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 as 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**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Number of presets</td>
</tr>
<tr>
<td>1</td>
<td>Power supply</td>
</tr>
<tr>
<td>2</td>
<td>Input trigger level</td>
</tr>
<tr>
<td>3</td>
<td>LCD options</td>
</tr>
<tr>
<td>4</td>
<td>Version</td>
</tr>
<tr>
<td>5</td>
<td>Delivery specification</td>
</tr>
<tr>
<td>6</td>
<td>Additional inputs, outputs or interface types on request</td>
</tr>
</tbody>
</table>

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

- **Output**
  - Relays (0 = relays, 1 = optocouplers (only 0 = 4))

- **LCD options**
  - No backlighting (0), green backlighting (1)
  - LED look, negative, red backlighting (2)
  - Multicolour, negative red/green backlighting (3)

- **Power supply**
  - 100 ... 240 V AC, ±10% (0)
  - 24 V AC, ±10% (2)
  - 10 ... 30 V DC (3)

- **Input trigger level**
  - Standard level (HTL) (0)
  - 4 ... 30 V DC level (A)

- **Version**
  - Standard 923/924 (0)
  - 6 optocoupler outputs (B)
  - Relay outputs (C)

- **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
    - 6.923.0101.000
    - 6.924.0101.000
    - 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
## LCD preset counters

### Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Dimensions in mm [inch]</th>
<th>Order-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter front bezel, 55 x 55 [2.17 x 2.17]</td>
<td>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]</td>
<td>T008853, N511004</td>
</tr>
<tr>
<td>Gasket 56 x 58 [2.28 x 2.28], for cut-out 50.2 x 50.2 [1.98 x 1.98]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapter front bezel, 60 x 75 [2.36 x 2.95]</td>
<td>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]</td>
<td>T008860, N511020</td>
</tr>
<tr>
<td>Gasket 60 x 75 [2.36 x 2.95] for cut-out 50 x 50 [1.97 x 1.97]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapter front bezel, 72 x 72 mm [2.83 x 2.83]</td>
<td>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)</td>
<td>T008177, T009420</td>
</tr>
</tbody>
</table>

### 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 cut-out 45 x 45 [1.77 x 1.77] and front bezel 48 x 48 [1.89 x 1.89]: lockable, key lockable
- G008143, G008153

### Mounting frame

- Suitable for snap-on mounting on 35 [1.38] top-hat DIN rail, for counters 48 x 48 [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
- **7-pin connector**: 9...15 (for 923 / 924), pitch 5.08
- **9...15 (for 924-4 / 924-6)**, pitch 5.08
- **16...20**, pitch 3.81

- **Adapter front bezel**, 55 x 55 [2.17 x 2.17] for counters 48 x 48 [1.89 x 1.89]
- **55 x 55 [2.17 x 2.17]**

- **Adapter front bezel**, 60 x 75 [2.36 x 2.95] for counters 48 x 48 [1.89 x 1.89]
- **60 x 75 [2.36 x 2.95]**

- **Adapter front bezel**, 72 x 72 mm [2.83 x 2.83] for counters 48 x 48 [1.89 x 1.89]
- **72 x 72 mm [2.83 x 2.83]**

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 positive green with optional backlighting.
- **LED Look**: negative red backlighting 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
  - DC 24 V AC ±10%, max. 6 VA
  - 10 ... 30 V DC, 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 Protection class 2
  - Application area Pollution level 2

- **UL approval**: File-No.: E128604
### Preset counters, electronic

#### LCD preset counters

**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 (details see manual) can be damped to 30 Hz (mechanical contacts)
- Tachometers: max. 85 kHz

**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

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

#### Codix 923 / 924

### Additional technical data Codix 924-4

<table>
<thead>
<tr>
<th>Output 3</th>
<th>Relay with closing contact (programmable as normally closed NC or normally open NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Switching voltage max. 125 V AC / 110 V DC</td>
</tr>
<tr>
<td></td>
<td>Switching current max. 1 A AC / 1 A DC</td>
</tr>
<tr>
<td></td>
<td>Switching capacity max. 62.5 VA / 30 W</td>
</tr>
<tr>
<td></td>
<td>Mech. service life (switching cycles) 5 x 10⁷</td>
</tr>
<tr>
<td></td>
<td>N° of switching cycles at 0.5 A / 125 V AC 1 x 10⁴</td>
</tr>
<tr>
<td></td>
<td>N° of switching cycles at 1 A / 30 V DC 1 x 10⁴</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output 4</th>
<th>Relay with changeover contact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Switching voltage max. 125 V AC / 110 V DC</td>
</tr>
<tr>
<td></td>
<td>Switching current max. 1 A AC / 1 A DC</td>
</tr>
<tr>
<td></td>
<td>Switching capacity max. 62.5 VA / 30 W</td>
</tr>
<tr>
<td></td>
<td>Mech. service life (switching cycles) 5 x 10⁷</td>
</tr>
<tr>
<td></td>
<td>N° of switching cycles at 0.5 A / 110 V AC 1 x 10⁴</td>
</tr>
<tr>
<td></td>
<td>N° of switching cycles at 1 A / 30 V DC 1 x 10⁴</td>
</tr>
</tbody>
</table>

**Reaction time of the outputs, Relay**
- < 7 ms (only impulse and time counter)

**Max. count frequency**
- 50 kHz

### Additional technical data Codix 924-6

<table>
<thead>
<tr>
<th>Output 1...6</th>
<th>NPN optocouplers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Switching capacity U_\text{CESAT} at IC = 10 mA max. 30 V DC / 10 mA</td>
</tr>
<tr>
<td></td>
<td>U_\text{CESAT} at IC = 5 mA max. 2.0 V / 0.4 V</td>
</tr>
</tbody>
</table>

**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

#### 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)
Preset counters, electronic

**Terminal assignment**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal and control inputs</th>
<th>Pin</th>
<th>Version with relays/optocouplers</th>
</tr>
</thead>
</table>
| 1   | Sensor power supply  
AC: 24 V DC / 80 mA  
DC: $U_b$ interconnected | 9   | Relay contact C. / Kollektor                      |
| 2   | GND (0 V DC)                                                    | 10  | Relay contact N.O. / Emitter                     |
| 3   | INP A (Signal input A)                                          | 11  | Relay contact C. / Emitter                       |
| 4   | INP B (Signal input B)                                          | 12  | Relay contact N.O. / not assigned                |
| 5   | RESET (Reset input)                                             | 13  | Relay contact N.C. / Collector                    |
| 6   | LOCK (Key locking input)                                        | 14  | AC: 24 V AC, 100... 240 V AC, ±10% N–DC: 10...30 V DC |
| 7   | GATE (Gate input)                                               | 15  | AC: 24 V AC, 100... 240 V AC, ±10% L–DC: GND (0 VDC) |
| 8   | MPI (User input)                                                |     |                                                  |

**Additional connections**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Additional connections 924-4</th>
<th>Pin</th>
<th>Additional connections 924-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Relay contact N.C. output 4</td>
<td>16</td>
<td>Common-Emitter output 3 to 6</td>
</tr>
<tr>
<td>17</td>
<td>Relay contact C.4 output 4</td>
<td>17</td>
<td>Collector 6 output 6</td>
</tr>
<tr>
<td>18</td>
<td>Relay contact N.O. output 4</td>
<td>18</td>
<td>Collector 5 output 5</td>
</tr>
<tr>
<td>19</td>
<td>Relay contact N.O.3 output 3</td>
<td>19</td>
<td>Collector 4 output 4</td>
</tr>
<tr>
<td>20</td>
<td>Relay contact C.3 output 3</td>
<td>20</td>
<td>Collector 3 output 3</td>
</tr>
</tbody>
</table>

**Dimensions**

Dimensions in mm [inch]

- $91$ [3.583]
- $4,25$ [0.167]
- $7$ [0.276]
- $45$ [1.772]
- $15,5$ [0.61]
- $48$ [1.89]
- $48$ [1.89]
- $45$ [1.77]
- $15,5$ [0.61]

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Preset counters, electronic

<table>
<thead>
<tr>
<th>LCD preset counters</th>
<th>Multifunction – pulse, frequency, time – 1...6 presets (AC+DC)</th>
<th>Codix 923 / 924</th>
</tr>
</thead>
</table>

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 \((A-B)/A \times 100\%\)
- 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
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 99.999)

**Application examples**

**A – B**

Synchro monitoring and control of two conveyor belts

**Quad**

Speed regulation with indication of direction

**A/B**

Ratio measurement

**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

**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
- Stop or tracking preset

**Application examples**

**InpA. InpB**

Run-time measurement

**Auto**

Time-controlled production line
Preset counters, electronic

**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