

Preset Counters

Preset counters are counting devices with control functions. Many different applications can be handled using the various versions which are available. Depending on your requirements, you can choose from electronic, electro-mechanical, pneumatic or mechanical models.

Most of the electronic preset counters have two presets and, using an initial switching point, they can control fast/slow positioning or coarse/fine dosage rates, for instance

Typical applications:

- Control of order-related quantities
- Simple length cutting control with e.g. cable, fibre, thread or wire
- Length cutting with fast and slow travel
- Dosage and filling
- Coarse/fine dosage rates
- Lift or curtain control
- Coil winding control
- Production process control with batch counter
- PTB approved length control
- Job data collection over interfaces
- Decentralised counting for PLC and PC applications, with integrated display
- Maintenance interval control

Electronic Preset Counters



Type	tico 732	tico 734 / 007	tico 735P7/P8	signo 723.1
Features	<ul style="list-style-type: none"> ■ Multifunctional, used as counter, tachometer, time counter, shift or batch counter ■ Voltage supply 12-24 VDC; 115 VAC, or 230 VAC ■ 6-digit LCD or LED display ■ Offering a large variety of programmable functions ■ Without preset or with 1 or 2 presets ■ Freely selectable prescaling function ■ Programmable keyboard lock ■ Integrated totalizing counter 	<ul style="list-style-type: none"> ■ Preset counter with large, 8-digit LCD display; illuminated ■ Voltage supply via exchangeable lithium cells ■ Small mounting depth ■ SSR output ■ Expandable by a variety of module options ■ 10 versions offering different functions (same design) 	<ul style="list-style-type: none"> ■ Large dual-colour, 5-digit LED display; digit height 18.5 mm ■ 1 or 2 presets ■ Programmable display colour ■ Upgrading options (e.g. RS 485) ■ Service-friendly due to plug-in system ■ Complete functions due to 8 counter versions and 5 process indicators 	<ul style="list-style-type: none"> ■ Large 6-digit LED display ■ Voltage supply 12-24 VDC or 115/230 VAC ■ Connections via plug-in screw terminals ■ Very high counting frequency up to 40 kHz ■ 2 Presets (as relay and transistor); one preset is programmable as a trailing preset ■ Reproducible, freely selectable set value ■ Optional with RS 232 or RS 485 interface
Technical Data				
Dimensions (mm) (Width x Height x Depth)	48 x 48 x 93.5	72 x 36 x 36	96 x 48 x 100	96 x 48 x 108
Front panel cutout (mm)	45 x 45	68 x 33	92 x 45	92 x 45
Display	LCD 6-digit, 9 mm LED 6-digit, 7.6 mm	LCD 8-digit, 12 mm	LED 5 digit, 18.5 mm Dual-colour	LED 6-digit, 14 mm
Protection	IP 65	IP 65	IP 66	IP 54
Supply voltage	12-24 VDC, 115 VAC, 230 VAC versions	Exchangeable Li battery	22-55 VDC / 20-50 VAC or 90-264 VAC	12-24 VDC; 115/230 VAC versions
Inputs				
Input control	PNP/NPN	PNP/NPN	PNP/NPN	PNP/NPN
Frequency	5 kHz / 30 Hz	10 kHz / 30 Hz	10 kHz / 200 Hz / 20 Hz	40 kHz / 30 Hz
Prescaling factor	0.001-999.999	0.0001-99.9999	0.0001-9.9999	0.0000-99.9999
Reset input	PNP/NPN	NPN	NPN	PNP/NPN
Control inputs	2 nd counter input and gate input	Keyboard lock	Keyboard lock	Gate input, display hold and keylock input
Count Mode				
Add Mode or Subtracting Mode	Programmable	Programmable	Programmable	
Difference Mode	Programmable	Optional	Programmable	Programmable
Count Direction Mode	Programmable	Programmable	Programmable	Programmable
Add/Add Mode	Programmable		Programmable	
Phase Discriminator	Programmable	Optional	Programmable	1-,2-,4fold programmable
Output	Without, or with 1 or 2 relays and transistor outputs	SSR output, with optional module as relay output	Optional with 1 or 2 relays and transistor outputs	2 preset outputs (relay and transistor)
Page	117	120	123	126

Electromechanical Preset Counters



Type	Type 486–487	Type 886–887	Type 446 / 447
Features	<ul style="list-style-type: none"> ■ Adding preset counter ■ Display 3-digit or 5-digit with permanently visible presets ■ Manual, electrical, or automatic reset ■ Plugs into modular system 400 ■ Easy to service 	<ul style="list-style-type: none"> ■ Adding preset counter ■ Display 3-digit or 5-digit with permanently visible presets ■ Manual, electrical, or automatic reset ■ Available with different front panel sizes ■ Compact design 	<ul style="list-style-type: none"> ■ Subtracting preset counter ■ Display 3-digit or 5-digit with permanently visible presets ■ Manual, electrical, or automatic reset ■ Plugs into modular system 400 ■ Easy to service
Technical Data			
Dimensions (mm) (Width x Height x Depth)	50 x 50 x 92.5	60 x 75 x 72.5 55 x 53.2 x 72.5	50 x 50 x 92.5
Front panel cutout (mm)	50 x 50	52 x 52	50 x 50
Display	3; 5, depending on version	3; 5, depending on version	3; 5, depending on version
Digit height	4 mm	4 mm	4 mm
Protection	IP 30	IP 30	IP 30
Pulse voltage	24 VDC, 24 VAC, 115 VAC, 230 VAC	24 VDC, 24 VAC, 115 VAC, 230 VAC	24 VDC, 24 VAC, 115 VAC, 230 VAC
Power consumption	DC 2.5 W; AC 2.75 VA	DC 2.5 W; AC 2.75 VA	DC 2.5 W; AC 2.75 VA
Reset	Manual, electrical - depending on version; optional: automatic reset	Manual, electrical - depending on version	Manual, electrical - depending on version; optional: automatic reset
Operating temperature	- 10...50 °C	- 10...50 °C	- 10...50 °C
Duty cycle	100 % at 25 °C	100 % at 25 °C	100 % at 25 °C
Accessories	Panel frame, connection box, reset automatic module 100 % duty cycle module		Panel frame, connection box, reset automatic module 100 % duty cycle module
Dimensions (mm) (with panel frame)	60 x 75 x 88		60 x 75 x 88
Panel frame cutout (mm)	55 x 55		55 x 55
Page	134	136	138

Mechanical Preset Counters



Type		Type 250		
Features	<ul style="list-style-type: none"> ■ 5-digit indication, revolution, length and stroke counter ■ Subtracting counting direction ■ Large stroke keys for preset input ■ Pushbutton reset ■ Large digits, 6.5 mm 			
Technical Data				
Dimensions (mm) (Width x Height x Depth)	132 x 70 x 74.2			
Digits	5			
Digit height	6.5 mm			
Protection	IP 40; connections IP00			
Reset	Manual reset via reset key			
Drive	Both sides, front, back, bottom			
Torque/ Actuating distance	1.2 Ncm Stroke counter 8 Ncm			
Max. speed	10.000 digits/min.			
Max. no. of strokes	800 strokes/min.			
Transmission ratio	1:1 / 1:5 / 2:1 / 5:1			
Mounting	Baseplate			
Accessories	Stroke levers, measuring wheels			
Page	140			

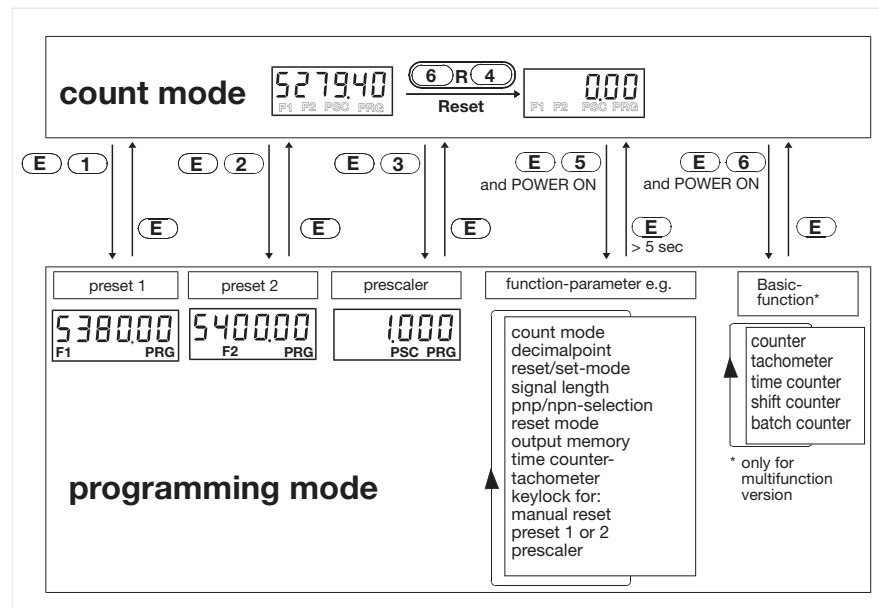
Multifunctional Counter – Bi-directional

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.

TECHNICAL DATA

General

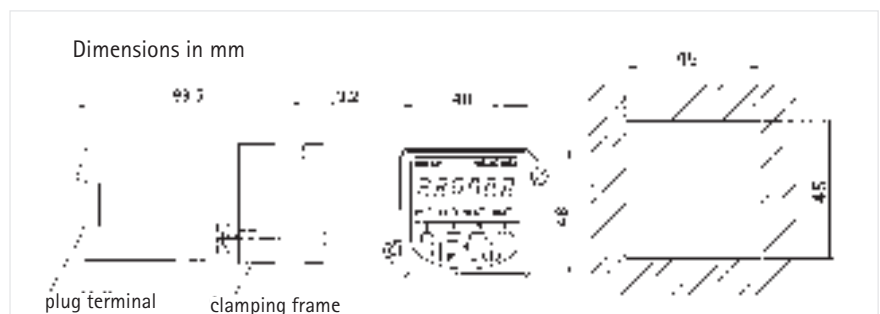
Display	LED or LCD, 6 digits, leading zero suppression, decimal point
Digit height	LED 7.6 mm; LCD 9 mm
Supply voltage	12...24 VDC; 24 VAC; 115 VAC; 230 VAC; 50/60 Hz, depending on version
Current consumption	12...24 VDC < 150 mA 100/115/230 VAC < 50 mA; including sensor supply
Sensor supply	only when 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 ² (10...150 Hz) according to IEC 68-T2-6
Shock stability	100 m/s ² (18 ms) according to IEC 68-T2-27
General design	according to VDE 0411, DIN 57411, protection class II
Approvals	UL + CUL E 96337
Amplitude thresholds	< 2 V and > 8 V, 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. 5 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 VDC max. 10 mA of AC-supply
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
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



DIMENSIONS

VDC 1 Rel/1 Trans

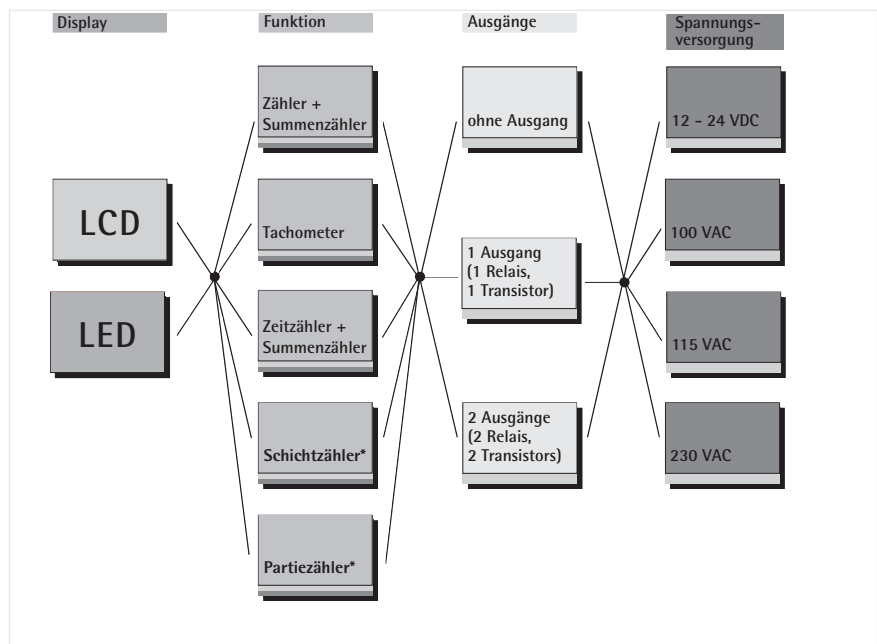
VAC 1 Rel/1 Trans

VDC 2 Rel/2 Trans

VAC 2 Rel/2 Trans

For versions with no output, pins 7-9 and 15-17 are not connected.

POSSIBLE VARIANTS



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	0 732 031	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 ¹	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.

Preset
Counters

tico 734



MODEL OVERVIEW

Preset Counter (0 734 007)

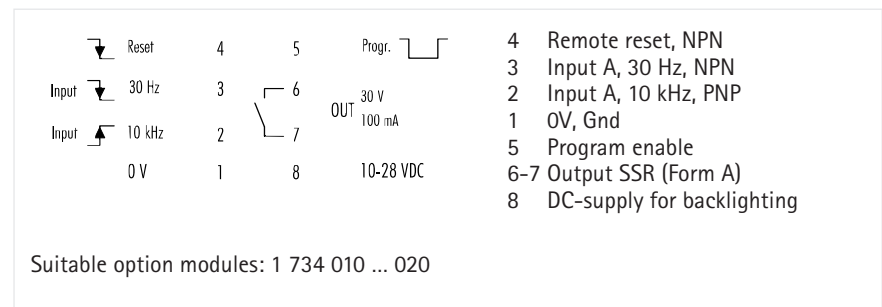
7 digit, programmable for up or down counting, SSR relay output, preset lock function, reset key can be enabled/disabled

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, ≤ 28 VDC, max. 10 kHz (50% duty cycle), Low < 1.0 V, High > 2.0 V, impulse > 45 μ s, impedance 1 M Ω

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

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

Low Voltage Option Module 5...30 VAC/DC, 30 Hz, 17 k Ω m, 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

SSR Relay Photo mos 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

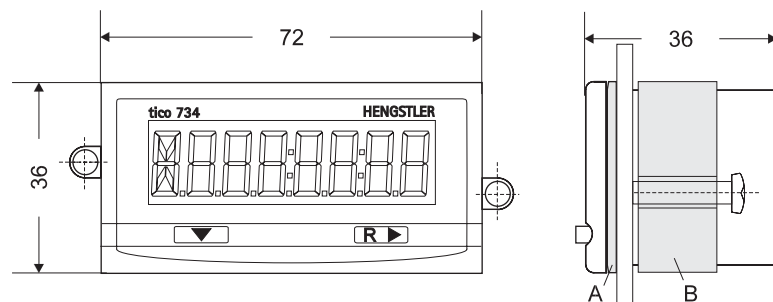
Operating and Storage Temperature 0 °C to + 55 °C

- 20 °C to + 60 °C

General DIN EN 61010 part 1 / VDE 0411 part 1

Protection according to class II, Contamination level 2
Overvoltage category II

DIMENSIONS



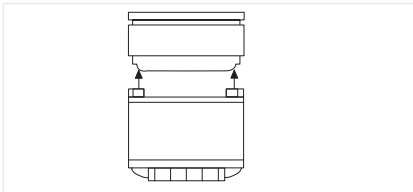
- 1) Panel cutout: 33 x 68 mm
- 2) Panel thickness: max 8 mm

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

Dimensions in mm

tico 734

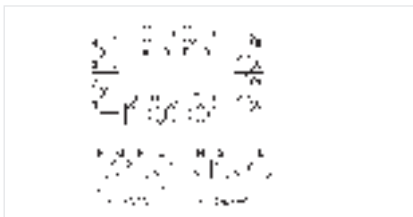
OPTION MODULES



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 ...

	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		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: 127 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
Elapsed Time Indicator	0 734 006
Preset Counter	0 734 007
Preset Timer	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

Flexible Counter Series, Dual tico 735

Colour Display in DIN size 48 x 96 mm

COUNTING - MEASURING - INDICATING - MONITORING - TRANSMITTING



FEATURES

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

PRESET COUNTER (1 Preset, 2 Presets)

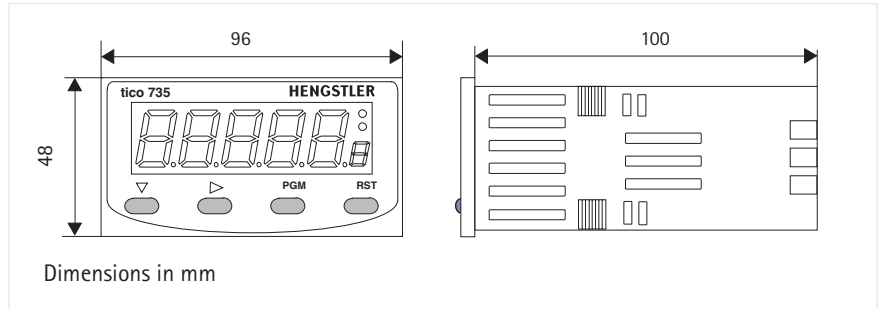
BATCH COUNTER

Input Modes, Features	Value Range
A+B, A-B, Direction, Quad	0...99999
1 or 2 Presets (P 1 as absolute Preset or Prewarn)	0...99999
Up/down with or without auto reset mode	0 -> P 2, P 2 -> 0
Out 1 and Out 2 separately programmable	latch or 0.01...99.99 Sec
A+B, A-B, Direction, Quad	0...99999
Up/down with or without auto reset mode	0 -> P 1, P 1 -> 0
Preset, Batch Preset, Totalizer	0...99999
Out 1 and Out 2 separately programmable	latch or 0.01...99.99 Sec

tico 735

Technical data

DIMENSIONS



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 LEDs 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

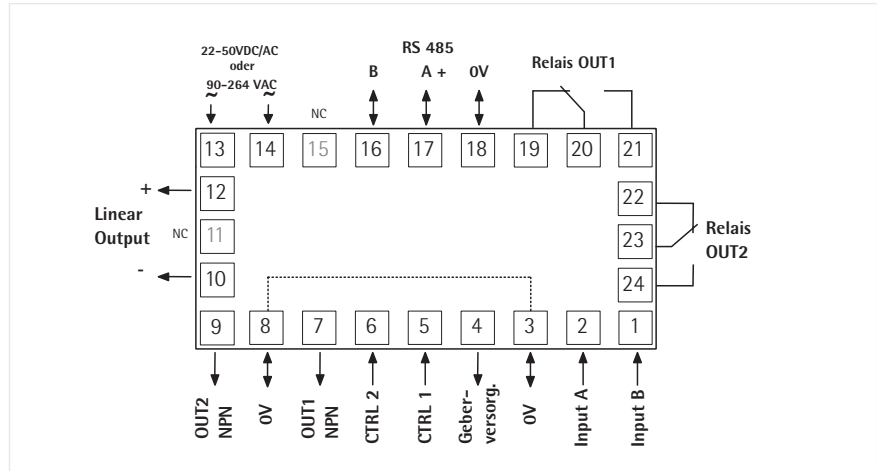
APPROVALS

Protection	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 ≥ 3.0 V, Low < 2.0 V or open; 10 kOhm to 0 V
with NPN	High ≥ 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 or hold)	NPN; High ≥ 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 ≥ 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
OUT 2 NPN	response time $< 75 \mu\text{s}$
Relay 1, Relays 2 (opt.)	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
- Count Calibrator 0.0001 to 9.9999 as standard
- Preset Lockout and Reset Disable programmable
- Program Security via CTRL 2

ORDERING DATA

Type 0735 P

<p>Output Relay 2 0 none 1 with Relay 2 not for function 1, 6, 7</p>	<p>Interfaces 0 none 5 with RS 485</p>
-------------------------------------------------------------------------------------	-------------------------------------------------------

0 7 3 5 P

<p>Function 1 Totalizer 2 Position Indicator 4 Tacho/Rate Meter 5 Rate + Totalizer 6 Time Counter 7 1 Preset Counter 8 2 Preset Counter 9 Batch Counter</p>	<p>Linear Output 0 none 3 with 4-20 mA (only with function 2, 4, 5)</p>	<p>Power Supply 0 90...264 V AC 2 20...50 V AC or 22...55 V DC</p>
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Option module	Ordering code
Relay 2	1 901 001
RS 485 interface	1 901 004

Preset Counters



DISPLAY

- Large, 6-digit, 14 mm high LED display
- Up/down counter with prescaler
- 2 presets, one programmable as trailing preset
- Easy direct selection by 2 function keys
- 2 relay outputs with change-over contacts
- Keypad can be secured against unauthorized access
- npn/pnp-programming of inputs
- RS 232 / RS 485 interface optional

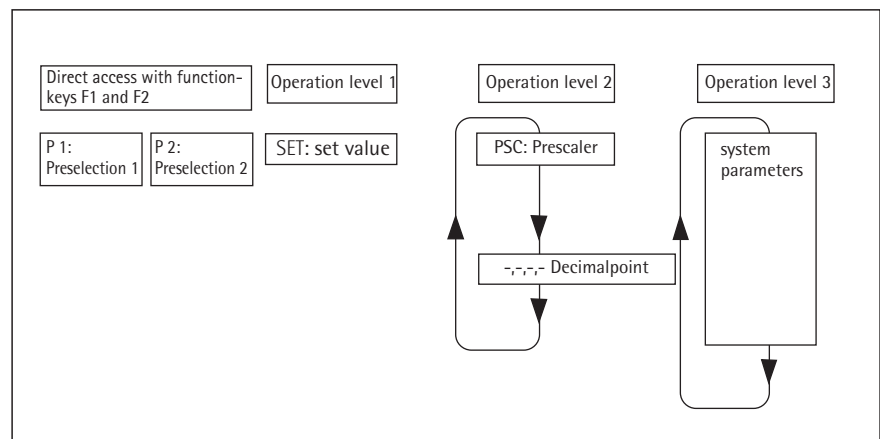
6-digit LED display with 14 mm high figures, easy to read, decimal point can be programmed.



Section A Shows the actual counting position when in counting mode, and the changeable parameters when in programming mode.

Section B: LED indicators showing the active output signal, and in programming mode indicating the changeable parameter.

PROGRAMMING



Programming of signo 723.1 is divided into 3 operation levels and direct access.

Direct access: Preselection 1 and 2 can be directly selected by the function keys F1 and F2

Operation level 1: Includes the set value

Operation level 2: Includes machine parameters and application specific parameters.

Operation level 3: Includes system parameters like operation modes and count modes, which normally are programmed during start-up procedure.

Unauthorized programming of the signo 723.1 is prevented by a control input, which can lock the operation levels as well as the operation keys.

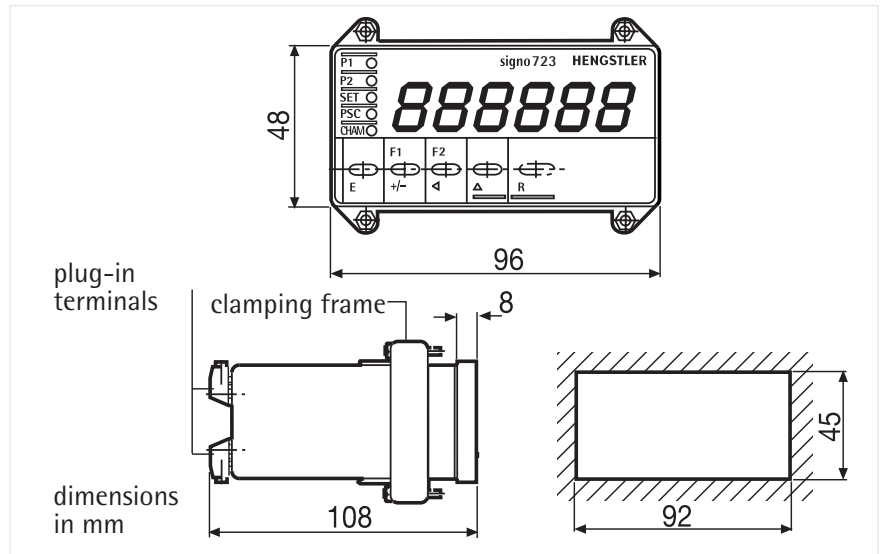
signo 723.1

TECHNICAL DATA

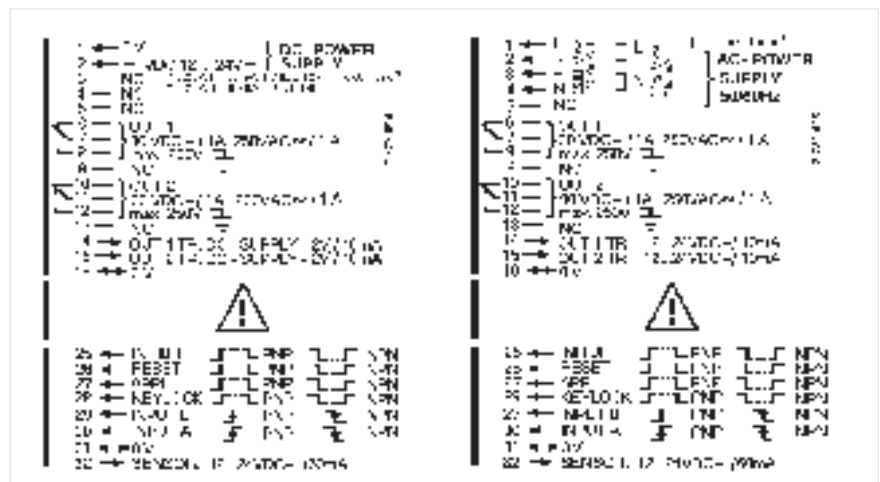
Technical data

Display	LED, 6 digits, suppression of leading zeros, programmable decimal point, minus sign
Digit Height	14 mm
Power Supply Voltage V_{op}	12 ... 24 VDC or 115/230 VAC depending on version
Current Consumption	12 ... 24 VDC < 250 mA, 115/230 VAC < 60 mA
Sensor Supply	AC-operation: 12 ... 24 VDC, DC-operation: $V_{op} - 2 V$, $I_{max.} = 60 mA$
Data Retention	non-volatile memory > 10 years
Operating Temperature	0 ... 50 °C
Storage Temperature	-20 ... +70 °C
Electrical Connection	plug-in terminals
Mounting	with clamping frame
Protection Class (IEC 144)	front side IP 54, terminals IP 20
Noise Immunity EMC	severity 3 according to IEC 801, part 2 + part 4
Vibro Stability	10 m/s ² (10... 150 Hz) according to IEC 68-part 2-6
Shock Stability	100 m/s ² (18 ms) according to IEC 68-part 2-27
General Rating	according to VDE 0411, DIN 57411, protection class II
Inputs:	
Switching Level	<2 V and >8 V, max. 40 VDC
Active Edge	positive when npn or negative when npn, can be switched over
Pulse Shape	any (square 1:1 at max. frequency)
Input Resistance	approx. 5 k Ω (static)
Count Input	
	with prescaler programmable 0.0005 ... 99.9999
	– as phase discriminator input with single, double or quadruple evaluation
	– as differential input
	– as up/down input
Pulse Duration	12.5 μ s (40 kHz), 17 ms (30 Hz)
Count Frequency max.	40 kHz or 30 Hz
Control Input:	
Reset	– manual by reset key – external by reset input, static or dynamic, programmable pulse duration min. 3 ms (attenuated min. 17 ms) – automatic when reaching preset 2
Gate	static, pulse duration > 12 μ s / >17 ms
Hold	static, pulse duration > 3 ms
Keylock	static, pulse duration >3 ms
Outputs:	
Relay	Out 1 and Out 2
Contact Type	changeover relay
Switching Voltage	max. 250 VAC / 30 VDC, min. 5 VAC/DC
Switching Current	max. 1A, min. 10 mA
Transistor	Out 1 and Out 2, PNP, 10 mA

DIMENSIONS



CONNECTION DIAGRAM



ORDER INFORMATION

Version	Supply Voltage	Ordering code
without interface	12 ... 24 VDC	0 723 101
	115/230 VAC	0 723 102

This counter is available with several interfaces. See next pages.

signo 723
signo 727



TECHNICAL DATA

RS 232

RS 485

Protocol

Variable Preset Counter and Position indicator with Interface RS 485 / RS 232

- Large 6 digit LED display, 14 mm
- Up-/down counter, 6 digits, with different count modes and prescaler
- 2 preset values or 2 limit values
- Transistor outputs (PNP) and relay outputs (changeover contacts)
- Compact DIN 48 x 96 mm
- Easy manual operation with function keys
- Interface: RS 485 or RS 232

Power Supply Voltage	12...24 VDC or 115/230 VAC
Sensor Supply	AC-operation: 12...24 VDC, DC-operation: Vop=2V, I _{max.} = 60 mA

Inputs:

Switching Level	< 2 V and > 8 V, max. 40 VDC
Active Edge	positive PNP or negative NPN programmable
Count Input	with prescaler programmable 0,0005 ... 99,9999 - as phase discriminator input with single, double or quadruple evaluation - as differential input - as up/down input
Count Frequency max.	40 kHz or 30 Hz
Control Inputs	Reset, Gate, Hold and Keylock

Outputs:

Relay	Out 1 and Out 2 with changeover contact, 1 A, 250 VAC/30 VDC
Transistor	Out 1 and Out 2 with PNP-Output, 10 mA
maximum length	15 m

Input R x D

typical input resistance	5 kOhm
max input voltage	30 V

Input T x D

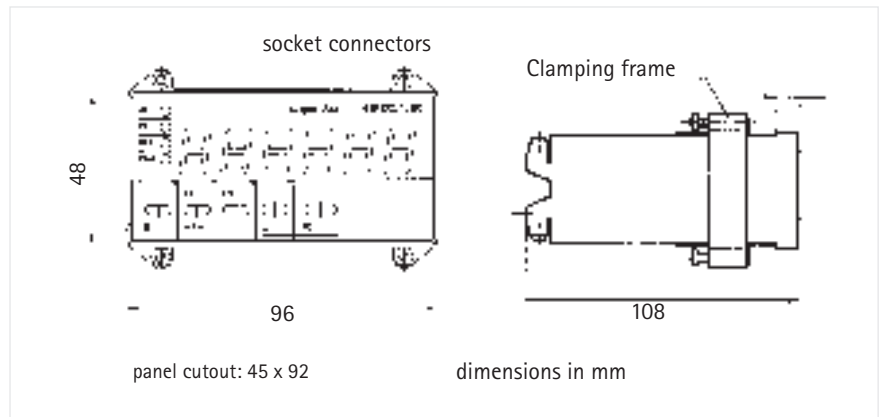
output voltage	8 V
output current max.	20 mA

Terminals A and B

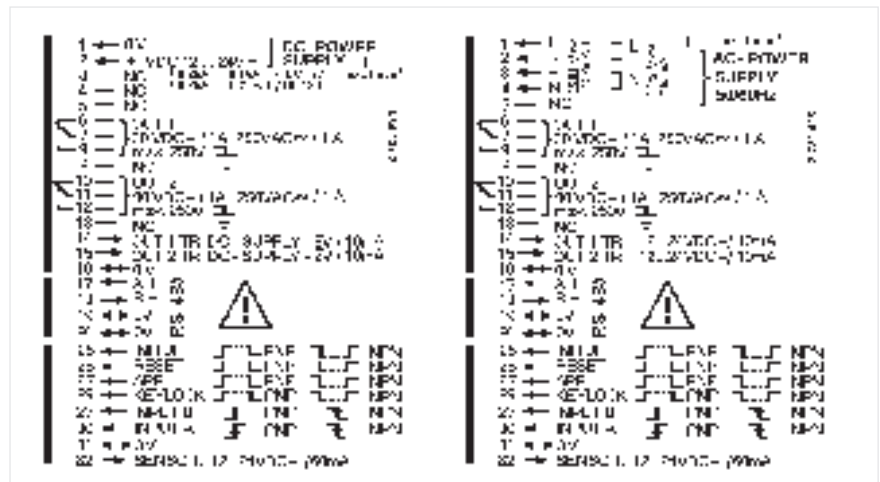
typical input resistance	12 kOhm
max input voltage	- 7 .. + 12 V
output level	High: 3.5 V, Low: 1.3 V
output current max.	60 mA
maximum bus length	2000 m
data transfer rate	1200, 2400, 4800 Baud
data format	7 bits, even parity 8 bits, no parity
stop bits	1
protocol	Hengstler TP3 or ASCII (depending on version)

For further technical information please refer to the pages describing signo 723.1 and signo 727.1

DIMENSIONS



CONNECTION DIAGRAM



PRINTER PROTOCOL FOR 723.1

Protocol	Standard ASCII
Baudrate	1200, 2400, 4800 Baud
Data format	7 Bits, even Parity, 1 Stop bit 8 Bits, no Parity, 1 Stop bit
Line and Form Feeds programmable before and after printout	
Cutter Control programmable	

PRINT MASKS

The counter allows for the programming of 5 different print masks	
Mask 0	only Count Value
Mask 1	Counters: <value>
Mask 2	Counter: <value>
Mask 3	Counter: <value> Preset1: <value> Preset2: <value> Set: <value> Prescaler: <value>
Mask 5	Length: <value> m

signo 723 signo 727

ORDER INFORMATION

Counter

Counter with time counter

PC-driversoftware for TP3 Protocol

RTC Converter RS 485 / RS 232

RTC



DIMENSIONS

CONNECTION DIAGRAMS

Technical data

Version with interface		12...24 VDC	115/230 VAC
signo 723 Printersoftware	RS232	0 723 150M1	0 723 151M1
signo 723 TP3 Protocol	RS232	0 723 150M3	0 723 151M3
	RS485	0 723 160M3	0 723 161M3
signo 727 TP3 Protocol	RS232	0 727 150M3	0 727 151M3
	RS485	0 727 160M3	0 727 161M3
signo 723 TP3 Protocol	RS485	0 723 125	0 723 126
Windows 3.X		0 723 165	
Windows 95 / NT		0 723 167	
DOS (ab 3.2) vt3com.exe		0 723 166	
TP3.com		0 723 168	
RTC		0 723 169	
Plug-in power supply for RTC		3 560 032	
Connection cable RTC-PC (RS 232), 5 m		1 723 055	

Remote Terminal Converter

The RTC is needed if more than one counter is to be connected to the PC or if the distance between the machine and the PC is longer than 15 m.

- up to 31 counters can be connected to the RTC via RS 485 bus
- Connection RTC - PC is a standard RS 232
- optimally tuned for operation with the Hengstler Software HTS (Hengstler Terminal Server)
- Power supply 12..24 VDC or 12..18 VAC, max. 2 VA (plug-in power supply available as accessory)

width 115 mm / height 38 mm / depth 165 mm

Connector ST 1

pin	signal
1	AC/DC
2	Earth
3	AC/DC

Connector ST 3

pin	signal
1.3	RS 485 A +
2.4	RS 485 B -
5	Earth

Connector ST 2

pin	signal	description
1	DCD	Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

**EXAMPLE**

```
' Logical counter address
Const CounterAddress = 25
' registers of a counter
Const CounterValue = 0
Const Preset1 = 1
Const Preset2 = 2
Const Chain = 3
```

- Guided Setup
- A program group and start icon are created automatically
- Setup registers the OLE attributes of HTS in the Windows registry
- DDE- and OLE Server

Reading and writing a counter from within MS Excel:

```
' read counter and insert result in table 1
Sub Read_Counter()
    Set Hts = GetObject(Class:="Hengstler.TerminalServer.10")
    Result = Hts.ReadRegister(CounterAddress; CounterValue)
    Sheets(„Table1“).Cells(6; 2).Value= Result
Ende Sub

Sub Write_Counter()
    Data = Sheets(„Table1“).Cells(2; 2).Value
    Set Hts = HoleObject(Class:="Hengstler.TerminalServer.10")
    Result = Hts.WriteRegister(CounterAddress; CounterValue; Data)
Ende Sub
```

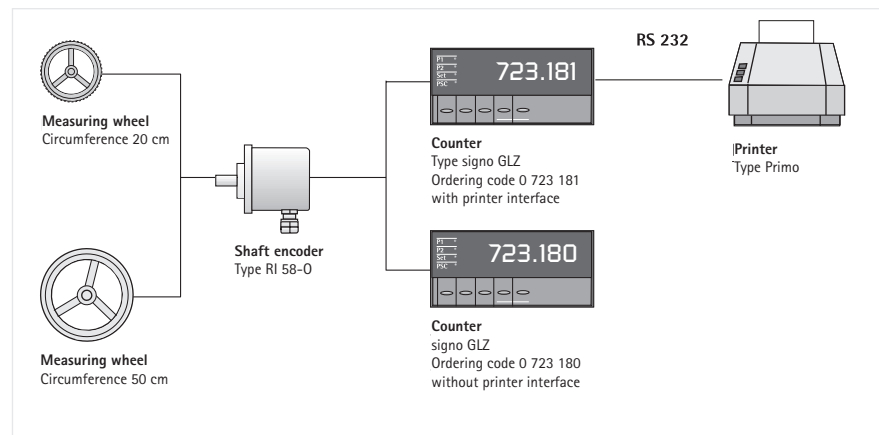
signo GLZ



COMPONENTS FOR THIS LENGTH MEASURING SYSTEM
see also under "PTB approved measuring systems"

Variable Preset Counter with PTB-Approval Versions with Programmable Prescaler

- large, 6-digit, 14mm high LED display
- up/down counter with programmable resolution (dm, cm or mm)
- 2 preselections of which one is programmable as trailing signal
- easy direct selection by 2 lockable function keys
- two relay outputs with change-over contacts
- keypad can be secured against unauthorized access
- also available with printer interface
- For measuring belt systems versions with programmable prescaler



TECHNICAL DATA

Count input	– Phase discriminator with single evaluation, impulse resolution in mm, cm, dm (Standard) Prescaler (only-P version) 0.0005...99.9999
Length Resolution	programmable in dm, cm or mm by adjusting the decimal point (Standard version) or programmable with prescaler
Pulse Duration	min. 12.5 µs
Count Frequency	max. 40 kHz

Control Inputs:	
Reset	– manual by reset key – external, static or dynamic, programmable – pulse duration: >3 ms or >17 ms
Gate	static, pulse duration >12 µs >17 ms
Display Hold	static, pulse duration >3 ms
Keylock	static, pulse duration >3 ms

All other data are according to signo 723.1

ORDER INFORMATION

Type Standard	Supply Voltage	Ordering Code
signo GLZ	115/230 V AC	0 723 180
signo GLZ with RS 232 interface	115/230 V AC	0 723 181

Type with Prescaler	Supply Voltage	Ordering Code
signo GLZ-P	115/230 V AC	0 723 182
signo GLZ-P with RS 232	115/230 V AC	0 723 183

Type 486/487



TECHNICAL DATA

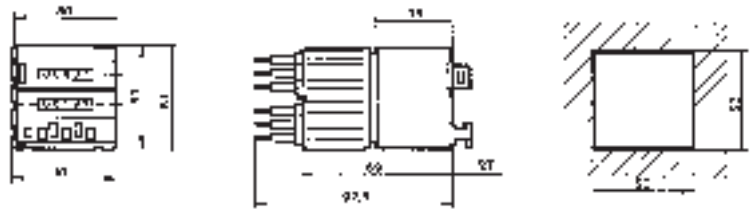
Adding Preset Counter, Plug-in System

- Preset value continuously visible
- Manual, electric or automatic reset
- 3 or 5-digit indication
- Plugs into modular system 400

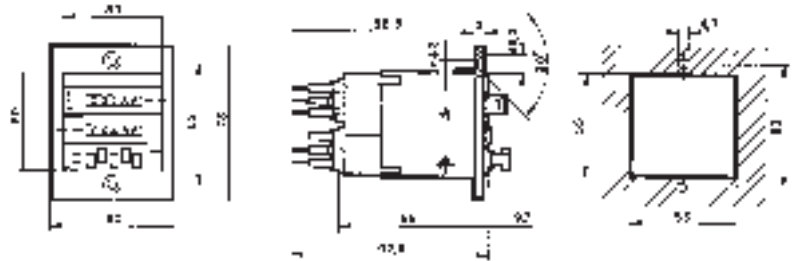
Display	3 or 5-digit indication of count and preset value, depending on version
Digit height	4 mm
Supply voltage V_{op}	see ordering code table, tolerance $\pm 10\%$ 230 VAC $+6-10\%$
Power consumption	counter: DC version 2.5 W, AC version 2.75 VA reset solenoid: DC version 12 W, AC version 16 VA
Residual ripple	48 %
Operating temperature	- 10 ... + 50 °C
Storage temperature	- 40 ... + 85 °C
Electrical connection	AMP connector, 0.8 x 2.8 mm (with connection box)
Mounting	modular system 400
Mounting position	roller axis horizontal
Protection class (EN 60529)	front IP 40; connections IP 00; for higher degree of protection we recommend a protective case with clear cover (see "Accessories")
General design	DIN EN 61010-1 Protection according to class II Contamination level 2 Over voltage category II
Duty cycle at 25 °C at 50 °C	Counter 100 %; reset solenoid: DC version 20 %, max. 2 minutes, AC versions 10 %, max. 1 minute Counter 50 %, max. 10 minutes
Maintenance-free operation	Counter 2×10^8 , reset solenoid 1.5×10^6 pulses
Approvals	UL: E 41 784-11
Count input	adding
Min. pulse length	DC version 20 ms, AC version 50 ms
Max. counting frequency	DC version 25 Hz, AC version 10 Hz
Pulse duty factor	1:1
Reset	- manual with button - external by electrical signal (versions with reset solenoid only), Min. pulse length 200 ms (max. see duty cycle); for longer reset pulses a continuous duty module must be used (see "order information" and "accessory modules") - automatic reset after preset has been reached (versions with reset solenoid only), using the automatic reset (see "order information" and "accessory modules")
Reset frequency	DC version max. 1 per s, AC version max. 1 per 2 s
Pulse duty factor	DC version 1:5, AC version 1:10
Signal output	
Signal duration	from when preset has been reached until reset
Contact type	Changeover contact, floating
Switching voltage	max. 220 VAC
Switching current	max. 20 VA/1 A, non-inductive

DIMENSIONS

With connection box

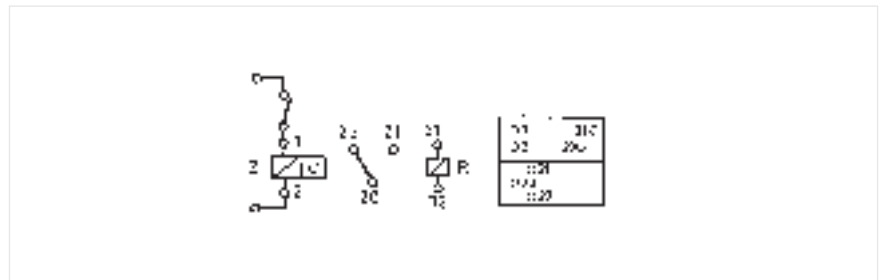


With connection box and panel frame



All dimensions in mm

CONNECTION DIAGRAM



ORDER INFORMATION

Counter

Voltage	3 digits		5 digits		cont. duty	
	button reset	el. reset	button reset	el. reset	module	automatic reset
24 V DC	0 487 164	0 487 764	0 486 164	0 486 764	1 486 420	1 486 402
24 V AC	0 487 186*	0 487 786*	0 486 186	0 486 786	1 486 423	1 486 409
115 V AC	0 487 189	0 487 789	0 486 189	0 486 789	1 486 421	1 486 412
230 V AC	0 487 190	0 487 790	0 486 190	0 486 790	1 486 422	1 486 413

Inquire for other voltages

Standard accessories

Connection box	Ordering Code 1 405 537
Key-reset system	Ordering Code + SR e.g. 0 487 164 SR
Panel frame, black	Ordering Code 1 405 492

For further accessories see "Accessories"

* on request

** For technical data and dimensioned drawings see accessory modules on page 209

Use only counters with electrical reset.

The connection box is integrated in the module.

Type 886/887



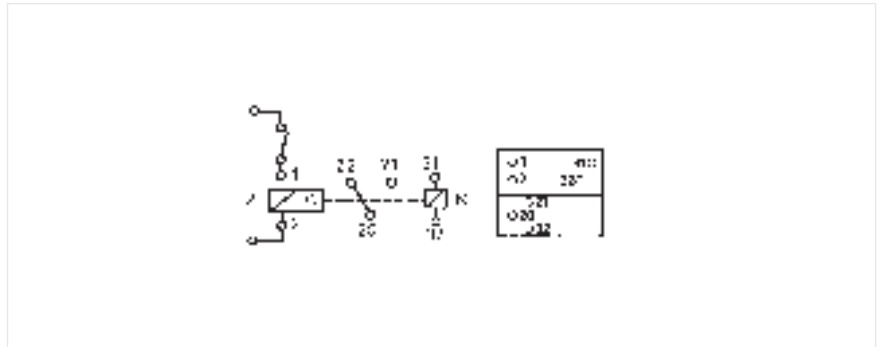
TECHNICAL DATA

Adding Preset Counters for Front Panel Mounting

- Preset value continuously visible
- Manual or electric reset
- 3 or 5-digit indication
- Various front panel sizes available

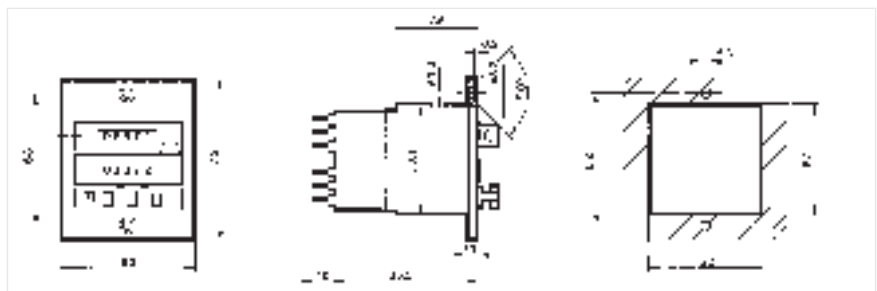
Display	3 or 5-digit indication of count and preset value, depending on version
Digit height	4 mm
Supply voltage V_{op}	see ordering code table, tolerance $\pm 10\%$ 230 VAC $+ 6-10\%$
Power consumption	counter: DC version 2.5 W, AC version 2.75 VA reset solenoid: DC version 12 W, AC version 16 VA
Residual ripple	48 %
Operating temperature	- 10 ... + 50 °C
Storage temperature	- 40 ... + 85 °C
Electrical connection	AMP connector, 0.8 x 2.8 mm
Mounting	screw or clamping spring attachment, see "Order information"
Mounting position	roller axis horizontal
Protection class (EN 60529)	front IP 40; connections IP 00; for higher degree of protection we recommend a protective case with clear cover (see "Accessories")
General design	DIN EN 61010-1 Protection according to class II Contamination level 2 Over voltage category II
Duty cycle at 25 °C	Counter 100 %, reset solenoid: DC version
at 50 °C	20 %, max. 2 minutes, AC versions 10 %, max. 1 minute Counter 50 %, max. 10 minutes
Maintenance-free operation	Counter: 2×10^8 , reset solenoid 1.5×10^6 pulses
Approvals	UL: E 41 784-11
Count input	adding
Min. pulse length	DC version 20 ms, AC version 50 ms
Max. counting frequency	DC version 25 Hz, AC version 10 Hz
Pulse duty factor	1:1
Reset	- manual with button - external by electrical signal (versions with reset solenoid only), min. pulse length 200 ms (max. see duty cycle); Reset frequency DC version max. 1 per 2 s
Pulse duty factor	DC version 1:5, AC version 1:10
Signal output	
Signal duration	from when preset has been reached until reset
Contact type	changeover contact, floating
Switching voltage	max. 220 VAC
Switching current	max. 20 VA/1 A, non-inductive

CONNECTION DIAGRAM

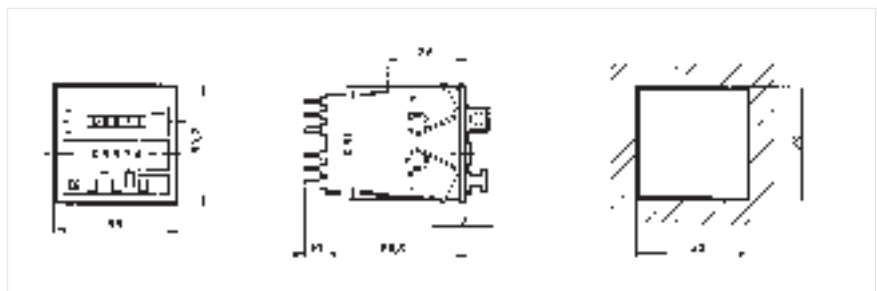


DIMENSIONS

Front panel 60 mm x 75 mm



Front panel 55 mm x 53 mm



ORDER INFORMATION

Counters for screw attachment
Front panel 60 mm x 75 mm

Voltage	3 digits		5 digits	
	button reset	el. reset	button reset	el. reset
24 VDC	0 887 264	0 887 214	0 886 264	0 886 214
230 VAC	0 887 290	0 887 240	0 886 290	0 886 240

COUNTERS FOR SPRING ATTACHMENT

Front panel 55 mm x 53 mm

Voltage	3 digits		5 digits	
	button reset	el. reset	button reset	el. reset
24 VDC	0 887 464	0 887 414	0 886 464	0 886 414
230 VAC	-	-	0 886 490	0 886 440

Inquire for other voltages
For key reset add ordering code + SR, e.g. 0 887 264 SR

Type 446/447



TECHNICAL DATA

Subtracting Preset Counter, Plug-in System

- Manual or electrical reset
- 3 or 5-digit display
- Plugs into modular system 400

Display	3 or 5-digit count and preset value indication, depending on version.
Digit height	4 mm
Supply voltage V_{op}	see ordering code table, tolerance $\pm 10\%$ 230 VAC $\pm 6-10\%$
Power consumption	counter: DC version 2.5 W, AC version 2.75 VA reset solenoid: DC version 12 W, AC version 16 VA
Residual ripple	48 %
Operating temperature	- 10 ... + 50 °C
Storage temperature	- 40 ... + 85 °C
El. connection	AMP connector, 0.8 x 2.8 mm (via connection box)
Mounting	modular system 400
Mounting position	roller axis horizontal
Protection class (EN 60529)	front IP 40; connections IP 00; for higher degree of protection we recommend a protective case with clear cover (see "Accessories")
General design	DIN EN 61010-1 Protection according to class II Contamination level 2 Over voltage category II
Duty cycle at 25 °C	Counter 100 %; reset solenoid: DC version 20 %, max. 2 minutes, AC versions 10 %, max. 1 minute
at 50 °C	Counter 50 %, max. 10 minutes
Maintenance-free operation	Counter 2×10^8 , reset solenoid 1.5×10^6 pulses
Approvals	UL: E 41 784-11
Count input	subtracting
Min. pulse length	DC version 20 ms, AC version 50 ms
Max. counting frequency	DC version 25 Hz, AC version 10 Hz
Pulse duty factor	1:1
Reset	- manual with button - external by electrical signal (versions with reset solenoid only), Min. pulse length 200 ms (max. see duty cycle); for longer reset pulses a continuous duty module must be used (see "Order information" and "Accessory modules") - automatic reset after preset has been reached (versions with reset solenoid only), using the automatic reset (see "Order information" and "Accessory modules")
Reset frequency	DC version max. 1 per s, AC version max. 1 per 2 s
Pulse duty factor	DC version 1:5, AC version 1:10
Signal output	
Signal duration	from when preset has been reached until reset
Contact type	changeover contact, floating
Switching voltage	max. 220 VAC
Switching current	max. 20 VA/1 A, non-inductive

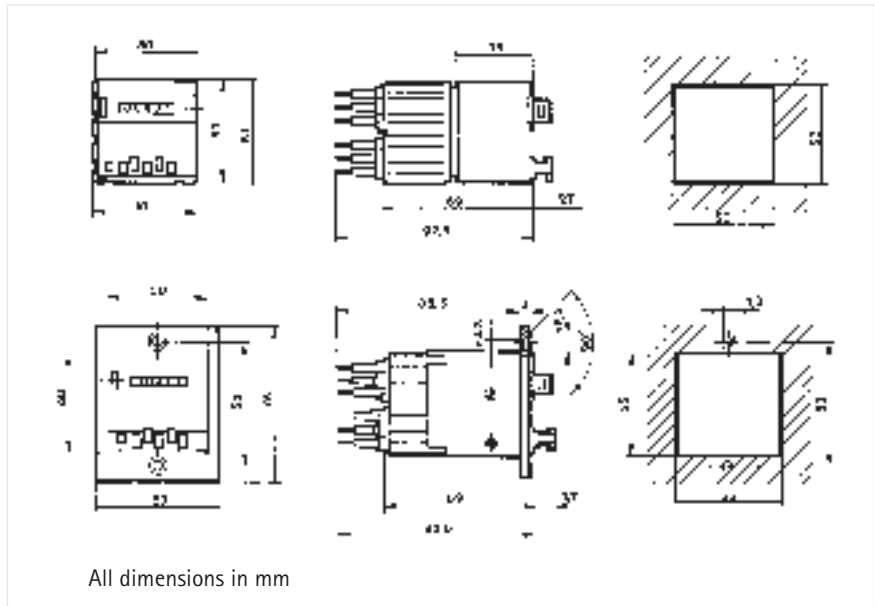
CONNECTION DIAGRAM



DIMENSIONS

With connection box

With connection box and panel frame



ORDER INFORMATION

Voltage	3 digits		5 digits		**	**
	button reset	el. reset	button reset	el. reset	cont. duty module	automatic reset
24 V DC	0 447 164	0 447 764	0 446 164	0 446 764	1 486 420	1 486 402
24 V AC	0 447 186	0 447 786	0 446 186	0 446 786	1 486 423	1 486 409
115 V AC	0 447 189	0 447 789	0 446 189	0 446 789	1 486 421	1 486 412
230 V AC	0 447 190	0 447 790	0 446 190	0 446 790	1 486 422	1 486 413

Standard accessories

Connection box	1 405 537
Panel frame, black	1 405 492
Key-reset system	Ordering code+ SR e.g. 0 447 164 SR

For further accessories see "Accessories".

Inquire for other voltages

** For technical data and dimensioned drawings see "accessory modules"
 Use only counters with electrical reset.
 The connection box is integrated in the module.

Type 250



TECHNICAL DATA

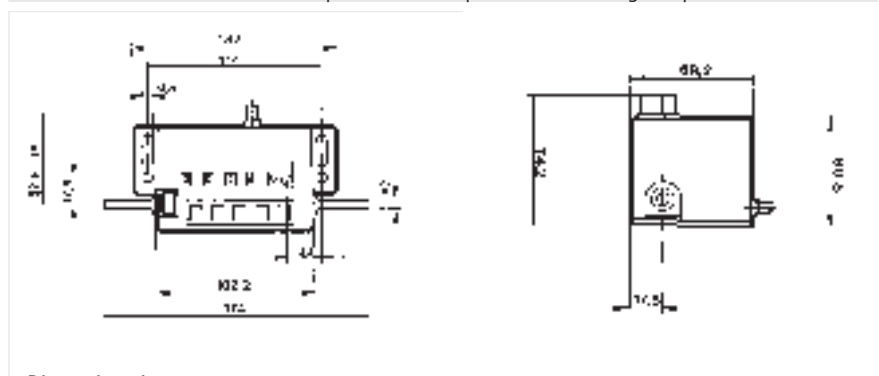
Preset Revolution, Length Measuring or Stroke Counter

- 5-digit display
- Large 6.5 mm digits
- Button reset

Display	5-digit display
Digit height	6.5 mm
Electrical connection	rear strain relief 4-wire cable, approx. 30 cm long
Protection class	IP 40, connections IP 00 (EN 60529)
General design	DIN EN 61010-1 Protection according to class I Contamination level 2 Over voltage category II
Base plate	burnished sheet steel
Case	die-cast metal, black varnish
Cap	plastic (ABS), grey
Weight	approx. 800 g
Counting mode	- + subtracting in specified direction of rotation, adding in reverse, stroke counter - subtracting in specified direction of rotation
Transmission ratio	see "Order information"
Speed	10000 increments/min, stroke counter 800 strokes/min
Actuating angle	min. 38°, max. 55° (stroke counter only)
Torque	1.2 Ncm, stroke counter 8.0 Ncm
Reset	button reset, secured against accidental operation

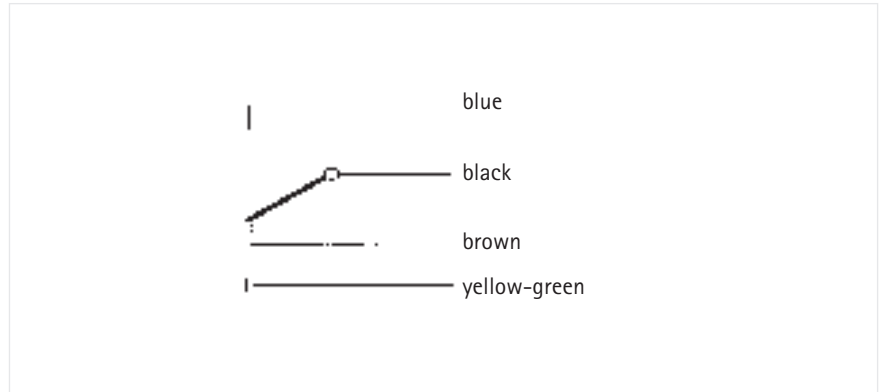
Output	
Signal duration	on transition from 00000 to 99999 until reset
Contact type	single-pole changeover contact
Switching voltage	max. 125 VDC/250 VAC
Switching current	max. 20 VA/0.3 A
⚠	Don't push the reset pushbutton during the process

DIMENSIONS



Dimensions in mm

CONNECTION DIAGRAM



ORDER INFORMATION

Revolution counter

Length counter

Stroke counter

Accessories

Actuation	Transmission ratio	Display	Unit	Bz	Bw
<input type="checkbox"/>	1:1	99999		0 250 001	0 250 002
<input type="checkbox"/>	5:1	99999	m	0 250 013	0 250 014
<input type="checkbox"/>	2:1	99999	m	0 250 019	0 250 020
<input type="checkbox"/>	1:5	9999.9	m/dm	0 250 023	0 250 024
<input type="checkbox"/>	1:1	99999		0 250 301	0 250 302

Stroke lever Ordering code 0 600 005

For other stroke levers, measuring wheels and installation frames see "Accessories"

Notes