# Actuator-Sensor Interface: intelligent wiring

Process signals created on site were previously transmitted via comprehensive parallel wiring and input/output modules. This means that each sensor or actuator in the field was connected via its own line with the input/output modules.

The change of structures, motivated by a high degree of cost consciousness, has pushed the architecture of automation systems strongly in the direction of decentralization over the past years. This triggered the triumphant progress of field bus technology and especially the AS interface® as the most significant standardized representative of the lowest field level: sensors and actuators.

Two factors have always characterized automation technology: the economic pressure to cut costs and the availability of new technologies. On the other hand, the requirement to use more progressive system architecture puts pressure on equipment manufacturers to structure components, so that they meet the needs of the architecture.

AS-i
Applications

Central control of complex processes in the packaging industry with AS-i.

To Control System
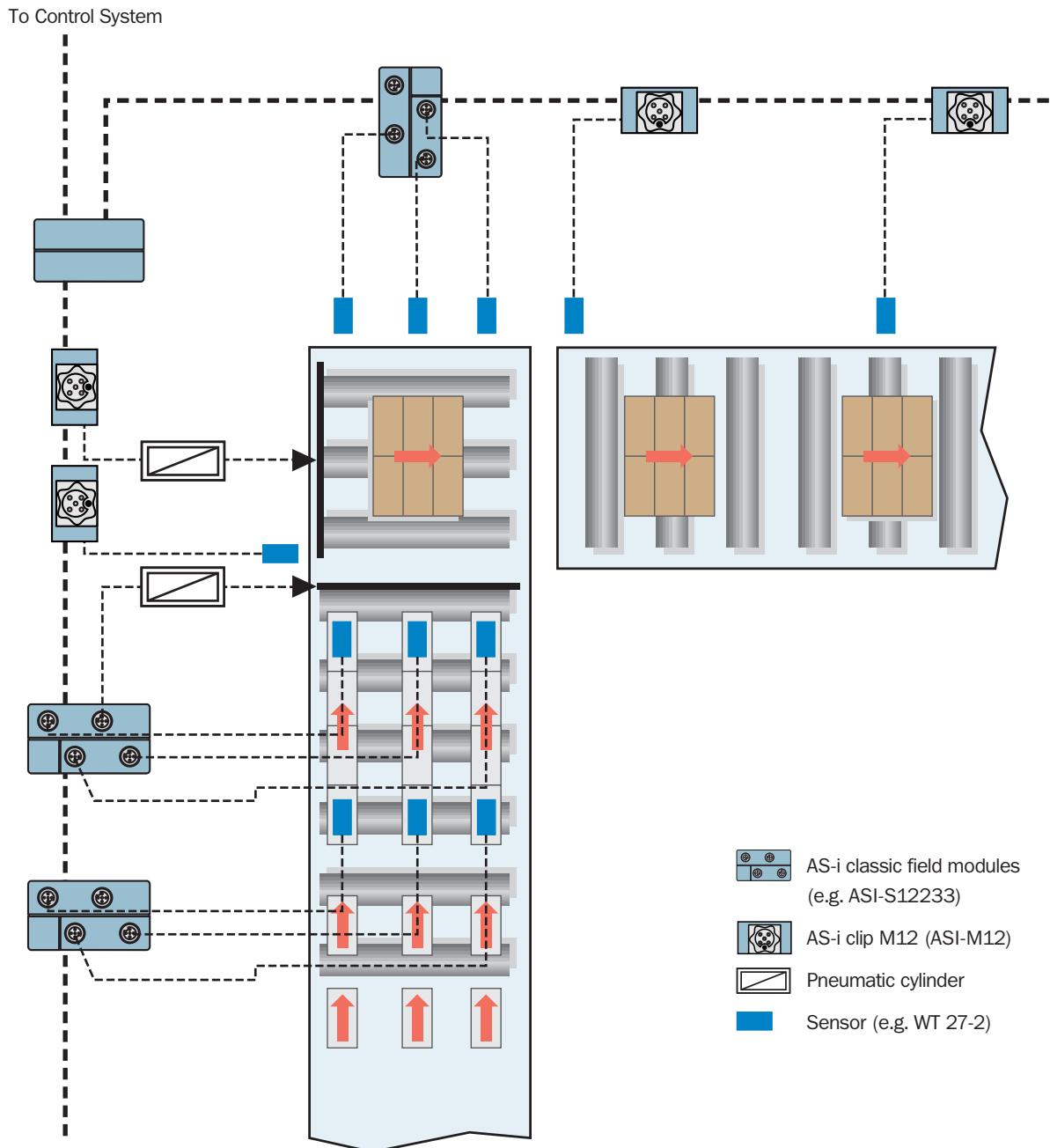
AS-i classic field modules
(e.g. ASI-S12233)

AS-i clip M12 (ASI-M12)

Pneumatic cylinder

Sensor (e.g. WT 27-2)

AS-i Master RS 232C, ASI-M11320

- Serial interface
- Simple SPS "AS-i Control" II
- Advanced AS-i diagnostics
- AS-i version 2.1

Dimensional drawing

110

100

75

100
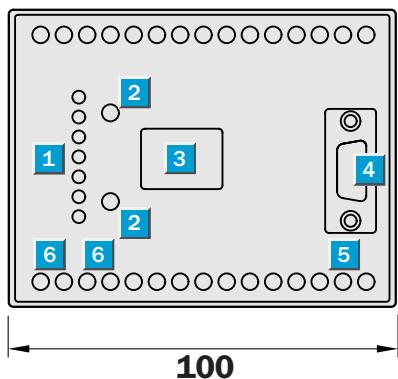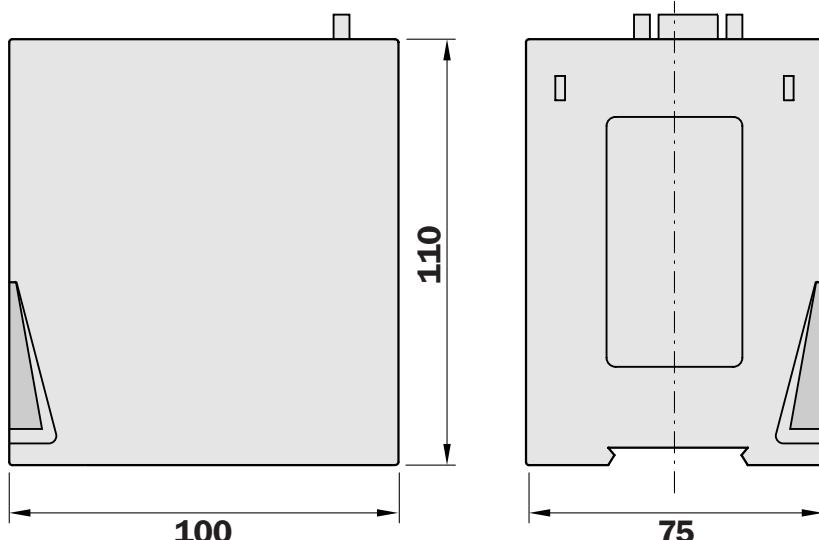
1	Status indicator LED
2	Buttons for manual operation
3	LCD display
4	RS 232C interface
5	Functional earth
6	AS-Interface® connection (power supply via AS-i cable)

Connection type

5
1
9
6

Terminals

1	+	AS-i +
2	−	AS-i −
3	+	AS-i +
4	−	AS-i −
5		FE

RS 232C
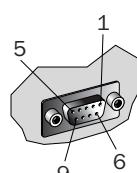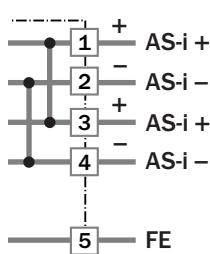
1	NC
2	R x D
3	T x D
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC
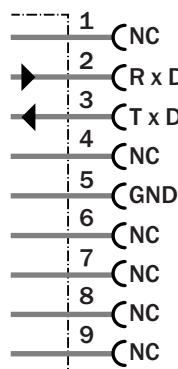
See chapter Accessories

AS-i Control Tool Software

Connection cable PC – RS 232

Technical data		ASI	-M 31320								
Supply voltage V$_S$ [1]		26.5 ... 31.6 V DC									
Operating current		Approx. 200 mA out of the AS-i circuit									
Interface		RS 232C									
Baud rates [2]		1200, 2400, 4800, 9600, 19.200									
		38.400 or 57.800 Baud									
AS-i cycle time [3]		150 µs									
AS-Interface specification		2.1									
Displays	LCD	Slave addresses and error messages									
	LED green (power)	Power on									
	LED green (ser active)	Profibus master recognized									
	LED red (config error)	Configuration error									
	LED green (U ASI)	AS-i voltage "OK"									
	LED green (ASI active)	AS-i normal operation									
	LED green (prg enable)	Automatic slave programming enabled									
	LED yellow (prj mode)	Configuration mode active									
Push-buttons		2 (mode/set)									
Voltages of insulation		500 V DC									
Product standard/EMC		EN 50295									
Ambient temperature T$_A$		Operating 0 ... +55 °C									
		Storage −25 ... +85 °C									
Enclosure rating to EN 60529		IP 20									
Tolerable loading impacts/vibrations[5]		Screw-mounting: b ≤ 30 g, T ≤ 11 ms									
		Spring lock-mounting: b ≤ 15 g, T ≤ 11 ms									
		Screw-mounting: f ≤ 55/s, a ≤ 1 mm									
		Spring lock-mounting: f ≤ 55/s, a ≤ 0.5 mm									
Housing		Housing with snap fastening, LDG-A-30									
Weight		420 g									

[1] In accordance with AS-i spezification
[2] Automatic recognition
[3] Number of slaves + 1
[4] Control program active
[5] Max. allowed values

Order information	
Type	**Order no.**
ASI-M31320	6 022 376

Description of the micro programmed logic control system

Processor	DS80C320
Programme memory (EEPROM)	600 bytes/16 Kbytes with activated AS-i Control Tool Software
Data storage capacity (bit/byte marker)	8 Kbytes
Remanent data storage capacity	128 byte marker
Clock speed (1 Kbit/1000 words)	1.8 ms/2.0 ms to 16 ms/18 ms, depending on the unit in question

Processing

Control Command System	based on STEP5
Supplementary operations	8051 assembler, call-up from AS-i Master functions
Marker/register	8 Kbytes
Number of counters/timers	1024 in each instance
Counter/timer resolution	16 Bit
Programmable times	1 to 40950 ms
Inputs and Outputs	up to 248 E, 186 A. 124 analog values by means of AS-i slaves

Programming

Programming languages	Selection logic, assembler
Programming device	PC
Programming platform	DOS, MS Windows, Windows 95/98, Windows NT, Windows 2000
Programming software	AS-i control tools

AS-i Profibus Gateway, ASI-M31321

- ■ IP 20
- ■ AS-i Control Tool
- ■ Advanced AS-i diagnostics
- ■ AS-i version 2.1
- ■ On-site diagnostics with graphic display
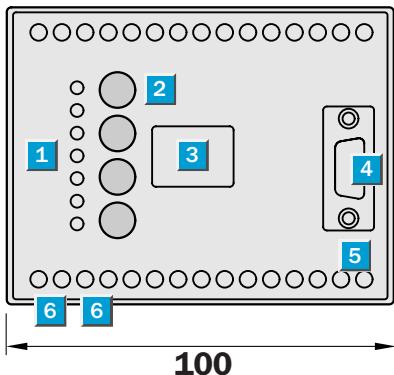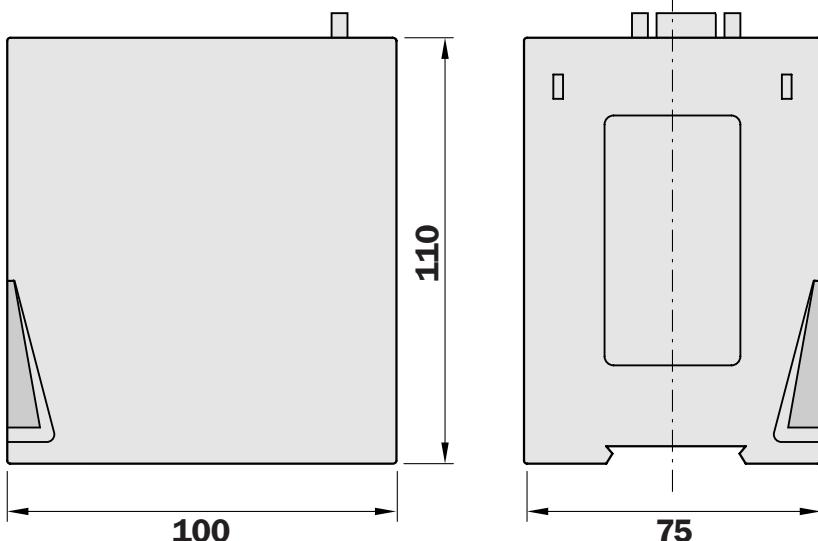
CE ASi INTERFACE
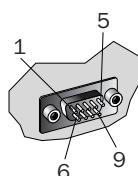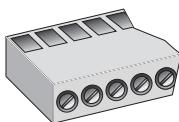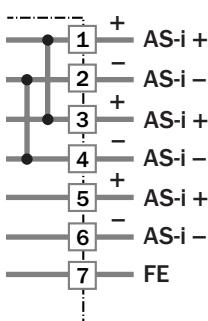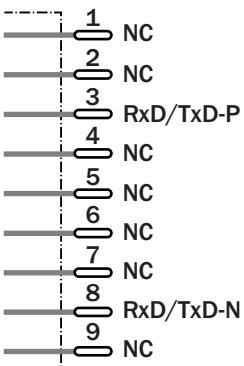
See chapter Accessories

Software AS-i Control Tools

Connection cable PC – RS 232

Profibus Master simulator

Dimensional drawing

110

100

75

100

1 Status indicator LED
2 Buttons for manual operation
3 Graphic display
4 Profibus interface
5 Functional earth
6 AS-Interface® connection
   (power supply via AS-i cable)

Connection type

5
1
6
9

Terminals

1	+	AS-i +
2	–	AS-i –
3	+	AS-i +
4	–	AS-i –
5	+	AS-i +
6	–	AS-i –
7		FE

Profibus

1	NC
2	NC
3	RxD/TxD-P
4	NC
5	NC
6	NC
7	NC
8	RxD/TxD-N
9	NC

Technical data	ASI	-M 31321								
Supply voltage V$_S$ [1]	26.5 ... 31.6 V DC									
Operating current	Approx. 200 mA out of the AS-i circuit									
Interface	Profibus according to DIN 19245 Part 3									
Baud rates [2]	9.6 to 12,000 kBaud									
DP functions [3]	Imaging of the AS-i slaves									
AS-i cycle time [4]	150 μs									
AS-Interface spezification	2.1									
Displays Display	Menu guided display									
LED green (power)	Power on									
LED green (Profibus)	Profibus master recognized									
LED red (config error)	Configuration error									
LED green (U ASI)	AS-i voltage "OK"									
LED green (ASI active)	AS-i normal operation									
LED green (prg enable)	Automatic slave programming enabled									
LED yellow (prj mode)	Configuration mode active									
Push-buttons	4 (mode/↑; ok; ESC; set/↓)									
Voltages of insulation	500 V DC									
Product standard/EMC	EN 50295									
Ambient temperature T$_A$	Operating 0 ... +55 °C									
	Storage −25 ... +85 °C									
Enclosure rating to EN 60529	IP 20									
Tolerable loading impacts/vibrations [5]	Screw-mounting: b ≤ 30 g, T ≤ 11 ms									
	Spring lock-mounting: b ≤ 15 g, T ≤ 11 ms									
	Screw-mounting: f ≤ 55/s, a ≤ 1 mm									
	Spring lock-mounting: f ≤ 55/s, a ≤ 0.5 mm									
Housing	Housing with snap fastening, LDG-A-30									
Weight	420 g									

[1] In accordance with AS-i spezification
[2] Automatic recognition
[3] As I/O Data of the Profibus complete diagnosis and configuration via Profibus DP
[4] Number of slaves + 1
[5] Max. allowed values

Order information	
Type	**Order no.**
ASI-M31320	6 027 500

AS-i components

AS-i Profibus Gateway

- ■ **IP 20**
- ■ **AS-i Control Tool**
- ■ **Advanced AS-i diagnostics**
- ■ **AS-i version 2.1**
- ■ **Two AS interface Master units in a single housing**
- ■ **On-site diagnostics with graphic display**
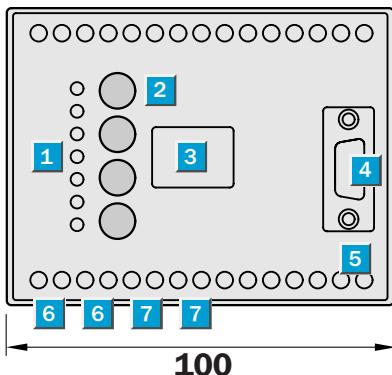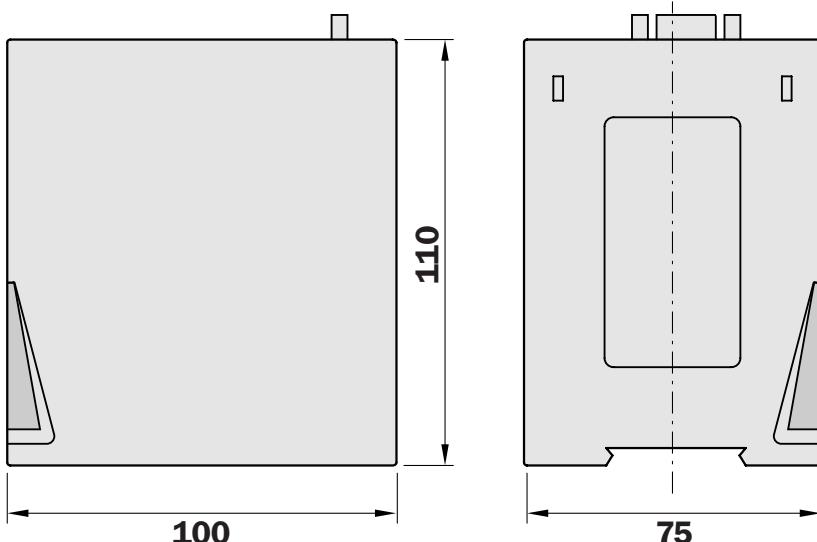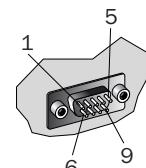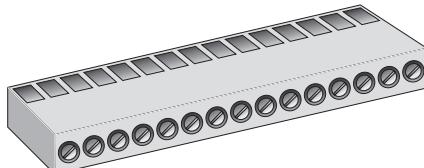
CE   ASI INTERFACE

See chapter Accessories

| AS-i Control Tool Software |
| Connection cable PC – RS 232 |
| Profibus Master simulator |

Dimensional drawing

110

100

75

100

1	Status indicator LED
2	Buttons for manual operation
3	Graphic display
4	Profibus interface
5	Functional earth
6	AS-Interface® connection 1 (power supply via AS-i cable)
7	AS-Interface connection 2 (power supply via AS-i cable)

Connection type

5
1
6   9

Terminals

1	+	AS-i +
2	–	AS-i –
3	+	AS-i +
4	–	AS-i –
5	+	AS-i +
6	–	AS-i –
7	+	AS-i +
8	–	AS-i –
9	J+	a
10	J–	L+
11	J+	M
12	J–	b
13		FE

Profibus

1	NC
2	NC
3	R x D/T x D-P
4	NC
5	NC
6	NC
7	NC
8	R x D/T x D-N
9	NC
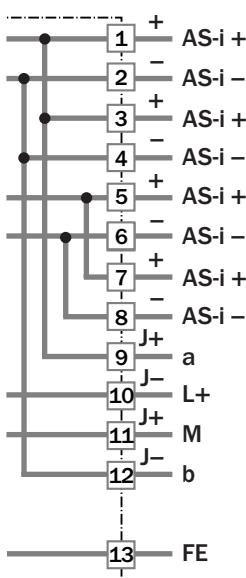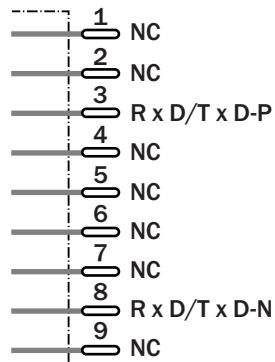
Technical data ASI	-M 32321										
Supply voltage V$_S$ [1]	26.5 ... 31.6 V DC										
Operating current	Approx. 200 mA out of the AS-i circuit										
Interface	Profibus, according to DIN 19245 Part 3										
Baud rates [2]	9.6 to 12,000 kBaud										
DP functions [3]	Imaging of the AS-i slaves										
AS-i cycle time [4]	150 µs										
AS-Interface spezification	2.1										
Displays Display	Menu guided display										
LED green (power)	Electrical supply On										
LED green (Profibus)	Profibus master recognized										
LED red (config error)	Configuration error										
LED green (U ASI)	AS-Interface voltage "OK"										
LED green (AS-i active)	AS interface operation normal										
LED green (prg enable)	Automatic slave programming enabled										
LED yellow (prj mode)	Configuration mode active										
Push-buttons	4 (mode/↑; ok; ESC; set/↓)										
Voltages of insulation	500 V DC										
Product standard/EMC	EN 50295										
Ambient temperature T$_A$	Operating 0 ... +55 °C										
	Storage −25 ... +85 °C										
Enclosure rating to EN 60529	IP 20										
Tolerable loading impacts/vibrations [5]	Screw-mounting: b ≤ 30 g, T ≤ 11 ms										
	Spring lock-mounting: b ≤ 15 g, T ≤ 11 ms										
	Screw-mounting: f ≤ 55/s, a ≤ 1 mm										
	Spring lock-mounting: f ≤ 55/s, a ≤ 0.5 mm										
Housing	Housing with snap fastening, LDG-A-30										
Weight	420 g										

[1] In accordance with AS-i spezification
[2] Automatic recognition
[3] As I/O Data of the Profibus complete diagnosis and configuration via Profibus DP

[4] Number of slaves + 1
[5] Max. allowed values

Order information	
Type	**Order no.**
ASI-M32321	6 027 501

- IP 65
- Advanced AS-i diagnostics
- AS-i version 2.1

Dimensional drawing

80
35
91
70
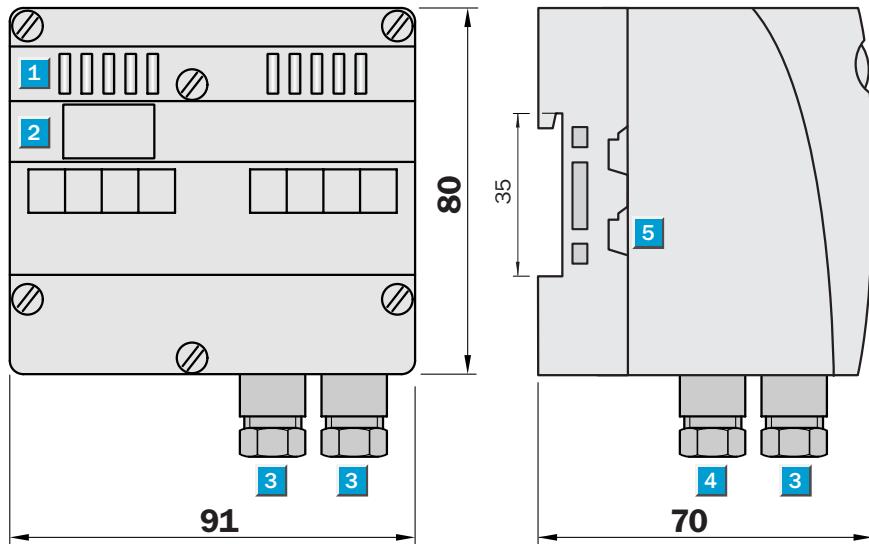
1 Status indicators LED
2 LCD display
3 Profibus interface via a Sub D data cable
(PG screwed connection)
4 Functional earth (Connection via PC screwed connection
in housing)
5 AS-Interface® connection
(power supply via AS-i cable)

With scheduling resistances that can be switched on and off.
FK lower part not included with delivery.

Connection type

1	RxD/TxD-N (data line A)
2	RxD/TxD-P (data line B)
3	RxD/TxD-N (data line A)
4	RxD/TxD-P (data line B)
5	0 V
6	Shield
7	FE functional earth
8	FE functional earth
9	Shield
10	+ 5 V
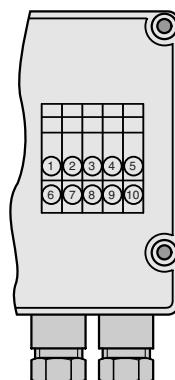
Technical data	ASI	-M 31330									
Supply voltage V$_S$ [1]	26.5 ... 31.6 V DC										
Operating current	Approx. 200 mA out of the AS-i circuit										
Interface	Profibus, according to DIN 19245 Part 3										
Baud rates [2]	9.6 to 12,000 kBaud										
DP functions [3]	Imaging of the AS-i slaves										
AS-i cycle time [4]	150 µs										
AS-Interface spezification	2.1										
Displays LCD	Slave addresses and error messages										
LED green (power)	Power on										
LED green (ser active)	Profibus master recognized										
LED red (config error)	Configuration error										
LED green (U ASI)	AS-i voltage "OK"										
LED green (ASI active)	AS-i normal operation										
LED green (prg enable)	Automatic slave programming enabled										
LED yellow (prj mode)	Configuration mode active										
Push-buttons	2 (mode/set)										
Voltages of insulation	500 V DC										
Product standard/EMC	EN 50295										
Ambient temperature T$_A$	Operation 0 ... +55 °C										
	Storage −25 ... +85 °C										
Enclosure rating to EN 60529	IP 65										
Tolerable loading impacts/vibrations[5]	Screw-mounting: b ≤ 30 g, T ≤ 11 ms										
	Spring lock-mounting: b ≤ 15 g, T ≤ 11 ms										
	Screw-mounting: f ≤ 55/s, a ≤ 1 mm										
	Spring lock-mounting: f ≤ 55/s, a ≤ 0.5 mm										
Housing	Housing with snap fastening, PA										
Weight	420 g										

[1] In accordance with AS-i spezification
[2] Automatic recognition
[3] As I/O Data of the Profibus complete diagnosis and configuration via Profibus DP
[4] Number of slaves + 1
[5] Max. allowed values

Order information	
Type	**Order no.**
ASI-M31330	6 022 378
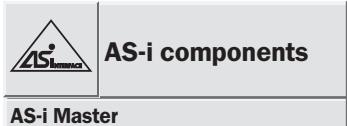
- **AS-i Master Board for AT-PCs**
- **Two AS-i Masters on one board**
- **Micro PLC AS Interface Control II**
- **Watchdog**
- **Advanced AS-i diagnostics**
- **AS-i version 2.1**

C E

See chapter Accessories

AS-i Control Tool Software

Dimensional drawing

100

164
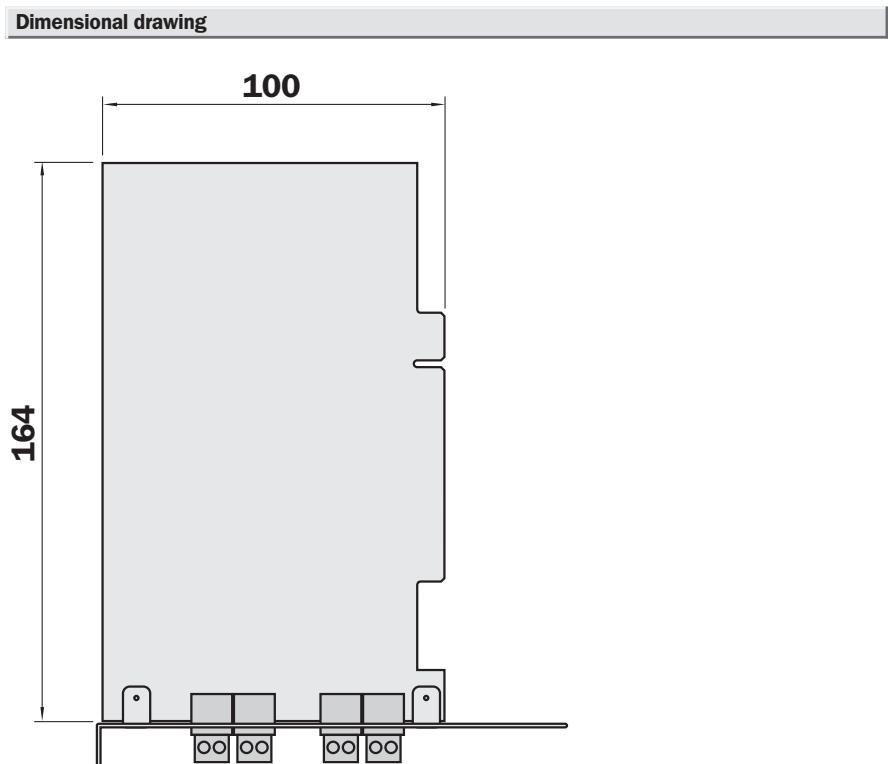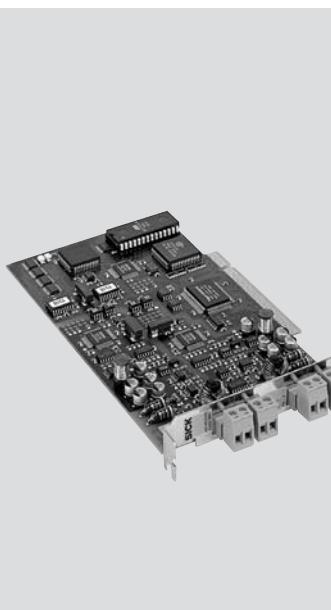
Connection type

Terminals

1	+	AS-i +
2	–	AS-i –
3	+	AS-i +
4	–	AS-i –
5	+	AS-i +
6	–	AS-i –
7	+	AS-i +
8	–	AS-i –
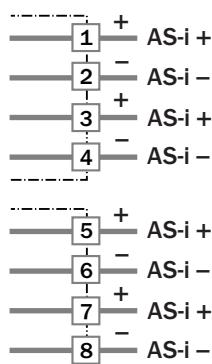
Technical data ASI		-M 22310									
Supply voltage V$_S$	Supply via PC and AS-i										
Operating current	Approx. 200 mA out of PC power supply										
	Approx. 70 mA from AS-i (per AS-i circuit)										
Type	PCI card										
Interface [1]	16 bit PCI bus interface										
	AS-i circuit 1										
	AS-i circuit 2										
Connection type	PC plug-in card location, Plug & Play										
ASI-cycle time [2]	150 μs										
ASI spezification	2.1										
Voltages of insulation	500 V										
Product standard/EMC	EN 50295										
Ambient temperature T$_A$	Operating 0 ... +55 °C										
	Storage −25 ... +70 °C										
Weight	125 g										

[1] Galvanic separation from AS-i
[2] Number of slaves + 1

Description of the micro programmed logic control system

Processor	DS80C320
Programme memory (EEPROM)	600 bytes/16 Kbytes with activated AS-i Control Tool Software
Data storage capacity (bit/byte marker)	8 kBytes
Remanent data storage capacity	128 byte marker
Clock speed (1 Kbit/1000 words)	1.8 ms/2.0 ms to 16 ms/18 ms, depending on the unit in question

Order information

Type	Order no.
ASI-M22310	6 022 380

Processing

Control Command System	based on STEP5
Supplementary operations	8051 assembler, call-up from AS-i Master functions
Marker/register	8 kBytes
Number of counters/timers	1024 in each instance
Counter/timer resolution	16 Bit
Programmable times	1 to 40950 ms
Inputs and Outputs	up to 248 E, 186 A. 124 analog values by means of AS-i slaves

Programming

Programming languages	Selection logic, assembler
Programming device	PC
Programming platform	DOS, MS Windows, Windows 95/98, Windows NT, Windows 2000
Programming software	AS-i control tools

AS-i components

AS-i power supply unit

- Easy mounting on DIN rail TS 35
- Overload and short-circuit protected
- Mains power input and output indirect-coupled
- Integrated data decoupling
- Plug-in bridge for switching off AS-i communication

CE ASi INTERFACE

Dimensional drawing

HN.SL A3.100

131 **124** **49** **96** **107**

HN.SL A8.100

4 230 V 4 Overload 5 Reset 6 124 1 2 3 N L + – + – Shield 4 7 5 44 11 91
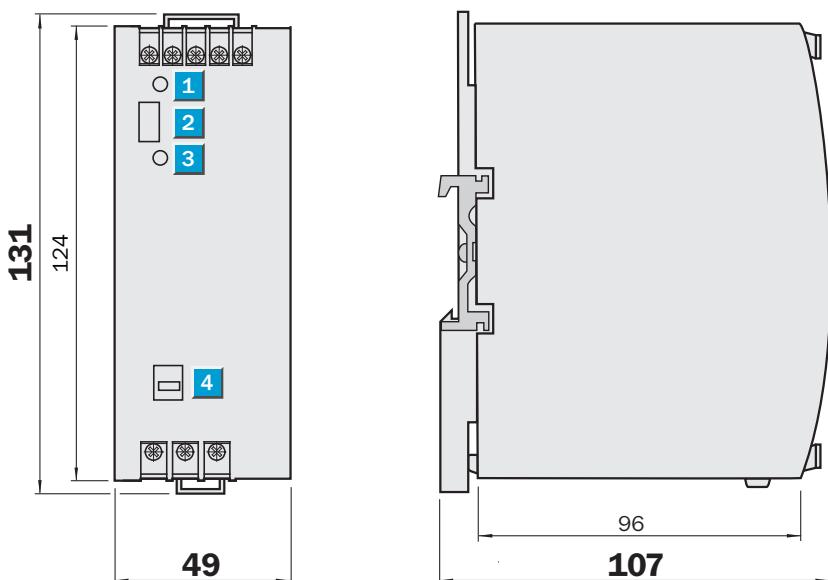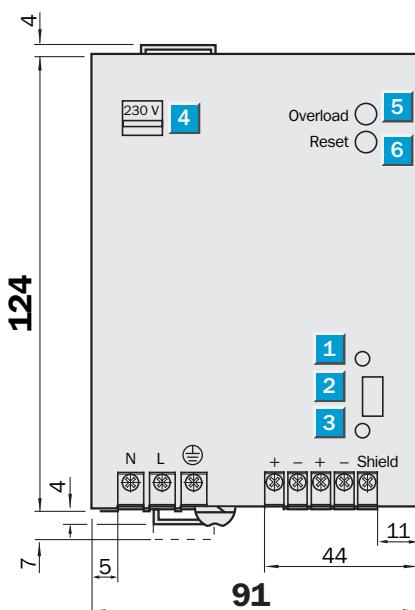
1	LED green, AS-i power supply OK
2	Plug-in bridge for switching off AS-i communication
3	LED red, AS-i communication interrupted
4	Switch 230 V DC/110 V DC
5	Red flashing LED in FKSE mode
6	Switch for resetting the FVSE mode

Connection type

1	+	AS-i +
2	–	AS-i –
3	+	AS-i +
4	–	AS-i –
5		Shield/FE

1	N
2	L+
3	PE
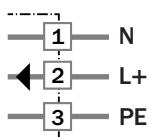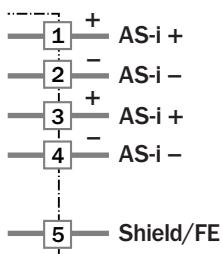
| Technical data	HN	SL A3. 100	SL A8. 100								
Voltage rating	115/230 V AC [1]	▨	▨								
Supply voltage V$_S$	85 ... 132 V AC/196 ... 264 V AC	▨	▨								
Output current	2.8 A	▨									
	8 A		▨								
Short-circuit protected		▨	▨								
Overload protected		▨	▨								
Network nominal frequency	47 ... 63/s	▨	▨								
Efficiency factor	90.5 %	▨									
	92 %		▨								
Output voltage [2]	29.5 ... 31.6 V DC to PELV	▨	▨								
Standby delay time	100 ms typ.	▨									
	300 ms typ.		▨								
Derating	2 W/k at 60 °C	▨									
	6 W/k at 60 °C		▨								
Power outage bridging time [3]	26 ms	▨									
	10 ms		▨								
Switch-on peak current [4]	20 A (132 V AC), 38 (264 V AC)	▨									
	< 14 A (120 V AC), < 27 A (240 V AC)		▨								
Fuses	T3 15 A/250 V integrated	▨									
	T 8 A/250 V HBC		▨								
Ripple	< 50 mV$_{PP}$	▨	▨								
Display LED green/red	AS-i communication	▨	▨								
Ambient temperature T$_A$	Operation −10 ... + 70 °C	▨	▨								
	Storage −25 ... +85 °C	▨	▨								
Enclosure rating	IP 20	▨	▨								
AS-i certificate	34401	▨									
	41601		▨								
EMC	EN 50081-1, EN 61000-6-2	▨	▨								
LVD (low-voltage directive)	EN 60950, EN 50178	▨	▨								
	EN 61000-3-2 (A 14), EN 61000-3-3	▨	▨								
Product standard	EN 50295	▨	▨								
Housing material	Aluminum, galvanized sheet steel	▨	▨								
Weight	496 g	▨									
	890 g		▨								

[1] 230 V AC default
[2] Output is short-circuit protected and protected against no-load and overload occurrences
[3] Load dependent
[4] Not accessible

Order information

Type	Order no.
HN.SL A3.100	6 022 381
HN.SL A8.100	6 022 382

AS-i components

AS-i Smartline switch cabinet modules

- **For cabinet mounting**
- **Digital inputs and outputs**
- **Sensor/actuator, connection via combicon plug**
- **Support rail fastening**
- **AS-i version 2.1**
- **Connection of 2-wired and 3-wired sensors**

CE   ⚠ASI INTERFACE

See chapter Accessories

AS-i address equipment
AS-i address cable
Combicon plug

Dimensional drawing

ASI-S12320	ASI-S24220
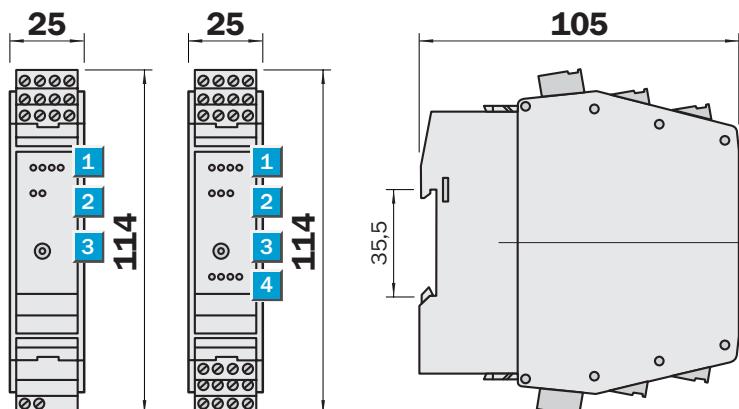
Combicon plug not included with delivery.

1	LED array 1
2	LED array 2
3	Addressing socket
4	LED array 3

Connection type

ASI-S12320	ASI-S24220

ASI-S12320

Terminal	Signal
1	+ AS-i +
2	− AS-i −
3	M (I−)
4	I1
5	L+ (I+)
6	M (I−)
7	I2
8	L+ (I+)
9	M (I−)
10	I3
11	L+ (I+)
12	M (I+)
13	I4
14	L+ (I+)

ASI-S24220

Terminal	Signal
1	+ AS-i +
2	− AS-i −
3	M (I−)
4	I1
5	L+ (I+)
6	M (I−)
7	I2
8	L+ (I+)
9	M (I−)
10	I3
11	L+ (I+)
12	M (I+)
13	I4
14	L+ (I+)
15	M (O−)
16	O1
17	M (O−)
18	O2
19	M (O−)
20	O3
21	M (O−)
22	O4
23	L+ (E−)
24	M (E−)

Technical data	ASI	-S 12320	-S 24220							
Digital inputs	4	■								
Digital outputs (transistor)	4		■							
Supply voltage V_S [1]	26.5 ... 31.6 V DC	■	■							
Current consumption total	≤ 240 mA	■	■							
Inputs										
Input circuit	PNP	■	■							
Sensor supply via	AS-i	■	■							
Voltage area	18 ... 30 V DC	■	■							
Current loading [2]	200 mA	■	■							
Inputs	Short-circuit protection	■	■							
Switching level HIGH signal 1	≥ 10 V	■	■							
Input current HIGH/LOW	≥ 6 mA/≤ 2 mA	■	■							
Outputs	PNP		■							
Electrically separated			■							
Short-circuit protected			■							
Watchdog integrated [3]			■							
Current load per output (DC 13) [4]	1 A		■							
Extern supply voltage [5]	10 ... 30 V DC required		■							
Current load per module	4 A		■							
AS-i interface reserve-polarity prot.		■	■							
AS-i profile	S-0.A.E	■								
	S-7.0.E		■							
AS interface spezification	2.1	■	■							
Extended address mode available		■								
AS-i certificate	40801	■								
	40701		■							
Product standard/EMC	EN 50295	■	■							
Enclosure rating to EN 60529	IP 20	■	■							
Ambient temperature T_A	Operation −25 ... + 70 °C	■	■							
	Storage −40 ... +100 °C	■	■							
Display LED green	AS-i voltage	■	■							
LED yellow	In-/output signals	■	■							
LED green	24 V supply	■	■							
LED red	Communication error [6]	■	■							
Addressing via addressing socket		■	■							
Housing material	PA 6.6	■	■							
Weight	110 g	■	■							
Connection to AS interface	Via combicon plug	■	■							

[1] In accordance with AS-i spezification
[2] For all inputs total
[3] Outputs will be reset, if communication is interrupted for more than 40 ms
[4] Category of use (DC 13): On and Off switching capacity for activation of electro-solenoids is designed for use up 20 W (in accordance with IEC 609-47-5-2)
[5] Via combicon plug to PELV
[6] Peripherie error

Order information

Type	Order no.
ASI-S12320	6 022 383
ASI-S24220	6 022 384

AS-i components

AS-i Compact field modules

- **For field applications IP 67**
- **Digital inputs and outputs**
- **External voltage supply via 24 V flat cable**
- **Inputs Y-circuit for connection of 3- or 4-wire sensors**
- **AS-i version 2.1**

CE ASI INTERFACE

See chapter Accessories
AS-i addressing unit
AS-i address cable
Safety cap for M12 female connector
Cables and connectors

Dimensional drawing

ASI-S12343
ASI-S21243

ASI-S24243

1	LED green: AS-i-Power
2	LED green: output voltage
3	LED red: FAULT
4	IR interface
5	Function ground FE

Two protection caps for M12 connectors included with delivery.
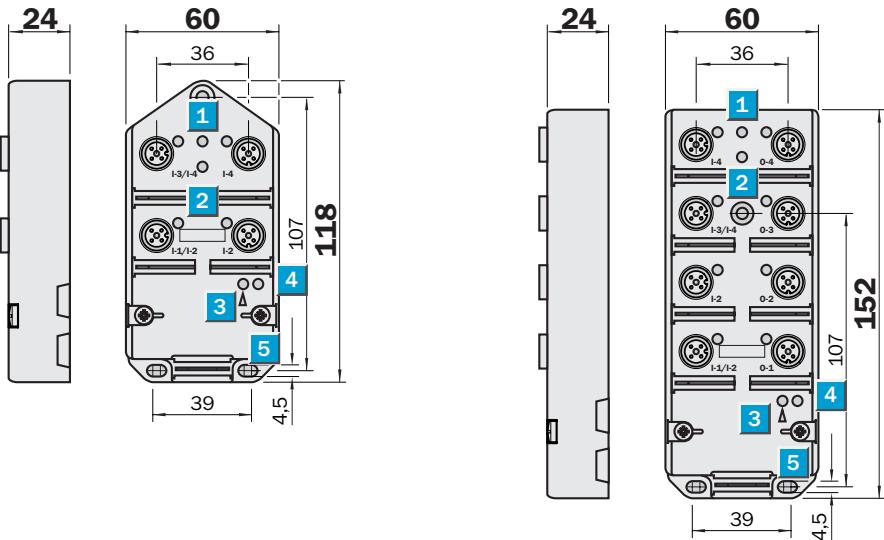
Connection type

ASI-S12343	ASI-S21243	
	ASI-S24243	
Socket 1 – 4	Socket 1 – 4	Socket 1 – 4
Input 1 – 4	Input 1 – 4	Output 1 – 4

I-1/I-2 (I-3/I-4)
1 L+
2 IN
3 M
4 IN
5 FE

I-2 (I-4)
1 L+
2 NC
3 M
4 IN
5 FE

I-1/I-2 (I-3/I-4)
1 L+
2 IN
3 M
4 IN
5 FE

I-2 (I-4)
1 L+
2 NC
3 M
4 IN
5 FE

1 NC
2 NC
3 M
4 OUT
5 FE

Technical data	ASI	-S 12343	-S 21243	-S 24243						
Digital inputs	2		●							
	4	●		●						
Digital outputs	2		●							
	4			●						
Supply voltage V_S[1]	26.5 … 31.6 V DC	●	●	●						
Current consumption total	≤ 242 mA	●		●						
	≤ 142 mA		●							
Inputs										
Input circuit	PNP	●	●	●						
Sensor supply via	ASI	●	●	●						
Voltage area	20 … 30 V DC	●	●	●						
Current loading [2]	200 mA	●		●						
	100 mA		●							
Inputs	Short-circuit protection	●	●	●						
Switching level HIGH signal 1	≥ 10 V	●	●	●						
Input current HIGH/LOW	≥ 5 mA/≤ 1.5 mA	●	●	●						
Outputs										
Electrically separated			●	●						
Short-circuit protected			●	●						
Watchdog integrated [3]			●	●						
Current load per output	2 A		●	●						
Extern supply voltage [4]	24 V DC required		●	●						
Current load per module	4 A		●	●						
AS-i interface reserve-polarity prot.		●	●	●						
AS-i profile	S-0.A.E	●								
	S-3.F.E		●							
	S-7.F.E			●						
AS interface specification	2.1	●	●	●						
Extended address mode available		●								
Product standard/EMC	EN 50295	●	●	●						
Enclosure rating to EN 60529	IP 67	●	●	●						
Ambient temperature T_A	Operation −25 … + 80 °C	●	●	●						
	Storage −40 … +100 °C	●	●	●						
Displays LED yellow	In-/output signals	●	●	●						
LED green	AS-i voltage	●	●	●						
LED red	Communication error [5]	●	●	●						
Addressing via IR interface		●	●	●						
Housing material	Polyurethan	●	●	●						
Weight	203 g	●	●							
	301 g			●						
Connection to AS interface	Via contact pins inside of the device [6]	●	●	●						

[1] In accordance with AS-i specification
[2] For all inputs total
[3] Outputs will be reset, if communication is interrupted for more than 40 ms
[4] Via AS interface ribbon cable to PELV
[5] Peripherie error
[6] Without separate FK lower part

Order information

Type	Order no.
ASI-S12343	6 022 387
ASI-S21243	6 022 388
ASI-S24243	6 022 389

- **For field applications IP 67**
- **AS-i interface to FK and FKE lower parts**
- **Extern supply voltage via 24 V flat cable**
- **Inputs Y-circuit for connection of 3- or 4-wire sensors**
- **AS-i version 2.1**

Dimensional drawing

ASI-S12233 ASI-S21334 ASI-S24233 ASI-S23130
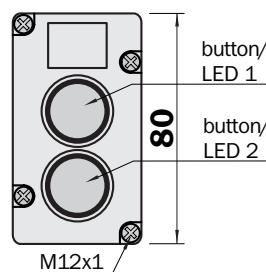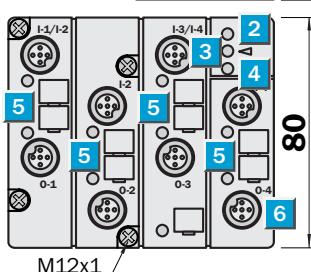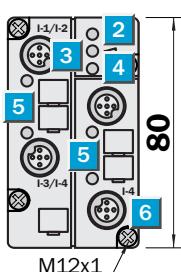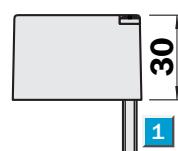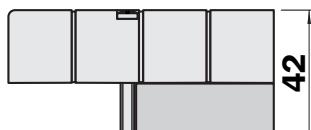
1 Screws for mounting on module lower part
2 LED red: FAULT
3 Attachment of IR adapter
4 LED green: PWR, power supply OK
5 LED yellow: status indicator
6 Connectors, M12

Protection cap for M12 connectors not included with delivery.
FK lower parts must be ordered separately.

See chapter Accessories

AS-i addressing unit
AS-i address cable
FK lower parts
Protection cap for M12 connector
Cables and connectors

Connection type

ASI-S12233	ASI-S24233	
Socket 1 – 4	Socket 1 – 4	Socket 1 – 4
Input 1 – 4	Input 1 – 4	Output 1 – 4
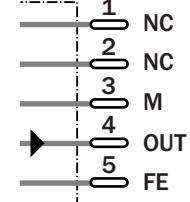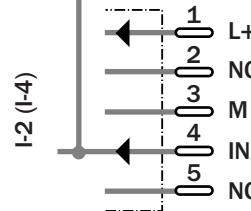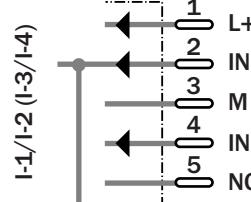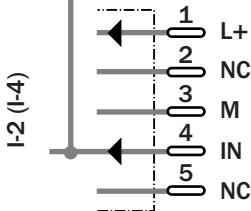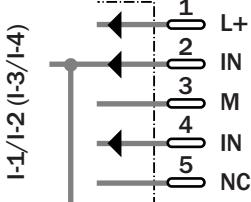
Technical data	ASI	-S 12233	-S 21334	-S 24233	-S 23130					
Digital inputs	4	■		■						
	2		■							
Digital outputs	4			■						
	2		■							
Supply voltage V$_S$ [1]	26.5 ... 31.6 V DC	■	■	■	■					
Current consumption total	≤ 240 mA	■								
	≤ 250 mA			■						
	≤ 55 mA (LED ein)				■					
	≤ 135 mA		■							
Inputs										
Input circuit	PNP	■	■	■						
Sensor supply via	AS-i	■	■	■						
Voltage area	20 ... 30 V DC	■	■	■						
Current loading [2]	200 mA	■		■						
	100 mA		■							
Short-circuit protected		■	■	■						
Switching level HIGH signal 1	≥ 10 V	■	■	■						
Input current HIGH/LOW	≥ 5 mA/≤ 1.5 mA	■	■	■						
Outputs										
Electrically separated			■	■						
Short-circuit protected			■	■						
Watchdog integrated [3]			■							
Current load per output (DC 13) [4]	1 A		■	■						
Extern supply voltage [5]	24 V DC required		■	■						
Current load per module	2 A		■	■						
AS-i interface reserve-polarity prot.		■	■	■	■					
AS-i profile	S-0.F.E	■								
	S-7.F.E			■						
	S-3.F				■					
	S-B.A.E		■							
AS interface specification	2.1	■	■	■						
	2.0				■					
Extended address mode available			■							
AS-Interface Certificate	33601				■					
Product standard/EMC	EN 50295	■	■	■	■					
Enclosure rating to EN 60529	IP 67	■	■	■	■					
Ambient temperature T$_A$	Operation –25 ... +80 °C	■	■	■						
	Storage –40 ... +100 °C	■	■	■						
	Operation –25 ... +60 °C				■					
	Storage –40 ... +85 °C				■					
Display LED yellow	In-/output signals	■	■	■						
LED green	Display AS-i voltage	■	■	■						
LED red	Communication error [6]	■	■	■						
Push-button 2	Data bit D0				■					
Push-button 1	Data bit D1, color selectable				■					
LED 2 [7]	Data bit D2				■					
LED 1 [7]	Data bit D3				■					
Addressing via IR interface		■	■	■						
Housing material	PBTP (Pocan)	■	■	■	■					
Weight	84 g	■	■							
	158 g			■						
	93 g				■					
Connection to AS interface	Via contact pins [8]	■	■	■	■					

[1] In accordance with AS-i spezification
[2] For all inputs total
[3] Outputs will be reset, if communication is interrupted for more than 40 ms
[4] Category of use (DC 13)
     ON an OFF switching capacity for acti-vation of electro-solenoids is designed for use up 20 W (in accordance with IEC 609-47-5-2)
[5] Via AS interface flat cable to PELV
[6] Peripherie error
[7] Color is set by the supplied pressure hood corresponding to scanner 1/2
[8] On FK or FKE lower parts or FK-A or FKE-A lower parts

Order information

Type	Order no.
ASI-S12233	6 022 390
ASI-S21334	6 022 391
ASI-S24233	6 022 392
ASI-S23130	6 022 393

AS-i components

AS-i Compact field modules

- **For applications in harsh environments IP 69K**
- **Stainless steel housing**
- **Digital inputs and outputs**
- **Connection of 2- or 3-wire sensors**
- **AS-i version 2.1**

CE ASI INTERFACE

See chapter Accessories

AS-i addressing unit

Cables and connectors

Dimensionlal drawing
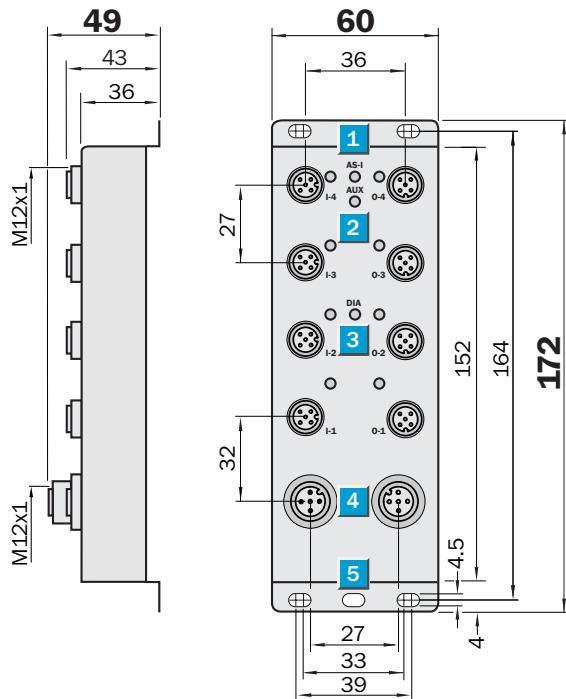
1	LED green: AS-i Power
2	LED green: output voltage
3	LED red: FAULT
4	Plug/female connector M12 (connection AS-i, actuator supply)
5	Function earth FE over mounting holes at the stainless steel housing

6 protection caps for M12 connectors included with delivery

Connection type

ASI-S24261

| Female connector 1-4 | Supply |
| Input I-1–I-4 | Plug IN |
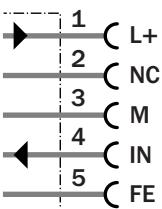
1 L+
2 NC
3 M
4 IN
5 FE

1 AS-i (+)
2 AUX (M)
3 AS-i (−)
4 AUX (L+)
5 NC

| Female connector 1-4 | Supply |
| Output 0-1–0-4 | Female connector OUT |

1 NC
2 NC
3 M
4 OUT
5 FE

1 AS-i (+)
2 AUX (M)
3 AS-i (−)
4 AUX (L+)
5 NC
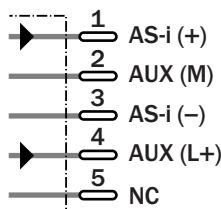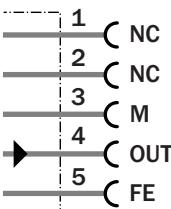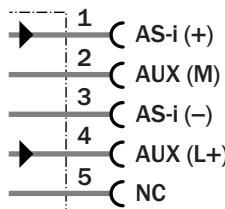
Technical data		ASI-S	24261									
Digital inputs	4											
Digital outputs	4											
Supply voltage V$_S$ [1]	26.5 ... 31.6 V DC											
Current consumption total	310 mA											
Inputs												
Input circuit	PNP											
Sensor supply	aus AS-i											
Voltage area	DC 17 ... 30 V											
Current loading [2]	200 mA											
Short-circuit protected	elektronisch gesichert											
Overload proof	elektronisch gesichert											
Switching level HIGH signal 1	≥ 10 V											
Input current HIGH/LOW	≥ 4.7 mA/≤ 1.5 mA											
Outputs												
Electrically seperated												
Short-circuit protected	Electronically protected											
Overload proof	Electronically protected											
Watchdog [3]	Integrated											
Actuator supply [4]	External, according PELV											
Nominal voltage	24 V DC											
Voltage range	11 ... 30 V DC											
Current load per module	4 A											
Current load per output	2 A											
AS-i interface reserve-polarity prot.												
AS-i profile	S-7.F.E											
AS-interface specification	2.1											
Product standard/EMC	EN 50295											
Enclosure rating to EN 60529	IP 69K											
Ambient Ttmperature T$_A$	Operation −25 ... +70 °C											
	Storage −25 ... +70 °C											
Displays LED yellow	In-/output signals											
LED green	AS-i voltage/actuator supply (AUX)											
LED red	Diagnostics [5]											
Adressing	Via M12 plug											
Housing material	Stainless steel/PUR											
Weight	550 g											
Connection to AS interface	Via M12 plug at the module											

[1] In accordance with AS-i specification
[2] For sensor supply at all inputs total

[3] Outputs will be reset, if communication is interrupted for more than 40 ms
[4] Via M12 plug at the module. For the output circuit an external auxiliary supply is necessary.

[5] ON Communication error
Flashing Peripherie error (short-circuit/overload)
OFF No error

Order information

Type	Order no.
ASI-S24261	6 028 620

AS-i components

AS-i Analog module

- ■ **For field applications IP 65**
- ■ **2 analog inputs 4 ... 20 mA**
- ■ **AS-i Version 2.1**
- ■ **Sensor supply via AS-i or 24 V flat cable.**

Dimensional drawing

80
35
91
70

1 Status indicators LED
2 Sensor connection
3 Functional earth (via PC screwed connection in housing)
4 AS-Interface® connection (power supply via AS-i cable)

PG dummy plugs contained in package.

FK lower parts must be ordered separately.
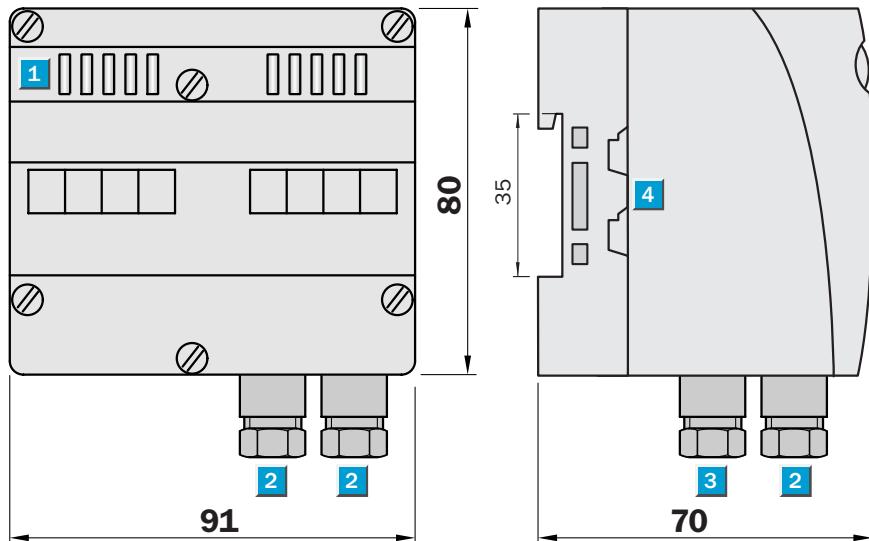
Connection type

1	+ 24 V Output
2	Sig.+Ch2
3	GND
4	Sig.–Ch2
5	Schield
6	Shield
7	+ 24 V Output
8	Sig.+Ch1
9	GND
10	Sig.–Ch1
11	FE function ground
12	FE function ground

See chapter Accessories

AS-i addressing unit

FK lower parts

AS-i address cable

Cables and connectors

Technical data		ASI	-S 41250									
Analog Inputs		**2**										
Supply voltage [1]		26.5 ... 31.6 V DC										
Current consumption total		< 80 mA										
Sensor supply		via AS-i/ext.										
Internal resistance		50 Ω										
Current loading per input		40 mA										
Resolution		16 Bit/1 μA										
AS-i profile		7.3										
AS Interface spezification		2.1										
Voltages of insulation		500 V DC										
ID-Code		3_{hex}										
ID2-Code		D_{hex}										
IO-Code		7_{hex}										
Displays	LED green (analog 1)	Status of channel 1										
	LED green (analog 2)	Status of channel 2										
	LED green (power)	Voltage supply 24 V DC for analog module										
	LED green (AS-i)	Voltage at AS-i terminals										
	LED red (FAULT)	AS-i Communucation/Peripherie error										
Product standard/EMC		EN 50295										
Ambient temperature T$_A$		Operation 0 ... +70 °C										
		Storage −25 ... +85 °C										
Enclosure rating to EN 60529		IP 65										
Housing material		PA										
Weight		242 g										
Connection to AS interface		Via contact pins[2]										

[1]   In accordance with AS-i spezification
[2]   On FK/FK-A/FKE or FKE-A lower part

| Order information	
Type	**Order no.**
ASI-S41250	6 022 401

Scanning distance 20...250 mm

Photoelectric proximity switches
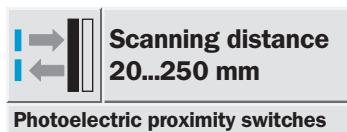
- Red light
- Insensitive to ambient light sources
- M12 plug rotatable by 90°
- With integrated AS-i chip
- Adjustable background suppression

Dimensional drawing

| 24 | 10 | 5 |

41.5

2

2

1

8.6

3

4

21.3

22.6

7.3

5.6

49

5

6

2

16.5

7

15

11
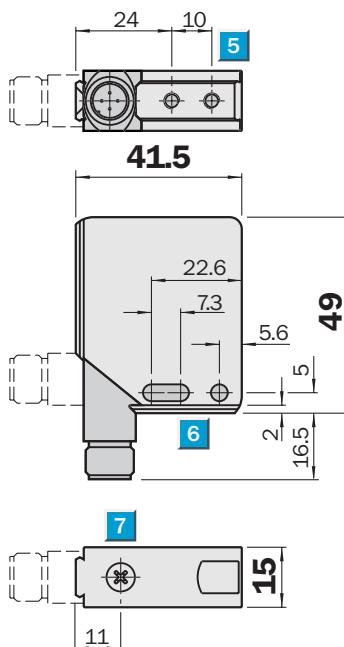
Adjustments possible

WT 12-2Z 430

2

7
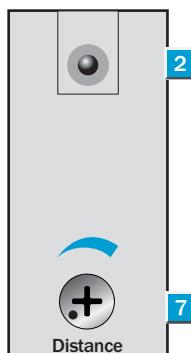
Distance

1	Standard direction of the material being scanned
2	LED signal strength indicator
3	Receiver's optical axis
4	Transmitter's optical axis
5	M4 threaded mounting hole – 4 mm deep
6	Mounting holes ∅ 4.2 mm
7	Scanning distance adjustment

Connection type

WT 12-2Z 430
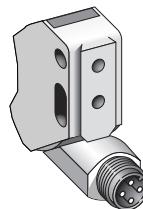
4-pin, M12
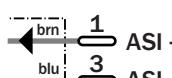
| brn | 1 | ASI |
| blu | 3 | ASI |

* 2 pieces included with delivery

Technical data

		WT 12-2	Z 430									

Scanning distance	20…250 mm, adjustable	
Light source[1], light type	LED, red light	
Light spot diameter	10 mm at 200 mm	
Supply voltage V_S	26.5…31.5 V DC[2]	
Current consumption[3]	≤ 35 mA	
Response time[4]	≤ 330 μs	
Max. switching frequency[5]	1500/s	
Pre-failure signalling output	Alarm	
Test input "TE"		
Connection type	4-pin, M12 plug	
VDE protection class[6]	▣	
Circuit protection[7]	A, B, C	
Enclosure rating	IP 67	
AS-i profile	S 1.1	
AS interface specification	2.0	
Ambient temperature T_A	Operation −25 °C…+60 °C	
	Storage −40 °C…+75 °C	
Weight	With plug: 120 g	
Housing material	Zinc die-cast housing	

[1] Average service life 100,000 h at T_A = +25 °C
[2] Limit values
[3] Without load
[4] Signal transit time with resistive load
[5] With light/dark ratio 1:1
[6] Reference voltage 50 V DC
[7] A = V_S connections reverse-polarity protected
B = Output Q and $\overline{Q}$ short-circuit protected
C = Interference pulse suppression

Assignment of data bits (Host level)

D_0	Switching state	0 If light interrupted	Input
	Mode: light-switching	1 If light received	
D_1	Alarm	0 Active	Input
		1 Inactive	
D_2	NC	0	Input
		1	
D_3	Test function	0 Sender ON	Output
		1 Sender OFF	

Assignment of parameter bits (Host level)

P_0*	NC	0	Parameter
		1	
P_1*	Light-/dark-switching	0 Dark-switching	Parameter
		1 Light-switching	
P_2*	NC	0	Parameter
		1	
P_3*	NC	0	Parameter
		1	

* Default setting = 1

Scanning distance

|	
1	Scanning distance on black, 6 % remission
2	Scanning distance on grey, 18 % remission
3	Scanning distance on white, 90 % remission

Order information

Type	Order no.
WT 12-2Z 430	1 016 136

**Scanning range
7 m**

Photoelectric proximity switches

- Red light
- Insensitive to ambient light sources
- M12 plug rotatable by 90°
- Integrated AS-i chip

Dimensional drawing

24 10

41.5

32

22.6
7.3
5.6

49

5

2
16.5

15

11
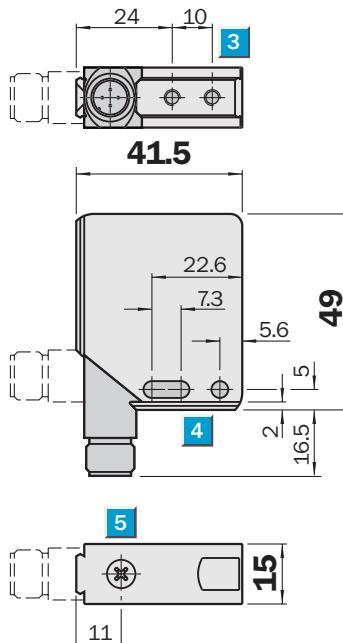
Adjustments possible

WL 12-2Z 430

Sensitivity

| 1 | LED signal strength indicator |
2	Centre of optical axis
3	M4 threaded mounting hole – 4 mm deep
4	Mounting holes ⌀ 4.2 mm
5	Sensitivity adjustment

Connection type

WL 12-2Z 430
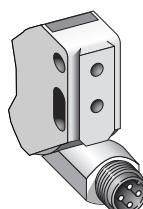
4-pin, M12

brn 1 ASI +
blu 3 ASI –
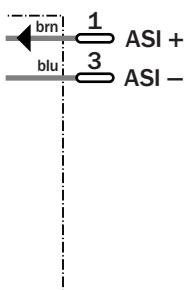
See chapter Accessories

| AS-i addressing unit |
| Cables and connectors |
| Mounting systems |
| Clamps* |
| Reflectors |

* 2 pieces included with delivery

Technical data		WL 12-2	Z 430									

Scanning range

max. typical/on reflector	7 m/PL 80 A	
Sensitivity	adjustable	
Light source[1], light type	LED, red light	
Light spot diameter	80 mm at 3 m	
Supply voltage V_S	26.5…31.6 V DC[2]	
Ripple[3]	≤ 35 mA	
Response time[4]	≤ 330 µs	
Max. switching frequency[5]	1500/s	
Pre-failure signalling output	Alarm	
Test input "TE"		
Connection type	M12 plug, 4-pin	
VDE protection class[6]	⬜	
Circuit protection[7]	A, C	
Enclosure rating	IP 67	
AS-i profile	S 1.1	
AS interface specification	2.0	
Ambient temperature T_A	Operation −25 °C…+60 °C	
	Storage −40 °C…+75 °C	
Weight	With plug: 120 g	
Polarising filter		
Housing material	Zinc die-cast housing	

[1] Average service life 100,000 h at T_A = +25 °C
[2] Limit values
[3] Without load
[4] Signal transit time with resistive load
[5] With light/dark ratio 1:1
[6] Reference voltage 50 V DC
[7] A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

Assignment of data bits				(Host level)
D_0	Switching state	0 If light interrupted	Input	
	Mode: light-switching	1 If light received		
D_1	Alarm	0 Active	Input	
		1 Inactive		
D_2	NC	0	Input	
		1		
D_3	Test function	0 Sender ON	Output	
		1 Sender OFF		

Assignment of parameter bits			(Host level)
P_0*	NC	0	Parameter
		1	
P_1*	Light-/dark-switching	0 Dark-switching	Parameter
		1 Light-switching	
P_2*	NC	0	Parameter
		1	
P_3*	NC	0	Parameter
		1	

* Default setting = 1

Scanning range

Operating range ▮ Operating range ▮ Scanning range, max. typical

Reflector type		Operating range
1	PL 80 A	0 … 5.0 m
2	C 110	0 … 3.0 m
3	PL 50 A	0 … 3.5 m
4	PL 40 A	0 … 3.5 m
5	PL 30 A	0 … 3.0 m
6	PL 20 A	0 … 2.0 m
7	Reflective tape	0 … 1.0 m
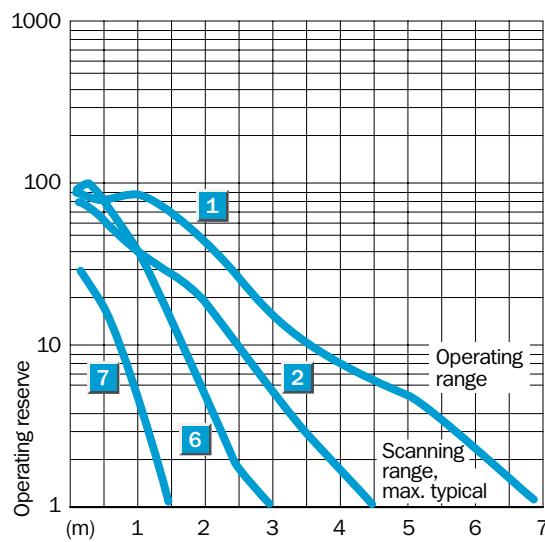
Order information	
Type	**Order no.**
WL 12-2Z 430	1 016 108

	Scanning distance 100…1000 mm
	Scanning distance 100...1500 mm

Photoelectric proximity switches

- ■ Red/infrared light
- ■ Adjustable background suppression
- ■ Front screen heating, optional (only for infrared type)
- ■ Integrated AS-i chip

Dimensional drawing

24.6 53.5

2
1
3
4
80
18
50
70
43.5
5.2
5
16 max.
40
50
5
6
61
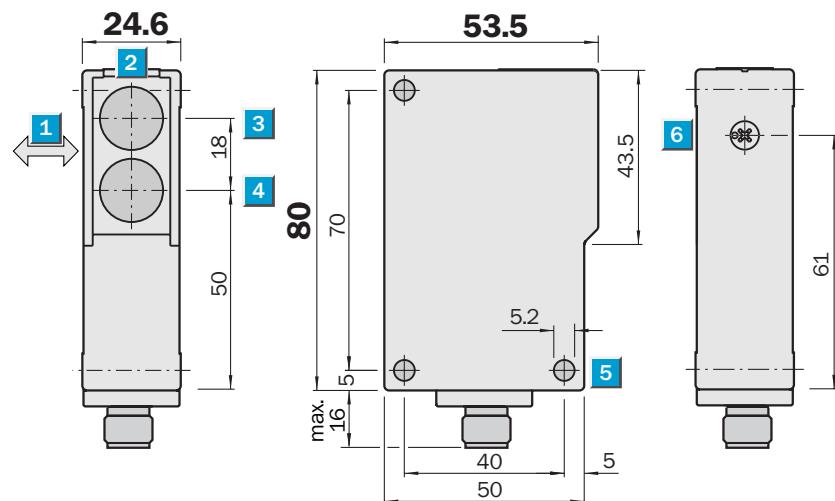
Adjustments possible

WT 27-2Z 230
WT 27-2Z 210
WT 27-2Z 240

6
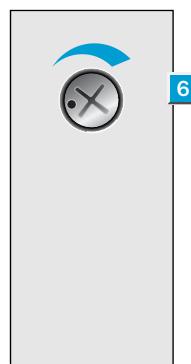
| 1	Standard direction of the material being scanned
2	LED signal strength indicator
3	Optical axis, sender
4	Optical axis, receiver
5	Mounting hole ⌀ 5.2 mm
6	Sensitivity adjustment

Connection type

WT 27-2Z 230
WT 27-2Z 210
WT 27-2Z 240
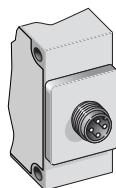
4-pin, M12

brn 1 AS-i +

blu 3 AS-i −
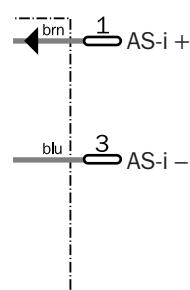
See chapter Accessories

AS-i addressing unit
Cables and connectors
Mounting systems

Technical data	WT 27-2	Z 230	Z 210	Z 240							
Scanning distance	100…1000 mm, adjustable	■									
	100…1500 mm, adjustable		■	■							
Light source[1], light type	LED, red light	■									
	LED, infrared light		■	■							
Light spot diameter	Approx. 15 mm at 500 mm	■									
	Approx. 25 mm at 800 mm		■	■							
Supply voltage V_S	26.5…31.6 V DC [2]	■	■	■							
Ripple[3]	$\leq 5\ V_{PP}$	■	■	■							
Current consumption[4]	≤ 30 mA	■	■								
	≤ 40 mA, front screen heating			■							
Response time[5]	2 ms	■	■	■							
Max. switching frequency[6]	250/s	■	■	■							
Pre-failure signalling output	Alarm	■	■	■							
Test input "TE"		■	■	■							
Connection type	Plug	■	■	■							
VDE protection class	▫	■	■	■							
Circuit protection[7]	A, C	■	■	■							
Enclosure rating	IP 67	■	■	■							
AS-i profile	S 1.1	■	■	■							
AS interface specification	2.0	■	■	■							
Ambient temperature T_A	Operation −40 °C…+60 °C	■	■	■							
	Storage −40 °C…+75 °C	■	■	■							
Weight	Approx. 100 g	■	■	■							
Front screen heating				■							
Housing material	ABS	■	■	■							

[1] Average service life 100,000 h at $T_A = +25$ °C
[2] Limit values
[3] May not exceed or fall short of V_S tolerances
[4] Without load
[5] Signal transit time with resistive load
[6] With light/dark ratio 1:1
[7] A = V_S connections reverse-polarity protected
C = Interference pulse suppression
[8] Black = 6 % remission
Grey = 18 % remission
White = 90 % remission

Assignment of data bits			(Host level)
D_0	Switching state	0 Light is not received	Input
	Mode: light-switching	1 Light is received	
D_1	Alarm	0 Active	Input
		1 Inactive	
D_2	NC	0	Input
		1	
D_3	Test function	0 Sender ON	Output
		1 Sender OFF	

Assignment of parameter bits			(Host level)
P_0*	NC	0	Parameter
		1	
P_1*	Light-/dark-switching	0 Dark-switching	Parameter
		1 Light-switching	
P_2*	NC	0	Parameter
		1	
P_3*	NC	0	Parameter
		1	

* Default setting = 1

Scanning distance

1	Scanning distance on black[8] red light
2	Scanning distance on grey[8] red light
3	Scanning distance on white[8] red light
4	Scanning distance on black[8] infrared light
5	Scanning distance on grey[8] infrared light
6	Scanning distance on white[8] infrared light
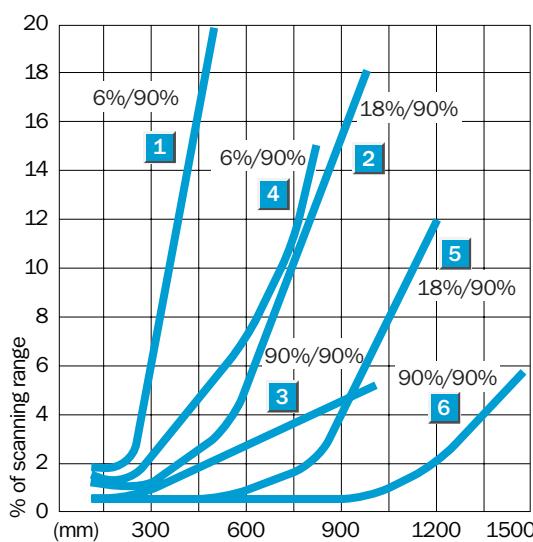
Order information

| Type	Order no.
WT 27-2Z 230	1 015 099
WT 27-2Z 210	1 015 098
WT 27-2Z 240	1 015 137

**Scanning range
14 m**
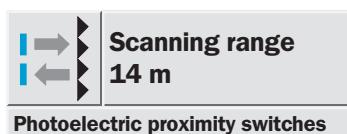
Photoelectric proximity switches

- ■ Visible red light
- ■ Front screen heating, optional
- ■ With integrated AS-i chip

Dimensional drawing

24.6   53.5

1

2
3

10

50

80

70

43.5

5

5.2

5

max.
16

40   5

50

61

4
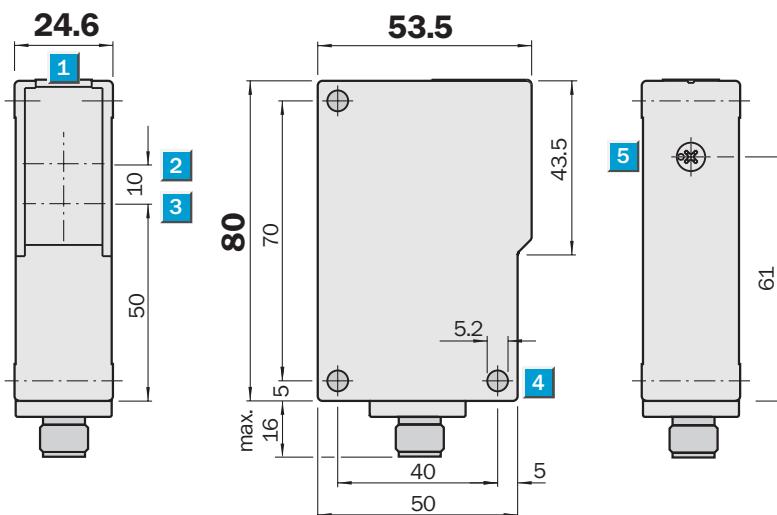
Adjustments possible

| WL 27-2Z 230 |
| WL 27-2Z 240 |
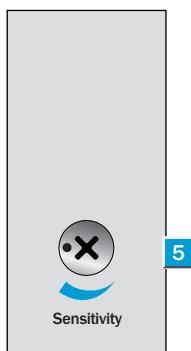
5

Sensitivity

| 1 | LED signal strength indicator |
2	Optical axis, sender
3	Optical axis, receiver
4	Mounting hole ⌀ 5.2 mm
5	Sensitivity adjustment

Connection type

| WL 27-2Z 230 |
| WL 27-2Z 240 |
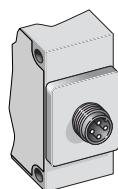
4-pin, M12

brn   1   AS-i +

blu   3   AS-i −
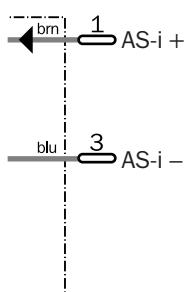
See chapter Accessories

| AS-i addressing unit |
| Cables and connectors |
| Mounting systems |
| Reflectors |

Technical data

Technical data	WL 27-2	Z 230	Z 240								
Scanning range, max. typ./on reflector	14 m / PL 80 A	▪	▪								
Light source[1], light type	LED, red light	▪	▪								
Light spot diameter	220 mm at a distance of 10 mm	▪	▪								
Supply voltage V_S	DC 26.5…31.6 V [2]	▪	▪								
Ripple[3]	≤ 5 V_{PP}	▪	▪								
Current consumption[4]	≤ 30 mA	▪									
	≤ 40 mA, front screen heating		▪								
Response time[5]	500 µs	▪	▪								
Max. switching frequency[6]	1000/s	▪	▪								
Pre-failure signalling output	Alarm	▪	▪								
Test input "TE"		▪	▪								
Connection type	Plug	▪	▪								
VDE protection class	▫	▪	▪								
Circuit protection[7]	A, C	▪	▪								
Enclosure rating	IP 67	▪	▪								
AS-i profile	S 1.1	▪	▪								
AS interface specification	2.0	▪	▪								
Ambient temperature T_A	Operation −40 °C…+60 °C	▪	▪								
	Storage −40 °C…+75 °C	▪	▪								
Weight	Approx. 100 g	▪	▪								
Front screen heating			▪								
Polarising filter		▪	▪								
Housing material	ABS	▪	▪								

[1] Average service life 100,000 h at T_A = +25 °C
[2] Limit values
[3] May not exceed or fall short of V_S tolerances
[4] Without load
[5] Signal transit time with resistive load
[6] With light/dark ratio 1:1
[7] A = V_S connections reverse-polarity protected
C = Interference pulse suppression

Assignment of data bits (Host level)

D_0	Switching state	0 Light is not received	Input
	Mode: light-switching	1 Light is received	
D_1	Alarm	0 Active	Input
		1 Inactive	
D_2	NC	0	Input
		1	
D_3	Test function	0 Sender ON	Output
		1 Sender OFF	

Assignment of parameter bits (Host level)

P_0*	NC	0	Parameter
		1	
P_1*	Light-/dark-switching	0 Dark-switching	Parameter
		1 Light-switching	
P_2*	NC	0	Parameter
		1	
P_3*	NC	0	Parameter
		1	

* Default setting = 1

Operating range and operating reserve

Operating range ■ | Scanning range, max. typ. ■

Order information

Type	Order no.
WL 27-2Z 230	1 015 112
WL 27-2Z 240	1 015 136

	Reflector type	Operating range
1	PL 80 A	0.1 … 10.0 m
2	C 110	0.3 … 6.0 m
3	PL 50 A	0.1 … 7.0 m
4	PL 40 A	0.1 … 6.2 m
5	PL 30 A	0.1 … 6.5 m
6	PL 20 A	0.1 … 4.2 m
7	Reflective tape	0.3 … 2.0 m
	Diamond Grade	

**Scanning range
35 m**

Through-beam photoelectric switches
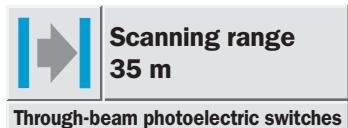
- Red light
- Selectable time delay
- With integrated AS-i chip

Dimensional drawing

24.6   53.5

1

2
3

10

50

80

70

43.5

5.2

5

max. 16

40

5

50

4
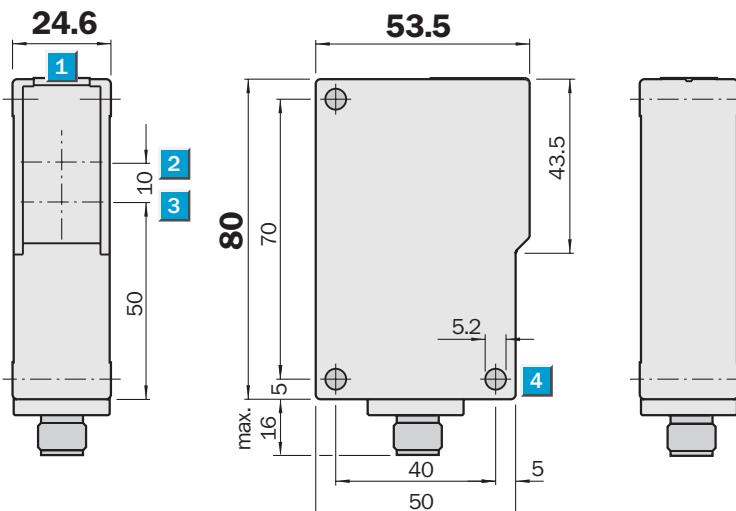
Adjustments possible

WS/WE 27-2Z 250
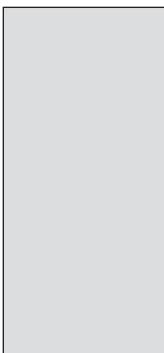
| 1 | LED signal strength indicator |
2	Optical axis, sender
3	Optical axis, receiver
4	Mounting hole ⌀ 5.2 mm

Connection type

WS/WE 27-2Z 250
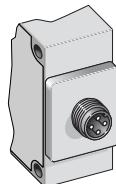
4-pin, M12

See chapter Accessories

AS-i addressing unit

Cables and connectors

Mounting systems

Sender

| bm | 1 | AS-i + |
| blu | 3 | AS-i − |

Receiver

| bm | 1 | AS-i + |
| blu | 3 | AS-i − |
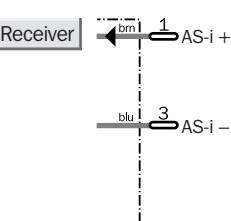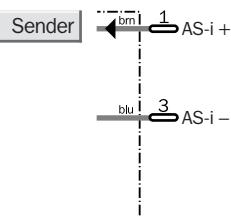
Technical data		WS/WE 27-2	Z 250									

Scanning range, max. typical	0…35 m	▨
Light source[1], **light type**	LED, red light	▨
Light spot diameter	Approx. 1200 mm at 25 m	▨
Angle of dispersion	3°	▨
Supply voltage V_S	26.5…31.6 V DC[2]	▨
Ripple[3]	$\leq 5\ V_{PP}$	▨
Current consumption[4] sender	$\leq$ 35 mA, front screen heating	▨
receiver	$\leq$ 40 mA, front screen heating	
Response time[5]	500 μs	▨
Max. switching frequency[6]	1000/s	▨
Pre-failure signalling output	Alarm	▨
Test input "TE"		▨
Connection type	Plug	▨
VDE protection class[7]	▱	▨
Circuit protection[8]	A, C	▨
Enclosure rating	IP 67	▨
AS-i profile WS 27-2	S D.1	▨
AS-i profile WE 27-2	S 1.1	▨
AS interface specification	2.0	▨
Ambient temperature T_A	Operation −40 °C…+60 °C	▨
	Storage −40 °C…+75 °C	
Weight	Approx. 100 g	▨
Front screen heating		▨
Housing material	ABS	▨

[1] Average service life 100,000 h at T_A = +25 °C
[2] Limit values
[3] May not exceed or fall short of V_S tolerances
[4] Without load
[5] Signal transit time with resistive load
[6] With light/dark ratio 1:1
[7] Reference voltage 50 V DC
[8] A = V_S connections reverse-polarity protected
C = Interference pulse suppression

WS 27-2 – Assignment of data bits			(Host level)
D_0	Test function	0 Sender ON	Output
		1 Sender OFF	
D_1	NC	0	Input
		1	
D_2	NC	0	Input
		1	
D_3	NC	0	Input
		1	

WS 27-2 – Assignment of parameter bits			(Host level)
P_0*	NC	0	Parameter
		1	
P_1*	NC	0	Parameter
		1	
P_2*	NC	0	Parameter
		1	
P_3*	NC	0	Parameter
		1	

WE 27-2 – Assignment of data bits			(Host level)
D_0	Switching state	0 Light is not received	Input
	Mode: light-switching	1 Light is received	
D_1	Alarm	0 Active	Input
		1 Inactive	
D_2	NC	0	Input
		1	
D_3	NC	0	Output
		1	

WE 27-2 – Assignment of parameter bits			(Host level)
P_0*	NC	0	Parameter
		1	
P_1*	Light-/dark-switching	0 Dark-switching	Parameter
		1 Light-switching	
P_2*	NC	0	Parameter
		1	
P_3*	NC	0	Parameter
		1	

*Default setting = 1

Operating range and operating reserve

0   25   35

0 (m) 5   10   15   20   25   30   35   40

■ Operating range   ■ Scanning range, max. typ.

Order information	
Type	**Order no.**
WS/WE 27-2Z 250	1 015 140

Function reserve

Operating range
Scanning range typ. max.

(m) 5   10   15   20   25   30   35   40

- **AS-i modules lower parts for Classic field modules**
- **AS-i interface to module upper part**
- **Quick mounting technology for AS-i flat cable**
- **DIN rail and panel mounting**

CE   ASi INTERFACE

See chapter Accessories

FK lower parts

Dimensional drawing

20

35

45

80
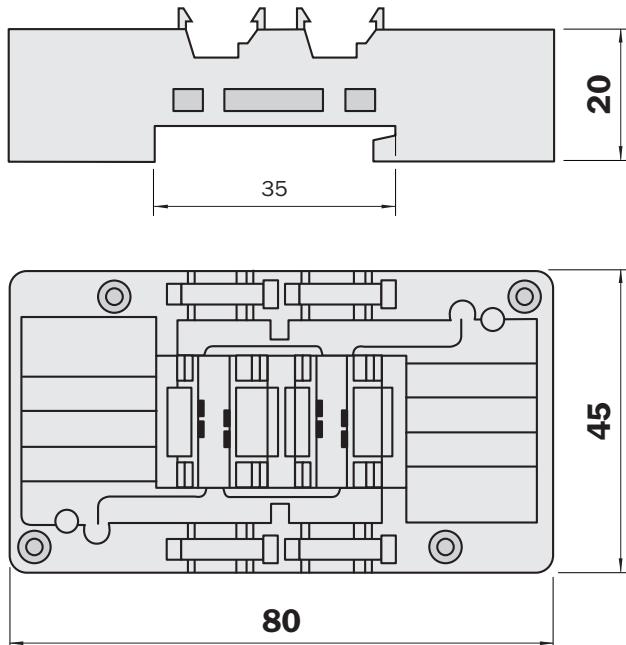
Connection type

ASI-FK	ASI-FK-A	ASI-FKE-A-E
ASI-FKE	ASI-FKE-A	
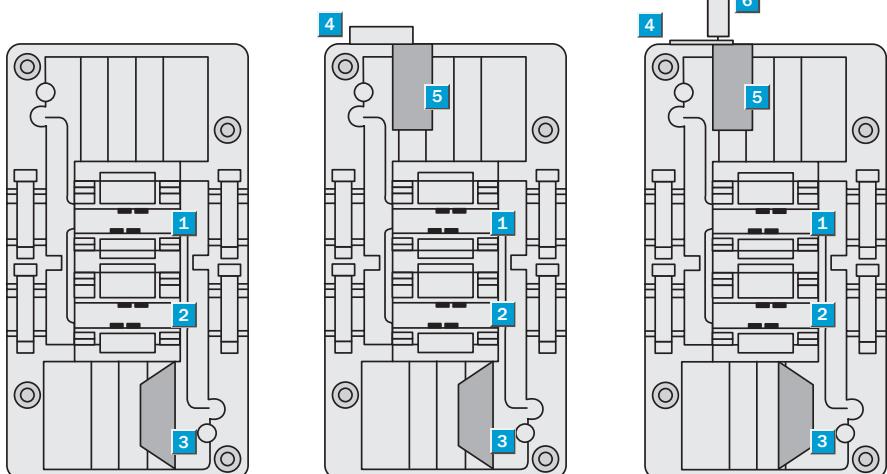
1	AS-i flat cable (yellow)
2	24 V flat cable (black) PELV (only with ASI-FKE and ASI-FKE-A)
3	Sealings
4	Plug
5	Addressing socket
6	Connection functional earth

Technical data	ASI-	FK	FKE	FK-A	FKE-A	FKE-A-E					
Operating voltage [1]	26.5 ... 31.6 V DC	■	■	■	■	■					
Contact load capacity	≤ 2 A	■	■	■	■	■					
Spezification	EMS	■		■							
	E-EMS		■		■	■					
Data bits	Available via ASI	■	■	■	■	■					
Parameter bits	Available via ASI	■	■	■	■	■					
ASI-Interface	reverse-polarity protection, mechanical	■	■	■	■	■					
Enclosure rating to EN 60529	IP 20/ IP 65/ IP 67 [2]	■	■	■	■	■					
Ambient temperature T_A	Operation −25 ... +60 °C	■	■	■	■	■					
	Storage −40 ... +85 °C	■	■	■	■	■					
Housing material	PBTP	■	■	■	■	■					
Weight	54 g	■	■	■	■	■					
Connection type	Via penetration technique [3]	■	■	■	■	■					
Addressing socket				■	■	■					
Special features											
End caps [4]	3 pieces	■	■	■	■	■					
FK seal	4 pieces	■	■	■	■	■					
Cable shafts AS-i parallel switched [5]	2	■		■							
Cable shaft for AS-i	1		■		■	■					
Cable shaft for ext. 24 V supply	1		■		■	■					
Connection for functional earth						■					

[1]   According to ASI spezification
[2]   Depending on used upper part
[3]   ASI-flat cable, connection to module upper part via contact socket
[4]   Unloseable supported in the module
[5]   For any T and X branches

Order information	
Type	**Order no.**
ASI-FK	6 022 394
ASI-FKE	6 022 395
ASI-FK-A	6 022 396
ASI-FKE-A	6 022 397
ASI-FKE-A	6 025 058 *)

*)   On request

AS-i module cover for covering the FK lower parts			
Use of the lower part as junction box		**Order information**	
		Type	**Order no.**
		ASI-FKTOP	5 308 999

AS-i Power Extender

AS-i components

AS-i Power Extender

- ■ **Extends distance between power supply unit and AS-i bus segment**
- ■ **Can be used with repeater**
- ■ **Several AS-i loops can be supplied via a power supply unit**
- ■ **Does not occupy any address in AS-i network**

Dimensional drawing

91

45

60
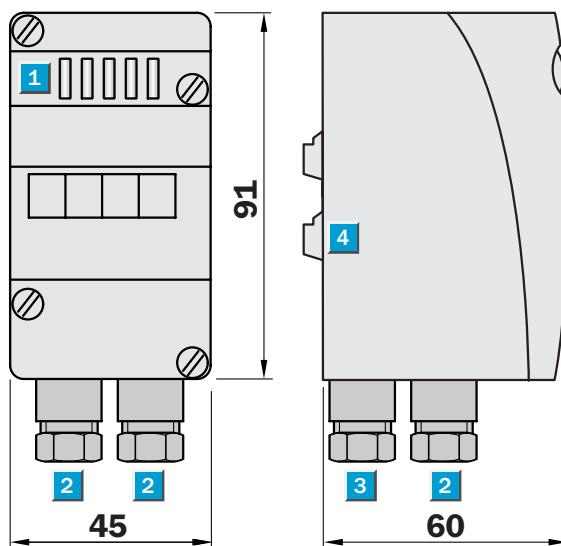
1	Status indicators LED
2	Functional earth (FE) (connection via PG connector in housing)
3	Functional earth (FE) (connection via PG connector in housing)
4	AS-Interface® connection (power supply via AS-i cable)

FKE lower part not included with delivery

Module	Connection type	
	Connection via FKE lower parts	Schield connection
		1 FE
		2 FE

Technical data	ASI-	PEXT1									
Input voltage [1]	DC 30 V via external power source	▨									
	or AS interface power pack	▨									
Output voltage [2]	26.5 ... 31.6 V DC	▨									
Current loading	≤ 2.8 A at 30 V	▨									
Short-circuit limiter	Self-resetting fuse 3 A	▨									
Voltages of insulation	500 V DC	▨									
Displays	LED green AS-i voltage > 28 V	▨									
	LED green AS-i voltage > 26 V	▨									
Product standard/EMC	EN 50295	▨									
Ambient temperature T$_A$	Operation 0 ... +70 °C	▨									
	Storage −25 ... +85 °C	▨									
Enclosure rating to EN 60529	Housing IP 65	▨									
Housing material	PA	▨									
Weight	120 g	▨									
Connection to AS interface	via contact pins [3]	▨									

[1]   To PELV
[2]   According to AS-i spezification
[3]   To FKE sub-unit

Order information	
Type	**Order no.**
ASI-PEXT1	6 022 456

AS-i components

AS-i Repeater

- **Line extension of 100 m**
- **Galvanic separation**
- **Does not occupy any address in AS-i network**

Dimensional drawing

91
45
60
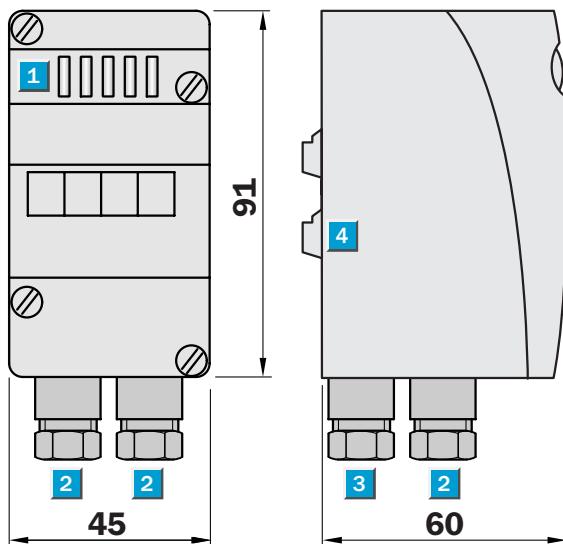
1	Status indicators LED
2	NC
3	NC
4	AS-Interface® connection (power supply via AS-i cable)

Lower part included with delivery

Connection type

Connection via FK lower parts

Technical data		ASI-	RPT1									

Operating voltage[1)]	26.5 ... 31.6 V DC	
Current consumption	60 mA [2)] (per cable segment)	
Conn. types 30 V input voltage	FK lower part for connecting AS-i cable	
Displays	4 LEDs	
U AS-i 1	AS-i power circuit 1	
FLT 1	AS-i Communication error circuit 1	
FLT 2	AS-i Communication error circuit 2	
U AS-i 2	AS-i power circuit 2	
Voltages of insulation	500 V DC	
Product standard/EMC	EN 50295	
Connection to AS interface	Via contact pins [3)]	
Ambient temperature T$_A$	Operation −10 ... +55 °C	
	Storage −25 ... +75 °C	
Enclosure rating to EN 60529	IP 65	
Housing material	PA	
Weight	120 g	

[1)] According to AS-i specification
[2)] One AS-i power supply unit required per
       segment, max. 2 repeaters in a row
[3)] Only by means of the supplied sub-unit

| Order information	
Type	**Order no.**
ASI-RPT1	6 022 457
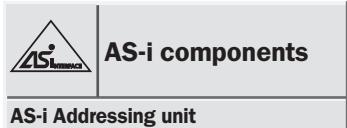
- ■ **Determination of the slave address**
- ■ **New addressing with check**
- ■ **Slave connection short-circuit and overload protected**
- ■ **LCD display**
- ■ **Error evaluation**
- ■ **Version 2.1**

CE

Dimensional drawing

30   80

209

Adjustments possible

ADR +   ↑

MODE

ADR -   ↓

Program   5

Search/Read/ON   6
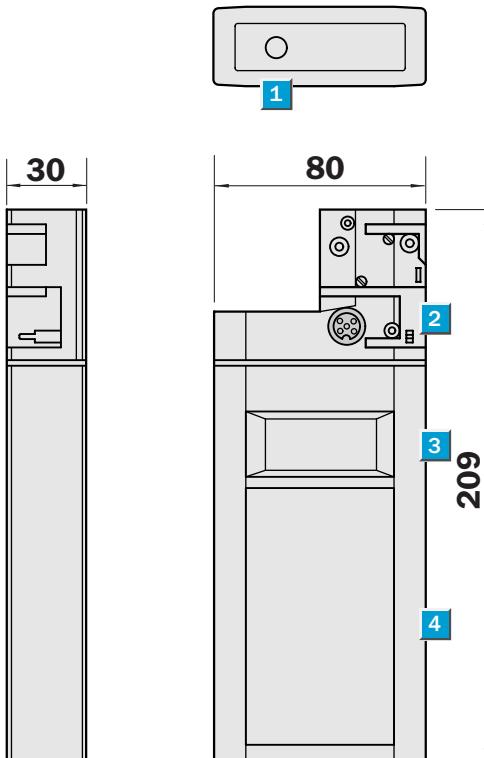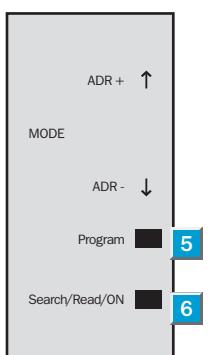
1	Loading jack
2	Adapter for connection of the AS interface slave
3	LC display
4	Operating panel
5	PRG
6	ADR

Function table

Push-button	Function
Mode	Setting of the operation mode.
↑	Setting of the desired addressed (counting upward) or the desired data.
↓	Setting of the desired addressed (counting downward) or the desired data.
PRG	Programming of the slave address from the active to the displayed address (only in addressing mode). Writing the displayed data in the activated slave (not in addressing mode).
ADR	Switching on of the equipment. Searching for the connected AS interface slaves. Activating of the next highest address (only in addressing mode). Re-inputting the slave information from an activated slave address (not in addressing mode).

Technical data	ASI-	PM 2									

Display	LCD, 13 mm digit height	
Keyboard	Film keyboard, 4 push-buttons	
Interface[1]	ASI	
Operating voltage	Battery-powered operation[2]	
Charger	Plug charger 230 V AC [3]	
Operating period	8 h/ $\geq$ 250 Writing/reading procedures	
EMC	EN 61326 [4], EN 50081-1 [5]	
	EN 60555-2/-3 [4], EN 50082-1 [5]	
LVD (Low voltage directive)	EN 61558-1 [5], EN 61558-2-6 [5]	
Enclosure rating to EN 60529	IP 20	
Ambient temperature T_A	Operation 0 ...+ 50 °C	
	Storage – 20 ...+ 55 °C	
Weight	approx. 550 g	

[1] Short-cicuit and overload protected (slave connection)

[2] Use charger (charging time approx. 14 h)

[3] Included with delivery
[4] Addressing unit
[5] Plug-in charger

Order information

Type	Order no.
ASI-PM2	6 022 426

Accessories addressing unit

Addressing cable for addressing classic modules in combination with FK lower parts with addressing socket in built-in state and modules with integrated addressing socket

Order information

Type	Order no.
ASI-PM2-DSL1	6 022 464

IR addressing cable for addressing classic and compact modules with IR addressing interface

Order information

Type	Order no.
ASI-PM2-DSL2	6 022 465

Addressing adapter for addressing the AS-i compact module with manual addressing device ASI-PM2

Order information

Type	Order no.
ASI-PM2-DSL3	6 025 773

AS-i components

AS-i Profibus Master simulator

- ■ Operation startup software for Profibus DP slaves
- ■ With interface converter
- ■ Universal tool for data exchange with Profibus slaves
- ■ Sub D data cable

Dimensional drawing
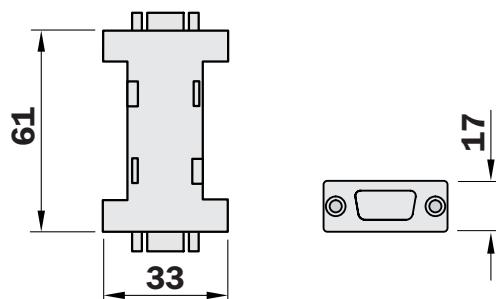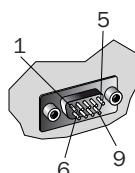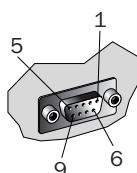
61

33

17

Connection type

5 1
9 6

1 5
6 9

Terminals		Profibus, Sub D	
1	NC	1	NC
2	RxD	2	NC
3	TxD	3	P
4	DTR	4	NC
5	GND	5	GND
6	NC	6	L+
7	NC	7	NC
8	CTS	8	N
9	NC	9	NC

Technical data	PR-	MSV0	MSV1									
Operating	5 V DC[1]	▨	▨									
Operating current	< 60 mA	▨	▨									
Interfaces	RS 232, RS 485	▨	▨									
Baud rates [2]	19.2 kBaud	▨	▨									
Ambient temperature T_A	Operation 0 ... +55 °C	▨	▨									
	Storage −25 ... +85 °C	▨	▨									
Cable length	RS 232 and RS 485 each max. 2 m	▨	▨									
Profibus	DPV0	▨										
	DPV1		▨									
EMC	EN 50081-2, EN 61000-2		▨									
System requirements	IBM compatible PC from 80386	▨	▨									
Supplied with delivery	Software: Profibus DP	▨	▨									
	Master simulator	▨	▨									
	16 Bit DLL for Win 3.1x	▨	▨									
	32 Bit DLL for Win 95/98, Win NT	▨	▨									
	Example programs in C in source code	▨	▨									
	Interface converter	▨	▨									
	Sub D data cable	▨	▨									

[1]   Receives power from the RS 485
     interface of the Profibus slave
[2]   Automatic recognition

Order information

Type	Order no.
PR-MSV0	6 022 458
PR-MSV1	6 022 459

AS-i components

AS-i Control Tools

- **Operating software for SICK AS-i Master/Gateways**
- **Configuration of an AS-i network**
- **Programming of slaves**
- **Advanced AS-i diagnostics**

ASI-CT210	
System requirements	IBM-compatible PC min. 80386
	MS Windows (min. 3.1), Windows 95/98, NT 4.0, ME, 2000, XP
Language	English/German
Application	Setup tools for AS-i
	Diagram of the AS-i network
Expanded diagnostic function	Storing of the error cause
	Log analysis (counter for transmission errors)

Order information

Type	Order no.
ASI CT210	6 022 501

Connection cable PC RS 232	
Cable connection	D-Sub plug
	D-Sub socket
Length	1.8 m
Pin 1 on Pin 1	Connected through

Order information

Type	Order no.
DSL-RS 232-02M	6 022 468

Female connector PC RS 485	
Cable connection	Prefabricated cable
	RS 485
Length	1.5 m
Connection	on Profibus
	IP 65 Gateway

Order information

Type	Order no.
DSL-RS485-02M	6 022 469

Combicon plug for switch cabinet modules

ASI-ADPS

Model	With screw terminals, 4 pin
Packaging unit	100/6 pieces
Specific insulation resistance (A= 2.5 mm^2)	1.5 mΩ
Max. load current (A= 2.5 mm^2)	12 A
Housing material	Current-carrying parts: Cu alloy, tin-coated

Order information		
Type	**Unit**	**Order no.**
ASI-ADPS	100 pieces	6 025 327
ASI-ADPS	6 pieces	2 024 074

ASI-FKVT AS-i flat cable junction

Material	PUR
Enclosure rating to EN 60529	IP 65
Current consumption total	8 A

Order information		
Type	**Unit**	**Order no.**
ASI-FKVT	1 piece	6 028 783

ASI-FKVT-M12 AS-i flat cable grabbing M12

Material	PUR
Enclosure rating to EN 60529	IP 65
Current consumption total	4 A

Order information		
Type	**Unit**	**Order no.**
ASI-FKVT-M12	1 piece	6 030 228

ASI-LTGAGF AS-i cable grabbing

Material	Housing PA
	Cable PUR
Enclosure rating to EN 60529	IP 67
Current consumption total	2 A

Bestell-Information		
Type	**Unit**	**Order no.**
ASI-LTGAGF	1 Stück	6 029 307

AS-i Clip

Technical data

Positive line	brown
Negative line	blue
Coating color	ASI-LTG D-MW: yellow/ASI-LTG E-MW: black
Cable material	EPDM
Enclosure rating	IP 67
Ambient temperature	Operation −30 ...+ 90 °C
Connection	2 x 1,5 mm^2

Order information

Type	Unit	Order no.
ASI-LTG D-MW	1 meter	6 022 462
ASI-LTG E-MW	1 meter	6 022 463

AS-i Clip M12 for connecting AS-i components directly to the AS-i flat cable

Material	PA
Enclosure rating to EN 60529	IP 67

Order information

Type	Unit	Order no.
ASI-M12	1 piece	6 022 472

Mounting clip for the AS-i flat cable

Material	PA

Order information

Type	Unit	Order no.
ASI-LTG CLIP	1 piece	5 309 051

Protecting cap for M12 connector

Order information

Type	Unit	Order no.
DOS-12SK	1 Kit /10 pieces	5 309 189

End piece for the AS-i flat cable

Order information

Type	Unit	Order no.
ASI-LTG END	1 Kit /10 pieces	5 309 052