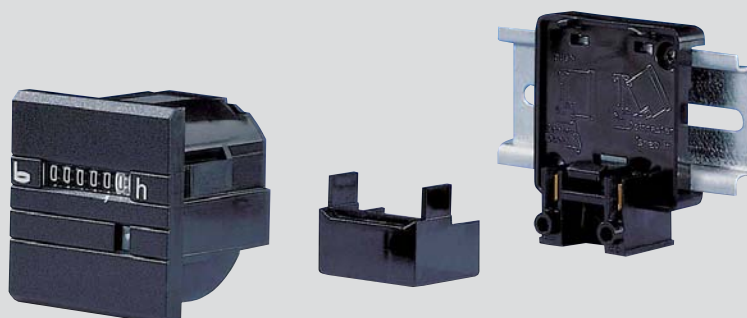
rubber seal for all versions with square or round cutout – please indicate type in your order

metal clamp:

available for all types, but the mounting depth changes: .. + 16 mm, order code, i.e.: 631.4/879

hour counters for magneto ignition:

on request, order code. i.e. 630.5/954



type 632A.2, 630A.2 with additional terminal cover type A

■ Electromechanical hour counters



* This retaining clip is included in the delivery at types for flush mounting (panel thickness up to 10 mm)

Accessories

Technical specifications:

| | AC | DC |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| reset: | no | no |
| counting range: | 99999,99 h | 99999,99 h |
| digits: | 1,5 x 3,5 mm (with lens 4 mm), white on black, decimals black on white | 1,5 x 3,5 mm (with lens 4 mm), white on black, decimals black on white |
| standard voltages: | 115 or 230 V AC | 10 - 80 V DC (1,5 - 15 mA) |
| special voltages: (at additional cost) | 12, 24, 36 - 48 and 400 V AC | 2 - 20 V DC (0,5 - 27 mA) 80 - 220 V DC (1,5 - 4,5 mA) |
| voltage tolerance: | ±10 % | - |
| frequency: | 50 or 60 Hz (on request 50 and 60 Hz) | - |
| current consumption: | approx. 10 mA at rated voltage | see above |
| protection class: | DIN 40050, housing IP 65 (front) terminals: IP 20 (Variant VBG 4) IP 00 (without VBG 4) | DIN 40050, housing IP 65 (front) terminals: IP 20 (Variant VBG 4) IP 00 (without VBG 4) |
| testing voltage: | winding and contact against GND 2500 V/50 Hz | - |
| ambient temperature: | -30 °C to +80 °C | -30 °C to +80 °C |
| fixing: | via included retaining clip*, panel thickness up to 10 mm, or via integrated snap-in lugs, panel thickness up to 2 mm, whereas the cutout should be 45,2 + 0,3 x 45,2 + 0,3 mm | via included retaining clip*, panel thickness up to 10 mm, or via integrated snap-in lugs, panel thickness up to 2 mm, whereas the cutout should be 45,2 + 0,3 x 45,2 + 0,3 mm |
| connection: | terminals or plugs, with or without protection against accidental contact | terminals or plugs, short circuit and reverse battery protected |
| approval: | CE, optional UL and CSA | CE |
| operation indication: | yes | yes |
| weight: | approx. 46 g | approx. 46 g |

Our developing and production know-how is excellent. This was certified according ISO9001. That is why we can guarantee to our world-wide OEM customers high quality products in the shortest time.



type 250, 250.1, 250.2, 260, 260.1, 260.2



type 251, 251.1, 251.2, 261, 261.1, 261.2



type 252, 252.1, 252.2, 262, 262.1, 262.2



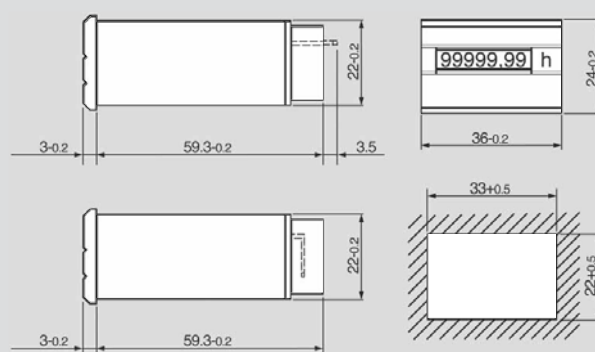
type 253, 253.1, 253.2, 263, 263.1, 263.2

Hour counters, for AC or DC, 36 x 24 mm, 48 x 24 mm

These are 7 digit BAUSER hour counters with the smallest dimensions for AC and DC operation. They are even suited for heavy applications on utility vehicles. Even for this range a protection class of IP65 (front) is offered.

Front frame 36 x 24 mm, protection class IP 65

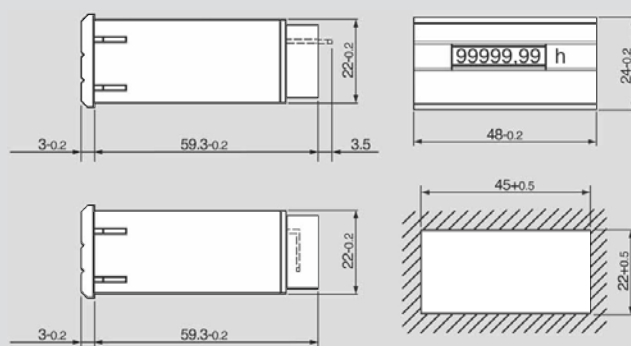
| AC | DC | front black | front grey | plug connect 6,3 x 0,8 „straight“ | plug connect „bent“ 90° | terminal connect „bent“ 90° |
|-------|-------|----------------|---------------|-----------------------------------------|-------------------------------|-----------------------------------|
| 250 | 260 | ■ | | ■ | | |
| 250.1 | 260.1 | ■ | | | ■ | |
| 250.2 | 260.2 | ■ | | | | ■ |
| 251 | 261 | | ■ | ■ | | |
| 251.1 | 261.1 | | ■ | | ■ | |
| 251.2 | 261.2 | | ■ | | | ■ |



A BAUSER top program, where everything is correct. From the technical solution, through the design up to the usual good value for money.

Front frame DIN dimension 48 x 24 mm Protection class IP 65

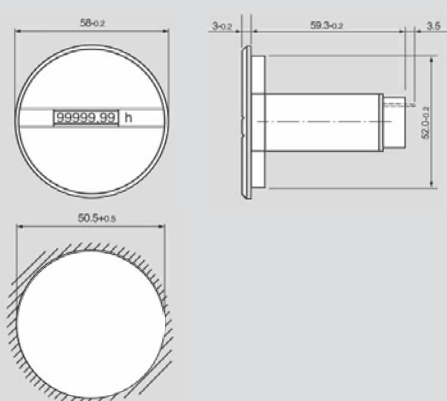
| AC | DC | front black | front grey | plug connect 6,3 x 0,8 „straight“ | plug connect „bent“ 90° | terminal connect „bent“ 90° |
|-------|-------|----------------|---------------|-----------------------------------------|-------------------------------|-----------------------------------|
| 252 | 262 | ■ | | ■ | | |
| 252.1 | 262.1 | ■ | | | ■ | |
| 252.2 | 262.2 | ■ | | | | ■ |
| 253 | 263 | | ■ | ■ | | |
| 253.1 | 263.1 | | ■ | | ■ | |
| 253.2 | 263.2 | | ■ | | | ■ |



■ Electromechanical hour counters



type 256, 256.1, 256.2, 266, 266.1, 266.2



Hour counters, for AC or DC, 53 x 31 mm, ø 52 mm

BAUSER offers – especially for your vehicle technology – hour counters with different housing variants. For power supply, you can choose between the classical plug- or terminal connection.

| AC | DC | cutout ø 52 mm | cutout 36,8 x 24,1 ± 0,5 mm | cutout 36,8 x 22 ± 0,5 mm | plug con. 6,3 x 0,8 „straight“ | plug con. „bent“ 90° | terminal con. „bent“ 90° |
|-------|-------|-------------------|-----------------------------------|---------------------------------|--------------------------------------|----------------------------|--------------------------------|
| 256 | 266 | ■ | | | ■ | | |
| 256.1 | 266.1 | ■ | | | | ■ | |
| 256.2 | 266.2 | ■ | | | | | ■ |
| 258 | 268 | | ■ | | ■ | | |
| 258.1 | 268.1 | | ■ | | | ■ | |
| 258.2 | 268.2 | | ■ | | | | ■ |
| 271 | 281 | | | ■ | ■ | | |
| 271.1 | 281.1 | | | ■ | | ■ | |
| 271.2 | 281.2 | | | ■ | | | ■ |

Accessories and special types at additional cost:

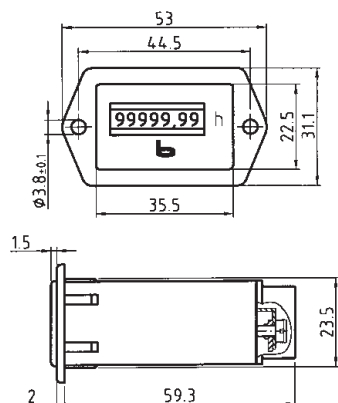
- variant for 20 to 100 Hz operation: order code i.e.: 250/943
- rubber seal: for additional sealing (please indicate for which type it is required)
- spring wire bracket: optionally, if there is only little space available –
but only up to maximum 48 V

Technical specifications:

| | AC | DC |
|-------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|
| housing: | plastic, black | plastic, black |
| reset: | no | no |
| counting range: | 99999,99 h | 99999,99 h (new - two decimals) |
| digit height: | 1,8 x 3,6 mm (with lens), white on black, decimals black on white | 1,8 x 3,6 mm (with lens), white on black, decimals black on white |
| voltages: | 115 or 230 V AC | 12 - 24 V DC |
| special voltages (at additional cost): | 12, 24 or 42 V AC | on request |
| voltage tolerance: | ±10 % | - |
| frequency: | 50 or 60 Hz - (on request 20 to 100 Hz operation) | |
| current consumption: | approx. 8 mA | approx. 5 - 15 mA |
| protection DIN 40050: | housing: IP 65 (front) terminals: IP 00 | housing: IP 65 (front) terminals: IP 00 |
| ambient temperature: | -30 °C to +80 °C | -20 °C to +80 °C |
| fixing: | retaining clipretaining clip | |
| connections: | terminals or plugs (straight or bent) | terminals or plugs short circuit and reverse battery protected |
| approvals: | CE, UL | CE, UL, cUL |
| weight: | approx. 35 g | approx. 35 g |



type 258, 258.1, 258.2, 268, 268.1, 268.2
271, 271.1, 271.2, 281, 281.1, 281.2



■ Electromechanical hour counters



type 603, 603.2, 603.3, 608, 608.2, 608.3*



type 604, 604.2, 604.3, 609, 609.2, 609.3*



type 604.10, 604.10.2, 604.10.3
609.10, 609.10.2, 609.10.3*



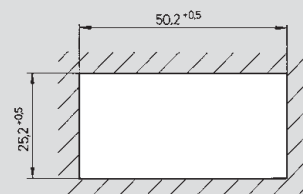
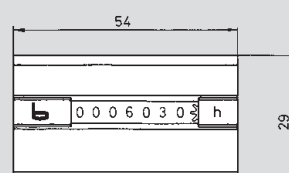
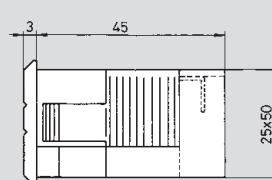
type 610.11, 610.11.1, 617.11, 617.11.1*

Hour counters, for AC or DC, with or without reset, 54 x 29 mm

These AC or DC counters offer a snap-in fixing for fast mounting and are available with or without cable connection and reset. On request even with detachable key, that is why they are protected against manipulation.

Front frame 54 x 29 mm, in BAUSER design

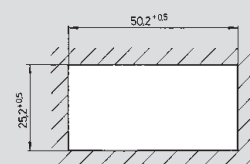
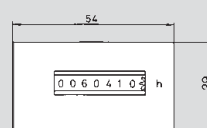
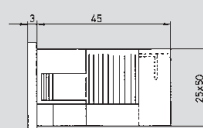
| AC | DC | grey | black | terminal connection | plug connection 6,3 x 0,8 | cable 2 x 0,38 \square L: 500 mm |
|-------|-------|------|-------|---------------------|---------------------------|------------------------------------|
| 603 | 608 | ■ | | | ■ | |
| 603.2 | 608.2 | ■ | | ■ | | |
| 603.3 | 608.3 | ■ | | | | ■ |
| 604 | 609 | | ■ | | ■ | |
| 604.2 | 609.2 | | ■ | ■ | | |
| 604.3 | 609.3 | | ■ | | | ■ |



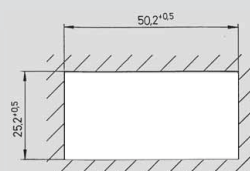
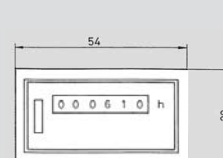
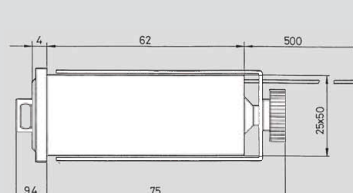
type 603 bis 609.3

Front frame 54 x 29 mm, without bezel

| AC | DC | grey | black | terminal connection | plug connection 6,3 x 0,8 | cable 2 x 0,38 \square L: 500 mm | reset without | with |
|-----------|-----------|------|-------|---------------------|---------------------------|------------------------------------|---------------|------|
| 604.10 | 609.10 | | ■ | | ■ | | ■ | |
| 604.10.2 | 609.10.2 | | ■ | ■ | | | ■ | |
| 604.10.3 | 609.10.3 | | ■ | | | ■ | ■ | |
| 610.10 | 617.10 | ■ | | | | ■ | | ■ |
| 610.10.1* | 617.10.1* | ■ | | | | ■ | | ■ |
| 610.11 | 617.11 | | ■ | | | ■ | | ■ |
| 610.11.1* | 617.11.1* | | ■ | | | ■ | | ■ |



type 604.10 bis 609.10.3



type 610.10 bis 617.11.1

■ Electromechanical hour counters



retaining clip at additional cost
(for type 603 to 609.3)

Accessories

BAUSER offers hour counters for operation on 50 and 60 Hz for the world-wide sales. These special types are available with order code .../943. Just as the AC standard counters are UL- and CSA approved.

Technical specifications:

| | AC | AC | DC | DC |
|----------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------|
| type: | 603 - 604.10.3 | 610.10, 610.10.1(*), 610.11, 610.11.1(*) | 608 - 609.10.3(*) | 617.10, 617.10.1(*), 617.11, 617.11.1(*) |
| reset: | no | yes | no | yes |
| counting range: | 99999,99 h | 9999,99 h (99999,9 h = 610.10.1, 610.11.1) | 999999,9 h | 9999,99 h (99999,9 h = 617.10.1, 617.11.1(*)) |
| digits: | 1,5 x 4 mm (with lens) white on black, decimals black on white | 2 x 4 mm, white on black, decimals black on white | 1,5 x 4 mm (with lens) white on black, decimals black on white | 2 x 4 mm, white on black, decimals black on white |
| voltages: | 115 or 230 V AC | 115 or 230 V AC | 10 - 50 V DC | 12 - 24 V DC |
| special voltages (at additional cost): | 12, 24, 42 and 400 V AC | 12, 24 and 42 V AC over 230 V AC with loose capacitor | 50 - 120 V DC | 36, 80, 110 V DC |
| voltage tolerance: | ±10 % | ±10 % | - | ± 15 % |
| frequency: | 50 or 60 Hz | 50 or 60 Hz | - | - |
| current consumption: | approx. 8 mA | approx 2 VA | 2,6 - 14,5 mA (1,3 - 3,5 mA at special voltage) | 7,5 - 30 mA (8 - 14 mA at special voltage) |
| protection class DIN 40050: | housing: IP 65 (front) terminals: IP 00 | housing: IP 41 (front) - | housing: IP 65 (front) terminals: IP 00 | housing: IP 41 (front) - |
| ambient temperature: | -20 °C to +70 °C | -20 °C to +70 °C | -20 °C to +70 °C | -10 °C to +50 °C |
| fixing: | integr. snap-in lugs, panel thickness 0,5 - 3 mm cutout 50,5 x 25,5 mm | metal clamp | integr. snap-in lugs, panel thickness 0,5 - 3 mm cutout 50,5 x 25,5 mm | metal clamp |
| retaining clip (at additional cost): | for panel thickness up to 15 mm | - | for panel thickness up to 15 mm | - |
| approvals: | CE (UL and CSA – at additional cost) | CE | CE | CE |
| operation indication: | yes | no | yes | no |
| conn. short circuit a. reverse batt. prot.: | - | - | yes | yes |
| protect. ag. accidental contact (to VBG 4): | yes | yes | yes | yes |
| weight: | approx. 45 g | approx. 135 g | approx. 45 g | approx. 135 g |

(*): only one position after decimal point

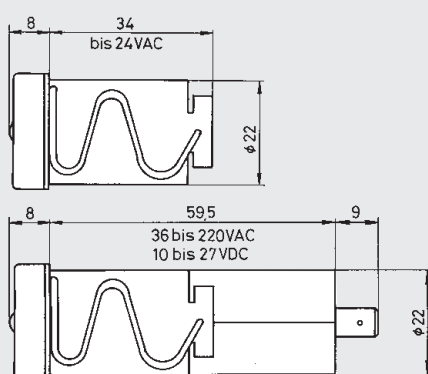
Accessories and special types at additional cost:

- **variants for 20 to 100 Hz operation:** order code i.e.: 603/943
- **reset with key:** for types 610.10/S, 610.11/S, 617.10/S, 617.11/S (detachable key)
- **retaining clip:** for type range 603 - 609.10.2
- **rubber seal for additional sealing:** between counter and panel
- **blind cover:** grey or black and cutout of minimum 50,2 x 25,2 ± 0,5 mm
- **prolonged cable connection**

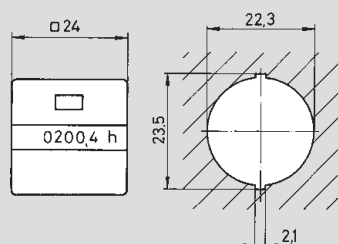
■ Electromechanical hour counters



type 200.4, 208



drawings



drawings

Mini hour counters, for AC or DC, 24 x 24 mm

If you want to register operation hours and have only minimum space available, then you can count on the mini counter with a counting range of rounded up 10.000 hours. This counter needs only a cutout of 22,3 mm.

| AC | DC | solder or plug connection | grey housing |
|-------|-----|---------------------------|--------------|
| 200.4 | 208 | ■ | ■ |

Accessories and special types at additional cost:

- **variants for 20 to 100 Hz operation:** order code i.e.: 200.4/943, but only up to 24 V AC or a pre-resistor is needed
- **type 200.4 R with 2 counting inputs:** for recording of different sizes

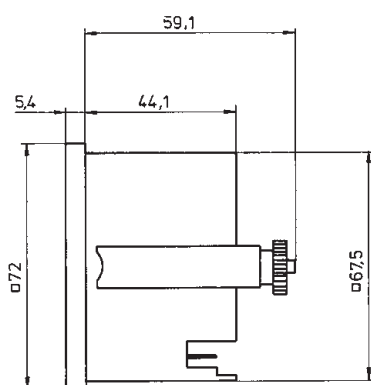
Technical specifications:

| | AC | DC |
|----------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| reset: | no | no |
| counting range: | 9999,9 h | 9999,9 h |
| digits: | 1,5 x 3,5 mm (with lens) white on black, decimals black on white | 1,5 x 3,5 mm (with lens) white on black, decimals black on white |
| voltages: | 12 - 24 or 230 V AC | 10 - 27 V AC/DC |
| special voltages (at additional cost): | 36 - 60, 60 - 140 V AC, over 230 V with separate capacitor | - |
| voltage tolerance: | ±10 % | - |
| frequency: | 50 or 60 Hz (on request 20 - 10 0 Hz operation) | - |
| current consumption: | approx. 8 mA | 7,5 - 39 mA |
| protection class DIN 40050: | housing: IP 54 terminals: IP 00 | housing: IP 54 terminals: IP 00 |
| ambient temperature: | -30 °C to +80 °C | -10 °C to +50 °C |
| fixing: | spring wire | spring wire |
| approval: | CE | CE |
| operation indication: | yes | yes |
| cutout: | Ø 22,3 mm, for an optimal fixing | Ø 22,3 mm, for an optimal fixing |
| mounting depth: | 34 mm at 12 - 24 V counters, 68,5 mm at higher voltages | 68,5 mm |
| connection: | at 12 - 24 V, plugs 1,5 x 0,5 as solder part, for all higher voltages 2 plugs 6,3 x 0,8 mm | 2 plugs 6,3 x 0,8 mm |
| weight: | approx. 30 g | approx. 30 g |

■ Electromechanical hour counters



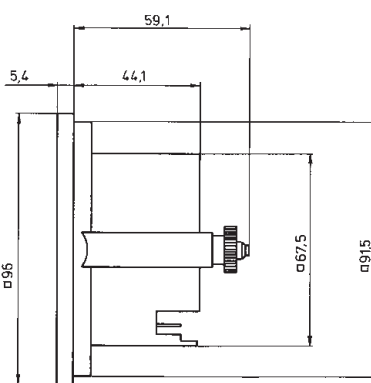
type R5 72, R5 77



drawing 72 x 72



type R5 72 N



drawing 96 x 96

Minutes and hour counters, for AC or DC, with or without reset, 72 x 72 mm, 92 x 92 mm

Hour counters with DIN dimensions 72 and 96 mm □, suitable for all standard measuring instruments. For AC or DC, for recording of hours or minutes, with or without reset.

Front frame 72 x 72 mm or 96 x 96 mm

| AC | DC | reset | | front frame mm | cutout mm | counting range |
|-----------|-------|-------|---------|----------------|-----------|----------------|
| | | with | without | | | |
| R5 72 | R5 77 | | ■ | 72 x 72 | 68 x 68 | 99999,99 h |
| R5 72 N | | ■ | | 72 x 72 | 68 x 68 | 9999,99 h |
| R5 72 N/M | | ■ | | 72 x 72 | 68 x 68 | 99999,9 min. |
| R5 96 | R5 97 | | ■ | 96 x 96 | 92 x 92 | 99999,99 h |
| R5 96 N | | ■ | | 96 x 96 | 92 x 92 | 9999,99 h |
| R5 96 N/M | | ■ | | 96 x 96 | 92 x 92 | 99999,9 min. |

Accessories and special types at additional cost:

- terminal cover type R5 protection against accidental contact
- detachable key for reset: order code i.e.: R5 72 N/S
- *DC hour counter with reset

Technical specifications:

| | AC | DC |
|-------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------|
| reset: | dependent on type | no |
| digits: | 2 x 4 mm, white on black, decimals black on white | 2 x 4 mm, white on black, decimals black on white |
| voltages: | 115 or 230 V AC | 10 - 50 V DC |
| special voltages (at additional cost): | 12, 24, 42 and 400 V AC | 36, 80, 110 V DC |
| voltage tolerance: | ±10 % | - |
| frequency: | 50 or 60 Hz | - |
| current consumption: | approx. 2 VA | 7,5 - 30 mA |
| protection class DIN 40050: | housing with reset button: IP 52 housing without reset button: IP 41 terminals: IP 00 | housing: IP 52 terminals: IP 00 |
| ambient temperature: | -10 °C to +60 °C | -10 °C to +50 °C |
| fixing: | metal bracket | metal bracket |
| connection: | terminal or plug (0,8 x 6,3 mm) | terminal or plug (0,8 x 6,3 mm) |
| approval: | CE, (UL at additional cost) | CE |
| protect. ag. accidental contact (at add. cost): | terminal cover type R5 VBG-4-requirements | terminal cover type R5 VBG-4-requirements |
| operation indication: | yes | yes |
| short circuit and rev. battery protected: | - | yes |
| weight: | approx. 115 or 140 g | approx. 120 or 145 g |

■ Electromechanical hour counters

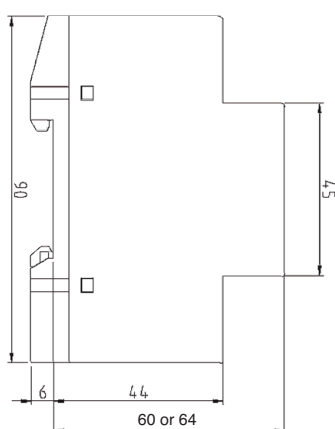


type 661.6, 661.7, 666.6, 666.7

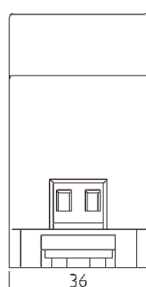
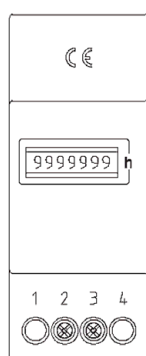
Hour counters for DIN rail mounting, for AC or DC, overall height 60 mm or 64 mm

With its overall height of 60 or 64 mm it is an ideal counter program for DIN rail mounting. A part of these AC or DC counters are produced with two decimals and special terminals (lift principle) values in just one single housing.

| AC | DC | counting range | overall height in mm | | »Lift«-terminal connection |
|-------|-------|----------------|----------------------|----|----------------------------|
| | | | 60 | 64 | |
| 661.6 | 666.6 | 99999,99 h | ■ | | ■ |
| 661.7 | 666.7 | 99999,99 h | | ■ | ■ |



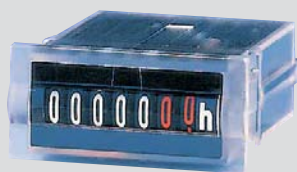
drawing



Find pulse counter as single counter for DIN rail mounting on page 41.

Technical specifications:

| | AC | DC |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| housing: | plastic light grey RAL 7035 | plastic light grey RAL 7035 |
| gearing: | plastic | plastic |
| counting range: | 99999,99 | 99999,99 |
| digits: | 1,8 x 3,6 mm, white on black, Decimals black on white | 1,8 x 3,6 mm, white on black, Decimals black on white |
| voltages: | 115 or 230 V AC | 12 - 24 V DC |
| special voltages: (additional charge) | 12, 24, 48, 400 V AC | on request |
| voltage tolerance: | ±10 % | ±10 % |
| frequency: | 50 or 60 Hz (on request 20 to 100 Hz) | |
| power consump.: | < 2 VA | < 1 VA |
| protection (front): | IP 65, screws IP 20 | IP 65, screws IP 20 |
| ambient temp.: | -10 °C to +70 °C | -10 °C to +70 °C |
| stocking temp.: | -40 °C to +80 °C | -40 °C to +80 °C |
| elec. connection: | Terminal Blocks (lift principle) with Philips-Head-Screw (+/- screw) in combination with slotted screw with 3 mm screwdriver size, 0-2.5 mm ² fine wire or 0-4 mm ² single wire clamp 2 and 3 (1 and 4 n. c.) | Terminal Blocks (lift principle) with Philips-Head-Screw (+/- screw) in combination with slotted screw with 3 mm screwdriver size, 0-2.5 mm ² fine wire or 0-4 mm ² single wire clamp 2 and 3 (1 and 4 n. c.) |
| max. torque: | 0,5 Nm | 0,5 Nm |
| vibration resist.: | 1 g (10...500 Hz) acc. to EN 60068-2-34 | 1 g (10...500 Hz) acc. to EN 60068-2-34 |
| shock resistance: | 30 g (18 ms) acc. to EN 60068-2-27 25 g (6 ms) acc. to EN 60068-2-29 | 30 g (18 ms) acc. to EN 60068-2-27 25 g (6 ms) acc. to EN 60068-2-29 |
| EMC: | EN 55011, EN 61000-6-2 | EN 55011, EN 61000-6-2 |
| industrial norm: | EN 61010, protection class II | EN 61010, protection class II |
| reset: | without | without |
| weight: | approx. 75 g | approx. 75 g |
| approval: | CE, UL, cUL | CE, UL, cUL |
| fixing: | snap-on fixing for DIN-rail according to DIN EN 50022 | snap-on fixing for DIN-rail according to DIN EN 50022 |



type 656

Mini hour counters, 4,5 - 35 V DC, 32 x 15 mm

Mini hour counter for 4,5 to 35 V DC

These mini hour counters for DC operation are suited for panel or printed circuit mounting. Find the corresponding pulse counters with same dimensions on page 42.

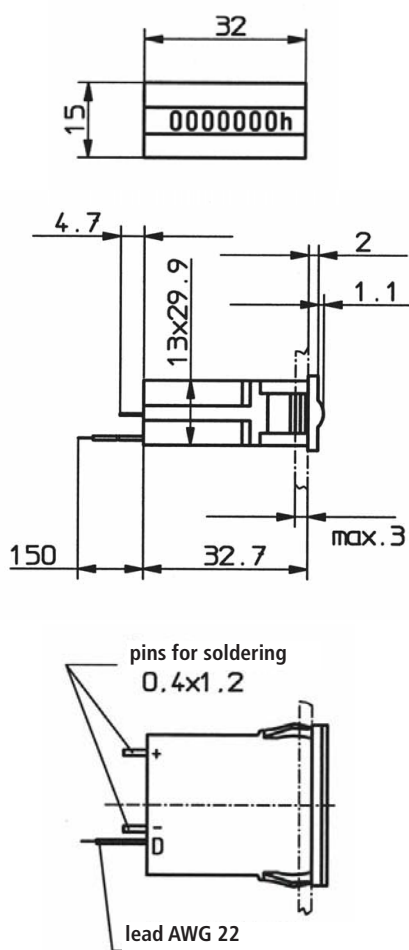
| | |
|-----|-------------------------------------------------|
| DC | front panel mounting (snap-in fixing max. 3 mm) |
| 656 | ■ |

Special features:

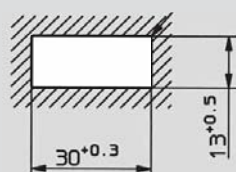
- with disable input for recording very short operating times
- high shock- and vibration resistance
- little current consumption
- well suited for battery-operated application and electronic circuits

Technical specifications:

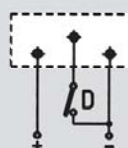
| | DC |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| reset: | no |
| counting range: | 99999,99 h |
| character height: | 4 mm |
| operating voltage: | 4,5 to 35 V DC |
| power consumption: | at $U_B = 5\text{ V DC}$ type 82 mW at $U_B = 12\text{ V DC}$ type 135 mW at $U_B = 24\text{ V DC}$ type 135 mW max. 170 mW Only every 36 s with a pulse length of 3 ms |
| protection: | IP 65 (front) |
| ambient temperature: | - 10° C to + 60° C |
| electr. connections: | soldered conn. 0,4 x 1,2 mm |
| weight: | 16 g |
| maintenance-free operation: | yes |



drawings



cutout



wiring diagram

| D | function |
|--------|----------|
| open | count |
| closed | break |

Hour counters, 10 - 80 V DC, with minute indicator, ø 52 mm, ø 60 mm

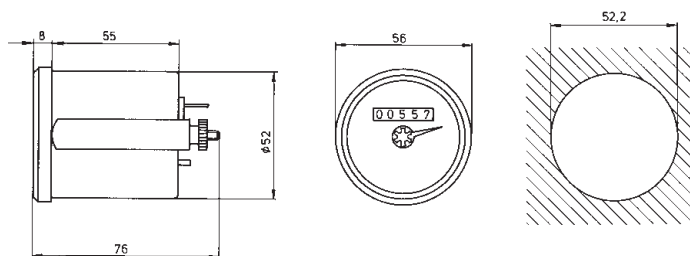
These quartz-operated hour counters for the utility vehicle industry have stood the test of decades. They have an elevated design, are robust, with water-proof front-face and available for the 52 or 60 mm panel cutout. The time is rapide and easily readable with the circulating minute hand.

Housing Ø 52 mm with chromed 3-edge-frontal ring



type 557, 558

| DC | terminal connection | plug connection 6,3 x 0,8 mm | 3-edge-frontal ring chromed |
|-----|---------------------|---------------------------------|--------------------------------|
| 557 | | ■ | ■ |
| 558 | ■ | | ■ |

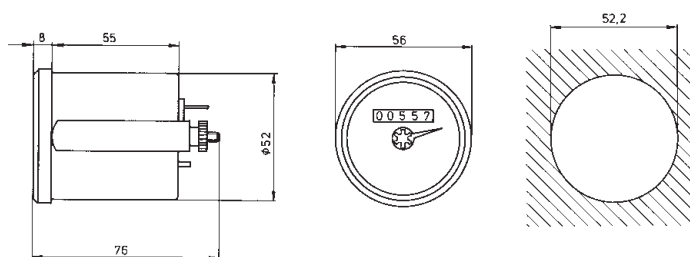


Housing Ø 52 mm with black-chromed 3-edge-frontal ring



type 557.2, 558.2

| DC | terminal connection | plug connection 6,3 x 0,8 mm | 3-edge-frontal ring black chromed |
|-------|---------------------|---------------------------------|--------------------------------------|
| 557.2 | | ■ | ■ |
| 558.2 | ■ | | ■ |

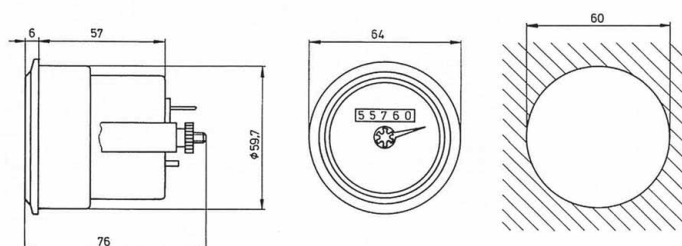


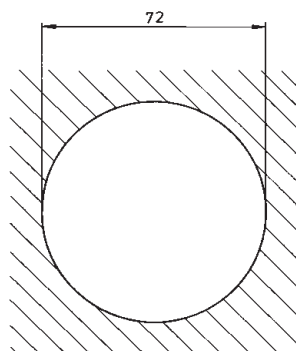
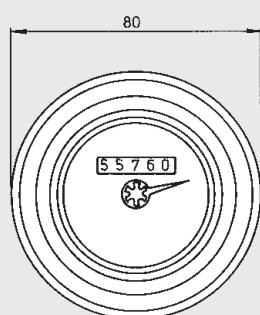
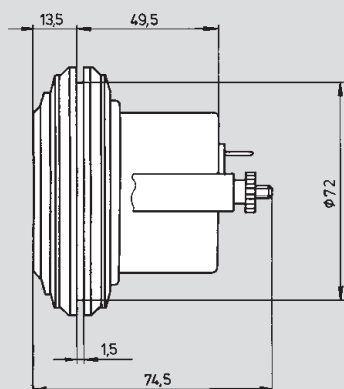
Housing Ø 52 mm with detachable adapter ring for reaching housing of Ø 60 mm with chromed or black-chromed 3-edge-frontal ring



type 557/60, 558/60

| DC | terminal connection | plug connection 6,3 x 0,8 mm | 3-edge-frontal ring chromed | 3-edge-frontal ring black chromed |
|----------|---------------------|---------------------------------|--------------------------------|--------------------------------------|
| 557/60 | | ■ | ■ | |
| 557/60.2 | | ■ | | ■ |
| 558/60 | ■ | | ■ | |
| 558/60.2 | ■ | | | ■ |





type 557/60.1 ... 2*
type 558/60.1 ... 2*
*with damping rubber

Further specifications for your order selection

The standard type is suited for applications with a voltage range of 10 - 80 V DC.
Further they can be used for different applications, for example with damping rubber ring for extreme vibrations.

**Housing Ø 52 mm with detachable adapter ring (=Ø 60 mm)
and damping rubber ring (= Ø 72 mm)**

| DC | terminal connection | plug connection 6,3 x 0,8 mm | rubber ring for damping ø 72 mm | 3-edge frontal ring chromed | 3-edge frontal ring black chromed |
|------------|------------------------|------------------------------------|---------------------------------------|-----------------------------------|-----------------------------------------|
| 557/60.1 | | ■ | ■ | ■ | |
| 557/60.1.2 | | ■ | ■ | | ■ |
| 558/60.1 | ■ | | ■ | ■ | |
| 558/60.1.2 | ■ | | ■ | | ■ |

Accessories and special types at additional cost:

- housing Ø 60 mm (without adapter ring), order code .../600
- rubber seal ring available for housing of Ø 52 mm or Ø 60 mm
- metal fastening bolt for extreme applications, order code .../894

Technical specifications:

| | DC |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
| reset: | no |
| counting range: | 99999 h and 0 - 60 minutes |
| digits char. height: | 2 x 4 mm, white on black |
| voltage: | 10 - 80 V DC (1,4 - 15 mA) |
| special voltages | 2 - 20 V DC (1,5 - 27 mA) |
| (at additional cost): | 80 - 220 V DC (1,4 - 4,5 mA) |
| protection class | housing: IP 65 (front) |
| (DIN 40050): | terminals: IP 00 |
| ambient temperature: | -40 °C to +80 °C |
| fixing: | metal bolt |
| approval: | CE |
| operation indication: | yes |
| connection: | short circuit and reverse battery protected |
| vibration resistance: | tested on 3 levels at 45 Hz, amplitude ± 0,5 mm each level, electronic and plastic version = little specific weight |
| time divergence: | only 0,01 % in 24 h: compared to the electromechanical counters no after running differences arise on the indication |
| weight: | approx. 110 g |

Hour counters, 10 - 80 V DC, ø 52 mm, ø 60 mm

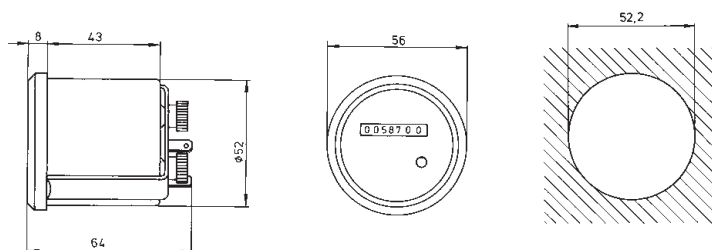
These instruments meet the high-level requirements for hour counters in construction machines, fork lift trucks or other vehicles. The quartz-controlled electronic and the known BAUSER housing technology offer a basis for optimum value for money. In large quantities it is possible to print your logo on the counter.

Housing Ø 52 mm – with 3-edge-plastic frontal ring



type 587.10.2, 588.10.2

| DC | terminal connection | plug connection 6,3 x 0,8 mm | 3-edge-plastic ring black |
|----------|---------------------|---------------------------------|------------------------------|
| 587.10.2 | | ■ | ■ |
| 588.10.2 | ■ | | ■ |

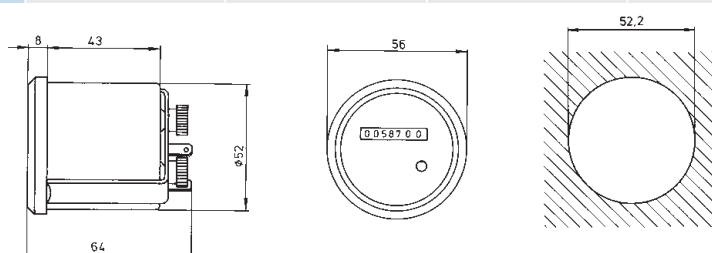


Housing Ø 52 mm with chromed or black-chromed 3-edge-frontal ring



type 587.2, 588.2

| DC | terminal connection | plug connection 6,3 x 0,8 mm | 3-edge-frontal ring chromed | 3-edge-frontal ring black chromed |
|-------|---------------------|---------------------------------|--------------------------------|--------------------------------------|
| 587 | | ■ | ■ | |
| 588 | ■ | | ■ | |
| 587.2 | | ■ | | ■ |
| 588.2 | ■ | | | ■ |

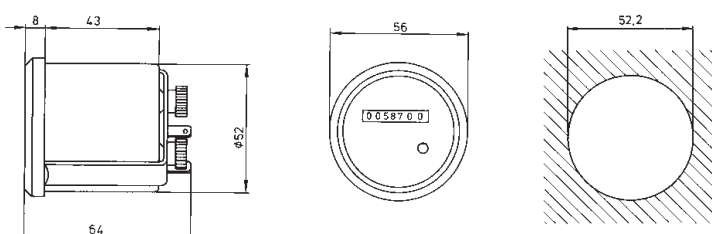


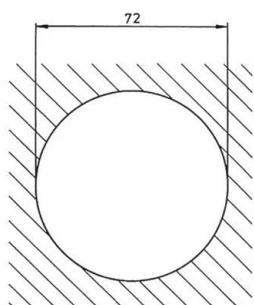
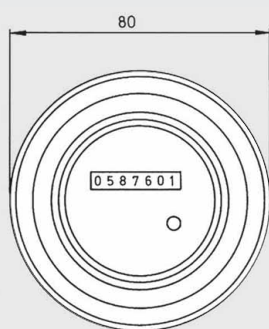
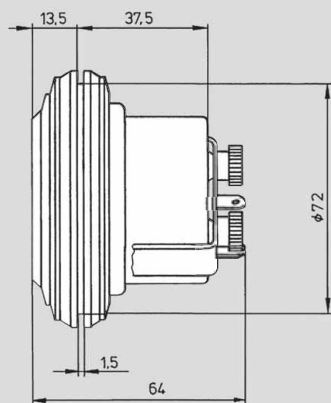
Housing Ø 52 mm with detachable adapter ring for reaching housing of Ø 60 mm with chromed or black-chromed 3-edge-frontal ring



type 587/60, 588/60

| DC | terminal connection | plug connection 6,3 x 0,8 mm | 3-edge-frontal ring chromed | 3-edge-frontal ring black chromed |
|----------|---------------------|---------------------------------|--------------------------------|--------------------------------------|
| 587/60 | | ■ | ■ | |
| 587/60.2 | | ■ | | ■ |
| 588/60 | ■ | | ■ | |
| 588/60.2 | ■ | | | ■ |





type 587/60.1 ... 2*
type 588/60.1 ... 2*
*with damping rubber

Further specifications for your order selection

BAUSER technology has convinced already a large number of known OEM customers world-wide. The quartz-controlled hour counters are suited for cutout of Ø 52 or 60 mm and offer a protection class of IP 65 (front).

**Housing Ø 52 mm with detachable adapter ring (= Ø 60 mm)
and damping rubber ring (Ø 72 mm)**

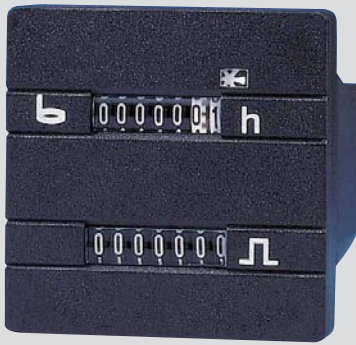
| DC | terminal connection | plug connection 6,3 x 0,8 mm | rubber ring for damping ø 72 mm | 3-edge frontal ring chromed | 3-edge frontal ring black chromed |
|------------|------------------------|------------------------------------|---------------------------------------|-----------------------------------|-----------------------------------------|
| 587/60.1 | | ■ | ■ | ■ | |
| 587/60.1.2 | | ■ | ■ | | ■ |
| 588/60.1 | ■ | | ■ | ■ | |
| 588/60.1.2 | ■ | | ■ | | ■ |

Accessories and special types at additional cost:

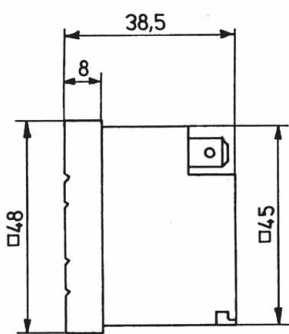
- housing Ø 60 mm (without adapter ring), order code .../600
- rubber seal ring for housing of Ø 52 or Ø 60 mm
- metal fastening bolt for extreme applications, order code .../894

Technical specifications:

| | DC |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------|
| reset: | no |
| counting range: | 99999,99 h |
| digits char. height: | 1,5 x 3,5 mm, white on black, decimals black on white |
| voltage: | 10 - 80 V DC (1,4 - 15 mA) |
| special voltages | 2 - 20 V DC (0,5 - 27 mA) |
| (at additional cost): | 80 - 220 V DC (1,5 - 4,5 mA) |
| protection class | housing: IP 65 (front) |
| (DIN 40050): | terminals: IP 00 |
| ambient temperature: | -40 °C to +80 °C |
| fixing: | metal bolt |
| approval: | CE |
| operation indication: | yes |
| connection: | short circuit and reverse battery protected |
| vibration resistance: | tested on 3 levels at 45 Hz, amplitude ± 0,5 mm each level, electronic and plastic version with little specific weight |
| time divergence: | only 0,01 % in 24 h; compared to the electromechanical counters no after-running differences arise on the indication |
| weight: | approx. 100 g |



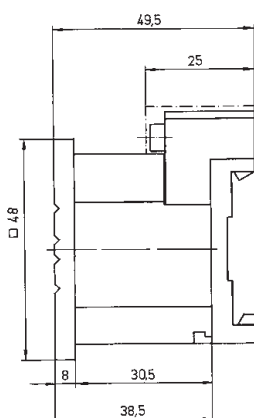
type 920



drawing type 920



type 920 A.2



drawing type 920 A.2

Hour and pulse counter combinations for flush and surface/DIN-rail mounting, for AC or DC, 48 x 48 mm

Here you will find a solid solution for a hour and pulse counter combination. Choose between flush or surface/DIN-rail mounting. The connections can be adjusted for a common or separate AC or DC current supply.

Type range 920, 920 A.2

| type | flush mounting | DIN-rail mounting | front frame 48 x 48 mm | terminal connection |
|---------|----------------|-------------------|------------------------|---------------------|
| 920 | ■ | | ■ | ■ |
| 920 A.2 | | ■ | ■ | ■ |

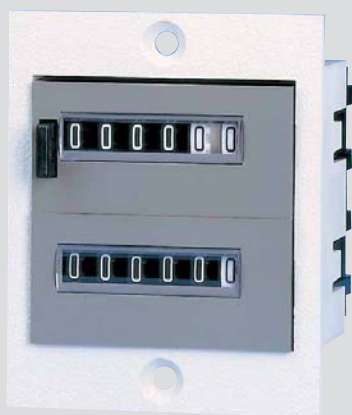
Descriptions and application field:

- this counter combination consists of one hour counter and one pulse counter.
- the counter operates with common current supply, that means the pulse counter registers the connecting frequency and the hour counter the total operating time of a machine/equipment, i.e. oil burner.

Technical specifications:

| | 920 | 920 A.2 |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mounting type: | flush mounting | surface/DIN-rail mounting |
| counting range: | hour counter: 99999,99 h pulse counter: ED 100 %, 9999999 | hour counter: 99999,99 h pulse counter: ED 100 %, 9999999 |
| digits character height: | 1,5 x 3,5 mm (with lens) | 1,5 x 3,5 mm (with lens) |
| voltages: | 115, 230 V AC, 50 and 60 Hz | 115, 230 V AC, 50 and 60 Hz |
| special voltages (at additional cost): | 24 V AC, 50 and 60 Hz | 24 V AC, 50 and 60 Hz |
| voltage: | 24 V DC | 24 V DC |
| connections: | standard: with common current supply at additional cost: with separate current supply, but with same voltage; that means both counters can be separately triggered, order code: z.B. 920/860 (= only for flush mounting) | standard: with common current supply at additional cost: with separate current supply, but with same voltage; that means both counters can be separately triggered, order code: z.B. 920/860 |
| voltage tolerance: | ±10 % | ±10 % |
| current consumption (common current supply): | V AC 3 - 8 mA V DC 7 - 13 mA | V AC 3 - 8 mA V DC 7 - 13 mA |
| protection class DIN 40050: | housing: IP 65 (front) terminal: IP 00 | housing: IP 65 terminals: IP 20, at additional cost with terminal cover: IP 40 |
| ambient temperature: | -10 °C to +50 °C | -10 °C to +50 °C |
| fixing: | retaining clip | surface/DIN-rail |
| approval: | CE | CE |
| operation indication: | yes | yes |
| weight: | approx. 55 g | approx. 70 g |

■ Electromechanical hour counters



type 593

Hour and pulse counter combinations, for AC or DC, with or without reset, 75 x 60 mm

Here you will find robust counters for recording of operating times, quantities or both combined in only one housing. It is also possible to reset a counter with a button or a key. Inform us about your wishes, we find the suitable solution for you.

Type range 593 ...

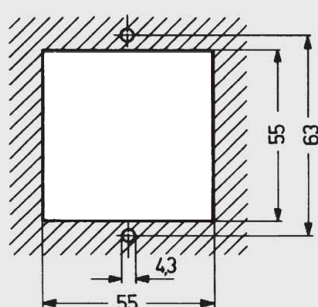
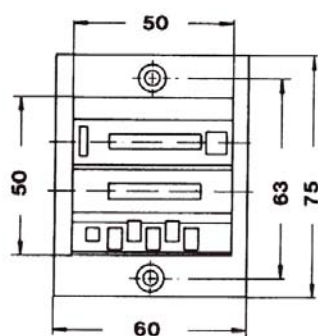
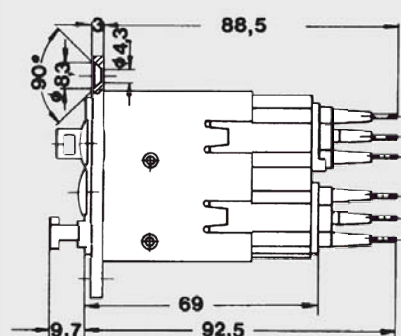
| AC | time counter with button reset | totalising hour counter without reset | fixing |
|-----|-----------------------------------|------------------------------------------|-------------------------------------|
| 593 | ■ | ■ | mounting frame with front fixing |

Special types at additional cost:

- first counter without reset or with key reset, for AC or DC operation
- combinations with pulse counters, with or without reset or hour counter and pulse counter combined according your requirements, for AC or DC operation.
- example of order: counter combination type 593, but consisting of: ...

Technical specifications:

| | AC |
|-------------------------------------------|--------------------------------------------------------|
| reset: | customized |
| counting range: | hour counter: 9999,99 h, totalising counter: 99999,9 h |
| digits character height: | 2 x 4 mm, white on black, decimals black on white |
| voltages: | 115 or 230 V AC |
| special voltages (at additional cost): | 12, 24 and 400 V AC |
| voltage tolerance: | ±10 % |
| frequency: | 50 or 60 Hz |
| current consumpt.: | approx. 2 VA |
| prot. class DIN 40050: | housing: IP 41 (front) |
| ambient temperature: | -20 °C to +70 °C |
| approval: | CE |
| operation indication: | no |
| weight: | 250 g |

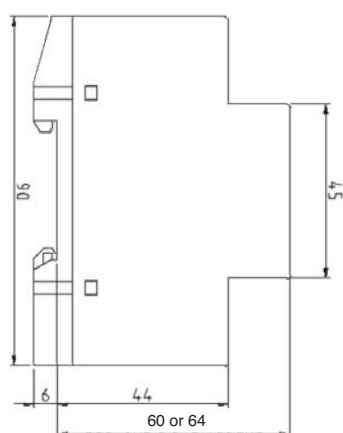


drawings

■ Electromechanical pulse counters



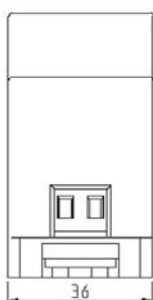
type 663.6, 663.7, 668.6, 668.7



drawing



type 663.6, 663.7, 668.6, 668.7



type 663.6, 663.7, 668.6, 668.7

Pulse counters for DIN rail mounting, for AC or DC, overall height 60 mm or 64 mm

Electromechanical pulse counters register quantities and therefore document production results or operating cycles. These are units for DIN-rail mounting with overall height of 60 or 64 mm.

| AC | DC | overall height in mm | | »Lift«-terminal connection |
|-------|-------|----------------------|----|----------------------------|
| | | 60 | 64 | |
| 663.6 | 668.6 | ■ | | ■ |
| 663.7 | 668.7 | | ■ | ■ |

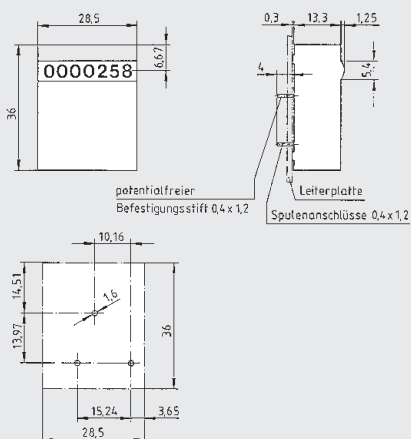
Technical specifications:

| | AC | DC |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| housing: | plastic light grey RAL 7035 | plastic light grey RAL 7035 |
| gearing: | plastic | plastic |
| counting range: | 9999999 | 9999999 |
| max. frequency: | 10 pulses/sec. max. duty cycle 100 % | 10 pulses/sec. max. duty cycle 100 % |
| digits: | 1,8 x 3,6 mm, white on black, decimals black on white | 1,8 x 3,6 mm, white on black, decimals black on white |
| voltages: | 115 or 230 V AC | 12 - 24 V DC |
| special voltages: (additional charge) | 24, 48, 400 V AC | on request |
| voltage tolerance: | ±10 % | ±10 % |
| frequency: | 50 or 60 Hz (on request 20 to 100 Hz) | |
| power consump.: | < 2 VA | < 1 VA |
| protection (front): | IP 65, screws IP 20 | IP 65, screws IP 20 |
| ambient temp.: | - 10 ° C to + 70° C | - 10 ° C to + 70° C |
| stocking temp.: | - 40 ° C to + 80° C | - 40 ° C to + 80° C |
| elec. connection: | Terminal Blocks (lift principle) with Philips-Head-Screw (+/- screw) in combination with slotted screw with 3 mm screwdriver size, 0-2.5 mm ² fine wire or 0-4 mm ² single wire | Terminal Blocks (lift principle) with Philips-Head-Screw (+/- screw) in combination with slotted screw with 3 mm screwdriver size, 0-2.5 mm ² fine wire or 0-4 mm ² single wire |
| max. torque: | 0,5 Nm | 0,5 Nm |
| vibration resist.: | 1 g (10...500 Hz) acc. to EN 60068-2-34 | 1 g (10...500 Hz) acc. to EN 60068-2-34 |
| shock resistance: | 30 g (18 ms) acc. to EN 60068-2-27 25 g (6 ms) acc. to EN 60068-2-29 | 30 g (18 ms) acc. to EN 60068-2-27 25 g (6 ms) acc. to EN 60068-2-29 |
| EMC: | EN 55011, EN 61000-6-2 | EN 55011, EN 61000-6-2 |
| industrial norm: | EN 61010, protection class II | EN 61010, protection class II |
| reset: | without | without |
| weight: | approx. 75 g | approx. 75 g |
| approval: | CE, UL, cUL | CE, UL, cUL |
| fixing: | snap-on fixing for DIN-rail according to DIN EN 50022 | snap-on fixing for DIN-rail according to DIN EN 50022 |

■ Electromechanical pulse counters



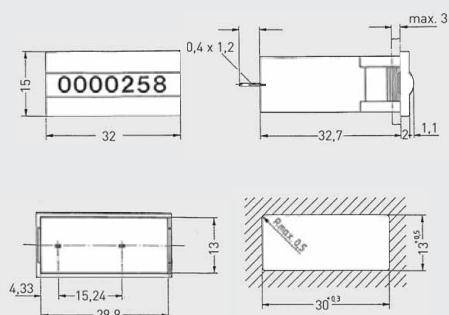
type 128



type 128



type 129



type 129

Mini pulse counters for printed circuit or front panel mounting, 5 - 24 V DC, 36 x 28,5 mm, 32 x 15 mm

Special features:

- mini pulse counter in solder and water-proof version
- highly shock and vibration resistant
- well suited for battery operation and electronic circuit
- low current consumption

| type | printed circuit counter washable | front panel mounting (snap-in fixing max. 3 mm) |
|------|----------------------------------|-------------------------------------------------|
| 128 | ■ | |
| 129 | | ■ |

Options:

- type 128 – indication visible on face (on request)
- type 129 – for large quantities also available in 12, 24, 110 or 230VAC (on request)
- 6 digit variant with smaller housing dimensions (on request for large quantities)

Technical specifications:

| | DC |
|-------------------------------|------------------------------------------|
| reset: | no |
| counting range: | 7 digits |
| character height: | 4 mm (with lens) |
| operating voltages: | 5, 12, 24 V DC |
| voltage tolerance: | ±10 % |
| duty cycle: | 100 % |
| counting frequency: | 10 pulses/s (25 I/s = 24 V DC) |
| mean power consumption: | 70 mW at 5 - 12 V DC, 250 mW at 24 V DC |
| protection class (DIN 40050): | type 128: IP 65, type 129: IP 65 (front) |
| ambient temperature: | -10 °C to +60 °C (option: to +85 °C) |
| electr. connections: | soldered conn. 0,4 x 1,2 mm |
| maintenance-free operation: | > 50 x 10 ⁶ pulses |
| approval: | CE |
| weight: | 15 - 18 g |

■ Electromechanical pulse counters



type 170



type 171

Pulse counters, for AC or DC, with or without reset, 36 x 24 mm

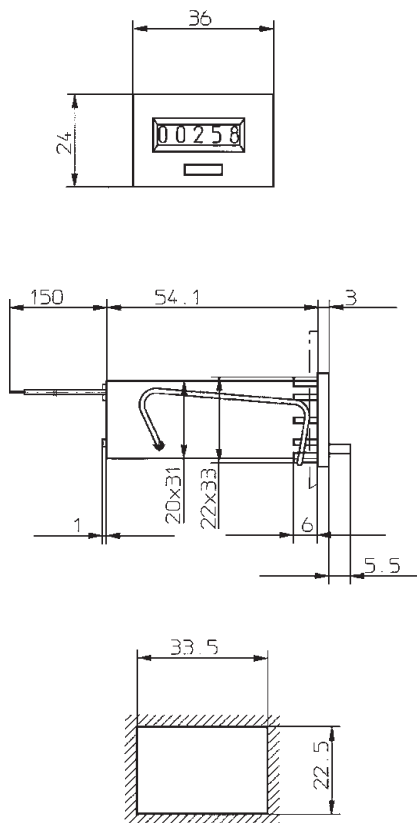
Description:

- adding counter, black plastic housing, fixing via a spring wire bracket

| type | without reset | with reset | display |
|------|---------------|------------|---------|
| 170 | ■ | | 6 digit |
| 171 | | ■ | 5 digit |

Technical specifications:

| | AC | DC |
|---------------------------------|----------------------------------------------------|----------------------------------------------------|
| voltages: | 230 V AC | 24 V DC |
| digits: | 1,7 x 4 mm, white on black | 1,7 x 4 mm, white on black |
| voltage tolerance: | ±10 % | ±10 % |
| frequency/ residual ripple: | 50/60 Hz | ≥ 48 % |
| testing speed: | 10 pulses/sec. | 10 pulses/sec. |
| pulse-/break duration: | 50/50 msec. | 50/50 msec. |
| power consumption: | 1,5 VA | 0,5 W |
| duration of operation at 25 °C: | 100 % | 100 % |
| ambient temperature: | -10 °C to +50 °C | -10 °C to +50 °C |
| maintenance-free oper.: | > 50 x 10 ⁶ pulses | > 50 x 10 ⁶ pulses |
| approval: | CE | CE |
| protection class : | type 170: IP 51 (front) type 171: IP 50 (front) | type 170: IP 51 (front) type 171: IP 50 (front) |
| electrical connection: | flex approx. 150 mm long | flex approx. 150 mm long |
| weight: | approx. 50 g | approx. 50 g |



drawing type 170, 171

■ Electromechanical pulse counters



type 180



type 181

Pulse counters, for AC or DC, with or without reset, 53 x 28 mm

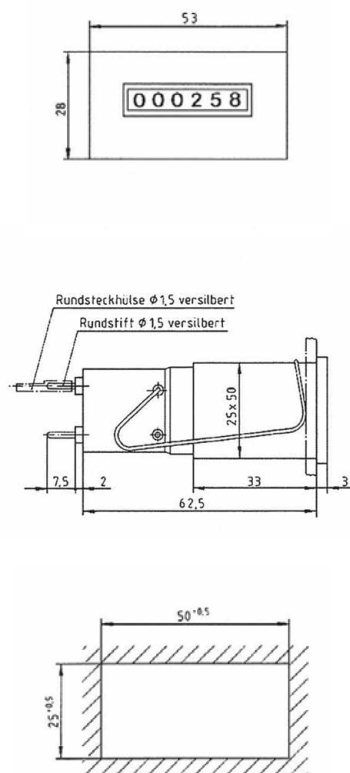
Description:

- adding counter, black plastic housing, fixing via a spring wire bracket

| type | without reset | with reset | display |
|------|---------------|------------|---------|
| 180 | ■ | | 6 digit |
| 181 | | ■ | 6 digit |

Technical specifications:

| | AC | DC |
|---------------------------------|-------------------------------------------------------|-------------------------------------------------------|
| voltages: | 230 V AC | 24 V DC |
| digits: | 2 x 4,5 mm, white on black | 2 x 4,5 mm, white on black |
| voltage tolerance: | ±10 % | ±10 % |
| frequency/ residual ripple: | 50/60 Hz | ≥ 48 % |
| testing speed: | 18 pulses/sec. | 25 pulses/sec. |
| pulse-/break duration: | 2 : 3 | 3 : 2 |
| minim. pulse duration: | 22,2 ms | 24 ms |
| power consumption: | 2,9 VA | 2 W |
| duration of operation at 25 °C: | 100 % | 100 % |
| ambient temperature: | -10 °C to +55 °C | -10 °C to +60 °C |
| maintenance-free oper.: | > 50 x 10 ⁶ pulses | > 50 x 10 ⁶ pulses |
| approval: | CE | CE |
| protection class : | type 180: IP 52 (front) type 181: IP 50 (front) | type 180: IP 52 (front) type 181: IP 50 (front) |
| electrical connection: | silver-bladed round pins ø 1,6 mm with plug bushes | silver-bladed round pins ø 1,6 mm with plug bushes |
| weight: | approx. 100 g | approx. 100 g |



drawing type 180, 181

Mechanical time switches



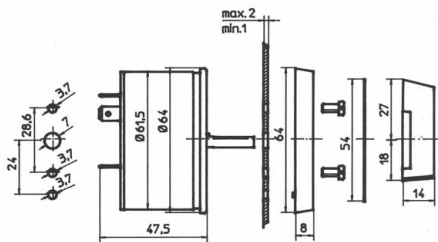
type 134 ..., 136.2

Time switches with clockwork/ spring movement, 5 min to 24 h, ø 64 mm

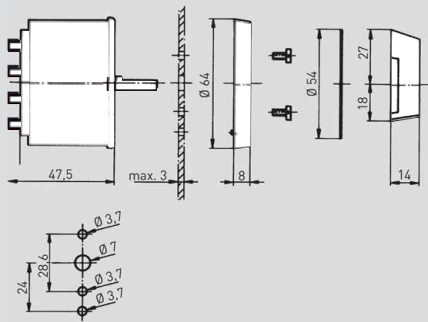
Well-tested mechanical time switches for controlling time processes individually, that means switching-on or off machinery or equipment. The operation is very simple.

With knob, clock face ø 54 mm and fixing plate, black.

Types - technical specifications:



type range 134 ...



type range 136.2

| type | 134/H/5M 134/H/15M | 134/U/60M 134/U/120M | 136.2 |
|------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|
| movement: | escape movement | spring movement | spring movement |
| setting time: | 5 or 15 minutes | 60 or 120 minutes | 6, 12, 24 h |
| time divergence: | 5 - 10 % | 5 - 10 % | < 5 % |
| connection assignment: | changeover contact | changeover contact | changeover contact |
| switch: | 16 A 250 V | 16 A 250 V | 16 A 250 V |
| prot. class DIN 40050 | | | |
| electrical con.: | IP 00 | IP 00 | IP 00 |
| complete switch: | IP 30 | IP 30 | IP 30 |
| ambient temp.: | | | |
| complete unit | -10 °C to +70 °C | -10 °C to +70 °C | -10 °C to +70 °C |
| without knob, dial and fixing | -10 °C to +100 °C | -10 °C to +100 °C | -10 °C to +100 °C |
| plate fixing: | 2 screws M 3,5 x 8 | 2 screws M 3,5 x 8 | 2 screws M 3,5 x 8 |
| connection: | plug contacts 6,3 x 0,8 mm (DIN 46244) | plug contacts 6,3 x 0,8 mm (DIN 46244) | plug contacts 6,3 x 0,8 mm (DIN 46244) |
| approvals: | CE | CE | CE |
| switching angle: | 30 ° | 30 ° | 30 ° |
| winding angle: | 330 ° | 330 ° | 330 ° |
| weight: | 180 g | 180 g | 190 g |
| wiring diagram: | | | |

Working procedure

- The clockwise setting of the dial on the desired pass time commences timing period.
The set time can be adjusted in both directions.

Materials

- Dial knob (polyacetal), clock face (polystyrene), fixing plate (acrylonitrile-butadiene-styrene/ABS), black, on request white, housing: moulded plastics.

Special version

- Time switch even available without knob and dial