



# ISD: Optical infrared data transmission replaces cable connections



The principal advantages of infrared data transmission are:

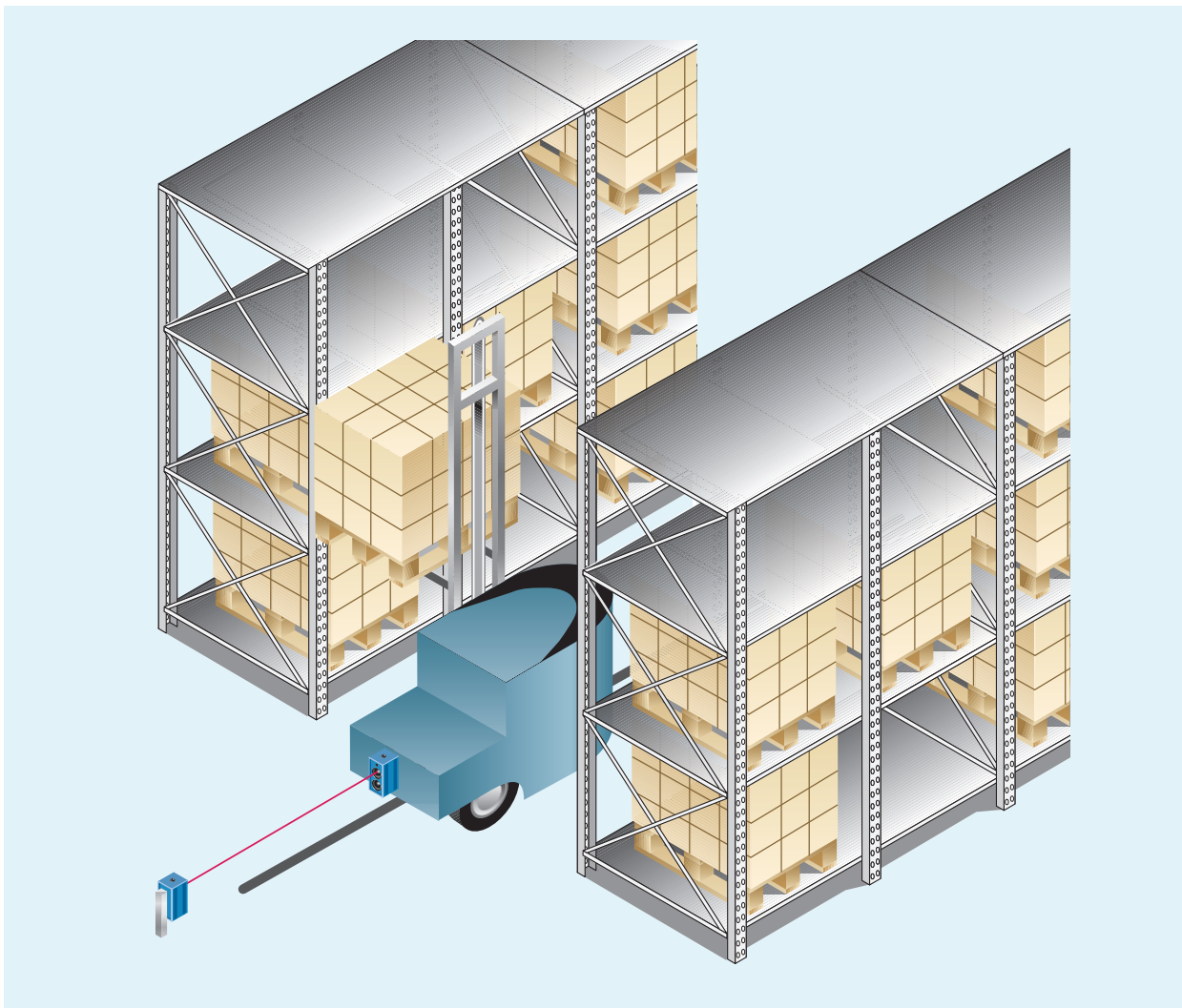
- Low cable installation and maintenance costs,
- fast installation using integrated optical alignment aid,
- high level immunity against electromagnetic interference,
- high insensitivity to ambient light thanks to integrated daylight filter and modulation,
- scanning ranges up to 200 m and transfer rates up to 2 Mbit/s,
- variety of interfaces: Profibus, Interbus, DH+, RIO, CANopen/DeviceNet, Ethernet.

**T**he ISD infrared data transmission system enables cable-free data transmission to rail-mounted vehicles along the light beam.


This system is a friction-free alternative to trailing cables, e.g. with high-bay stackers. The system consists of a device pair, i.g. optical data sender and receiver.

Both units can communicate in both directions over large distances. The point-to-point light beam is monitored during data transmissions. Interruption of the light beams is indicated both optically on the device and signalled via a special function interface.

► ISD infrared data transmission systems enable cable-free connection of high-bay stackers to the control components of, for example, Profibus DP. Trailing cables are no longer necessary.



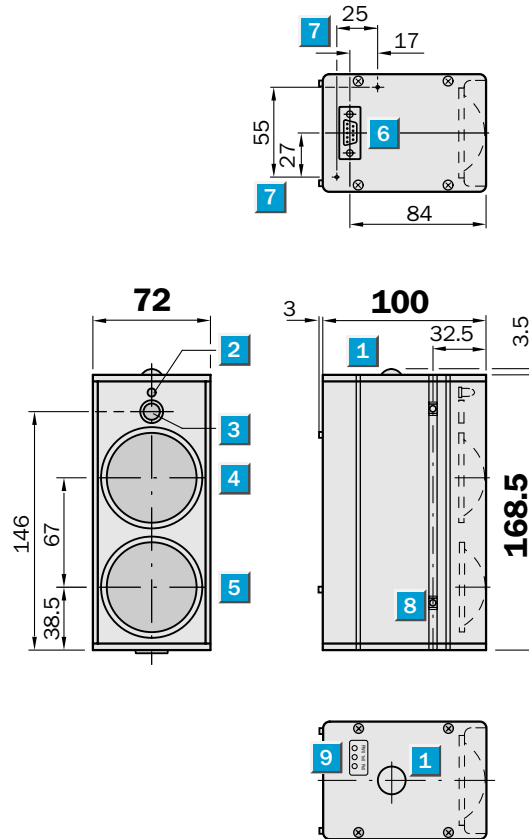
▲ The ISD data transmission system is ideal for use in, for example, aisles of high-bay warehouses. The system ensures high functionality, reliable transmission, simple installation and fast system alignment.

 **Scanning range**  
0.2 ... 200 m

**Data transmission systems**

- Duplex operation
- CL 20 mA, RS 232
- RS 422/485
- 38,400 bit/s

## Dimensional drawing



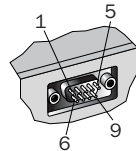
## Settings

See Operating Instructions (order no. 8 008 207) for interface settings in the device.

- 1 View of optical adjustment aid (cross-line)
- 2 LED function indicator "interrupted light beam"
- 3 Light inlet for optical adjustment aid
- 4 Receiver lens
- 5 Sender lens
- 6 9-pin D-sub plug (all signals)
- 7 Mounting hole M3 threaded – 5 mm deep, for plug cover
- 8 M5 running nut (in groove), max. screwing depth 10 mm from housing surface
- 9 LED function indicators "Power on", "RxD" and "TxD"



## Connection diagram and data interfaces



9-pin plug

### Function interfaces

### Data interfaces

	RS 485 (2L)	RS 232
CL 20 mA		
RS 422		
RS 485 (4L)		

Pin	Function	RS 485 (2L)	RS 485 (4L)	RS 232
1	DC + 24 V			
2	Switching output <sup>2)</sup> , "pollution"			
3	Switching output <sup>2)</sup> , "light path free"			
4	Input, "sender off"			
5	GND/0 V	GND/0 V	GND/0 V	GND/0 V
6		R+ <sup>3)</sup>	R+/T+ <sup>3)</sup> or B <sup>4)</sup>	R x D
7		R- <sup>3)</sup>	R-/T- <sup>3)</sup> or A <sup>4)</sup>	-
8		T+	-	T x D
9		T-	-	-

<sup>1)</sup> Wire cross-section on device with heating; min. 0.25 mm<sup>2</sup> with 5 m cable  
<sup>2)</sup> In PNP system  
<sup>3)</sup> With additional cable connection (cable termination)  
<sup>4)</sup> Symbols A and B apply to PROFIBUS and PROFIBUS-DP

**See chapter Accessories**

Cables and connectors
Mounting systems
Special accessories

Technical data		ISD 230-	2111	4111	5111	4121	5121						
<b>Scanning range</b>	0.2...200 m												
Light source	Infrared diode ( $\lambda = 860$ nm)												
Transmit/receive frequency	3 MHz $\pm$ 0.5 MHz												
Transmit/receive angle	Approx. $\pm 0.4^\circ$ / approx. $\pm 0.8^\circ$												
Light spot diameter	Approx. 0.7 m at 50 m, Approx. 1.4 m at 100 m												
<b>Data transfer rate</b>	Max. 38.4 kBd												
Signal delay (over a light path)	Max. 10 $\mu$ s												
LED status indicator	4 status functions ("light beam inter- ruption"), "Power on", "Rx/D", "Tx/D"												
Data interface	CL 20 mA a/p RS 232/RS 422/RS 485 Sinec L1 (for bus terminals BT 777)												
<b>Switching inputs</b>	"Sender off", PNP, $U_e = 24$ V, $I_e = 5$ mA												
<b>Switching outputs</b>	"Light path free", PNP, $U_a = 24$ V, $I_{A \max} = 20$ mA "Pollution", PNP, $U_a = 24$ V, $I_{A \max} = 20$ mA												
<b>Electrical connections</b>	9-pin D-sub plug												
<b>Supply voltage <math>V_s</math></b>	With heating 24 V DC + 20 %/– 5 % 24 V DC $\pm$ 20 %												
Current consumption	Max. 0.4 A With heating max. 2.5 A												
<b>Enclosure rating</b>	IP 54 (to DIN 40 050), With plug cover IP 65												
<b>Protection class</b>	$\diamond$ (to VDE 0106)												
<b>EMC vibration test</b>	To IEC 801/IEC 68-2-6 Test FC												
Mounting	Using 4 M5 running nuts, 2 in nut per side												
<b>Ambient temperature</b>	Operation 0 ... +55 $^\circ$ C –38 ... +55 $^\circ$ C (with heating) Storage –20 ... +70 $^\circ$ C												
Max. relative humidity	90 %, uncondensed												
<b>Weight</b> per unit	Approx. 1 kg (excluding accessories)												
<b>Housing material</b>	Aluminium (treated), glass/plastic lens												

**Notes:**

Two equivalent devices are required through plug bridges (see Operating Instructions, order no. 8 008 207).  
The data transfer frequencies are set

**Order information**

Type	Order no.
ISD 230-2111	1 017 388
ISD 230-4111	1 017 389
ISD 230-5111	1 017 390
ISD 230-4121	1 017 543
ISD 230-5121	1 017 544

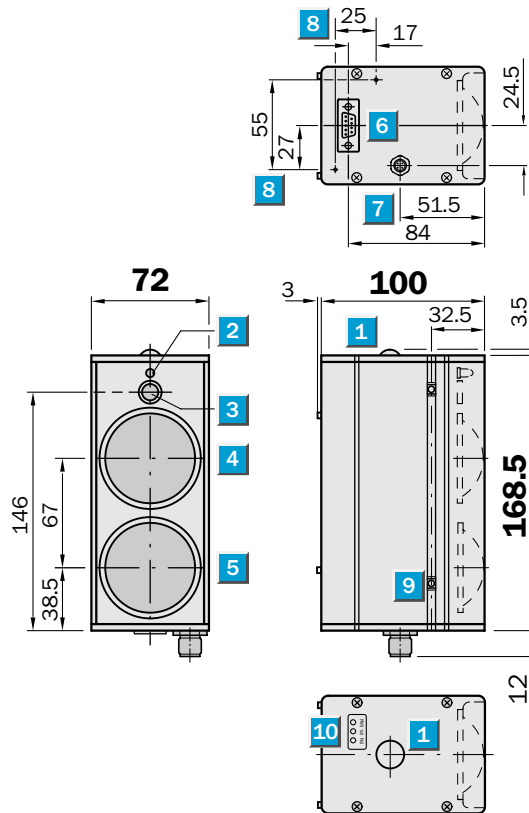


**Scanning range**  
**0.2 ... 180 m**

**Data transmission systems**

- Duplex operation
- RS 422/485
- Profibus
- Interbus-S
- SSI Interface

### Dimensional drawing

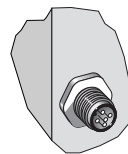


### Settings

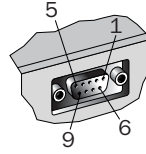
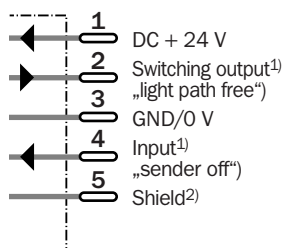
See Operating Instructions (order no. 8 008 207) for interface settings in the device.

- 1 View of optical adjustment aid (cross-line)
- 2 LED function indicator "interrupted light beam"
- 3 Light inlet for optical adjustment aid
- 4 Receiver lens
- 5 Sender lens
- 6 9-pin D-sub plug (data interface)
- 7 5-pin M12 round plug (power supply and function interfaces)
- 8 Mounting hole M3 threaded – 5 mm deep, for plug cover
- 9 M5 running nut (in groove), max. screwing depth 10 mm from housing surface
- 10 LED function indicators "Power on", "RxD" and "TxD"

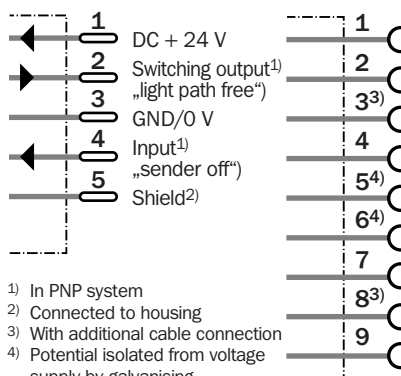
### Connection diagram und data interfaces



5-pin, M12



9-pin bush



- 1) In PNP system
- 2) Connected to housing
- 3) With additional cable connection
- 4) Potential isolated from voltage supply by galvanising

### Data interface

RS 422	RS 485 (2L)	Profibus
RS 485 (4L)		Profibus-DP
NC	NC	NC
NC	NC	NC
R+	R+/T+	B
T+	Reserved	Reserved
GND	GND	GND
+ 5 V	+ 5 V	+ 5 V
NC	NC	NC
R-	R-/T-	A
T-	Reserved	Reserved



### See chapter Accessories

- Cables and connectors
- Mounting systems
- Special accessories

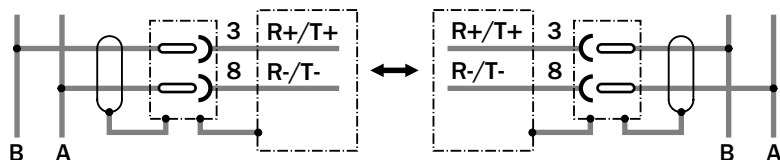
Technical data		ISD			
		260	260	280	280
		-1111	-1121	-1111	-1121
		-1112	-1122	-1112	-1122
<b>Scanning range</b>	0.2 ... 180 m				
	0.2 ... 150 m				
Light source	Infrared diode ( $\lambda = 860$ nm)				
Transmit/receive frequency	4 MHz $\pm$ 0.5 MHz/11 MHz $\pm$ 0.75 MHz				
Transmit/receive angle	Approx. $\pm$ 0.4° / approx. $\pm$ 0.8°				
Light spot diameter	Approx. 0.7 m at 50 m				
	Approx. 1.4 m at 100 m				
<b>Data transfer rate</b>	Max. 0.5 MBd				
	Max. 1.5 MBd				
Signal delay (over a light path)	Max. 2 $\mu$ s				
LED status indicator	4 status functions ("light beam interruption"), "Power on", "RxD", "TxD"				
Data interfaces	RS 422 or RS 485 in 2- or 4 tip configurations				
<b>Switching inputs</b>	"Sender off", PNP $U_e = 24$ V, $I_e = 5$ mA				
<b>Switching outputs</b>	"Light path free", PNP, $U_a = 24$ V, $I_{A \max} = 20$ mA				
<b>Electrical connections</b>	9-pin D-sub bush				
	5-pin round plug				
<b>Supply voltage <math>V_s</math></b>	With heating 24 V DC $+ 20\% / - 5\%$				
	24 V DC $\pm 20\%$				
Current consumption	Max. 0.4 A /with heating max. 2.5 A				
<b>Enclosure rating</b>	IP 54 (to DIN 40 050), With plug cover IP 65				
<b>Protection class</b>	$\diamond$ (to VDE 0106)				
<b>EMC vibration test</b>	To IEC 801/IEC 68-2-6 Test FC				
Mounting	Using 4 M 5 running nuts, 2 in nut per side				
<b>Ambient temperature</b>	Operation 0 ... +40 °C -38 ... +40 °C (with heating)				
	Storage -20 ... +70 °C				
Max. relative humidity	90 %, uncondensed				
<b>Weight</b> per unit	Approx. 1 kg (excluding accessories)				
<b>Housing material</b>	Aluminium (treated), glass/plastic lens				

**Notes:**

A pair of devices with numbers ending in 1 and 2 are required to create a data transfer section.

**Data interface Profibus (L2 - DP)**

(for other bus coupling, see Operating Instructions)



A and B in accordance with EN 50 170

The data cables for the bus can be connected directly to the device via the Siemens Profibus plug (9-pin, D-sub) (compatible configuration). The cable then terminates in the plug.

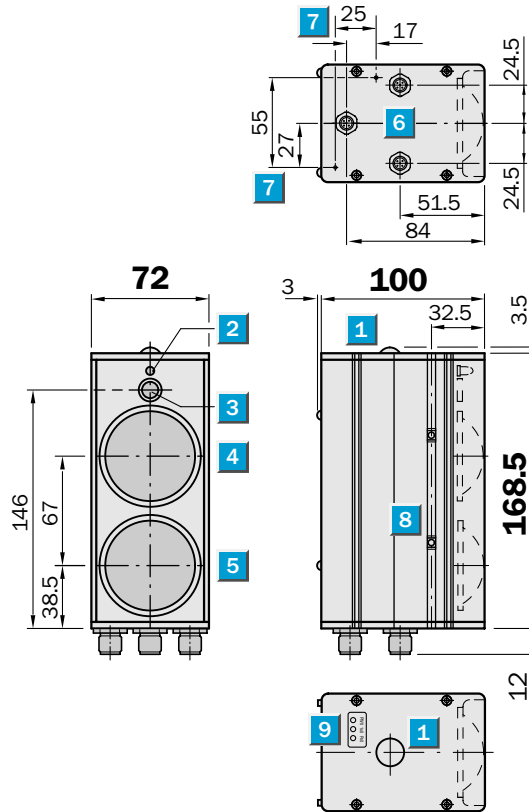
**Order information**

Type	Order no.
ISD 260-1111	1 017 379
ISD 260-1112	1 017 380
ISD 260-1121	1 017 381
ISD 260-1122	1 017 382
ISD 280-1111	1 017 046
ISD 280-1112	1 017 047
ISD 280-1121	1 017 375
ISD 280-1122	1 017 376

	<b>Scanning range</b>
	<b>0.2 ... 150 m</b>
<b>Data transmission systems</b>	

- Profibus
- M12 interface, 5-pin

**Dimensional drawing**



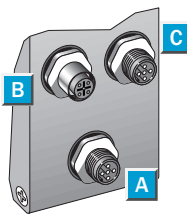
**Settings**

See Operating Instructions (order no. 8 008 207) for interface settings in the device.

- 1 View of optical adjustment aid (cross-line)
- 2 LED function indicator "interrupted light beam"
- 3 Light inlet for optical adjustment aid
- 4 Receiver lens
- 5 Sender lens
- 6 5-pin M12 round plug (3 x) (power supply and function interfaces)
- 7 Mounting hole M3 threaded – 5 mm deep, for plug cover
- 8 M5 running nut (in groove), max. screwing depth 10 mm from housing surface
- 9 LED function indicators "Power on", "RxD" and "TxD"

**Connection diagram und data interfaces**

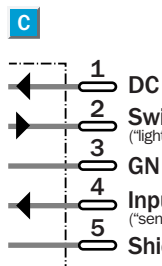
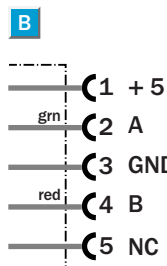
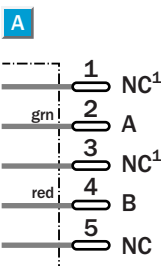
All types



5-pin, M12  
Bus in

5-pin, M12  
Bus out

5-pin, M12



1) reserved: do not connect

2) In PNP system

3) Connected to housing



**See chapter Accessories**

- Cables and connectors
- Mounting systems
- Special accessories

Technical data		ISD 280-				1111	1112	1121	1122						
			S03	S04	S05	S06									
<b>Scanning range</b>	0.2 ... 150 m														
Light source	Infrared diode ( $\lambda = 860 \text{ nm}$ )														
Transmit/receive frequency	4 MHz $\pm$ 0.5 MHz/11 MHz $\pm$ 0.75 MHz														
Transmit/receive angle	Approx. $\pm 0.4^\circ$ / approx. $\pm 0.8^\circ$														
Light spot diameter	Approx. 0.7 m at 50 m														
	Approx. 1.4 m at 100 m														
<b>Data transfer rate</b>	Max. 1.5 MBd														
Signal delay	Max. 2 $\mu\text{s}$														
(over a light path)															
LED status indicator	4 status functions ("light beam interruption", "Power on", "RxD", "TxD")														
Data interfaces	RS 422 or RS 485 in 2 or 4 tip configurations														
<b>Switching inputs</b>	"Sender off", PNP $U_e = 24 \text{ V}$ , $I_e = 5 \text{ mA}$														
<b>Switching outputs</b>	"Light path free", PNP, $U_a = 24 \text{ V}$ , $I_{A \text{ max}} = 20 \text{ mA}$														
<b>Electrical connections</b>	5-pin round plug														
<b>Supply voltage <math>V_S</math></b>	With heating 24 V DC + 20 %/– 5 %														
	Without heating 24 V DC $\pm$ 20 %														
Current consumption	With heating max. 2.5 A														
	Without heating max. 0.4 A														
<b>Enclosure rating</b>	IP 65														
<b>Protection class</b>	$\diamond$ (to VDE 0106)														
<b>EMC vibration test</b>	To IEC 801/IEC 68-2-6 Test FC														
Mounting	Using 4 M5 running nuts, 2 in nut per side														
<b>Ambient temperature <math>T_A</math></b>	Operation – 38 °C ... + 40 °C (with heat.)														
	0 °C ... + 40 °C (without heat.)														
	Storage – 20 °C ... + 70 °C														
Max. relative humidity	90 %, uncondensed														
<b>Weight per unit</b>	Approx. 1 kg (excluding accessories)														
<b>Housing material</b>	Aluminium (treated), glass/plastic lens														

**Notes:**

A pair of devices with numbers ending in 1 and 2 are required to create a data transfer section.

**Order information**

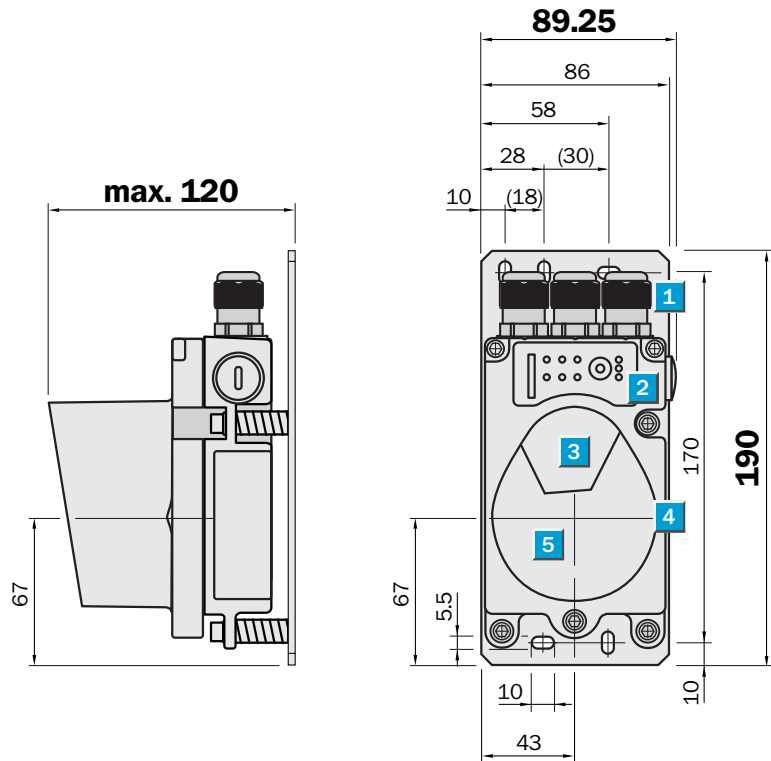
Type	Order no.
ISD280-1111S03	1 027 187
ISD280-1112S04	1 027 188
ISD280-1121S05	1 027 638
ISD280-1122S06	1 027 639



	<b>Scanning range</b> 0.2 ... 120/0.2 ... 200/ 0.2 ... 300 m
<b>Data transmission systems</b>	

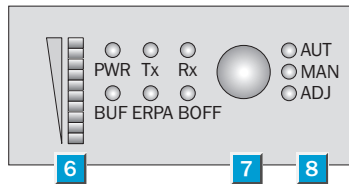
- Profibus interface
- Control panel front access
- Easy one-man-handling
- Up to 1.5 Mbit/s transfer rate
- Integrated 3-point bracket

**Dimensional drawing**



**Adjustment possible**

All types



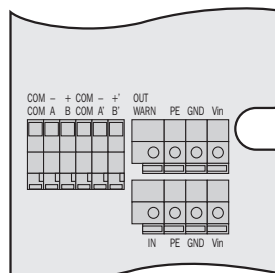
- 1 M16
- 2 Control panel
- 3 Sender lens
- 4 Center of optical axis
- 5 Receiver lens
- 6 Display for signal level
- 7 Function button
- 8 LED operating indicator



**See chapter Accessories**

- Cables and connectors
- Mounting systems
- Special accessories

**Connection type and data interface**



**Terminals, general**

V <sub>in</sub>
GND
PE
OUT/WARN
IN

**Terminals, Profibus**

L+
M
Shield
Q
Switch. input

**Terminals, Profibus**

A, -	A wire
B, +	B wire
COM	Pot. balance
A', -'	A wire
B', +'	B wire

Technical data		ISD	300	300	300	300	300						
			-1211	-1221	-1111	-1121	-1311						
			-1212	-1222	-1112	-1122	-1312						
<b>Scanning range</b>	0.2 ... 120 m												
	0.2 ... 200 m												
	0.2 ... 300 m												
<b>Light source</b>	Infrared light ( $\lambda = 880 \text{ nm}$ )												
<b>Transmit/receive angle</b>	$\pm 0.5^\circ$ for optical axis												
<b>Light spot diameter</b>	0.9 m at 50 m/1.75 m at 100 m/												
	3.5 m at 200 m												
<b>Data transfer rate</b>	1.5 Mbit/s Profibus RS 485												
<b>Signal delay</b>	1.5 $\mu\text{s}$ + 1 Tbit												
<b>LED status indicator</b>	Supply voltage, function mode												
	data transfer, signal level												
<b>Data interface</b>	Profibus/RS 485												
<b>Switching inputs</b>	0 ... 2 V DC: "sender/receiver off"												
	18 ... 30 V DC: "sender/receiver on"												
<b>Switching outputs</b>	0 ... 2 V DC: normal operative												
	$V_{in} - 2 \text{ V DC}$ : reduced function reserve												
<b>Electrical connections</b>	Terminals												
<b>Supply voltage <math>V_S</math></b>	18 ... 30 V DC												
<b>Current consumption</b>	200 mA at 24 V DC (without heating)												
	800 mA at 24 V DC (with heating)												
<b>Enclosure rating</b>	IP 65												
<b>Protection class</b>	1												
<b>EMC vibration test</b>	EN 61326 (1998) + A1 (1999)												
<b>Ambient temperature</b>	Operation 5 ... +50 °C												
	(without heating)												
	-30 ... +50 °C												
	(with heating)												
	Storage -30 ... +70 °C												
<b>Max. relative humidity</b>	90 %, uncondensed												
<b>Weight per unit</b>	1200 g												
<b>Housing material</b>	Aluminium die-cast, front screen: glass												

**Notes:**

A pair of devices with numbers ending in 1 and 2 are required to create a data transfer section.

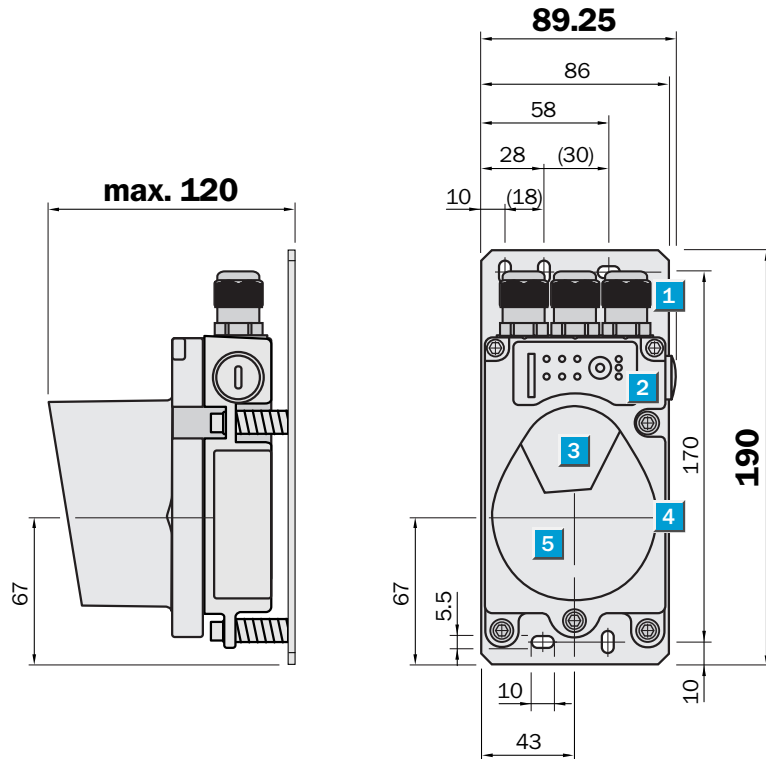
**Order information**

Type	Order no.
ISD 300-1211	6 024 759
ISD 300-1212	6 024 760
ISD 300-1221	6 024 838
ISD 300-1222	6 024 839
ISD 300-1111	6 024 761
ISD 300-1112	6 024 837
ISD 300-1121	6 024 840
ISD 300-1122	6 024 841
ISD 300-1311	6 028 213
ISD 300-1312	6 028 214

	<b>Scanning range</b> 0.2 ... 120 m/
	0.2 ... 200 m
<b>Data transmission systems</b>	

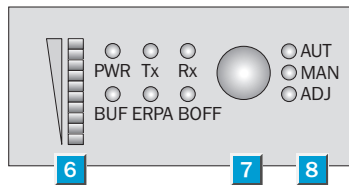
- Interbus interface
- Control panel front access
- Easy one-man-handling
- Up to 500 kbit/s transfer rate
- Integrated 3-point bracket

**Dimensional drawing**



**Adjustment possible**

All types



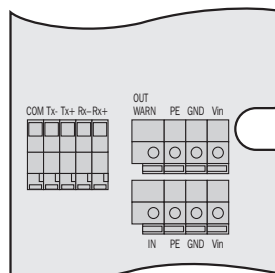
- 1** M16
- 2** Control panel
- 3** Sender lens
- 4** Center of optical axis
- 5** Receiver lens
- 6** Display for signal level
- 7** Function button
- 8** LED operating indicator



**See chapter Accessories**

- Cables and connectors
- Mounting systems
- Special accessories

**Connection type and data interface**



Terminals, general		Terminals, Interbus	
V <sub>in</sub>	L+	DO1/DI2, Rx+	Receiver wire
GND	M	DO1/DI2, Rx-	Receiver wire
PE	Shield	DI1/DO2, Tx+	Send wire
OUT/WARN	Q	DI1/DO2, Tx-	Send wire
IN	Switch. input	COM	Pot. balance

Technical data		ISD	300	300	300	300					
			-2211	-2221	-2111	-2121					
			-2212	-2222	-2112	-2122					
<b>Scanning range</b>	0.2 ... 120 m										
	0.2 ... 200 m										
Light source	Infrared light ( $\lambda = 880$ nm)										
Transmit/receive angle	$\pm 0.5^\circ$ for optical axis										
Light spot diameter	0.9 m at 50 m/1.75 m at 100 m/ 3.5 m at 200 m										
<b>Data transfer rate</b>	500 kbit/s Interbus RS 422										
Signal delay	1.5 $\mu$ s										
LED status indicator	Supply voltage, function mode, data transfer, signal level										
Data interface	Interbus/RS 422										
<b>Switching inputs</b>	0 ... 2 V DC: "sender/receiver off" 18 ... 30 V DC: "sender/receiver on"										
<b>Switching outputs</b>	DC 0 ... 2 V: normal operative DC $V_{in}-2$ V: reduced function reserve										
<b>Electrical connections</b>	Terminals										
<b>Supply voltage <math>V_s</math></b>	18 ... 30 V DC										
Current consumption	200 mA at 24 V DC (without heating) 800 mA at 24 V DC (with heating)										
<b>Enclosure rating</b>	IP 65										
<b>Protection class</b>	1										
<b>EMC vibration test</b>	EN 61326 (1998) + A1 (1999)										
<b>Ambient temperature</b>	Operation 5 ... +50 °C (without heating) -30 ... +50 °C (with heating)										
	Storage -30 ... +70 °C										
Max. relative humidity	Max. 90 %, uncondensed										
<b>Weight</b> per unit	1200 g										
<b>Housing material</b>	Aluminium die-cast, front screen: glass										

**Notes:**

A pair of devices with numbers ending in 1 and 2 are required to create a data transfer section.

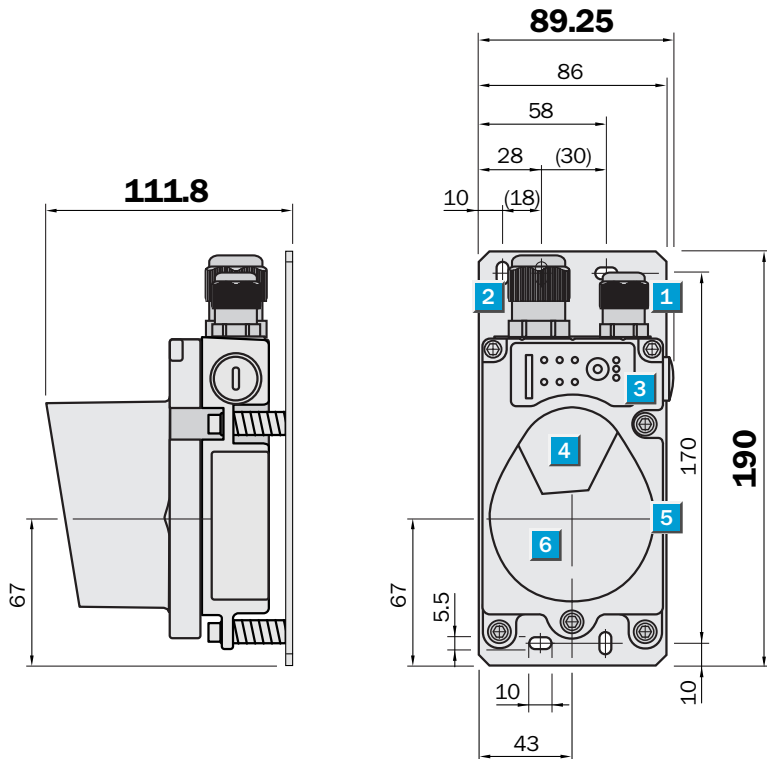
**Order information**

Type	Order no.
ISD 300-2211	6 024 842
ISD 300-2212	6 024 843
ISD 300-2221	6 024 846
ISD 300-2222	6 024 847
ISD 300-2111	6 024 844
ISD 300-2112	6 024 845
ISD 300-2121	6 024 848
ISD 300-2122	6 024 849

	<b>Scanning range</b> 0.2 ... 200 m
<b>Data transmission systems</b>	

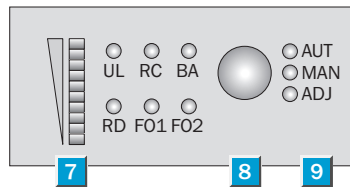
- Interbus interface
- Control panel front access
- Easy one-man-handling
- Up to 2 Mbit/s transfer rate
- Integrated 3-point bracket

**Dimensional drawing**



**Adjustment possible**

All types



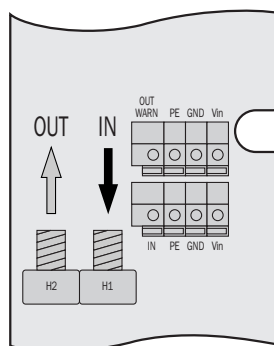
- 1 M20
- 2 M16
- 3 Control panel
- 4 Sender lens
- 5 Center of optical axis
- 6 Receiver lens
- 7 Display for signal level
- 8 Function button
- 9 LED operating indicator



**See chapter Accessories**

- Cables and connectors
- Mounting systems
- Special accessories

**Connection type and data interface**



Terminals, general	
V <sub>in</sub>	L+
GND	M
PE	Shield
OUT/WARN	Q
IN	Switch. input

Fibre optic socket, Interbus	
H1	Receiver
H2	Sender



Technical data		ISD									
		300	300								
		-3211	-3221								
		-3212	-3222								
<b>Scanning range</b>	0.2 ... 200 m										
Light source	Infrared light ( $\lambda = 880$ nm)										
Transmit/receive angle	$\pm 0.5^\circ$ for optical axis										
Light spot diameter	0.9 m at 50 m/1.75 m at 100 m/ 3.5 m at 200 m										
<b>Data transfer rate</b>	2 Mbit/s Interbus LWL										
Signal delay	2.5 $\mu$ s										
LED status indicator	Supply voltage, function mode, data transfer, signal level										
Data interface	Interbus/LWL										
<b>Switching inputs</b>	0 ... 2 V DC: "sender/receiver off" 18 ... 30 V DC: "sender/receiver on"										
<b>Switching outputs</b>	0 ... 2 V DC: normal operative $V_{in}$ -2 V DC: reduced function reserve										
<b>Electrical connections</b>	Terminals										
<b>Supply voltage <math>V_s</math></b>	18 ... 30 V DC										
Current consumption	200 mA at 24 V DC (without heating) 800 mA at 24 V DC (with heating)										
<b>Enclosure rating</b>	IP 65										
<b>Protection class</b>	1										
<b>EMC vibration test</b>	EN 61326 (1998) + A1 (1999)										
<b>Ambient temperature</b>	Operation 5 ... +50 °C (without heating) -30 ... +50 °C (with heating)										
	Storage -30 ... +70 °C										
Max. relative humidity	Max. 90 %, uncondensed										
<b>Weight</b> per unit	1200 g										
<b>Housing material</b>	Aluminium die-cast, front screen: glass										

**Notes:**

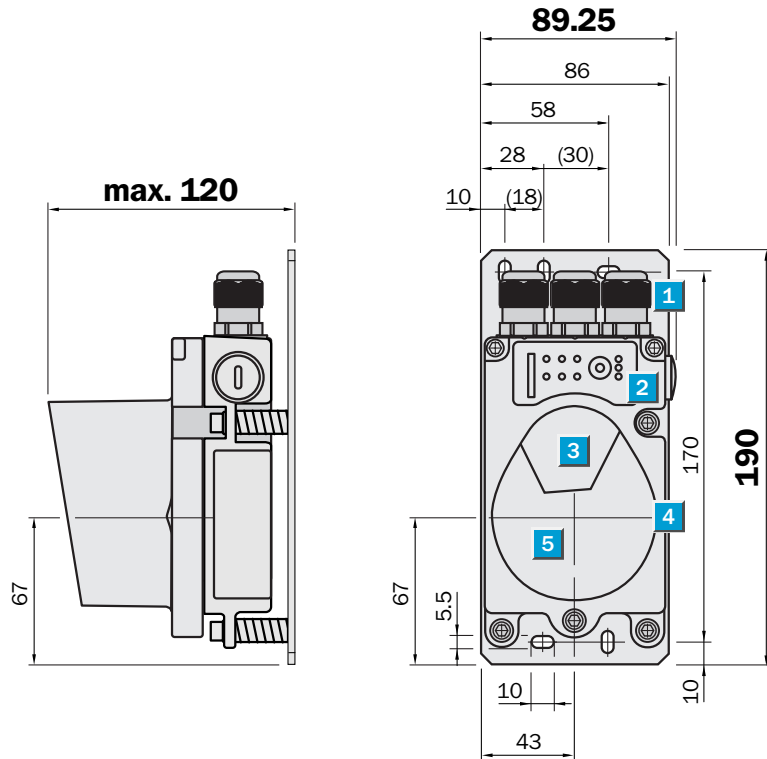
A pair of devices with numbers ending in 1 and 2 are required to create a data transfer section.

Order information	
Type	Order no.
ISD 300-3211	6 024 850
ISD 300-3212	6 024 851
ISD 300-3221	6 024 852
ISD 300-3222	6 024 853

	<b>Scanning range</b> 0.2 ... 200 m
<b>Data transmission systems</b>	

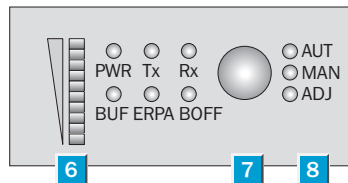
- DH+/RIO interface
- Control panel front access
- Easy one-man-handling
- Up to 230.4 kbit/s transfer rate
- Integrated 3-point bracket

### Dimensional drawing



### Adjustment possible

All types



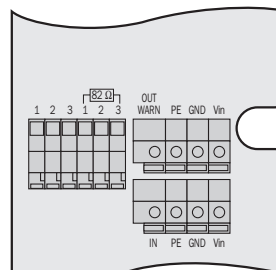
- 1 M16
- 2 Control panel
- 3 Sender lens
- 4 Center of optical axis
- 5 Receiver lens
- 6 Display for signal level
- 7 Function button
- 8 LED operating indicator



### See chapter Accessories

- Cables and connectors
- Mounting systems
- Special accessories

### Connection type and data interface



#### Terminals, general

V <sub>in</sub>	L+
GND	M
PE	Shield
OUT/WARN	Q
IN	Switch. input

#### Terminals, DH+/DH-

1	Clear/blue
2	Shield
3	Blue/clear

Technical data		ISD	300	300								
			-4211	-4221								
			-4212	-4222								
<b>Scanning range</b>	0.2 ... 200 m											
Light source	Infrared light ( $\lambda = 880 \text{ nm}$ )											
Transmit/receive angle	$\pm 0.5^\circ$ for optical axis											
Light spot diameter	0.9 m at 50 m/1.75 m at 100 m/ 3.5 m at 200 m											
<b>Data transfer rate</b>	230.4 kbit/s DH+/RIO											
Signal delay	1.5 $\mu\text{s}$ + 1.5 Tbit											
LED status indicator	Supply voltage, function mode, data transfer, signal level											
Data interface	DH+/RIO											
<b>Switching inputs</b>	0 ... 2 V DC: "sender/receiver off" 18 ... 30 V DC: "sender/receiver on"											
<b>Switching outputs</b>	0 ... 2 V DC: normal operative $V_{in}-2 \text{ V DC}$ : reduced function reserve											
<b>Electrical connections</b>	Terminals											
<b>Supply voltage <math>V_S</math></b>	18 ... 30 V DC											
Current consumption	200 mA at 24 V DC (without heating) 800 mA at 24 V DC (with heating)											
<b>Enclosure rating</b>	IP 65											
<b>Protection class</b>	1											
<b>EMC vibration test</b>	EN 61326 (1998) + A1 (1999)											
<b>Ambient temperature</b>	Operation 5 ... +50 °C (without heating) -30 ... +50 °C (with heating)											
	Storage -30 ... +70 °C											
Max. relative humidity	Max. 90 %, uncondensed											
<b>Weight</b> per unit	1200 g											
<b>Housing material</b>	Aluminium die-cast, front screen: glass											

**Notes:**

A pair of devices with numbers ending in 1 and 2 are required to create a data transfer section.

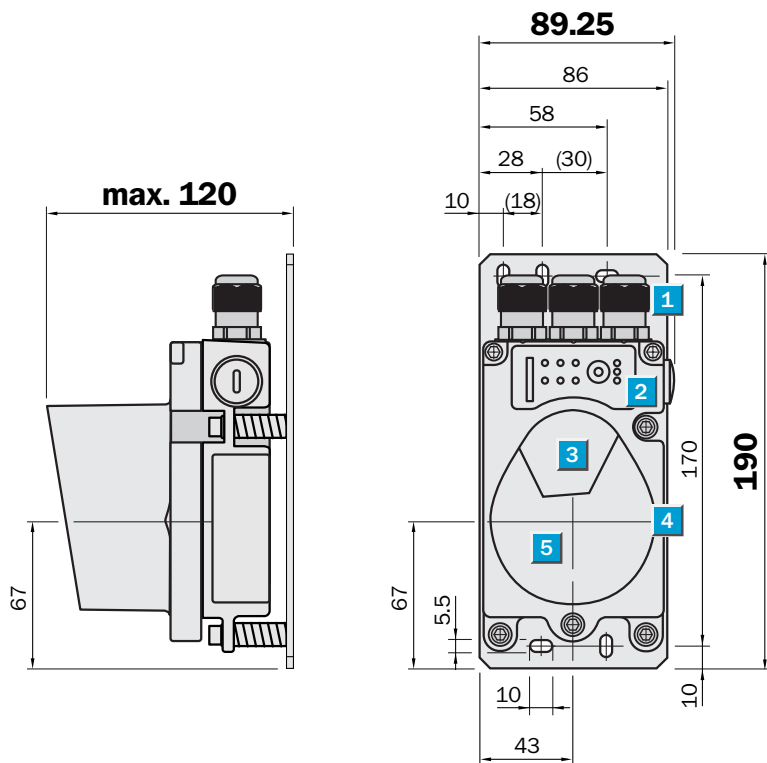
**Order information**

Type	Order no.
ISD 300-4211	6 024 854
ISD 300-4212	6 024 855
ISD 300-4221	6 024 856
ISD 300-4222	6 024 857

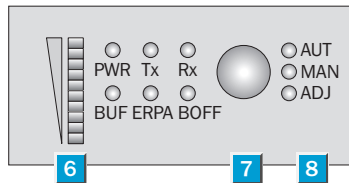
	<b>Scanning range</b> <b>0.2 ... 200 m</b>
<b>Data transmission systems</b>	

- CANopen/DeviceNet interface
- Control panel front access
- Easy one-man-handling
- Up to 1 MBit/s transfer rate
- Integrated 3-point bracket

**Dimensional drawing**



**Adjustment possible**  
All types

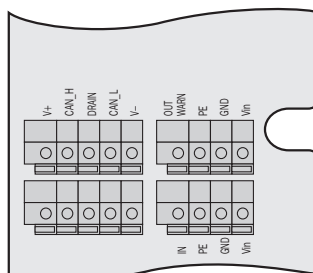


- 1** M16
- 2** Control panel
- 3** Sender lens
- 4** Center of optical axis
- 5** Receiver lens
- 6** Display for signal level
- 7** Function button
- 8** LED operating indicator



**Connection type and data interface**

<b>See chapter Accessories</b>
Cables and connectors
Mounting systems
Special accessories



Terminals, general	
V <sub>in</sub>	L+
GND	M
PE	Shield
OUT/WARN	Q
IN	Switch. input

Terminals, CANopen/DeviceNet	
V-	Neg. supply (CAN reference ground)
CAN_L	Bus signal (LOW)
DRAIN	Shield
CAN_H	Bus signal (HIGH)
V+	Pos. supply

Technical data		ISD 300-	5211	5212								
<b>Scanning range</b>	0.2 ... 200 m											
Light source	Infrared light ( $\lambda = 880$ nm)											
Transmit/receive angle	$\pm 0.5^\circ$ for optical axis											
Light spot diameter	0.9 m at 50 m/1.75 m at 100 m/ 3.5 m at 200 m											
<b>Data transfer rate</b>	Max. 500 kBit/s DeviceNet											
	Max. 1 MBit/s CANopen											
LED status indicator	Supply voltage, function mode, data transfer, signal level											
Data interface	CANopen/DeviceNet											
<b>Switching inputs</b>	0 ... 2 V DC: "sender/receiver off"											
	18 ... 30 V DC: "sender/receiver on"											
<b>Switching outputs</b>	0 ... 2 V DC: normal operative											
	$V_{in}-2$ V DC: reduced function reserve											
<b>Electrical connections</b>	Terminals											
<b>Supply voltage <math>V_S</math></b>	18 ... 30 V DC											
Current consumption	200 mA at 24 V DC											
<b>Enclosure rating</b>	IP 65											
<b>Protection class</b>	1											
<b>EMC vibration test</b>	EN 61326 (1998) + A1 (1999)											
<b>Ambient temperature</b>	Operation $-5 \dots +50$ °C											
	Storage $-30 \dots +70$ °C											
Max. relative humidity	Max. 90 %, uncondensed											
<b>Weight</b> per unit	1200 g											
<b>Housing material</b>	Aluminium die-cast, front screen: glass											

**Notes:**

A pair of devices with numbers ending in 1 and 2 are required to create a data transfer section.

**Order information**

Type	Order no.
ISD 300-5211	6 027 231
ISD 300-5212	6 027 232



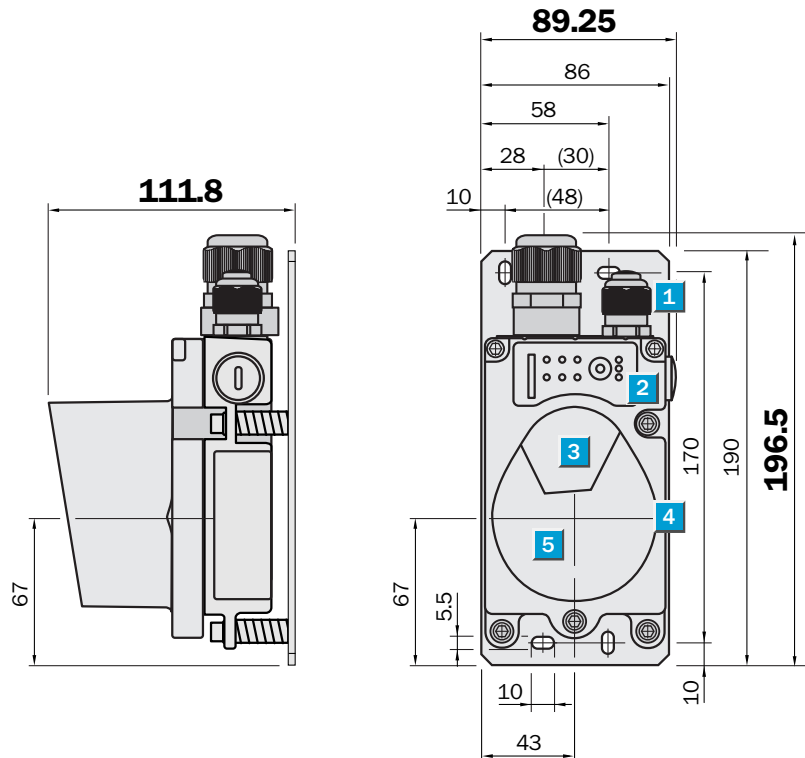
**Scanning range**  
0.2 ... 200 m

Data transmission systems

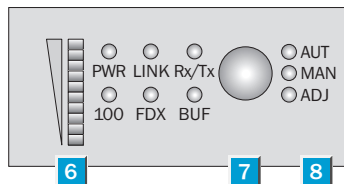
- Ethernet interface
- Control panel front access
- Easy one-man-handling
- Up to 2 MBit/s transfer rate
- Protocol-independent
- RJ 45 plug connection
- Integrated 3-point bracket



Dimensional drawing

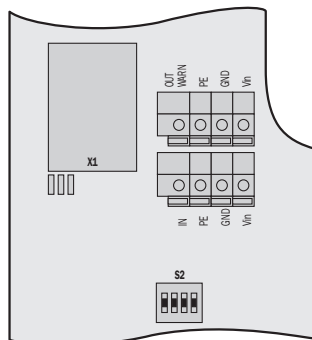


Adjustment possible  
All types



- 1 M16
- 2 Control panel
- 3 Sender lens
- 4 Center of optical axis
- 5 Receiver lens
- 6 Display for signal level
- 7 Function button
- 8 LED operating indicator

Connection type and data interface



Terminals, general	
V <sub>in</sub>	L+
GND	M
PE	Shield
OUT/WARN	Q
IN	Switch. input



**See chapter Accessories**

Cables and connectors
Mounting systems
Special accessories

Socket	Function	
<b>X1</b>	Socket for 10Base-T or 100Base-TX	
Switch	Position	Function
<b>S2.1</b>	ON	<b>Autonegotiation active (default)</b>
	OFF	Autonegotiation deactivated
<b>S2.2</b>	ON	100 MBit
	OFF	<b>10 MBit (default)</b>
<b>S2.3</b>	ON	Full duplex
	OFF	<b>Half duplex (default)</b>
<b>S2.4</b>	ON	Reserved
	OFF	<b>Reserved (default)</b>

Technical data		ISD 300-	6211	6212	6221	6222	6311	6312				
<b>Scanning range</b>	0.2 ... 200 m											
	... 300 m											
Light source	Infrared light ( $\lambda = 880 \text{ nm}$ )											
Transmit/receive angle	$\pm 0.5^\circ$ for optical axis											
Light spot diameter	0.9 m at 50 m/1.75 m at 100 m/											
	3.5 m at 200 m											
<b>Data transfer rate</b>	Max. 2 MBit/s											
LED status indicator	Supply voltage, function mode, data transfer, signal level											
Data interface	Ethernet											
<b>Switching inputs</b>	0 ... 2 V DC: "sender/receiver off"											
	18 ... 30 V DC: "sender/receiver on"											
<b>Switching outputs</b>	0 ... 2 V DC: normal operative											
	$V_{in}$ -2 V DC: reduced function reserve											
<b>Electrical connections</b>	Terminals											
<b>Supply voltage <math>V_S</math></b>	18 ... 30 V DC											
Current consumption	200 mA at DC 24 V (without heating)											
	800 mA at 24 DC V (with heating)											
<b>Enclosure rating</b>	IP 65											
<b>Protection class</b>	1											
<b>EMC vibration test</b>	EN 61326 (1998) + A1 (1999)											
<b>Ambient temperature</b>	Operation $-5^\circ\text{C} \dots +50^\circ\text{C}$											
	Storage $-30^\circ\text{C} \dots +70^\circ\text{C}$											
Max. relative humidity	Max. 90 %, uncondensed											
<b>Weight</b> per unit	1200 g											
<b>Housing material</b>	Aluminium die-cast, front screen: glass											

**Notes:**

A pair of devices with numbers ending in 1 and 2 are required to create a data transfer section.

**Order information**

Type	Order no.
ISD 300-6211	6 028 692
ISD 300-6212	6 028 693
ISD 300-6221	6 030 557
ISD 300-6222	6 030 558
ISD 300-6311	6 032 711
ISD 300-6312	6 032 712