# tico 731

# Flexible Counter Series
## in DIN size 24 x 48 mm







- high contrast 8-digit LCD display or brilliant 6-digit LED display
- different supply voltages available:
  – independent of mains supply with lithium battery or
  – maintenance-free and with 12-24 V DC supply
- also high-voltage input 12-250 V AC/V DC
- up to 8 different functions for each standard model:
  01 pulse counter
  02 tachometer (1/min)
  03 time counter (hhhh:mm:ss)
  04 time counter (hhhhhh,hh)
  05 numerical display for the PLC (serial)
  06 bidirectional position indicator
  07 counter with differencial mode
  08 maintenance counter (on request)

## OVERVIEW







| Standard Models | Type 1 | Type 2 | Type 3 | Type 4 | Type 5 |
|---|---|---|---|---|---|
| **Hardware** | | | | | |
| Display | 8-digit LCD | 8-digit LCD | 8-digit LCD | 8-digit LCD | 6-digit LED |
| Supply voltage | Lithium battery | 12 – 24 VDC | Lithium battery | 12 – 24 VDC | 12 – 24 VDC |
| Nominal data retention | 7 years | NV-FRAM > 10 years | 7 years | NV-FRAM > 10 years | NV-FRAM > 10 years |
| Active edge negative or positive edge programmable | x | x | x | x | x |
| Amplitude thresholds | < 0.7 and > 5 V, max. 30 V DC | < 0.7 and > 5 V, max. 30 V DC | < 3 V and > 12 V max. 250 V DC/AC | < 0.7 and > 5 V, max. 30 V DC | < 0.7 and > 5 V, max. 30 V DC |
| Counting frequency programmable | max. 7.5 kHz or 30 Hz attenuated | max. 7.5 kHz or 30 Hz attenuated | 20 Hz | max. 7.5 kHz or 30 Hz attenuated | max. 7.5 kHz or 30 Hz attenuated |
| Control inputs | Reset and Keylock | Reset | Reset and Keylock | Reset and application input | Reset and application input |
| Keylock | external input | programmable | external input | programmable | programmable |
| Mounting depth | 32 mm | 32 mm | 60 mm | 60 mm | 60 mm |
| **Software** | | | | | |
| Impulse counter | x | x | x | x | x |
| **Tachometer 1/min** | x | x | | x | x |
| Time counter h : 1/100 h | x | x | x | x | x |
| Time counter h : min : s | x | x | x | x | x |
| Numerical display for PLC | | x | | x | x |
| Position indicator bi directional | | | | x | x |
| Counter with differencial mode | | | | | x |
| Maintenance counter (on request) | | | | | x |

# Technical data tico 731

**TYPE 1**

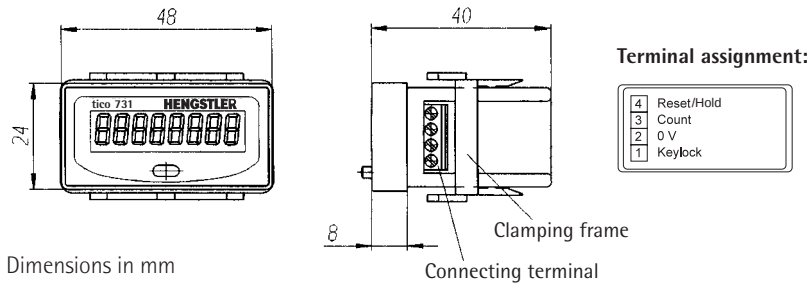


- LCD display
- Lithium battery
- COUNT: programmable count input for voltage signal or contact, frequency 7.5 kHz or 30 Hz
- HOLD: Display memory input contact (negative, 30 Hz)
- KEYLOCK: locking of the Hold buttom
- Gate measurement with 6 s measuring time in Imp/min

## TECHNICAL DATA

| | |
|---|---|
| Operating temperature | -10 ... 50 °C |
| Strorage temperature | -20 ... +60 °C |
| Electrical connection | screw terminals |
| Mounting | with clamping frame |
| Front panel cutout | 45 + 0.6 x 22 + 0.3 mm |
| Protection class (IEC 144) | front side IP 54, terminals IP 20 |
| Dynamic strength | 10 m/s2 (10 ... 150 Hz) according to IEC 68-T2-6 |
| Shock stability | 100 m/s2 (18 ms) according to IEC 68-T2-27 |
| General rating | according to EN 61010, protective system II |
| Pulse shape | any square wave (1:1 for max. frequency) |
| Input resistance | < 50 kOhm (static) |
| Min. pulse length | 17 ms (30 Hz), 70 µs (7.5 kHz) |
| Display | 8-digit LCD, 7 mm |
| Supply voltage $U_b$ | internal lithium battery |
| Nominal data retention | lithium battery: 7 years |
| | |
| Inputs: | |
| Amplitude thresholds | voltage input up to 7.5 kHz:<br>< 0.7 V and > 5 V, max 30 V DC |
| Active edge | negative or positive edge programmable |
| Counting frequency | max. 7.5 kHz |
| | |
| Control inputs: | |
| Display Hold | - manual via keyboard (can be locked)<br>- external Hold with static behaviour,<br>active edge negative 30 Hz |

## DIMENSIONS CONNECTION DIAGRAM




Dimensions in mm

## ORDER NUMBER

Model tico 731

| 0 731 | 1 | 0 | 2 | * S |
|---|---|---|---|---|

* Option: with plug-in screw terminals

**Software function**
**01** impulse counter
**02 tachometer (1/min)**
**03** time counter (hhhh:mm:ss)
**04** time counter (hhhhhh.hh)

# tico 731

## Technical data

**TYPE 2**




- LCD display
- DC supply voltage 12 – 24 V DC
- COUNT: programmable count input for voltage signal or contact, frequency (7.5 kHz or 30 Hz)
- HOLD: Display memory input contact (negative, 30 Hz)
- KEYLOCK: locking of the Hold buttom
- Gate measurement with 6 s measuring time in Imp/min

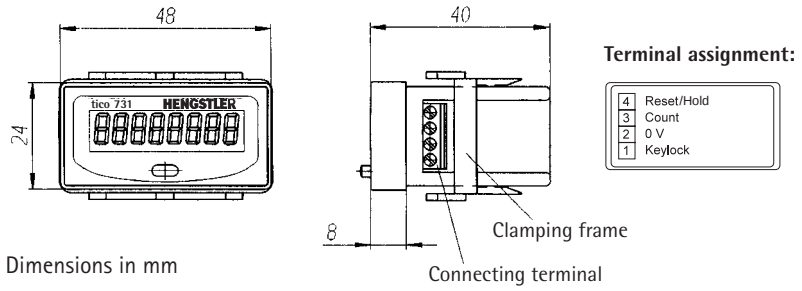
**TECHNICAL DATA**

| | |
|---|---|
| Operating temperature | -10 ... 50 °C |
| Strorage temperature | -20 ... +60 °C |
| Electrical connection | screw terminals |
| Mounting | with clamping frame |
| Front panel cutout | 45 + 0.6 x 22 + 0.3 mm |
| Protection class (IEC 144) | front side IP 54, terminals IP 20 |
| Dynamic strength | 10 m/s² (10 ... 150 Hz) according to IEC 68-T2-6 |
| Shock stability | 100 m/s² (18 ms) according to IEC 68-T2-27 |
| General rating | according to EN 61010, protective system II |
| Pulse shape | any square wave (1:1 for max. frequency) |
| Input resistance | < 50 kOhm (static) |
| Min. pulse length | 17 ms (30 Hz), 70 µs (7.5 kHz) |
| Display | 8-digit LCD, 7 mm |
| Supply voltage $U_b$ | 12 ... 24 V DC |
| Current consumption DC | 12 ... 24 V DC < 5 mA |
| Nominal data retention | nonvolatile memory > 10 years |

| Inputs: | |
|---|---|
| Amplitude thresholds | voltage input up to 7.5 kHz:<br>< 0.7 V and > 5 V, max. 30 V DC |
| Active edge | negative or positive edge programmable |
| Counting frequency | programmable: 7.5 kHz or 30 Hz (attenuated for contacts) |

| Control inputs: | |
|---|---|
| Hold | - manual hold via keyboard (can be locked)<br>- external hold with static behaviour, active edge negative attenuated 30 Hz |
| Hold lock | programmable via front key |

**DIMENSIONS**
**CONNECTION DIAGRAM**




Dimensions in mm

**ORDER NUMBER**

Model tico 731

| 0 731 | 2 | 0 | 2 | * S |
|---|---|---|---|---|

* Option: with plug-in screw terminals

**Software function**
01 impulse counter
**02 tachometer (1/min)**
03 time counter (hhhh:mm:ss)
04 time counter (hhhhhh.hh)
05 numerical display for PC

# Technical data tico 731

**TYPE 4**

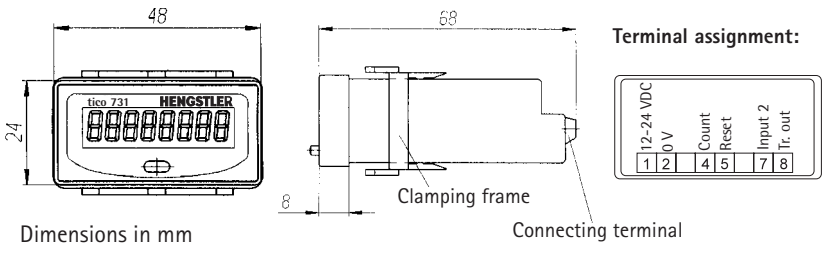


- LCD display
- 12-24 V DC supply voltage
- COUNT: programmable count input for voltage signal or contact, frequency 7.5 kHz or 30 Hz
- exactly period measuring princip (1/Tau)
- INPUT 2: control input for display memory (Hold)
- Long case

## TECHNICAL DATA

| | |
|---|---|
| Operating temperature | -10 ... 50 °C |
| Strorage temperature | -20 ... +60 °C |
| Electrical connection | screw terminals |
| Mounting | with clamping frame |
| Front panel cutout | 45 + 0.6 x 22 + 0.3 mm |
| Protection class (IEC 144) | front side IP 54, terminals IP 20 |
| Dynamic strength | 10 m/s² (10 ... 150 Hz) according to IEC 68-T2-6 |
| Shock stability | 100 m/s² (18 ms) according to IEC 68-T2-27 |
| General rating | according to EN 61010, protective system II |
| Pulse shape | any square wave (1:1 for max. frequency) |
| Input resistance | < 50 kOhm (static) |
| Min. pulse length | 17 ms (30 Hz), 70 µs (7.5 kHz) |
| Display | 8-digit LCD, 7 mm |
| Supply voltage $U_b$ | 12 ... 24 V DC |
| Current consumption DC | 12 ... 24 V DC < 50 mA |
| Nominal data retention | nonvolatile memory > 10 years |
| Count input: | |
| Amplitude thresholds | voltage input up to 7.5 kHz:<br>< 0.7 V and > 5 V, max. 30 V DC |
| Active edge | negative or positive edge programmable |
| Counting frequency | programmable: 7.5 kHz or 30 Hz (attenuated for contacts)<br>with position indicator 2 kHz: active edge positive |
| Control inputs: | |
| Input 2: (Hold) | - manual hold via keyboard (can be locked)<br>- external hold with static behaviour, active edge negative<br>attenuated 30 Hz |
| Hold lock | programmable via front key |

## DIMENSIONS CONNECTION DIAGRAM




Dimensions in mm

## ORDER NUMBER

Model tico 731

| 0 731 | 4 | 0 | 2 |
|---|---|---|---|

**Software function**
01 impulse counter
**02 tachometer (1/min)**
03 time counter (hhhh:mm:ss)
04 time counter (hhhhhh.hh)
05 numerical display for PLC
06 bidirectional position indicator

# tico 731

## Technical data

**TYPE 5**

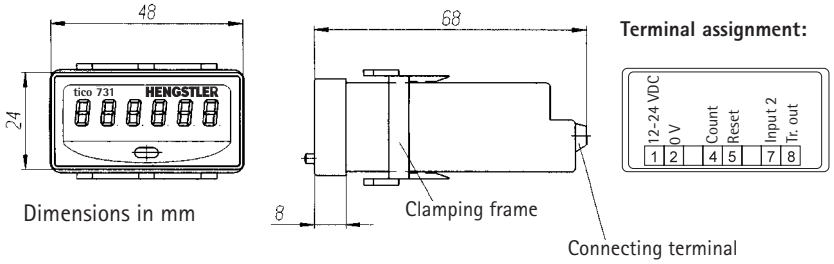



- LED display
- 12-24 V DC supply voltage
- COUNT: programmable count input for voltage signal or contact, frequency 7.5 kHz or 30 Hz
- exactly period measuring princip (1/Tau)
- INPUT 2: control input for display memory (Hold)
- Long case

**TECHNICAL DATA**

| | |
|---|---|
| Operating temperature | -10 ... 50 °C |
| Strorage temperature | -20 ... +60 °C |
| Electrical connection | screw terminals |
| Mounting | with clamping frame |
| Front panel cutout | 45 + 0.6 x 22 + 0.3 mm |
| Projection class (IEC 144) | front side IP 54, terminals IP 20 |
| Dynamic strength | 10 m/s² (10 ... 150 Hz) according to IEC 68-T2-6 |
| Shock stability | 100 m/s² (18 ms) according to IEC 68-T2-27 |
| General rating | according to EN 61010, protective system II |
| Pulse shape | any square wave (1:1 for max. frequency) |
| Input resistance | < 50 kOhm (static) |
| Min. pulse length | 17 ms (30 Hz), 70 µs (7.5 kHz) |
| Display | 6-digit LCD, 7 mm |
| Supply voltage $U_b$ | 12 ... 24 V DC |
| Current consumption DC | 12 ... 24 V DC < 50 mA |
| Nominal data retention | nonvolatile memory > 10 years |
| Count input: | |
| Amplitude thresholds | voltage input up to 7.5 kHz:<br>< 0.7 V and > 5 V, max. 30 V DC |
| Active edge | negative or positive edge programmable |
| Counting frequency | programmable: 7.5 kHz or 30 Hz (attenuated for contacts) |
| Control inputs: | |
| Input 2: (Hold) | - manual hold via keyboard (can be locked)<br>- external hold with static behaviour, active edge negative attenuated 30 Hz |
| Hold lock | programmable via front key |

**DIMENSIONS**
**CONNECTION DIAGRAM**




**ORDER NUMBER**

Model tico 731

| 0 731 | 5 | 0 | 2 |
|---|---|---|---|

**Software function**
01 impulse counter
**02 tachometer (1/min)**
03 time counter (hhhh:mm::ss)
04 time counter (hhhhhh.hh)
05 numerical display for PLC
06 bidirectional position indicator
07 counter with differential mode **(1 kHz)**

## SPECIAL FUNCTIONS

To best match your application, you can order special functions such as prescaler value, decimal point and preset value, which are permanently set by us before delivery. With the variable prescaler value you can adapt to already existing transfer ratios of your application. Small resolutions can be shown with the decimal point, e. g. for the position indicator or the tachometer.
A special feature is the possibility of displaying an information text in the display, e. g. for the surveillance of maintenance cycles. In this case the desired information is shown in the display after reaching the fixed preset value. You can display any text that can be created with the 7-segment alphabet, e. g. STOP, HELP, FILTER etc.

## ORDER NUMBER SPECIAL VERSIONS

| Special functions for | Impulse counter | Tacho-meter | Time counter | Numerical display | Position indicator | Counter with differential work |
|---|---|---|---|---|---|---|
| Preset value 0,001 bis 99,999 | x | x | | | x | x |
| Decimal point 0 to 3 positions behind the comma | x | x | | | x | x |
| Preset value 0 to 99 999 999 | x | | x | | | |
| Information text (on reaching the preset value) LCD = 8 characters LED = 6 characters | x | | x | | | |

## ORDER NUMBER SPECIAL VERSIONS

**Choose version and basic function:**

Model tico 731

| 0 731 | 7 | | | * S |
|---|---|---|---|---|

* Option: with plug-in screw terminals only for standard model 1, 2

**Standard version:**
1 Standard model 1
2 Standard model 2
3 Standard model 3
4 Standard model 4
5 Standard model 5

**Function:**
1 Impulse counter
**2 Tachometer (1/min)**[1)]
3 Time counter (hhhh:mm:ss)
4 Time counter (hhhhhh.hh)
6 Position indicator (2-channel)[2)]
7 Counter with differential mode[3)]

1) not available for standard type 3
2) not available for standard types 1, 2, 3
3) only available for standard type 5

**Please state the desired special version on your order:**

| | |
|---|---|
| **P: (Value);** | Prescaler value: 0.001 to 99.999[4)] |
| **D: (Value);** | Decimal point: 0 to 3 positions after the comma[4)] |
| **V: (Value);** | Preset value: 0 to 99 999 999[5)] |
| **T: (Text);** | The information text displayed on reaching the preset value can be built up as required from the 7-segment alphabet |

4) not available for time counters
5) not available for tachometers and position indicator