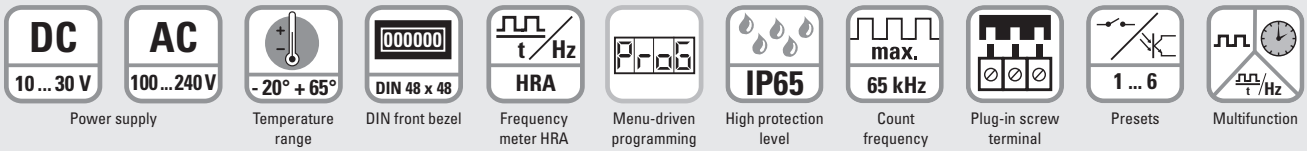
LCD preset counters | Multifunction – pulse, frequency, time – 1...6 presets (AC+DC) | Codix 923 / 924



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.



Multifunction

- Counter, tachometer and timer in one device
- Can be used a preset counter, batch counter or totaliser (overall cumulative count)
- 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 power supply

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 value and the presets, batch count or total count
- 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
- Multicolour display for improved differentiation

Order Code

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

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

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

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

d *Power supply*
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 [1] 924-6 (only **b** = 1)
C = 4 relay outputs [1] 924-4 (only **b** = 0)

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

Additional inputs, outputs or interface types on request

Stock types

6.923.0100.000	6.924.0100.000
6.923.0100.300	6.924.0100.300
6.923.0101.000	6.924.0101.000
6.923.0101.300	6.924.0101.300
6.923.0102.000	6.924.0102.000
6.923.0102.300	6.924.0102.300
6.923.0103.000	6.924.0103.000
6.923.0103.300	6.924.0103.300
	6.924.0100.00C
	6.924.0100.30C
	6.924.0113.00B
	6.924.0113.30B

1) 24 V AC on request

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Preset counters, electronic

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

Accessories	Dimensions in mm [inch]		Order-No.
Adapter front bezel, 55 x 55 [2.17 x 2.17]	For cut-out 50 x 50 [1.97 x 1.97] to cut-out 45 x 45 [1.77 x 1.77] with clip mounting for counters 48 x 48 [1.89 x 1.89]	black	**T008853**
	Gasket 58 x 58 [2.28 x 2.28], for cut-out 50.2 x 50.2 [1.98 x 1.98]		**N511004**
Adapter front bezel, 60 x 75 [2.36 x 2.95]	For cut-out 50 x 50 [1.97 x 1.97] to cut-out 45 x 45 [1.77 x 1.77] with screw mounting for counters 48 x 48 [1.89 x 1.89]	black	**T008860**
	Gasket 60 x 75 [2.36 x 2.95] for cut-out 50 x 50 [1.97 x 1.97]		**N511020**
Adapter front bezel, 72 x 72 mm [2.83 x 2.83]	For cut-out 68 x 68 [2.68 x 2.68] to cut-out 45 x 45 [1.77 x 1.77] (Mating clip T009420 must be ordered separately)	black	**T008177**
		mating clip	**T009420**
Sealing cover type K2, IP65	Suitable for front bezel 75 x 60 [2.95 x 2.36] with screw mounting	transparent/black	**G008303**
Transparent cover, IP65	For cut-out 50 x 50 [1.97 x 1.97], with screw mounting for counters with	lockable	**G008143**
	cut-out 45 x 45 [1.77 x 1.77] and front bezel 48 x 48 [1.89 x 1.89]	key lockable	**G008153**
Mounting frame with cut-out 50 x 50 [2.36 x 2.36] via separate adapter also for 45 x 45 [1.77 x 1.77]	For snap-on mounting on 35 [1.38] top-hat DIN rail, for counters 48 x 48 m [1.89 x 1.89], 53 x 53 [2.09 x 2.09] and 55 x 55 [2.17 x 2.17]	chromated	**G300003**
Replacement parts			
8-pin connector	1 ... 8, pitch 3.81		**N100498**
7-pin connector	9 ... 15 (for 923 / 924), pitch 5.08		**N100548u002**
	9 ... 15 (for 924-4 / 924-6), pitch 5.08		**N100400u002**
5-pin connector	16 ... 20, pitch 3.81		**N100399u002**

Suitable gaskets as well as further accessories can be found in the accessories section or in the accessories area of our website at: www.kuebler.com/accessories.

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
	Multicolour	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]
Humidity	at +40°C [+104°F]	RH 93% (non-condensing)
Altitude		up to 2000 m [6562']

Mechanical data

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

Electrical data

Sensor power supply	AC (50/60 Hz)	100 ... 240 V AC, ±10%, max. 9 VA 24 V AC ±10%, max. 6 VA
	DC	10 ... 30 V , max. 4.5 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 power supply	AC supply	24 V DC ±15%, 80 mA
	DC supply	max. 80 mA, external power supply is connected through
EMC	Emitted interference	EN55011 class B
	Immunity to interference	EN 61000-6-2
Device safety	Designed to	EN61010 part 1
	Protection class	2
	Application area	Pollution level 2
UL approval		File-No.: E128604

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

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 (output 1 not 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 x 10^7
N° of switching cycles at 3 A / 250 V AC		1 x 10^5
N° of switching cycles at 3 A / 30 V DC		1 x 10^5
Output 2 (Relay with changeover contact)		
Mech. service life (switching cycles)		2 x 10^7
N° of switching cycles at 3 A / 250 V AC		5 x 10^4
N° of switching cycles at 3 A / 30 V DC		5 x 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

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 x 10^7
N° of switching cycles at 0.5 A / 125 V AC	1 x 10^5
N° of switching cycles at 1 A / 30 V DC	1 x 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 x 10^7
N° of switching cycles at 1 A / 110 V AC	1x10^5
N° of switching cycles at 1 A / 30 V DC	1x10^5
Reaction time of the outputs, Relay	< 7 ms (only impulse and time counter)
Max. count frequency	50 kHz

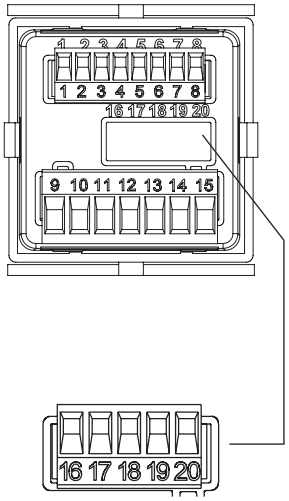
Additional technical data Codix 924-6

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

Terminal assignment



Pin	Signal and control inputs
1	Sensor power supply 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)

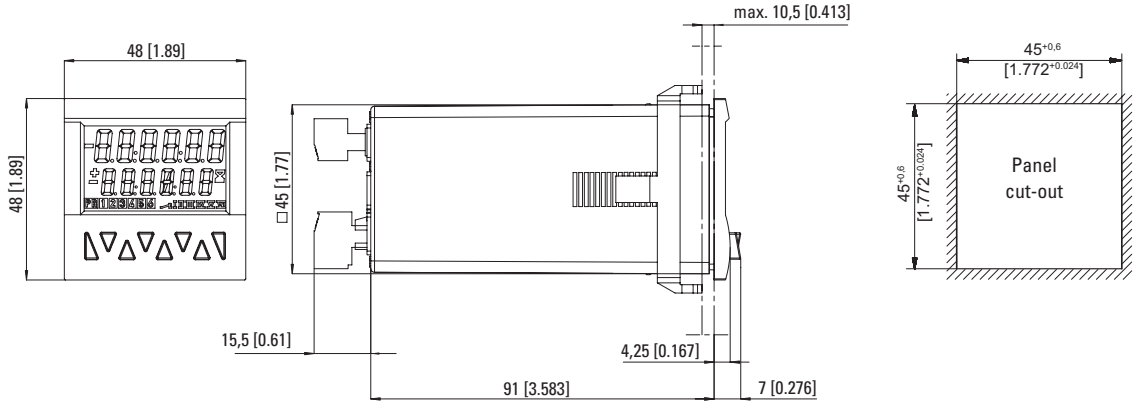
Pin	Version with relays/optocouplers	
9	Relay contact C. / Kollektor	Output 1
10	Relay contact N.O. / Emitter	
11	Relay contact C. / Emitter	Output 2
12	Relay contact N.O. / not assigned	
13	Relay contact N.C. / Collector	
14	AC: 24 V AC, 100 ... 240 V AC, ±10% N~ DC: 10 ... 30 V DC	Power supply
15	AC: 24 V AC, 100 ... 240 V AC, ±10% L~ DC: GND (0 VDC)	

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]



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

Pulse counter

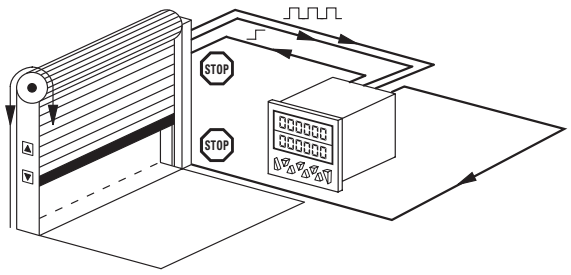
Functions / count modes:

- 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
- Totaliser (overall total)
- Multiplication and division factor (up to 99.9999)
- Set value
- Step or tracking preset

Application examples

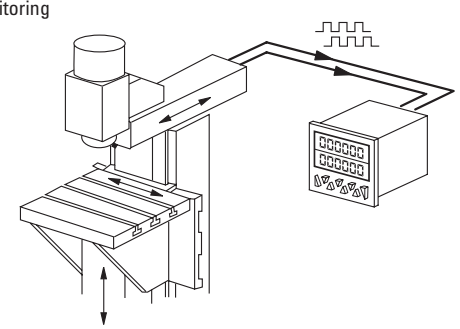
CountDir + Add

Roller shutter door with automatic shut-off



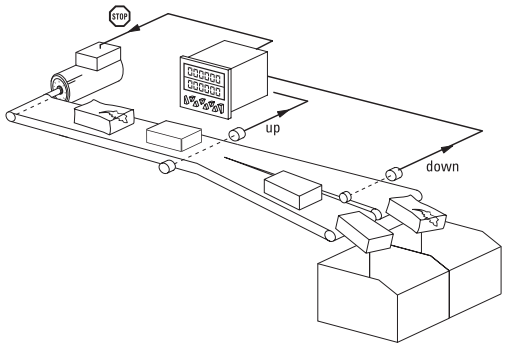
Quad + Add

Running direction and position on milling machines,
Limit switch monitoring



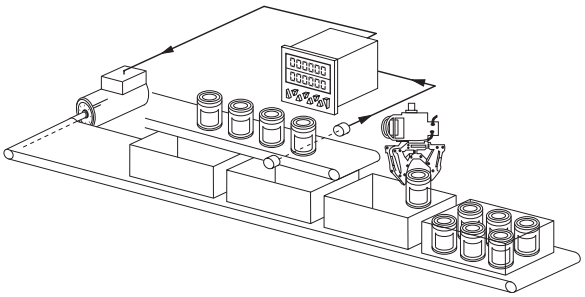
UpDown + Add

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



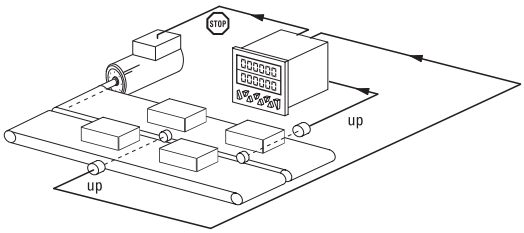
CountDir + Batch

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



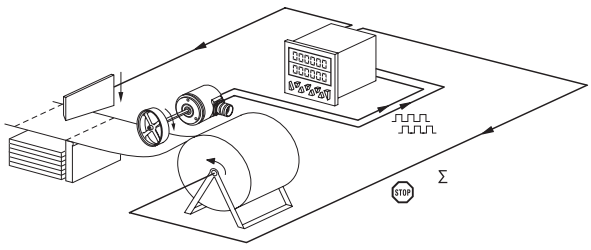
UpUp + Add

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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Preset counters, electronic

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

Frequency meter (tachometer)

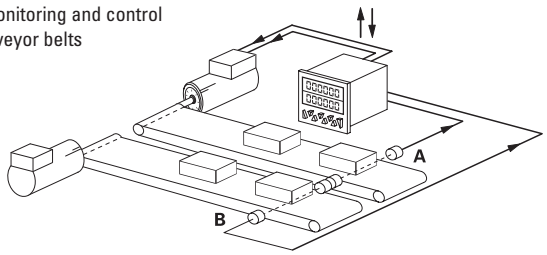
Functions / count modes:

- 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

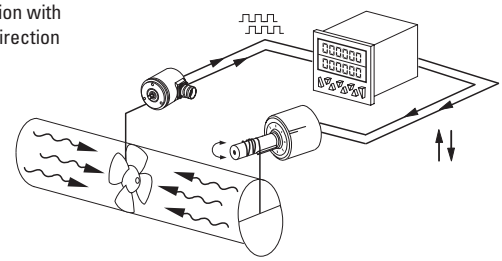
A – B

Synchro monitoring and control of two conveyor belts



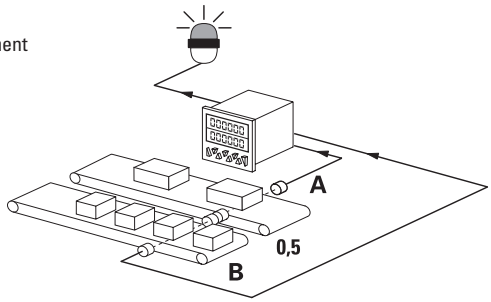
Quad

Speed regulation with indication of direction



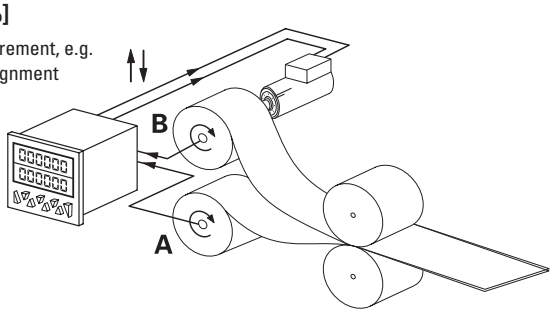
A/B

Ratio measurement



(A-B)/A [%]

Ratio measurement, e.g. for speed alignment



Time and Hours-run meter (timer)

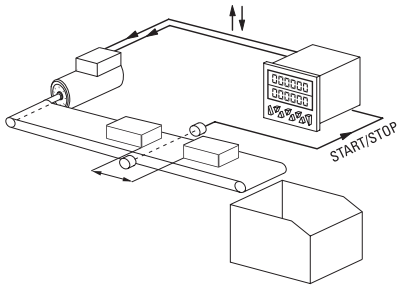
Functions / Ccount modes:

- 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.)
- Totaliser (overall total)
- Batch counting
- Set value
- Step or tracking preset

Application examples

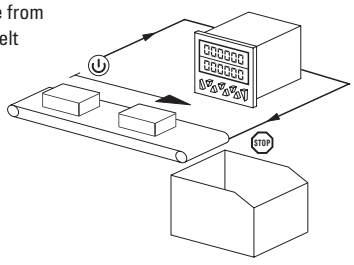
InpB. InpB

Interval measurement



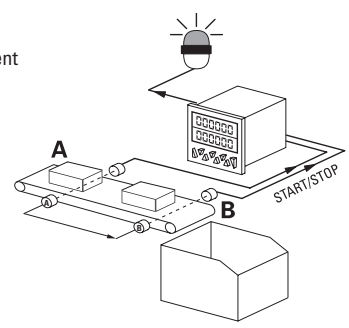
FrErun

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



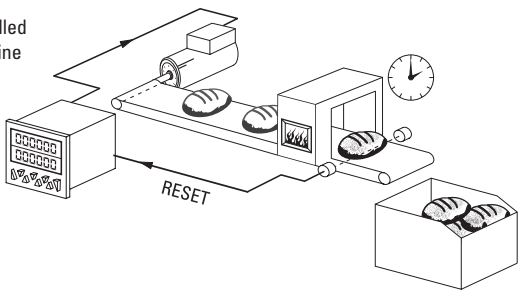
InpA. InpB

Run-time measurement



Auto

Time-controlled production line



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

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

Customisable software

Individual customisation 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 Multicolour version, the display colour changes when reaching the preset, or blinking display with all versions





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