Service pulse counters | IO-Link | Codix 144



The Codix 144 voltage-supplied service pulse counter can be used as a simple pulse counter, service counter and/or batch counter. Thanks to the adjustable pre-warning and signaling via the traffic light function, the display is ideal for monitoring service intervals.

The user also has a large number of adjustable parameters and modes at their disposal, which can be parameterized via the IO-Link interface. This offers a wide range of options for solving control and monitoring tasks in any application.

Traffic light function



RoHS IO-Link



Features and benefits

- **IO-Link interface**
  - For easy integration into Industry 4.0 / IIoT networks.
  - Simple parameterization via IO-Link.
  - Ideal for retrofit applications.
- **User-friendly**
  - 7-digit multicolor LCD display for optimum readability.
  - Flashing text message in the display (service or pre-service).
  - Signalization via traffic light function (green, yellow, red) when the set limit values are reached.
  - Reset button with multiple function can be activated via separate input.
  - Scalable display with multiplication and division factor to display corresponding units.
- **Functional**
  - Monitoring of service intervals with adjustable advance warning.
  - As a simple pulse counter, service counter and/or batch counter.
  - Various counting modes (differential, totalizing or counting direction detection).
  - Fast or damped PNP/NPN control.
  - Two separate inputs and one transistor output.
  - Manual or electrical reset.
  - Freely programmable set value.
  - Storage of values in EEPROM.

Order code

6.144.	011	.3 (a)	0	8 (b)

(a) *Supply voltage*
3 = 24 V DC

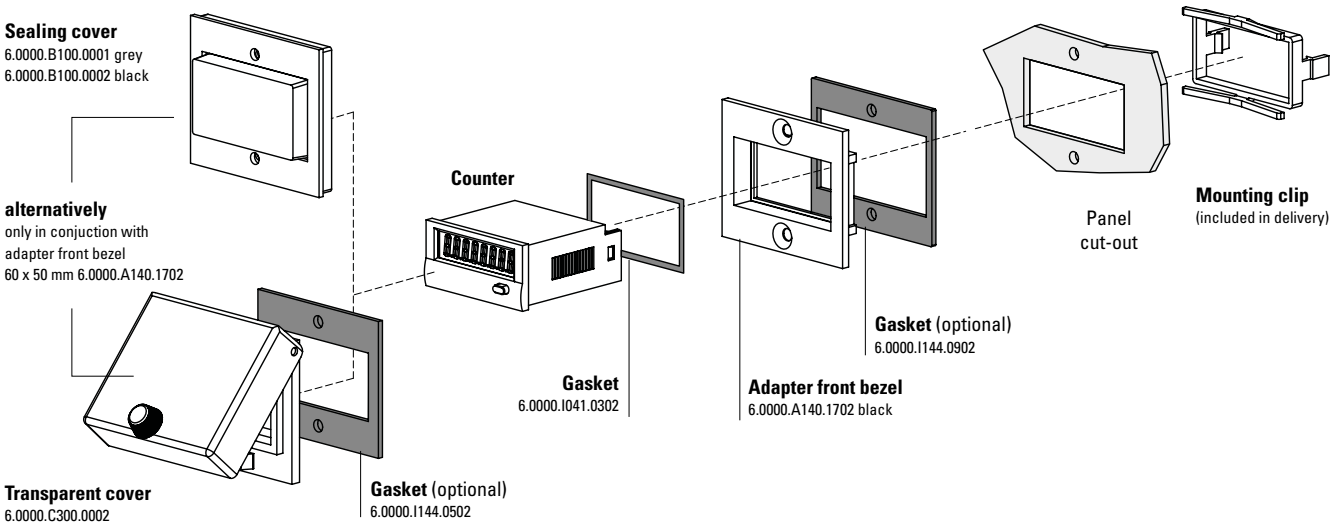
(b) *Interface*
8 = IO-Link

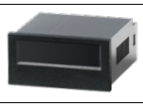
Delivery specification
- Counter
- Mounting clip
- Gaskets
- Reference to the operating instructions, multilingual

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Service pulse counters | IO-Link | Codix 144

Accessories / Mounting examples



		Type / size	Description		Order no.	suitable gasket
Adapter front bezel		**53 x 28 mm [2.09 x 1.10“]**	for cut-out 50 x 25 mm [1.97 x 0.98“] to cut-out 45 x 22.2 mm [1.77 x 0.94“]	black anthracite	**6.0000.A080.0502** **6.0000.A080.0503**	**6.0000.I082.0502**
		**56 x 40 mm [2.20 x 1.57“]**	for cut-out 50 x 25 mm [1.97 x 0.98“] to cut-out 45 x 22.2 mm [1.77 x 0.94“] screw mounting	black anthracite	**6.0000.A110.0502** **6.0000.A110.0503**	**6.0000.I113.0502**
		**72 x 36 mm [2.83 x 1.42“]**	for cut-out 68 x 33 mm [2.68 x 1.30“] to cut-out 45 x 22.2 mm [1.77 x 0.94“]	black and silver anodised as set	**6.0000.A210.1802**	–
		**60 x 50 mm [2.36 x 1.97“]**	for cut-out 54 x 29 mm [2.13 x 1.14“] to cut-out 45 x 22.2 mm [1.77 x 0.94“] screw mounting	black	**6.0000.A140.1702**	**6.0000.I144.0902**
		**48 x 48 mm [1.89 x 1.89“]**	for cut-out 45 x 45 mm [1.77 x 1.77“] to cut-out 45 x 22.2 mm [1.77 x 0.94“]	black	**6.0000.A040.0402**	–
Sealing cover IP65		**K1**	only in conjuction with adapter front bezel 60 x 50 mm 6.0000.A140.1702	transparent / grey transparent / black	**6.0000.B100.0001** **6.0000.B100.0002**	–
Transparent cover IP65		**1 Dv** (mounted on bezel)	cover lockable, for cut-out 54 x 29 mm [2.13 x 1.14“], only in conjuction with adapter front bezel 60 x 50 mm 6.0000.A140.1702	transparent / black	**6.0000.C300.0002**	**6.0000.I144.0502**
Gasket counter			48 x 24 mm (for installation in adapter front bezel) 49 x 25 mm		**6.0000.I041.0302** 6.0000.I063.0302	
Mounting frame		**cut-out 50 x 25 mm [1.97 x 0.98“]**	via adapter 6.0000.A080.0503 for snap-on mounting on 35 mm [1.38“] top-hat DIN rail	chromated	**6.0000.F300.0006**	–
Enclosure blind		**48 x 24 mm [1.89 x 0.94“]**	for cut-out 45 x 22.2 mm [1.77 x 0.94“] and cut-out 50 x 25 mm [1.97 x 0.98“]	anthracite	**6.0000.H100.0003**	–

incl. in delivery

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Service pulse counters	IO-Link	Codix 144

Accessories			Order no.
IO-Link Master USB 	For parameterizing device settings via FDT/IODD communication. USB interface for easy connection to a PC and for power supply.		**IOL1A. 1K1341.ZZ1UU1**
IO-Link Master 	The IO-Link masters from Kübler are available with the Ethernet/IP, EtherCAT and PROFINET protocols. Versions with 4 or 8 ports in Class A and Class B are available from stock. Existing field devices that send classic switching signals can also be operated per port in SIO mode.	**4 Ports Class A** Ethernet/IP EtherCAT PROFINET **4 Ports Class A** **+ 4 Ports Class B** Ethernet/IP EtherCAT PROFINET	 **IOL4A.124341.1222A1** **IOL4A.124341.1222B1** **IOL4A.124341.1222C1** **IOL4A4B.1L8341.1L21A1** **IOL4A4B.1L8341.1L21B1** **IOL4A4B.1L8341.1L21C1**

Cables and connectors		Order no.
Preassembled cables	M12 male connector with external thread, 4-pin, A-coded, straight single ended 2 m [6.56'] PUR cable	**05.00.60H1.6411.002M**

Further Kübler accessories can be found at: kuebler.com/accessories
Further Kübler cables and connectors can be found at: kuebler.com/connection-technology

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Service pulse counters | IO-Link | Codix 144

Technical data

Electrical characteristics

Display	LCD, 7 digits, 8 mm [0.32“] high Overflow and underflow are displayed
Counting range	-999999 up to 9999999
Reset	manual and electric
Supply voltage	24 V DC
Current consumption max. (no load)	33 mA
Number of presets	2
Backlighting	RGB, predefined set of colors
Start delay	50 ms
Data backup	EEPROM

Mechanical characteristics

Weight		40 g
Housing	material color	PC (polycarbonate) dark gray Ral 7021
Mounting type		panel mounting
Connections		screw terminals, 8-pin
Core cross-section max.		2.5 mm^2
Protection	front side rear side	IP65 IP20
Operating temperature		-20 °C ... +65 °C [-4 °F ... +149 °F]
Storage temperature		-25 °C ... +75 °C [-13 °F ... +167 °F]
Relative humidity		< 85 % (non-condensing)
Vibration resistance acc. to EN 60068-2-6		10 ... 55 Hz / 1 mm / 30 min
Shock resistance acc. to EN 60068-2-27		100 G: 2 ms 10 G: 6 ms

Approvals

CE compliant in accordance with

EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

Interface characteristics IO-Link

Communication mode	COM 2 (38.4 kBaud)
IO-Link revision	1.1
Min. process cycle time	54.4 ms

Inputs / Count inputs

Polarity of the inputs		PNP / NPN; (parameterizable)
Number of inputs		2
Input resistance		10 kOhm
Counting frequency max.		25 kHz max, parameterized attenuation filter, suitable for use with mechanical contacts
Activation input for reset button		Static NPN input
Minimum pulse duration of the reset input		20 ms
Switching level	LOW HIGH	0 ... 2 V DC 3.5 ... 30 V DC
Switching threshold		ca. 2.7 V DC

Outputs

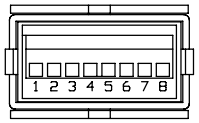
Number of outputs	1
Output function	N/O contact / N/C contact (parameterizable)
Type of exit	NPN transistor output, Open Collector

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Service pulse counters | IO-Link | Codix 144

Terminal assignment

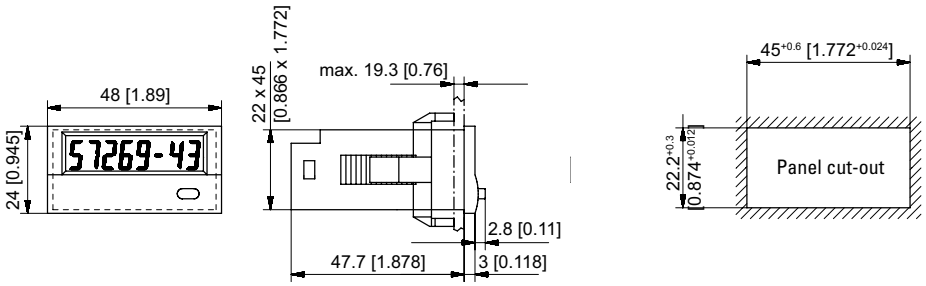
Connection terminal, 8-pin, screw connection								
Function:	IO-Link / supply voltage			Inputs				Output
Pin:	1	2	3	4	5	6	7	8
Signal:	L+	L-	C/Q	0 V (GND)	Input A	Input B	Reset Manual Enable	Out (Collector)



L+ : Supply voltage +V DC
L- : Supply voltage ground 0 V (GND)
C/Q : IO-Link communication

Dimensions

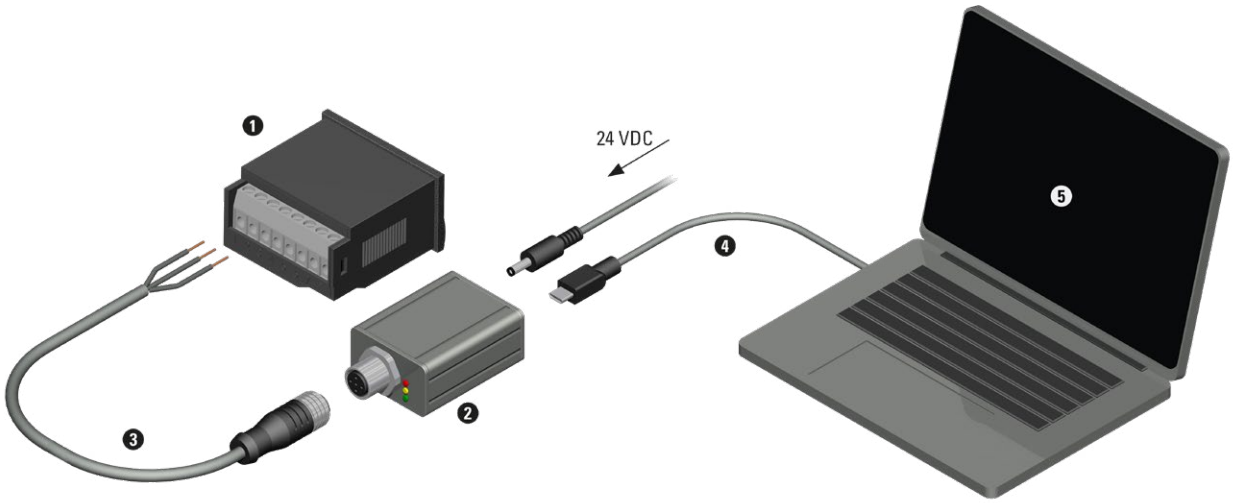
Dimensions in mm [inch]



Service pulse counters | **IO-Link** | **Codix 144**

Technology in detail

Individual parameterization via FDT/IODD with IO-Link Master USB



Connection

The Codix 144 service pulse counter ❶ is connected to the IO-Link Master USB ❷ via an adapter cablel ❸ and connected to the PC ❺ via the USB interface ❹ . The device parameters can be set using appropriate software (e.g. PACTware).

Setting options

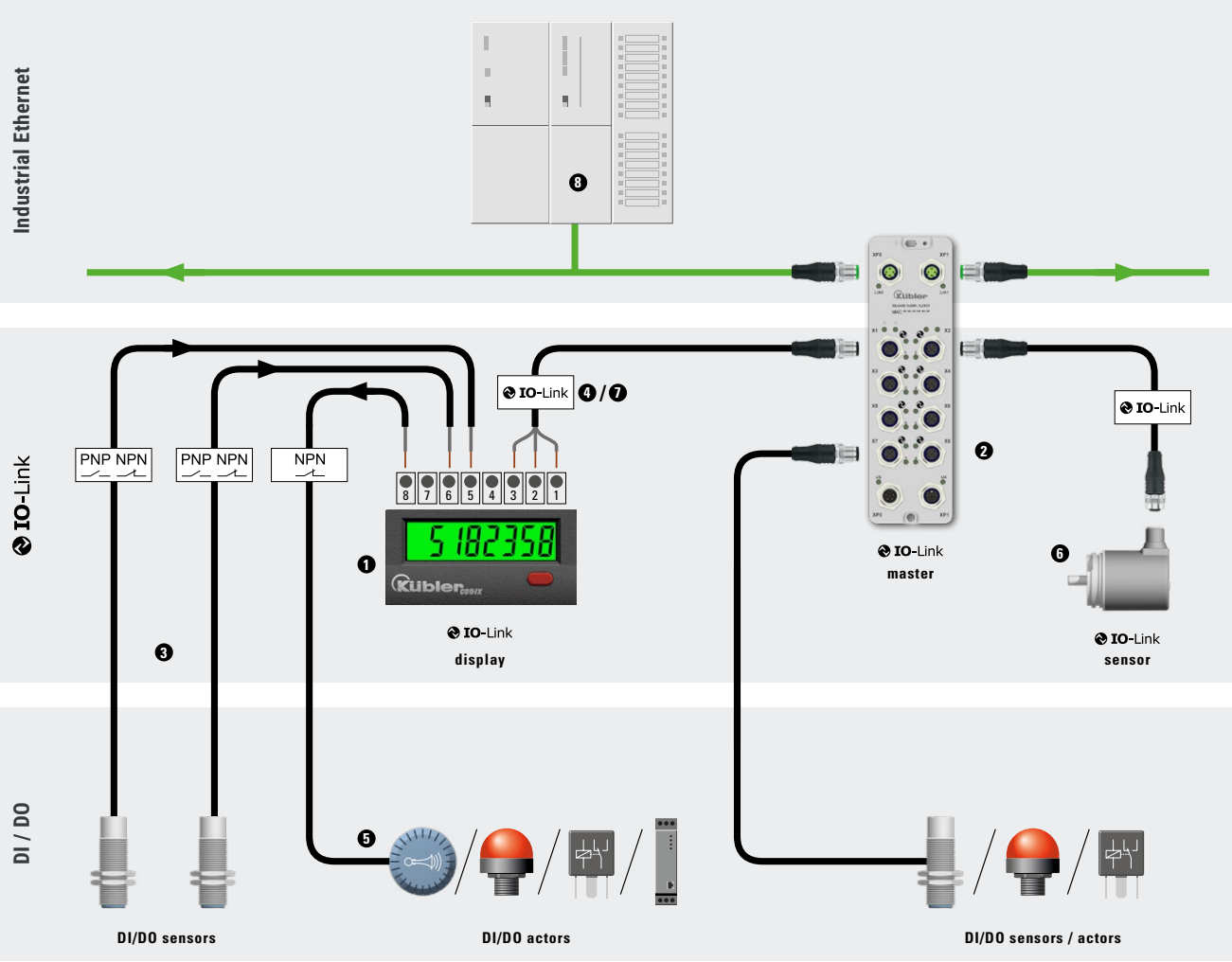
Operating mode	Differential, totalizing, counting direction or ratio measurement
Source of the process input data	Main counter, batch counter, input voltage, ...
Main counter / Batch counter	Set the value for the main counter/batch counter or reset the current value
Inputs	Set polarity (PNP/NPN) and filter of the inputs
Scaling	Scaling of the main counter via decimal point, factor or divisor
Display menu	Select the source of supply for the display as well as the backlight and refresh rate of the display
Pre-selection menu	Set values for pre-warning / warning with optional color change
Output menu	Select output mode, output delay and normally closed or normally open function
Further setting options	Many other parameters can also be selected

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Service pulse counters | IO-Link | Codix 144

Application options

In the IO-Link network



Structure / Function

The Codix 144 service pulse counter ❶ has an IO-Link interface that enables it to be used in the IO-Link network and thus connected to an IO-Link master ❷.
The device can record and evaluate PNP/NPN pulses via the two separate inputs ❸ and transmit the processed data to the IO-Link master (Process-Data-Input ❹).
The integrated transistor output can control an actuator such as a horn, light, relay or an IO module ❺ when a preset preset is reached.
With the "Process-Data-Output" function, data that comes from an IO-Link sensor ❻ via the IO-Link master, for example, can be transmitted to the display and visualized ❼.
The counter is parameterized during operation via the controller ❽.

Benefits

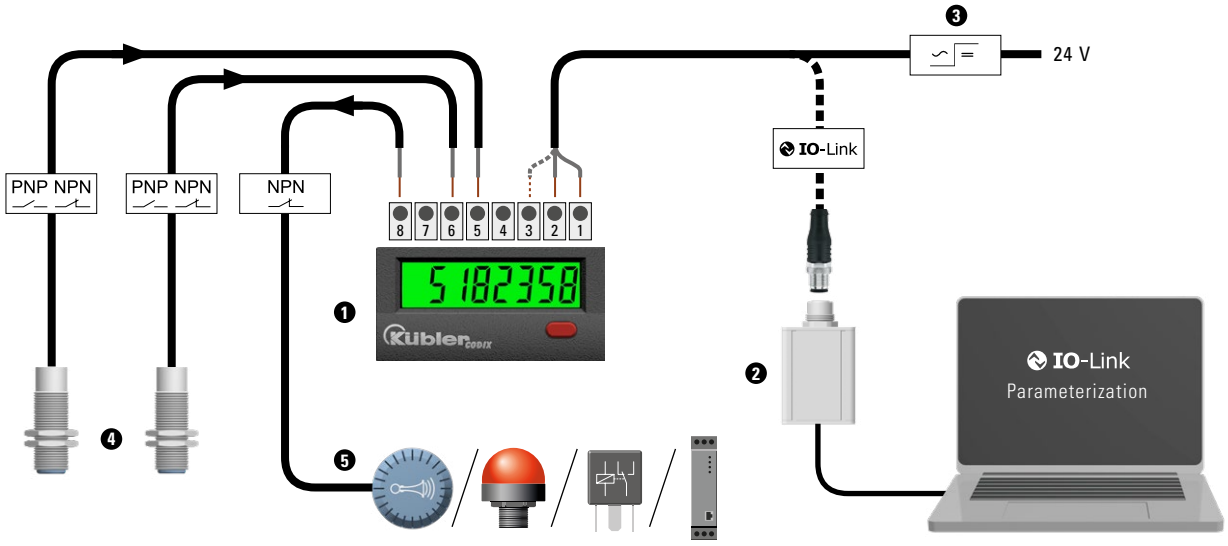
- Decentralized unit with evaluation and display "on site"
- Programmed modes for individual evaluation of the input data
- Use as a service device with visual warning and/or pre-warning
- Integration of two switching inputs and one switching output in the IO-Link network
- Cost-effective network solution (3 connections for one IO-Link port on the master)

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Service pulse counters | IO-Link | Codix 144

Application options

Stand-alone solution / parameterizable via IO-Link



Structure / Function

The Codix 144 service pulse counter ❶ with IO-Link interface can be connected and parameterized directly to a PC via the IO-Link Master USB ❷. As a stand-alone solution, the counter is supplied with an external voltage ❸ and the device can record and evaluate PNP/NPN pulses via the two separate inputs ❹.
The transistor output can control an actuator such as a horn, light, relay or an IO module ❺ when a preset preset is reached.

Benefits

- Simple and intuitive parameterization via the IO-Link interface
- Use as a service device with visual warning and/or pre-warning
- Pre-programmed modes for individual evaluation of the input data
- Wide range of possible applications

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