Zero Pressure Accumulation made easy

Product description

Just as traffic lights handle the flow of cars in big cities, SICK ZoneControl solutions control product traffic on a conveyor without any other PLC or other external control. SICK ZoneControl is made up of three product families designed to control this traffic, known as Zero Pressure Accumulation (ZPA). Installation of ZoneControl solutions – via plug and play – is incredibly simple: daisy chain the ZoneControl products to one another, install the sensor, and connect the pneumatic line or connection to motor rollers.

No programming of a PLC, no laptop, and no expensive wiring is required. Each of these products creates one of two types of accumulation logic: Single Accumulation (with/without sleep) and Block (Slug) Accumulation, depending on what the application requires. To accomodate various mounting requirements, there are three different versions with different mounting configurations: between the rollers (R/IR), side frame mount (ZLM) and over the conveyor (WLR).

At a glance

- Three mounting versions: betweeen the rollers (IR/R), side frame mount (ZLM) and over the conveyor (WLR)
- Three types of logic: single accumulation, single accumulation with sleep, block (slug) accumulation
- Up to 50 ZoneControl solutions can be cascaded in one string
- Fully animated simulation to ease selection and implementation
- Standard zone lengths of 1m (3ft) or 2m (6 ft)

Your benefits

- Largest Zero Pressure Accumulation portfolio on the market gives users a wide variety of choices for their application
- SICK ZoneControl solutions control the flow of packages a on conveyor without a PLC or other external control.
- Quick setup since no programming, no laptop, and no PLC interfacing are required
- With 20 years of ZoneControl experience and personal support from SICK experts, all application and product issues are quickly addressed
- Quick expansion or modification of the conveyor due to the modular design

Additional information

→ **www.mysick.com/en/ZoneControl**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

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Subject to change without notice

Detailed technical data

Features

	R DC	R AC/DC	IR DC
Sensor principle	Photoelectric proximity sensor		
Detection principle	Background suppression		
Actuator	–		Pneumatic, valve on board Pneumatic, valve supplied separately Electrical (depending on type)
Max. number of sensors	Approx. 30 [1]/Approx. 50 [2]		
Logical principle of operation	–		Single accumulation/single accumulation with sleep (depending on type)
Type of Release	–		Single release/block (slug) release/single release (depending on type)
Dimensions (W x H x D)	20.6 mm x 99.2 mm x 48.9 mm		50 mm x 147.4 mm x 48.9 mm 59.9 mm x 151.9 mm x 48.9 mm 20.6 mm x 99.2 mm x 48.9 mm (depending on type)
Housing design (light emission)	Fitting roller spacings		
Sensing range	60 mm ... 900 mm		
Type of light	Infrared light		
Light source [3]	LED		
Light spot size (distance)	Ø 20 mm (500 mm)		
Angle of dispersion	7 °		
Adjustment	Potentiometer, 9 turns		
Time type	Switch on delay/time delay off (depending on type)	Time delay off/switch on delay (depending on type)	–
Delay time	0 s ... 5 s		–

[1] When powerd from the end of the IR daisy chain.
[2] When powerd from center of the IR daisy chain.
[3] Average service life of 100,000 h at T_A = +25 °C.

Mechanics/electronics

	R DC	R AC/DC	IR DC
Supply voltage [1]	10 V DC ... 30 V DC	≤ 250 V AC/DC	10 V DC ... 30 V DC
Ripple [2]	< 5 V_{pp}		
Power consumption [3]	< 20 mA	< 100 mA	< 20 mA
Output type	NPN, PNP	FET switch	Valve/PNP
Switching mode	Light switching Dark-switching Light/dark-switching [4] (depending on type)	Light switching Dark-switching (depending on type)	Dark-switching
Signal voltage PNP HIGH/LOW	Approx. V_S – 0.5 V / 0 V	–	Approx. V_S – 0.5 V / 0 V
Signal voltage NPN HIGH/LOW	Approx. VS / < 2.0 V		–
Output current $I_{max.}$	≤ 100 mA		
Response time	2 ms		
Switching frequency	± 250 Hz		

	R DC	R AC/DC	IR DC
Connection type	Male connector, M12 [5] Cable, 2 m [5] (depending on type)	Cable, 2 m [5]	Male connector, M12 [5]
Connection type for daisy chain	–		Cable with connector M12, 4-pin
Circuit protection	A [6], C [7], D [8]		
Protection class	III		
Weight	175 g	–	175 g
Housing material	ABS		
Enclosure rating	IP 67		IP 65
Shock/vibration	According to IEC 68		
Ambient operating temperature	–40 °C ... +60 °C (depending on type)	+10 °C ... +55 °C	–40 °C ... +60 °C (depending on type)
Ambient storage temperature	–40 °C ... +75 °C		

[1] Limit values.
[2] May not exceed or fall short of V_S tolerances.
[3] Without load and valve deenergized.
[4] Selectable via light/dark rotary switch.
[5] Do not bend below 0 °C.
[6] A = V_S connections reverse-polarity protected.
[7] C = interference suppression.
[8] D = outputs overcurrent and short-circuit protected.

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Pneumatic

	R DC	R AC/DC	IR DC
Coil ratings			
Valve, metric	–		24 V DC 1 W
Valve, imperial	–		24 V DC 1 W
Medium for valves	–		Compressed air or neutral gases filtered, non-lubricated or lubricated
Design solenoid valve	–		3/2-way valve
Connection type solenoid valve			
Valve, metric	–		Compressed air 2 x 8 mm diameter, output line 4 mm diameter
Valve, imperial	–		Control line 1/4 " diameter, compressed air 2x 3/8 " diameter: output line 2 x 1/4 " diameter, compressed air 2x 3/8 " diameter (depending on type)
Without magnetic valve	–		Cable with 9.4 mm DIN valve connector
Air flow rate			
Valve, metric	–		Approx. 20 Nl/min
Valve, imperial	–		Approx. 1.4 SCFM
Ventilation capacity			
Valve, metric	–		Approx. 130 Nl/min
Valve, imperial	–		Approx. 1.4 SCFM
Operating pressure range			
Valve, metric	–		2 bar ... 8 bar
Valve, imperial	–		0 psi ... 65 psi

Ordering information

Other models available at www.mysick.com/en/ZoneControl

R DC

Switching mode	Output type	Time type	Connection	Connection diagram	Type	Part no.
Light switching	PNP, NPN	–	Connector M12, 4-pin	Cd-256	RT-B1221	1063174
			Cable, 4-wire, 2 m	Cd-251	RT-B1117	1063153
Dark-switching	PNP, NPN	–	Connector M12, 4-pin	Cd-261	RT-B2221	1063175
			Cable, 4-wire, 2 m	Cd-252	RT-B2117	1063178
Light/dark-switching	PNP	–	Cable, 4-wire, 2 m	Cd-249	RT-P3117	1063179
			Connector M12, 4-pin	Cd-255	RT-P3221	1063129
		Switch on delay	Connector M12, 4-pin	Cd-255	RTN-P3221	1063172
			Cable, 4-wire, 2 m	Cd-249	RTN-P3117	1063182
		Time delay off	Cable, 4-wire, 2 m	Cd-249	RTF-P3117	1063181
			Connector M12, 4-pin	Cd-255	RTF-P3221	1063171
	NPN	–	Connector M12, 4-pin	Cd-255	RT-N3221	1063162
			Cable, 4-wire, 2 m	Cd-249	RT-N3117	1063180
Light/dark-switching [1]	PNP	–	Connector M12, 4-pin	Cd-258	RTQ-P4221	1063173
			Cable, 4-wire, 2 m	Cd-250	RTQ-P4117	1063183
	PNP, NPN	–	Connector M12, 4-pin	Cd-256	RTQ-B1221	1063177
			Cable, 4-wire, 2 m	Cd-251	RTQ-B1117	1063184

[1] Selectable via light/dark rotary switch.

R AC/DC

Switching mode	Output type	Time type	Connection	Connection diagram	Type	Part no.
Light switching	FET switch	–	Cable, 4-wire, 2 m	Cd-247	RT-M1117	1063194
		Time delay off	Cable, 4-wire, 2 m	Cd-247	RTF-M1117	1063195
		Switch on delay	Cable, 4-wire, 2 m	Cd-247	RTN-M1117	1063196
Dark-switching		–	Cable, 4-wire, 2 m	Cd-248	RT-M2117	1063197
		Time delay off	Cable, 4-wire, 2 m	Cd-248	RTF-M2117	1063198
		Switch on delay	Cable, 4-wire, 2 m	Cd-248	RTN-M2117	1063199

IR DC Air to Drive (NC)

- **Actuator:** pneumatic, valve on board
- **Switching mode:** dark-switching
- **Output type:** valve
- **Connection:** Connector M12, 4-pin

Type of output	Connection type solenoid valve	Connection type for daisy chain	Connection diagram	Type	Part no.
Valve, metric	Compressed air 2 x 8 mm diameter, output line 4 mm diameter	Cable with connector M12, 4-pin 2 m	Cd-265	IRT-P212E40	1063108
Valve, imperial	Control line 1/4 “ diameter, compressed air 2x 3/8 “ diameter	Cable with connector M12, 4-pin 1.2 m	Cd-265	IRT-P211A10	1063117
		Cable with connector M12, 4-pin 2 m	Cd-265	IRT-P212A10	1063123

IR DC Air to Brake (NO)

- **Actuator:** pneumatic, valve on board
- **Switching mode:** dark-switching
- **Output type:** valve
- **Connection:** Connector M12, 4-pin

Type of output	Connection type solenoid valve	Connection type for daisy chain	Connection diagram	Type	Part no.
Valve, metric	Compressed air 2 x 8 mm diameter, output line 4 mm diameter	Cable with connector M12, 4-pin 1.2 m	Cd-265	IRT-P211E41	1063107
		Cable with connector M12, 4-pin 2 m	Cd-265	IRT-P212E41	1063109
Valve, imperial	Output line 2 x 1/4 “ diameter, compressed air 2x 3/8 “ diameter	Cable with connector M12, 4-pin 1.2 m	Cd-265	IRT-P211A11	1063118
	Control line 1/4 “ diameter, compressed air 2x 3/8 “ diameter	Cable with connector M12, 4-pin 2 m	Cd-265	IRT-P212A11	1063124

IR DC HIGH to Drive

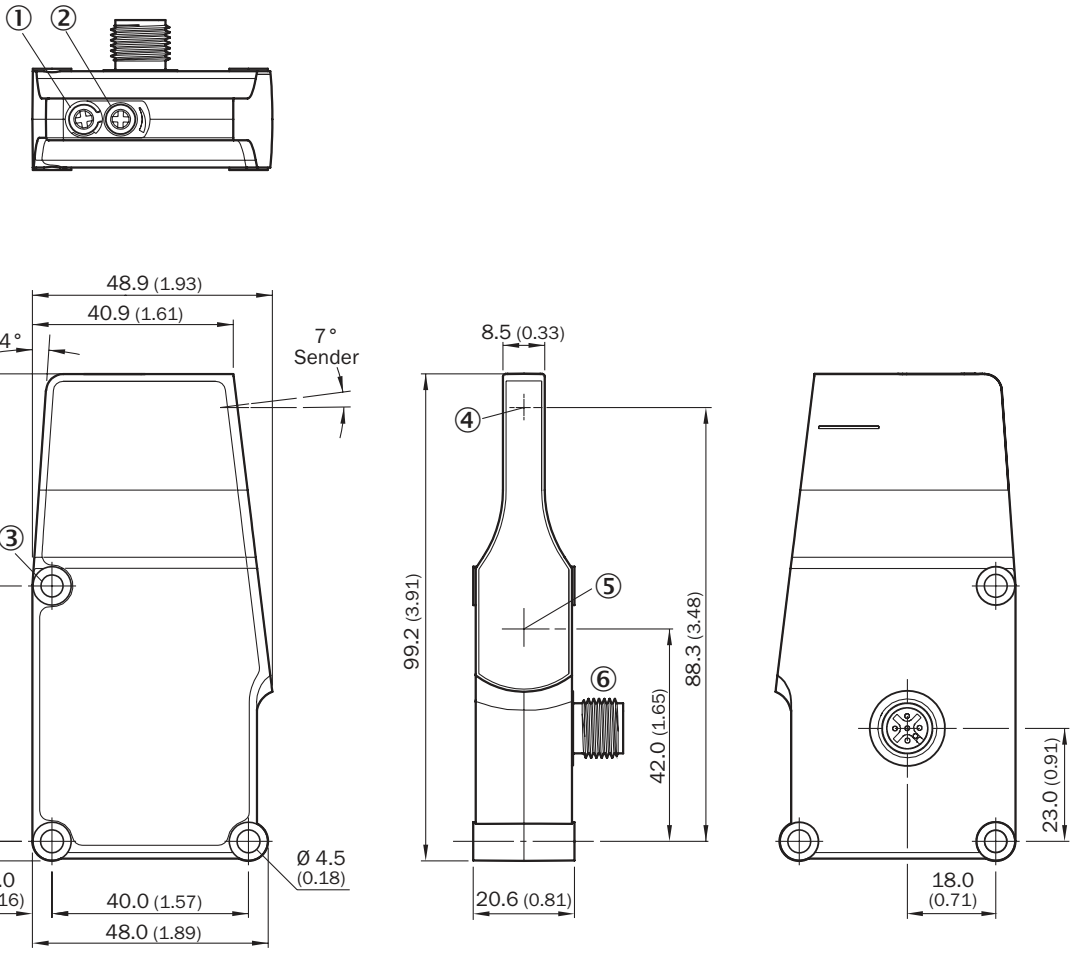
- **Switching mode:** dark-switching
  Output type: valve / PNP
- **Connection:** connector M12, 4-pin

Type of output	Actuator	Connection type solenoid valve	Connection type for daisy chain	Connection diagram	Type	Part no.
Without magnetic valve	Pneumatic, valve supplied separately	Cable with 9.4 mm DIN valve connector	Cable with connector M12, 4-pin 1.2 m	Cd-265	IRT-P211C63	1063127
			Cable with connector M12, 4-pin 2 m	Cd-265	IRT-P212C63	1063116
For Motor Driven Rollers (MDR)	Electrical	–	Cable with connector M12, 4-pin 1.2 m	Cd-266	IRT-P231C83	1063101
			Cable with connector M12, 4-pin 2 m	Cd-266	IRT-P232C83	1063100

Dimensional drawings

Dimensions in mm (inch)

R / IR without valve



① LED
② Potentiometer
③ Mounting hole
④ Center of optical axis, sender
⑤ Center of optical axis, receiver
⑥ Connector M12, 4-pin

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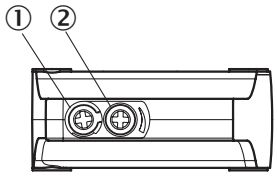
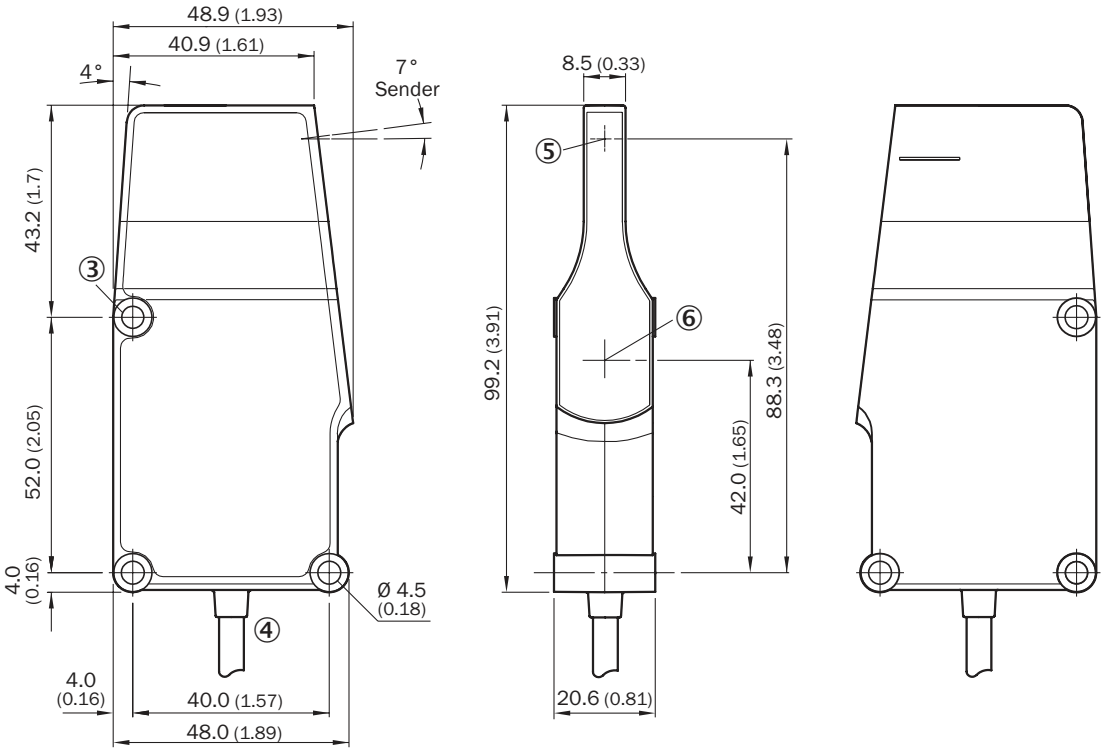
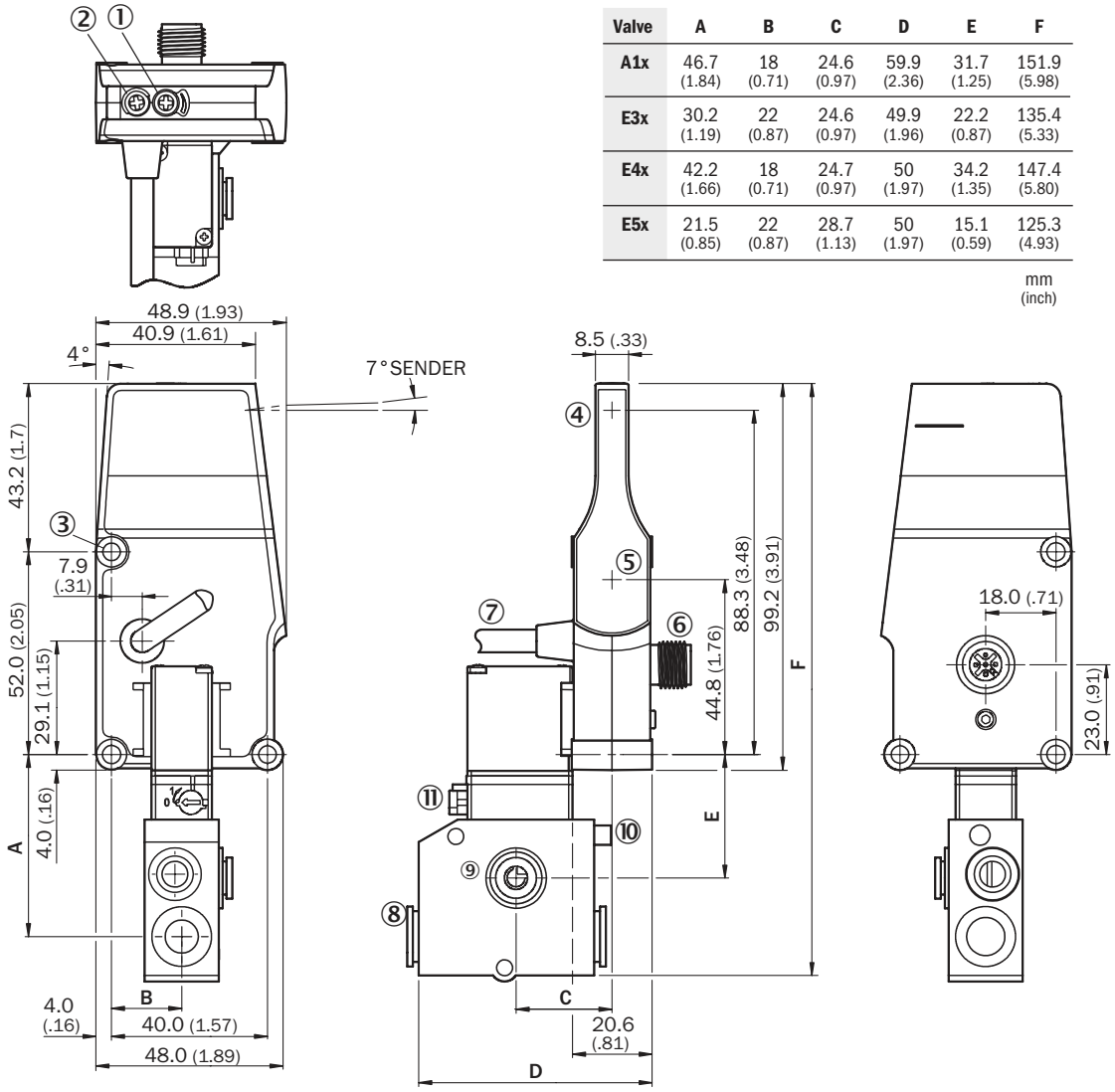
R cable





① LED
② Potentiometer
③ Mounting hole
④ Cable
⑤ Center of optical axis, sender
⑥ Center of optical axis, receiver

IR, valve metric/imperial



Valve	A	B	C	D	E	F
A1x	46.7 (1.84)	18 (0.71)	24.6 (0.97)	59.9 (2.36)	31.7 (1.25)	151.9 (5.98)
E3x	30.2 (1.19)	22 (0.87)	24.6 (0.97)	49.9 (1.96)	22.2 (0.87)	135.4 (5.33)
E4x	42.2 (1.66)	18 (0.71)	24.7 (0.97)	50 (1.97)	34.2 (1.35)	147.4 (5.80)
E5x	21.5 (0.85)	22 (0.87)	28.7 (1.13)	50 (1.97)	15.1 (0.59)	125.3 (4.93)

mm
(inch)

① Potentiometer
② LED
③ Mounting hole
④ Center of optical axis, sender
⑤ Center of optical axis, receiver
⑥ Connector M12, 4-pin
⑦ Daisy chain, cable with female connector

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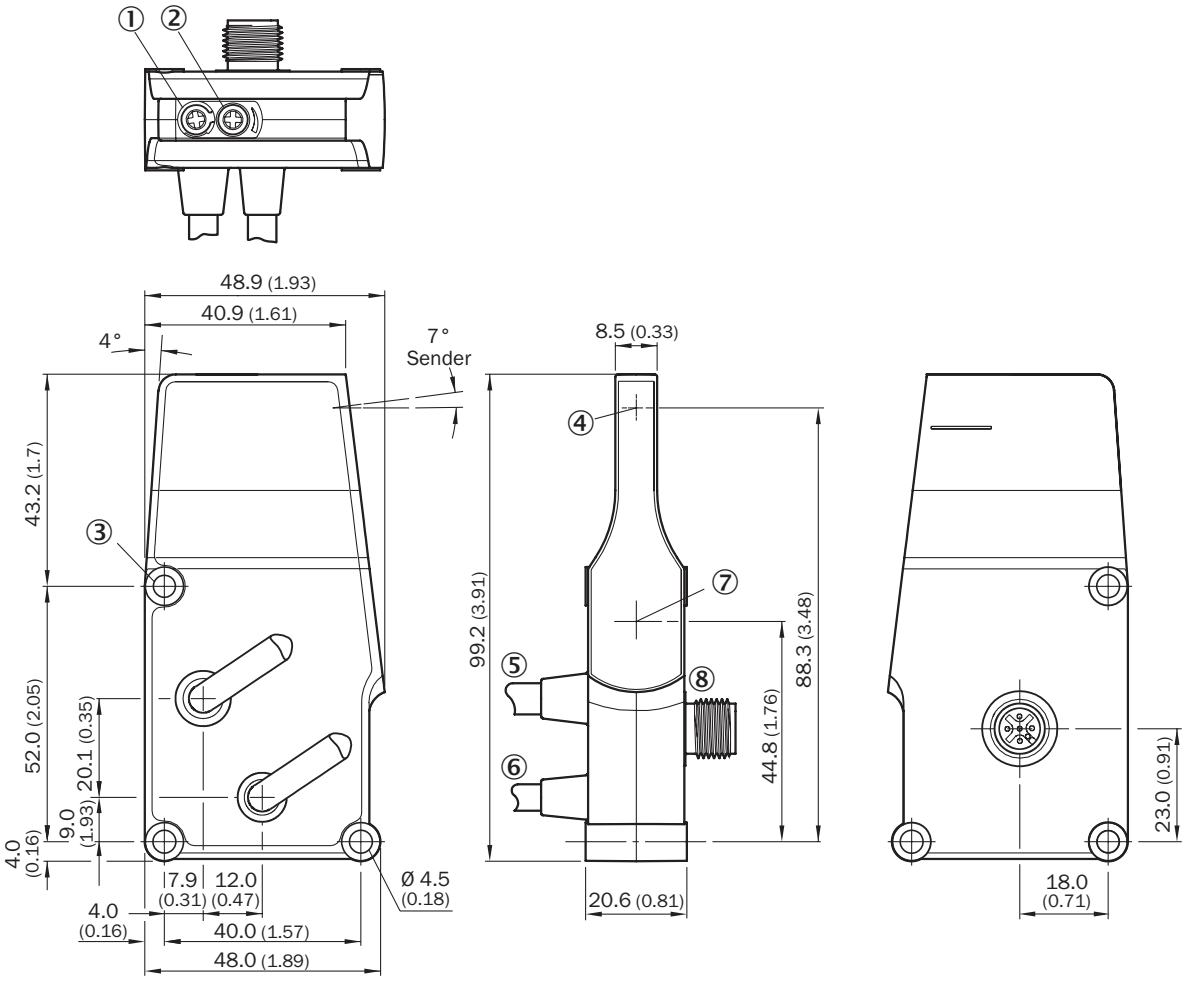
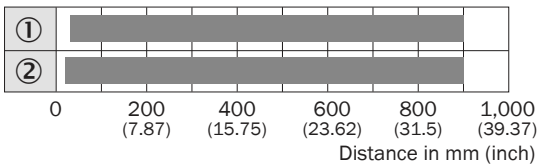
IR, for Motor Driven Rollers (MDR)



① LED
② Potentiometer
③ Mounting hole
④ Center of optical axis, sender
⑤ Daisy chain, cable with female connector
⑥ Connection for motor
⑦ Center of optical axis, receiver
⑧ Connector M12, 4-pin

Bar diagrams

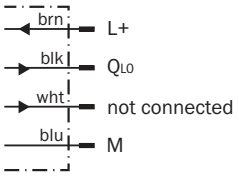


Sensing range max.

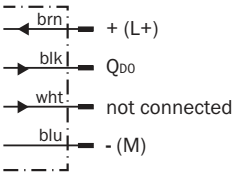
① Sensing range on black, 5 % remission
② Sensing range on white, 90 % remission

Connection diagram

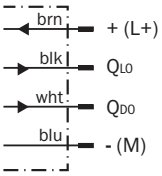
Cd-247



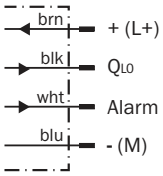
Cd-248



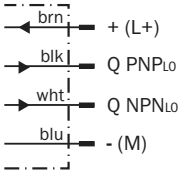
Cd-249



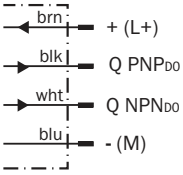
Cd-250



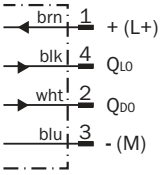
Cd-251



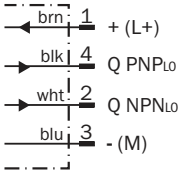
Cd-252



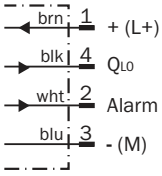
Cd-255



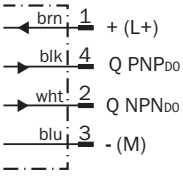
Cd-256



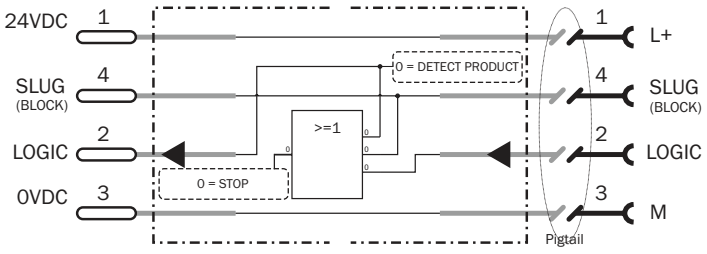
Cd-258



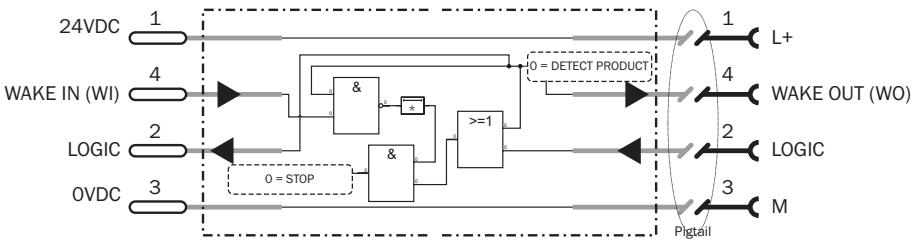
Cd-261



Cd-265



Cd-266



*After 9 s of no product, sensor goes into sleep.
Wake In input only active when sensor sleeping.

Recommended accessories

Adapters/distributors

T-junctions

Figure	Connecting cable	Connector material	Locking nut material	Description	Model name	Part no.
	0.3 m	TPU	CuZn, nickel-plated brass	Signal interrogation and logic interrupt	DSL-1104-T0M3	6011683
				Signal interrogation	DSL-1204-T0M4	6011682

Mounting brackets/plates

Mounting brackets

Figure	Material	Description	Model name	Part no.
	Steel, zinc coated	Mounting bracket	BEF-WK-WTR	2051786

→ **For additional accessories, please see page L-861**

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