



- Input: time meter, pulse counter, position indication, frequency counter
- Display: 6-position
- Height of digits: 8 mm
- Operation with front-panel buttons
- Material: plastic
- Housing: 48 x 24 mm
- Panel mounting
- Power supply: 24 V<sub>DC</sub>
- Protection type: IP 65 at front



KOBOLD offices exist in the following countries:

**ARGENTINA, AUSTRIA, BELGIUM, BRAZIL, CANADA, CHINA, FRANCE, GERMANY, GREAT BRITAIN, ITALY, NETHERLANDS, PERU, POLAND, SWITZERLAND, USA, VENEZUELA**

KOBOLD Messring GmbH  
Nordring 22-24  
D-65719 Hofheim/Ts.  
☎ (06192) 299-0  
Fax (06192) 23398  
E-mail: info.de@kobold.com  
Internet: www.kobold.com

**Model:**  
ZEC-1



**Description**

The electronic hour meters, KOBOLD type series ZEC-1Z, provide economical time measurement. The input signal can be of any shape due to an integrated Schmitt trigger. The display can be read correctly even in badly lit installation positions. The negligible mounting depth means that the device takes up very little space when installed in a control cabinet or a control panel.

Programming and operation is carried out with two buttons on the front panel. The buttons have been designed to allow operation even when wearing gloves.

**The time meter has the following functions:**

- scale range from 0–999 999 with suppression of leading zeros
- The period on the lowest decade flashes when counting is enabled; removal of suppression of leading zeros for overflow
- Display: s, min, h or h.m.s  
Decimal point determines resolution
- SET button for reset (can be inhibited separately for each counter in the setup)
- Optical isolator output (optional). active during counting
- The following features are programmable:  
input polarity (npn or pnp)  
attenuation of inputs  
type of input  
operating mode  
decimal point  
Reset:  
electrical,  
manual  
Manual and electrical no reset

**Typical applications**

- Machine construction
- Plant engineering
- Construction machinery
- Chemical industry
- Process visualization

**Technical details**

Max. counting frequency: can be attenuated from 20 kHz to 30 Hz

Display: 6-position, red 7-segment LED  
8 mm high digits

Scale range: 0 to 999 999 with suppression of leading zeros

Accuracy: < 50 ppm

Ambient temperature: -10 to +50 °C

Storage temperature: -25 to +70 °C

Housing: plastic

Dimensions: 48 x 24 x 66 mm (w x h x d)

Panel cut-out: 45 x 22 mm or 50 x 25 mm

**Inputs**

INP A: stop input  
(depending on type of input set)

INP B: start/stop or gate input  
(depending on type of input set)

RESET: dynamic reset input

Switching level low: 0 V<sub>DC</sub> to 0.2 x power supply

Switching level high: 0.6 x power supply to 30 V<sub>DC</sub>

Input resistance for logic inputs: approx. 10 kΩ

Polarity of input signals: common programming for all inputs (npn or pnp)

Minimum pulse duration of reset input: 5 ms

Pulse envelope: any (Schmitt trigger inputs)

Data back-up: EEPROM 1 x 10<sup>6</sup> storage cycles or 10 years

Noise immunity: EN 50081-2; EN 55011 class B; EN 50082-2

Optical isolator output: max. 30 V / 10 mA

Power supply: 10-30 V<sub>DC</sub>, max. 50 mA

Protection type: IP 65 at front

Weight: approx. 50 g

**Scope of supply ZEC-1Z**

- Latch-type fastener
- Front-panel frame for screw fixing  
Panel cut-out 50 x 25 mm
- Front-panel frame for latch-type fastening  
Panel cut-out 50 x 25 mm
- Gasket

**Order details** (example: ZEC-1Z 3 0)

Model	Description	Power supply	Output
ZEC-1Z	Electronic hour meter combination device time meter/short-duration timer DIN housing 48 x 24 mm	3 = 10 - 30 V <sub>DC</sub>	0 = without 1 = optocoupler



### Description

The electronic pulse counters, KOBOLD type series ZEC-1K, serve as combination devices for time metering and pulse counting. The input pulse can be of any shape due to an integrated Schmitt trigger. The display can be read correctly even in badly lit installation positions. The negligible mounting depth means that the device takes up very little space when installed in a control cabinet or a control panel. Programming and operation is carried out with two buttons on the front panel. The buttons have been designed to allow operation even when wearing gloves.

### The pulse counters and time meters have the following functions:

- Inputs:
  - one counting input,
  - start/stop or gate input,
  - a reset input (the effect can be separately programmed and inhibited on both channels in the setup);
  - the polarity of the inputs is programmable
- Adjustable scaling factor
- Scale range from 0-999 999 with suppression of leading zeros
- The period on the lowest decade flashes when counting is enabled; removal of suppression of leading zeros for overflow
- Display:
  - pulse counter: decimal point indicating only
  - Time meter: s, min, h or h.m.s
  - Decimal point determines resolution
- SET button for reset (can be inhibited separately for each counter in the setup)
- Button 2
  - for toggling between pulse counter,
  - and time meter

### Typical applications

- Machine construction
- Plant engineering
- Construction machinery
- Chemical industry
- Process visualization

**Order Code: ZEC-1K 3 0**

### Technical details

Max. counting frequency:	can be attenuated from 20 kHz to 30 Hz
Display:	6-position, red 7-segment LED 8 mm high digits
Scale range:	0 to 999 999 with suppression of leading zeros
Accuracy of time meter:	< 50 ppm
Ambient temperature:	-10 to +50 °C
Storage temperature:	-25 to +70 °C
Housing:	plastic
Dimensions:	48 x 24 x 66 mm (w x h x d)
Panel cut-out:	45 x 22 mm or 50 x 25 mm
<b>Inputs:</b>	
INP A:	counting input, dynamic for pulse counter
INP B:	start/stop or gate input for time meter (depending on type of input set)
RESET:	dynamic reset input
Switching level low:	0 V <sub>DC</sub> to 0.2 x power supply
Switching level high:	0.6 x power supply to 30 V <sub>DC</sub>
Input resistance for logic inputs:	approx. 10 kΩ
Polarity of input signals:	common programming for all inputs (npn or pnp)
Minimum pulse duration of reset input:	5 ms
Pulse envelope:	any (Schmitt trigger inputs)
Data back-up:	EEPROM 1 x 10 <sup>6</sup> storage cycles or 10 years
Noise immunity:	EN 50081-2; EN 55011 class B; EN 50082-2
Power supply:	10-30 V <sub>DC</sub> , max. 50 mA
Protection type:	IP 65 at front
Weight:	approx. 50 g

### Scope of supply ZEC-1K

- Latch-type fastener
- Front-panel frame for screw fixing  
Panel cut-out 50 x 25 mm
- Front-panel frame for latch-type fastening  
Panel cut-out 50 x 25 mm
- Gasket



**Description**

The electronic meters, KOBOLD type series ZEC-1M, serve as multifunction devices for time metering, frequency and pulse counting, and for position indication.

The input pulse can be of any shape due to an integrated Schmitt trigger. The display can be read correctly even in badly lit installation positions. The negligible mounting depth means that the device takes up very little space when installed in a control cabinet or a control panel.

Programming and operation is carried out with two buttons on the front panel. The buttons have been designed to allow operation even when wearing gloves.

**The following standard functions are selectable:**

- pulse counter / position indication
- frequency counter / tachometer function
- time meter

The meter can be fitted with an optocoupler as an option. The functions are defined and specified in following table:

Standard meter functions	Indicated value/ measured value	Optocoupler functions
Pulse counter	Indicated value $\leq 0$	Output active (presetting counter)
Frequency counter	$f = 0$	Output active (standstill counter)
Time meter	With active counting	Frequency output activated / de-activated: Hz

**Typical applications**

- Machine construction
- Plant engineering
- Construction machinery
- Chemical industry
- Process visualization

**Scope of supply ZEC-1M:**

- Latch-type fastener
- Front-panel frame for screw fixing  
Panel cut-out 50 x 25 mm
- Front-panel frame for latch-type fastening  
Panel cut-out 50 x 25 mm
- Gasket

**Order details** (example: ZEC-1M 3 0)

Model	Description	Power supply	Output
ZEC-1M	Electronic hour meters Pulse and frequency counters and time meters Multifunction device DIN housing 48 x 24 mm	3 = 10-30 V <sub>DC</sub>	0 = without 1 = optocoupler

**Technical details**

Max. counting frequency: can be attenuated from 20 kHz to 30 Hz, 11 kHz for counting with phase discriminator

Display: 6-position, red 7-segment LED 8 mm high digits

Scale range: 0 to 999 999 with suppression of leading zeros -199 999 to 999 999 (pulse counter/position indication)

Accuracy: 50 ppm (time meter) < 0.1 % (tachometer/frequency counter)

Ambient temperature: -10 to +50 °C

Storage temperature: -25 to +70 °C

Housing: plastic

Dimensions: 48 x 24 x 66 mm (w x h x d)

Panel cut-out: 45 x 22 mm or 50 x 25 mm

**Inputs**

INP A: counting input dynamic for pulse counter

INP B: start/stop or gate input for time meter (depending on type of input set)

RESET: dynamic reset input

Switching level low: 0 V<sub>DC</sub> to 0.2 x power supply

Switching level high: 0.6 x power supply to 30 V<sub>DC</sub>

Input resistance for logic inputs: approx. 10 kΩ

Polarity input signals: Common programming for all inputs (npn or pnp)

Minimum pulse duration of reset input: 5 ms

IPulse envelope: any (Schmitt trigger inputs)

Data back-up: EEPROM 1 x 10<sup>6</sup> storage cycles or 10 years

Noise immunity: EN 50081-2; EN 55011 class B; EN 50082-2

Optical isolator output: max. 30 V / 10 mA

Power supply: 10-30 V<sub>DC</sub>, max. 50 mA

Protection type: IP 65 at front

Weight: approx. 50 g