

tico 772



TECHNICAL DATA

GENERAL

Multifunctional counter

tico 772


- Universell applicable as tachometer, timer shift-counter, batch-counter ...
- Most simple handling
- 4 different coloured backlight versions
- For the first time the intensity of the backlight is adjustable
- Impressive, clearly readable display in 48x48 mm
- Input frequency up to 60 kHz
- Easy installation due to pluggable terminals
- 3 Presets

Display	LCD reflective, Transflective positiv: black figures on back lighted ground Transmissive negativ: white, red or green figures on black ground 2 lines, counter reading/presettings 6-digits; decimal point (up to 4 decimals)
Digit height	1st line 9.3 mm; 2nd line 7.2 mm
View angle	12 o'clock
Supply voltage	SELV: 12-30 VDC; protected against polarity reversal 24 VAC, 50/60 Hz, $\pm 10\%$ / 115 VAC, 230 VAC, 50/60 Hz, $\pm 10\%$
Current consumption	12 ... 30 VDC: < 200 mA, 24 VAC < 250 mA; including sensor supply 115 / 230 VAC < 50 mA; incl. Sensor supply
Power consumption	< 5 W
Duty cycle	100%
Overload protection	external fuse DC: 0,16 AT (IEC 127); DC: 0,2 AT (UL 198) 24 VAC: 315 mAT 230 VAC: 32 mAT; 115 VAC: 63 mAT
Overload protection	external fuse 230 V, 2,5 mAT
Relay output	
Sensor supply	Only for AC operation: 12-24 VDC load-dependent; max. 50 mA
Storage of values	NV-memory > 10 years
Electrical connections	Plug-in screw-type connections / terminals
Cable cross-section	1...1.5 mm ² with wire-end sleeves
Amplitude threshold	< 2 V and > 8 V or < 1 V and > 4 V at TTL-level amplitude max. 40 VDC
Active edge	programmable, positive for PNP-input, negativ for NPN-input

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Pulse form	any desired form (at max. frequency square 1:1)	
Input resistance	approx. 10 kOhm	
Count frequency	max. 60 kHz (TTL 15 kHz): single-channel counting max. 60 kHz (TTL 15 kHz): Differential counting and totalizing (channel A+B together) max. 30 kHz (TTL 15 kHz): phase discriminator single or double evaluation max. 15 kHz (TTL 15 kHz): phase discriminator, quadruple evaluation damped (attenuated) 30 Hz	
Pulse duration min.	17 ms (30 Hz); 8 µs (60 kHz)	
Prescaler	0,0001 - 99,9999	
Reset	manual reset via keyboard, external reset static or dynamic pulse length min. 5 ms, automatic reset after reaching Preset 2, via application input (programmable) and programmable Power-On Reset	
Set function	Setting to Preset 0 (independent of reset)	
Display and preset range	- 999 999 bis + 999 999	
Alarm signal	Display flashes when preset 0, 1 or 2 are active	
Signal times	0,01 s to 599,99 s or bistable programming; tolerance ± 10 ms; active on or off	
Relay (Preset 1 and 2)	Change-over contact max.: 250 VAC / 30 VDC / 5 A Change-over contact min.: 5 VAC / 5 VDC / 10 mA; delay < 10 ms	
Transistor preset (Preset 1 + 2)	PNP-output	12 - 30 VDC, max. 50 mA for DC supply 12 - 24 VDC, max. 30 mA for AC supply (24/115/230 VAC)
Application output	PNP-output	12 - 30 VDC, max. 20 mA for DC supply 12 - 24 VDC, max. 20 mA for AC supply (24/115/230 VAC)
AC only		Current load of the outputs (Sensor 12-24 VDC, Out1, Out2, Appl.-Outp.) is not allowed to exceed 65 mA in sum.

COUNTER

Counter mode Input A,B	Unidirectional; adding or subtracting; directional input; Differential operation, add / sub; Summation (Totalizing) add/add; Phase discriminator single, double or quadruple evaluation	
Control input	Reset; Gate	
Preselect modes	Absolute or trail, Range signal limit values (sign. 1 < P1, sign. 2 > P 2)	
Application input/output	Output: Preset 0-out, Direction-out, Prescaler out Input: addt. counter input add / sub, Keylock, Hold, Teach in, Reset, Set, Gate	

BATCH COUNTER

Mode	Batch counter with Preset or 2nd totalizer with Preset	
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SHIFT COUNTER

Counter mode of operation Differential counting add/sub, totalizing add/add

TACHOMETER

Measuring principle	Period (cycle) measurement (1/Tau)
Time base	1/min or 1/s
Min. frequency	1 Hz or 0,1 Hz
Limit values	2 alarms with programmable startup suppression + 1 additional upper limit value on the application output
Tachometer mode of operation	Unidirectional add oder sub; directional input Differential add / sub; totalizing add / add; Phase discriminator single, double or quadruple evaluation A / B or (A-B) / A %
Application input / output	Output: Preselect 0-out, Direction-out Input: addtl. counter input add / sub, Keylock, Hold, Teach in
Accuracy of the tachometer function	Time base: ± 30 ppm Measuring principle: Periodic measurement Measuring time: min. 0,5s / max. 1s or 10s Measuring resolution: 0,4 μ s (<30 ppm) Display resolution: 4 decimal places 1 digit = 100 ppm
Overall tolerance	= Shown resolution + tolerance of timebase = 130 ppm

TIMER

Measuring principle	Pulse-width or cycle duration measurement Start Inp. A + Stop Inp. B; Start/Stop key
Time base	Programmable in sec, min, h or hh.mm.ss
Resolution	1; 0,1; 0,01; 0,001; 0,0001
Function	Single-pulse or cumulative measurement
Application input / output	Output: Preset 0-out, Input: addtl. Run, Stop, Reset, Keylock, Hold, Teach in
Accuracy of the timer	Time base: ± 30 ppm Start / Stop-point in time: 16 μ s / 16 ms (not damped / damped) Resolution: 100 μ s = 100 ppm
Overall tolerance	= Shown resolution + tolerance of timebase = 130 ppm

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ENVIRONMENT. CON. SAFETY RULES

Multifunctional counter

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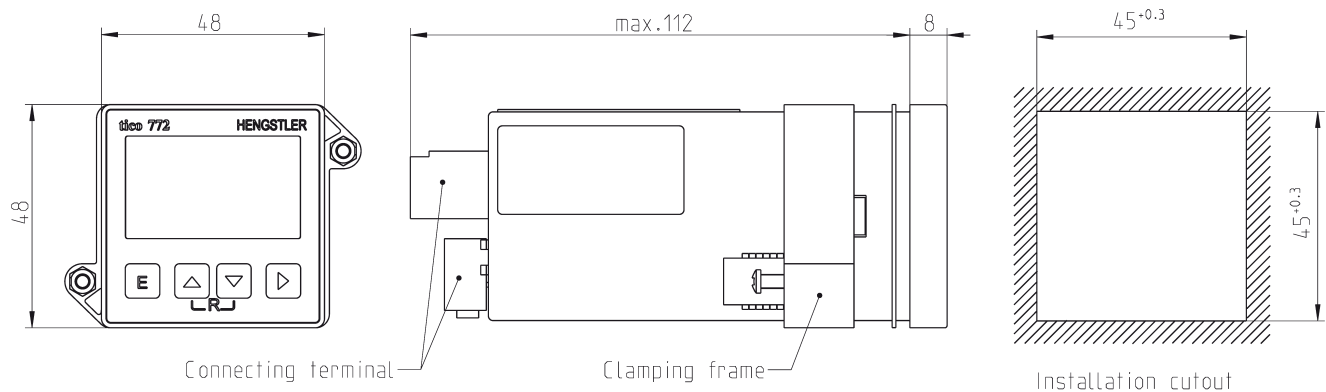
General design	EN 61 010-1 / IEC 61010-1
Protection Class	II; EN 61010-1 / IEC 61010-1
Pollution degree	V 2, EN 50178
EMC - Interference immunity	EN 61326-1 industrial environment**
EMV-Emission	EN 61326-1 Class B**
Ambient temperature	0°... 50°C EN 60 068-2-1/2
Storage temperature	- 20°... + 65°C EN 60 068-2-1/2
Climate	40°C / 93% rel. humidity class 4K4H, EN 60 068-2-78 25 - 50°C / 93% rel. humidity cyclic, EN 60 068-2-38
Degree of protection	IP 65 frontside; EN 60529 IP 20 terminals
Vibration resistance	10 m/s ² (10 ... 150 Hz); IEC 60 068-2-6
Shock resistance	100 m/s ² (18 ms); IEC 60 068-2-27
Resistance to chemicals	Frontfolie acc. to DIN 42 115-2
Approvals	UL, CSA (pending)
RoHS	compliant

MECHANICAL DATA

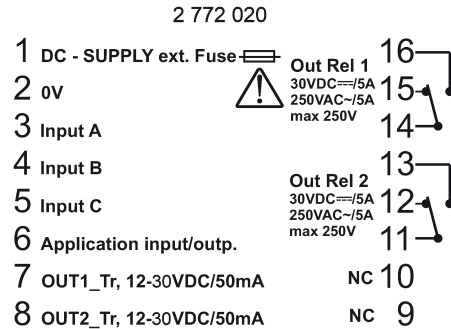
Installation	Front-panel installation with tenter (frame) Front panel thickness max. 11 mm
Dimensions	48 mm x 48 mm x 118 mm, installation depth 110 mm DIN 43700
Front-panel cutout	45 mm x 45 mm + 0,3 mm
Weight	ca. 200 g

** For cable length > 30 m, for connection to DC-supply-network and input level TTL additional protection limit necessary.

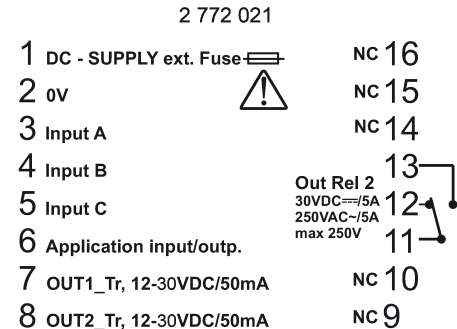
DIMENSIONED DRAWING



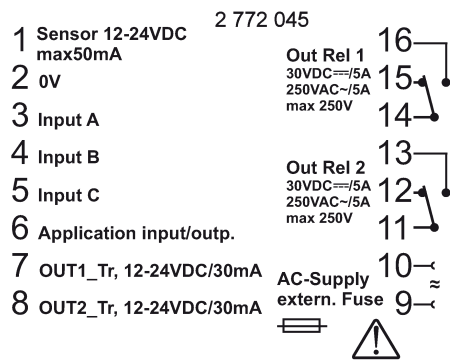
CONNECTIONS



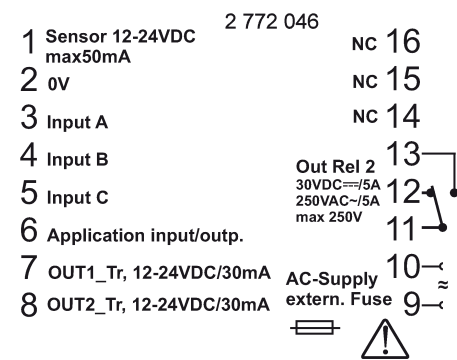
VDC 2 Relay / 2 Transistors



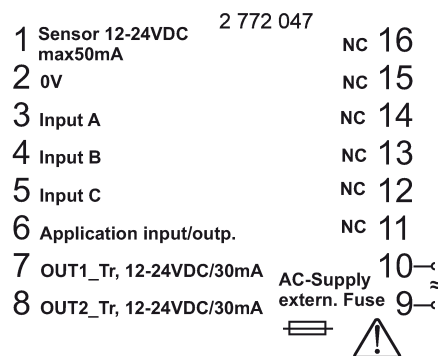
VDC 1 Relay / 2 Transistors



VAC Trafo 2 Relay / 2 Transistors



VAC Trafo 1 Relay / 2 Transistors



VAC Trafo 2 Transistors

ORDER INFORMATION

Display	Relay	12-24 VDC	24 VAC	115 VAC	230 VAC
LCD reflective	1	0 772 101	0 772 111	0 772 121	0 772 131
LCD reflective	2	0 772 102	0 772 112	0 772 122	0 772 132
Transflective positive	1	0 772 201	-	-	-
Transflective positive	2	0 772 202	-	-	-
Transmissive negative	1	0 772 301	-	-	-
Transmissive negative	2	0 772 302	-	-	-
Transmissive red	1	0 772 401	-	-	-
Transmissive red	2	0 772 402	-	-	-
Transmissive green	1	0 772 501	-	-	-
Transmissive green	2	0 772 502	-	-	-

Transflective positiv: black figures on back lighted ground

Transmissive negativ: white figures on black ground

Transmissive red: red figures on black ground

Transmissive green: green figures on black ground