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 environmentally friendly with 12-24 VDC supply
- also high-voltage input 12-250 VAC/VDC
- up to 8 different functions for each standard model:
  01 Pulse counter
  02 Tachometer (1/min)
  03 Time counter (display in hhhh:mm:ss)
  04 Time counter (display in hhhhhh,hh)
  06 Bidirectional position indicator
  07 Counter with differential mode

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 differential 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
- RESET: reset input with contact (negative, 30 Hz)
- KEYLOCK: locking of the reset key
- short case

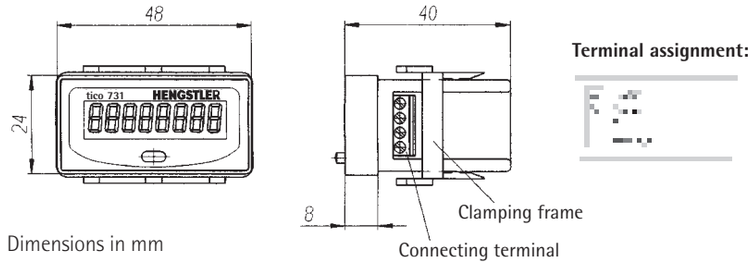
TECHNICAL DATA

Operating temperature	-10 ... 50 °C
Strorage temperature	-20 ... +60 °C
Electrical connection	screw terminals, cable length < 30 m
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 61010-1, EN 50178, 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 Ub	internal lithium battery
Nominal data retention	lithium battery: 7 years

Inputs:	
Amplitude thresholds	voltage input up to 7.5 kHz: < 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:	
Reset	- manual reset via keyboard (can be locked) - external reset with static behaviour, active edge negative attenuated 30 Hz
Reset lock	via Keylock input, bridged to 0 V
Counting frequency	max. 7.5 kHz

DIMENSIONS CONNECTION DIAGRAM



Dimensions in mm

ORDER NUMBER

Model tico 731

0 731	1	0	1	* 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

TYPE 2



TECHNICAL DATA

Technical data

- 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
- RESET: reset input with contact (negative, 30 Hz)
- short case

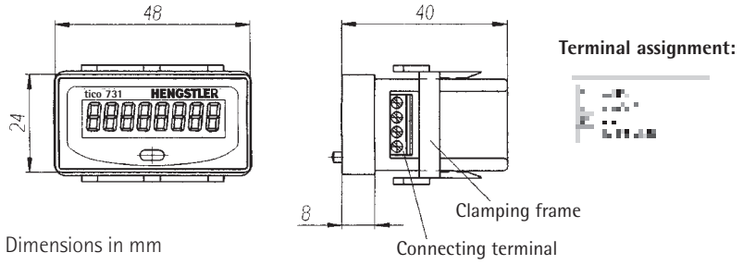
Operating temperature	-10 ... 50 °C
Strorage temperature	-20 ... +60 °C
Electrical connection	screw terminals
Mmounting	with clamping frame
Front panel cutout	45 + 0.6 x 22 + 0.3 mm
Protection class (IEC 144)	front side IP 54, terminals IP 20
Dynamic strength	10 m/s² (10 ... 150 Hz) according to IEC 68-T2-6
Shock stability	100 m/s² (18 ms) according to IEC 68-T2-27
General rating	according to EN 61010-1, EN 50178, 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

* Not to be connected to a DC-Network. For further information see manual.

Inputs:	
Amplitude thresholds	voltage input up to 7.5 kHz: < 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:	
Reset	- manual reset via keyboard (can be locked) - external reset with static behaviour, active edge negative attenuated 30 Hz
Reset lock	programmable via front key
Counting frequency	max. 7.5 kHz, transmission rate for numerical display: 100 Hz

DIMENSIONS CONNECTION DIAGRAM



Dimensions in mm

ORDER NUMBER

Model tico 731

0 731	2	0	1	* 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)

Technical data tico 731

TYPE 3



- LCD display
- Lithium battery
- COUNT: count input for voltage pulses 12-250 V AC/DC (20 Hz)
- RESET: reset input for voltage pulses 12-250 V AC/DC (20 Hz)
- KEYLOCK: locking of the reset key
- long case

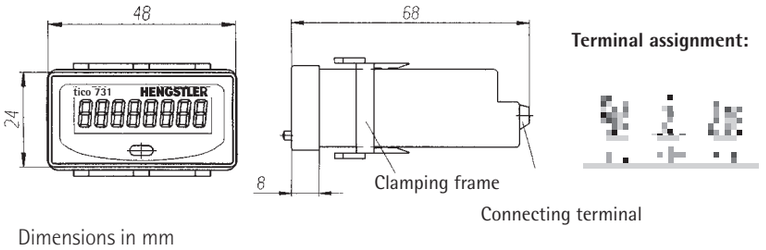
TECHNICAL DATA

Operating temperature	-10 ... 50 °C
Storage temperature	-20 ... +60 °C
Electrical connection	screw terminals, cable length < 30 m
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 61010-1, EN 50178, protective system II
Pulse shape	any square wave (1:1 for max. frequency)
Input resistance	< 50 kOhm (static)
Min. pulse length	25 ms (20 Hz)
Display	8-digit LCD, 7 mm
Supply voltage U_b	internal lithium battery
Current consumption DC	lithium battery: 7 years

Inputs:	
Amplitude thresholds	high voltage input 20 Hz: < 3 V and > 12 V, max. 250 V DC/AC
Active edge	voltage input positive edge
Counting frequency	20 Hz

Control inputs:	
Reset	- manual reset via keyboard (can be locked) - external reset with static behaviour, positive circuit
Reset lock	by means of bridge on the keylock input

DIMENSIONS CONNECTION DIAGRAM



Dimensions in mm

ORDER NUMBER

Model tico 731

0 731	3	0	1

Software function
01 impulse counter
03 time counter (hhhh:mm:ss)
04 time counter (hhhhhh.hh)

tico 731

TYPE 4



TECHNICAL DATA

Technical data

- LCD display
- 12-24 V DC supply voltage
- COUNT: programmable count input for voltage signal or contact, frequency 7.5 kHz or 30 Hz
- INPUT 2: control input for temporary locking of count input (gate) or second count input with position indicator
- RESET: reset input
- OUT: transistor output for preset signal
- long case

Operating temperature	-10 ... 50 °C
Strorage temperature	-20 ... +60 °C
Electrical connection	screw terminals, cable length < 30 m
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 61010-1, EN 50178, 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

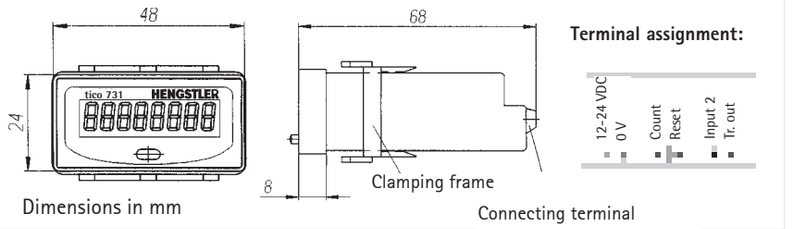
* Not to be connected to a DC-Network. For further information see manual.

Count input:	
Amplitude thresholds	voltage input up to 7.5 kHz: < 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)
	with position indicator 2 kHz: active edge positive
Control inputs:	
Reset	– manual reset via keyboard (can be locked) – external reset with static behaviour, 30 Hz attenuated same edge as with count input
Input 2:	gate or second count channel; same edge as with count input
Reset lock	programmable via front key
Transistor output signal	PNP output
Voltage/switching current	voltage supply minus 2 V; max. 10 mA
Counting frequency	max. 7.5 kHz, transmission rate for numerical display: 1 kHz

INFORMATION

This is a class A device. This device may cause radio interferences in residentialenviroments. In this case, the user may be asked to take care of reasonable action.

DIMENSIONS CONNECTION DIAGRAM



Dimensions in mm

Connecting terminal

ORDER NUMBER

Model tico 731

0 731	4	0	1

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

Technical data tico 731

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
- INPUT 2: control input for temporary locking of count input (gate) or second count input with position indicator
- RESET: reset input
- OUT: transistor output for preset signal
- long case

TECHNICAL DATA

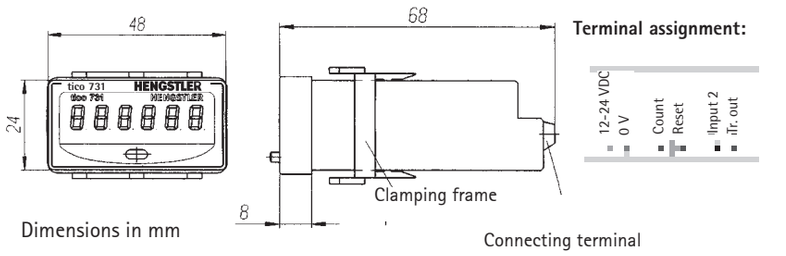
Operating temperature	-10 ... 50 °C
Strorage temperature	-20 ... +60 °C
Electrical connection	screw terminals
Mounting	with clamping frame
Front panel cutout	45 + 0.6 x 22 + 0.3 mm
Protection class (IEC 144)	front side IP 54, terminals IP 20
Dynamic strength	10 m/s² (10 ... 150 Hz) according to IEC 68-T2-6
Shock stability	100 m/s² (18 ms) according to IEC 68-T2-27
General rating	according to EN 61010-1, EN 50178, 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: < 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) with position indicator 2 kHz

* Not to be connected to a DC-Network. For further information see manual.

Control inputs:	
Reset	– manual reset via keyboard (can be locked) – external reset with static behaviour, same edge as count input
Input 2:	gate or second count channel
Reset lock	programmable via front key
Transistor output signal	PNP output
Voltage/switching current	supply minus 2 V; max. 10 mA
Counting frequency	max. 7.5 kHz, transmission rate for numerical display: 1 kHz

DIMENSIONS CONNECTION DIAGRAM



Dimensions in mm

Connecting terminal

ORDER NUMBER

Model tico 731

0 731	5	0	1	
0 731	5	0	7	

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

Special functions

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 NUMBERS SPECIAL VERSIONS

Special functions for	Impulse counter	Tacho-meter	Time counter	Numerical display	Position indicator	Differential counter
Prescaler value 0.000015 to 65535,99998	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 NUMBERS 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: 0.000015 to 65535,99998[4)]
D: (Value);	Decimal point: 0 to 3 positions after the dot[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