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 laidout decade keys. Complex control tasks can be carried out using a batch count or total count function. 00. лл ึกกกไ ۵ ٥ DC AC 000000 ¥ лл ۵ t/Hz Prob max. 000 TT./HZ 10...30 V 100...240 V IP65 1...6 HRA 60 kHz 20° + 65° DIN 48 x 48 Power supply Temperature **DIN** front bezel Frequency Menu-driven High protection Count Plug-in screw Presets Multifunction neter HRA range programming level frequency terminal E5) ∇ Batch POSITION 2x6 LCD LCD display Position Batch Totaliser Multicolour display display counter

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)

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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 60 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

Number of presets

- 3 = 1 preset
- 4 = 2, 4 or 6 presets
- O Output
- 0 = relays $1 = optocouplers (only (3 = 4))^{1}$
- 1 optocoupiers (only G 4)
- G LCD options
- 0 = no backlighting
- 1 = green backlighting ¹⁾
- 2 = LED look, negative, red backlighting ¹⁾
- 3 = multicolour, negative red/green backlighting

0 = 100 ... 240 V AC, ±10% 2 = 24 V AC, ±10%

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3 = 10 ... 30 V DC

O Power supply

0 1 X X

- Input trigger level
 standard level (HTL)
- A = 4 ... 30 V DC level 1)
- Version
- 0 = standard 923/924
- B = 6 optocoupler outputs 1)
- 924-6 (only (1) = 1) C = 4 relay outputs ¹⁾ 924-4 (only (1) = 0)

- Delivery specification
- Preset counter
 Mounting clip
- 8 pin screw terminal
- 7 pin screw terminal
- Operating instructions
- 6.923.0100.000 6.924.0100.000 6 924 0100 300 6.923.0100.300 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

Stock types

Additional inputs, outputs or interface types on request





Multifunction – pulse, frequency, time – 16 presets (AC+DC) Cod	x 923 / 924
Dimensions in mm [inch]	Order-No.
with clip mounting for counters 48 x 48 [1.89 x 1.89] black	T008853 N511004
	T008860 N511020
.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 mating clip	T008177 T009420
Suitable for front bezel 75 x 60 [2.95 x 2.36] with screw mounting transparent/black	G008303
For cut-out 50 x 50 [1.97 x 1.97], with screw mounting for counters withlockablecut-out 45 x 45 [1.77 x 1.77] and front bezel 48 x 48 [1.89 x 1.89]key lockable	G008143 G008153
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] 7 x 1.77] and 55 x 55 [2.17 x 2.17] chromated	G300003
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, pitch 3.81	N100498 N100548u002 N100400u002 N100399u002
	Dimensions in mm [inch](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] Gasket 58 x 58 [2.28 x 2.28], for cut-out 50.2 x 50.2 [1.98 x 1.98]black(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] Gasket 60 x 75 [2.36 x 2.95] for cut-out 50 x 50 [1.97 x 1.97]black(.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 mating clipSuitable for front bezel 75 x 60 [2.95 x 2.36] with screw mountingtransparent/blackFor cut-out 50 x 50 [1.97 x 1.97], with screw mounting for counters with cut-out 45 x 45 [1.77 x 1.77] and front bezel 48 x 48 [1.89 x 1.89]key lockableFor 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]chromated1 8, pitch 3.81 9 15 (for 923 / 924), pitch 5.0811

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	2 line 2 x 6 digits LCD display	
Standard	P	
	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']	

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 protectio	n 90260 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),	
	Fraguanay motors	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,	
	fillior.	Auto, InpA.InpB., InpB.InpB.	
Sensor power supply	AC supply	24 V DC ±15%, 80 mA	-
Sensor hower subhis	DC supply	max, 80 mA,	
	Doodphiy	external power supply is	
		connected through	
EMC Emi	tted interference	EN55011 class B	Ī
Immunit	ty 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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Mechanical data			
Protection	IP65 (front side)		
Weight	approx. 125 g [4.41 oz]		

LCD preset counters

Multifunction – pulse, frequency, time – 1...6 presets (AC+DC)

Codix 923 / 924

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Inputs			
Count inputs			A and B
Polarity of the inputs			programmable for all inputs in common NPN/PNP
Input resistance			5 kΩ
Count frequency			max, 55 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: 4 30 V DC:	LOW HIGH LOW	0 2 V DC
		HIGH	3.5 30 V DC
Switching levels with DC supply	HTL level:	LOW HIGH	0 0.2 x U _B 0.6 x U _B 30 V DC
	4 30 V DC:	LOW HIGH	0 2 V DC 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 co normally closed (1 0	e as normally open (NO) or	
Mech. service life (switchin	ng 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 chan			
Mech. service life (switchin	ng 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	
	_{CESAT} at IC = 10 mA	max. 2.0 V	
l	U _{CESAT} at IC = 5 mA	max. 0.4 V	
Reaction time of the outputs	relay	approx. 13 ms	
(pulse / time)	optocoupler	approx. 1 ms Details see instruction manual	
Response time of the frequency	y 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

Additional technical data Codix 924-4

Output 3

Relay with closing contact (programmable as normal	
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

- 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)

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 cou			
	Add/Sub/	< 1 ms	
	with auto repeat	< 1 ms	
	A/B; (A-B)/A	< 23 ms	



Preset counters

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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	
12	Relay contact N.O. / not assigned	Output 2
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)	



Additional connections 924-4	
Relay contact	N.C.4 output 4
Relay contact	C.4 output 4
Relay contact	N.O.4 output 4
Relay contact	N.O.3 output 3
Relay contact	C.3 output 3
	924-4 Relay contact Relay contact Relay contact Relay contact

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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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



UpDown + Add

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



UpUp + Add Adding up of two parallel or staggered production lines



Quad + Add

Running direction and position on milling machines, Limit switch monitoring



CountDir + Batch

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



Quad + Add tot Cut-to-length with overall total count and control of the machine







LCD preset counters

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



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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



