

Type 903/904



Your benefit

- 2 line LCD display
- programmable as impulse counter, frequency meter or time meter with sign and zero blanking
- Power supply
90 ... 260 V AC or 10 ... 30 V DC
- approval
- Batch mode

Further product features

- Display range –199 999 ... 999 999 with zero blanking
 - easy to operate and set the preset values via 4 keys
 - Relay or optocoupler-output
 - Scaling factor 0,0001 ... 9,9999
- 903:** 1 preset value, 1 output
904: 2 preset values, 2 outputs

Technical data

Supply voltage:	10 ... 30 V DC, max. 1,1 W with reverse protect. 90 ... 260 V AC max. 4 VA
Display:	2 line LCD display, 6 digits
Count inputs:	2 count inputs, 4 input modes are programmable
Polarity of the inputs:	programmable for all inputs in common
Input resistance:	appr. 10 kΩ
Count frequency:	10 kHz via DIL-switches reducible for INP A and INP B to 30 Hz (7 kHz at input mode E3 and E4 phase discriminator), automatic repeat at 900 Hz without losing counts (500 Hz for input mode E4)
Min pulse duration of the inputs:	5 ms
Input sensitivity:	DC supply voltages: Low: 0 ... 0.2 x U _B [V DC] High: 0.6 x U _B ... 30 [V DC] AC supply voltages: Low 0 ... 4 V DC High 12 ... 30 V DC
Pulse shape:	variable (Schmitt-Trigger characteristics)
Output 1 Relay:	with potential free contact, programmable as normally opened or normally closed. switching voltage max. 250 V AC/125 V DC, switching current max. 3 A. switching current at DC min. 30 mA switching power at DC 90 W at AC max. 750 VA

or npn optocoupler:	with open collector and emitter switching power 30 V DC/15 mA
Output 2 Relay:	with potential free contact, programmable as normally opened or normally closed. switching voltage max. 250 V AC/125 V DC, switching current max. 3 A. switching current at DC min. 30 mA switching power at DC 90 W at AC max. 750 VA
or npn optocoupler:	with open collector and emitter switching power 30 V DC/15 mA

Reaction time of the inputs:	Relay: appr. 7 ms Optocoupler: appr. 1 ms
Data retention:	min. 10 years or 1x10 ⁶ memory cycles
Transmitter voltage:	24 V DC –40 %/+15 %, 100 mA at 90 ... 260 V AC with optional backlighting: 24 V DC –40 %/+15 %, 60mA at 90 ... 260 V AC
Ambient temperature:	0... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
EMC:	EN 61 000-6-4/EN 55011 class B EN 61 000-6-2
UL:	File E128604
Protection:	IP65 (front) EX version IP54
Weight:	appr. 240 g, AC version with relay

Inputs

INP A, INP B

Count inputs: The max. count frequency 30 Hz or 10 kHz is separately selectable for both of these inputs

Gate

Static gate input
no counting while this input is activated

Reset

Dynamic reset input; it is connected in parallel to the red reset key and sets the counter to zero (adding mode) or to the preset value (subtracting mode)

Key

Static keyboard lock input. While this input is activated, the front keys are locked for operations

Outputs

2 potential free outputs (903: 1 output), versions with relay or optocoupler available

Programming

The types 903 and 904 are programmed via only 4 keys on the front side. Trouble-free and intuitive operation through clear text user guidance on the display. The operating parameters are chosen from a menu. The device can be used as:

1. Pulse counter
2. Frequency meter
3. Time meter

Therefore the following functions are programmable:

Polarity of the inputs:

Positive (pnp) or negative (npn) polarity of the inputs. The selected polarity applies to all inputs.

Operating modes, impulse counter and timer:

- adding, starting at zero
- subtracting, starting at the preset value (903) or at preset value 2 (904)
- adding with automatical reset to zero at preset value (903) or preset value 2 (904)
- subtracting with automatical reset to preset value (903) or preset value (904) at zero.

Input modes, impulse counter and frequency meter:

- E1 1 count input, 1 count direction input
- E2 1 Count input up
1 Count input down
- E3 quadrature input
to connect encoders with 2 signals shifted by 90°

- E4 quadrature input with pulse doubling
to connect encoders with 2 signals shifted by 90°

Decimal places:

The display is possible with two or three decimal places

Scaling factor

For optimizing the operation with an encoder a scaling factor of 0.0001 ... 9.9999 may be programmed

Output signal

selectable as NO contact or NC contact, positive or negative timed signal (duration 0.01 ... 99.99 s)

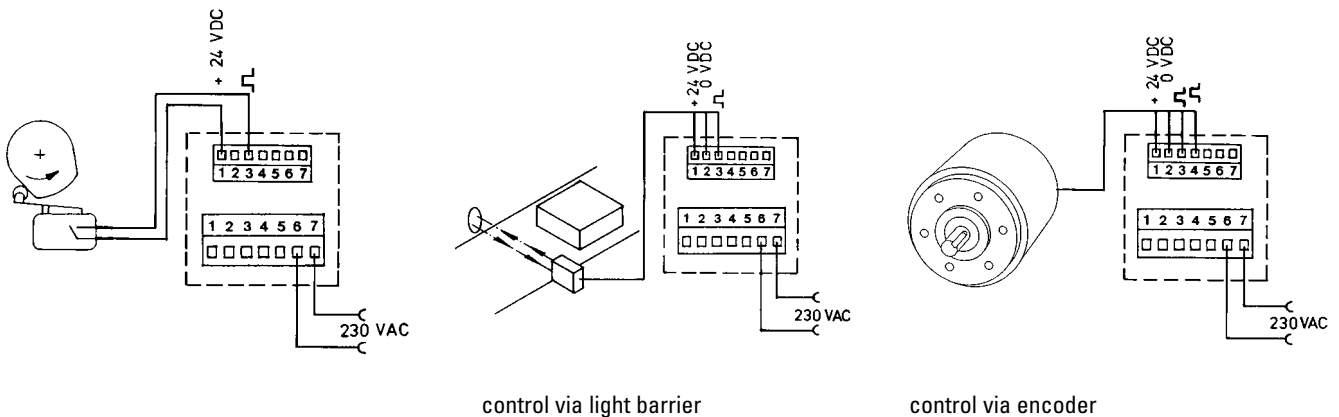
Gate time for frequency meter

selectable from 0.01 ... 99.99 s

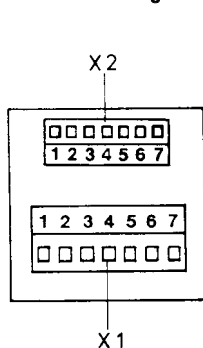
Hour meter

Timing in h, min or s, with a resolution of 0.001, 0.01, 0.1 or h:min:s.

Applications:



Connection diagram 904:



Pin connection X1:

Pin	AC version	DC version
1	Output 1 Relay collector at optocoupler output	
2	Output 1 relay emitter at optocoupler output	
3	Output 2 Relay common contact (c) emitter at optocoupler output	
4	Output 2 Relay normally open (NO)	
5	Output 2 relay normally close (NC) collector at optocoupler output	
6	Supply voltage	
7	90 ... 260 V AC	11 ... 30 V DC
	90 ... 260 V AC	0 V DC (GND)

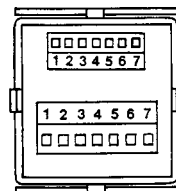
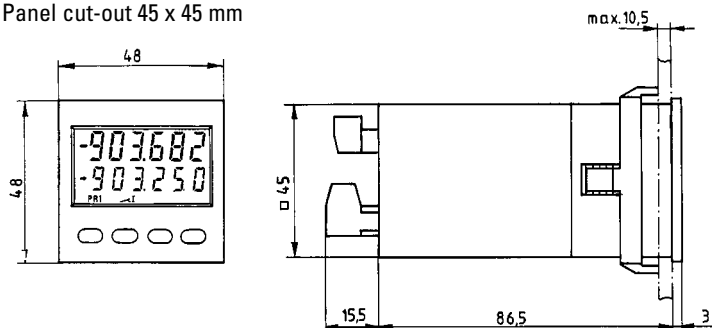
Pin connection X2:

Pin	Description	AC version	DC version
1	+24 V DC	transmitter voltage supply	n.c.
2	0 V DC (GND)	GND	n.c.
3	INP A	Count input A	
4	INP B	Count input B	
5	Reset	Reset input	
6	Gate	Gate input	
7	Key	Key locking input	

Dimensions:

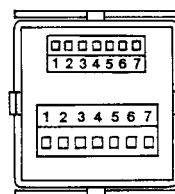
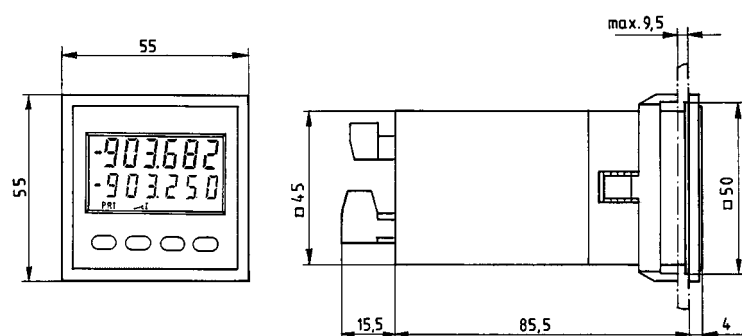
903/904

Panel cut-out 45 x 45 mm



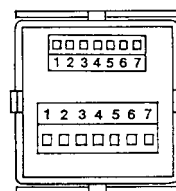
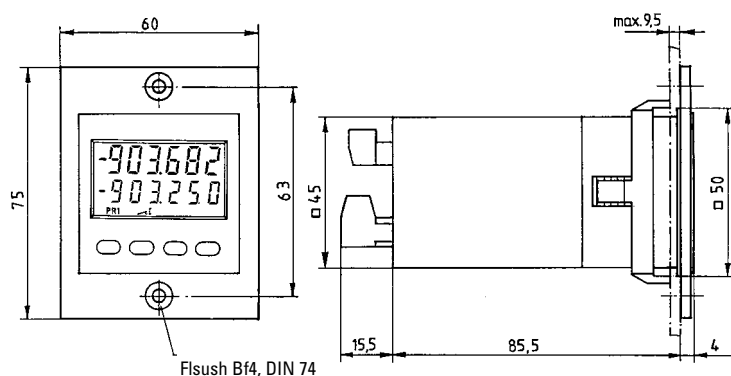
903/904 with front bezel no 2

Panel cut-out 50 x 50 mm



903/904 with front bezel no. 3

Panel cut-out 50 x 50 mm



Delivery specification::

Counter

2 lithium batteries

1 Screw terminal

1 Front frame for screw mounting

Panel cut-out 50 x 50 mm

1 Front frame for spring clip mount

Panel cut-out 50 x 50 mm

1 Spring clip

1 Template for panel cut-out

1 Operating instruction

Order code:

6.XXX.01X.XXX

Type

903 = Preset counter with one preset

904 = Preset counter with two presets

Outputs

0 = Relay

1 = Optocoupler

Options

00 = without

10 = backlit LCD

Supply voltage

0 = 90 ... 250 V AC

3 = 10 ... 30 V DC