LCD preset counters | Multifunctional – pulse, frequency, time – 1...6 presets (AC+DC) | Codix 923 / 924



The multifunction preset counters Codix 923 / 924 can be used universally. These preset pulse counters, tachometers or preset timers with up to 6 presets can solve a wide variety of control and monitoring tasks in every application.

With their two-line display in 4 different versions the counters are very easy to read and simple to programme using the clearly laid-out decade keys. Complex control tasks can be carried out using a batch count or total count function.



Multifunctional

- Counter, tachometer and timer in one device.
- Can be used a preset counter, batch counter, totalizer or position display with tracking preset.
- Presets: 923: 1, 924: 2, 924-4: 4, 924-6: 6.
- Relay or optocoupler outputs.
- Many different count modes for pulse inputs, time and frequency.
- Scalable input using multiplication and division factor
- Set value.
- Averaging, start delay (tachometer).
- Step or tracking presets (eliminate the need for reprogramming of the pre-signal).
- Multi-range supply voltage.

Fast and user-friendly

- Direct input of the presets via the front keys or via the Teach-In input.
- Fast installation thanks to plug-in screw terminals.
- Max. count frequency 65 kHz.
- Simultaneous display of the actual and of the preset value, or of the actual value and of the batch / totalizing counter.
- Annunciators for the displayed preset and for the output status.
- 3 predefined parameter settings.
- Direct entry into the programming.
- Minimal installation depth.
- 4-stage RESET modes.
- 3-stage key lockout.
- Multicolor display for improved differentiation.

Order code

6.92 X . 0 1 X X . X X X
(a) (b) (c) (d) (e) (f)

(a) *Number of presets*
3 = 1 preset
4 = 2, 4 or 6 presets

(b) *Output*
0 = relays
1 = optocouplers (only (a) = 4) [2]

(c) *LCD options*
0 = no backlighting
1 = green backlighting [1]
2 = LED look, negative, red backlighting [1]
3 = multicolor, negative red/green backlighting

(d) *Supply voltage*
0 = 100 ... 240 V AC, ±10 %
2 = 24 V AC, ±10 %
3 = 10 ... 30 V DC

(e) *Input trigger level*
0 = standard level (HTL)
A = 4 ... 30 V DC level [1]

(f) *Version*
0 = standard 923/924
B = 6 optocoupler outputs [2] 924-6 (only (b) = 1)
C = 4 relay outputs [2] 924-4 (only (b) = 0)

Delivery specification
- Preset counter
- Mounting clip
- 8 pin screw terminal
- 7 pin screw terminal
- Operating instructions

Stock types
6.923.0100.000
6.923.0100.300
6.923.0103.000
6.924.0100.300
6.924.0101.000
6.924.0102.000
6.924.0103.000
6.924.0103.300

Additional inputs, outputs or interface types on request

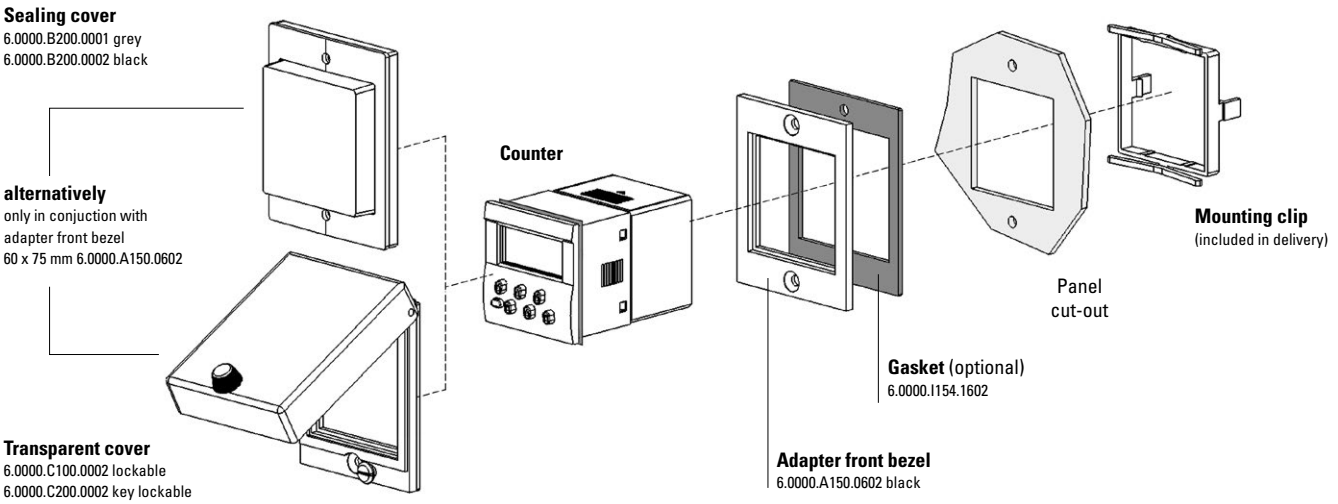
1) 24 V AC on request

2) Not possible in 24 V AC.

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LCD preset counters | Multifunctional – pulse, frequency, time – 1...6 presets (AC+DC) | Codix 923 / 924

Accessories / Mounting examples



		Type / size	Description		Order no.	suitable gasket
Adapter front bezel		**55 x 55 mm [2.17 x 2.17]**	for cut-out 50 x 50 mm [1.97 x 1.97"] or ø 50,5 mm [1.99"] to cut-out 45 x 45 mm [1.77 x 1.77"]	grey black	**6.0000.A100.1601** **6.0000.A100.1602**	**6.0000.I104.1402**
		**55 x 55 mm [2.17 x 2.17]**	for cut-out 50 x 50 mm [1.97 x 1.97"] to cut-out 45 x 45 mm [1.77 x 1.77"]	black	**6.0000.A100.0602**	**6.0000.I133.0802**
		**60 x 75 mm [2.36 x 2.95]**	for cut-out 50 x 50 mm [1.97 x 1.97"] to cut-out 45 x 45 mm [1.77 x 1.77"]	black	**6.0000.A150.0602**	**6.0000.I154.1602**
		**72 x 72 mm [2.83 x 2.83]**	for cut-out 68 x 68 mm [2.68 x 2.68"] to cut-out 45 x 45 mm [1.77 x 1.77"]	grey black Mating clip	**6.0000.A160.1901** **6.0000.A160.1902** **6.0000.S100.0002**	**6.0000.I164.1402**
		**ø 72 mm [2.83]**	for cut-out ø 60 mm [2.36"] to cut-out 45 x 45 mm [1.77 x 1.77"]	black	**6.0000.A220.2002**	–
Sealing cover IP65		**K2**	only in conjuction with adapter front bezel 60 x 75 mm 6.0000.A150.0602	transparent / grey transparent / black	**6.0000.B200.0001** **6.0000.B200.0002**	–
Transparent cover IP65		**2 Dv** (mounted on bezel)	cover lockable, for cut-out 50 x 50 [1.97 x 1.97], only in conjuction with adapter front bezel 60 x 75 mm 6.0000.A150.0602	transparent / black	**6.0000.C100.0002**	–
		**2 Dvs** (mounted on bezel)	cover key lockable, for cut-out 50 x 50 [1.97 x 1.97], only in conjuction with adapter front bezel 60 x 75 mm 6.0000.A150.0602	transparent / black	**6.0000.C200.0002**	–
Mounting frame		**cut-out 50 x 50 mm [2.36 x 2.36]**	for snap-on mounting on 35 mm [1.38"] top-hat DIN rail	chromated	**6.0000.F200.0006**	
Screw terminal (replacement part)			1 ... 8, pitch 3.81 9 ... 15 (for 923 / 924), pitch 5.08 9 ... 15 (for 924-4 / 924-6), pitch 5.08 16 ... 20 (for 924-4 / 924-6), pitch 3.81	8-pin 7-pin 7-pin 5-pin	6.0000.S140.0009 6.0000.S150.0009 6.0000.S130.0009 6.0000.S120.0009	

incl. in delivery

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LCD preset counters | **Multifunctional – pulse, frequency, time – 1...6 presets (AC+DC)** | **Codix 923 / 924**

Technical data

General technical data

Display	standard	2 line 2 x 6 digits LCD display positive green with optional backlighting
	LED look	negative red backlighting
	multicolor	upper line negative, red backlighting lower line negative, red or green backlighting (programmable)
Operating temperature		-20 °C ... +65 °C [-4 °F ... +149 °F] (non-condensing)
Storage temperature		-25 °C ... +75 °C [-13 °F ... +167 °F]
Relative humidity at +40 °C [+104 °F]		93 % (non-condensing)
Altitude		up to 2000 m [6562']

Mechanical characteristics

Protection	IP65 (front side)
Weight	approx. 125 g [4.41 oz]

Electrical characteristics

Sensor supply voltage	AC (50/60 Hz)	100 ... 240 V AC, ±10 %, max. 15 VA 24 V AC ±10 %, max. 6 VA
	DC	10 ... 30 V, max. 5.5 W
External fuse protection	100 ... 240 V AC	T 0.1 A
	24 V AC	T 0.315 A
	10 ... 30 V DC	T 0.2 A
Data retention		> 10 years, EEPROM
Input modes	pulse counters:	Count direction (cnt.dir), Difference (up.dn), Addition A+B (up.up), phase discriminator x1, x2, x4 (quad, quad x2, quad x4), Ratio (A/B), Ratio in % ((A-B)/A x100%)
	frequency meter:	A, A-B, A+B quad, A/B, (A-B)/A x 100 %
	timer:	4 Start modes: FrErun, Auto, InpA.InpB., InpB.InpB.
Sensor supply voltage	AC supply	24 V DC ±15 %, 80 mA
	DC supply	max. 80 mA, external supply voltage is connected through
Device safety	designed to	EN 61010-1, EN 61010-2-201
	protection class	2
	application area	pollution level 2

Approvals

UL compliant in accordance with	File no. E128604
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU
Low Voltage Directive	2014/35/EU

Inputs

Count inputs			A and B
Polarity of the inputs			programmable for all inputs in common NPN/PNP
Input resistance			5 kΩ
Count frequency	pulse counters		max. 55 kHz
	tachometers		max. 65 kHz (details see manual) can be damped to 30 Hz (mechanical contacts)
Control / Reset input			MPI, Lock, Gate, Reset
Min pulse duration of signal and control inputs			10 ms / 1 ms
Switching levels with AC supply	HTL level:	LOW	0 ... 4 V DC
		HIGH	12 ... 30 V DC
	4 ... 30 V DC:	LOW	0 ... 2 V DC
		HIGH	3.5 ... 30 V DC
Switching levels with DC supply	HTL level:	LOW	0 ... 0.2 x U_B
		HIGH	0.6 x U_B ... 30 V DC
	4 ... 30 V DC:	LOW	0 ... 2 V DC
		HIGH	3.5 ... 30 V DC
Pulse shape			variable, Schmitt-Trigger characteristics

Outputs

Outputs relay version (1 changeover contact with 923)

Switching voltage	max. 250 V AC / 110 V DC
Switching current	max. 3 A AC/DC min. 30 mA DC
Switching capacity	max. 750 VA / 90 W

Output 1 (Relay closing contact, programmable as normally open (NO) or normally closed (NC))

Mech. service life (switching cycles)	2×10^7
N° of switching cycles at 3 A / 250 V AC	1×10^5
N° of switching cycles at 3 A / 30 V DC	1×10^5

Output 2 (Relay with changeover contact)

Mech. service life (switching cycles)	2×10^7
N° of switching cycles at 3 A / 250 V AC	5×10^4
N° of switching cycles at 3 A / 30 V DC	5×10^4

Outputs optocoupler version

Output 1 and 2 (npn optocoupler)

switching power		30 V DC / 10 mA
	U_{CESAT} at IC = 10 mA	max. 2.0 V
	U_{CESAT} at IC = 5 mA	max. 0.4 V
Reaction time of the outputs (pulse / time)	relay	approx. 13 ms
	optocoupler	approx. 1 ms Details see instruction manual
Response time of the frequency meter		100/600 ms details see instruction manual

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LCD preset counters | **Multifunctional – pulse, frequency, time – 1...6 presets (AC+DC)** | **Codix 923 / 924**

Codix 924-4 and 924-6

The preset counters 924-4 and 924-6 vary from the standard counters 923 and 924 as follows:

- Relay version: 924-4, 4 presets, 2 additional relays
- Optocoupler version: 924-6: 6 presets, 4 additional optocoupler outputs
- No tracking presets
- Presets 1 and 4 affect the batch or total counter
- Presets 2, 3, 5 and 6 (Type: 924-6) or presets 2 and 3 (Type 924-4) affect the main counter
- Preset 2 is the main preset; it triggers the automatic reset
- Preset 2 is likewise the main preset for all further counting modes (the other presets are pre-signals)

Additional technical data Codix 924-4

Output 3	
Relay with closing contact (programmable as normally closed NC or normally open NO)	
Switching voltage	max. 125 V AC / 110 V DC
Switching current	max. 1 A AC / 1 A DC min. 1 mA AC/DC
Switching capacity	max. 62.5 VA / 30 W
Mech. service life (switching cycles)	5×10^7
N° of switching cycles at 0.5 A / 125 V AC	1×10^5
N° of switching cycles at 1 A / 30 V DC	1×10^5
Output 4	
Relay with changeover contact	
Switching voltage	max. 125 V AC / 110 V DC
Switching current	max. 1 A AC / 1 A DC min. 1 mA AC/DC
Switching capacity	max. 62.5 VA / 30 W
Mech. service life (switching cycles)	5×10^7
N° of switching cycles at 1 A / 110 V AC	1×10^5
N° of switching cycles at 1 A / 30 V DC	1×10^5
Reaction time of the outputs, Relay	< 7 ms (only impulse and time counter)
Max. count frequency	50 kHz
Operating temperature	-20 °C ... +55 °C [-4 °F ... +131 °F]

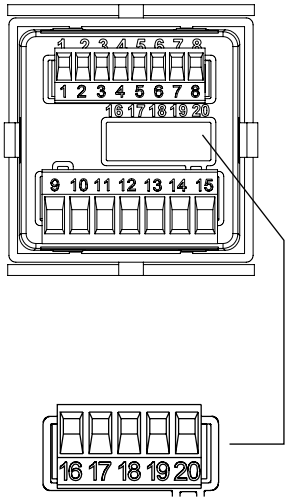
Additional technical data Codix 924-6

Output 1 ... 6		
NPN optocouplers		
Switching capacity		30 V DC / 10 mA
	U_{CESAT} at IC = 10 mA	max. 2.0 V
	U_{CESAT} at IC = 5 mA	max. 0.4 V
output 3, 4, 5 and 6 with common emitter		
Reaction time of the outputs, optocouplers (only impulse and time counter)		
	Add/Sub/	< 1 ms
	with auto repeat	< 1 ms
	A/B; (A-B)/A	< 23 ms
Max. count frequency		50 kHz

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LCD preset counters | Multifunctional – pulse, frequency, time – 1...6 presets (AC+DC) | Codix 923 / 924

Terminal assignment



Pin	Signal and control inputs
1	Sensor supply voltage AC: 24 V DC / 80 mA DC: U_B interconnected
2	GND (0 V DC)
3	INP A (Signal input A)
4	INP B (Signal input B)
5	RESET (Reset input)
6	LOCK (Key locking input)
7	GATE (Gate input)
8	MPI (User input)

Pin	Version with relays/optocouplers
9	Relay contact C. / Collector
10	Relay contact N.O. / Emitter
11	Relay contact C. / Emitter
12	Relay contact N.O. / not assigned
13	Relay contact N.C. / Collector
14	AC: 24 V AC, 100 ... 240 V AC, ±10 % N~ DC: 10 ... 30 V DC
15	AC: 24 V AC, 100 ... 240 V AC, ±10 % L~ DC: GND (0 VDC)

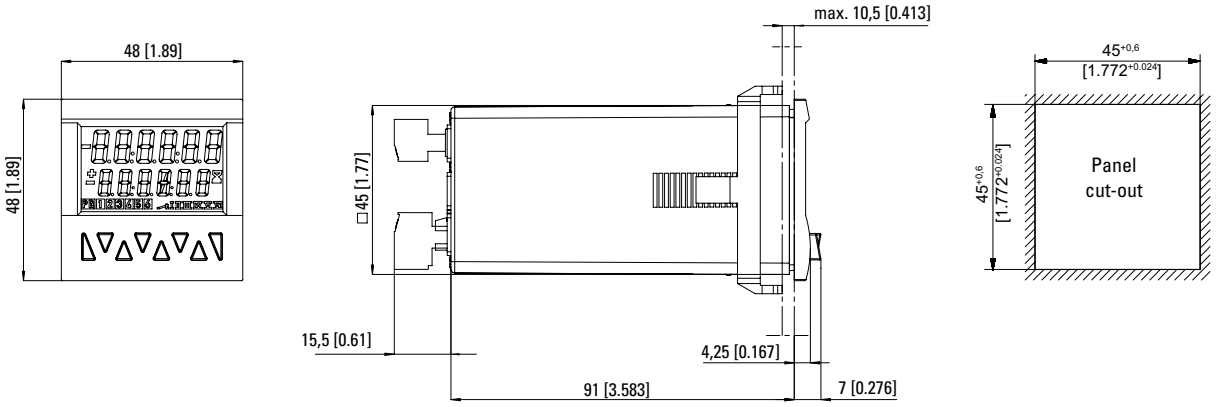
Output 1
Output 2
Supply voltage

Pin	Additional connections 924-4	
16	Relay contact	N.C.4 output 4
17	Relay contact	C.4 output 4
18	Relay contact	N.O.4 output 4
19	Relay contact	N.O.3 output 3
20	Relay contact	C.3 output 3

Pin	Additional connections 924-6	
16	Common-Emitter	output 3 to 6
17	Collector 6	output 6
18	Collector 5	output 5
19	Collector 4	output 4
20	Collector 3	output 3

Dimensions

Dimensions in mm [inch]



LCD preset counters | **Multifunctional – pulse, frequency, time – 1...6 presets (AC+DC)** | **Codix 923 / 924**

Pulse counter

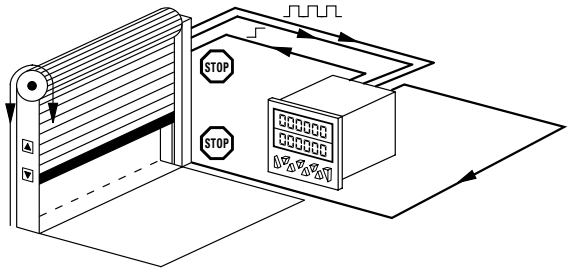
Functions / count modes:

- Count with direction mode
- Difference mode
- Quadrature mode quad/quad2/quad4
- Add, Sub, automatic reset
- 2-input adding mode A+B
- Ratio measurement A/B
- Percentage difference measurement (A-B)/A x 100 %
- Batch counting
- Totalizer (overall total)
- Multiplication and division factor (up to 99.9999)
- Set value
- Step or tracking preset

Application examples

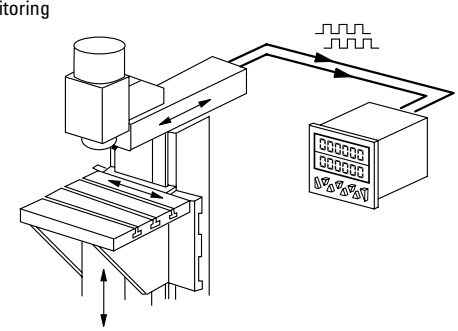
CountDir + Add

Roller shutter door with automatic shut-off



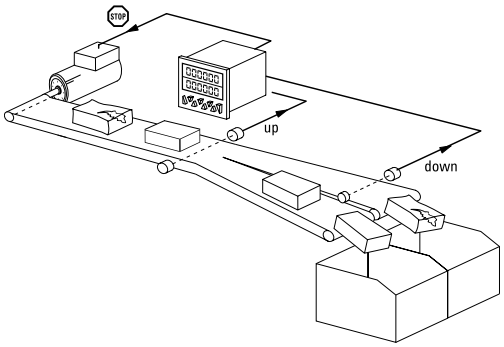
Quad + Add

Running direction and position on milling machines,
Limit switch monitoring



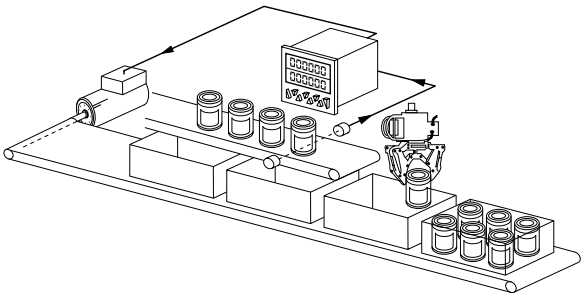
UpDown + Add

Automatic subtraction of faulty or reject parts from the total piece count



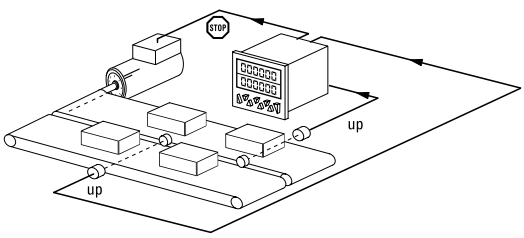
CountDir + Batch

Logging of piece numbers and packing units plus control of replenishment of packing cartons



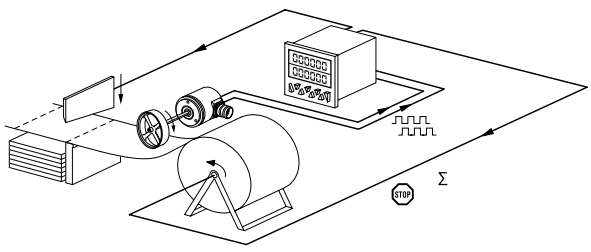
UpUp + Add

Adding up of two parallel or staggered production lines



Quad + Add tot

Cut-to-length with overall total count and control of the machine



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Frequency meter (tachometer)

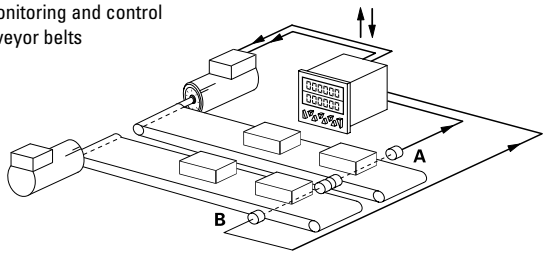
Functions / count modes:

- A
- A – B
- A + B
- A / B
- (A – B) / A x 100 % (percentage display)
- Quad (phase discriminator with recognition of direction)
- Averaging
- Start delay
- 2nd tacho input
- Gate input
- Multiplication and division factor (up to 99.9999)

Application examples

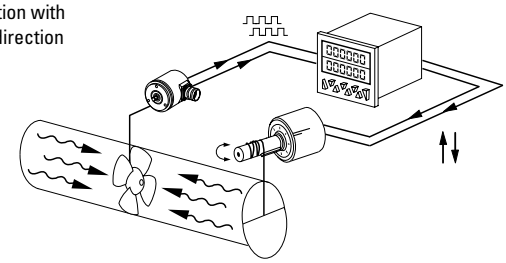
A – B

Synchro monitoring and control of two conveyor belts



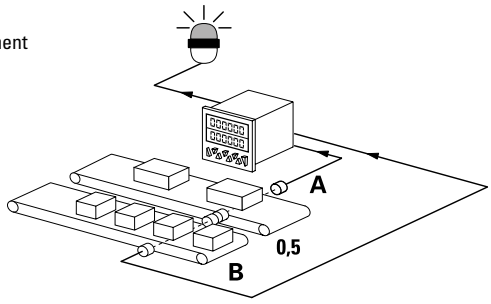
Quad

Speed regulation with indication of direction



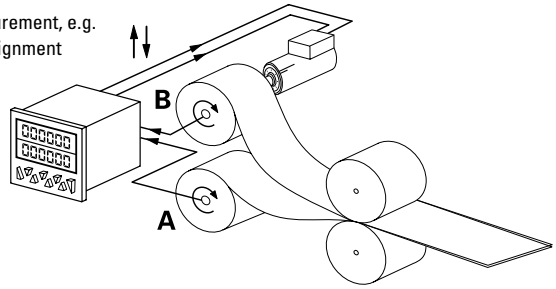
A/B

Ratio measurement



(A-B)/A [%]

Ratio measurement, e.g. for speed alignment



Time and Hours-run meter (timer)

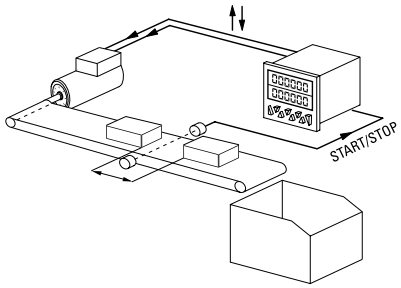
Functions / count modes:

- FrErun (control via gate input)
- Auto (start via reset, stop at preset)
- InpB.InpB (start with first edge at InpB., stop with second edge InpB.)
- InpA. InpB (start with InpA., stop with InpB.)
- Totalizer (overall total)
- Batch counting
- Set value
- Step or tracking preset

Application examples

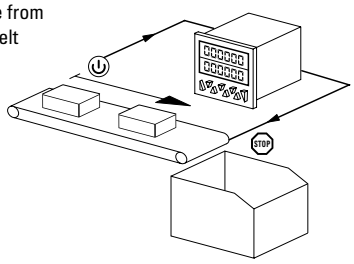
InpB. InpB

Interval measurement



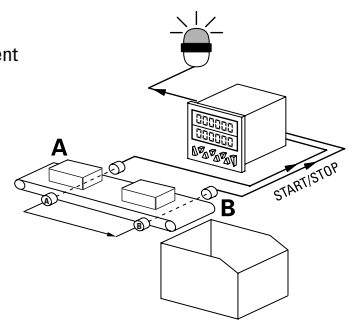
FrErun

Measurement of overall time from switching on the conveyor belt till switching off



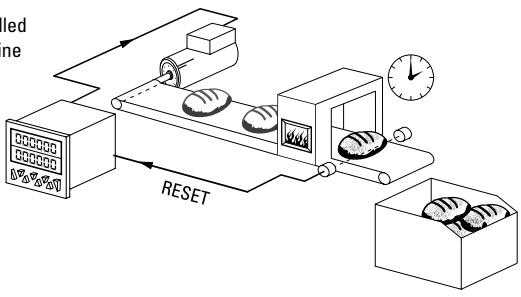
InpA. InpB

Run-time measurement



Auto

Time-controlled production line



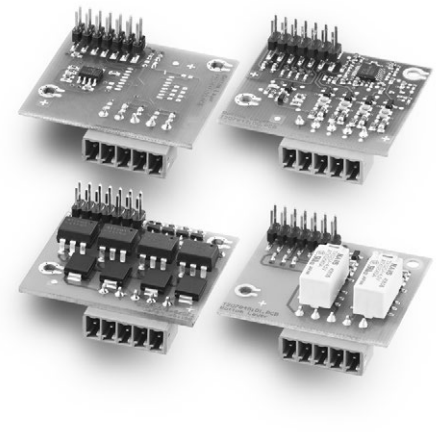
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Expandable hardware

Expandable on request via modules:

- 4 additional inputs
- Or 4 additional optocoupler outputs
- Or 2 additional relay outputs
- Or RS232/485 communications interfaces



Application examples

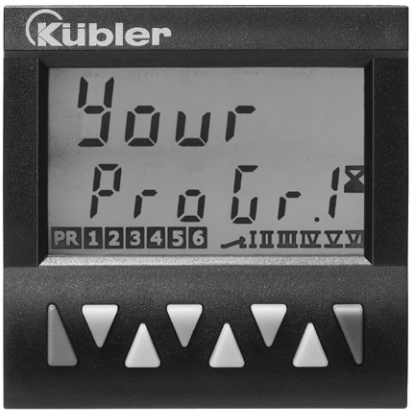
- Limit switch monitoring
- Special functions/PLC function
- Initiation of fixed program sequences
- Control of several processes
- Special protocols
- Print commands for logging

Customizable software

Individual customization of software to your application.

For example:

- Separate inputs for total counter and preset counter
- Separate scaling of input A and B
- Programmable measuring period for the tachometer
- Measurement of rotary speeds based on time
- Processing time, measurement of time based on frequency
- With the Multicolor version, the display color changes when reaching the preset, or blinking display with all versions





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