



# ZoneControl®

OUT OF THE STONE AGE, AND INTO THE ZONE AGE

MultiTask photoelectric sensors

**SICK**  
Sensor Intelligence.



# Out of the Stone Age, and into the Zone Age

## ZoneControl-Stop and Go, without a PLC



Just as traffic lights handle the flow of cars in big cities, SICK ZoneControl solutions control product traffic on a conveyor without a PLC or other external control. Accumulation conveyor is used to accumulate and release product with zero forward pressure on product, which is accomplished with SICK ZoneControl. This eliminates the risk of product damage or derailment and increases control of individual packages. 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.



The three parts of a ZoneControl Solution

- 1 **Sensor**
  - Reliable detection of conveyed product
- 2 **Integrated Logic**
  - No PLC, No Laptop
  - Sensors are Daisy Chained together
- 3 **Direct Output to Conveyor**
  - Pneumatic or
  - Motor Drive Rollers(MDR)

### Variants

Each of these products, when daisy chained together, create one of two types of accumulation logic: **Single Accumulation** (with/without sleep) and **Block (Slug) Accumulation**, depending on what the application requires. To accommodate various mounting requirements, there are three different-versions with different mounting configurations:

- between the rollers (**R/IR**), from page 4
- side frame mount (**ZLM**), from page 12
- over the conveyor (**WLR**), from page 16

Whether you are conveying product with pneumatic actuators or motor-driven rollers, the ZoneControl family makes ZPA easy.

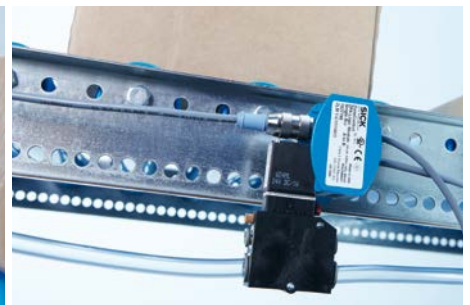
#### R/IR



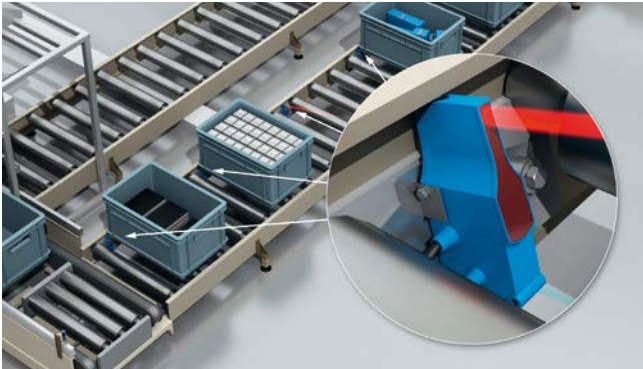
#### WLR



#### ZLM

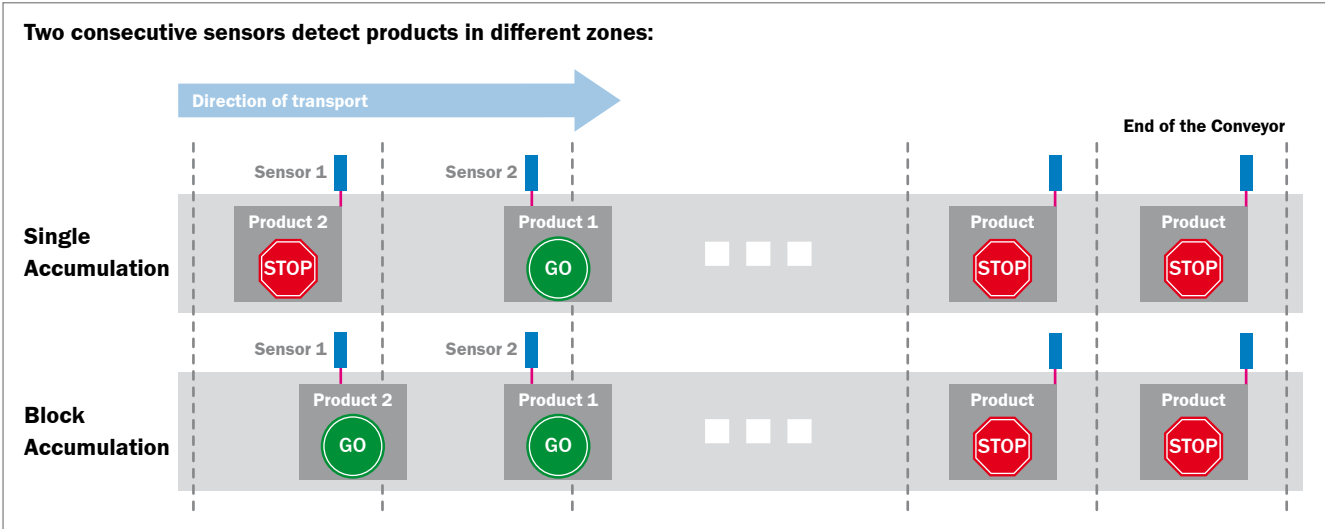


Accumulation Logic



**Single accumulation** logic(with/without Sleep) stops transfer of product in the upstream zone of any two consecutive zones that are detecting product. Sleep stops the downstream zone of any two consecutive zones that are not detecting products for 9s.

**Block(Slug) accumulation** logic will allow a large block or slug of product to travel uninterrupted to the furthest downstream zone, typically the discharge zone. The conveyor will not accumulate (deactivate) any zone until product reaches the furthest downstream zone.



Overview

	1 2 3			Mounting			Logic		Release		Features				Page	
	Sensor	Logic	Valve	Between the Rollers	Side Mount	Above the Conveyor	Single Accumulation	Block(Slug) Accumulation	Single Release	Block (Slug) Release	Max. Detection Distance (mm)	Enclosure rating	AC	Compatible with Motor Rollers		Connection to external valve
R	■			■							900	IP 67	■			4
IR	■	■	■	■			■		■	■	900	IP 65		■	■	4
WLR	■	■				■	■	■	■	■	9,000	IP 67	■		■	12
ZLM	... <sup>1)</sup>	■	■		■		■	■	■	■	... <sup>1)</sup>	IP 65				16

<sup>1)</sup> Connection for all discrete DC sensors.

# 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 accommodate 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: between 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

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→ [www.mysick.com/en/ZoneControl](http://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.



## Detailed technical data

## Features

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

<sup>1)</sup> When power from the end of the IR daisy chain.

<sup>2)</sup> When power from center of the IR daisy chain.

<sup>3)</sup> Average service life of 100,000 h at T<sub>A</sub> = +25 °C .

## Mechanics/electronics

	R DC	R AC/DC	IR DC
<b>Supply voltage</b>	10 V DC ... 30 V DC	≤ 250 V AC/DC <sup>1)</sup>	10 V DC ... 30 V DC
<b>Ripple</b>	< 5 V <sub>ss</sub>		
<b>Power consumption <sup>2)</sup></b>	< 20 mA	< 100 mA	< 20 mA
<b>Output type</b>	PNP <sup>3)</sup> NPN PNP, NPN <sup>3)</sup> (depending on type)	FET switch	Valve/PNP
<b>Switching mode</b>	Light switching Dark-switching Light/dark-switching <sup>3)</sup> (depending on type)	Light switching Dark-switching (depending on type)	Dark-switching
<b>Signal voltage PNP HIGH / LOW</b>	Approx. V <sub>S</sub> - 0.5 V / 0 V	-	Approx. V <sub>S</sub> - 0.5 V / 0 V
<b>Signal voltage NPN HIGH / LOW</b>	Approx. V <sub>S</sub> / < 2.0 V	-	-

	R DC	R AC/DC	IR DC
<b>Output current I<sub>max</sub></b>	≤ 100 mA		
<b>Response time</b>	2 ms		
<b>Switching frequency</b>	± 250 Hz		
<b>Connection type</b>	Connector, M12 <sup>4)</sup> Cable, 2 m <sup>4)</sup> (depending on type)	Cable, 2 m <sup>4)</sup>	Connector, M12 <sup>4)</sup>
<b>Connection type for daisy chain</b>	-		Cable with connector M12, 4-pin
<b>Circuit protection</b>	A <sup>5)</sup> , C <sup>6)</sup> , D <sup>7)</sup>		
<b>Protection class</b>	III		
<b>Weight</b>	175 g		
<b>Housing material</b>	ABS		
<b>Enclosure rating</b>	IP 67		IP 65
<b>Shock/vibration</b>	According to IEC 68		
<b>Ambient operating temperature</b>	-40 °C ... +60 °C	+10 °C ... +55 °C	-40 °C ... +60 °C
<b>Ambient storage temperature</b>	-40 °C ... +75 °C		

<sup>1)</sup> Limit values.

<sup>2)</sup> Without load and valve deenergized.

<sup>3)</sup> Selectable via light/dark rotary switch.

<sup>4)</sup> Do not bend below 0 °C.

<sup>5)</sup> A = V<sub>s</sub> connections reverse-polarity protected.

<sup>6)</sup> C = interference suppression.

<sup>7)</sup> D = outputs overcurrent and short-circuit protected.

## Pneumatic

	R DC	R AC/DC	IR DC
<b>Coil ratings</b>			
Valve, metric	-		24 V DC 1 W
Valve, imperial	-		24 V DC 1 W
<b>Medium for valves</b>	-		Compressed air or neutral gases filtered, non-lubricated or lubricated
<b>Design solenoid valve</b>	-		3/2-way valve
<b>Connection type solenoid valve</b>			
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
<b>Air flow rate</b>			
Valve, metric	-		Ca. 20 NI/min
Valve, imperial	-		Ca. 1.4 SCFM
<b>Ventilation capacity</b>			
Valve, metric	-		Ca. 130 NI/min



	R DC	R AC/DC	IR DC
Valve, imperial	-		Ca. 1.4 SCFM
<b>Operating pressure range</b>			
Valve, metric	-		2 bar ... 8 bar
Valve, imperial	-		0 psi ... 65 psi

### Ordering information

Other models available at [www.mysick.com/en/ZoneControl](http://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	
			Connector M12, 4-pin	Cd-255	RTN-P3221	1063172	
			Cable, 4-wire, 2 m	Cd-249	RTN-P3117	1063182	
	NPN	-	Time delay off	Cable, 4-wire, 2 m	Cd-249	RTF-P3117	1063181
				Connector M12, 4-pin	Cd-255	RTF-P3221	1063171
				Connector M12, 4-pin	Cd-255	RT-N3221	1063162
				Cable, 4-wire, 2 m	Cd-249	RT-N3117	1063180
Light/dark-switching <sup>1)</sup>	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	

<sup>1)</sup> Selectable via light/dark rotary switch.

### R AC/DC

- **Output type:** FET switch
- **Connection:** Cable, 4-wire, 2 m

Switching mode	Time type	Connection diagram	Type	Part no.
Light switching	-	Cd-247	RT-M1117	1063194
	Time delay off	Cd-247	RTF-M1117	1063195
	Switch on delay	Cd-247	RTN-M1117	1063196
Dark-switching	-	Cd-248	RT-M2117	1063197
	Time delay off	Cd-248	RTF-M2117	1063198
	Switch on delay	Cd-248	RTN-M2117	1063199

IR DC, Air to Drive (NC)

- **Actuator:** pneumatic, valve on board
- **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
- **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

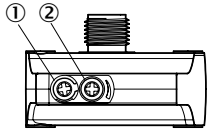
- **Output type:** Valve/PNP
- **Connection:** Connector M12, 4-pin

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

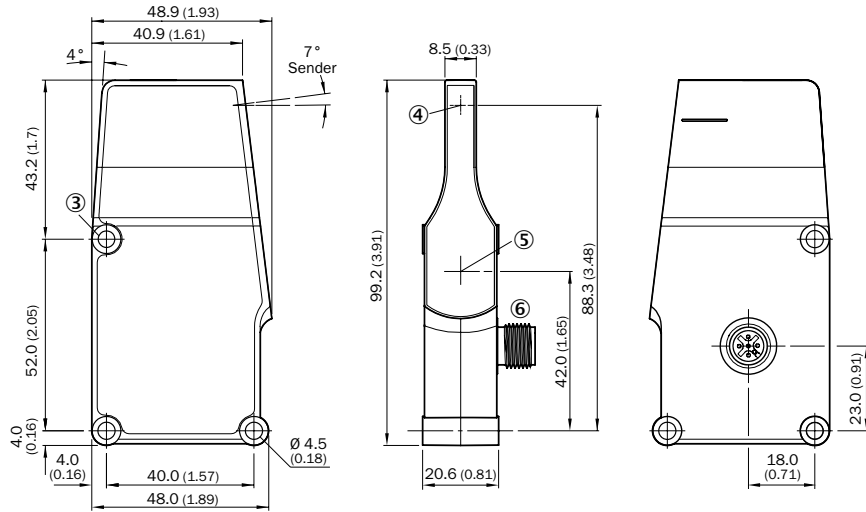


Dimensional drawings (Dimensions in mm (inch))

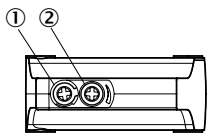
R / IR without valve



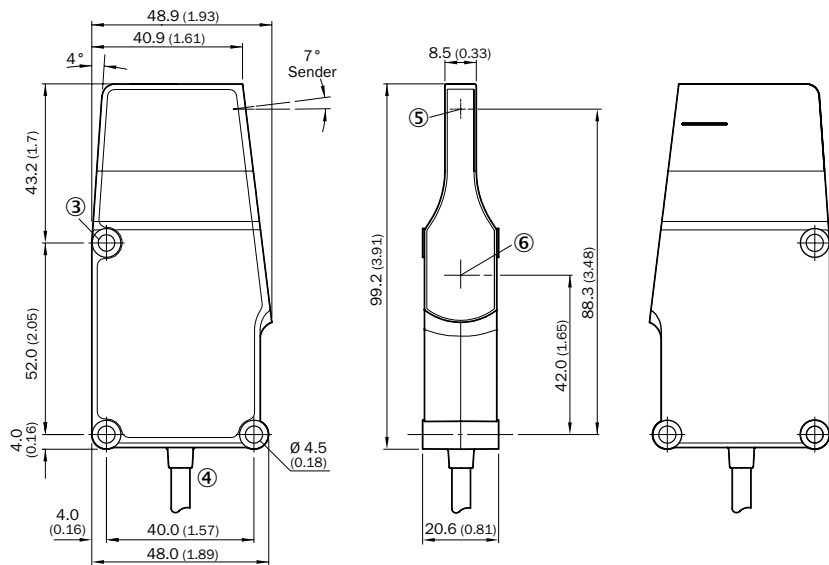
- ① LED
- ② Potentiometer
- ③ Mounting hole
- ④ Center of optical axis, sender
- ⑤ Center of optical axis, receiver
- ⑥ Connector M12, 4-pin



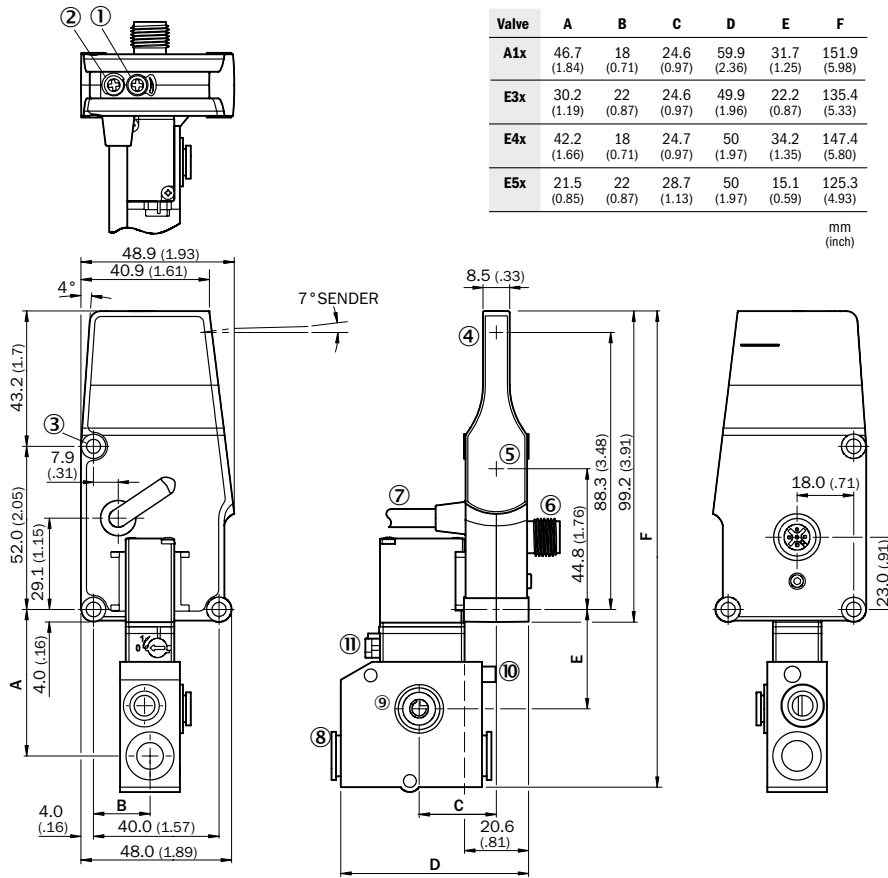
R cable



- 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

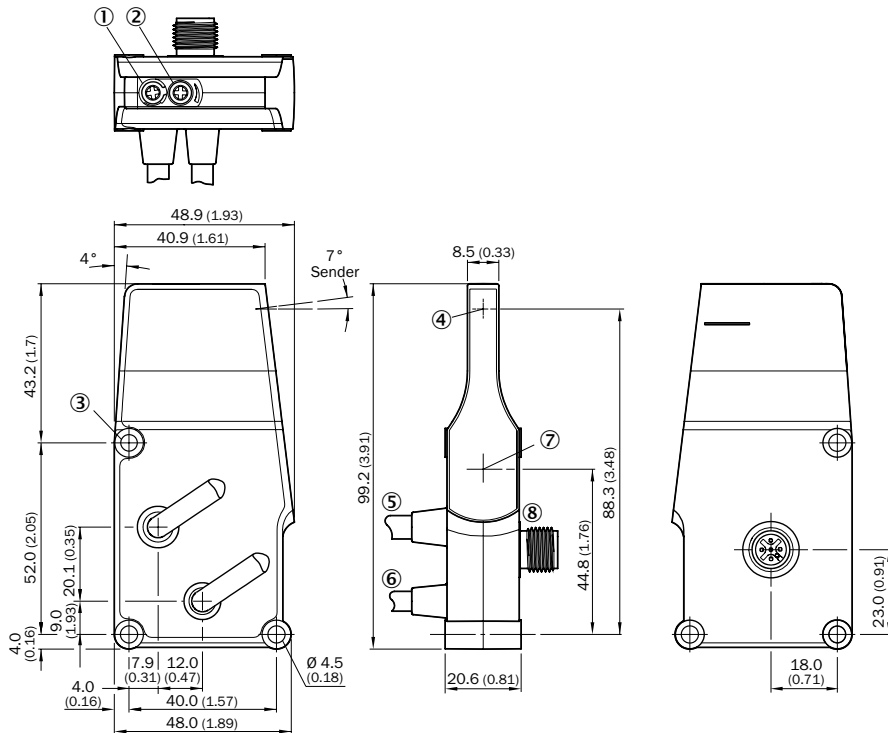


Valve	A	B	C	D	E	F
A1x	46.7 (1.84)	18 (0.71)	24.6 (0.97)	59.9 (2.36)	31.7 (1.25)	151.9 (5.98)
E3x	30.2 (1.19)	22 (0.87)	24.6 (0.97)	49.9 (1.96)	22.2 (0.87)	135.4 (5.33)
E4x	42.2 (1.66)	18 (0.71)	24.7 (0.97)	50 (1.97)	34.2 (1.35)	147.4 (5.80)
E5x	21.5 (0.85)	22 (0.87)	28.7 (1.13)	50 (1.97)	15.1 (0.59)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

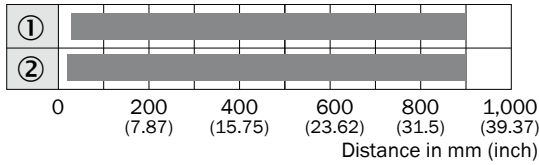
IR, for Motor Driven Rollers (MDR)



- 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

Bar diagram photoelectric proximity sensors



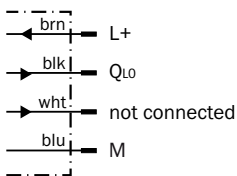
■ Sensing distance typ. max.

① Sensing range on black, 6 % remission

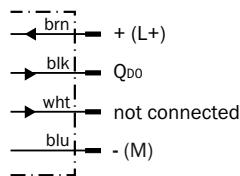
② Sensing range on white, 90 % remission

## Connection diagram

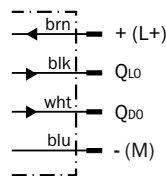
Cd-247



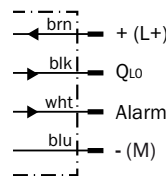
Cd-248



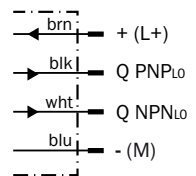
Cd-249



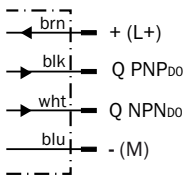
Cd-250



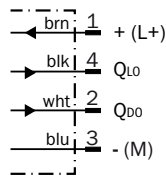
Cd-251



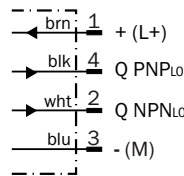
Cd-252



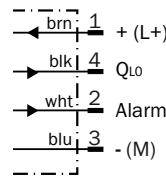
Cd-255



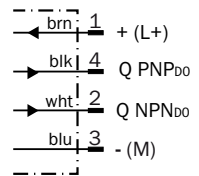
Cd-256



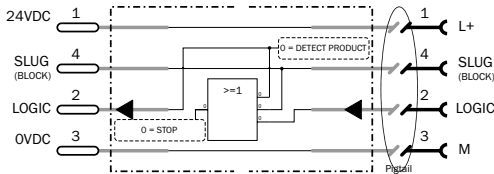
Cd-258



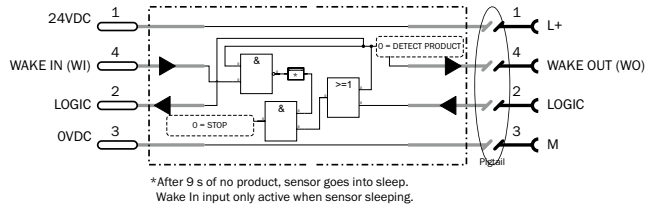
Cd-261



Cd-265



Cd-266



## Recommended accessories

### Adapters/distributors

#### T-junctions

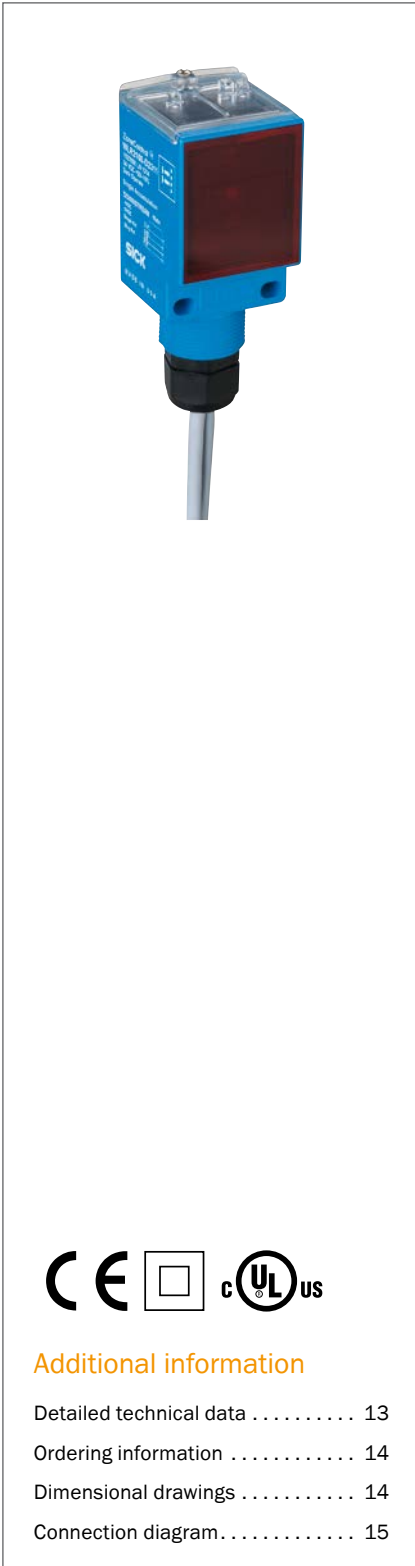
Figure	Connecting cable	Connector material	Locking nut material	Description	Model name	Part no.
	0.3 m	TPU	CuZn, nickel-plated brass	Signal interrogation and logic interrupt	DSL-1104-TOM3	6011683
				Signal interrogation	DSL-1204-TOM3	6011682

### Mounting brackets/plates

#### Mounting brackets

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

# 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

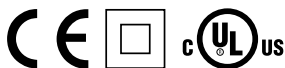
motor rollers. No programming of a PLC, no laptop, and no expensive wiring is required. Each of these products creates one of two types of accumulation logic: Single Accumulation (with/without sleep) and Block (Slug) Accumulation, depending on what the application requires. To accommodate various mounting 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

- Connects to any 9.4 mm DIN valve
- Single or slug accumulation
- Ideal for pneumatic actuators or motor-driven rollers
- Daisy chain connection cables included for zone lengths of 1m (3 ft) and 2 m (6 ft)
- AC power options

## Your benefits

- Attach your choice of actuator to complete the ZoneControl Solution
- Linear polarized retro-reflective sensing technology eliminates false detection of shiny or plastic-wrapped objects
- The Daisy Chain means that last minute changes or adding a zone is a matter of minutes
- A sealed IP67 housing to withstand harsh environments and washdown
- Single or Block (slug) Accumulation Logic to maximize product throughput
- Output cable for connection to electric motor control or pneumatic valve



## Additional information

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→ [www.mysick.com/en/WLR](http://www.mysick.com/en/WLR)

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.



## Detailed technical data

## Features

	Single accumulation	Block (slug) accumulation
<b>Sensor principle</b>	Photoelectric retro-reflective sensor	
<b>Logical principle of operation</b>	Single accumulation	Block (slug) accumulation
<b>Type of Release</b>	Single release, block (slug) release	Block (slug) release
<b>Dimensions (W x H x D)</b>	45 mm x 73.7 mm x 48.6 mm	
<b>Housing design (light emission)</b>	Rectangular	
<b>Sensing range <sup>1)</sup></b>	0 m ... 9 m	
<b>Type of light</b>	Visible red light	
<b>Light source <sup>2)</sup></b>	LED	
<b>Light spot size (distance)</b>	Ø 205 mm (9 m)	

<sup>1)</sup> PL80A.

<sup>2)</sup> Average service life of 100,000 h at  $T_A = +25 \text{ °C}$ .

## Mechanics/electronics

<b>Ripple</b>	< 5 Vss
<b>Power consumption <sup>1)</sup></b>	≤ 40 mA
<b>Switching mode</b>	Light switching
<b>Response time</b>	1 ms
<b>Switching frequency</b>	500 Hz
<b>Connection type</b>	Cable with connector, M12, 300 mm
<b>Connection type for daisy chain</b>	Cable with receptacle, M12, 4-pin
<b>Circuit protection</b>	A <sup>2)</sup> , C <sup>3)</sup> , D <sup>4)</sup>
<b>Protection class</b>	II
<b>Housing material</b>	ABS
<b>Enclosure rating</b>	IP 67
<b>Shock/vibration</b>	According to IEC 68
<b>Ambient operating temperature</b>	-25 °C ... +55 °C
<b>Ambient storage temperature</b>	-40 °C ... +70 °C

<sup>1)</sup> Without load and valve deenergized.

<sup>2)</sup> A =  $V_S$  connections reverse-polarity protected.

<sup>3)</sup> C = interference suppression.

<sup>4)</sup> D = outputs overcurrent and short-circuit protected.

## Pneumatic

	Single accumulation	Block (slug) accumulation
<b>Connection type solenoid valve</b>	Spade, 1 m: spade, 2 m cable, 1 m, with 9.4 mm DIN valve connector cable, 2m, with 9.4 mm DIN valve connector (depending on type)	Cable, 1 m, with 9.4 mm DIN valve connector: cable, 2m, with 9.4 mm DIN valve connector (depending on type)

### Ordering information

Other models available at [www.mysick.com/en/WLR](http://www.mysick.com/en/WLR)

#### Single accumulation

- **Housing design:** rectangular
- **Sensor principle:** Photoelectric retro-reflective sensor
- **Switching mode:** Light switching
- **Connection to sensor:** Cable with connector M12, 4-pin 300 mm

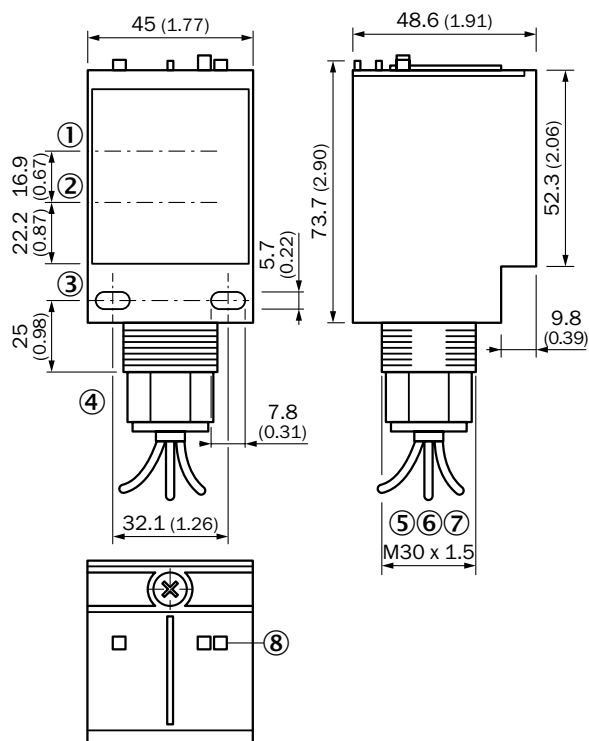
Connection type for daisy chain	Connection type solenoid valve	Connection diagram	Model name	Part no.
Cable with receptacle, M12, 4-pin, 1 m	Spade, 1 m	Cd-246	WLR2100-D1311	7027185
	Cable, 1 m, with 9.4 mm DIN valve connector	Cd-246	WLR2100-D2311	7027808
Cable with receptacle, M12, 4-pin, 2 m	Spade, 2 m	Cd-246	WLR2100-D1312	7027753
	Cable, 2m, with 9.4 mm DIN valve connector	Cd-246	WLR2100-D2312	7027811

#### Block (slug) accumulation

- **Housing design:** rectangular
- **Sensor principle:** Photoelectric retro-reflective sensor
- **Switching mode:** Light switching
- **Connection to sensor:** Cable with connector M12, 4-pin 300 mm

Connection type for daisy chain	Connection type solenoid valve	Connection diagram	Model name	Part no.
Cable with receptacle, M12, 4-pin, 1 m	Cable, 1 m, with 9.4 mm DIN valve connector	Cd-246	WLR2100-D1321	7027754
	Cable, 1 m, with 9.4 mm DIN valve connector	Cd-246	WLR2100-D2321	7027809
Cable with receptacle, M12, 4-pin, 2 m	Cable, 2m, with 9.4 mm DIN valve connector	Cd-246	WLR2100-D1322	7027755
	Cable, 2m, with 9.4 mm DIN valve connector	Cd-246	WLR2100-D2322	7027810

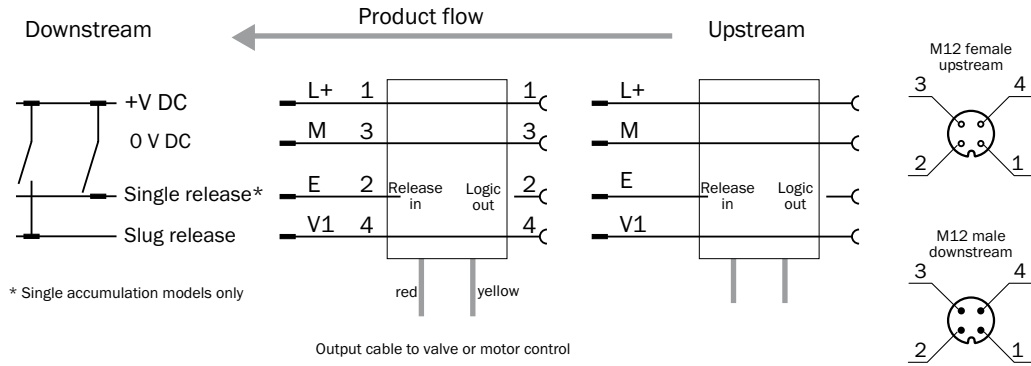
#### Dimensional drawings (Dimensions in mm (inch))



- ① Sender
- ② Receiver
- ③ Fastening threads
- ④ Threaded mounting hole
- ⑤ Daisy chain, cable with female connector
- ⑥ Cable
- ⑦ Daisy chain connector, male
- ⑧ Status indicator: LED

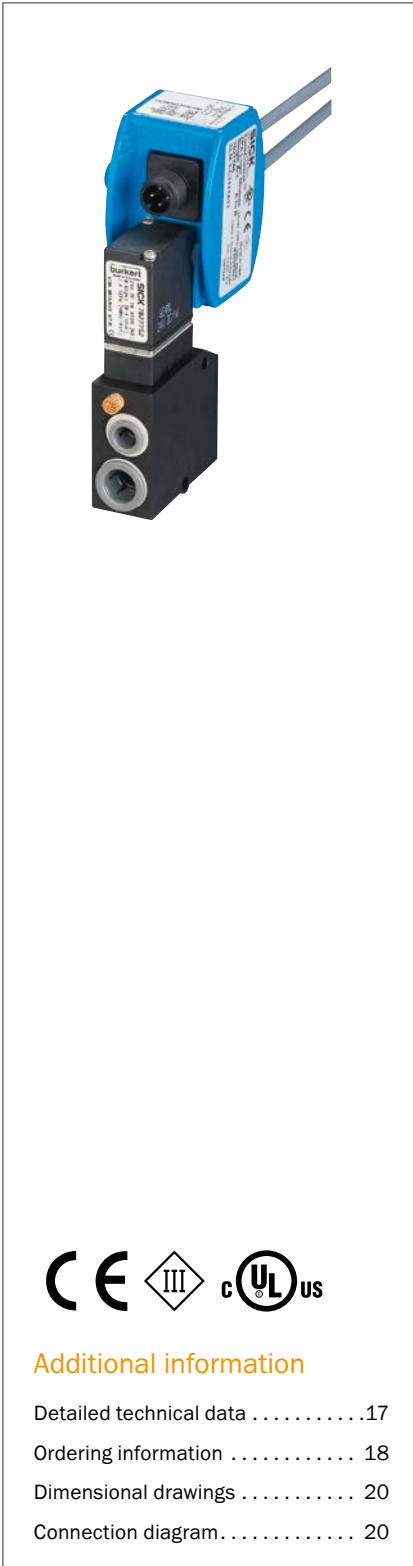
Connection diagram

Cd-246





# SIDE-MOUNTED CONVEYOR MODULE WITH ZONE CONTROL INTELLIGENCE



## 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 accommodate 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

- Connects to any discrete DC voltage sensor
- Single or slug accumulation
- Ideal for pneumatic actuators
- Daisy chain connection cable included for zone lengths of 1m (3ft) or 2m (6 ft)
- Bolt-on or clip-on installation into the conveyor's side frame

## Your benefits

- Sensor Cable integrated for you to attach nearly any sensor
- SICK's most compact ZoneControl solution, you won't even know it's there
- Single or Block (slug) Accumulation Logic to maximize product throughput
- The Daisy Chain means that last minute changes or adding a zone is a matter of minutes



## Additional information

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Connection diagram . . . . .	20

→ [www.mysick.com/en/ZLM](http://www.mysick.com/en/ZLM)

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.



## Detailed technical data

## Features

	ZLM ZLM-B	ZLM ZLM-C
<b>Actuator</b>	Pneumatic, valve on board	
<b>Max. number of sensors</b>	Ca. 30 <sup>1)</sup> Ca. 50 <sup>2)</sup>	
<b>Logical principle of operation</b>	Single accumulation / block (slug) accumulation (depending on type)	
<b>Type of Release</b>	Single release / block (slug) release / block (slug) release (depending on type)	
<b>Dimensions (W x H x D)</b>	31 mm x 110 mm x 83 mm 31 mm x 93 mm x 74 mm 31 mm x 105 mm x 74 mm (depending on type)	30 mm x 110 mm x 70 mm
<b>Housing design (light emission)</b>	Bolt-on mounting	Clip-on mounting
<b>Time type</b>	Time delay off	–
<b>Delay time</b>	0 s ... 2 s	–

<sup>1)</sup> When power from the end of the IR daisy chain.

<sup>2)</sup> When power from center of the IR daisy chain.

## Mechanics/electronics

	ZLM ZLM-B	ZLM ZLM-C
<b>Supply voltage</b>	$\geq 21.6 \text{ V DC}^1$	$\geq 21.6 \text{ V DC}^1$
<b>Ripple</b>	$< 5 \text{ Vss}$	
<b>Power consumption <sup>3)</sup></b>	$< 60 \text{ mA}$	
<b>Output type</b>	PNP	
<b>Signal voltage PNP HIGH / LOW</b>	Approx. $V_s - 0.5 \text{ V} / 0 \text{ V}$	
<b>Output current <math>I_{\text{max}}</math></b>	100 mA	
<b>Response time</b>	2.5 ms	
<b>Switching frequency</b>	200 Hz	
<b>Connection type</b>	Cable with receptacle, 0.5 m <sup>4)</sup> Cable with receptacle, 1.1 m <sup>4)</sup> (depending on type)	Cable with receptacle, 0.5 m <sup>4)</sup>
<b>Connection type for daisy chain</b>	Cable with connector M12, 4-pin / Cable with push-on connector M12, 4-pin (depending on type)	Cable with push-on connector M12, 4-pin / Cable with connector M12, 4-pin (depending on type)
<b>Circuit protection</b>	A <sup>5)</sup> , C <sup>6)</sup> , D <sup>7)</sup>	
<b>Protection class</b>	III <sup>8)</sup>	
<b>Housing material</b>	ABS	
<b>Enclosure rating</b>	IP 40	
<b>Shock/vibration</b>	According to IEC 68	
<b>Ambient operating temperature</b>	$-10 \text{ }^\circ\text{C} \dots +55 \text{ }^\circ\text{C}$	
<b>Ambient storage temperature</b>	$-40 \text{ }^\circ\text{C} \dots +75 \text{ }^\circ\text{C}$ (depending on type)	$-40 \text{ }^\circ\text{C} \dots +75 \text{ }^\circ\text{C}$
<b>Mounting system type</b>	Side-Frame-Mount	

<sup>1)</sup> Limit values.

<sup>2)</sup> Limit values, the device may connect only to protected extra low voltage.

<sup>3)</sup> Without load and valve deenergized.

<sup>4)</sup> Do not bend below 0 °C.

<sup>5)</sup> A =  $V_s$  connections reverse-polarity protected.

<sup>6)</sup> C = interference suppression.

<sup>7)</sup> D = outputs overcurrent and short-circuit protected.

<sup>8)</sup> Reference voltage 50 V DC.

Pneumatic

		ZLM ZLM-B	ZLM ZLM-C
<b>Coil ratings</b>	Valve, imperial	24 V DC 1 W	
	Valve, metric	24 V DC 2 W / 24 V DC 1 W (depending on type)	-
<b>Medium for valves</b>		Compressed air or neutral gases filtered, non-lubricated or lubricated	
<b>Design solenoid valve <sup>1)</sup></b>		3/2-way valve	
<b>Connection type solenoid valve</b>	Valve, imperial	Compressed air 3/8 " diameter, control line 1/4 " diameter	
	Valve, metric	Compressed air 2 x 8 mm diameter, output line 4 mm diameter	-
<b>Air flow rate</b>	Valve, imperial	40 NI/min	
	Valve, metric <sup>2)</sup>	Ca. 20 NI/min	-
<b>Ventilation capacity</b>	Valve, imperial	40 NI/min	
	Valve, metric	Ca. 100 NI/min / ca. 130 NI/min (depending on type)	-
<b>Operating pressure range</b>	Valve, imperial	0 bar ... 4.5 bar	
	Valve, metric	0.5 bar ... 8 bar <sup>3)</sup> (depending on type)	-
<b>Response time solenoid valve</b>		Partially open 10 ms Open 23 ms Close 21 ms	

<sup>1)</sup> Other valve types available on request.

<sup>2)</sup> P - A.

<sup>3)</sup> In combination with cylinders with small air volume we recommend tests.

Ordering information

Other models available at [www.mysick.com/en/ZLM](http://www.mysick.com/en/ZLM)

Bolt-on mounting, Air to Drive (NC)

- **Connection diagram:** Cd-263

Type of output	Logical principle of operation	Ventilation capacity	Operating pressure range	Connection to sensor	Connection type for daisy chain	Model name	Part no.
Valve, imperial	Single accumulation	40 NI/min	0 bar ... 4.5 bar	Cable with receptacle, M12, 4-pin 0.5 m	Cable with connector M12, 4-pin 1.2 m	ZLM1-B1111A10	7027768
					Cable with connector M12, 4-pin 2 m	ZLM1-B1211A10	7027784
				Cable with receptacle, M12 push-on, 4-pin 0.5 m	Cable with push-on connector M12, 4-pin 1.2 m	ZLM1-B1451A10	1052126
	Block (slug) accumulation	40 NI/min	0 bar ... 4.5 bar	Cable with receptacle, M12, 4-pin 0.5 m	Cable with connector M12, 4-pin 1.2 m	ZLM1-B2111A10	7027770
					Cable with connector M12, 4-pin 2 m	ZLM1-B2211A10	7027786
Valve, metric	Single accumulation	Ca. 130 NI/min	2 bar ... 8 bar <sup>1)</sup>	Cable with receptacle, M12, 4-pin 1.1 m PVC	Cable with connector M12, 4-pin 1.2 m	ZLM1-B1612E42	7028842

<sup>1)</sup> In combination with cylinders with small air volume we recommend tests.

**Bolt-on mounting, Air to Brake (NO)**

- **Connection diagram:** Cd-263

Type of output	Logical principle of operation	Ventilation capacity	Operating pressure range	Connection to sensor	Connection type for daisy chain	Model name	Part no.
Valve, imperial	Single accumulation	40 NI/min	0 bar ... 4.5 bar	Cable with receptacle, M12, 4-pin 0.5 m	Cable with connector M12, 4-pin 1.2 m	ZLM1-B1111A11	7027769
					Cable with connector M12, 4-pin 2 m	ZLM1-B1211A11	7027785
	Block (slug) accumulation	40 NI/min	0 bar ... 4.5 bar	Cable with receptacle, M12, 4-pin 0.5 m	Cable with connector M12, 4-pin 2 m	ZLM1-B2211A11	7027787
					Cable with connector M12, 4-pin 1.2 m	ZLM1-B2111A11	7027771
Valve, metric	Single accumulation	Ca. 100 NI/min	0.5 bar ... 8 bar <sup>1)</sup>	Cable with receptacle, M12, 4-pin 1.1 m PVC	Cable with connector M12, 4-pin	ZLM1-B5612E41	7028428
		Ca. 130 NI/min	2 bar ... 8 bar <sup>1)</sup>	Cable with receptacle, M12, 4-pin 1.1 m PVC	Cable with connector M12, 4-pin	ZLM1-B1612E43	7028843

<sup>1)</sup> In combination with cylinders with small air volume we recommend tests.

**Clip-on mounting Air to Drive (NC)**

- **Type of output:** Valve, imperial
- **Ventilation capacity:** 40 NI/min
- **Operating pressure range:** 0 bar ... 4.5 bar
- **Connection diagram:** Cd-263

Logical principle of operation	Connection to sensor	Connection type for daisy chain	Model name	Part no.
Single accumulation	Cable with receptacle, M12 push-on, 4-pin 0.5 m	Cable with push-on connector M12, 4-pin 1.2 m	ZLM1-C1451A10	7029987
	Cable with receptacle, M12, 4-pin 0.5 m	Cable with connector M12, 4-pin 1.2 m	ZLM1-C1111A10	7027764
		Cable with connector M12, 4-pin 2 m	ZLM1-C1211A10	7027780
Block (slug) accumulation	Cable with receptacle, M12, 4-pin 0.5 m	Cable with connector M12, 4-pin 2 m	ZLM1-C2211A10	7027782

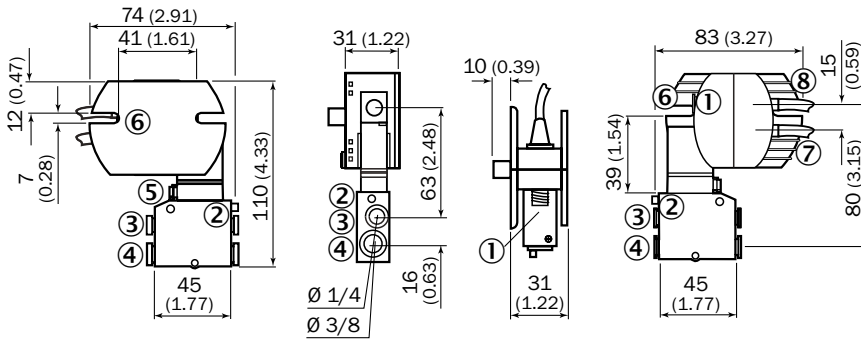
**Clip-on mounting Air to Brake (NO)**

- **Type of output:** Valve, imperial
- **Ventilation capacity:** 40 NI/min
- **Operating pressure range:** 0 bar ... 4.5 bar
- **Connection diagram:** Cd-263

Logical principle of operation	Connection to sensor	Connection type for daisy chain	Model name	Part no.
Single accumulation	Cable with receptacle, M12, 4-pin 0.5 m	Cable with connector M12, 4-pin 2 m	ZLM1-C1211A11	7027781
		Cable with connector M12, 4-pin 1.2 m	ZLM1-C1111A11	7027765
	Cable with receptacle, M12 push-on, 4-pin 0.5 m	Cable with push-on connector M12, 4-pin 1.2 m	ZLM1-C1451A11	7029988
Block (slug) accumulation	Cable with receptacle, M12, 4-pin 0.5 m	Cable with connector M12, 4-pin 1.2 m	ZLM1-C2111A11	7027767
		Cable with connector M12, 4-pin 2 m	ZLM1-C2211A11	7027783

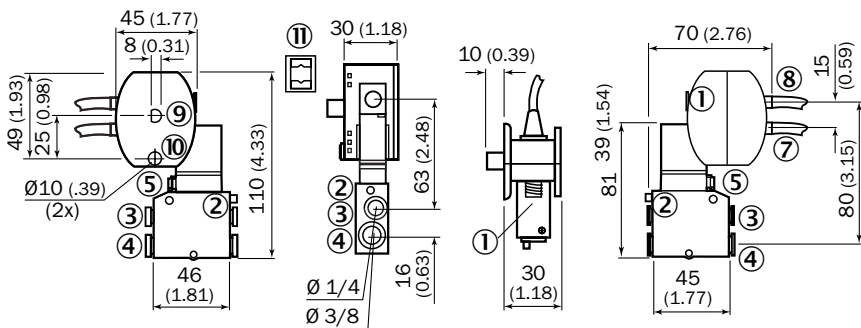
Dimensional drawings (Dimensions in mm (inch))

ZLM-B



- ① Daisy chain connector, male
- ② Exhaust
- ③ Output port (x1)
- ④ Media connector (x2)
- ⑤ Manual override switch
- ⑦ Daisy chain connector, male or female
- ⑧ Sensor connection cable, female
- ⑨ Mounting stud
- ⑩ Anti-rotation stud
- ⑪ Mounting clip

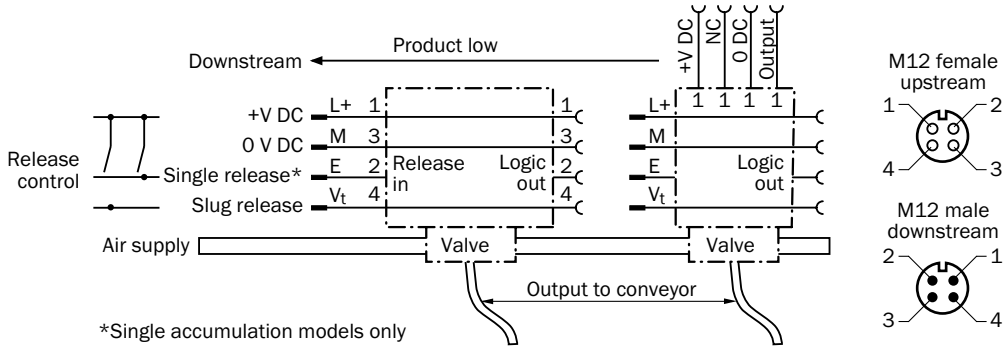
ZLM-C



- ① Daisy chain connector, male
- ② Exhaust
- ③ Output port (x1)
- ④ Media connector (x2)
- ⑤ Manual override switch
- ⑥ Mounting slots (x2)
- ⑦ Daisy chain connector, male or female

Connection diagram

Cd-263



\*Single accumulation models only

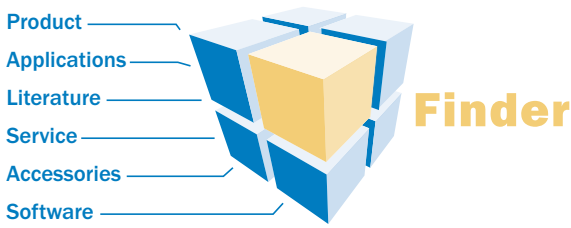






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SICK is a leading manufacturer of intelligent sensors and sensor solutions for factory, logistics, and process automation. With more than 6,000 employees and over 40 subsidiaries worldwide, we are always close our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

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