

BAUSER®



GRANT AN **EXCELLENT MEASURE** WITH BAUSER COUNTERS

- TIME COUNTERS
- PULSE COUNTERS
- TIME SWITCHES



Index

Page

General product descriptions	3 – 5
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Digital time and pulse counters

Type 3800, 3810, 3820, 3830, 3840, 3850, 3860, 3870, 3880, 3890	6
Type 3801, 3811, 3821, 3831, 3841, 3851, 3861, 3871, 3881, 3891	7
Type 3802, 3812, 3822, 3832, 3842, 3852, 3862, 3872, 3882, 3892	8
Order specifications	9
Type 670R.6.X.X	10
Type 672R.6.X.X.X.X	11

Electromechanical hour counters

AC: 631 – 634.1 DC: 629 – 638.1	12
AC: 631.2 – 634.3 DC: 629.2 – 638.3	13
AC: 631.4 – 634.5 DC: 629.4 – 638.5	14
AC: 631 A.2, 632 A.2 DC: 629 A.2, 630 A.2	15
Accessoires and technical specifications of page 12 – 15	16
Accessoires for the products of page 15	17
AC: 250 – 251.2 DC: 260 – 261.2	18
AC: 252 – 253.2 DC: 262 – 263.2	19
AC: 256 – 271.2 DC: 266 – 281.2	20
Technical specifications	21
AC: 603 – 604.10.3 DC: 608 – 609.10.3	22
AC: 610.10 – 610.11.1 DC: 617.10 – 617.11.1	23
Accessoires and technical specifications	24
AC: 200.4 DC: 208	25
AC: 661.6, 661.7 DC: 666.6, 666.7	26
557, 558	27
557.2, 558.2	28
557/60 – 558/60.2	29
557 – 558/60.2	30
587.10.2, 558.10.2	31
587 – 558.2	32
587/60 – 558/60.2	33
587.60.1, 587/60.1.2, 588/60.1, 588/60.1.2	34
920, 920 A.2	35
AC: 663.6, 663.7 DC: 668.6, 668.7	36

Disposal instructions



Parts and components of old devices, e.g. batteries, motors, electronic components have to be disassembled and disposed properly and professionally according to the national and international laws and regulations.

General terms and conditions	37
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Notes	38 – 39
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As versatile as your requirements: Complete solutions to visualise and control vehicle functions.

Whether installed in utility vehicles for the Off-Highway sectors, in forestry and agricultural applications or in industrial forklift trucks, lawn mowers, communal vehicles, scissor lifts and other specialised vehicles, BAUSER instrument clusters are always in vogue: The clear readability and easy plug-and-play installation allows complete solutions for the cost-efficient supervision and control of the vehicle.

Our wide range of solutions impresses by tailoring standard solutions to OEM requirements in an instant. An excellent view is granted on all kinds of data and error messages can be received on analogue and digital inputs as well as on CAN-Bus communication.

Increased comfort of the driver's cab is provided by an attractive instrument cluster design offering a high-contrast display through to a coloured indication. A variety of engine data like rpm, speed, oil pressure, coolant and oil temperature as well as operating data (operating hours, service intervals, distance travelled) or error messages enable a safe and conscientious operation of the vehicle.

Thanks to enhanced standard features like country-dependent settings of languages and units (metric or imperial) these instruments are suitable to be sold worldwide.

Our creative expertise and long experience in business enable the vehicle-manufacturing sector to gain competitive advantage by technical improvement.

With BAUSER's intelligent standard solutions in hardware and software, any modification and complementary development is carried out easily, rapidly and cost-efficiently. The hardware tooling of the casings covers a wide range of dimensions and shapes as well as different PCB layouts designed for a variety of applications. The use of various micro-controller technologies ensures fast-customised software programming. On receipt of your hard and software specification, the pre-existing standard tooling and software will be amended or complemented, gaining time and saving money.

Do you require a customised front foil with your design and your company logo? We can offer the solution! BAUSER has decades of experience within the electronics and software engineering sector.



As a modern and innovative family owned company with decades of experience in electronics, display and casing technology, we constantly strive to apply new technologies in the product development and the subsequent product industrialisation.

Our long-standing know-how from the product design to the series production guarantees a constant high »Made in Germany« quality level. Our qualified BAUSER-Team consisting of engineers, software developers, graphic designers and commercial assistants supports you at any stage of the project realisation. From the product design, through the electronics and the software application, to the final series production, our TEAM will assist you with the utmost care. The best evidence of this is the »A-level-supplier« rating of international leading OEMs for several years.

BAUSER – excellent in all phases of the project.

Concept and design

Experienced engineers, graphic designers and commercial assistants can work with you to produce your desired product design and functional requirements.

Development

Realise »specifications« in hard and software by constructing prototypes. Existing and well-tested hardware and software tools are adopted for this.

Product industrialisation

Qualify the designed and constructed product through a series of environmental shock and vibration, EMC and electric test ranges for the series production. For this purpose, our quality engineers and partners in the testing laboratories are using specialised and standardised norms and guidelines. At the same time, the necessary production processes for assuring a constant and reliable quality of the product are being designed and realised.

Series production

Manufacture the qualified product according to the quality management ISO 9001:2008. Important testing systems are AOI, ICT, Boundary Scan as well as a PLC for final inspection. A 100% serial parts testing is essential.

Logistics

Organise and control the material flow processes from procurement to series production.



Available in different casing dimensions, the reading of operating data is made especially comfortable with BAUSER displays. The front of the backlit display is protected IP67. At the rear the protection class of IP 65 can be achieved by using a sealed counter connector and a goretex membrane mounted in the casing.

These casings have been designed to be extremely shock and vibration resistant for the harshest applications and have been tested to the current standards for utility vehicles. A CAN-Bus interface enables the communication with other machine components (e.g. the engine control unit) via CANopen or SAE J1939. This interface is also used to configure machine data as well as making software updates keeping the instrument cluster flexible in the field application. The required software tools are made available by BAUSER.

We evolve continuously – with our clients and for our clients to become a system provider for the instrumentation.

Our current development: TFT Colour Display.

Our aim: design and develop system-orientated solutions with our clients.

We have complemented our range of display technologies, which offer different backlight colours, i.e. TN (Twisted Nematic) for 7-segment indication, ASTN (Advanced Super Twisted Nematic) for monochrome Dot-Matrix LCD visualisation by a comfortable and very flexible indication of vehicle data and error messages. These new TFT colour displays are available in the following dimensions 2.8", 3.5", 4.3" and in different resolutions i.e. QVGA 240x320 or 320x240 pixels and WQVGA 480x272 pixels for an »excellent« view irrespective of the viewing position.

Know-how from one single source at the pivot of your vehicles: The Cockpit.

Our clients include well-known manufacturers in the material handling and utility vehicle sector. We have also been supplying internationally recognised OEMs in the automation sector and heating industry for decades.

Simply outline your requirements to us or send us your specifications. We would be pleased to assist you. BAUSER solutions will give you an important advantage as our high level of automation through to the final assembly allows us to simply produce more efficiently.

Structuring production processes and their perfect coordination is what sets us apart. An excellent syntonized logistics with a smooth material flow guarantees economical processes leading to a high productivity with on-time deliveries.

Additional features under development: »video-input for a camera connection« as well as »touch-screen colour displays«.



Digital time and pulse counters

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

Order specifications on page 9



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

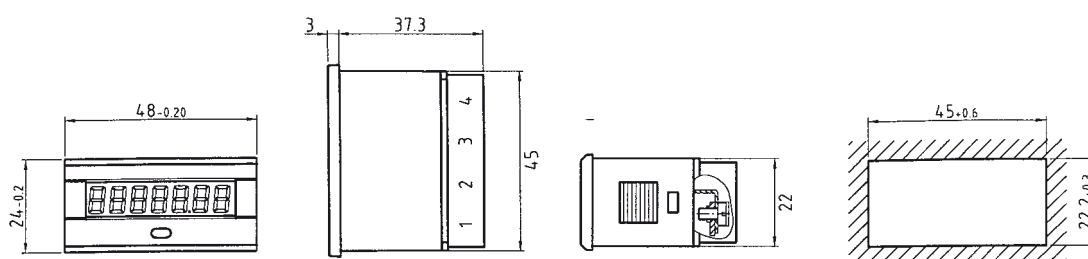
Advanced BAUSER technology enables: Even without battery, your information remains registered in the EEPROM records. Further, the digital time- and pulse counters offer a smart design, high quality and reliability. Therefore, ideally suitable for the heavy applications in the industry and vehicles.

With the BAUSER counters, you can count on:

- LC-display with 7 digits, character height 7 mm
- 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.

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 / $< 5\text{ mA}$ 24 V AC / DC / $< 10\text{ mA}$ 110 – 240 V AC 50/60 Hz / $< 15\text{ mA}$
Ambient temperature:	-30°C to $+70^{\circ}\text{C}$
Stocking temperature:	-40°C to $+80^{\circ}\text{C}$
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, optional 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 g



Digital time and pulse counters

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

Order specifications on page 9



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 / $< 5\text{ mA}$ 24 V AC / DC / $< 10\text{ mA}$ 110 – 240 V AC 50/60 Hz / $< 15\text{ mA}$
Ambient temperature:	-30°C to $+70^\circ\text{C}$
Stocking temperature:	-40°C to $+80^\circ\text{C}$
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, optional 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:	42 g

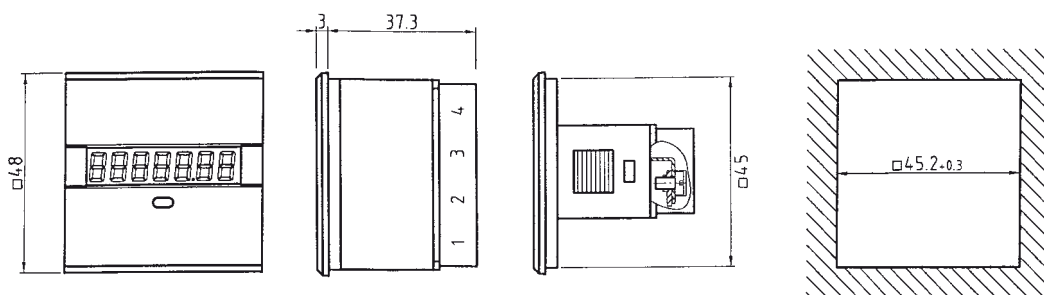
Time and pulse counters (single counter) for AC or DC or with Twin-technology as time, service or pulse counters (double counter)
7 mm digit height, 48 x 48 mm

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
- 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.



Digital time and pulse counters

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

Order specifications on page 9



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, ø 56 mm

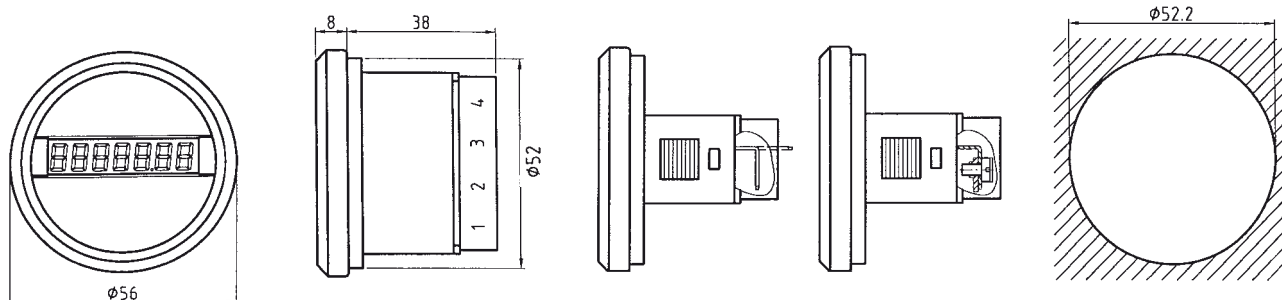
Advanced BAUSER technology enables: Even without battery, your information remains registered in the EEPROM records. Further, the digital time- and pulse counters offer a smart design, high quality and reliability. Therefore, ideally suitable for the heavy applications in the industry and vehicles.

With the BAUSER counters, you can count on:

- LC-display with 7 digits, character height 7 mm
- Protection class IP 65
- 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.

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 / $< 5\text{ mA}$ 24 V AC / DC / $< 10\text{ mA}$ 110 – 240 V AC 50/60 Hz / $< 15\text{ mA}$
Ambient temperature:	-30°C to $+70^{\circ}\text{C}$
Stocking temperature:	-40°C to $+80^{\circ}\text{C}$
Electrical Connection:	Plug connection 6,3 x 0,8 mm / 90° bent or terminal connection
Reset:	Without or electrical
Protection:	IP 65
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, optional 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:	57 g



Digital time and pulse counters

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

* HC = Hour counter, PC = Pulse counter, STC = Service time counter, SPC = Service pulse counter, bg = Background

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)
- Time and pulse counter
- Periodical and totalising counter

Further order specifications:

12 – 24 V DC, 24 – 48 V DC, 24 V AC/DC or 110 – 240 V AC 50/60 Hz

Please indicate your desire service and prewarning times. I.e. the service should happen after 1.000 pulses with a prewarning after 900 pulses, maximum 4, minimum 1 digit values. Accessoires: Additional sealing, rubber seal at additional costs.

Order specifications type range

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

Connections

- 1** – Plug connection
6,3 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

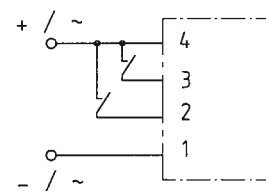
Input signal

- 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



Pin 1+4 =
Voltage supply

- 1** = DC "–" (GND) or AC
- 2** = Time or pulse counter input
- 3** = Reset
- 4** = DC "+" or AC

Digital time and pulse counters

670R.6.X.X



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.

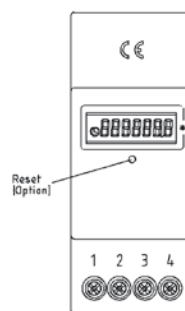
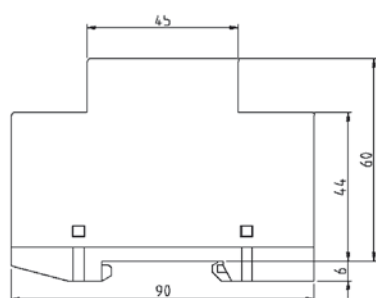
Order specifications type range 670R.6.X.X

- 1** – Hour counter
- 2** – Pulse counter

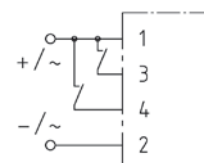
Reset type

- 1** – Without reset
- 2** – With electrical reset
- 3** – With manual or electrical reset

Housing:	Plastic light grey RAL 7035
Indication:	LC-display, 7 digits (0.1 h 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 to +70 °C
Stocking temperature:	–40 °C to +80 °C
Electrical connection:	Terminal Blocks (lift principle) with Philips-Head-Screw size 1 (+/- 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



Wiring diagram



- 1** = DC "+" or AC
- 2** = DC "-" or AC
- 3** = Time and pulse counter input
- 4** = Reset option



Digital time and pulse counters

672R.6.X.X.X.X

Housing:	Plastic light grey RAL 7035
Indication:	LC-display, 7 digits (0.1 h resolution for hour counter)
Character height:	5 mm
Operating voltage (Ub):	12 V DC – 150 V DC und 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 k Ω m (Count, Reset)
Protection (front):	IP65 (without reset button) IP40 (with reset button), screw IP20
Ambient temperature:	–10 °C to +70 °C
Stocking temperature:	–40 °C to +80 °C
Electrical connection:	Terminal Blocks (lift principle) with Philips-Head-Screw size 1 (+/- 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

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 672R.6.X.X.X.X

Configuration counter 2

- 1 – Hour counter
- 2 – Pulse counter

Configuration counter 2

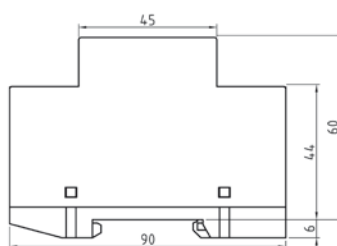
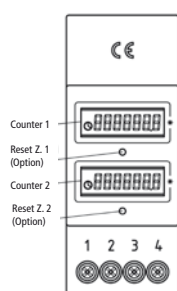
- 1 – Without reset
- 2 – With manual reset

Configuration counter 1

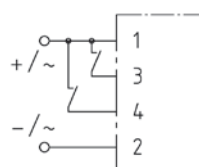
- 1 – Hour counter
- 2 – Pulse counter

Configuration counter 1

- 1 – Without reset
- 2 – With manual reset



Wiring diagram



- 1 = DC "+" or AC
- 2 = DC "-" or AC
- 3 = Time or pulse counter input, counter 1
- 4 = Time or pulse counter input, counter 2

Electromechanical hour counters

AC: 631 – 634.1

DC: 629 – 638.1

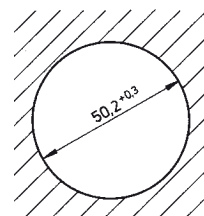
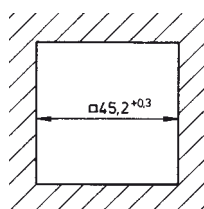
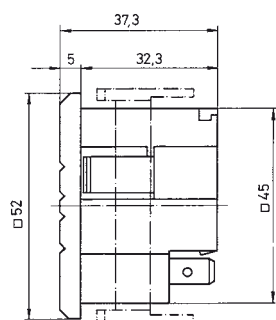
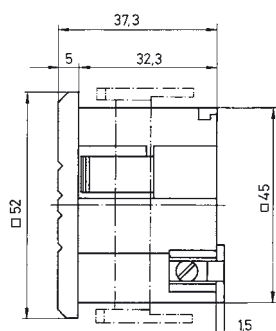


Hour counters, for AC or DC,
front frame 52 x 52 mm,
cutout $\varnothing 50,2^{+0,3}$ mm or $\square 45,2^{+0,3}$ mm

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.

AC	DC	Grey	Black	Terminal connection	Plug connection	Protection against accidental contact	
						With	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 contract



Electromechanical hour counters

AC: 631.2 – 634.3

DC: 629.2 – 638.3

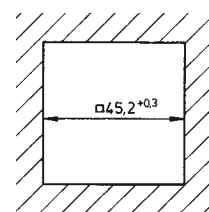
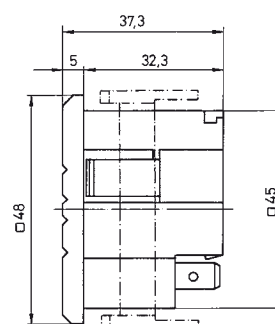
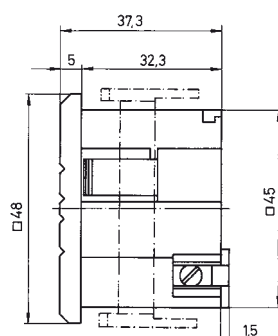


AC	DC	Grey	Black	Terminal connection	Plug connection	Protection against accidental contact	
						With	Without
631.2	629.2	✓		✓		✓	
632.2	630.2		✓	✓		✓	
633.2	637.2	✓		✓			✓
634.2	638.2		✓	✓			✓
631.3	629.3	✓			✓	✓	
632.3	630.3		✓		✓	✓	
633.3	637.3	✓			✓		✓
634.3	638.3		✓		✓		✓

With or without protection against accidental contract

Hour counters, for AC or DC,
front frame 48 x 48 mm,
cutout $\square 45,2^{+0,3}$ 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.



Electromechanical hour counters

AC: 631.4 – 634.5

DC: 629.4 – 638.5

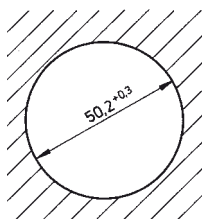
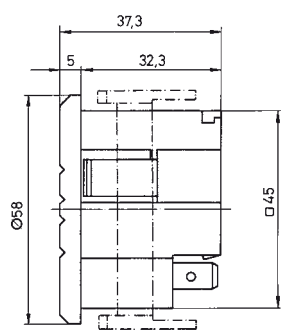
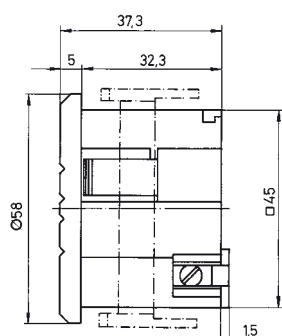


Hour counters, for AC or DC, front frame $\varnothing 58$ mm, cutout $\varnothing 50,2^{+0,3}$ mm

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.

AC	DC	Grey	Black	Terminal connection	Plug connection	Protection against accidental contact	
						With	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 contract



Electromechanical hour counters

AC: 631 A.2, 632 A.2

DC: 629 A.2, 630 A.2

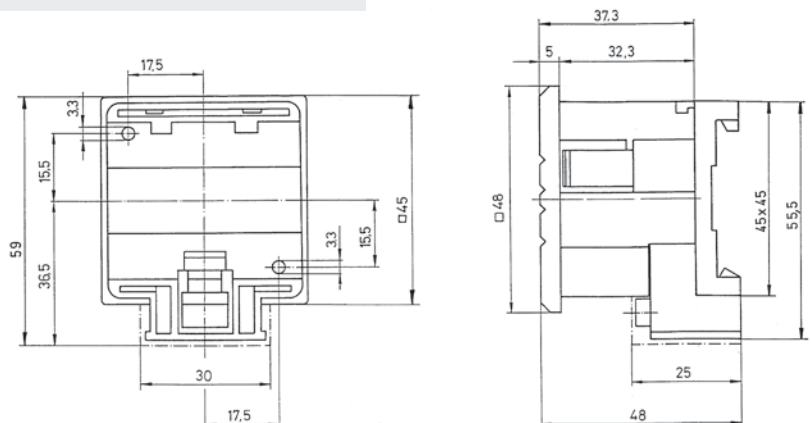


AC	DC	Grey	Black	Terminal connection	Plug connection	Protection against accidental contact	
						With	Without
631 A.2	629 A.2	✓		✓		✓	
632 A.2	630 A.2		✓	✓		✓	

Hour counters, for AC or DC, front frame 48 x 48 mm, surface or DIN rail 35 mm (DIN 46277)

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.

With or without protection against accidental contract



Electromechanical hour counters

Accessoires and technical specifications

For the products of page 12 – 15

Bezel 55 x 55 mm

Bezel 72 x 72 mm

Retaining clip

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.

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.

	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	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
Operating indication:	Yes	Yes
Weight:	approx. 46 g	approx. 46 g

Accessoires and special types at additional cost:

- **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

Electromechanical hour counters

Accessoires

For the products of page 15



Mounting socket

Terminal cover

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

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.

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.

Electromechanical hour counters

AC: 250 – 251.2

DC: 260 – 261.2

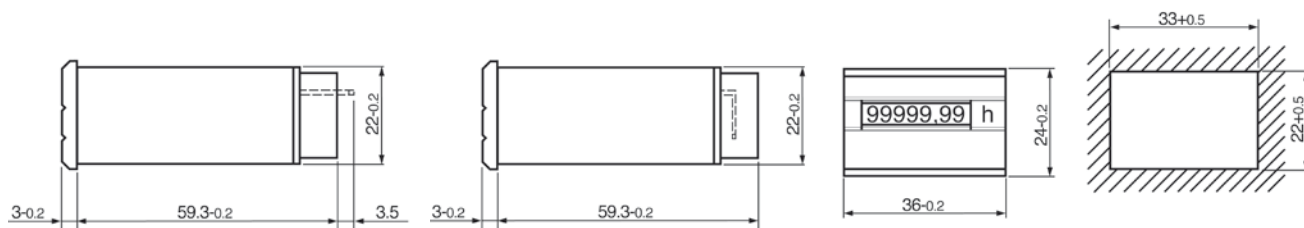


Hour counters, for AC or DC, 36 x 24 mm, protection class IP 65

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.

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

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		✓			✓



Electromechanical hour counters

AC: 252 – 253.2

DC: 262 – 263.2

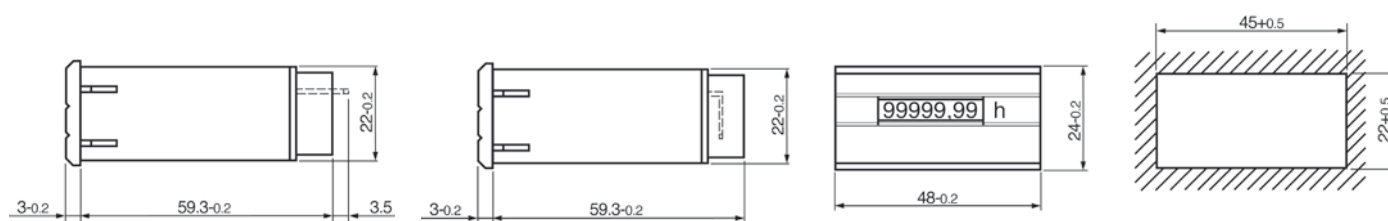


AC	DC	Front black	Front grey	Plug connect 6,3 x 0,8 „straight“	Plug connect „bent“ 90°	Terminal connect „bent“ 90°
252	262	✓		✓		
252.1	262.1	✓			✓	
252.2	262.2	✓				✓
253	263		✓	✓		
253.1	263.1		✓		✓	
253.2	263.2		✓			✓

**Hour counters, for AC or DC,
DIN dimensions 48 x 24 mm,
protection class IP 65**

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.

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



Electromechanical hour counters

AC: 256 – 271.2

DC: 266 – 281.2



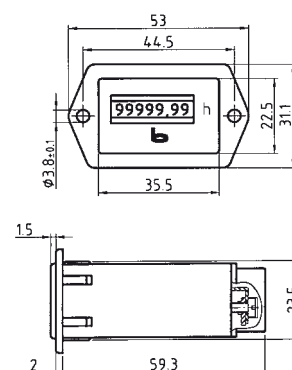
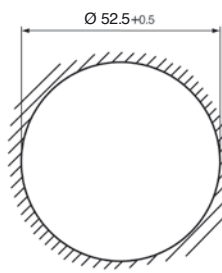
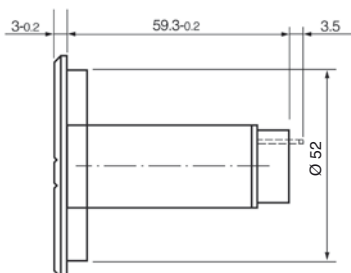
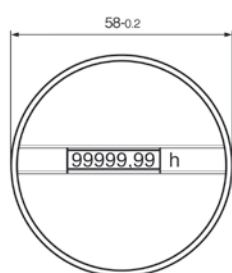
Hour counters, for AC or DC, ø 52 mm or 53 x 31 mm

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.

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)

AC	DC	Cutout ø 52 mm	Cutout 36,8 x 24,1 ± 0,5 mm	Cutout 36,8 x 22 ± 0,5 mm	Plug conn. 6,3 x 0,8 „straight“	Plug conn. „bent“ 90°	Terminal conn. „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			✓			✓



Electromechanical hour counters

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 clip or front fixing	
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

Electromechanical hour counters

AC: 603 – 604.10.3

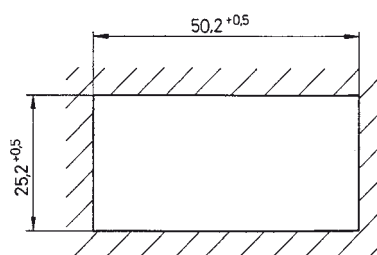
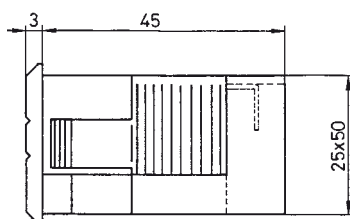
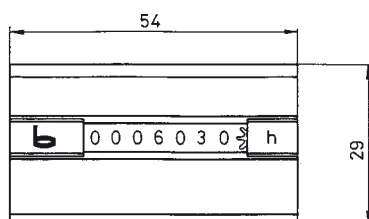
DC: 608 – 609.10.3



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

These AC or DC counters offer a snap-in fixing for fast mounting and are available with or without cable connection.

AC	DC	Grey	Black	Terminal conneciton	Plug connection 6,3 x 0,8	Cable 2 x 0,38 Φ L: 500 mm
603	608	✓			✓	
603.2	608.2	✓		✓		
603.3	608.3	✓				✓
604	609		✓		✓	
604.2	609.2		✓	✓		
604.3	609.3		✓			✓
604.10	609.10		✓		✓	
604.10.2	609.10.2		✓	✓		
604.10.3	609.10.3		✓			✓



Electromechanical hour counters

AC: 610.10 – 610.11.1*

DC: 617.10 – 617.11.1*



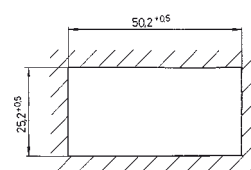
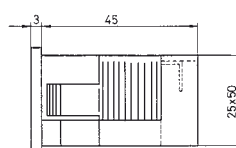
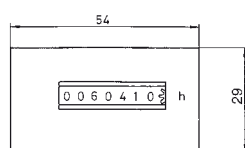
Hour counters, for AC or DC, with or without reset, 54 x 29 mm, without bezel

These AC or DC counters offer a snap-in fixing for fast mounting and are available with or without cable connection and reset.

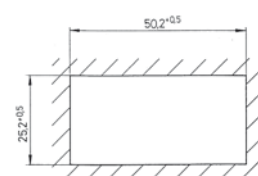
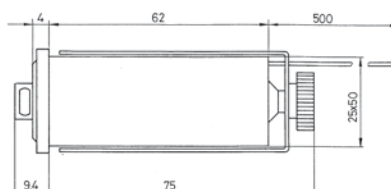
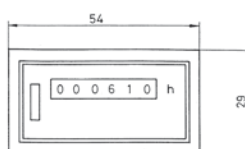
AC	DC	Grey	Black	Terminal con.	Plug con. 6,3 x 0,8	Cable 2 x 0,38 ϕ L: 500 mm	Reset	
							With	Without
610.10	617.10	✓				✓	✓	
610.10.1*	617.10.1*	✓				✓	✓	
610.11	617.11		✓			✓	✓	
610.11.1*	617.11.1*		✓			✓	✓	

(*): Only one position after decimal point

Type 603 bis 609.3



Type 610.10 bis 617.11.1



Electromechanical hour counters

Accessoires and technical specifications

Retaining clip for
type 603 and 604



	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

Accessoires and special types at additional cost:

- **Variants for 20 to 100 HZ operation:** Order code i.e.: 603/943
- **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

AC: 200.4
DC: 208



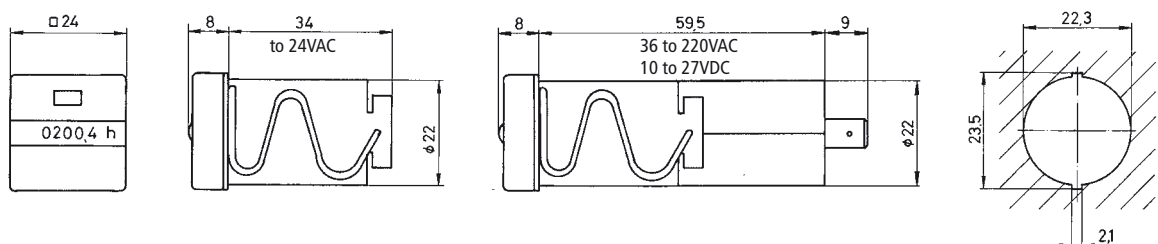
	AC	DC
Reset:	No	No
Counting range:	9999,9 h	9999,9 h
Digits:	1,5 x 3,5 mm (with lens) white on black, decimals black on white	1,5 x 3,5 mm (with lens) white on black, decimals black on white
Voltages:	12 – 24 or 230 V AC	10 – 27 V AC/DC
Special voltages (at additional cost):	36 – 60, 60 – 140 V AC, over 230 V with separate capacitor	–
Voltage tolerance:	±10 %	–
Frequency:	50 or 60 Hz (on request 20 – 100 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

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.

Accessoires 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



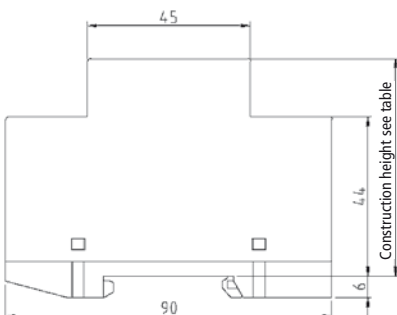
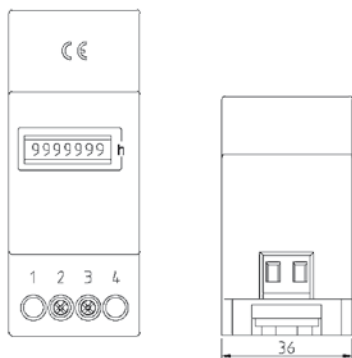
Electromechanical hour counters

AC: 661.6, 661.7
DC: 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
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

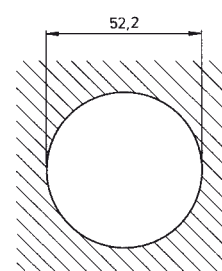
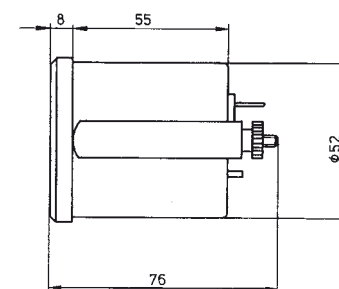
AC	DC	»Lift«-terminal connection	Counting range	Overall height in mm	
				60	64
661.6	666.6	✓	99999,99 h	✓	
661.7	666.7	✓	99999,99 h		✓

Electromechanical hour counters

557, 558


Hour counters, 10 – 80 V DC, with minute indicator, ø 52 mm with chromed 3-edge-frontal ring

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.



	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 (at additional cost):	80 – 220 V DC (1,4 – 4,5 mA)
Protection class (DIN 40050):	Housing: IP 65 (front) 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

DC	Terminal connection	Plug connection 6,3 x 0,8 mm	3-edge-frontal ring chromed
557		✓	✓
558	✓		✓

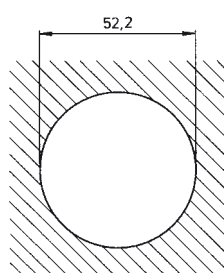
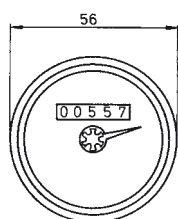
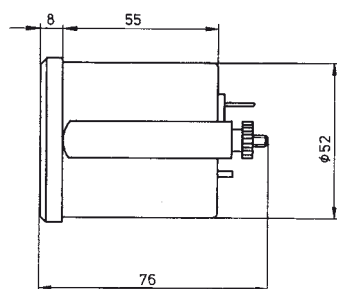
Electromechanical hour counters

557.2, 558.2



Hour counters, 10 – 80 V DC, with minute indicator, ø 52 mm with black-chromed 3-edge-frontal ring

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.



	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 (at additional cost):	80 – 220 V DC (1,4 – 4,5 mA)
Protection class (DIN 40050):	Housing: IP 65 (front) 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

DC	Terminal connection	Plug connection 6,3 x 0,8 mm	3-edge-frontal ring black chromed
557.2		✓	✓
558.2	✓		✓

Electromechanical hour counters

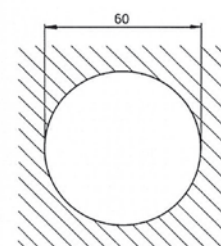
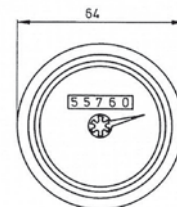
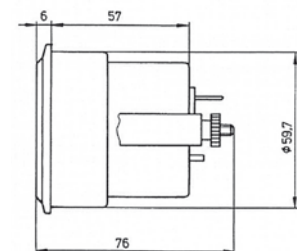
557/60 – 558/60.2



	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 (at additional cost):	80 – 220 V DC (1,4 – 4,5 mA)
Protection class (DIN 40050):	Housing: IP 65 (front) 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 $\pm 0,5$ 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, with minute indicator, $\varnothing$ 52 mm with detachable adapter ring for reaching housing of $\varnothing$ 60 mm with chromed or black-chromed 3-edge-frontal ring

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.



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	✓			✓

Electromechanical hour counters

557 – 558/60.2

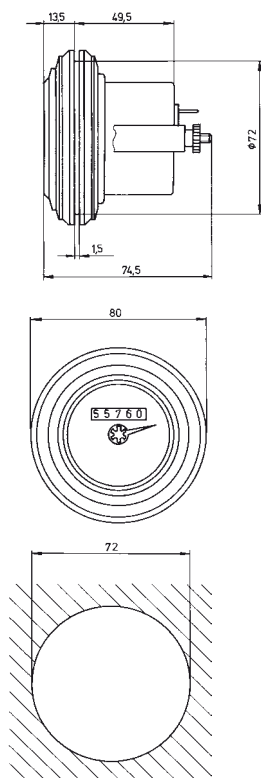


Further specifications for your order selection

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.

Accessories and special types at additional cost:

- Housing $\varnothing$ 60 mm (without adapter ring), order code .../600
- Rubber seal ring available for housing of $\varnothing$ 52 mm or $\varnothing$ 60 mm
- Metal fastening bolt for extreme applications, order code .../894



	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 (at additional cost):	80 – 220 V DC (1,4 – 4,5 mA)
Protection class (DIN 40050):	Housing: IP 65 (front) 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 $\pm$ 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

DC	Terminal connection	Plug connection 6,3 x 0,8 mm	Rubber ring for damping $\varnothing$ 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	✓		✓		✓

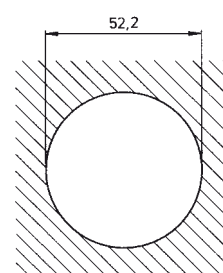
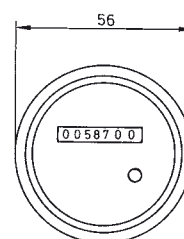
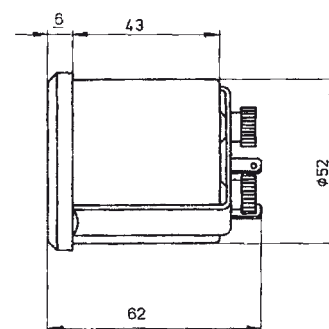
Electromechanical hour counters

587.10.2, 588.10.2


**Hour counters, 10 – 80 V DC, ø 52 mm
with 3-edge-plastic frontal ring**

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.

	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 (at additional cost):	80 – 220 V DC (1,5 – 4,5 mA)
Protection class (DIN 40050):	Housing: IP 65 (front) 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. 100 g



DC	Terminal connection	Plug connection 6,3 x 0,8 mm	3-edge-plastic ring black
587.10.2		✓	✓
588.10.2	✓		✓

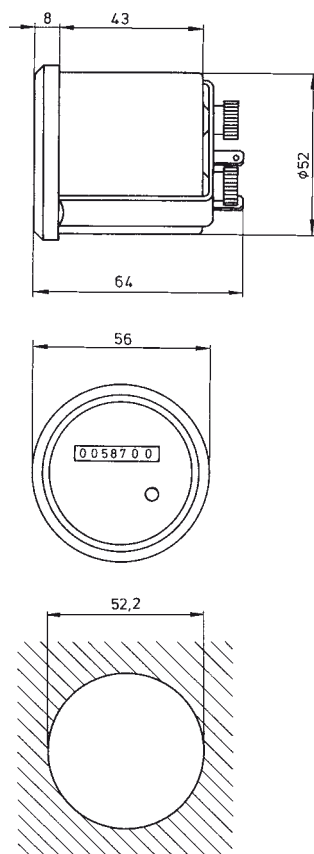
Electromechanical hour counters

587 – 558.2



Hour counters, 10 – 80 V DC, ø 52 mm with chromed or black-chromed 3-edge-frontal ring

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.



	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 (at additional cost):	80 – 220 V DC (1,5 – 4,5 mA)
Protection class (DIN 40050):	Housing: IP 65 (front) 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. 100 g

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	✓			✓

Electromechanical hour counters

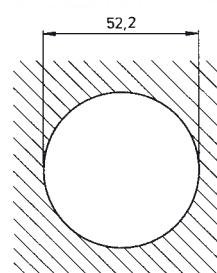
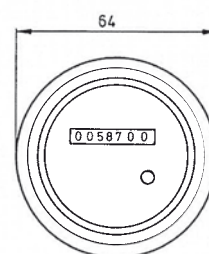
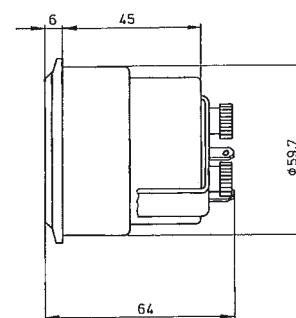
587/60 – 588/60.2



	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 (at additional cost):	80 – 220 V DC (1,5 – 4,5 mA)
Protection class (DIN 40050):	Housing: IP 65 (front) 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 $\pm 0,5$ 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. 100 g

Hour counters, 10 – 80 V DC, $\varnothing$ 52 mm with detachable adapter ring for reaching housing of $\varnothing$ 60 mm with chromed or black-chromed 3-edge-frontal ring

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.



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	✓			✓

Electromechanical hour counters

587/60.1,
587/60.1.2,
588/60.1,
588/60.1.2

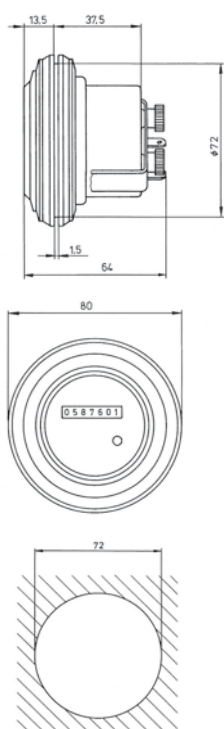


Further specifications for your order selection

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

Accessories and special types at additional cost:

- Housing $\varnothing$ 60 mm (without adapter ring), order code .../600
- Rubber seal ring available for housing of $\varnothing$ 52 mm or $\varnothing$ 60 mm
- Metal fastening bolt for extreme applications, order code .../894



	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 (at additional cost):	80 – 220 V DC (1,5 – 4,5 mA)
Protection class (DIN 40050):	Housing: IP 65 (front) 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 $\pm$ 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. 100 g

DC	Terminal connection	Plug connection 6,3 x 0,8 mm	Rubber ring for damping $\varnothing$ 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	✓		✓		✓

Electromechanical hour counters

920, 920 A.2

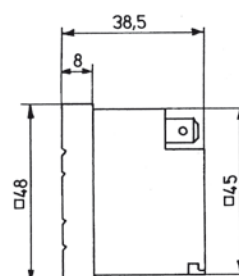

Hour and pulse counter combinations for flush and surface/DIN-rail mounting, for AC or DC, 48 x 48 mm

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.

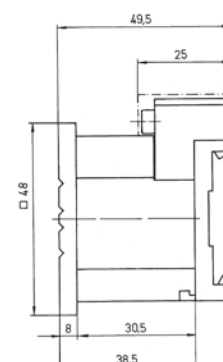
Descriptions and application field:

- 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

Type 920



Type 920 A.2



Type	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: E.g. 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: E.g. 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

Type	Flush mounting	DIN-rail mounting	Front frame 48 x 48 mm	Terminal connection
920	✓		✓	✓
920 A.2		✓	✓	✓

Electromechanical pulse counters

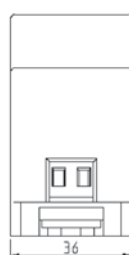
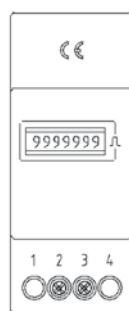
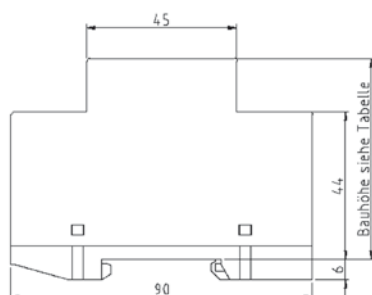
AC: 663.6, 663.7

DC: 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
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 (at additional cost):	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 mm² fine wire or 0 – 4 mm² single wire	Terminal Blocks (lift principle) with Philips-Head-Screw (+/- screw) in combination with slotted screw with 3 mm screwdriver size, 0 – 2.5 mm² fine wire or 0 – 4 mm² 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

AC	DC	Overall height in mm		»Lift«-terminal connection
		60	64	
663.6	668.6	✓		✓
663.7	668.7		✓	✓

General terms and conditions of business (Germany) Issue 2003

I. Offers:

1. Offers issued by the company - including offers made on the basis of catalogues and brochures - are drawn up free of charge and are without obligation.

2. Any documents and other papers appended to the offer (illustrations, drawings, information regarding weight, dimensions, performance and any other information relating to the object of delivery - including from catalogues and brochures) are only to be understood as guides, if not expressly stated to be binding in the offer.

3. Catalogues, brochures and price lists from the company become invalid at the latest on publication of the new catalogue, brochure or price lists.

II. Conclusion of contract, scope of delivery:

1. In the absence of agreement to the contrary, the supply contract comes into being through written confirmation of the order on the part of the company.

2. The scope of delivery is exclusively defined by the written order confirmation of the company, including any technical or other documents. Information in the order confirmation and/or catalogues, brochures or descriptions which are valid at the time when the contract is concluded which contain information regarding the scope of delivery, appearance, performance, dimensions and weight, ambient temperature, current consumption, power input, breaking capacity or operating costs of the object of delivery form a constituent part of the contract. The information is to be considered as a guide and does not constitute warranted characteristics; it serves as a yardstick in order to establish whether the object of delivery is free of defects, unless specific confirmations to the contrary are contained in the order confirmation or written contract.

3. The company reserves the right to make changes to the object of delivery as regards design, execution and form, including subsequent to conclusion of the contract, in so far as contrary interests of the customer are not unreasonably restricted.

4. The customer is not entitled to assign or transfer claims or rights from any legal or contractual relationship involving obligations towards the company to third parties.

III. Delivery times:

1. Delivery times are basically binding, in so far as they have been confirmed by the company in writing. However, fixed-date purchase contracts are not undertaken. The agreed delivery period begins when the order confirmation is despatched or on the conclusion of the contract, but not before the customer has supplied all the documents, approvals and releases which are due from him and not before all individual (particularly technical) aspects of the object of delivery have been clarified, nor before receipt of any advance payments which may have been agreed. Adherence to the delivery date also presupposes that the customer has fulfilled all his contractual obligations. The delivery period is deemed to have been fulfilled if the object of delivery has left the company factory or if the readiness for despatch has been communicated to the customer before its expiry, in so far as the object of delivery cannot be delivered for reasons which are due to the customer.

2. The delivery period shall be prolonged correspondingly in cases of force majeure and also in the presence of unforeseen uncommon events, such as insurgency or riot, strike, lockout, fire, sequestration, embargo, limitation of energy consumption, incorrect or unpunctual delivery from the suppliers, in so far as these events are not the responsibility of the company, the company was not able to prevent them despite taking the care which is reasonable in the circumstances of the particular case and was not able to achieve timely fulfilment of the contract. If the delivery period is extended unreasonably based on such circumstances, the customer is entitled to withdraw from the contract following expiry of an appropriate period of grace to be set by the customer, or if the customer is interested in a partial delivery, he shall be entitled to withdraw from that portion of the contract which is not fulfilled.

3. If the company is in arrears with regard to the delivery, the customer must agree to a suitable extended delivery period. If this extended delivery period is exceeded by the company, the customer is entitled to withdraw from the contract or, in so far as the customer is interested in partial delivery, to withdraw from that portion of the contract which is not fulfilled. Further claims on the part of the customer - in particular claims for damages based on non-fulfilment or delay - are excluded, in so far as the following Section X does not specify to the contrary.

4. Deliveries made before completion of the delivery period and partial deliveries are permissible in the absence of agreement to the contrary in so far as contrary interests of the customer are not unreasonably restricted.

5. If delivery is agreed on a "call off" basis, the customer shall accept the delivery on the call-off dates.

IV. Prices, Payment:

1. The stated prices are to be understood ex works in Euro plus the relevant valid legal rate of VAT, even if not shown separately, plus costs for packaging, freight, installation, postal charges, insurance costs, any bank or other charges or fees associated with payment and any other ancillary costs. The prices are calculated based on the material prices and wages which apply at the time of conclusion of the contract. Any material price and/or wage increases which occur up to the date of delivery entitle the company to add the proven material price rise and/or wage rise to the price which was originally agreed, in so far as the delivery has to be effected within 4 months of conclusion of the contract - or, in the case of a customer who is a merchant in the legal sense and the contract belongs to the operation of his business or trade, within 2 months.

2. In the absence of written agreement to the contrary, payment of the price of the goods, plus any further costs as described in No. (1) above, must be made as follows:

- for invoices amounts over Euro 100,- plus the valid legal rate of VAT, within 10 days of the invoice date with 2% discount.
- within 30 days of the invoice date, strictly net. Deduction of discount is,

however, not permissible if a previous invoice to the customer has not been paid or has not been paid in full.

3. All payments - with the exception of any permitted deduction of discount - must be made without deductions of any kind to the payment location or bank of the company. Other means of payment are only accepted by special agreement and only on account of performance, and all collection or discounting fees associated with the means of payment shall be added to the due amount.

4. Payments are always used to cover the oldest unpaid debts in the customer's account, plus any interest and costs which may have accrued. Before all due invoiced amounts have been paid in full, including interest and costs, the company is not obliged to provide any further deliveries arising from any current contracts. If the customer is in arrears with any payment which is due, the company can demand cash payment of all outstanding amounts, disregarding the normal payment target with immediate effect, including notes receivable or deposits, before the delivery is made. Any invoices which are not yet due for payment can also be claimed as due with immediate effect.

5. Claims may not be offset against disputed counterclaims of the customer which have not yet been finally decided before a court of law or where decision before such a court of law is not yet due. If the customer is a merchant in the legal sense and if the supply contract belongs to the operation of his business or trade, any complaints are without influence on the duty of payment and the due date of payment and he shall not exercise his right to refuse or withhold performance, unless the company or his legal representatives or vicarious agents are guilty of gross infringement of the contract or if the counterclaims of the customer on which the refusal or withholding of performance are based are undisputed, established in law or due for decision before the law or, in the case of defective deliveries, if the company has already received sufficient payment.

V. Transfer of risk, Despatch, Packaging:

1. In the absence of written agreement to the contrary, the object of delivery will be delivered "ex works" of the company.

2. In all cases risk is transferred to the customer when the object of delivery is handed to the person or company responsible for the transport - including risk of seizure. This also applies if the company undertakes the transport itself, if the forwarding is carried out at the expense of the company or if the company undertakes delivery to the customer. If despatch is delayed for reasons which are the responsibility of the customer, the risk is already transferred to the customer when the object of delivery is announced as ready for despatch.

3. In the absence of agreement to the contrary, the company determines the type of packaging and despatch to be used. Despatch of the object of delivery - including of partial deliveries - is always without insurance, unless the customer requested insurance of the goods during transport in writing and confirmed that he shall be responsible for the costs of the transport insurance.

VI. Retention of title:

1. The company retains title to the object of delivery until all the claims resulting from the business relationship with the customer have been met.

2. The customer shall not be entitled to dispose of the object of delivery by way of sale, lien, pledging as security or in any other way during the period when the retention of title is in force.

3. Enforcement of the retention of title is not deemed to constitute withdrawal from the contract in so far as the law regarding ownership and payment by instalment (Abzahlungsgesetz - AbzG) does not apply.

VII. Warranty:

1. The company shall be liable for defects of the object of delivery - defects here also to be taken to include the absence of warranted characteristics - in accordance with the following provisions.

2. Complaints due to incomplete or incorrect items delivered or complaints due to obvious defects must be reported to the company immediately following delivery of the item and the complaints must be communicated in writing, as otherwise the object of delivery is deemed to be accepted, unless the company, its legal representatives or vicarious agents are guilty of deception. Defects which cannot be discovered even during careful inspection immediately following delivery must be reported to the company in writing immediately following discovery, in so far as the customer is a merchant in the legal sense and the contract belongs to the operation of his business or trade.

3. The warranty offered by the company is limited to a period of 24 months following delivery of the item and is also limited to the obligation to either repair the items or replace them with defect-free items (at the company's discretion).

4. The customer shall send the defective object of delivery to the company for repair or replacement at his own risk. Any items which are replaced become the property of the company.

5. If repair or replacement is not successful, the customer can demand a reduction in price or cancellation of the contract.

6. Further claims of the customer, in particular because of injury of persons, damage to goods which are not the object of the contract or for loss of profit, consequential costs etc. are excluded, if not stated to the contrary in Item X below.

7. The warranty performance of the company does not cover natural wear and tear and parts which wear out early because of the materials of which they are made or their use, and also does not cover damage caused by incorrect storage, handling or use, excessive loading or stress or electro-chemical or electrical influences. Neither does it cover damage caused by non-observance of regulations concerning installation or use of the items which are supplied by the company. The warranty obligation of the company does not cover defects which are based on materials supplied or specified by the customer or

any design laid down by the customer.

8. If certain performance criteria are laid down by the company in order to achieve a certain performance by the object of delivery, establishment of the performance may only be in accordance with these criteria.

VIII. Withdrawal from the contract:

1. The customer can - apart from the other cases regulated in these conditions - also withdraw from the contract by means of written declaration to that effect if the company has become totally unable to fulfil the contract prior to the transfer of risk. In cases of partial impossibility, the right of withdrawal only applies if the partial delivery or the partial performance is demonstrably not of interest for the customer; otherwise the customer can require appropriate reduction in the price. Further claims of the customer against the company are excluded, if not stated to the contrary in Item X below.

2. If neither of the contractual partners is responsible for the impossibility, the company has a claim to the payment which corresponds to the work which has already been performed.

IX. Special manufacture, New development:

1. If the object of delivery has been specially manufactured for the customer, or if it is a new development undertaken according to specifications, drawings and instructions from the customer, any tools which have been purchased or manufactured for such special manufacture or new development shall remain in the ownership of the company and shall be charged to the customer as a separate item, in so far as there is no specific agreement between the parties to the contrary. The company undertakes to keep such tools for one year following delivery of the objects of delivery. If the customer informs the company before this period has elapsed that orders will be placed within a further year, the period for which the tools have to be kept is also prolonged by a further year. Following elapse of the period for keeping the tools, the company can dispose freely of the special tools and other documents.

2. The customer is responsible for ensuring that rights and industrial property rights of third parties - in particular patents etc. - are not infringed in the course of manufacture, new development or special manufacture of an object of delivery in accordance with specifications, drawings and instructions of the customer. The customer undertakes to hold the company harmless without limitation in every respect, including time, as regards claims from any third parties, particularly claims arising from infringement of industrial property rights or patents.

X. Liability:

1. The customer is basically not entitled to make any other or further contractual or legal claims against the company, its legal representatives or vicarious agents, than are allowed for in these general terms and conditions of business or are expressly accepted by the company in writing.

2. Any other liability of the company, its legal representatives or vicarious agents, in particular in the cases described above in Items III. (3), VII. (6) and VIII. (1), is limited in any event - in particular in cases of blame as a result of contract negotiations and positive violation of a contractual duty - to cases of deliberate intent, gross negligence, tortious infringement of fundamental contractual obligations or cardinal duties or the absence of warranted characteristics. Deliberate intent, gross negligence or the lack of warranted characteristics allow the company, its legal representatives or vicarious agents to be liable to the full extent; otherwise, liability of the company, its legal representatives or vicarious agents is restricted to compensation for the foreseeable damage which is typical for this type of contract. If the company has covered the risk which is typical of this type of contract by means of third-party liability insurance, the liability of the company, its legal representatives or vicarious agents is limited to the performance offered by the third-party liability insurance, in so far as the customer is a merchant in the legal sense and the contract belongs to the operation of his business or trade. If the insurance company is not obliged to pay, the company shall be liable to provide compensation up to the amount of the cover provided by the insurance out of its own pocket.

XI. Place of performance, legal venue, governing law:

1. The place of performance for payment obligations of the customer is 72186 Emplingen (Germany), for obligations of the company, the location of the company's supply factory.

2. The legal venue for all claims arising from the legal relationship, including those from bills of exchange and cheques, is 72160 Horb/Neckar (Germany), in so far as the customer is a merchant in the legal sense and the contract belongs to the operation of his business or trade.

3. All contractual and business relationships between the company and the customer shall be exclusively governed by the law of the Federal Republic of Germany, excluding the unified laws regarding the international sale of goods.

XII. Final provisions:

1. If one or more of the aforementioned provisions should be or become ineffective, this shall not influence the effectiveness of the remaining provisions.

2. These general terms and conditions of business apply for all supply of goods and services to the customer. The customer shall raise an express objection or express objections if he is not in agreement with the above general terms and conditions or parts thereof. Placement of an order or issue of a confirmation on the part of the customer while pointing out his own terms and conditions of business shall not be deemed an objection and the terms and conditions of the company shall remain unaffected, unless the company has accepted the terms and conditions of business of the customer or parts of these in the order confirmation or in another written context.

In cases of doubt, the German version of these general terms and conditions of business shall be binding.





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