

## Time counters / Time relays

Time counters show how long equipment, machines and other devices have been switched on. They show information about elapsed warranty time, usage and whether it's time to carry out maintenance work. We also have a range of time preset counters in our program for use with time based controllers.

As a further option, we offer a line of modern, well designed Time relays with a wide range of programming options

### Typical applications:

- Operating hours recording
- Service time counting
- Service life tests
- Maintenance interval counter
- Time control
- Time delays
- After run control
- Pulse shaper
- Timed on and off switching
- Shorttime measurement and monitoring up to 1 ms
- Sports timing
- Throughput time control
- Curing time control
- Mixing process control
- Oven control
- Light control
- Machine runtime recording

# Electronic Time Counters



Type	tico 731	tico 732	tico 734 006
<b>Features</b>	<ul style="list-style-type: none"> <li>■ Small, compact, 5 different versions</li> <li>■ Voltage supply via lithium cell or 12-24 VDC</li> <li>■ 8-digit LCD or 6-digit LED display</li> <li>■ Two versions with different time ranges for each type</li> <li>■ High-voltage version for 12-250 VDC/AC input pulses</li> <li>■ Optional with output signal for use as maintenance counter</li> </ul>	<ul style="list-style-type: none"> <li>■ Multifunctional, used as counter, tachometer, time counter, shift or batch counter</li> <li>■ Voltage supply 12-24 VDC; 115 VAC, or 230 VAC</li> <li>■ 6-digit LCD or LED display</li> <li>■ Offering a variety of programmable functions</li> <li>■ Without or with 1 or 2 presets</li> <li>■ Offering many adjustable time ranges</li> <li>■ Resolution up to 1 ms</li> <li>■ Programmable keyboard lockout</li> <li>■ Integrated sun totalizing counter</li> </ul>	<ul style="list-style-type: none"> <li>■ Totalizing counter with large 6-digit LCD display; illuminated</li> <li>■ 4 different programmable time ranges</li> <li>■ Voltage supply via exchangeable lithium cell</li> <li>■ Small mounting depth</li> <li>■ Expandable by a variety of module options</li> <li>■ 10 versions of the same design are offering different functions</li> </ul>
<b>Technical Data</b>			
Dimensions (mm) (Width x Height x Depth)	48 x 24 x 32 short 48 x 24 x 60 long	48 x 48 x 93.5	72 x 36 x 36
Front panel cutout (mm)	45 x 22.5	45 x 45	68 x 33
Display	LCD 8-digit, 7 mm LED 6-digit, 7.6 mm	LCD 6-digit, 9 mm LED 6-digit, 7.6 mm	LCD 6-digit, 12 mm
Protection	IP 65	IP 65	IP 65
Supply voltage	Li battery, type 1+3, 12-24 VDC	12-24 VDC, 115 VAC, 230 VAC versions	Exchangeable Li battery
<b>Inputs</b>			
Input control	PNP/NPN, type 3 with 12-250 VDC/AC	PNP/NPN	PNP/NPN
Time format	hhhhhh.hh; hhhh:mm:ss; (LCD) hhhh.hh; hh:mm:ss (LED)	Sec, min, hours, decimal point up to 0.000 or programmable format hh:mm:ss	ssssss; mmmmm.m; hhhhh.h; hh:mm:ss; programmable
Measuring principle	Accumulated measurement; Pulse-width	Accumulated or single- pulse measurement; Pulse-width or period duration	Accumulated measurement; Pulse-width
Reset input	NPN type 1+2, type 3 with 12-250 VDC/AC; NPN/PNP Type 4-5	PNP/NPN	NPN
Control inputs	Optional: Keylock or Display hold input	2 <sup>nd</sup> counter input and display input	Keylock input
<b>Output</b>	Optional as transistor PNP or display	Without, or with 1 or 2 relays and transistor outputs	Optional as SSR output
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# Electromechanical Time Counters



Type	Type 891	Type 891 DIN	Type 478	Type 633 DC
<b>Features</b>	<ul style="list-style-type: none"> <li>■ 7-digit display</li> <li>■ Without reset function</li> <li>■ DIN dimensions 48 x 24; 48 x 48 and 72 x 72 via adapter frame</li> <li>■ Low-cost</li> <li>■ Screw-type terminal connections</li> </ul>	<ul style="list-style-type: none"> <li>■ 7-digit display</li> <li>■ Without reset function</li> <li>■ DIN-rail mounting</li> <li>■ Compact design</li> <li>■ Low-cost</li> <li>■ Screw-type terminal connections</li> </ul>	<ul style="list-style-type: none"> <li>■ 6- or 7-digit display</li> <li>■ Manual reset function or without reset function</li> <li>■ Plugs into modular system 400</li> <li>■ Easy to service</li> </ul>	<ul style="list-style-type: none"> <li>■ Small building dimensions</li> <li>■ Low power consumption</li> <li>■ Standard connections</li> <li>■ Suitable for PCB mounting</li> <li>■ Machine-solderable and washable</li> <li>■ High shock resistance</li> </ul>
<b>Technical Data</b>				
Dimensions (mm) (Width x Height x Depth)	48 x 24 x 40.5	48 x 70 x 49	50 x 25 x 75.5	25.2 x 31 x 14.6 30 x 20 x 40
Front panel cutout (mm)	45 x 22.5		50 x 25	27 x 14.2; only .8
No. of digits/	7	7	6 or 7, depending on version	7
Digit height	5 mm (visual)	5 mm (visual)	4 mm	4 mm (visual)
Protection	IP 66	IP 66	IP 40	IP 65
Pulse voltage	12-36 VDC; 24 VAC; 115 VAC; 230 VAC; further voltages available as options	12-36 VDC; 24 VAC; 115 VAC; 230 VAC; further voltages available as options	12 VDC; 24 VDC; 24 VAC; 115 VAC; 230 VAC; depending on version	5; 12; 24 VDC
Power consumption	DC 0.75 W; AC 0.7 VA	DC 0.75 W; AC 0.7 VA	Approx. 1 VA	Approx. 30 mW
Reset	None	None	None; manual - depending on version	None
Operating temperature	- 10...50 °C	- 10...50 °C	- 10...50 °C;	- 10...50 °C; optional - 40...+ 85 °C
Time format	hhhhh.hh	hhhhh.hh	hhhh.hh or hhhhh.hh	hhhhh.hh
Accessories	Panel frame adapter		Panel frame, connection box	
Dimensions (mm) (including panel frame)	54 x 29; 48 x 48; 52 x 52; 72 x 72; D 73; D 58		60 x 50 x 88	
Cutout (mm) (including panel frame)	50 x 25; 45 x 45; D 50; 68 x 68; D 50; D 50		55 x 29.5	
Page	174	176	178	180

# Electromechanical Time Counters



Type	Type 633 DIN	Type 633 AC		
<b>Features</b>	<ul style="list-style-type: none"> <li>■ Suitable for DIN-rail mounting</li> <li>■ Suitable for installation in switching cabinets</li> <li>■ Screw-type terminal connections</li> <li>■ Without reset function</li> <li>■ Low power consumption</li> </ul>	<ul style="list-style-type: none"> <li>■ Small AC voltage meter</li> <li>■ Low power consumption</li> <li>■ Simple installation</li> <li>■ Protection class IP 65</li> <li>■ Screw-type terminal connections or cable connections</li> </ul>		
<b>Technical Data</b>				
Dimensions (mm) (Width x Height x Depth)	25.5 x 68.5 x 28	30 x 20 x 56		
Front panel cutout (mm)		27 x 14.4		
No. of digits	7	6		
Digit height	4 mm (visual)	4 mm (visual)		
Protection	IP 10	IP 66		
Pulse voltage	5, 12 or 24 VDC, depending on version	24, 115, 230 VAC		
Power consumption	Approx. 250 mW	0.08 -1 VA		
Operating temperature	0...60 °C	- 10...50 °C		
Time format	hhhhh.hh	hhhhh.h		
Accessories		Panel frame		
<b>Page</b>	182	183		

# Electronic Preset Time Counters



Type	tico 732	tico 734 008	tico 735P6
<b>Features</b>	<ul style="list-style-type: none"> <li>■ Multifunctional, used as counter, tachometer, time counter, shift or batch counter</li> <li>■ Voltage supply 12-24 VDC; 115 VAC, or 230 VAC</li> <li>■ 6-digit LCD or LED display</li> <li>■ Variety of programmable functions</li> <li>■ Without presets or with 1 or 2 presets</li> <li>■ Variety of adjustable time ranges</li> <li>■ Resolution up to 1 ms</li> <li>■ Programmable keyboard lock</li> <li>■ Integrated sum totalizing counter</li> </ul>	<ul style="list-style-type: none"> <li>■ Totalizing counter with large, 6-digit LCD display; illuminated</li> <li>■ Different time, 4 ranges programmable</li> <li>■ Voltage supply via exchangeable lithium cell</li> <li>■ Small mounting depth</li> <li>■ Expandable by a variety of module options</li> <li>■ 10 versions offering different functions (same design)</li> </ul>	<ul style="list-style-type: none"> <li>■ Large dual-colour, 5-digit LED display; digit height 18.5 mm</li> <li>■ Programmable display colour</li> <li>■ Different time, 5 ranges programmable</li> <li>■ Upgrading options (e.g. RS 485)</li> <li>■ Service-friendly due to plug-in system</li> <li>■ Complete functions by 8 counter versions and 5 process indicators</li> </ul>
<b>Technical Data</b>			
Dimensions (mm) (Width x Height x Depth)	48 x 48 x 93.5	72 x 36 x 36	96 x 48 x 100
Front panel cutout (mm)	45 x 45	68 x 33	92 x 45
Display	LCD 6-digit, 9 mm LED 6-digit, 7.6 mm	LCD 6-digit, 12 mm	LED 5 digit, 18.5 mm Dual-colour
Protection	IP 65	IP 65	IP 66
Supply voltage	12-24 VDC, 115 VAC, 230 VAC versions	Exchangeable Li battery	22-55 VDC / 20-50 VAC or 90-264 VAC
<b>Inputs</b>			
Input control	PNP/NPN	PNP/NPN	PNP/NPN
Time format	Sec., min, hours, with decimal point up to 0.000; or programmable format hh:mm:ss	sssss; mmmm.m; hhhh.h; hh:mm:ss; programmable	sss.s; mmm.m; hhh.h; mm.ss; hh.mm; programmable
Measuring principle	Accumulated or single-pulse measurement; Pulse width or period duration	Accumulated measurement Pulse width	Accumulated or single-pulse measurement Pulse width
Reset input	PNP/NPN	NPN	NPN
Control inputs	Display hold input	Keylock	Keylock
Control inputs	Display buffer input	Keyboard lock	Keyboard lock
<b>Output</b>	Without, or with 1 or 2 relays and transistor outputs	As SSR output	1 relay and transistor output
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# Flexible Counter Series in DIN size 24 x 48 mm

tico 731



- 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)
  - 05 Numerical display for the PLC (serial)
  - 06 Bidirectional position indicator
  - 07 Counter with differential mode
  - 08 Maintenance counter (on request)



Standard Models	Type 1	Type 2	Type 3	Type 4	Type 5
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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

Time counters/  
Timer relays

# tico 731

## TYPE 1



## TECHNICAL DATA

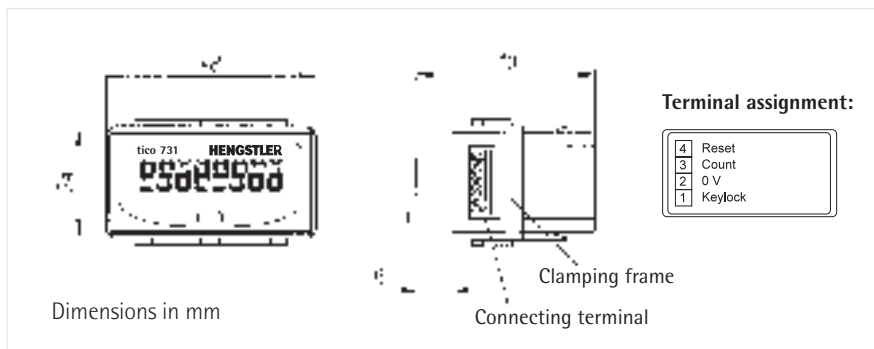
- LCD display
- lithium battery
- COUNT: programmable start input for voltage signal or contact, frequency 30 Hz
- RESET: reset input with contact (negative, 30 Hz)
- KEYLOCK: locking of the reset key
- short case

Operating temperature	-10 ... 50 °C
Storage 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 65, terminals IP 20
Dynamic strength	10 m/s <sup>2</sup> (10 ... 150 Hz) according to IEC 68-T2-6
Shock stability	100 m/s <sup>2</sup> (18 ms) according to IEC 68-T2-27
General rating	according to EN 61010, protective system II
Input resistance	< 50 kOhm (static)
Display	8-digit LCD, 7 mm
Supply voltage U <sub>b</sub>	internal lithium battery
Nominal data retention	lithium battery: 7 years

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

Control inputs:	
reset	- manual reset via keyboard (can be locked) - external reset with static behaviour, active edge negative
Reset lock	- by means of bridge on keylock input to 0 V

## DIMENSIONS CONNECTION DIAGRAM



## ORDER NUMBER

Model tico 731

0	731	1	0	3	S
0	731	1	0	4	

\* Option: with plug-in screw terminals

**Software function**

- 01 impulse counter
- 02 tachometer (1/min)
- 03 time counter (hhhh:mm:ss)
- 04 time counter (hhhhh.hh)



## TYPE 2



## TECHNICAL DATA

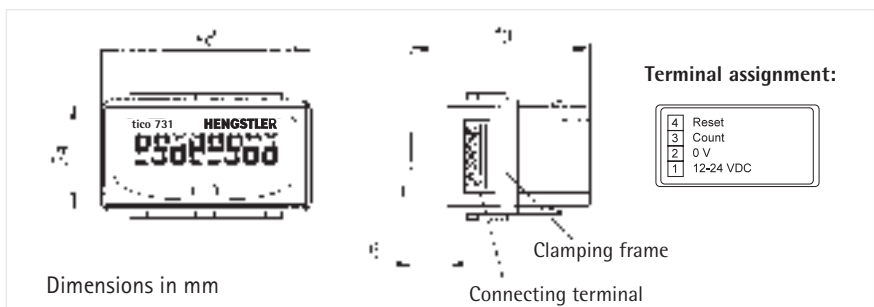
- LCD display
- DC supply voltage 12 – 24 V DC
- COUNT: programmable start input for voltage signal or contact, frequency 30 Hz
- RESET: reset input with contact (negative, 30 Hz)
- short case

Operating temperature	-10 ... 50 °C
Storage 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 65, terminals IP 20
Dynamic strength	10 m/s <sup>2</sup> (10 ... 150 Hz) according to IEC 68-T2-6
Shock stability	100 m/s <sup>2</sup> (18 ms) according to IEC 68-T2-27
General rating	according to EN 61010, protective system II
Input resistance	< 50 kOhm (static)
Display	8-digit LCD, 7 mm
Supply voltage U <sub>b</sub>	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 30 Hz: < 0.7 V and > 5 V, max 30 V DC
Active edge	negative or positive edge programmable
Counting frequency	programmable: 30 Hz (attenuated for contacts)

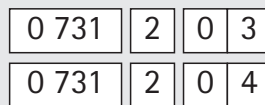
Control inputs:	
Reset	- manual reset via keyboard (can be locked) - external reset with static behaviour, active edge negative attenuated 30 Hz
Reset lock	programmable via front key

## DIMENSIONS CONNECTION DIAGRAM



## ORDER NUMBER

Model tico 731



\* Option: with plug-in screw terminals

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

# tico 731

## TYPE 3



## TECHNICAL DATA

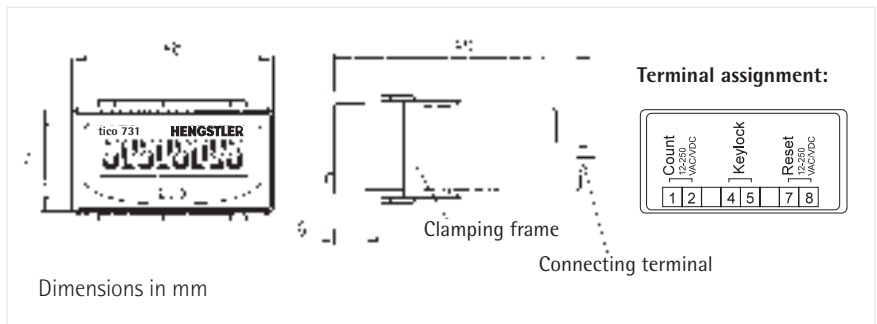
- LCD display
- Lithium battery
- COUNT: Start input for voltage pulses 12-250 V AC/DC (20 Hz)
- RESET: reset input for voltage pulses 12-250 V AC/DC (20 Hz)
- KEYLOCK: locking of the reset key
- long case

Operating temperature	-10 ... 50 °C
Storage 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 65, terminals IP 20
Dynamic strength	10 m/s <sup>2</sup> (10 ... 150 Hz) according to IEC 68-T2-6
Shock stability	100 m/s <sup>2</sup> (18 ms) according to IEC 68-T2-27
General rating	according to EN 61010, protective system II
Input resistance	< 50 kOhm (static)
Display	8-digit LCD, 7 mm
Supply voltage U <sub>b</sub>	internal lithium battery
Nominal data retention	lithium battery: 7 years
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



## ORDER NUMBER

Typ tico 731



Software function  
 01 impulse counter or  
 03 time counter (hhh:mm:ss)  
 04 time counter (hhhhh.hh)

## TYPE 4

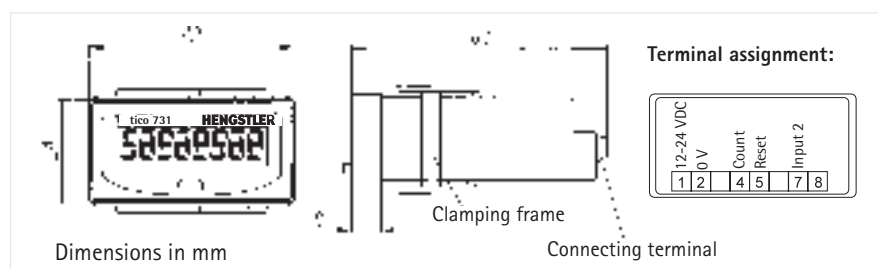


## TECHNICAL DATA

- LCD display
- 12-24 V DC supply voltage
- COUNT: programmable start input for voltage signal or contact, frequency 30 Hz
- INPUT 2: control input for temporary hold of display value (Hold)
- RESET: reset input
- Long case

Operating temperature	-10 ... 50 °C
Storage 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 65, terminals IP 20
Dynamic strength	10 m/s <sup>2</sup> (10 ... 150 Hz) according to IEC 68-T2-6
Shock stability	100 m/s <sup>2</sup> (18 ms) according to IEC 68-T2-27
General rating	according to EN 61010, protective system II
Input resistance	< 50 kOhm (static)
Display	8-digit LCD, 7 mm
Supply voltage U <sub>b</sub>	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 30 Hz: < 0.7 V and > 5 V, max. 30 V DC
Active edge	negative or positive edge programmable
Counting frequency	programmable: 30 Hz (attenuated for contacts)
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:	Display Hold
Reset lock	programmable via front key
Voltage/switching current	voltage supply minus 2 V; max. 10 mA

## DIMENSIONS CONNECTION DIAGRAM



## ORDER NUMBER

Model tico 731



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

# tico 731

## TYPE 5



## TECHNICAL DATA

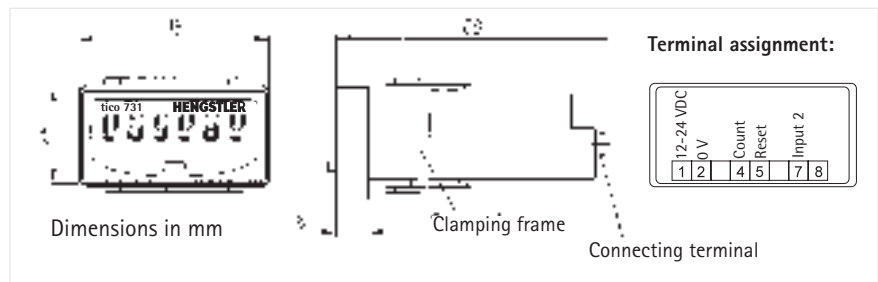
- LED display
- 12-24 V DC supply voltage
- COUNT: programmable start input for voltage signal or contact, frequency 30 Hz
- INPUT 2: control input for temporary hold of display value (Hold)
- RESET: reset input
- Long case

Operating temperature	-10 ... 50 °C
Storage 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 65, terminals IP 20
Dynamic strength	10 m/s <sup>2</sup> (10 ... 150 Hz) according to IEC 68-T2-6
Shock stability	100 m/s <sup>2</sup> (18 ms) according to IEC 68-T2-27
General rating	according to EN 61010, protective system II
Input resistance	< 50 kOhm (static)
Display	6-digit LED, 7 mm
Supply voltage U <sub>b</sub>	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 30 Hz: < 0.7 V and > 5 V, max. 30 V DC
Active edge	negative or positive edge programmable
Counting frequency	programmable: 30 Hz (attenuated for contacts)

Control inputs:	
Reset	- manual reset via keyboard (can be locked) - external reset with static behaviour, 30 Hz attenuated same edge as count input
Input 2:	Display Hold
Reset lock	programmable via front key
Voltage/switching current	supply minus 2 V; max. 10 mA

## DIMENSIONS CONNECTION DIAGRAM



## ORDER NUMBER

Model tico 731

0	731	5	0	3
0	731	5	0	4

### Software function

- 01 impulse counter
- 02 tachometer (1/min)
- 03 time counter (hhh: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
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 NUMBER SPECIAL VERSIONS

### Choose version and basic function:

Model tico 731



\* 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)<sup>1)</sup>
- 3 Time counter (hhhh:mm:ss)
- 4 Time counter (hhhhh.hh)
- 6 Position indicator (2-channel)<sup>2)</sup>
- 7 Counter with differential mode<sup>3)</sup>

- 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<sup>4)</sup>

**D: (Value);**

Decimal point: 0 to 3 positions after the comma<sup>4)</sup>

**V: (Value);**

Preset value: 0 to 99 999 999<sup>5)</sup>

**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

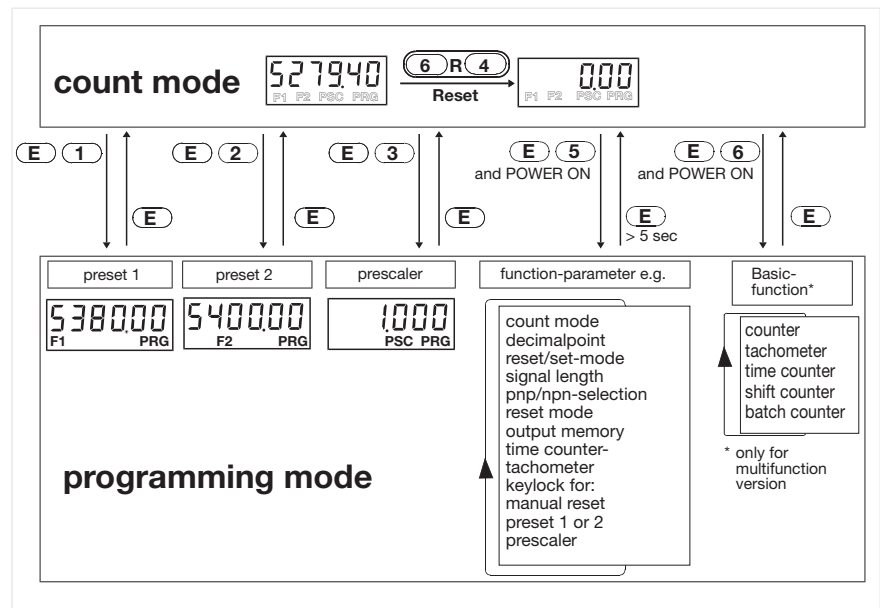
# tico 732



## PROGRAMMING

# Bi-directional Multifunction-Counter

- high-contrast LED or LCD-Display, 6 digits
- small and compact DIN dimensions 48 x 48 mm
- easy operation by one key per digit
- direct access to parameters
- available with 1 or 2 presets
- transistor and relay with changeover contact, for each preset
- with integrated separate totalizer
- 5 basic functions easily programmable: counter, tachometer, time counter, shift counter and batch counter
- display range from - 99999 to 999999



The important values, preset 1, preset 2, prescaler and separate totalizer can be directly selected. It is necessary only to press the relevant button and the E-button together. To make the operation still more easy, access to those values can be locked separately. All other system parameters like operation and count modes are laid down in a common operation level. These parameters are usually programmed once only during the first initiation.

## TECHNICAL DATA

### General

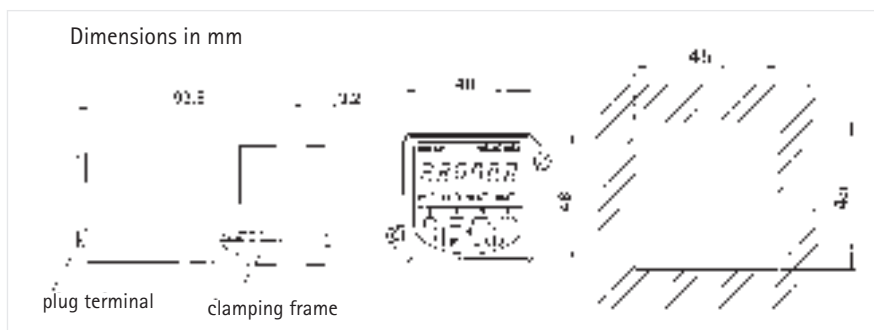
Display	LED or LCD, 6 digits, leading zero suppression, decimal point
Digit height	LED 7,6 mm; LCD 9 mm
Supply voltage	12...24 VDC; VAC; 115 VAC; 230 VAC; 50/60 Hz, depending on version
Current consumption	12...24 VDC < 150 mA 100/115/230 VAC < 50 mA; including sensor supply
Sensor supply	only when AC operated: 12 ... 30 VDC, max 50 mA
Data retention	non-volatile memory > 10 years
Operating temperature	0 ... +50 °C
Storage temperature	- 20 ... + 70 °C
Electrical connection	screw terminals
Mounting	with clamping frame
Protection class (IEC 144)	front side IP 65, terminals IP 20
Vibro stability	10 m/s <sup>2</sup> (10...150 Hz) according to IEC 68-T2-6
Shock stability	100 m/s <sup>2</sup> (18 ms) according to IEC 68-T2-27
General rating	according to VDE 0411, DIN 57411, protection class II
Approvals	UL + CUL E 96337
Amplitude thresholds	< 2 V and > 8 V or < 2 V and > 3.8 V with TTL level, max 40 VDC
Active edge	programmable; positive with pnp input; negative with npn input
Pulse shape	any (squarewave 1:1 for max. frequency)
Input resistance	approx. 10 kOhm (static)
Counting frequency	max. 5 kHz (2.5 kHz bi-directional)
Prescaler	programmable from 0.001 to 9.999 (999.999)
Count inputs A, B	- phase discriminator with single evaluation - differential mode (add/sub) - count direction mode - totalizing mode (add/add)
Pulse length min.	17 ms (30 Hz), 100 µs (5 kHz)
Control input C	- manual reset possible - external reset, static or dynamic, programmable, pulse length > 5 ms - automatic reset when main preset has been reached (programmable)
Relay	changeover contact max. 250 VAC / 30 VDC, min. 5 V AC/DC max. 1 A, min. 10 mA, delay < 5 ms
Transistor	pnp output 12...24 VDC max 10 mA of DC supply; 12 ... 30 V DC max 10 mA of AC supply
Tacho	
Method	time interval (1/Tau)
Display range	1/min or 1/sec
Min input frequency	0.125 Hz = 8 sec
Alarms	2 alarms with programmable start-up-suppression
Time bases	programmable; sec, min., h or hh.mm.ss
Resolution	programmable 1; 0.1; 0.01; 0.001 (on sec = 1 ms)
Function	single pulse measurement (short time meter) or cumulated counting (hour meter)
Count mode	pulse width or period measurement (start-stop)

### Counter

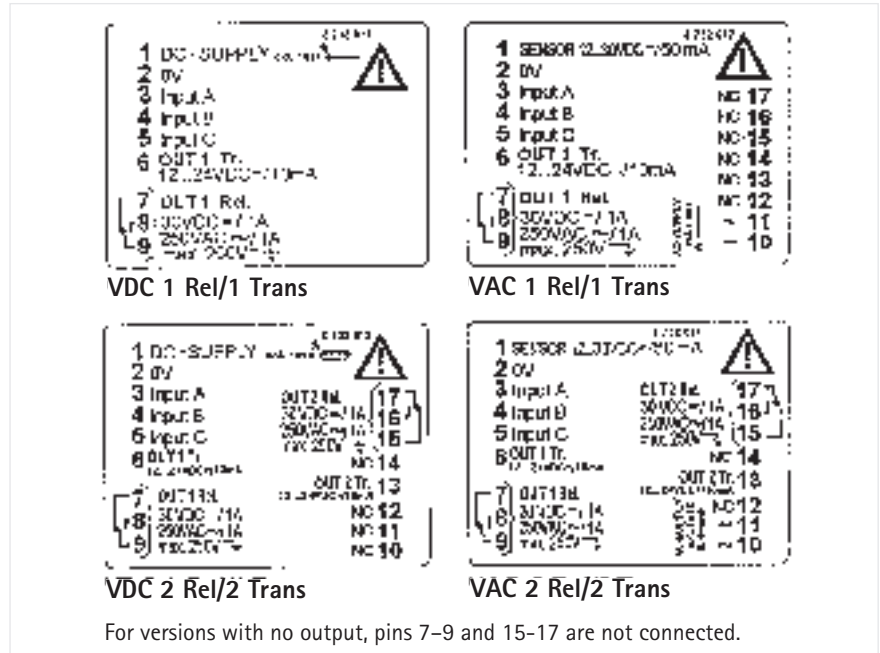
### Tacho

### Time-counter

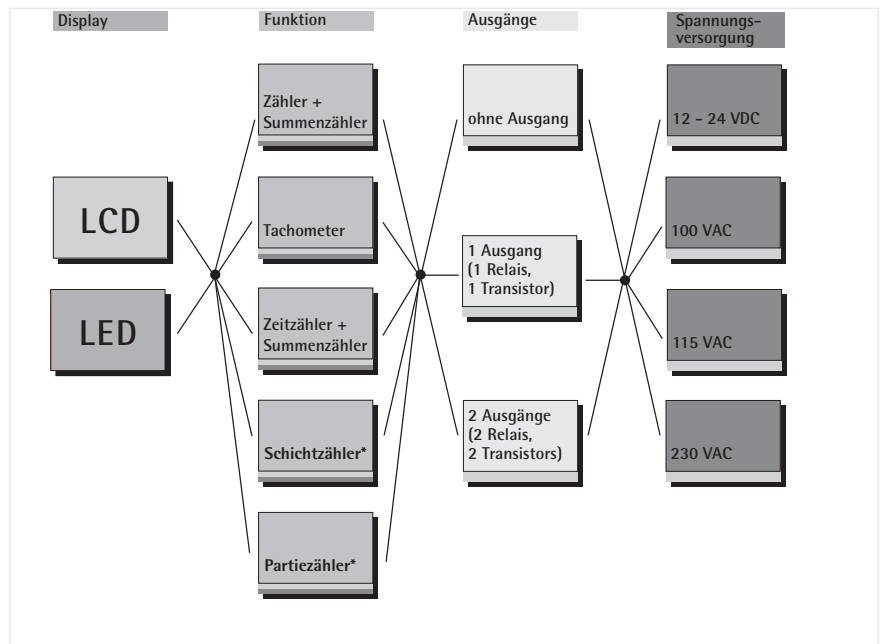
## DIMENSIONS



CONNECTING DIAGRAM



POSSIBLE VARIANTS



Multifunctional version: Article No.: 0 732 0 B

ORDER INFORMATION

Display	Preset	12-24 VDC	24 VAC	115 VAC	230 VAC
LCD	-	0 732 000	0 732 071	0 732 037	0 732 001
LCD	1	0 732 002	0 732 073	0 732 039	0 732 003
LCD	2	0 732 012	0 732 078	0 732 049	0 732 013
LED	-	0 732 018	0 732 080	0 732 055	0 732 019
LED	1	0 732 020	0 732 082	0 732 057	0 732 021
LED	2	0 732 030	0 732 087	0 732 067	0 732 031

Important: only versions with 2 presets or without preset can be used as tachometers.



## in DIN size 36 x 72 mm



### MODEL OVERVIEW

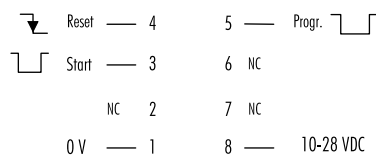
- LCD display, 8 digits, 12 mm height, excellent contrast through
- Backlighting with a 10-28 VDC supply
- Lithium battery power supply
- Decimal point, input scaling, count direction, output mode, etc. programmable, depending on model
- Programming reduced to a minimum for easy handling and set-up
- CE approval, IP 65, NEMA 4
- Suitable for TTL
- Mounting depth 29 mm

The family **tico 734** consists of ten models:

0 734 000	Totalizer without scaling
0 734 001	Add/Subtract totalizer
0 734 002	Position indicator
0 734 003	Tachometer
0 734 004	Programmable rate meter
0 734 005	Rate meter with totalizer
0 734 006	Time counter
0 734 007	Preset counter
0 734 008	Time preset counter
0 734 009	Rate meter 005; with total and pulsed output

### Elapsed Time Indicator (0 734 006)

6 digit, display format: 999999s, 99999.9m, 99999.9h, hh:mm:ss, reset key can be enabled/disabled

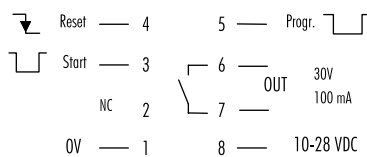


Suitable option modules: 1 734 0.. 10, 12, 14, 17, 19

- 4 Remote reset, NPN
- 3 Timing Enable, NPN or dry contact
- 2 Not used
- 1 0V, Common
- 5 Program enable
- 6 Not used
- 7 Not used
- 8 DC-supply for backlighting

### Preset Timer (0 734 008)

6 digit, display format: 999999s, 99999.9m, 99999.9h, hh:mm:ss, programmable for up or down counting, SSR output programmable for on-delay or interval, reset key can be enabled/disabled, preset lock function



Suitable option modules: 1 734 010 ... 20

- 4 Remote reset, NPN
- 3 Timing Enable, NPN or dry contact
- 2 Not used
- 1 0V, Common
- 5 Program enable
- 6-7 Output SSR (Form A)
- 8 DC-supply for backlighting

# tico 734

## Technical data

### Power Supply

Internal Single or dual lithium 3 V battery (CR 1/2 AA), typical life time of 5 years (10 yrs w/2 batteries). „Lo BAT“ display flashes approximately 2 weeks prior to end of battery life.

### Display

via Option Module 120/240 VAC provides 12 VDC for display backlighting

Display LCD, 12 mm height, 8 digits

Backlighting Whole display area can be backlit with a 10-28 VDC supply, green-yellow colour

### Count Inputs

High Speed Input (2) PNP,  $\leq 28$  VDC, max. 10 kHz (50 % duty cycle), Low  $< 1.0$  V, High  $> 2.0$  V, impulse  $> 45$   $\mu$ s, impedance 1 M $\Omega$

Low Speed Input (3) NPN,  $\leq 28$  VDC, max. 30 Hz (50 % duty cycle), Low  $< 1.0$  V, High  $> 2.0$  V, impedance 1 M $\Omega$

High Voltage Option Module 100..260 VAC/DC, 30 Hz, 1 M $\Omega$ , with internal connection to input (3)

Low Voltage Option Module 5..30 VAC/DC, 30 Hz, 17 k $\Omega$ m, with internal connection to input (3)

### Control Inputs

Enable Input (5) NPN,  $\leq 28$  VDC, level sensitive

Reset Input (4) NPN,  $\leq 28$  VDC, edge triggered, max. 30 Hz (50 % duty cycle)

### Output (only 008)

SSR Relay Photomos relay, 0.1 A, 30 VAC/DC, reaction time  $< 5$  ms

Relay Option Module Changeover contact 5 A, 120/240 VAC or 30 VDC

### Physical

Mounting Front panel mounting with mounting bracket

Dimensions DIN 36 x 72 mm, 36 mm total depth, total width 83 mm

Panel Cutout  $33^{+0,3}$  mm x  $68^{+0,3}$  mm, depth behind panel  $< 29$  mm

### Environmental

Panel Thickness max. 8 mm

Front Panel Rating IP 65 / NEMA 4

Operating and Storage Temperature  $0$   $^{\circ}$ C to  $+ 55$   $^{\circ}$ C

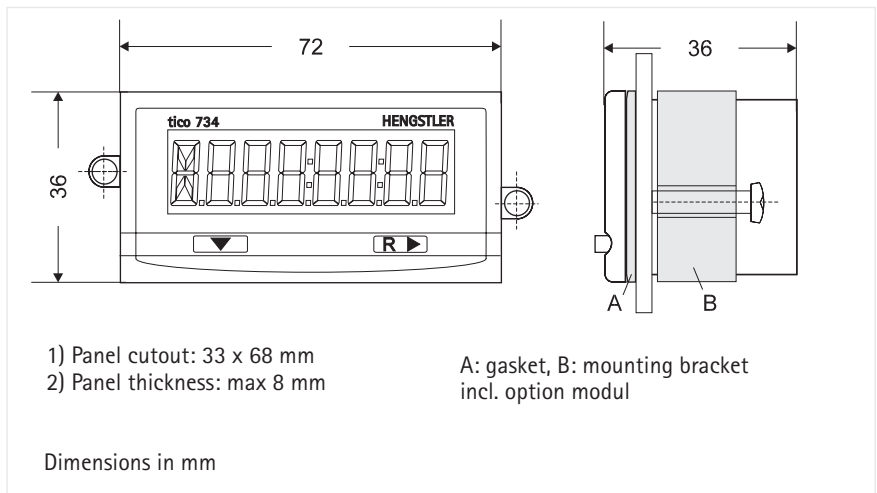
$- 20$   $^{\circ}$ C to  $+ 60$   $^{\circ}$ C

General DIN EN 61010 part 1 / VDE 0411 part 1

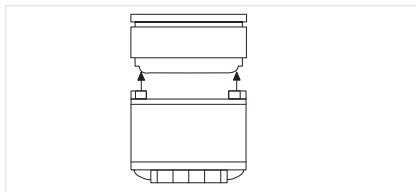
Protection according to class II, Contamination level 2

Overvoltage category II

### DIMENSIONS



## OPTION MODULES



## FUNCTIONS OVERVIEW

## TECHNICAL DATA

## WIRING



## ORDERING INFORMATION

With the Option Modules, the **tico 734** can be functionally extended and adapted to special application conditions. The following option functions are available:

- AC power supply providing sensor supply 10-20 VDC / 50 mA and 12 V supply for display backlighting (supports the battery in models with SSR output)
- Relay output, changeover contact, 5 A, 120/240 VAC or 30 VDC
- High voltage input (100..260 VAC/DC, max. 30 Hz, 200 KΩ)

### 1734 ...

	Connections	010	011	012	013	014	015	016	017	018	019	020
High Voltage Input	C-D		x		x	x		x				
Relay 1 x change over	A-B-J			x		x		x		x		x
AC power Supply	E-F, G-H			x		x	x	x			x	x
Low Voltage Input	C-D								x	x	x	x

Power Supply (E-H)	115 VAC or 230 VAC (see wiring), frequency 50/60 Hz. Terminal (8) provides an unregulated 10-20 VDC supply for powering sensors up to 50 mA
Relay	Type: SPDT (Form C) mechanical relay; Operate Time: 6 ms
Output (A-B-J)	5A, 120/240 VAC or 30 VDC, silver alloy Electrical Life: > 500 000 operations, Mechanical Life: > 10 million operations
High Voltage Input (C-D)	Voltage Range: 100 to 260 VAC or VDC Count Speed: max. 30 Hz. (duty cycle 50 %) Minimum Pulse Width: 12 ms; Impedance: 200 kOhm
Low Voltage Input (C-D)	Voltage Range: 5 to 30 VAC or VDC Count Speed: max. 30 Hz. (duty cycle 50 %) Minimum Pulse Width: 12 ms; Impedance: 17 kOhm
Mounting	Attaching on back of instrument
Dimensions	42 x 69 mm, depth 58 mm, total depth behind panel with instrument 82 mm
Temperature	Operating: -0° C to +50° C; Storage -20° C to +60° C;
General	DIN EN 61010 part 1, Protection according to class II Contamination level 2; Overvoltage category II

All modules contain 17 terminals. The exact functions that are present are determined by the model of instrument and option module (see Functions Overview).

1-8 Connection to instrument (refer to appropriate operating instructions)

- A Normally Open Relay Contact
- B Relay Common
- J Normally Closed Relay Contact
- C-D High or Low Voltage Input, no polarity, (provides NPN signal on terminal 3)
- E-F 115 VAC Line winding I
- G-H 115 VAC Line winding II

Panel Instruments	
Totalizer	0 734 000
Add/Subtract Totalizer	0 734 001
Position Indicator	0 734 002
Tachometer	0 734 003
Programmable Rate Meter	0 734 004
Rate Meter with Totalizer	0 734 005
<b>Elapsed Time Indicator</b>	0 734 006
Preset Counter	0 734 007
<b>Preset Timer</b>	0 734 008
Rate Meter with Total and Pulsed Output	0 734 009
Lithiumbattery	E3533 355

Option Modules	
HV Input	1 734 010
Relay	1 734 011
AC Power	1 734 012
HV Input and Relay	1 734 013
HV Input and Power	1 734 014
Power and Relay	1 734 015
HV Input/Power/Relay	1 734 016
LV Input	1 734 017
LV Input and Relay	1 734 018
LV Input and Power	1 734 019
LV Input/Power/Relay	1 734 020

# Type 891

## Time Counter with DIN

### Dimensions for AC and DC Operation

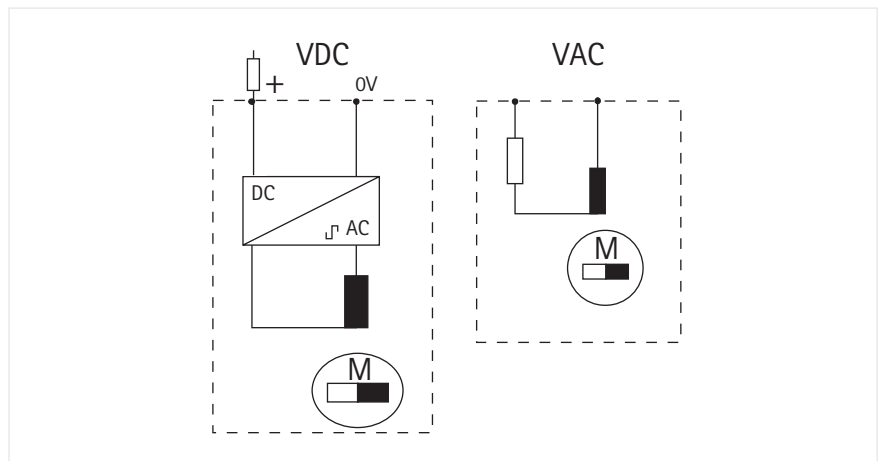


- Low-cost
- DIN dimensions 24 x 48 mm, 48 x 48 mm or 72 x 72 mm
- Highly legible display
- Simple installation
- No reset

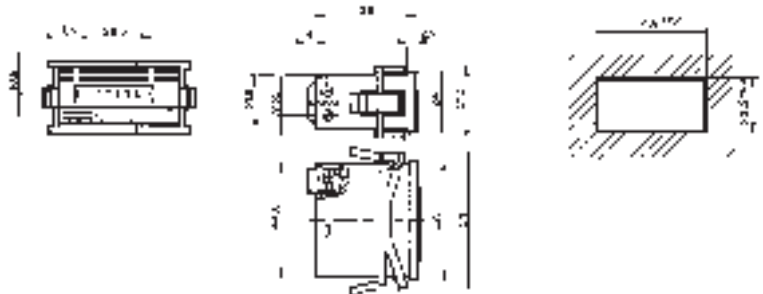
#### TECHNICAL DATA

Display	7-digit, 0 ... 99999.99 h
Digit height	5 mm, visual
Supply voltage $V_{op}$	acc. to order information + 10 % (230 VAC + 15 %)
Power consumption	0.7 VA or max 750 mW on DC
Operating temperature	- 10 ... + 50 °C
Storage temperature	- 20 ... + 70 °C
El. connection	screw terminals for cables of max. 2.5 mm <sup>2</sup> and AMP connector 6.3 x 0.8 mm
Mounting	with clamping frame (Ordering code 2 891 016)
Mounting position	roller axis horizontal
Protection class (IEC 144)	front IP 66; screw terminals IP 20, AMP connectors IP 00
Vibrostability	30 m/s <sup>2</sup> (10 ... 500 Hz) acc. to IEC 068-2-6
Shock stability	800 m/s <sup>2</sup> (6 ms) acc. to IEC 068-2-27
General design	acc. to DIN VDE, part 1, protection according to class II, Contamination level 2; Overvoltage category II
Weight	approx. 50 g
Approvals	UL: E 130453 (M), CSA (only AC version)
Reset	none

#### CONNECTION DIAGRAM

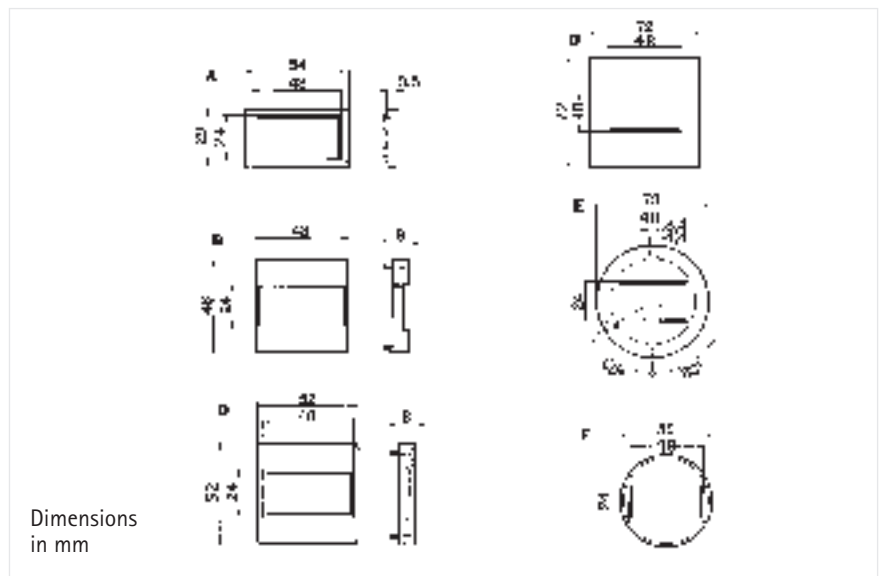


## DIMENSIONS Counter



Seal: Ordering code 2 405 231 (0.5 mm)

## Installation frame



## ORDER INFORMATION Counter

Voltage	Power consumption	50 Hz Ordering code	60 Hz Ordering code
24 VAC	0.1 VA	0 891 201	0 891 202
115 VAC	0.6 VA	0 891 203	0 891 204
230 VAC	0.7 VA	0 891 211	0 891 206
100 VAC	0,3 VA	0 891 213	0 891 214
200 VAC	0.7 VA	0 891 215	0 891 216

Voltage	Max. power consumption	Ordering code	external resistor
12... 36 VDC	350 mW	0 891 331	
40... 60 VDC	620 mW	0 891 331	+ 6,8 kΩ/1 W
80...125 VDC	1100 mW	0 891 331	+ 15 kΩ/1 W

## Installation frame

	Size	Installation cutout	Frame Ordering code	Seal Ordering code
A	54 x 29 mm	50 x 25 mm	2 405 218	2 405 232
B	48 x 48 mm	45 x 45 mm	2 405 219	2 405 233
C	52 x 52 mm	∅ 50 mm	2 405 220	2 405 234
D	72 x 72 mm	68 x 68 mm	1 405 672	2 405 235
E	∅ 73 mm	∅ 50 mm	2 405 223	2 405 237
F	∅ 58 mm	∅ 50 mm	2 405 224	2 405 236

Time counters/  
Timer relays

## Type 891



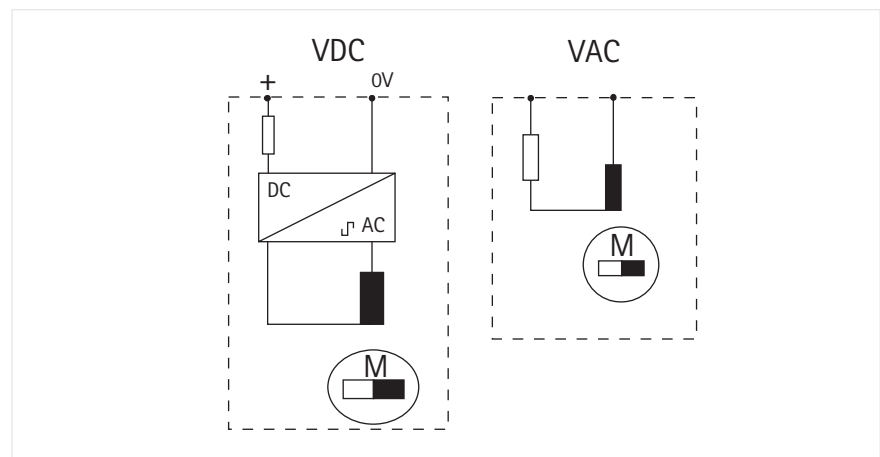
### TECHNICAL DATA

## Time Counter for Surface Mounting, Suitable for AC and DC Operation

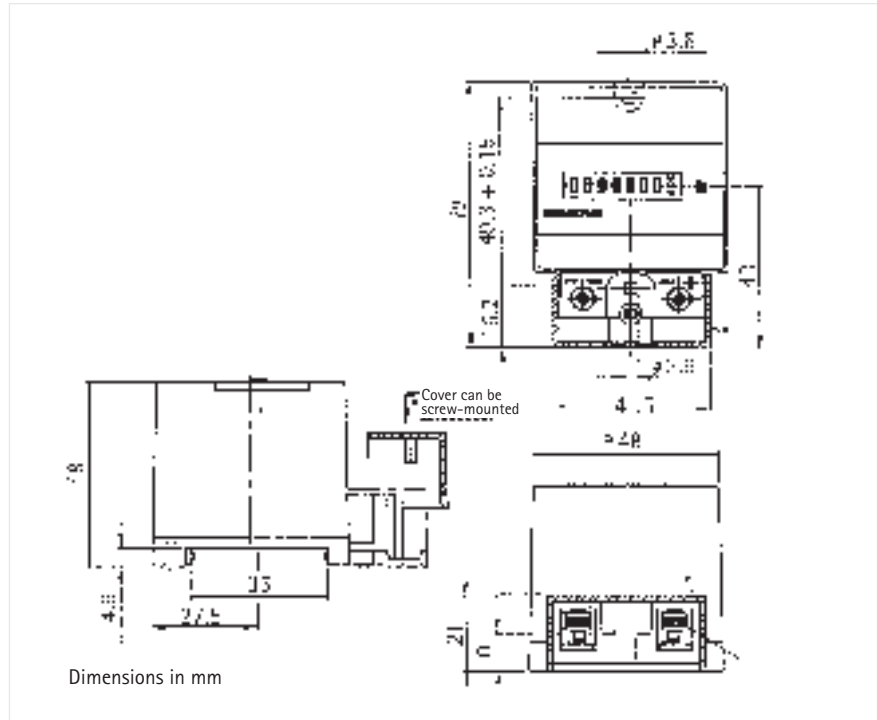
- Low-cost
- DIN rail attachment
- Highly legible display
- Simple installation
- No reset

Display	7-digit, 0 ... 99999.99 h
Digit height	5 mm, visual
Supply voltage $V_{op}$	acc. to order information + 10 % (230 VAC + 15 %)
Power consumption	0.7 VA on AC - 750 mW on DC
Operating temperature	- 10 ... + 50 °C
Storage temperature	- 20 ... + 70 °C
El. connection	screw terminals for cables of max. 2.5 mm <sup>2</sup> and AMP connector 6.3 x 0.8 mm
Mounting	with screws or on DIN rail
Mounting position	roller axis horizontal
Protection class (IEC 144)	front IP 66; screw terminals IP 20, AMP connectors IP 00
Vibrostability	30 m/s <sup>2</sup> (10 ... 500 Hz) acc. to IEC 068-2-6
Shock stability	800 m/s <sup>2</sup> (6 ms) acc. to IEC 068-2-27
General design	acc. to DIN VDE, part 1, protection according to class II, Contamination level 2; Overvoltage category II
Weight	approx. 50 g
Reset	none

### CONNECTION DIAGRAM



DIMENSIONS  
Counter



ORDER INFORMATION  
Counter

Voltage	Power consumption	Voltage tolerance	Ordering code
24 V 50 Hz	0.1 VA	± 10 %	0 891 501
24 V 60 Hz	0.1 VA	± 10 %	0 891 502
115 V 50 Hz	0.6 VA	± 10 %	0 891 503
115 V 60 Hz	0.6 VA	± 10 %	0 891 504
230 V 50 Hz	0.7 VA	± 15 %	0 891 511
12- 36 V DC	max. 550 mW	± 10 %	0 891 531
40- 60 V DC	max. 50 mW	± 10 %	0 891 532
80-125 V DC	750 mW	± 10 %	0 891 533

Time counters/  
Timer relays

## Type 478



### TECHNICAL DATA

## Plug-in Time Counters for Modular System 400

- 6 or 7-digit display
- With or without reset
- Simple installation
- Easy maintenance through plug-in system
- Can be combined with other counters in the modular system 400

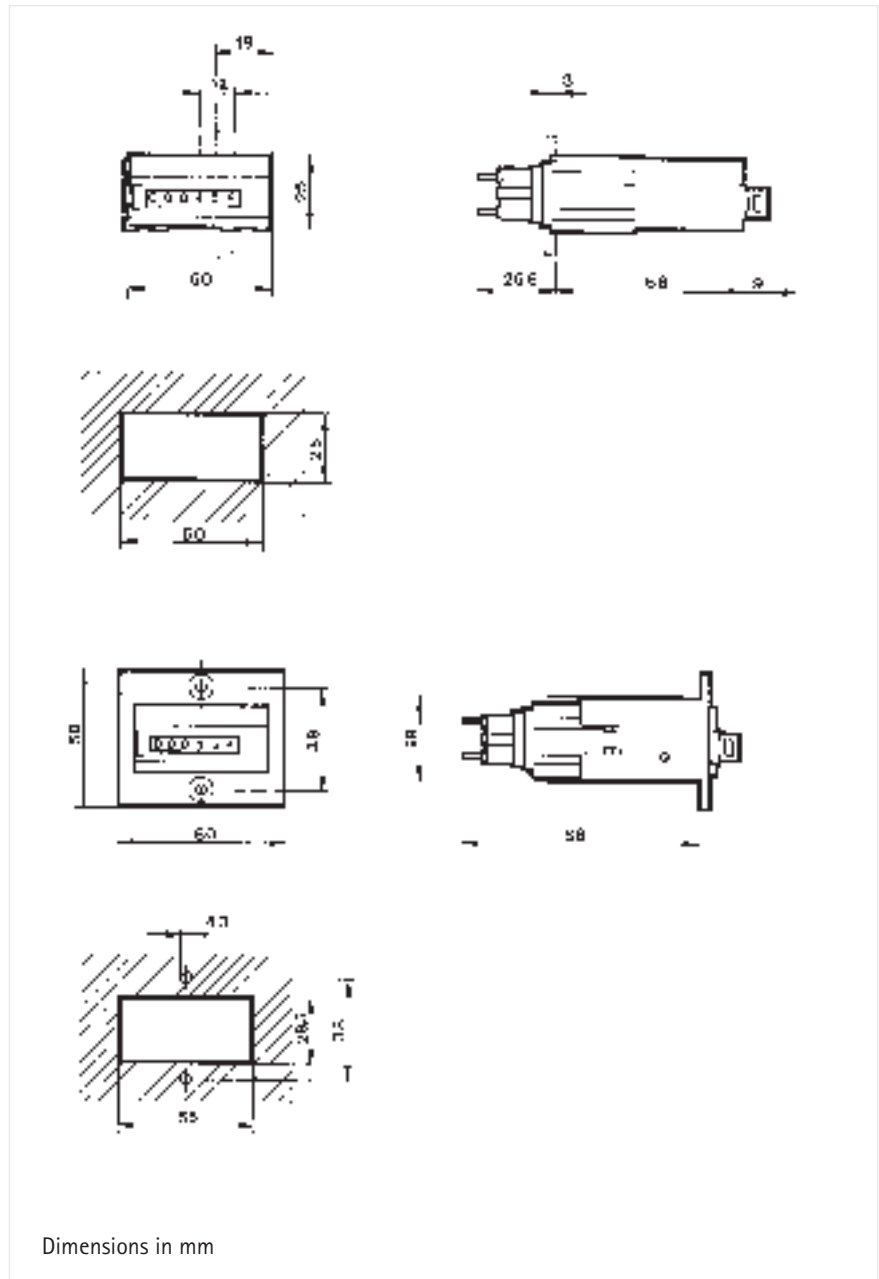
Display	6 or 7-digit, depending on version
Counting range	0 ... 9999.99 h or 0 ... 99999.99 h, depending on version
Digit height	4 mm
Supply voltage $V_{op}$	acc. to order information, tolerance + 10 %
Power consumption	approx. 1 VA
Operating temperature	- 10 ... + 50 °C
Storage temperature	- 20 ... + 70 °C
Protection class (EN 60529)	front IP 40, connections IP 00
Vibrostability	50 m/s <sup>2</sup> acc. to IEC 068-2-6
Shock stability	600 m/s <sup>2</sup> (6 ms) acc. to IEC 068-2-27
General design	according EN 61010-1
Contamination Level	2
Protection	according to class II
Overvoltage category	II
Reset	depending on version - manual reset with key or button - without reset

### CONNECTION DIAGRAM





DIMENSIONS



ORDER INFORMATION  
Counter

Voltage	6-digit with reset			7-digit without reset		
	50 Hz	60 Hz	DC	50 Hz	60 Hz	DC
12 V	-	-	0 478 160	-	-	-
24 V	0 478 101	-	0 478 121	0 478 111	0 478 112	0 478 123
115 V AC	0 478 103	0 478 104	-	0 478 113	0 478 114	-
220 V AC	0 478 105	0 478 106	-	0 478 115	0 478 116	-

Inquire for other version

Standard accessories

Connection box	Ordering code 1 405 464
Panel frame, black	Ordering code 1 405 491
Key reset system	Ordering code + SR e. g. 0 478 160 SR
Case, covers	see "Accessories"

Time counters/  
Timer relays

# Type 633-DC



Type 633.0

# Time Counters mini "h", DC Version



Type 633.7



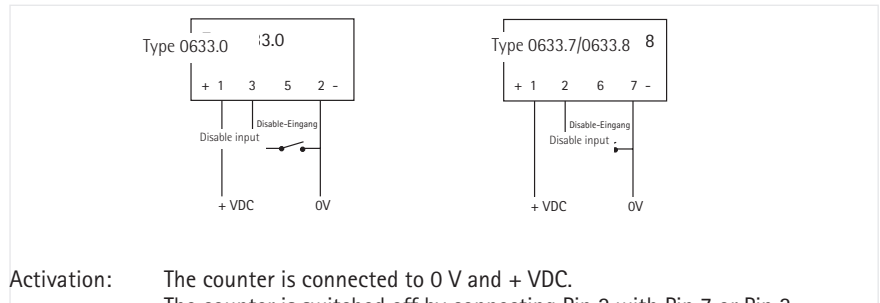
Type 633.8

- High shock resistance
- Miniature dimensions
- Low power consumption
- Electrical connections in standard grid
- Suitable for PCB mounting
- Machine-solderable and washable versions available
- Protection class IP 65

## TECHNICAL DATA

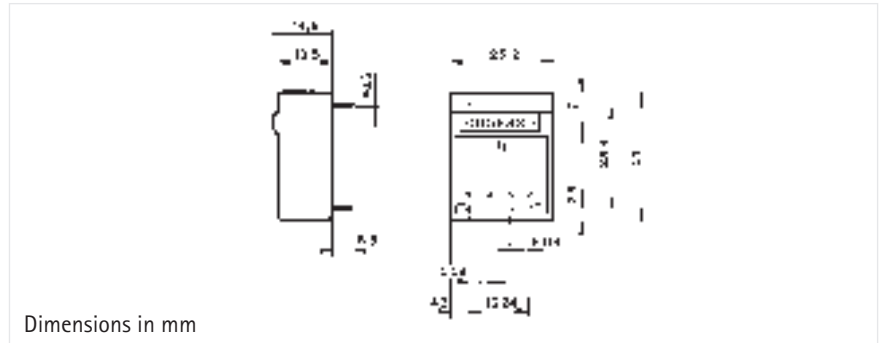
Display	7-digit, 0 ... 99 999.99 h
Digit height	4 mm, visual
Supply voltage Vop	acc. to order information, tolerance + 10 %
Power consumption	approx. 30 mW
Residual ripple	< 1 %
Operating temperature	- 10 ... + 60 °C
Storage temperature	- 40 ... + 70 °C
El. connection	versions .0 solder pins, .7 and .8 wiring posts Ø 0.6 mm
Mounting	versions .0 on PCB, .7 with wiring posts, .8 with catch spring
Mounting position	horizontal figure wheel shaft
Protection class (DIN 4050)	IP 66, versions .7 and .8 only at front, connections IP 00
Vibrostability	30 m/s <sup>2</sup> (10 - 500 Hz) acc. to IEC 068-2-6
Shock stability	> 3500 m/s <sup>2</sup> acc. to IEC 068-2-27
General design	acc. to DIN VDE 0700; insulation group C (VDE 0110), protection class II
Weight	approx. 10 g
Time error	with disable per switching cycle 0.488 ms
Reset	none

## CONNECTION DIAGRAM



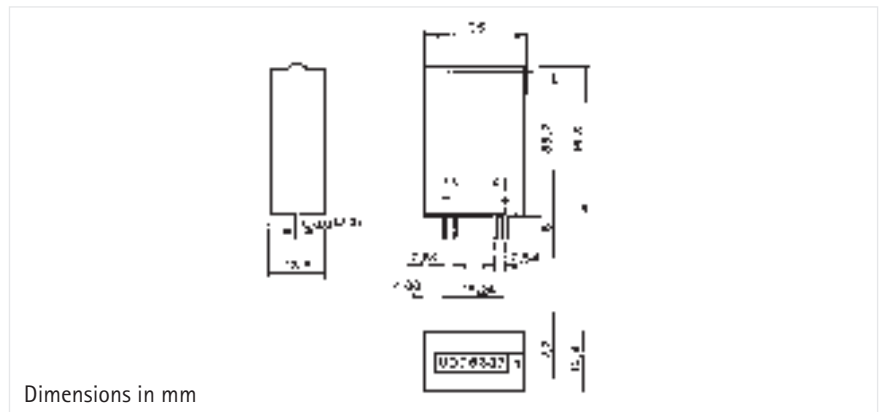
DIMENSIONS

Type 633.0

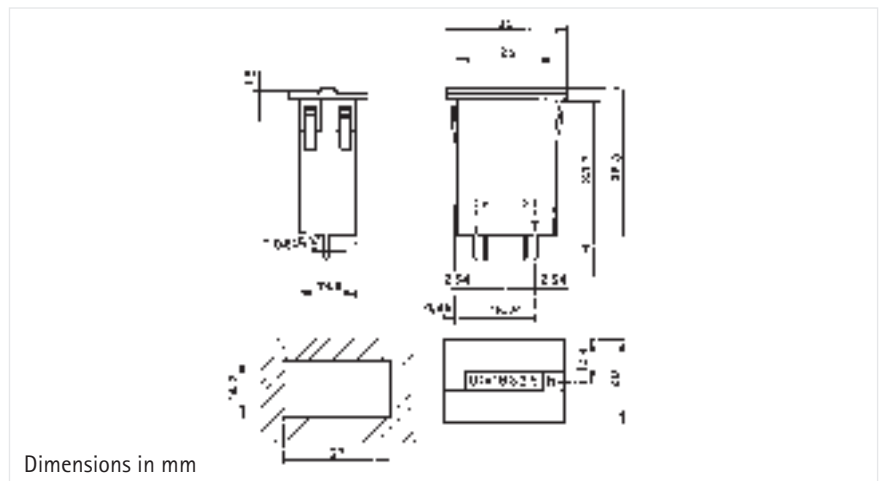


Dimensions in mm

Typ 633.8



Dimensions in mm



Dimensions in mm

ORDER INFORMATION  
Counter

Voltage	Ohm	Current consumption during pulse	Type 633.0 Ord. code	Type 633.7 Ord. code	Type 633.8 Ord. code
5 VDC	140	35 mA	0 633 031	0 633 731	0 633 831
12 VDC	720	17 mA	0 633 032	0 633 732	0 633 832
24 VDC	1140	9 mA	0 633 033	0 633 733	0 633 833

Accessories

Flying lead 150 mm red	1 634 008	1 634 008
Flying lead 150 mm black	1 634 007	1 634 007

Time counters/  
Timer relays

# Type 633-DC



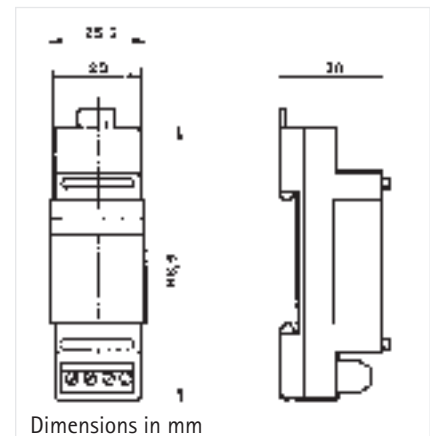
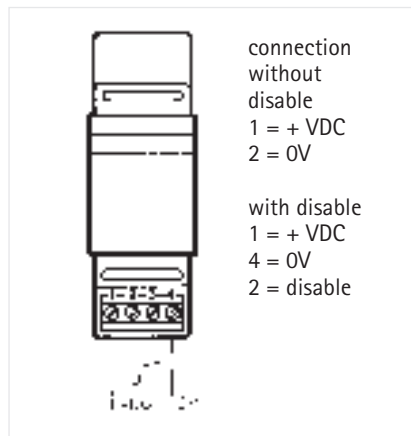
## TECHNICAL DATA

# Miniature Time Counter for 35 mm DIN Rail Attachment

- Miniature size
- Low power consumption
- Screw terminal connection
- Suitable for switch cabinet installation
- Snap-on attachment for 35 mm DIN rail

Display	7-digit, 0 ... 99999.99 h	
Digit height	4 mm, visual	
Supply voltage $V_{op}$	acc. to order information, tolerance + 10 %	
Current consumption	during pulse	voltage
	35 mA	5 VDC
	17 mA	12 VDC
	9 mA	24 VDC
Residual ripple	< 1 %	
Operating temperature	0 ... + 60 °C	
Storage temperature	- 40 ... + 70 °C	
Protection class (DIN 4050)	IP 10	
Vibrostability	30 m/s <sup>2</sup> (10 - 500 Hz) acc. to IEC 068-2-6	
Shock stability	> 3500 m/s <sup>2</sup> acc. to IEC 068-2-27	
General design	acc. to DIN VDE 0700; insulation group C (VDE 0110), protection class II	
Weight	approx. 40 g	
Time error	with disable 0.488 ms per switching cycle	
Reset	none	

## CONNECTION DIAGRAM DIMENSIONS



## ORDER INFORMATION

Time counter for supply voltage 5 VDC	0 633 531
Time counter for supply voltage 12 VDC	0 633 532
Time counter for supply voltage 24 VDC	0 633 533

# Time Counter mini "h", Type 633-AC

## AC Version

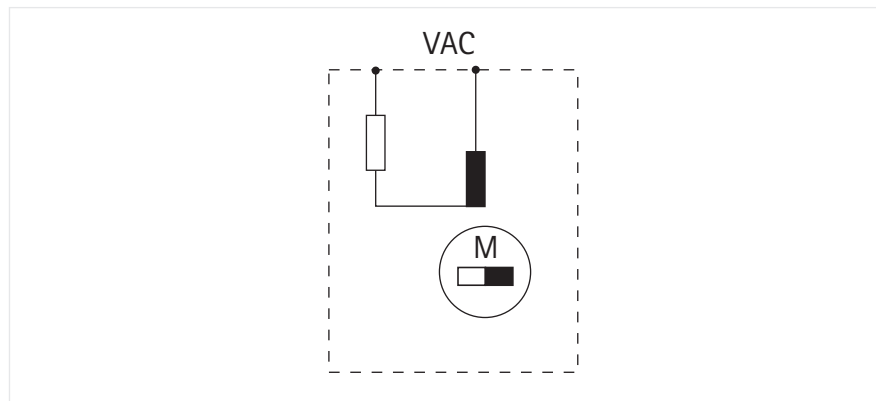


### TECHNICAL DATA

- Miniature dimensions
- Low power consumption
- Quiet operation
- Protection class IP 65

Display	6-digit, 0 ... 99999.9 h
Digit height	4 mm, visual
Supply voltage Vop	acc. to order information, tolerance + 10 %
Power consumption	24 V 0.08 VA, 115 V 0.56 VA, 220 V 1 VA
Operating temperature	- 10 ... + 50 °C
Storage temperature	- 25 ... + 70 °C
Humidity	75 %, without condensation
El. connection	depending on version screw terminal connection for cables up to 2.5 mm <sup>2</sup> or 250 mm long connecting cable, AWG 28 or AMP 2.8 x 0.8 mm
Mounting	with clamping frame
Mounting position	horizontal figure wheel shaft
Protection class (DIN 4050)	Version .8: front IP 66, connections IP 40 (touchproof)
Vibro stability	30 m/s <sup>2</sup> (10 - 500 Hz) acc. to IEC 068-2-6
Shock stability	800 m/s <sup>2</sup> (6 ms) acc. to IEC 068-2-27
General design	acc. to DIN VDE 0700; insulation group C (VDE 0110), protection class II
Noise level	approx. 40 dB (distance 25 cm)
Reset	none

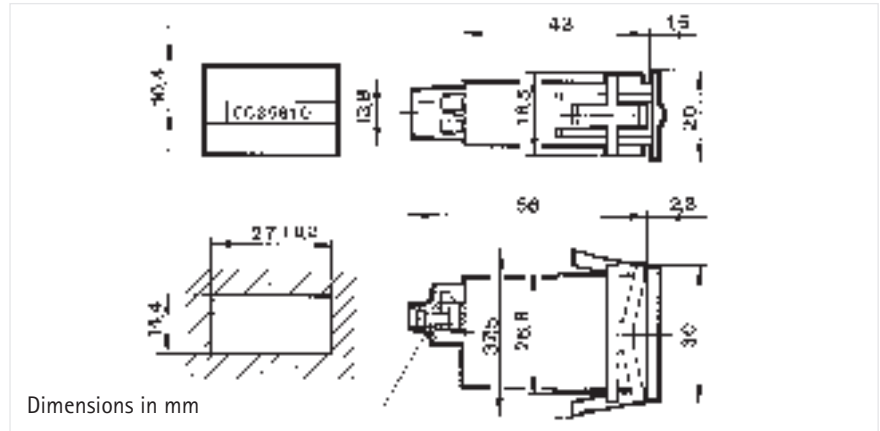
### CONNECTION DIAGRAM



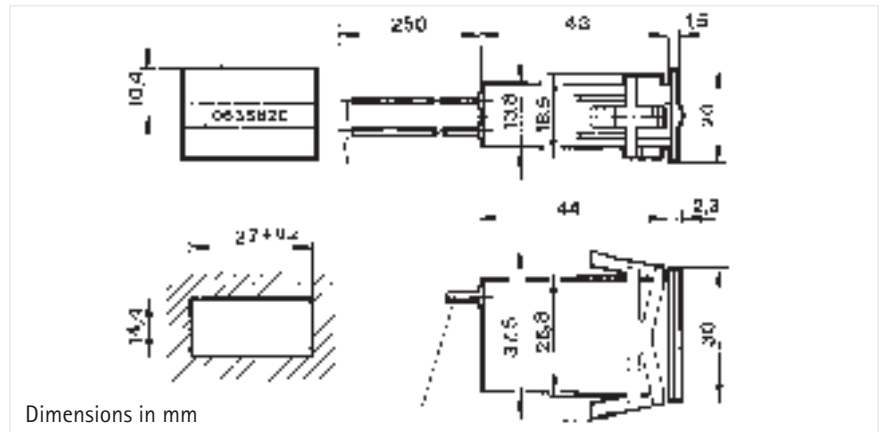
# Type 633-AC

## Technical data

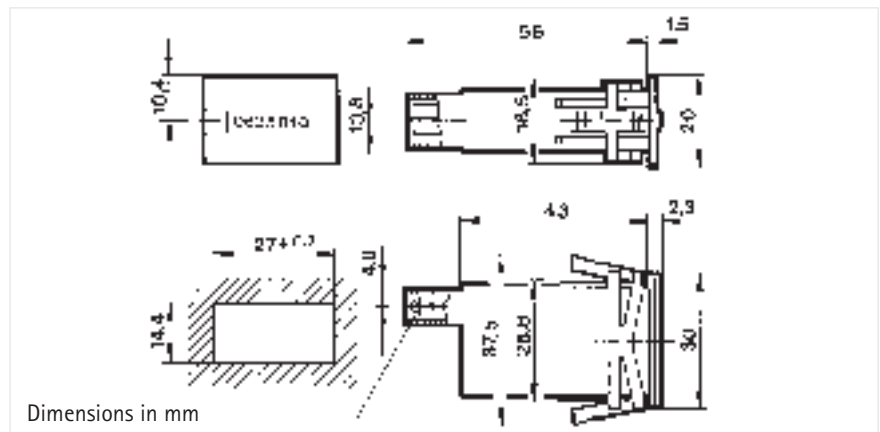
### DIMENSIONS Screw terminals



### Connecting cable



### AMP connector



### ORDER INFORMATION

#### Counter

Voltage	Screw terminals	Connecting cable
24 V 50 Hz	0 633 811	0 633 821
115 V 50 Hz	0 633 813	0 633 823
115 V 60 Hz	0 633 814	0 633 824
220 V 50 Hz	0 633 815	0 633 825

Other voltages on request

#### Accessories

panel frame 24x36 mm (insert dimensions 22 x 36 mm) Ordering code 1 405 674

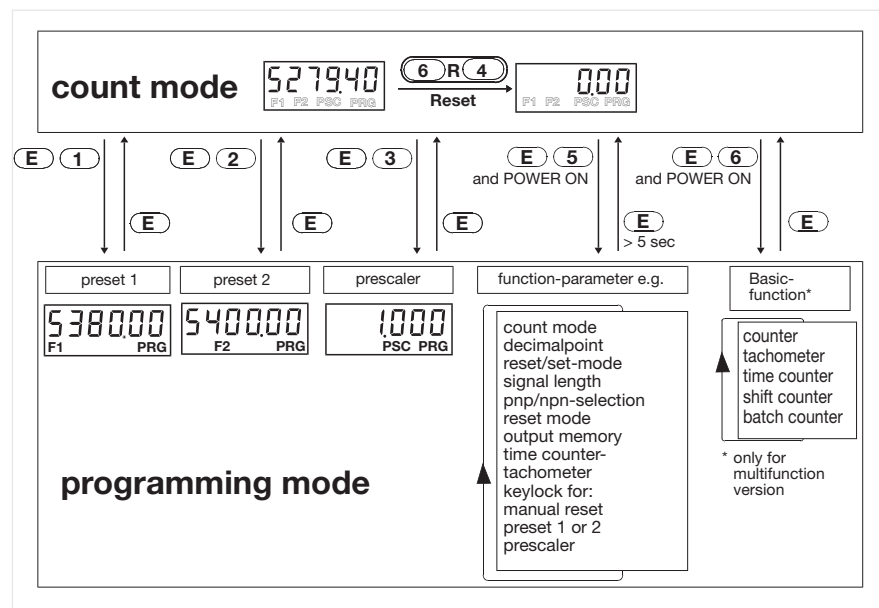
# Bi-directional Multifunction-Counter

tico 732



- high-contrast LED or LCD-Display, 6 digits
- small and compact DIN dimensions 48 x 48 mm
- easy operation by one key per digit
- direct access to parameters
- available with 1 or 2 presets
- transistor and relay with changeover contact, for each preset
- with integrated separate totalizer
- 5 basic functions easily programmable: counter, tachometer, time counter, shift counter and batch counter
- display range from - 99999 to 999999

## PROGRAMMING

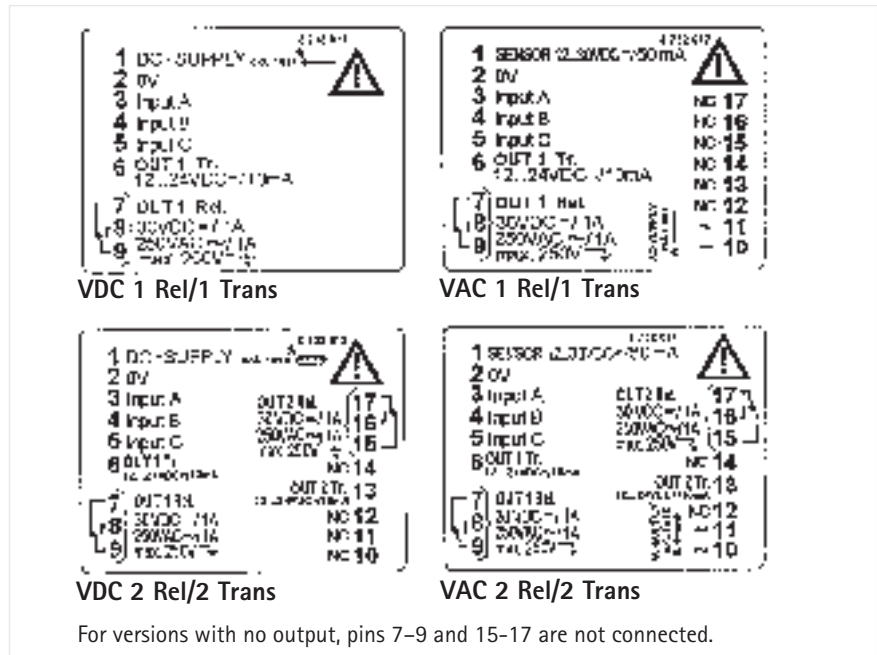


The important values, preset 1, preset 2, prescaler and separate totalizer can be directly selected. It is necessary only to press the relevant button and the E-button together. To make the operation still more easy, access to those values can be locked separately. All other system parameters like operation and count modes are laid down in a common operation level. These parameters are usually programmed once only during the first initiation.

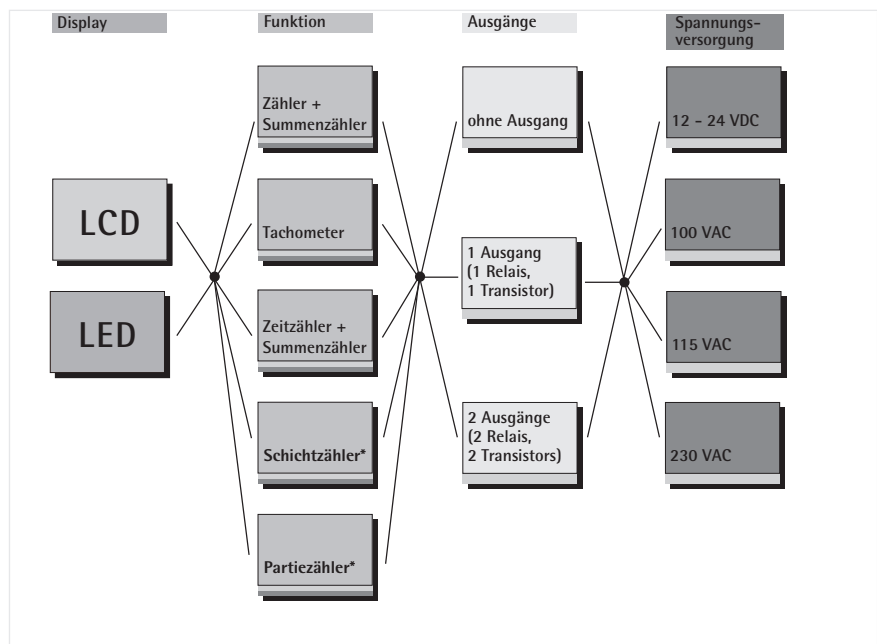




CONNECTING DIAGRAM



POSSIBLE VARIANTS



Time counters/  
Timer relays

Multifunctional version: Article No.: 0 732 0 B

ORDER INFORMATION

Display	Preset	12-24 VDC	24 VAC	115 VAC	230 VAC
LCD	-	0 732 000	0 732 071	0 732 037	0 732 001
LCD	1	0 732 002	0 732 073	0 732 039	0 732 003
LCD	2	0 732 012	0 732 078	0 732 049	0 732 013
LED	-	0 732 018	0 732 080	0 732 055	0 732 019
LED	1	0 732 020	0 732 082	0 732 057	0 732 021
LED	2	0 732 030	0 732 087	0 732 067	0 732 031

Important: only versions with 2 presets or without preset can be used as tachometers.

# tico 734



## MODEL OVERVIEW

### Elapsed Time Indicator (0 734 006)

6 digit, display format: 999999s,  
99999.9m, 99999.9h, hh:mm:ss,  
reset key can be enabled/disabled

### Preset Timer (0 734 008)

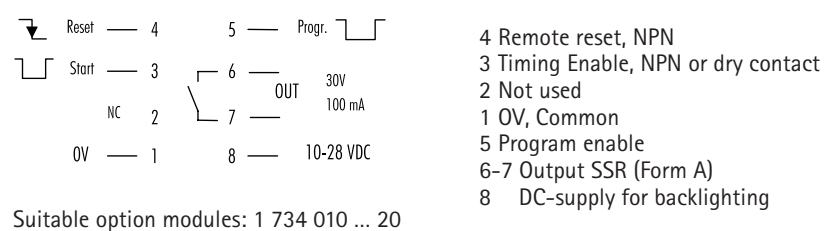
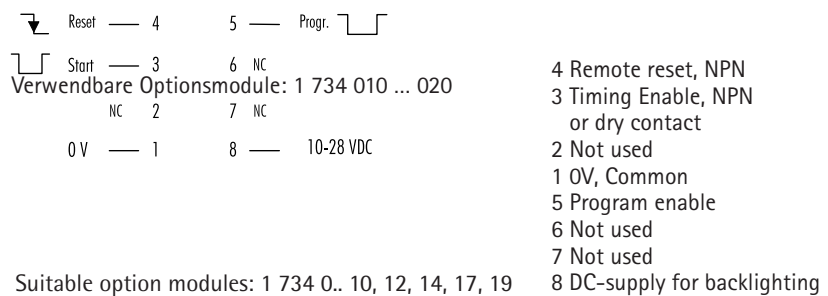
6 digit, display format: 999999s,  
99999.9m, 99999.9h, hh:mm:ss,  
programmable for up or down  
counting, SSR output programmable  
for on-delay or interval,  
reset key can be enabled/disabled,  
preset lock function

## Flexible Counter Series in DIN size 36 x 72 mm

- LCD display, 8 digits, 12 mm height, excellent contrast through
- Backlighting with a 10-28 VDC supply
- Lithium battery power supply
- Decimal point, input scaling, count direction, output mode, etc. programmable, depending on model
- Programming reduced to a minimum for easy handling and set-up
- CE approval, IP 65, NEMA 4
- Suitable for TTL
- Mounting depth 29 mm

The family **tico 734** consists of ten models:

0 734 000	Totalizer without scaling
0 734 001	Add/Subtract totalizer
0 734 002	Position indicator
0 734 003	Tachometer
0 734 004	Programmable rate meter
0 734 005	Rate meter with totalizer
0 734 006	Time counter
0 734 007	Preset counter
0 734 008	Time preset counter
0 734 009	Rate meter 005; with total and pulsed output



## Power Supply

Internal Single or dual lithium 3 V battery (CR 1/2 AA), typical life time of 5 years (10 yrs w/2 batteries). „Lo BAT" display flashes approximately 2 weeks prior to end of battery life.

## Display

via Option Module 120/240 VAC provides 12 VDC for display backlighting

Display LCD, 12 mm height, 8 digits

Backlighting Whole display area can be backlit with a 10-28 VDC supply, green-yellow colour

## Count Inputs

High Speed Input (2) PNP,  $\leq 28$  VDC, max. 10 kHz (50% duty cycle), Low  $< 1.0$  V, High  $> 2.0$  V, impulse  $> 45$   $\mu$ s, impedance 1 M $\Omega$

Low Speed Input (3) NPN,  $\leq 28$  VDC, max. 30 Hz (50% duty cycle), Low  $< 1.0$  V, High  $> 2.0$  V, impedance 1 M $\Omega$

High Voltage Option Module 100..260 VAC/DC, 30 Hz, 1 M $\Omega$ , with internal connection to input (3)

Low Voltage Option Module 5..30 VAC/DC, 30 Hz, 17 k $\Omega$ , with internal connection to input (3)

## Control Inputs

Enable Input (5) NPN, 28 VDC, level sensitive

Reset Input (4) NPN, 28 VDC, edge triggered, max. 30 Hz (50% duty cycle)

## Output (only 008)

SSR Relay Photomos relay, 0.1 A, 30 VAC/DC, reaction time  $< 5$  ms

Relay Option Module Changeover contact 5 A, 120/240 VAC or 30 VDC

## Physical

Mounting Front panel mounting with mounting bracket

Dimensions DIN 36 x 72 mm, 36 mm total depth, total width 83 mm

Panel Cutout  $33^{+0,3}$  mm x  $68^{+0,3}$  mm, depth behind panel  $< 29$  mm

Panel Thickness max. 8 mm

## Environmental

Front Panel Rating IP 65 / NEMA 4

Operating and Storage Temperature  $0$   $^{\circ}$ C to  $+ 55$   $^{\circ}$ C

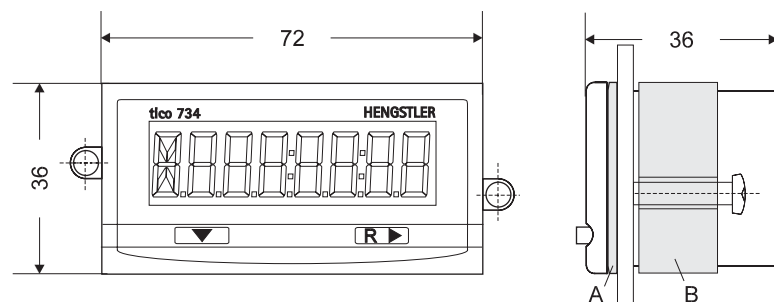
$- 20$   $^{\circ}$ C to  $+ 60$   $^{\circ}$ C

General DIN EN 61010 part 1 / VDE 0411 part 1

Protection according to class II, Contamination level 2

Overvoltage category II

## DIMENSIONS



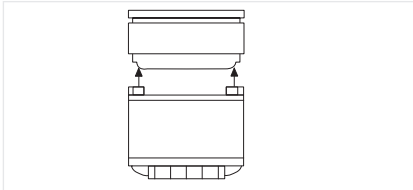
- 1) Panel cutout: 33 x 68 mm
- 2) Panel thickness: max 8 mm

A: gasket, B: mounting bracket incl. option modul

Dimensions in mm

# tico 734

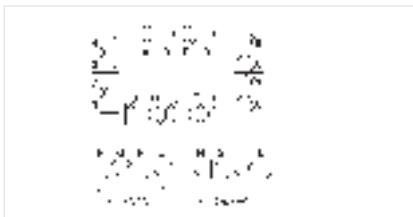
## OPTION MODULES



## FUNCTIONS OVERVIEW

## TECHNICAL DATA

## WIRING



## ORDERING INFORMATION

# Technical data

With the Option Modules, the **tico 734** can be functionally extended and adapted to special application conditions. The following option functions are available:

- AC power supply providing sensor supply 10-20 VDC / 50 mA and 12 V supply for display backlighting (supports the battery in models with SSR output)
- Relay output, changeover contact, 5 A, 120/240 VAC or 30 VDC
- High voltage input (100..260 VAC/DC, max. 30 Hz, 200 KΩ)

1734 ...

		010	011	012	013	014	015	016	017	018	019	020
High Voltage Input	C-D	x		x	x		x					
Relay 1 x change over	A-B-J		x		x		x	x		x		x
AC power Supply	E-F, G-H			x		x	x	x			x	x
Low Voltage Input	C-D								x	x	x	x

Power Supply (E-H)	115 VAC or 230 VAC (see wiring), frequency 50/60 Hz. Terminal (8) provides an unregulated 10-20 VDC supply for powering sensors up to 50 mA
Relay Output (A-B-J)	Type: SPDT (Form C) mechanical relay; Operate Time: 6 ms 5A, 120/240 VAC or 30 VDC, silver alloy Electrical Life: > 500 000 operations, Mechanical Life: > 10 million operations
High Voltage Input (C-D)	Voltage Range: 100 to 260 VAC or VDC Count Speed: max. 30 Hz. (duty cycle 50 %) Minimum Pulse Width: 12 ms; Impedance: 200 kOhm
Low Voltage Input (C-D)	Voltage Range: 5 to 30 VAC or VDC Count Speed: max. 30 Hz. (duty cycle 50 %) Minimum Pulse Width: 12 ms; Impedance: 17 kOhm
Mounting	Attaching on back of instrument
Dimensions	42 x 69 mm, depth 58 mm, total depth behind panel with instrument 82 mm
Temperature	Operating: -0° C to +50° C; Storage -20° C to +60° C;
General	DIN EN 61010 part 1, Protection according to class II Contamination level 2; Overvoltage category II

All modules contain 17 terminals. The exact functions that are present are determined by the model of instrument and option module (see Functions Overview).

1-8 Connection to instrument (refer to appropriate operating instructions)

A	Normally Open Relay Contact
B	Relay Common
J	Normally Closed Relay Contact
C-D	High or Low Voltage Input, no polarity, (provides NPN signal on terminal 3)
E-F	115 VAC Line winding I
G-H	115 VAC Line winding II

Panel Instruments	
<b>Totalizer</b>	<b>0 734 000</b>
Add/Subtract Totalizer	0 734 001
Position Indicator	0 734 002
Tachometer	0 734 003
Programmable Rate Meter	0 734 004
Rate Meter with Totalizer	0 734 005
<b>Elapsed Time Indicator</b>	<b>0 734 006</b>
Preset Counter	0 734 007
<b>Preset Timer</b>	<b>0 734 008</b>
Rate Meter with Total and Pulsed Output	0 734 009
Lithiumbattery	E3533 355

Option Modules	
HV Input	1 734 010
Relay	1 734 011
AC Power	1 734 012
HV Input and Relay	1 734 013
HV Input and Power	1 734 014
Power and Relay	1 734 015
HV Input/Power/Relay	1 734 016
LV Input	1 734 017
LV Input and Relay	1 734 018
LV Input and Power	1 734 019
LV Input/Power/Relay	1 734 020

## Flexible Counter Series, **tico 735** Dual Colour Display, in DIN size 48 x 96 mm



### FEATURES

COUNTING - MEASURING - INDICATING - MONITORING - TRANSMITTING

Because of the unlimited number of measurements it can handle, the **tico 735** device family is equally well suited to applications in the world of impulse and time counting as to those in the processing area.

If you are looking for display clarity and high levels of accuracy, then the **tico 735** is the right choice for you. The dual-colour display is unique, highlighting an alarm situation or an excess value at a single glance. You can program your own choice of display colour to indicate normal or alarm conditions.

- Brilliant 18.5 mm high dual-colour red/green LED display with programmable colour settings
- As standard, all models have limit or preset values
- Scaling available as standard
- Universal Power Supply 90...264 V AC or 20...50 V AC/DC
- Simple structured operation with switchable help function
  
- External Program Lockout
- DIN housing 48 x 96 mm, mounting depth < 100 mm
- Conveniently sized Screw Terminals
- Large keys offer safety and ease of operation
  
- NPN and Relay Outputs
- Option: RS 485 ASCII protocol serial interface for all versions. "Remote Display" version receives process values over RS 485

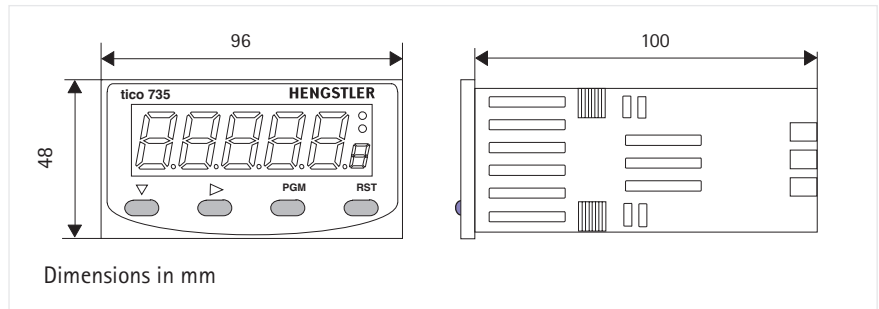
### TIME PRESET COUNTER

Time formats programmable (minimum time 0.1 Sec)	9999.9 s, 9999.9 m, 9999.9 h, mmm:ss, hhh:mm
Time Preset with Output Signal	0...99999
Count Direction up/down	0 -> P 1, P 1 -> 0
Count Mode	Single, Accumulating

# tico 735

## Technical data

### DIMENSIONED DRAWINGS



### DISPLAY AND KEYBOARD

Primary Display	Red/Green, 7 segment LED, 5 digits, height 18.5 mm
Secondary Display	single digit 7 segment LED, height 7 mm, red/green
Output Indicators	2 red LED indicators for OUT 1 and OUT 2 status
Keyboard	4 rubber keys for programming and manual reset

### PHYSICAL

Front Dimensions	DIN 48 mm x 96 mm, 110 mm total depth
Mounting	Front panel mounting (mounting bracket supplied)
Panel Cutout	45 mm x 92 mm, panel thickness max 12 mm
Construction	Front carrier with PCBs can be pulled out
Terminals	Screw Type (combination head)

### OPERATING CONDITIONS

Power Supply	90 - 264 V AC 50/60 Hz (electrically separated from all inputs and outputs) or 20...50 V AC / 22...55 V DC
Temperature	Operation: 0 °C to +55 °C (32 °F to 131 °F) Storage: -20 °C to +60 °C (-4 °F to 176 °F)
Relative Humidity	0 to 90 %, non-condensing

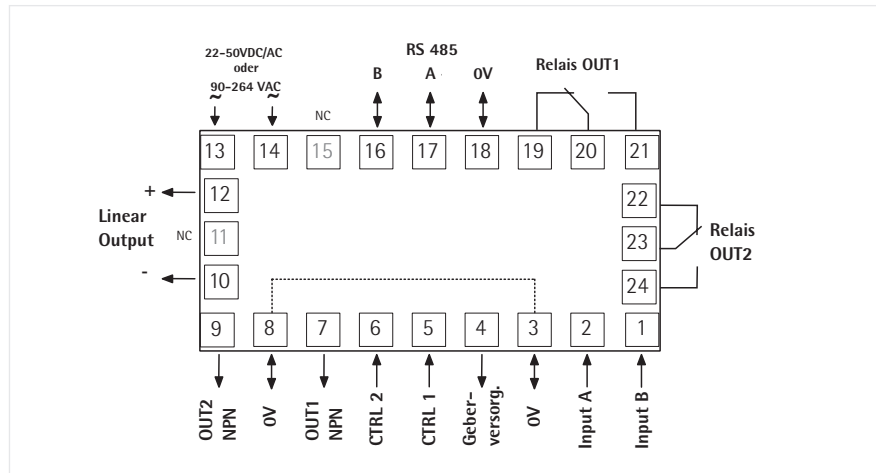
### APPROVALS

Protection class	Frontpanel IP 66
CE	EN 50082-1/92-95; EN 50081-1/92, -2/94
Safety	DIN EN 61010 part 1; protection according to class II
General	UL, CUL, Overvoltage cat. II, Contamination level 2

### OPTION RS 485

Type	RS 485, serial asynchronous, Open ASCII, Master-Slave, up to 99 zones
Parameters	9600...1200 Bd, 1 start, 7 data, 1 stop, even parity

TERMINALS



COUNT INPUTS

Active Edge with PNP	NPN or PNP programmable; capable of TTL; 30 V DC max High $\geq 3.0$ V, Low $< 2.0$ V or open; 10 kOhm to 0 V
with NPN	High $\geq 3.0$ V or open, Low $< 2.0$ V; 4.7 kOhm to V+
Frequency	20 Hz, 200 Hz or 10 kHz programmable

CONTROL INPUTS

CTRL 1 (Reset)	NPN; High $\geq 3.0$ V or open, Low $< 2.0$ V; 4,7 kOhm to V+ edge sensitive; 25 ms min., max 30 V DC
CTRL 2 (Progr. security))	NPN; High $\geq 3.0$ V or open, Low $< 2.0$ V; 4,7 kOhm to V+ level sensitive; 25 ms min.; max 30 V DC

OUTPUTS

OUT 1 NPN	NPN, open collector; 30 V DC max; 100 mA max response time $< 75 \mu s$
Relay 1,	Changeover (Form C); 240 V AC / 3A or 110 V AC / 5 A; pull-in time 8 ms
Auxiliary Power Supply	9...15 (unregulated V DC), 125 mA max; residual ripple $< 0.5$ V

SPECIAL FEATURES

- Display colour programmable
- Preset Lockout and Reset Disable programmable
- Program Security via CTRL 2
- Scaling available as standard

ORDERING DATA

**Type 0735 P**

0	7	3	5	P
---	---	---	---	---

**Output Relay 2**  
 0 none  
 1 with Relay 2 not for function 1, 6, 7

**Interface**  
 0 none  
 5 with RS 485

<b>Function</b>	<b>Linear Output</b>	<b>Power Supply</b>
1 Totaliser	0 none	0 90...264 V AC
2 Position Indicator	3 with 4-20 mA (only with function 2, 4, 5)	2 20...50 V AC or 22...55 V DC
4 Tacho/Rate Meter		
5 Rate + Totaliser		
<b>6 Time Counter</b>		
7 1 Preset Counter	<b>Option module</b>	<b>Ordering code</b>
8 2 Preset Counter	RS 485 interface	1 901 004
9 Batch Counter		

Time counters/  
Timer relays

## Type 489



### TECHNICAL DATA

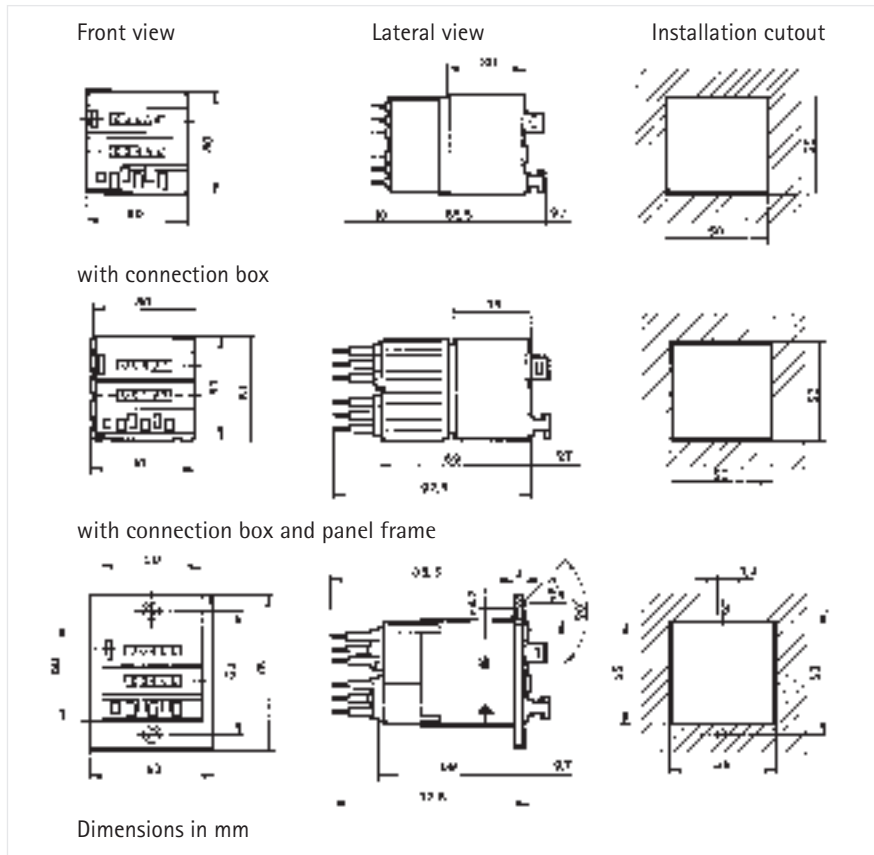
## Plug-in Electromechanical Preset Time Counters

- Preset value continuously visible
- Manual reset
- Resolution 0.1 h
- Plugs into modular system 400

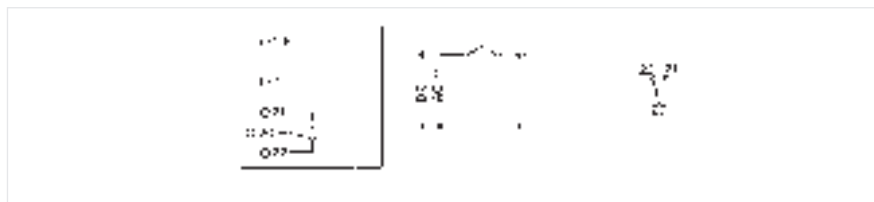
Display	5-digit indication of count and preset value, 9999.9 h
Digit height	4 mm
Supply voltage $V_{op}$	see ordering code table, tolerance + 10 %
Power consumption	counter: 1 VA/W
Operating temperature	- 10 ... + 50 °C
Storage temperature	- 20 ... + 85 °C
Electrical connection	AMP connector, 0.8 x 2.8 mm (via connection box)
Mounting	modular system 400
Mounting position	roller axis horizontal
Protection class (IEC 144)	front IP 40, connections IP 00; for higher degree of protection we recommend a protective case with transparent cover (see "Accessories")
General design	acc. to DIN VDE 0700
Reset	manual with button
Reset frequency	DC version max. 1 per s, AC version max. 1 per 2 s
Signal output	changeover contact, floating
Signal duration	from when preset has been reached until reset
Switching voltage	max. 220 VAC
Switching current	max. 20 VA/1 A, non-inductive



DIMENSIONED DRAWINGS



CONNECTION DIAGRAM



ORDER INFORMATION  
Counter

Voltage	Display 9999.9 h Ordering code
24 V/50 Hz	0 489 101
115 V/50 Hz	0 489 103
220 V/50 Hz	0 489 105
24 V/60 Hz	0 489 102*
220 V/60 Hz	0 489 106*
24 VDC	0 489 121

Standard accessories

Key reset system	Ordering code + SR e. g. 0 489 101 SR
Panel frame	1 405 492
Connection box	1 405 537

\* on request

Time counters/  
Timer relays

## Notes