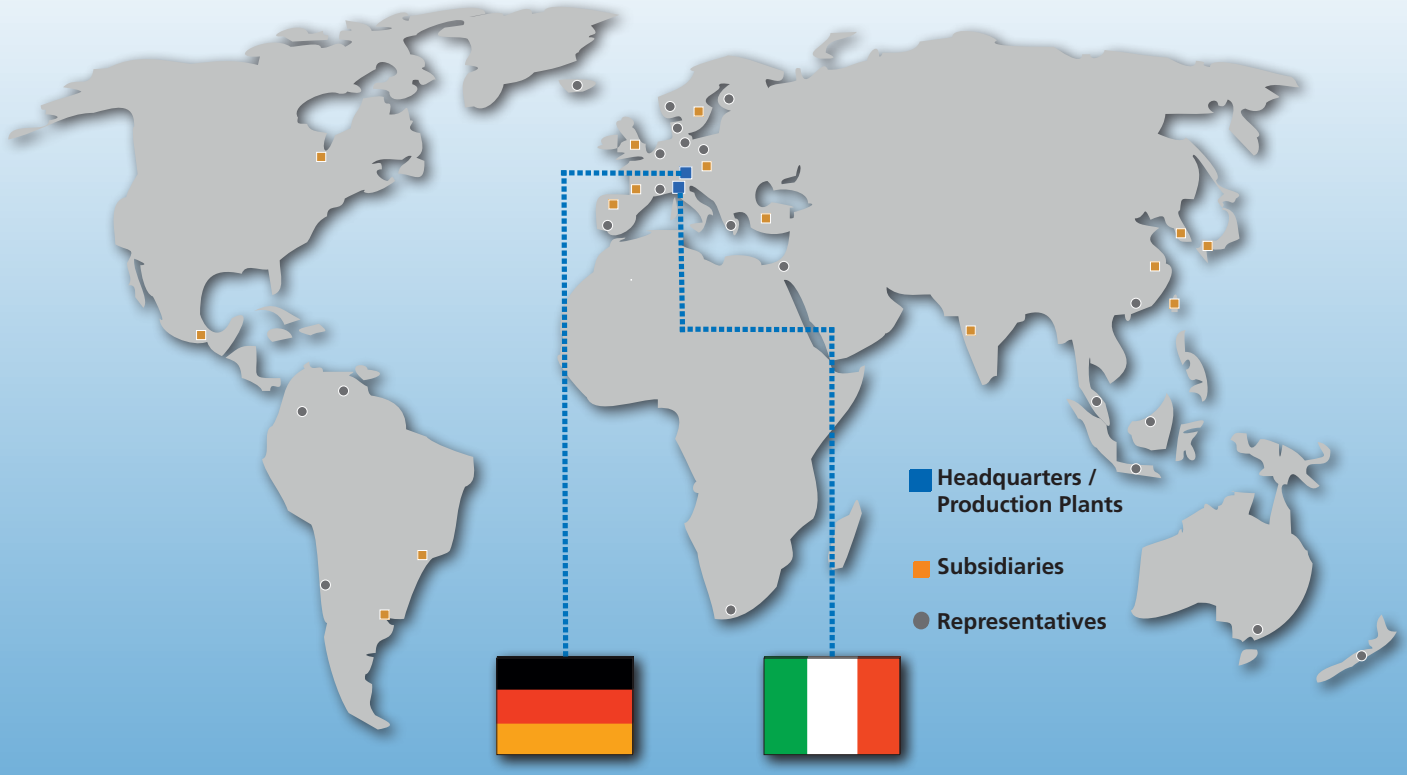
Inductive Coupling Systems | Sensoric | Digital Products | Measuring Systems | Connectivity

WIRELESS TECHNOLOGIES

www.smw-electronics.com

SMW-AUTOBLOK worldwide



SMW-AUTOBLOK manufacturing plant Meckenbeuren
Development | Manufacturing | Sales | Service | Support

SMW-electronics Meckenbeuren plant Meckenbeuren
Development | Manufacturing | Sales | Service | Support

SMW-AUTOBLOK technology and logistics center Meckenbeuren

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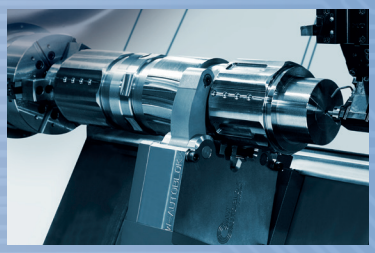
Market segements

Automotive

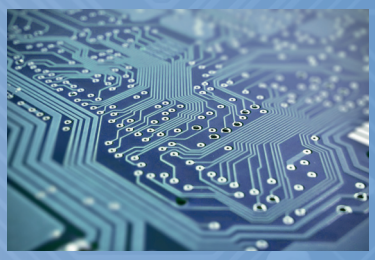


Industrial Equipment

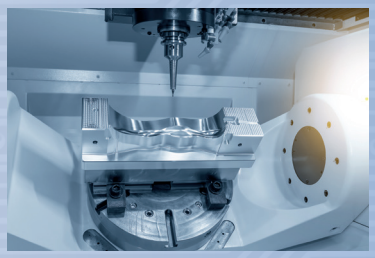
OCTG

Aerospace

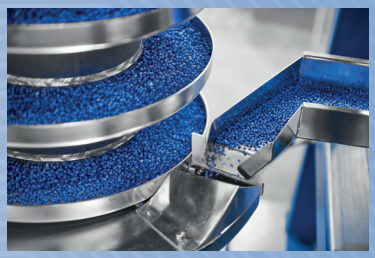
Off Highway



Electronics



Mold Industry



Plastics

Automation
and Handling

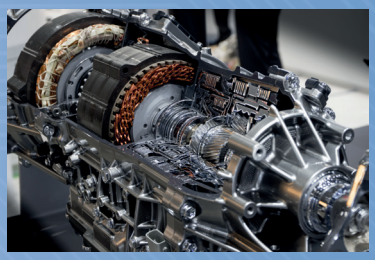
Mining Industry
Cranes

Robots / Cobots

Medical Technology

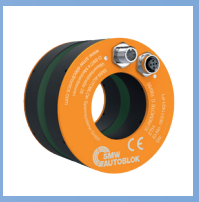
Intralogistics

Packaging Industry



Powertrain

Product range

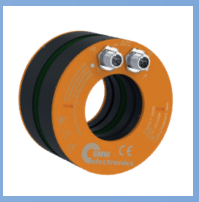


Page 10

Inductive Coupling System F100 Ethernet

Axial coupler

- Contact free transmission of energy and signals
- High transmission of energy up to 75 W
- Transmission of signals Ethernet 100 Base-T
- Diameter 100 mm / through-hole 50 mm

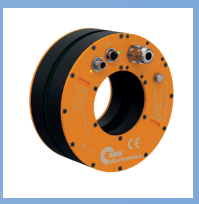


Page 12

Inductive Coupling System F100-2IOL

Axial coupler

- Contact free transmission of energy and signals
- High transmission of energy up to 75 W
- Transmission of signals: 2x IO-Link (COM1, COM2, COM3)
- Diameter: 180 mm / through-hole: 85 mm

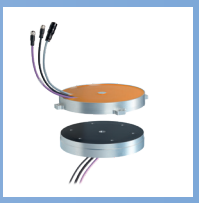


Page 14

Inductive Coupling System F180 Ethernet

Axial coupler

- Contact free transmission of energy and signals
- High transmission of energy up to 400 W
- Transmission of signals Ethernet 100 Base-T
- Diameter 180 mm / through-hole 85 mm



Page 16

Inductive Coupling System F280 CAN

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 1100 W
- Transmission of signals 2 x CAN-Bus, 2 x digital
- Diameter 280 mm

Page 18

Inductive Coupling System F100/66-IOL

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 22 W
- Transmission of signals: IO-Link (COM1, COM2, COM3)
- Ideal for pallet change application

Page 20

Inductive Coupling System F60-4/4A

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 2.5 W
- Transmission of signals (4 x digital, 4 x analog 0 - 10 V)
- Base with mounting flange
- Diameter 60 mm / through-hole 36 mm

Page 22

Inductive Coupling System F60-4/4A

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 2.5 W
- Transmission of signals (4 x digital, 4 x analog 0 - 10 V)
- Diameter 60 mm / through-hole 36 mm

Page 24

Inductive Coupling System F120

Axial coupler

- Contact free transmission of energy
- Transmission of energy 120 W
- No signal transmission

Page 26

Inductive Coupling System M12-2

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 1 W
- Transmission of signals 2 x digital
- Mounting M12 x 1

Page 28

Inductive Coupling System M18-4

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 1.2 W
- Transmission of signals 4 x digital
- Mounting M18 x 1

Page 30

Inductive Coupling System M30-2

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 12 W
- Transmission of signals 2 x digital
- Mounting M30 x 1.5

Page 32

Inductive Coupling System M30-8

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 12 W
- Transmission of signals 8 x digital
- Mounting M30 x 1.5

Page 34

Inductive Coupling System M30-IOL

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 12 W
- Transmission of signals: IO-Link (COM1 / COM2 / COM3)
- Mounting: M30 x 1.5

Page 36

Inductive Coupling System M30-4A

Axial coupler

- Contact free transmission of energy and signals
- Transmission of energy up to 6 W
- Transmission of signals 4 x analog (4 - 20 mA/0 - 10 V)
- Mounting M30 x 1.5

Continuation on the next page

Product range

Page 38

Inductive Coupling System M30-8+8

Axial coupler

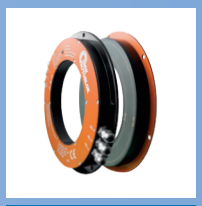
- Contact free transmission of energy and signals
- Transmission of energy up to 12 W
- Transmission of signals 8 / 8 x digital (bidirectional)
- Mounting M30 x 1.5

Page 40

Mounting Brackets

Accessories

- Mounting brackets for inductive couplers M30, M18 und M12
- Simple mounting



Page 41

Inductive Coupling System

Individual solutions

- Individual customized adaptions
- Customizable geometry
- Energy and signal transmission depending on customer requirements

Page 44

LPS 4.0 14 IO

Linear Positioning System

- Inductive positioning system
- Output analog and IO-Link interface
- Measuring range = 14 mm

Page 45

LPS 4.0 48 IO

Linear Positioning System

- Inductive positioning system
- Output analog and IO-Link interface
- Measuring range = 48 mm

Page 46

LPS 4.0 80 IO

Linear Positioning System

- Inductive positioning system
- Output analog and IO-Link interface
- Measuring range = 80 mm

Page 47

LPS 4.0 120 IO

Linear Positioning System

- Inductive positioning system
- Output analog and IO-Link interface
- Measuring range = 120 mm

Page 48

USP 4.0 250

Ultrasonic Position Measuring System

- Non-contact distance measurement using Ultrasonic technology
- Large measuring range 25 - 250 mm
- State of the art ultrasonic
- Output signal analog 0 - 10 V/4 - 20 mA

Page 52

GFT-X 4.0

Multifunctional Gripping Force Tester

- Wireless grip force measuring
- Assistance systems APPs
- Tablet IP 67 protected
- Integrated software for clamping force / speed evaluation

Page 54

Digital Products

- App programming
- Cloud solutions
- PNP programming
- Monitoring and analysis software
- Software for mechatronic clamping systems

Page 60

Connectivity

Accessories

- IO-Link Hub 16 x digital IN/OUT
- IO-Link Hub 16 x digital IN
- Sensors / actuators connecting cable

Page 62

RFID

Accessories

- Write / read station
- Transponder ISO 15693

Page 64

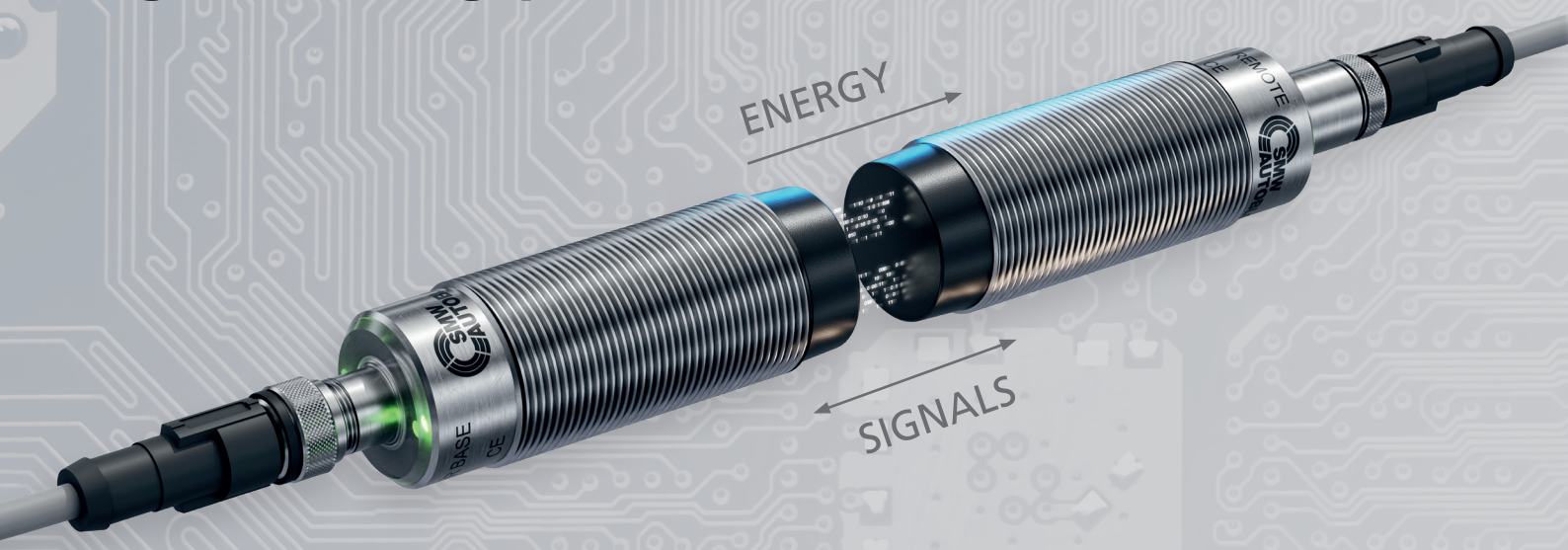
Application Examples

- Inductive coupling systems
- LPS 4.0
- UPS 4.0

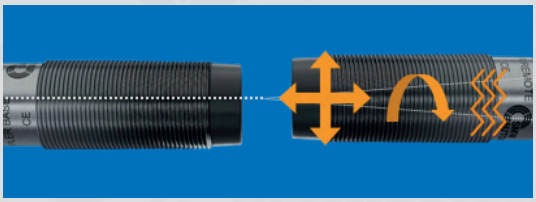
Continuation from previous page

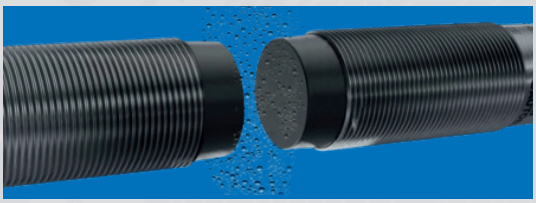
Inductive transmission of energy and signals

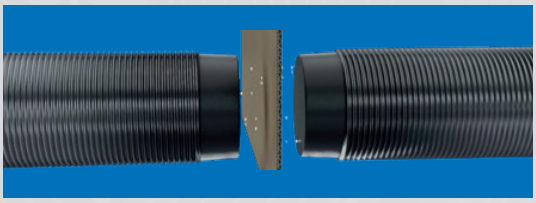
Contact free transmission of energy and signals via air gap

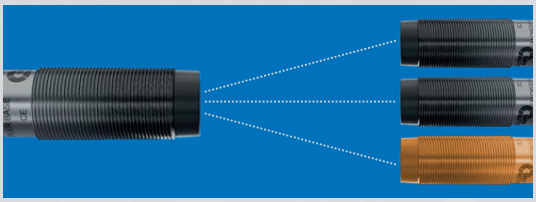


Benefits









- Flexible installation due to the large transmission distance
- Safe transmission even when the mobile coupler rotates
- Also suitable for high speeds
- Insensitive to vibrations
- No cable breakage
- Safe transmission of signals

- Completely free from wear and maintenance
- Can be used in rough conditions and also for clean room applications
- Protected according to IP67

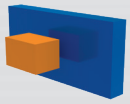
- Safe transmission even through non-metallic obstacles

- Dynamic Pairing: Base unit (stationary) can communicate with different remote units (mobile)

Our technical possibilities and designs
of energy and signal transmission

- **Inductive energy transmission**
  - Up to 1100 W
- **Inductive signal transmission**
  - Analog signals (0 - 10 V / 4 - 20 mA)
  - Temperature signals (PT 100)
  - Digital switching PNP signals
  - Field bus (CAN or Profibus)
  - IO-Link (COM1, COM2, COM3)
  - Ethernet (compatible among others with PROFINET, Modbus, EtherNet/IP)
- **Hybrid systems**
  - Energy transmission via slip ring / contact pins
  - Inductive signal transmission

Examples of geometric design
for inductive energy and signal transmission

							
Transmission	Axial	Axial	Axial	Axial	Radial	Radial	Translational
Motion	Rotation / Linear	Rotation	Rotation	Rotation	Rotation	Rotation	Linear
Geometry	Cylinder (also cubic)	Disc	Ring	Ring segment / Ring	Segment / Ring	Ring / Ring	Cubic
Application examples	Palletizing, automation, mechanical engineering, tool monito-ring, connector replacement	Mechanical engineering, mechatronics, collector ring replacement	Printing machines, robotics, collector ring replacement	Mechanical engineering, process technology	Packaging machines, centrifuges, process technology	Rotary indexing tables, packaging machines	Transport systems

Blue: Stationary unit (base) **Orange:** Mobile unit (remote)

F100 Ethernet

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy and signals**

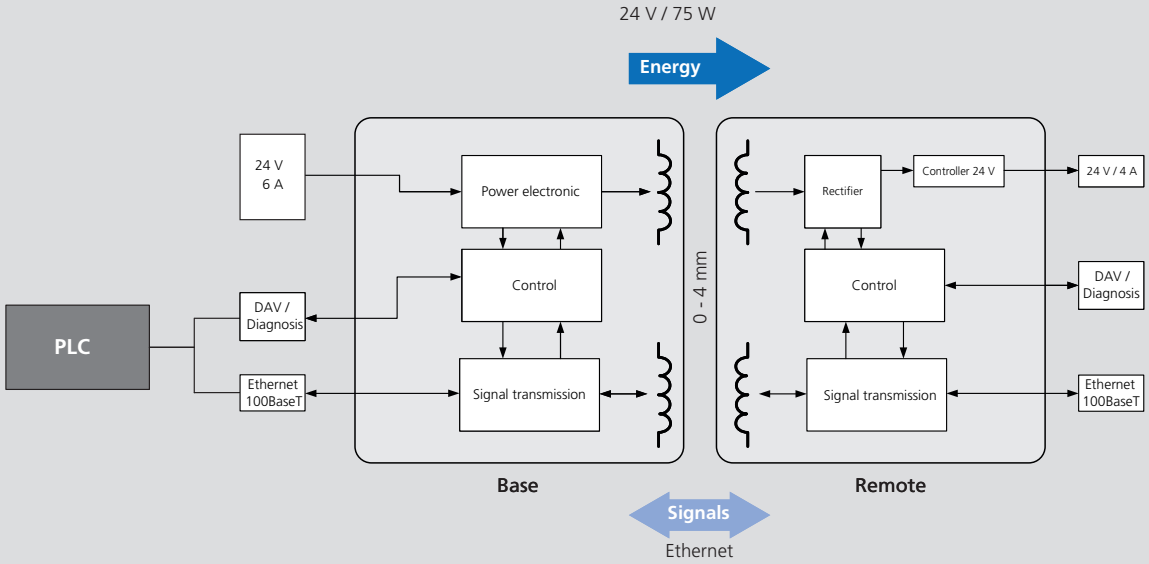
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Robotic (End of Arm Tooling), Automation, Mechanical engineering
- Substitution of slip ring / connector
- Dynamic Pairing
- Wear and maintenance free
- Protective functions: temperature monitoring, foreign object detection, reverse polarity protection
- Multi-level LED with good visibility

Technical features

- Diameter 100 mm / Through hole 50 mm
- Operating voltage 24 V / 6 A
- Transmission distance 0 - 4 mm
- Transmission of energy 24 V / 75 W
- Transmission of signals Ethernet 100 Base-T
- Transmission bandwidth: < 5 MBit/s
- Connections: M12 Ethernet (D-coded) / M12 Power (L-coded)
- Protection class: IP 67

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system F100 Ethernet		
SMW-electronics Type	**Base**	**Remote**
Id. No.	**0E011420**	**0E011421**
Operating temperature (housing surface)	-20 °C ... +60 °C	
Storage temperature	-20 °C ... +60 °C	
Transmission distance	0 mm ... 4 mm	
Operating voltage	24 V	-
Output voltage	-	24 V (75 W)
Signal transmission Ethernet (bidirectional)	Ethernet 100 Base-T	
LED	2 LEDs 2-color	
Current consumption (Base)	6 A (24 V)	-
Overload protection / short circuit protection	✓	✓
Residual ripple	-	< 50 mV
Reverse polarity protection	✓	-
Data-Valid output	max. 100 mA	
Ready delay	< 1s	

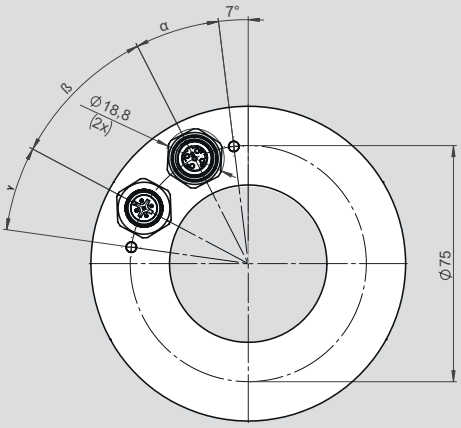
Inductive Coupling System

■ Stationary unit - Base
■ Mobile unit - Remote

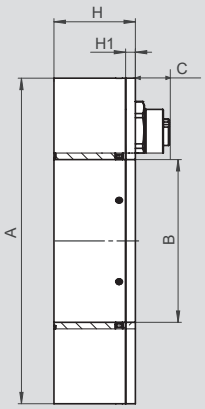
F100 Ethernet

Axial coupler

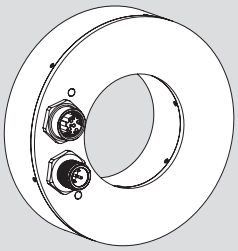
Base / Remote:



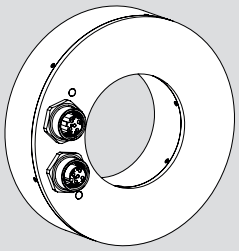
Base / Remote:



Base:



Remote:



Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system F100 Ethernet			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E011420**	**0E011421**
A	mm	100	
B	mm	50	
C	mm	13	10
H	mm	25	
H1	mm	3	
α	degree	27	
ß	degree	35	
γ	degree	20	
Housing material		Al, GFK	
Protection class		IP 67	

Function Base	
LED Power	
Color	Green / red
Function	Off » Unit not supplied with voltage (or undervoltage)
	On (green) » Voltage ok and mobile unit has been detected
	2 Hz green 50 / 50% » Operating temperature in critical range
	1 Hz green 25 / 75% » Voltage ok but no mobile unit detected
	1 Hz red / green » Incompatible mobile unit detected
	2 Hz red » Foreign element detected
	5 Hz red » Internal error
LED Signal transmission Ethernet	
Color	Yellow / red
Function	Off » No mobile unit detected
	On / yellow » Signal transmission ready
	1 Hz yellow » Data packets are being transmitted
	3 Hz yellow » 50% of the transmission bandwidth used (10 s)
	8 Hz red » Data packets were discarded (in the last 10 s)
	On / red » Error in data transmission (internal error)

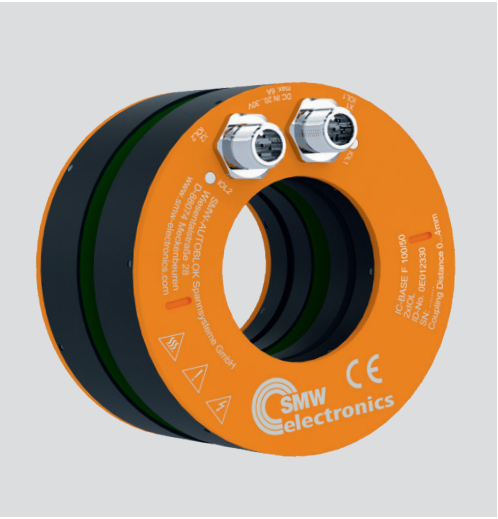
Function Remote	
LED Power	
Color	Green / red
Function	Off » Unit not paired
	On (green) » Unit paired, voltage output ok
	Flashes 2 Hz red » Paired but short circuit
	Flashes 5 Hz red » Internal error
LED Signal transmission Ethernet	
Color	Yellow / red
Function	Off » No mobile unit detected
	On / yellow » Signal transmission ready
	1 Hz yellow » Data packets are being transmitted
	3 Hz yellow » 50% of the transmission bandwidth used (10 s) 8 Hz red » Data packets were discarded (in the last 10 s)
	On / red » Error in data transmission (internal error)

F100-2IOL

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy and signals**



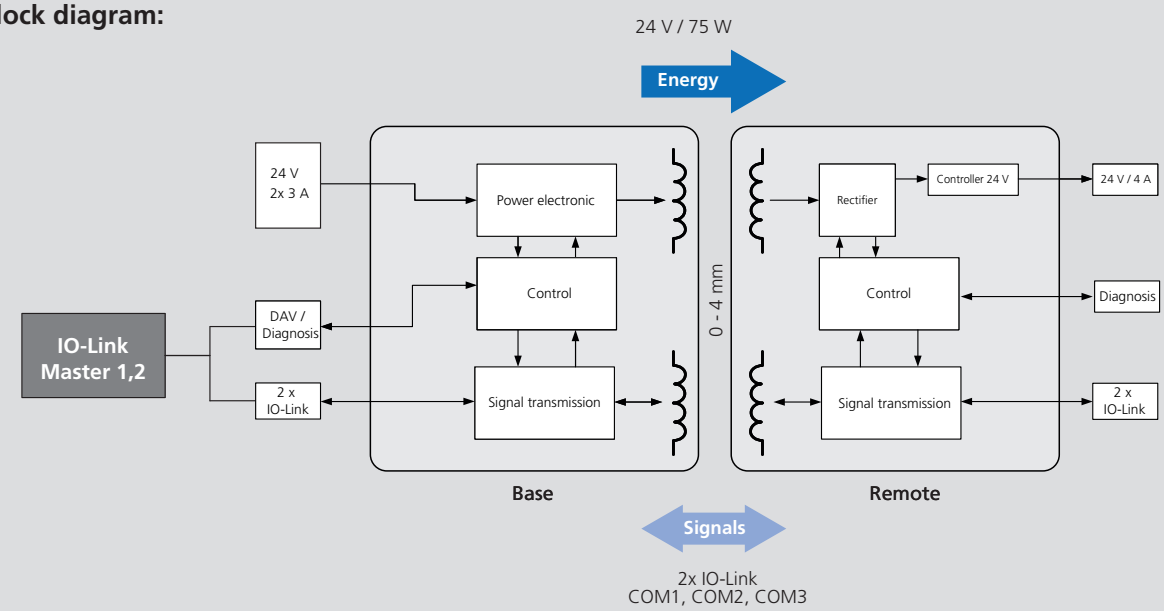
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Robotic (End of Arm Tooling), Automation, Mechanical engineering
- Substitution of slip ring / connector
- Dynamic Pairing
- Wear and maintenance free
- Protective functions: temperature monitoring, foreign object detection, reverse polarity protection
- Multi-level LED with good visibility

Technical features

- Diameter 100 mm / Through hole 50 mm
- Operating voltage 24 V / max. 6 A
- Transmission distance 0 - 4 mm
- Transmission of energy 24 V / 75 W
- Transmission of signals: 2 x IO-Link (COM 1, COM 2, COM 3)
- Connections: Base: 2x M12 x 1 male 5-pin
  Remote: 2x M12 x 1 female 5-pin
- Protection class: IP 67

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system F100-2IOL		
SMW-electronics Type	**Base**	**Remote**
Id. No.	**0E012330**	**0E012331**
Operating temperature (housing surface)	-20 °C ... +60 °C	
Storage temperature	-20 °C ... +60 °C	
Transmission distance	0 mm ... 4 mm	
Operating voltage	24 V	-
Output voltage	-	24 V (75 W)
Signal transmission	2x IO-Link (COM2, COM 2, COM 3)	
LED	2 LEDs 2-color	
Current consumption (Base)	6 A (24 V)	-
Overload protection / short circuit protection	✓	✓
Residual ripple	-	< 50 mV
Reverse polarity protection	✓	-
Data-Valid output	max. 100 mA	
Ready delay	< 1s	

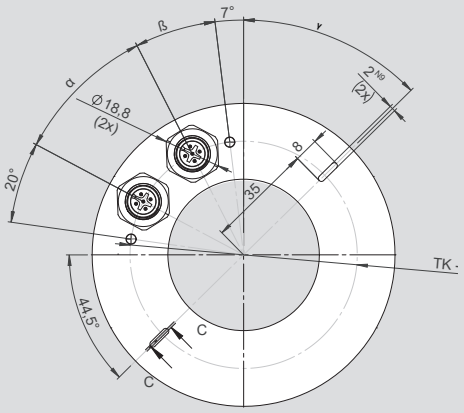
Inductive Coupling System

■ Stationary unit - Base
■ Mobile unit - Remote

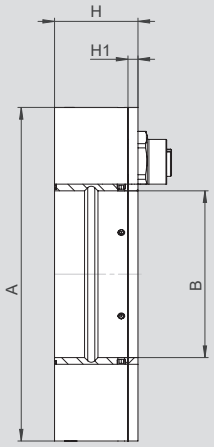
F100-2IOL

Axial coupler

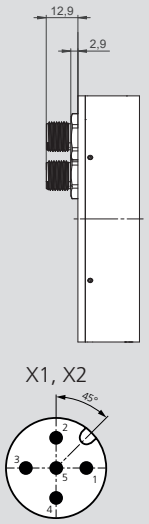
Base / Remote:



Base / Remote:

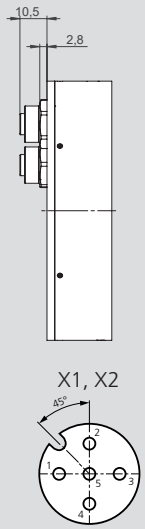


Base:



2x Male connector 5-pin
M 12 x 1

Remote:



2x Female connector 5-pin
M 12 x 1

Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system F100-2IOL			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E012330**	**0E012331**
A	mm	100	
B	mm	50	
C	mm	1	
H	mm	25	
H1	mm	3	
α	degree	35	
ß	degree	20	
γ	degree	45,5	
Housing material		Al, GFK	
Protection class		IP 67	

Function LED IO-Link Base (X1, X2)	
LED Power	
Color	Yellow / red
	Yellow » SIO mode active and SIO signal is high
	Flash yellow (1000ms on, 100ms off),» IO-Link communication active, power is on, Remote was detected
	Flashing 2 Hz yellow » no IO-Link device detected, power on, no Remote detected
	Flashing 2 Hz red » Short circuit on IO-Link PIN
	Flashing 5 Hz red » Overload voltage output Remote

Function LED IO-Link Remote (X1, X2)	
LED Power	
Color	Yellow / red
Function	Yellow » SIO mode active and SIO signal is high
	Flash yellow (1000ms on, 100ms off),» IO-Link communication active, power is on, Base has been detected
	Flashing 2 Hz yellow » No IO-Link communication, power on, no Base detected
	Flashing 2 Hz red » Short circuit on IO-Link PIN
	Flashing 5 Hz red » Overload voltage output Base

PIN assignment	PIN	X1 Base	X2 Base	X1 Remote	X2 Remote
Supply voltage	1	24 V IN	24 V IN	24 V OUT	24 V OUT
Data-Valid	2	DAV 24 V	-	-	-
Ground	3	GND	GND	GND	GND
IO-Link Signal	4	IO-Link CQ	IO-Link CQ	IO-Link CQ	IO-Link CQ
-	5	-	-	-	-

F180 Ethernet

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy and signals**

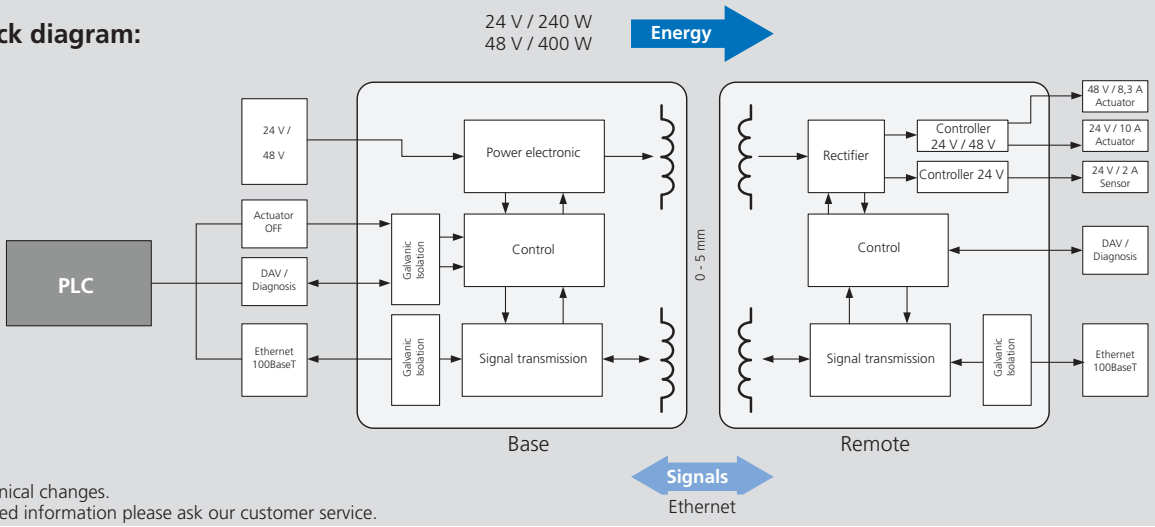
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Packaging machines, special machines, Automation, Machine Tools, Printing Machines, Robot applications (EOAT)
- Substitution of slip ring / connector
- Dynamic Pairing
- Wear and maintenance free
- Protective functions: temperature monitoring, foreign object detection
- Multi-level LED with good visibility

Technical features

- Diameter: 180 mm / Through hole: 85 mm
- Operating voltage: 24 V or 48 V
- Transmission distance: 0 - 5 mm at 24 V or 0 - 3 mm at 48 V
- Energy transmission: 24 V / 240 W or 48 V / 400 W (settable)
- Signal transmission: Ethernet 100 Base-T
- Transmission bandwidth < 5 MBit/s
- Connections: M12 Ethernet (D-coded), M12 Diagnosis (A-coded), terminal block (Energy)
- Protection class: IP 67

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system F180 Ethernet		
SMW-electronics Type	**Base**	**Remote**
Id. No.	**0E011246**	**0E011247**
Operating temperature (body surface)	-20° C ... +60° C	
Stocking temperature	-20° C ... +60° C	
Transmission distance	0 mm ... 5 mm (24 V) 0 mm ... 3 mm (48 V)	
Operating voltage	24 V / 48 V	-
Output voltage (Actuator supply)*	-	24 V DC / 10 A 48 V DC / 8,3 A
Output voltage (Sensor supply)*	-	24 V DC / 4 A
Signal transmission	Ethernet 100 Base-T	
LED function display	3 LEDs 2-color	
Current consumption (base)	15 A (24 V) 12 A (48 V)	-
Overload protection / short-circuit protection	✓	✓
Reverse polarity protection	-	< 50 mV
Data valid output	max. 100 mA	-
Ready delay	< 1 s	

*max 400 W total

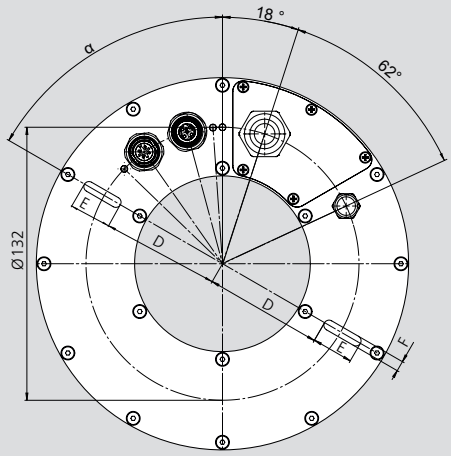
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

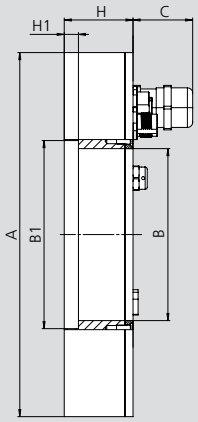
F180 Ethernet

Axial coupler

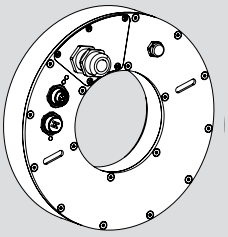
Base / Remote:



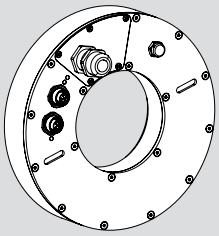
Base / Remote:



Base:



Remote:



Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system F180 Ethernet			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E011246**	**0E011247**
A	mm	180	
B	mm	85	
B1	mm	93	
C	mm	29.5	
D	mm	57	
E	mm	20	
F	mm	5	
H	mm	34	
H1	mm	7	
α	degree	60	
Housing material		Al, GFK	
Protection class		IP 67	

Function Base	
LED Power	
Color	Green/red
Function	Off » Unit not supplied with voltage (or undervoltage)
	On (green) » Voltage ok and mobile unit has been detected
	2 Hz green 50/ 50% » Operating temperature in critical range
	1 Hz green 25/75% » Voltage ok but no mobile unit detected
	1 Hz red/green » Incompatible mobile unit detected
	2 Hz red » Foreign element detected
	5 Hz red » Internal error
LED Signal transmission Ethernet	
Color	Yellow/red
Function	Off » No mobile unit detected
	On/yellow » Signal transmission ready
	1 Hz yellow » Data packets are being transmitted
	3 Hz yellow » 50% of the transmission bandwidth used (10 s)
	8 Hz red » Data packets were discarded (in the last 10 s)
	On/red » Error in data transmission (internal error)
LED Energy transmission	
Color	Yellow/red
Function	Off » No mobile unit detected
	On (yellow) » Unit coupled, voltage output ok
	1 Hz red/yellow » Short circuit at voltage output sensor
	3 Hz red/yellow » Short circuit at voltage output actuator
	3 Hz red » Short circuit at both voltage outputs
	5 Hz red » Internal error

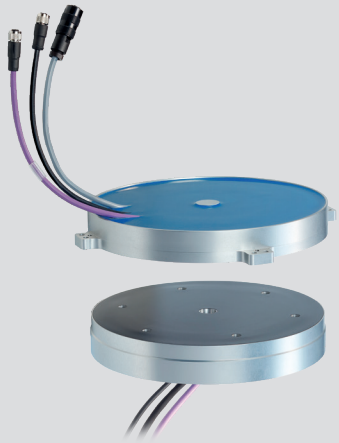
Function Remote	
LED Actuator	
Color	Green/red
Function	Off » Unit not paired
	On (green) » Unit paired, voltage output actuator ok
	Flashes 2 Hz red » Unit paired but short circuit on actuator
	Flashes 5 Hz red » Internal error
LED Sensor supply	
Color	Green/red
Function	Off » Unit not paired
	On (green) » Unit paired, voltage output sensor (24 V) ok
	Flashes 2 Hz red » Unit paired but short circuit on sensor (24 V)
	Flashes 5 Hz red » Internal error
LED Signal transmission	
Color	Yellow/red
Function	Off » No mobile unit detected
	On/yellow » Signal transmission ready
	Flashes 1 Hz yellow » Data packets are being transmitted
	Flashes 3 Hz yellow » 50% of the transmission bandwidth used (10 s)
	Flashes 8 Hz red » Data packets were discarded (in the last 10 s)
	On/red » Error in data transmission (internal error)

F280 CAN

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy and signals**



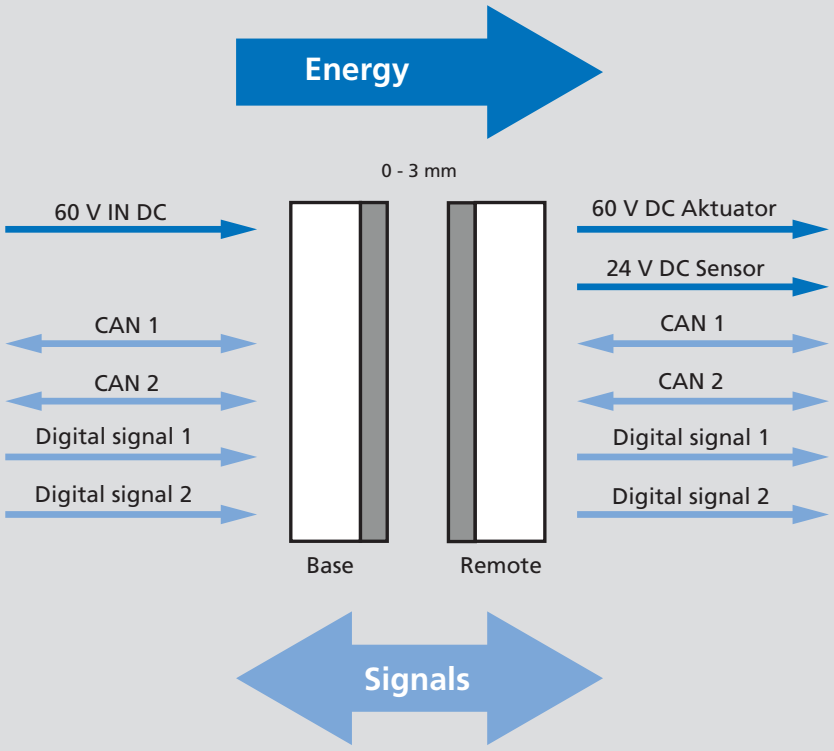
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Connection from mechatronic clamping systems (MM / RT e-motion line) within machine tools, slip ring replacement
- Dynamic Pairing
- Free from wear and maintenance

Technical features

- Operating voltage 60 V ± 10%
- Energy transmission: 60 V / 1100 W (18 A) actuators, 24 V (2 A) sensors
- Signal transmission: Bus system 2x CAN BUS
- Signal transmission: Digital 2 x 24 V switching signal remote to base
- Diameter 280 mm
- Transmission distance 0 - 3 mm
- Inverse-polarity protection (base), short-circuit proof (remote)
- Protection class: IP 67

Block diagram:

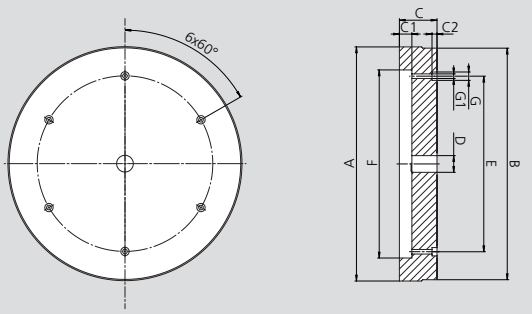


Subject to technical changes.
For more detailed information please ask our customer service.

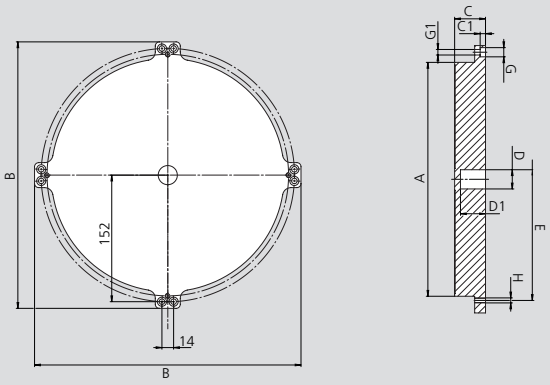
F280 CAN

Axial coupler

Base:



Remote:



Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system F280 CAN			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**208004**	**208005**
A	mm	280	
B	mm	277	320
C	mm	45	37
C1	mm	15	6.4
C2	mm	6	-
D	mm	20	23
D1	mm	-	30
E	mm	210	290
F	mm	225	-
G	mm	10	11
G1	mm	5.5	6.6
H	mm	-	M6
Weight		4.6 kg	4.1 kg
Housing material		Al, PA12	
Protection class		IP 67	
Operating temperature		-10° C ... +50° C	
Storage temperature		-25° C ... +70° C	
Transmission distance		0 mm ... 3 mm	
Operating voltage		60 V DC	-
Output voltage actuator		-	60 V DC
Output voltage sensor		-	24 V DC
Power consumption (Base)		< 25 A	-
Power output (Remote)		-	Max. 18 A Aktuator (60 V) / max. 2 A Sensor (24 V)
Overload protection / short circuit protection			✓
Residual ripple		-	< 5 V
Reverse polarity protection		✓	-
Ready delay		< 800 ms	

F100/66-IOL

Axial coupler

Inductive Coupling System

- Contact free transmission of energy and signals
- Ideal for pallet change applications

IO-Link

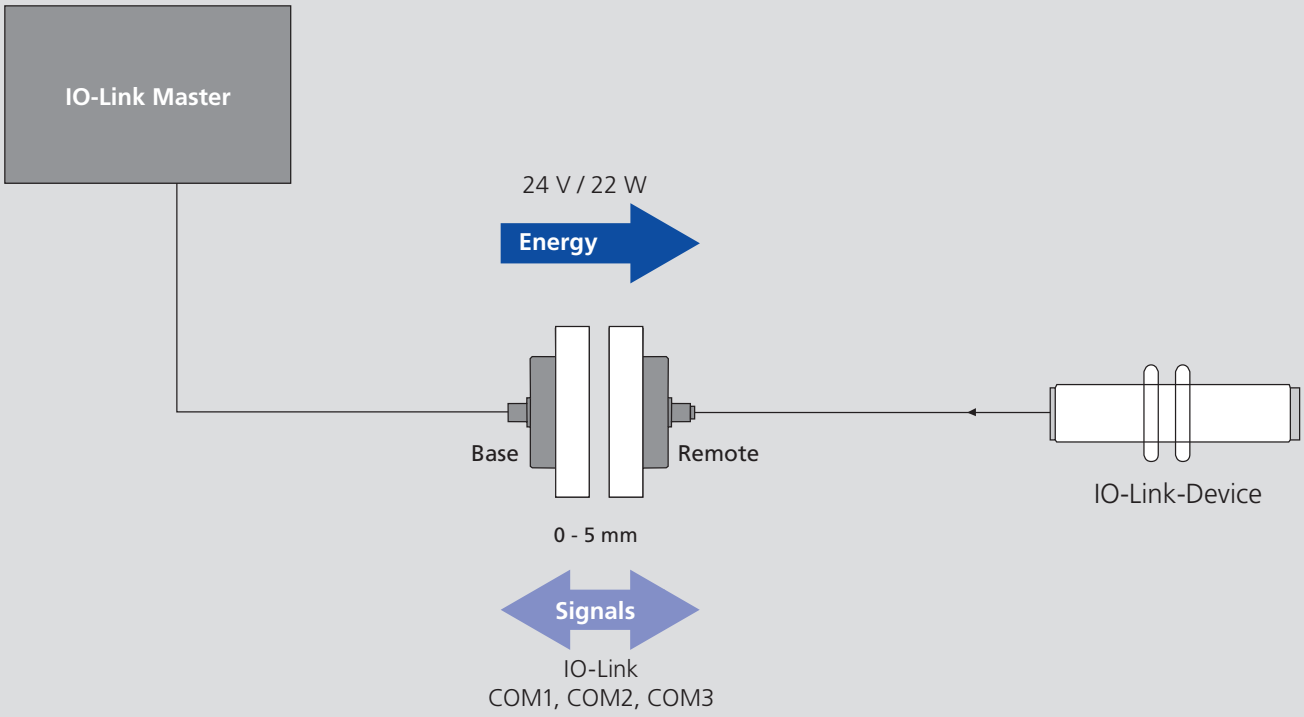
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Supply of sensors and valves in pallet change applications
- Dynamic Pairing
- Wear and maintenance free
- Protective functions: Temperature monitoring, foreign object detection, reverse polarity protection

Technical features

- Mounting 4 x M5 x 20, pitch circle Ø 84 mm
- Axial installation sealing
- Operating voltage 24 V (18 ... 30 V)
- Transmission distance 0 - 5 mm
- Transmission of energy: 24 V / 22 W
- Transmission of signals: IO-Link (COM1, COM2, COM3)
- Connection: Base male connector M12x1 (5-pin), remote female connector M12x1 (4-pin)
- Protection class IP 67
- Id. No. Base: 0E012280
  Id. No. Remote: 0E012290

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

IO-Link

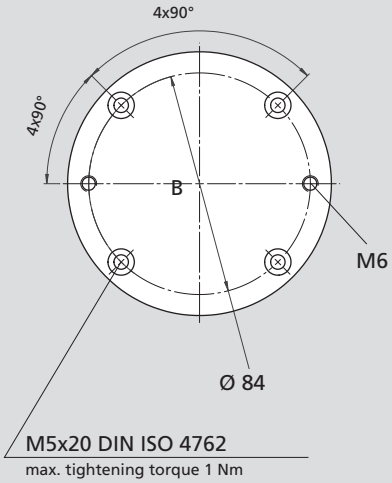
Inductive Coupling System

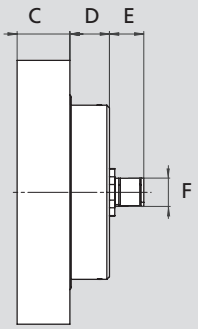
F100/66-IOL

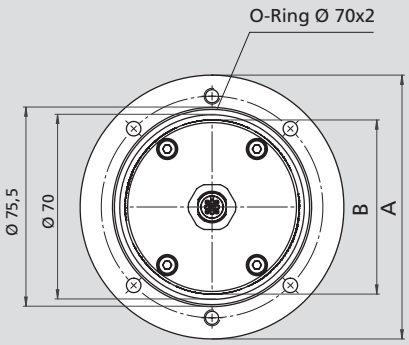
- Contact free transmission of energy and signals
- Ideal for pallet change applications

Axial coupler

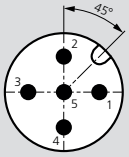
Base/ Remote:





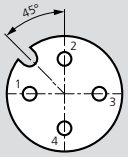


Base



Male connector 5-pin
M 12 x 1

Remote



Female connector 4-pin
M 12 x 1

Subject to technical changes.
For more detailed information please ask our customer service.

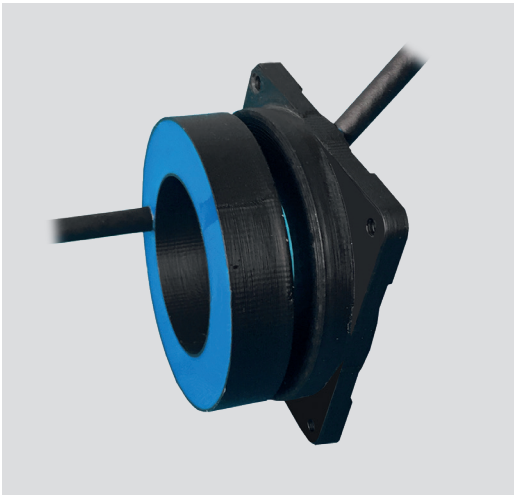
Inductive coupling system F100/66-IOL			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E012280**	**0E012290**
A	mm	100 - 0,1	
B	mm	66 - 0,1	
C	mm	20 - 0,1	
D	mm	15	
E	mm	12	
F	mm	M12 x 1 / Male	M12 x 1 / Female
Housing material		PA 12 C, AL	
Protection class		IP 67	
Operating temperature		-20° C ... +50° C	
Storage temperature		-20° C ... +80° C	
Transmission distance		0 - 5 mm	
Operating voltage		24 V (18 ... 30 V)	-
Output voltage		-	24 V ± 10% DC
Power consumption (Base)		1600 mA	-
Power output (Remote)		-	920 mA
Overload protection / short circuit protection		✓	✓
Residual ripple		-	< 200 mV
Reverse polarity protection		✓	-
Temperature monitoring		✓	✓
Data-Valid Output		150 mA	-
Ready delay		< 600 ms	
PIN assignment		**Signal Base**	**Signal Remote**
Supply voltage	1	24 V IN	24 V OUT
Digitalsignal	2	0/24 V OUT	0/24 V IN
Ground	3	GND	GND
IO-Link Signal	4	IO-Link CQ	IO-Link CQ
Data-Valid	5	DAV 24 V	-

F60-4/4A

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy and signals**



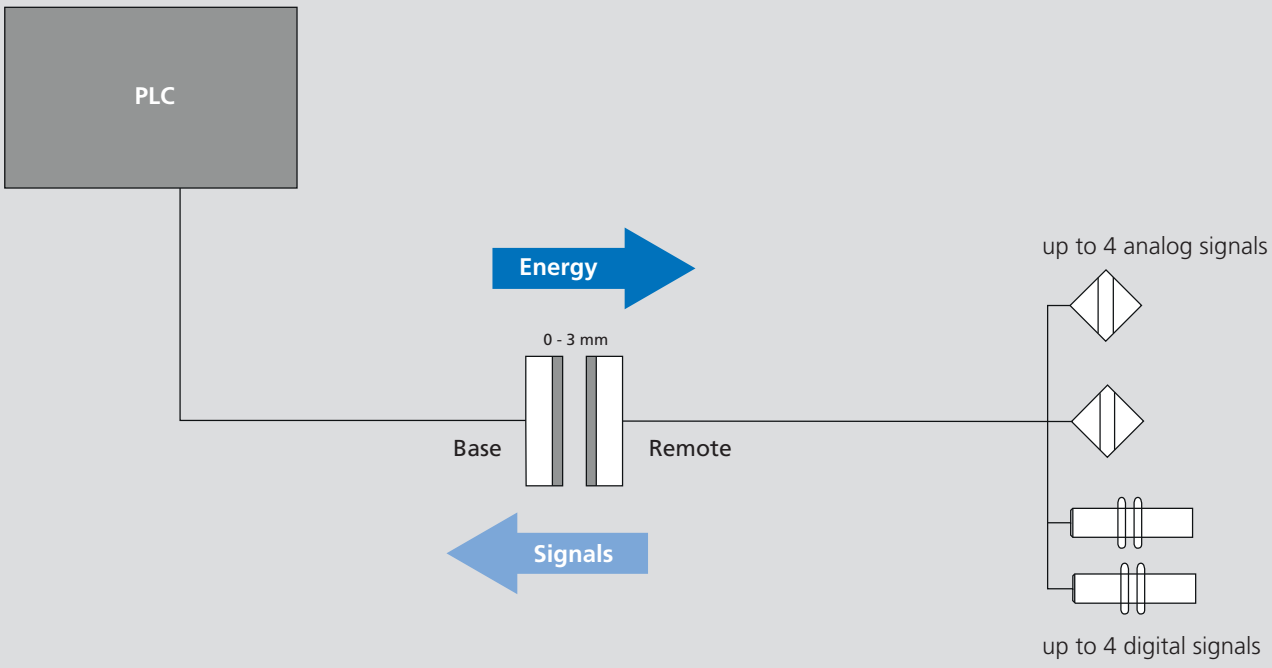
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application example: Monitoring of sensors in clamping systems, automation, slip ring replacement
- Base with mounting flange
- Dynamic Pairing
- Wear and maintenance free

Technical features

- Operating voltage 24 V ± 10%
- Transmission distance 0 - 3 mm
- Energy transmission: 24 V / 2.5 W (100 mA)
- Transmission of signals: 4 analog signals (0 - 10 V) / 4 digital signals (PNP)
- Inverse-polarity protection (base), short-circuit proof (remote)
- Protection class: IP 67
- Id. No. Base: 0E010972
  Id. No. Remote: 0E010973

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

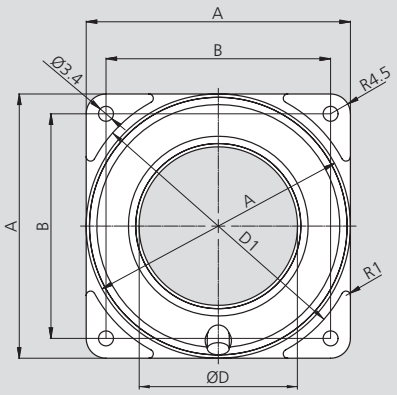
Inductive Coupling System

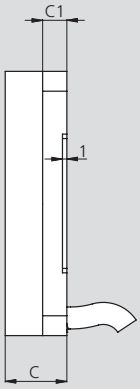
■ Stationary unit - Base
■ Mobile unit - Remote

F60-4/4A

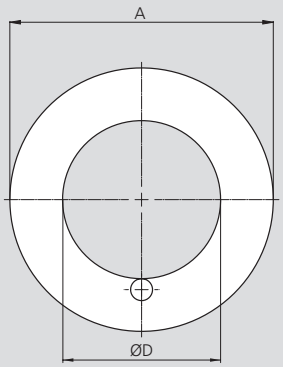
Axial coupler

Base:





Remote:



Subject to technical changes.
For more detailed information please ask our customer service.

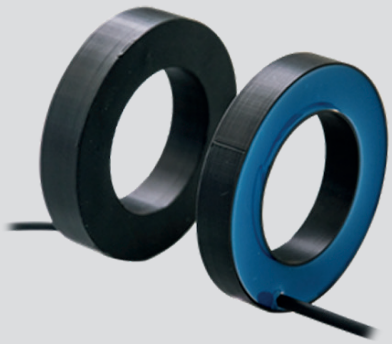
Inductive coupling system F60-4/4A			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E010972**	**0E010973**
A	mm	60	
B	mm	51	-
C	mm	14	12
C1	mm	13	
D	mm	36	
D1	mm	64	-
Housing material		POM, PA66, PC GF 30%	
Protection class		IP 67	
Operating temperature		0° C ... +60° C	
Storage temperature		-10° C ... +70° C	
Transmission distance		0 mm ... 3 mm	
Operating voltage		24 V ± 10% DC	-
Output voltage		-	24 V ± 10% DC
Power consumption (Base)		< 300 mA	-
Power output (Remote)		-	< 100 mA
Overload protection / short circuit protection		✓	✓
Residual ripple		-	< 200 mV
Reverse polarity protection		✓	-
Data-Valid Output		0 / 24 V	-
Ready delay		≤ 100 ms	

F60-4/4A

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy and signals**



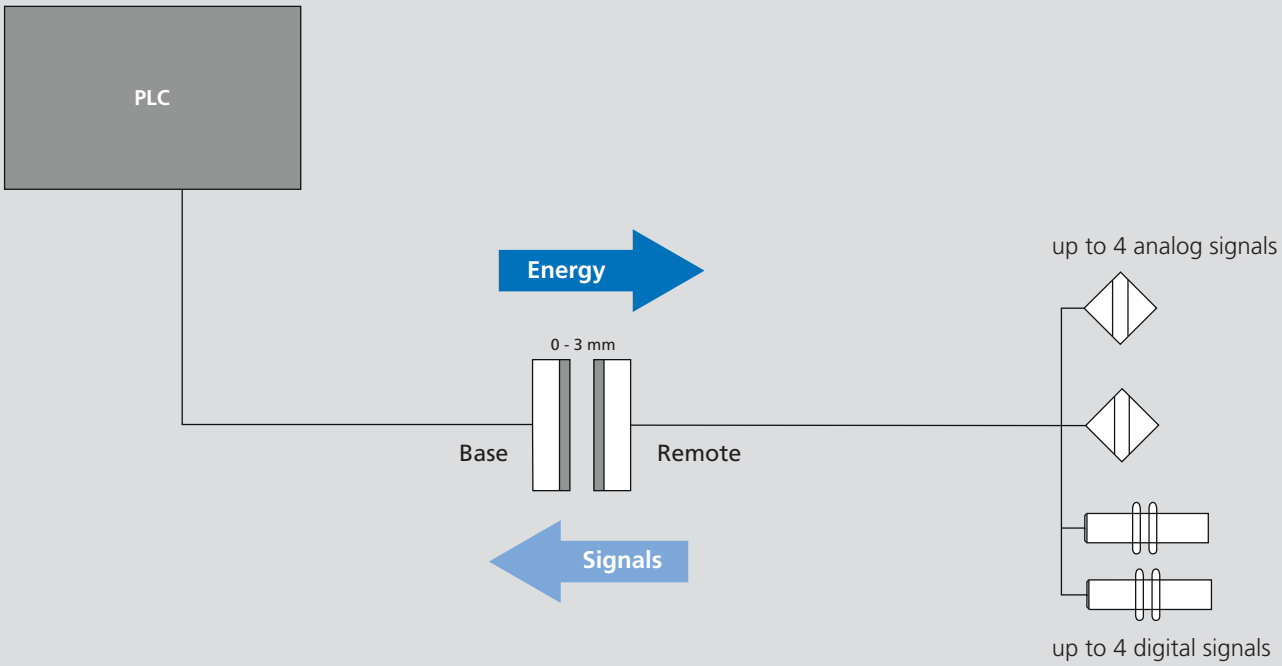
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Robotics, slip ring replacement
- Dynamic Pairing
- Wear and maintenance free

Technical features

- Operating voltage 24 V ± 10 %
- Transmission distance 0 - 3 mm
- Transmission of energy: 24 V / 2.5 W (100 mA)
- Transmission of signals: 4 analog signals (0 - 10 V) / 4 digital signals (PNP)
- Inverse-polarity protection (base), short-circuit proof (remote)
- Protection class: IP 67
- Id. No. Base: 0E010974
  Id. No. Remote: 0E010975

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

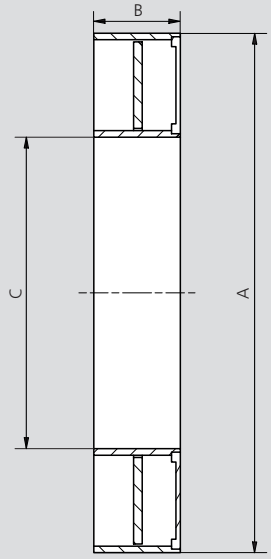
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

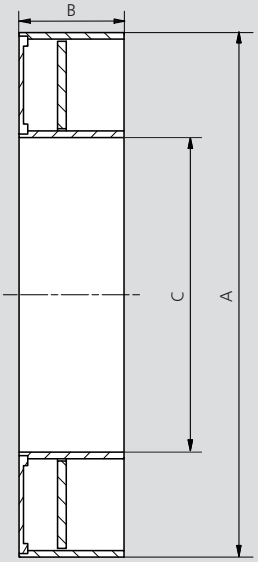
F60-4/4A

Axial coupler

Base:



Remote:



Subject to technical changes.
For more detailed information please ask our customer service.

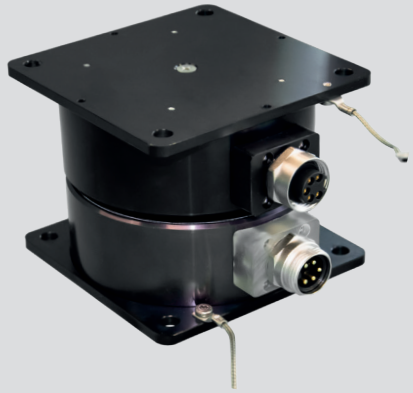
Inductive coupling system F60-4/4A			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E010974**	**0E010975**
A	mm	Ø 60	
B	mm	10	12
C	mm	Ø 36	
Housing material		POM, PA66, PC GF 30%	
Protection class		IP 67	
Operating temperature		0° C ... +60° C	
Storage temperature		-10° C ... +70° C	
Transmission distance		0 mm ... 3 mm	
Operating voltage		24 V ± 10% DC	-
Output voltage		-	24 V ± 10% DC
Power consumption (Base)		< 300 mA	-
Power output (Remote)		-	< 100 mA
Overload protection / short circuit protection		✓	✓
Residual ripple		-	≤ 200 mV
Reverse polarity protection		✓	-
Data-Valid Output		0 / 24 V	-
Ready delay		≤ 100 ms	

F120

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy**



Application/customer benefits

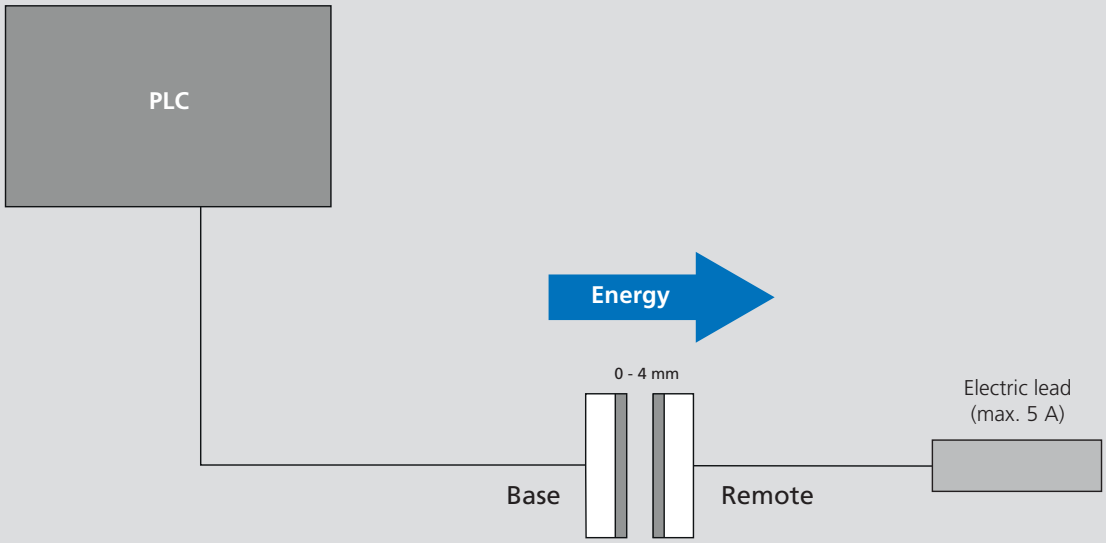
- Contact free, safe transmission of energy (power only) between moving / rotating and stationary components
- Application examples: Automation, replacement of slip ring
- Dynamic Pairing
- Wear and maintenance free

Technical features

- Flange mounting 120 x 120 mm (Diameter 116 mm)
- Operating voltage 24 V ± 10%
- Transmission distance 0 - 4 mm
- Transmission of energy 24 V / 120 W
- Inverse-polarity protection (base), short-circuit proof (remote)
- Connections: Base male connector 7/8“ (5-pin), remote female connector 7/8“ (5-pin)
- Protection class: IP 67
- Id. No. Base: 0E010983
  Id. No. Remote: 0E010984
- LED interface (base)

color:	green
slow flashing:	power on / no remote detected
static:	connection to remote established
fast flashing:	overload / short circuit

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

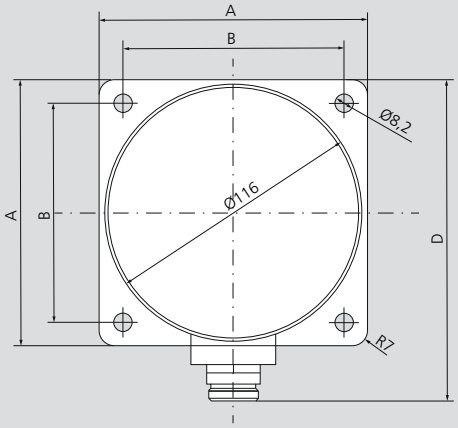
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

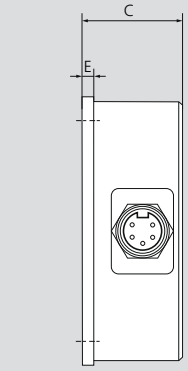
F120

Axial coupler

Base/Remote:



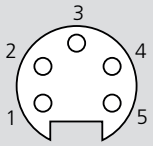
Base/Remote:



Base

Male connector 5-pin
7/8"

Remote



Female connector 5-pin
7/8"

Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system F120			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E010983**	**0E010984**
A	mm	120	
B	mm	99	
C	mm	45	
D	mm	145	148.5
E	mm	5	
Weight		850 g	
Housing material		Al, PA66, PC GF 30%	
Protection class		IP 67	
Operating temperature		0° C ... +50° C	
Storage temperature		-10° C ... +70° C	
Transmission distance		0 mm ... 4 mm	
Operating voltage		24 V ± 10% DC	-
Output voltage		-	24 V ± 10% DC
Power consumption (Base)		< 10 A	-
Power output (Remote)		-	< 5 A
Overload protection / short circuit protection		✓	✓
Residual ripple		-	< 200 mV
Reverse polarity protection		✓	-
Data-Valid Output		-	-
Ready delay		< 500 ms	

PIN assignment	PIN	Signal Base	Signal Remote
Ground	1	GND	
Ground	2	GND	
PE Protective earth	3	PE	
Voltage supply	4	24 V IN	24 V OUT
Voltage supply	5	24 V IN	24 V OUT

M12-2

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy and signals**

Application/customer benefits

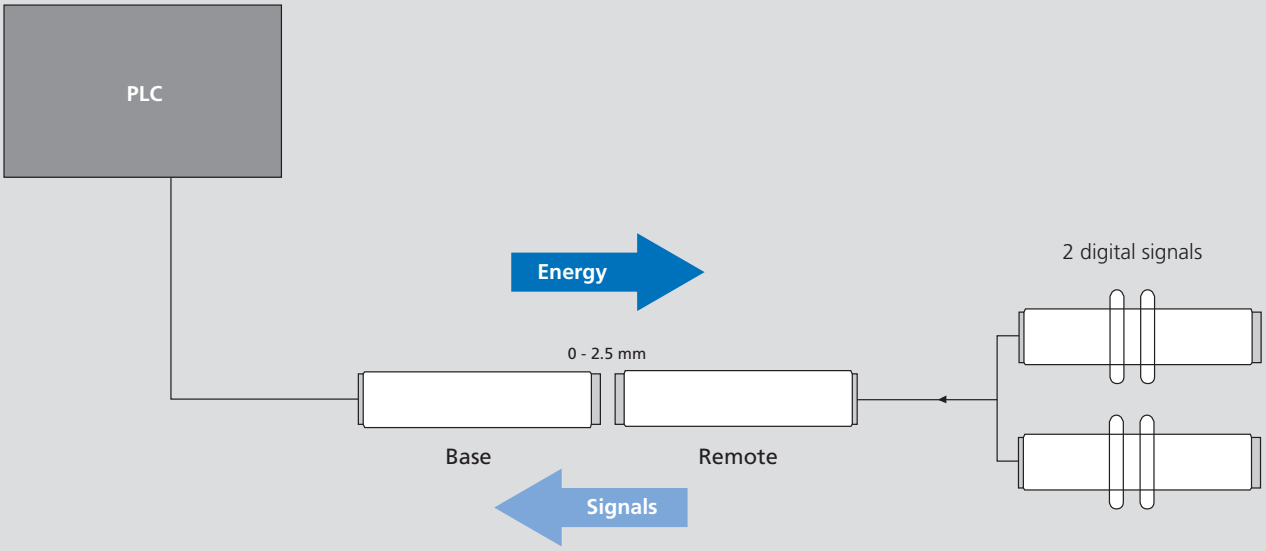
- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Supply of mobile sensors, supply and monitoring of remote systems, monitoring of door contacting
- Dynamic Pairing
- Wear and maintenance free
- Operating display

Technical features

- Mounting M12 x 1
- Operating voltage 24 V ± 10%
- Transmission distance 0 - 2.5 mm
- Transmission of energy: 24 V / 1 W (35 mA)
- Transmission of signals: 2 digital signals (PNP)
- Inverse-polarity protection (base), short-circuit proof (remote)
- Connections: Base cable 300 mm with male connector M12 (5-pin), remote cable 300 mm with female connector M12 (5-pin)
- Protection class IP 67
- Id. No. Base: 0E010956, Id. No. Remote: 0E010957
- LED interface (Base)

color:	green
slow flashing:	power on / no remote detected
static:	in position
fast flashing:	overload / short circuit

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

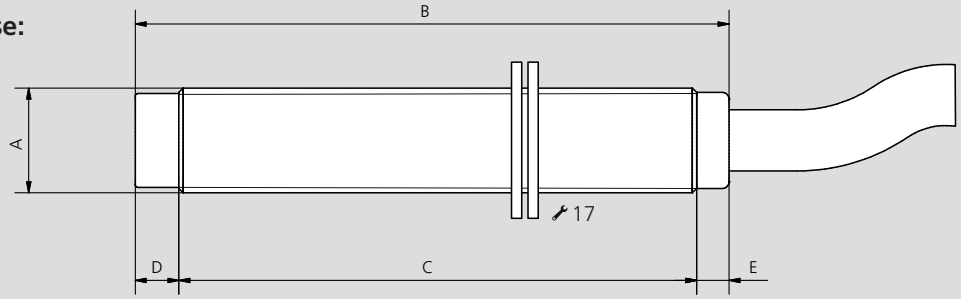
Inductive Coupling System

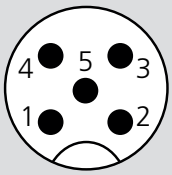
■ Stationary Unit - Base
■ Mobile Unit - Remote

M12-2

Axial coupler

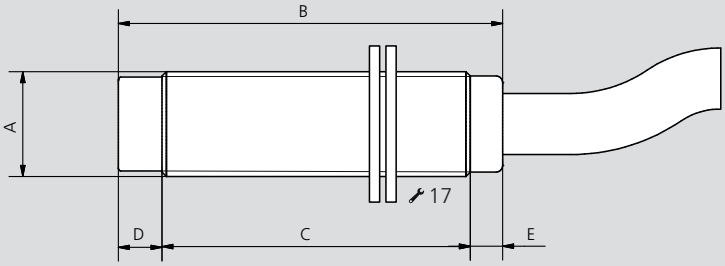
Base:





Male connector 5-pin
M12 x 1

Remote:



Female connector 5-pin
M12 x 1

Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system M12-2			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E010956**	**0E010957**
A	mm	M12 x 1	
B	mm	68	44
C	mm	59.3	35.3
D	mm	5	
E	mm	3.7	
Cable length	mm	300	
Housing material		CuZn, PA66, PC GF 30%	
Protection class		IP 67	
Operating temperature		-10° C ... +55° C	
Storage temperature		-25° C ... +70° C	
Transmission distance		0 mm ... 2.5 mm	
Operating voltage		24 V ± 10% DC	-
Output voltage		-	24 V ± 10% DC
Power consumption (Base)		> 400 mA	-
Power output (Remote)		-	< 50 mA
Overload protection / short circuit protection		✓	✓
Residual ripple		-	< 200 mV
Reverse polarity protection		✓	-
Data-Valid Output		max. 100 mA	-
Ready delay		100 ms	

PIN assignment	PIN	Signal Base	Signal Remote
Supply voltage	1	+24 V IN	+24 V OUT
Digital signal 1	2	0 / 24 V OUT	0 / 24 V IN
Ground	3	GND	GND
Digital signal 2	4	0 / 24 V OUT	0 / 24 V IN
Data-Valid	5	DAV 24 V	-

M18-4

Axial coupler

Inductive Coupling System

■ Contact free transmission of energy and signals

Application/customer benefits

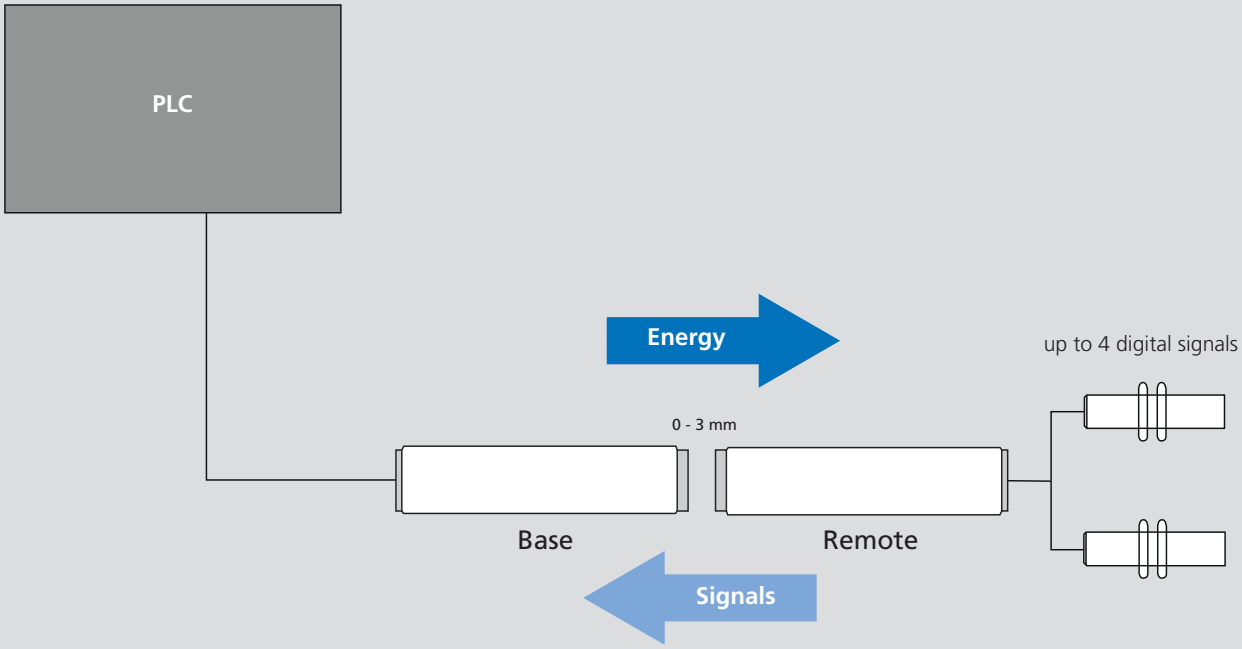
- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Automation, piloting of magnet valves, reading of status signals, online monitoring of sensor signals in the remote area, contacting at rotary tables, plug replacement for SPS signals
- Dynamic Pairing
- Wear and maintenance free
- Operating display

Technical features

- Mounting M18 x 1
- Operating voltage 22 V ... 30 V ± 10%
- Transmission distance 0 - 3 mm
- Transmission of energy: 12 V / 1.2 W (100 mA)
- Transmission of signals: 4 digital signals (PNP)
- Inverse-polarity protection (base), short-circuit proof (remote)
- Connection: Base cable 2000 mm open ended, remote cable 2000 mm open ended
- Protection class: IP 67
- Id. No. Base: 0E010954
  Id. No. Remote: 0E010955
- LED interface (base)

color:	green
slow flashing:	power on
static:	in position
fast flashing:	overload / short-circuit

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

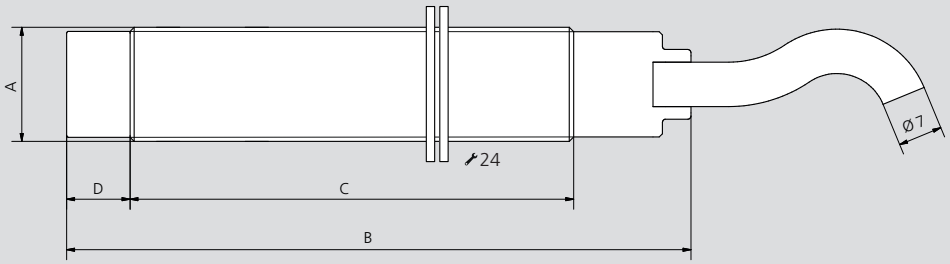
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

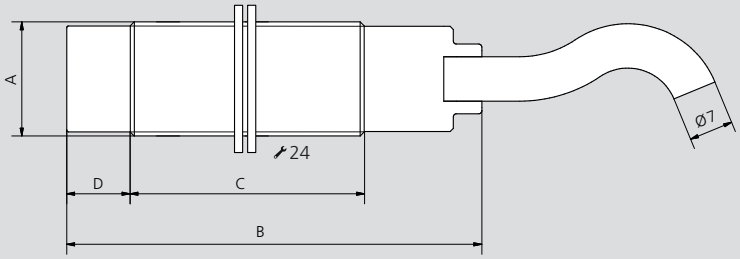
M18-4

Axial coupler

Base:



Remote:



Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system M18-4			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E010954**	**0E010955**
A	mm	M18 x 1	
B	mm	98.5	65.5
C	mm	70	37
D	mm	10	
Cable length	mm	~ 2000	
Housing material		CuZn, PA66, PC GF 30%	
Protection class		IP 67	
Operating temperature		0° C ... +50° C	
Storage temperature		-10° C ... +70° C	
Transmission distance		0 mm ... 3 mm	
Operating voltage		22 V ... 30 V	-
Output voltage		-	12 V ± 10% DC
Power consumption (Base)		≤ 500 mA	-
Power output (Remote)		-	< 100 mA
Overload protection / short circuit protection		✓	✓
Residual ripple		-	< 200 mV
Reverse polarity protection		✓	-
Data-Valid Output		max. 100 mA	-
Ready delay		< 80 ms	

PIN assignment (*Legend)	PIN	Signal Base	Signal Remote
Connection line **WH (Base) / WH (Remote)**	1	Supply voltage 24 V IN	Supply voltage VCC 12 V OUT
Connection line **BU (Base) / BU (Remote)**	2	GND 0 V	GND
Connection line **GY (Base) / BN (Remote)**	3	Data-Valid 0 / 24 V OUT	Digital signal 1: 0 / 24 V IN
Connection line **BN (Base) / PK (Remote)**	4	Digital signal 1: 0 / 24 V OUT	Digital signal 2: 0 / 24 V IN
Connection line **PK (Base) / YE (Remote)**	5	Digital signal 2: 0 / 24 V OUT	Digital signal 3: 0 / 24 V IN
Connection line **YE (Base) / GN (Remote)**	6	Digital signal 3: 0 / 24 V OUT	Digital signal 4: 0 / 24 V IN
Connection line **GN (Base) / GY (Remote)**	7	Digital signal 4: 0 / 24 V OUT	-

(*Legend) WH = White; BU = Blue; GY = Grey; BN = Brown; PK = PINK; YE = YELLOW; GN = Green;

M30-2

Axial coupler

Inductive Coupling System

■ Contact free transmission of energy and signals

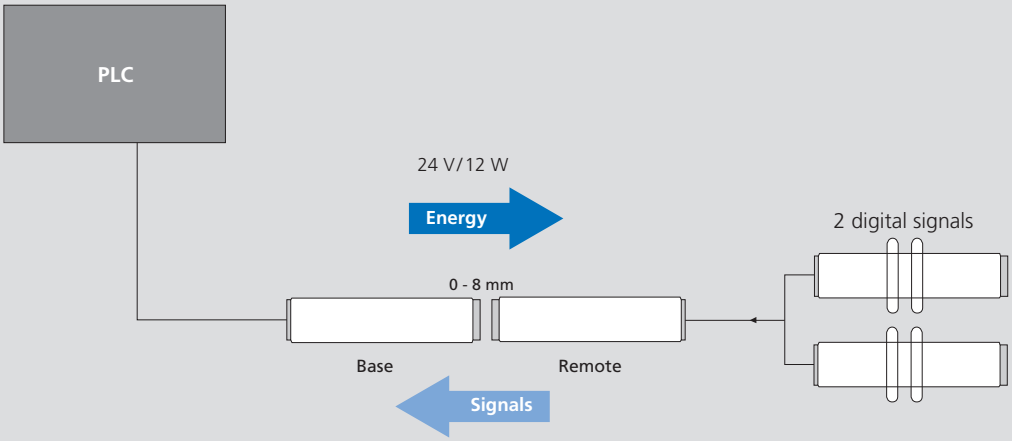
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Supply of sensors, supply and monitoring of remote systems, contactless battery charge (W-Charge), monitoring of door contacting, valve control, plug replacement
- Dynamic Pairing
- Wear and maintenance free
- Protective functions: Temperature monitoring, foreign object detection, reverse polarity protection
- Multi-level LED with good visibility

Technical features

- Mounting M30 x 1.5
- Operating voltage 24 V (18 ... 30 V)
- Transmission distance 0 - 8 mm
- Transmission of energy: 24 V / 12 W (500 mA)
- Transmission of signals: 2 digital signals (PNP)
- Connection: Remote female connector M12x1 (5-pin), base male connector M12x1 (4-pin)
- Protection class IP 67
- Id. No. Base: 0E011600, Id. No. Remote: 0E011601

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

Function Base	
LED Power	
Color	Green / red
Function	Off » Unit not supplied with voltage (or undervoltage)
	On (green) » 24 V ok and remote unit has been detected
	Flashes 2 Hz green » 24 V ok but no remote unit detected
	Flashes 1 Hz green / red » Incompatible remote unit detected
	Flashes 2 Hz red » Foreign object detected
	Flashes 5 Hz red » Internal error
LED Signal 1	
Color	Yellow
Function	Off » Digital input 1 is not connected or no remote unit detected
	On » Digital input 1 is connected
	Flashes 2 Hz » Digital input connected but short circuit at the output
	Flashes 5 Hz » Overload voltage output remote unit
LED Signal 2	
Color	Yellow
Function	Out » Digital input 2 is not connected or no remote unit detected
	On » Digital input 2 is connected
	Flashes 2 Hz » Digital input connected but short circuit at the output
	Flashes 5 Hz » Overload voltage output remote unit

Function Remote	
LED Coupling	
Color	Green / red
Function	Off » Unit is not connected
	On (green) » Unit is connected, voltage output DC 24 V ok
	Flashes 2 Hz red » Unit is connected but short circuit at DC 24 V
	Flashes 5 Hz red » Internal error
LED Signal 1	
Color	Yellow
Function	Off » Digital input 1 is not connected
	On » Digital input 1 is connected
LED Signal 2	
Color	Yellow
Function	Off » Digital input 2 is not connected
	On » Digital input 2 is connected

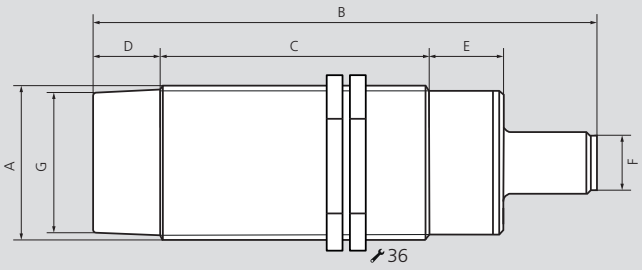
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

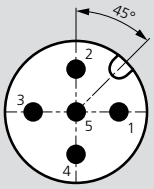
M30-2

Axial coupler

Base / Remote:

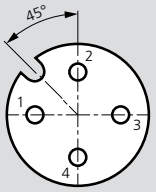


Base



Male connector 5-pin
M 12 x 1

Remote



Female connector 4-pin
M 12 x 1

Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system 30-2			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E011600**	**0E011601**
A	mm	M30 x 1.5	
B	mm	98	
C	mm	52	
D	mm	13	
E	mm	14.5	
F	mm	M12 x 1 / Male	M12 x 1 / Female
G	mm	Ø 27	
Housing material		1.4301/PA66 GF30	
Protection class		IP 67	
Operating temperature		-20°C ... +60°C	
Storage temperature		-20°C ... +80°C	
Transmission distance		0 mm ... 8 mm	
Operating voltage		24 V (18 ... 30 V)	-
Output voltage		-	24 V ± 10% DC
Power consumption (Base)		< 1.5 A	-
Power output (Remote)		-	< 500 mA (750 mA short term)
Overload protection / short circuit protection		✓	✓
Residual ripple		-	< 200 mV
Reverse polarity protection		✓	-
Temperature monitoring		✓	✓
Data-Valid Output		150 mA	-
Ready delay		< 300 ms	

PIN assignment	PIN	Signal Base	Signal Remote
Supply voltage	1	24 V IN	24 V OUT
Digital signal	2	0/24 V OUT	0/24 V IN
Ground	3	GND	GND
Digital signal	4	0/24 V OUT	0/24 V IN
Data-Valid	5	DAV 24 V	-

M30-8

Axial coupler

Inductive Coupling System

■ Contact free transmission of energy and signals

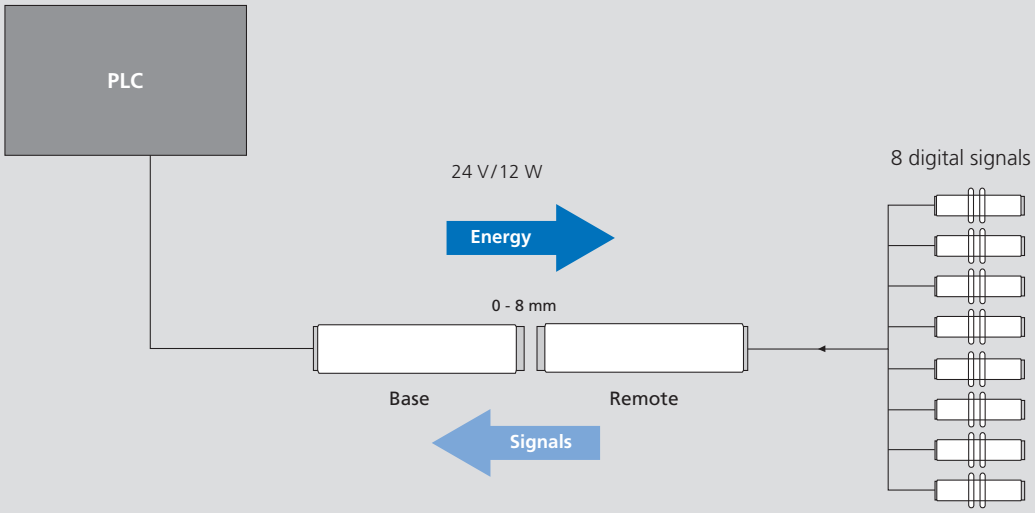
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Supply of sensors, supply and monitoring of remote systems
- Dynamic Pairing
- Wear and maintenance free
- Protection functions: Temperature monitoring, foreign object detection, reverse polarity protection
- Multilevel LED function display with good Visibility

Technical features

- Mounting M30 x 1.5
- Operating voltage 24 V (18 ... 30 V)
- Transmission distance 0 - 8 mm
- Transmission of energy: 24 V / 12 W (500 mA)
- Transmission of signals: 8 digital signals (PNP)
- Connection: Remote female connector M12 (12-pin), base male connector M12 (12-pin)
- Protection class IP 67
- Id. No. Base: 0E011602, Id. No. Remote: 0E011603

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer ser Vice.

Function Base	
LED Power	
Color	Green / red
Function	Off » Unit not supplied with Voltage (or under Voltage)
	On (green) » 24 V ok and mobile unit has been detected
	Flashes 2 HZ green » 24 V ok but no mobile unit detected
	Flashes 1 HZ green / red » Incompatible mobile unit detected
	Flashes 2 HZ red » Foreign object detected
	Flashes 5 HZ red » Internal error
LED Data Valid	
Color	Yellow
Function	Off » No mobile unit detected
	On » Mobile unit detected and signals are transmitted
	2 HZ » Short circuit on at least one of the outputs
	Flashes 5 HZ » O Verload Voltage output mobile unit

Function Remote	
LED Coupling	
Color	Green / red
Function	Off » Unit not connected
	On (green) » Unit connected, Voltage output DC 24 V ok
	Flashes 2 HZ red » Unit connected but short circuit at DC 24 V
	Flashes 5 HZ red » Internal error

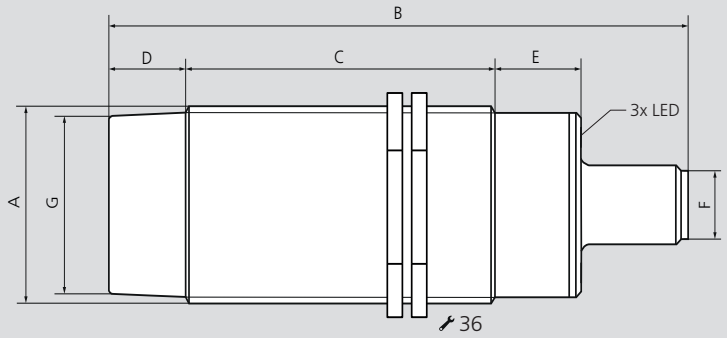
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

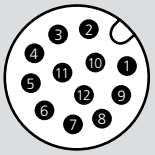
M30-8

Axial coupler

Base / Remote:

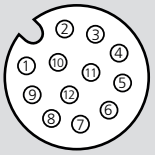


Base



Male connector 12-pin
M 12 x 1

Remote



Female connector 12-pin
M 12 x 1

Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system M30-8			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E011602**	**0E011603**
A	mm	M30 x 1.5	
B	mm	98	
C	mm	52	
D	mm	13	
E	mm	14.5	
F	mm	M12 x 1 / Male	M12 x 1 / Female
G	mm	Ø 27	
Housing material		1.4301/PA 66 GF30	
Protection class		IP 67	
Operating temperature		-20°C ... +80°C	
Storage temperature		-20°C ... +80°C	
Transmission distance		0 mm ... 8 mm	
Operating voltage		24 V (18 ... 30 V)	-
Output voltage		-	24 V ± 10% DC
Power consumption (Base)		< 1,5 A	-
Power output (Remote)		-	< 100 mA
Overload protection / short circuit protection		✓	✓
Residual ripple		-	< 200 mV
Reverse polarity protection		✓	-
Temperature monitoring		✓	✓
Data-Valid Output		150 mA	-
Ready delay		< 300 ms	

PIN assignment	PIN	Signal Base	Signal Remote
Supply voltage	1	24 V IN	24 V OUT
Digital signal 1	2	0/24 V OUT	0/24 V IN
Digital signal 2	3	0/24 V OUT	0/24 V IN
Digital signal 3	4	0/24 V OUT	0/24 V IN
Digital signal 4	5	0/24 V OUT	0/24V IN
Digital signal 5	6	0/24 V OUT	0/24 V IN
Digital signal 6	7	0/24 V OUT	0/24 V IN
Digital signal 7	8	0/24 V OUT	0/24 V IN
Digital signal 8	9	0/24 V OUT	0/24 V IN
Ground	10	GND	GND
Data-Valid	11	DAV 24 V	-
-	12	-	-

M30-IOL

Axial coupler

Inductive Coupling Sytem

■ **Contact free transmission of energy and signals**

IO-Link

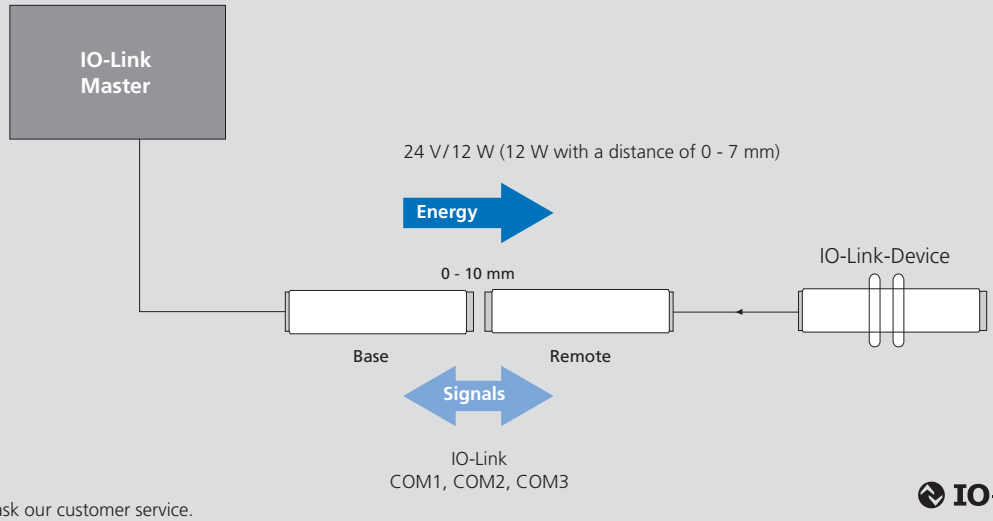
Application/customer benefits

- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Supply of sensors, Supply and monitoring of remote systems
- Dynamic Pairing
- Wear and maintenance free
- Protective function: Temperature monitoring, foreign object detection, reverse polarity protection
- Multi-level LED with good visibility

Technical features

- Mounting M30 x 1.5
- Operating voltage 24 V (18 ... 30 V)
- Transmission distance 0 - 10 mm
- Transmission of energy: 24 V / 12 W (500 mA) with a distance of 0 - 7 mm
- Transmission of signals: IO-Link (COM1, COM2, COM3), 1 digital signal
- Connection: Base male connector M12 (5-pin), remote female connector M12 (4-pin)
- Protection class IP 67
- Id. No. Base: 0E011604, Id. No. Remote: 0E011605

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

IO-Link

Function Base	
LED Power	
Color	Green / red
Function	Off » Unit not supplied with voltage (or undervoltage)
	On (green) » 24 V ok and mobile unit has been detected
	Flashes 2 Hz green » 24 V ok but no mobile unit detected
	Flashes 1 Hz red / green » Incompatible mobile unit detected
	Flashes 2 Hz red » Foreign object detected
	Flashes 5 Hz red » Internal error
LED IO-Link	
Color	Green /yellow
Function	Green » Signals IO-Link Operation
	Green » On (SIO Mode Signal on)
	Green » Off (SIO Mode Signal off)
	Flashes 2 Hz red » Short circuit at the IO-Link PIN
	Flashes 5 Hz red » Overload voltage output remote unit
LED Signal	
Color	Yellow
Function	Off » Digital input is not connected or no mobile unit detected
	On » Digital input is connected
	Flashes 2 Hz » Digital input is connected but short circuit at the output
	Flashes 5 Hz » Overload voltage output mobile unit

Function Remote	
LED Power	
Color	Green / red
Function	Off » Unit is not connected
	On (green) » Unit coupled, voltage output DC 24 V ok
	Flashes 2 Hz red » Connected but short-circuited at DC 24 V
	Flashes 5 Hz red » Internal error
LED IO-Link	
Color	Green / yellow
Function	Green » Signals IO-Link operation according to IO-Link specification (1000 ms on / 100 ms off)
	Green » On (SIO Mode Signal on)
	Green » Off (SIO Mode Signal off)
	Flashes 2 Hz red » Short circuit at the IO-Link PIN
	Flashes 5 Hz red » Overload voltage output mobile unit
LED Signal	
Color	Yellow
Function	Off » Digital input 2 is not connected or no mobile unit detected
	On / yellow » Digital input 2 is connected

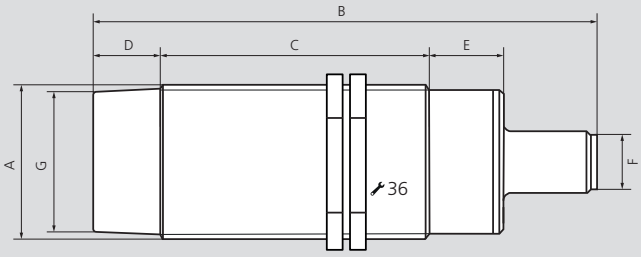
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

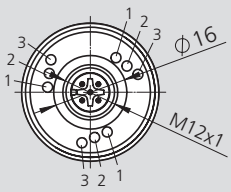
M30-IOL

Axial coupler

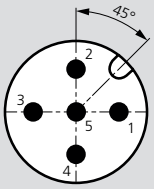
Base / Remote



Display Base LED

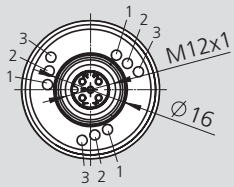


Base

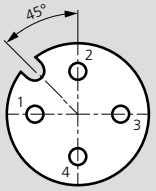


Male connector 5-pin
M 12 x 1

Display Remote LED



Remote



Female connector 4-pin
M 12 x 1

Number	LED	Color
1	Power LED	Green / Red
2	Signal LED	Yellow
3	IOL LED	Yellow / Red

Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system M30-IOL			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E011604**	**0E011605**
A	mm	M30 x 1.5	
B	mm	96	94
C	mm	52	
D	mm	13	
E	mm	18	
F	mm	M12 x 1 / Male	M12 x 1 / Female
G	mm	Ø 27	
Housing material		CrNi, PA66, PC GF30%	
Protection class		IP 67	
Operating temperature		-20°C ... +50°C	
Storage temperature		-20°C ... +80°C	
Transmission distance		0 mm ... 10 mm (12 W: 0 mm ... 7mm)*	
Operating voltage		24 V (18 ... 30 V)	-
Output voltage		-	24 V ± 10% DC
Power consumption (Base)		1500 mA	-
Power output (Remote)		-	500 mA
Overload protection / short circuit protection		✓	✓
Residual ripple		-	< 200 mV
Reverse polarity protection		✓	-
Temperature monitoring		✓	✓
Data-Valid Output		150 mA	-
Ready delay		< 600 ms	

PIN assignment	PIN	Signal Base	Signal Remote
Supply voltage	1	24 V IN	24 V OUT
Digital signal	2	0/24 V OUT	0/24 V IN
Ground	3	GND	GND
IO-Link Signal	4	IO-Link CQ	IO-Link CQ
Data-Valid	5	DAV 24 V	-

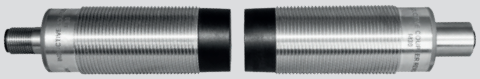
* V in ≥ 22 V Base

M30-4A

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy and signals**



- Id. No. Base (4 x 0 - 10 V): 0E010958
  Id. No. Remote (4 x 0 - 10 V): 0E010959
- Id. No. Base (4 x 4 - 20 mA): 0E010960
  Id. No. Remote (4 x 4 - 20 mA): 0E010961

Application/customer benefits

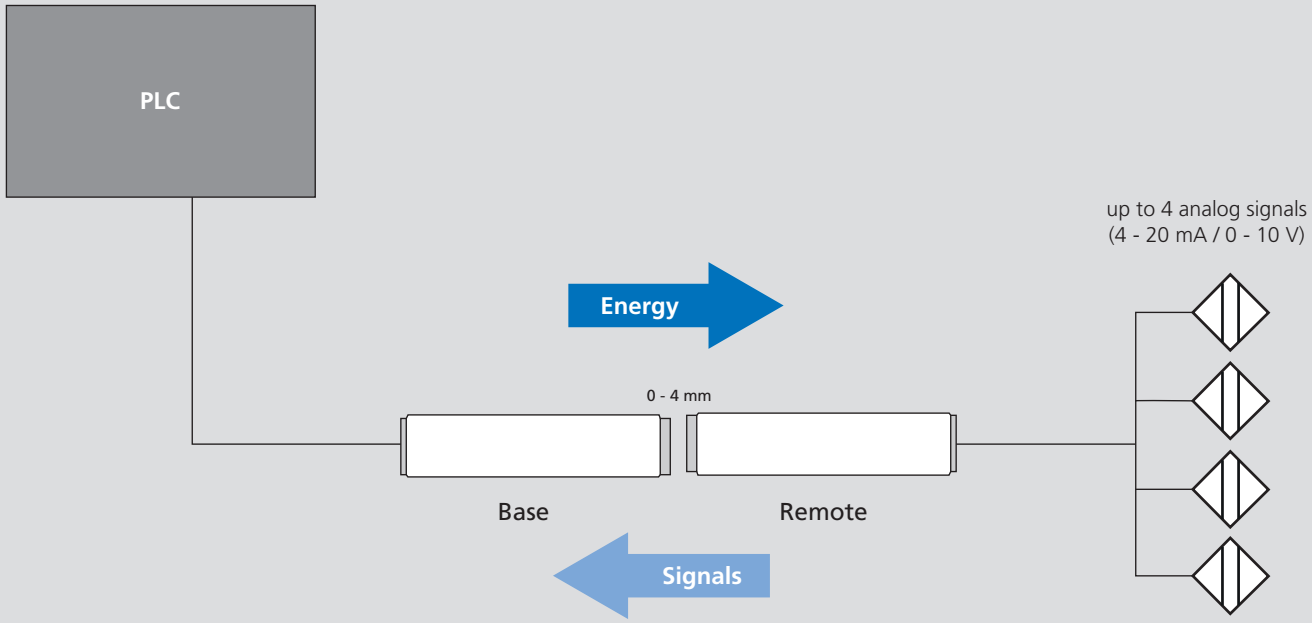
- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Process monitoring edibles, manufacturing of plastic, test engineering, machine tools
- Dynamic Pairing
- Wear and maintenance free
- Operating display

Technical features

- Mounting M30 x 1.5
- Operating voltage 24 V ± 10%
- Transmission distance 0 - 4 mm
- Transmission of energy: 24 V / 6 W (250 mA)
- Transmission of signals: 4 analog signals (4 - 20 mA / 0 - 10 V)
- Inverse-polarity protection (base), short-circuit proof (remote)
- Ports: Base male connector M12 (12-pin), remote female connector M12 (12-pin)
- Protection class: IP 67
- LED interface (base)

color:	green
slow flashing:	power on
static:	in position
fast flashing:	overload / short circuit

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

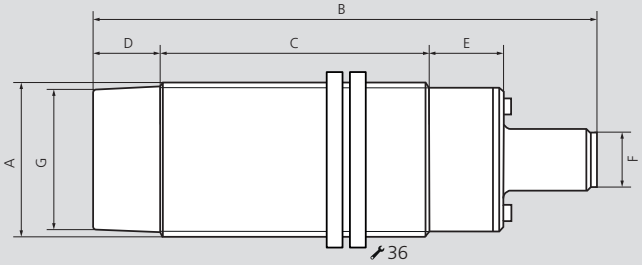
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

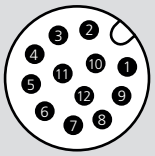
M30-4A

Axial coupler

Base / Remote:

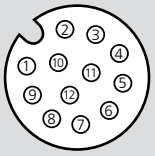


Base



Male connector 12-pin
M 12 x 1

Remote



Female connector 12-pin
M 12 x 1

Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system M30-4A					
SMW-electronics Type		**Base 0 ... 10 V**	**Remote 0 ... 10 V**	**Base 4 ... 20 mA**	**Remote 4 ... 20 mA**
Id. No.		**0E010958**	**0E010959**	**0E010960**	**0E010961**
A	mm	M30 x 1.5			
B	mm	98			
C	mm	52			
D	mm	13			
E	mm	14.5			
F	mm	M12	M12 / Female connector	M12	M12 / Female connector
G	mm	Ø 27			
Housing material		CuZn, PA66, PC GF 30%			
Protection class		IP 67			
Operating temperature		0° C ... +60° C			
Storage temperature		-10 °C ... +80° C			
Transmission distance		0 mm ... 4 mm			
Operating voltage		24 V ± 10% DC	-	24 V ± 10% DC	-
Output voltage		-	24V ± 10% DC	-	24 V ± 10% DC
Power consumption (Base)		< 500 mA	-	< 500 mA	-
Power output (Remote)		-	250 mA	-	250 mA
Overload protection / short circuit protection		✓	✓	✓	✓
Residual ripple		-	< 200 mV	-	< 200 mV
Reverse polarity protection		✓	-	✓	-
Data-Valid Output		max. 100 mA	-	max. 100 mA	-
Data-Valid Visual		✓	-	✓	-
Operational readiness		< 100 ms			

PIN assignment	**PIN**	**Signal Base**	**Signal Remote**	**Signal Base**	**Signal Remote**
Supply voltage	1	+24 V IN	+24 V OUT	+24 V IN	+24 V OUT
Analog signal 1	2	CH 1 0 ... 10 V OUT	CH 1 0 ... 10 V IN	CH 1 4 ... 20 mA OUT	CH 1 4 ... 20 mA IN
Ground connection 1	3	GND	GND	GND	GND
Analog signal 2	4	CH 2 0 ... 10 V OUT	CH 2 0 ... 10 V IN	CH 2 4 ... 20 mA OUT	CH 2 4 ... 20 mA IN
Ground connection 2	5	GND	GND	GND	GND
Analog signal 3	6	CH 3 0 ... 10 V OUT	CH 3 0 ... 10 V IN	CH 3 4 ... 20 mA OUT	CH 3 4 ... 20 mA IN
Ground connection 3	7	GND	GND	GND	GND
Analog signal 4	8	CH 4 0 ... 10 V OUT	CH 4 0 ... 10 V IN	CH 4 4 ... 20 mA OUT	CH 4 4 ... 20 mA IN
Ground connection 4	9	GND	GND	GND	GND
Ground	10	GND	GND	GND	GND
	11	NC	NC	NC	NC
*0 = no remote detected / 24 V = remote detected	12	*Data-Valid OUT	NC	NC	NC

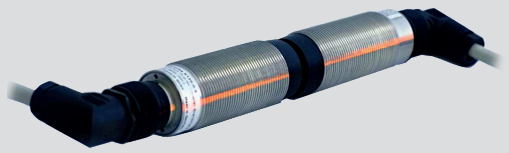
* Only with inductive coupler M30-4A Base 0 ... 10 V

M30-8+8

Axial coupler

Inductive Coupling System

■ **Contact free transmission of energy and signals**



Application/customer benefits

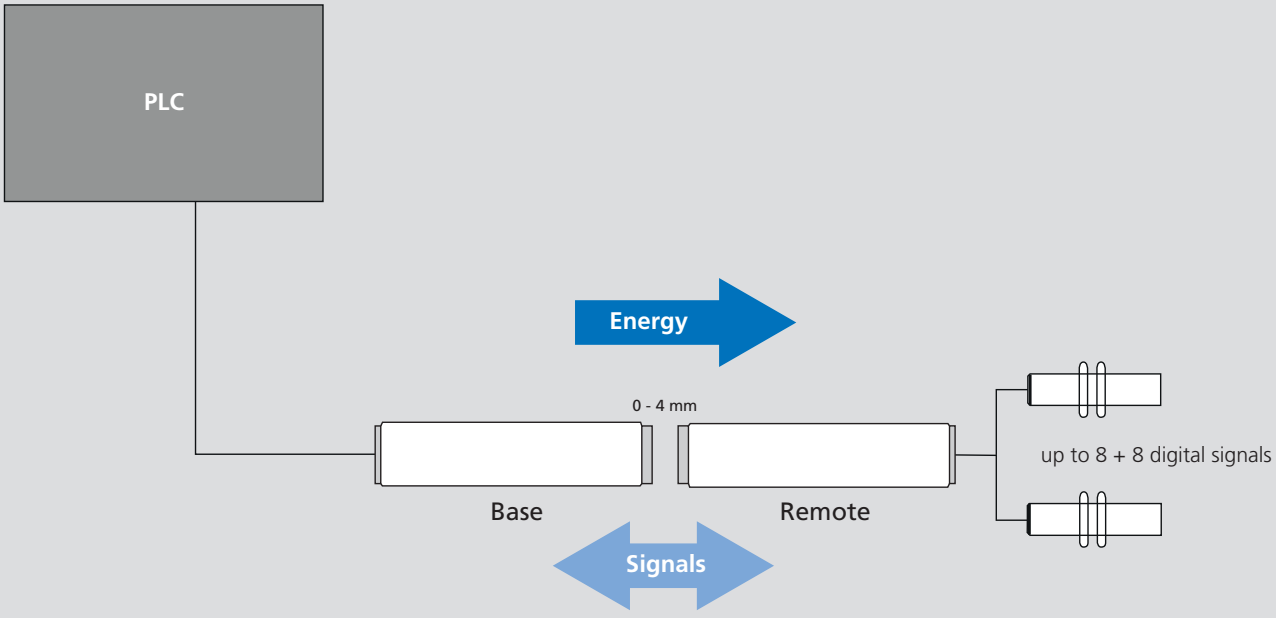
- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Automation, piloting of magnet valves, reading of status signals, online monitoring of sensor signals in the remote area, contacting at rotary tables, plug replacement for SPS signals
- Dynamic Pairing
- Wear and maintenance free
- Operating display

Technical features

- Mounting M30 x 1.5
- Operating voltage 24 V ± 10%
- Transmission distance 0 - 4 mm
- Transmission of energy: 24 V / 12 W (500 mA)
- Transmission of signals: 8 + 8 digital (bidirectional)
- Inverse-polarity protection (base), short-circuit proof (remote)
- Connection: Base male connector M16 (19-pin), remote female connector M16 (19-pin)
- Protection class: IP 67
- Id. No. Base: 0E010964, Id. No. Remote: 0E010965
- LED interface (base)

color:	green
slow flashing:	power on
static:	in position
fast flashing:	overload / short-circuit

Block diagram:



Subject to technical changes.
For more detailed information please ask our customer service.

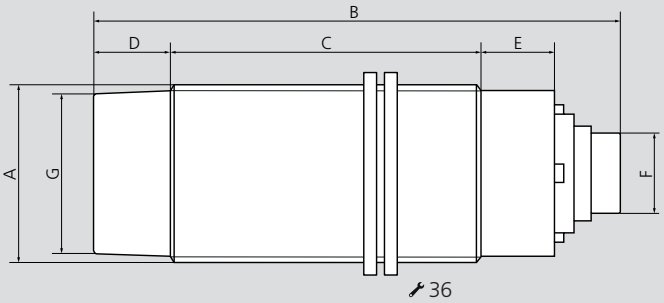
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

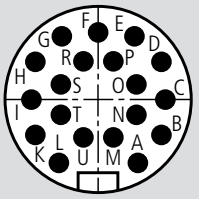
M30-8+8

Axial coupler

Base / Remote:

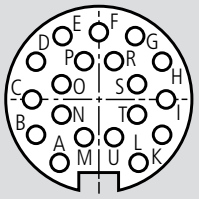


Base



Male connector 19-pin
M 16

Remote



Female connector 19-pin
M 16

Subject to technical changes.
For more detailed information please ask our customer service.

Inductive coupling system M30-8+8			
SMW-electronics Type		**Base**	**Remote**
Id. No.		**0E010964**	**0E010965**
A Thread	mm	M30 x 1.5	
B	mm	88.5	81
C	mm	52	
D	mm	13	
E	mm	14.5	
F	mm	M16	M16 / Buchse
G	mm	Ø 27	

Housing material	CuZn, PA66, PC GF 30%	
Protection class	IP 67	
Operating temperature	0°C ... +50°C	
Storage temperature	-10° ... +70°C	
Coupling distance	0 mm ... 4 mm	
Operating voltage	24 V ± 10% DC	-
Output voltage	-	24 V ± 10% DC
Power consumption (Base)	< 500 mA	-
Power output (Remote)	-	< 500 mA
Overload protection / short circuit protection	✓	✓
Residual ripple	-	< 200 mV
Reverse polarity protection	✓	-
Data-Valid Output	max. 100 mA	-
Ready delay	< 80 ms	< 100 ms

PIN assignment	PIN	Signal Base	Signal Remote
Digital signal 8	A	0/24 V IN	0/24 V OUT
Digital signal 7	B	0/24 V IN	0/24 V OUT
Digital signal 5	C	0/24 V IN	0/24 V OUT
Digital signal 3	D	0/24 V IN	0/24 V OUT
Digital signal 2	E	0/24 V IN	0/24 V OUT
Data-Valid	F	DAV 24 V	-
Digital signal 2	G	0/24 V OUT	0/24 V IN
Digital signal 3	H	0/24 V OUT	0/24 V IN
Digital signal 5	I	0/24 V OUT	0/24 V IN
Digital signal 7	K	0/24 V OUT	0/24 V IN

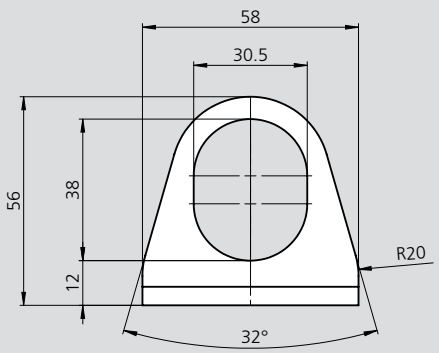
PIN assignment	PIN	Signal Base	Signal Remote
Digital signal 8	L	0/24 V OUT	0/24 V IN
Ground	M	GND	GND
Digital signal 6	N	0/24 V IN	0/24 V OUT
Digital signal 4	O	0/24 V IN	0/24 V OUT
Digital signal 1	P	0/24 V IN	0/24 V OUT
Digital signal 1	R	0/24 V OUT	0/24 V IN
Digital signal 4	S	0/24 V OUT	0/24 V IN
Digital signal 6	T	0/24 V OUT	0/24 V IN
Voltage	U	24 V IN	24 V OUT

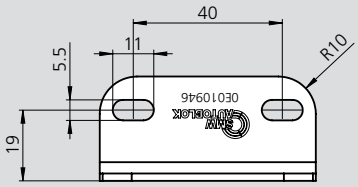
Mounting brackets

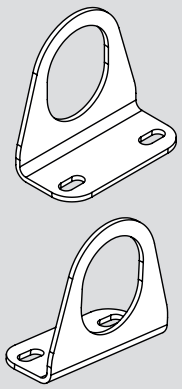
Accessories

■ For Inductive couplers M30, M18 and M12

Mounting bracket for inductive coupler M30



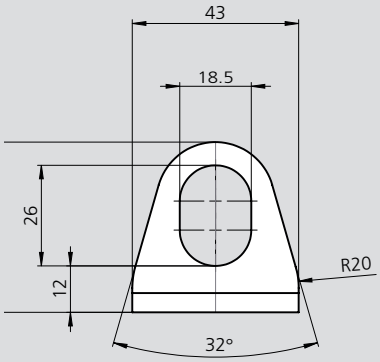


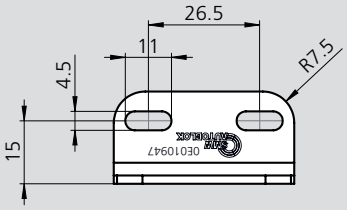


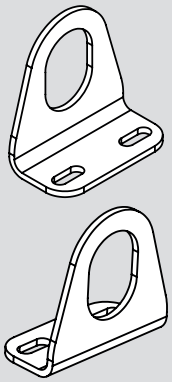
Scope of delivery: 1 piece

SMW-electronics Type	Id. No.
Mounting bracket M30	0E010946

Mounting bracket for inductive coupler M18



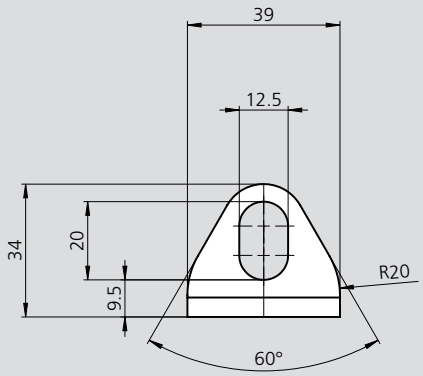


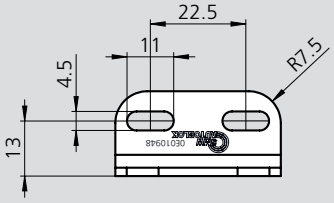


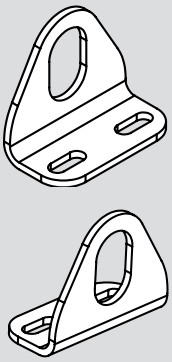
Scope of delivery: 1 piece

SMW-electronics Type	Id. No.
Mounting bracket M18	0E010947

Mounting bracket for inductive coupler M12







Scope of delivery: 1 piece

SMW-electronics Type	Id. No.
Mounting bracket M12	0E010948

Application/customer benefits

- Wireless axial transmission of energy and data between stationary and moving components
- Customization of the geometry and data transfer for the best possible integration
- Designed for permanent use
- Wear and maintenance free

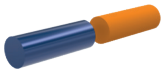
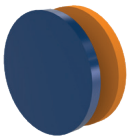
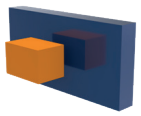
Technical features

- Energy transfer: Up to 1500 W
- Possible signal transfer:
  - Analog signals (0 - 10 V / 4 - 20 mA)
  - Temperature signals (PT100)
  - Digital signals / PNP signals
  - Field bus (CAN, Profibus, RS485, RS232)
  - IO-Link
  - Ethernet

Request form for individual customized adaptions

Please tick the selection that applies to you or enter your desired parameters
in the fields provided and afterwards send the completed inquiry form to info@smw-electronics.de

Specifications - Mechanics

☐ Axial Cylindrical		☐ Axial Disc		☐ Axial Ring		☐ Radial		☐ Radial Ring / Ring		☐ Axial Segment / Ring		☐ Linear	
													
ØA		**ØA**		**ØA**		**ØA**		**ØA**		**ØA**		**L1**	
L1				**ØI**		**ØI**		**ØI**		**ØI**		**L2**	
L2													

ØA = Outside diameter, **ØI** = Inside diameter, **L1** = Length part 1, **L2** Length part 2

Specifications - Electronics

Voltage ☐ 24 V Other

Type of supply ☐ Sensors ☐ Actuator technology Other

Distance mm

Signal transfer

Signals / Interface	Quantity signals remote to base (unidirectional)	Quantity signals base to remote (bidirectional)
Analog 0 - 10 V		
Analog 4 - 20 mA		
Temperature measurement / PT100		
Digital switching / SPS signals		
IO Link		
Ethernet < 100 MBit/s		
CAN / BUS		
Customized		

Ask our experts. We would be happy to provide you with an individual solution.
You can reach us at the following email address: info@smw-electronics.de

LPS 4.0
Linear Position Sensor System
High-precision inductive linear position sensorsystem

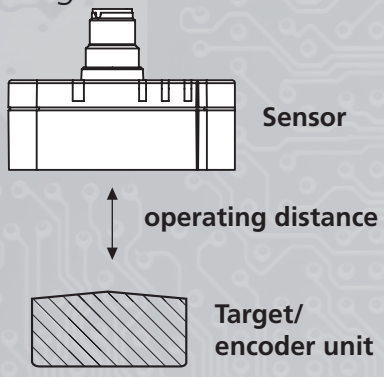
Standard connection
M12 x 1(5 Pole)

Common communication interfaces:
- IO-Link
- Analog signal (0 - 10 V/4 - 20 mA)

Status displays LEDs
- Operation and
- Target detection

Housing plastic Protection
- class IP 67/69 K

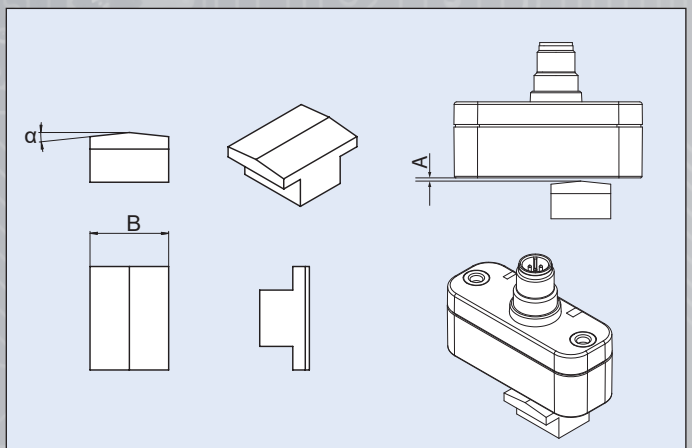
Inductive position measurement
by target / encoder unit



TARGET / ENCODER UNIT DESIGN
Required dimensions: **LPS 4.0 48/80/120**

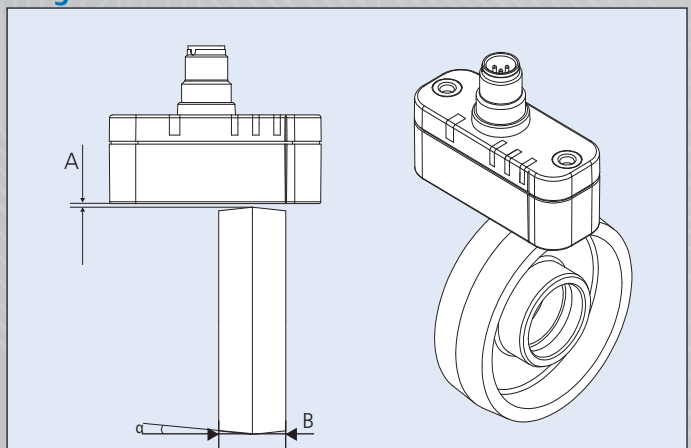
Dimensions	Remark
Operating distance A = 1.0 mm ± 0.25	A = Required distance (light and parallel) between measuring surface and the operating ring
Width B = 19 mm	B = Required width of the operating cam or operating ring
Angle α = 6°	α = Angle min. 6°

Cam



Example:Target / encoder unit (cam geometry)

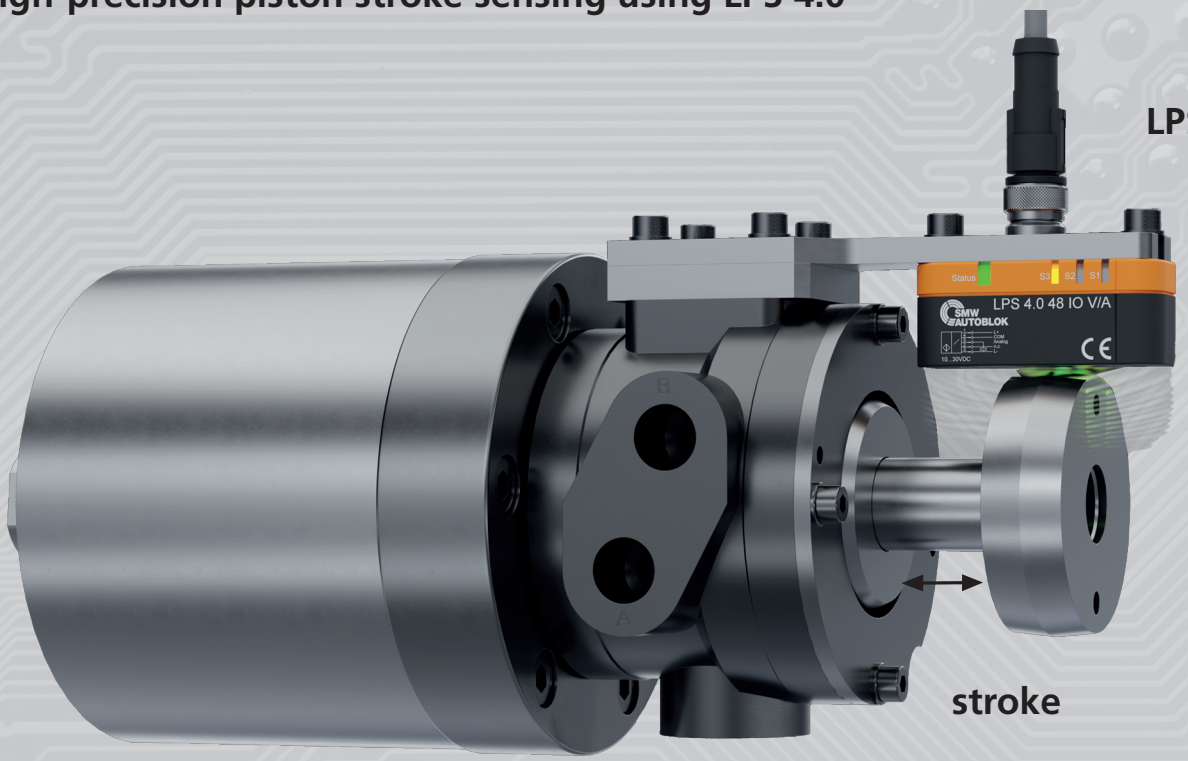
Ring



Example:Target / encoder unit (ring geometry)

Application example

High-precision piston stroke sensing using LPS 4.0



Clamping cylinder

Benefits:

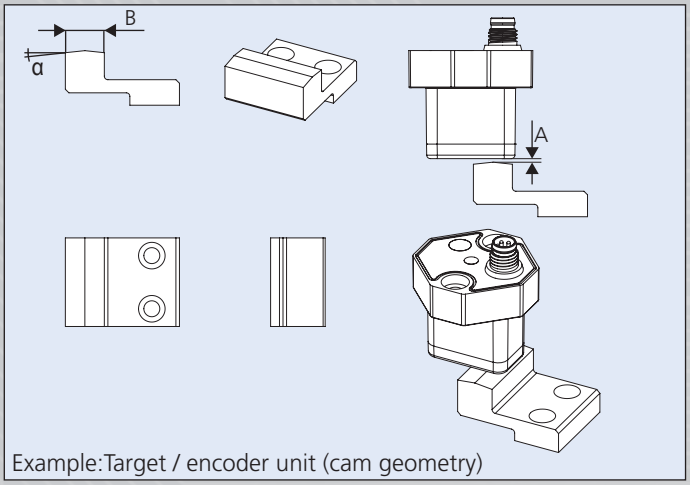
- Measuring ranges from 0 - 120 mm
- Wear-free, due to contact free function
- Highest repeatability and precise positioning
- IO-Link and analog signal (0 - 10 V, 4 - 20 mA)
- Plug & Play integration
- Extremly robust + protected according to IP67/69K

TARGET / ENCODER UNIT DESIGN

Required dimensions: **LPS 4.0 14**

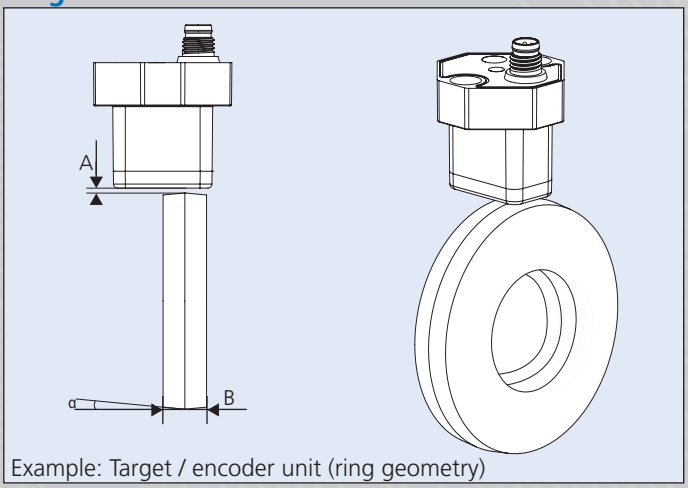
Dimensions	Remark
Operating distance A = 1.0 mm ± 0.25	A = Required distance (light and parallel) between measuring surface and the operating ring
Width B = 11 mm	B = Required width of the operating cam or operating ring
Angle α = 6°	α = Angle min. 6°

Cam



Example:Target / encoder unit (cam geometry)

Ring



Example: Target / encoder unit (ring geometry)

LPS 4.0 14 IO

Measuring range 14 mm

Linear Position Sensor

Application/customer benefits

- High precise inductive linear position measuring system
- Ready for Industry 4.0

Technical features

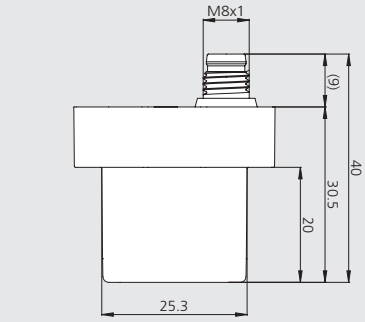
- Inductive measuring system
- No interference from magnetic fields
- Measuring range = 14 mm
- Compact design / simple installation
- Analog output 0 - 10 V (Id. No. 208106)
- IO-Link standard interface
- Protection class IP 67

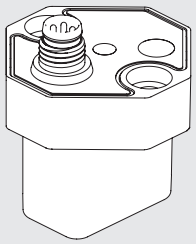
Standard equipment

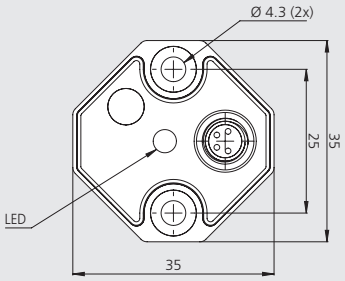
LPS 4.0 14 IO without cable

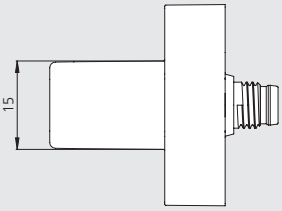
Ordering example

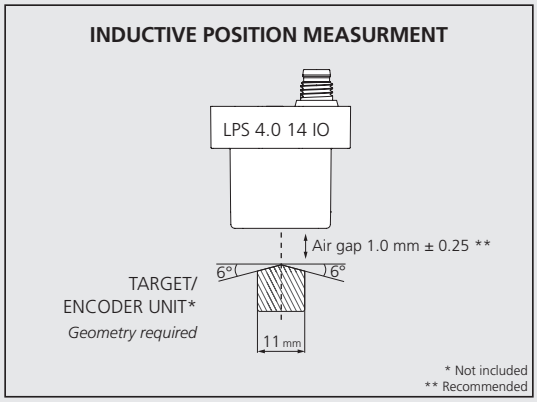
LPS 4.0 14 IO 0 - 10 V
Id. No. 208106
Cable with elbow plug 5 m
Id. No. 208241











Pin Assignment

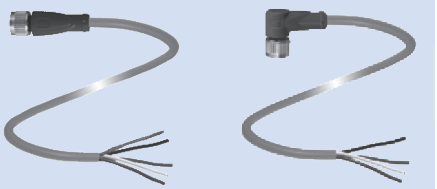
Pin	Description
1	24 V DC
2	Signal output 0 - 10 V
3	GND
4	C/Q (IO-Link)

Male connector
M 8 x 1

Technical data

SMW-AUTOBLOK Type	LPS 4.0 14 IO 0 - 10 V
Id. No.	208106
Measuring range	14 mm
Output signal	0 - 10 V
Power supply	24 V DC
Repeat accuracy	± 0.05 mm
Linearity	± 0.20 mm
Temperature drift	0.25 mm
Operating temperature	10 - 60°
Protection class	IP 67
Interface	IO-Link 1.0
$MTTF_d$	490 a
Mission time (T_M)	20 a
Diagnostic Coverage (DC)	0%

Cables for LPS 4.0 14 IO*	Length	Id. No.
Sensor connection cable straight plug M8 x 1 5-pin	5 m 10 m 15 m	208238 208239 208240
Sensor connection cable elbow plug M8 x 1 5-pin	5 m 10 m 15 m	208241 208242 208243



* Shielded PUR cable, 1 side cable end, 1 side with socket M8 x 1, machined and gold-plated contacts.

Linear Position Sensor

LPS 4.0 48 IO

Measuring range 48 mm

Application/customer benefits

- High precise inductive linear position measuring system
- Ready for Industry 4.0

Technical features

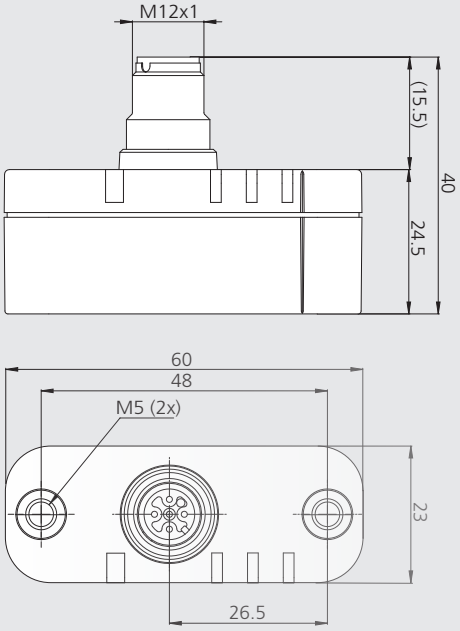
- Inductive measuring system
- No interference from magnetic fields
- Measuring range = 48 mm
- Compact design / simple installation
- Analog output 0 - 10V (Id. No. 208108) / 4 - 20mA (Id. No. 208107)
- IO-Link standard interface
- Protection class IP 67
- LEDs for operating status

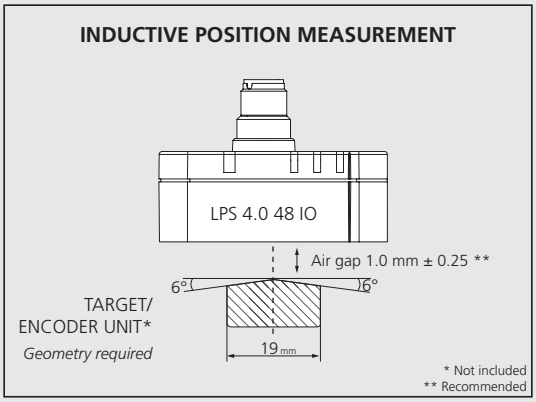
Standard equipment

LPS 4.0 48 IO without cable

Ordering example

LPS 4.0 48 IO 0 - 10V
Id. No. 208108
Cable with elbow plug 5 m
Id. No. 208247

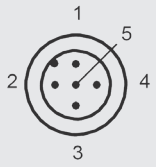




Pin Assignment

Pin	Description
1	24 V DC
2	not used
3	GND
4	C/Q (IO-Link)
5	Signal output 0 - 10 V (Id. No. 208108) Signal output 4 - 20 mA (Id. No. 208107)

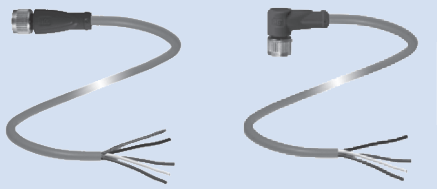
Male connector
M 12 x 1



Technical data

SMW-AUTOBLOK Type	LPS 4.0 48 IO 0 - 10 V	LPS 4.0 48 IO 4 - 20 mA
Id. No.	208108	208107
Measuring range	48 mm	
Output signal	0 - 10 V	4 - 20 mA
Power supply	24 V DC	
Repeat accuracy	± 0.1 mm	
Linearity	± 0.2 mm	
Temperature drift	0.25 mm	
Operating temperature	10 - 60°	
Protection class	IP 67	
Interface	IO-Link 1.1	
$MTTF_d$	365 a	
Mission time (T_M)	20 a	
Diagnostic Coverage (DC)	0%	

Cables for LPS 4.0 48 IO*	Length	Id. No.
Sensor connection cable straight plug M12 x 1 5-pin	5 m 10 m 15 m	208244 208245 208246
Sensor connection cable elbow plug M12 x 1 5-pin	5 m 10 m 15 m	208247 208248 208249



* Shielded PUR cable, 1 side cable end, 1 side with socket M12 x 1, machined and gold-plated contacts.

LPS 4.0 80 IO

Measuring range 80 mm

Linear Position Sensor

IO-Link

Application/customer benefits

- High precise inductive linear position measuring system
- Ready for Industry 4.0

Technical features

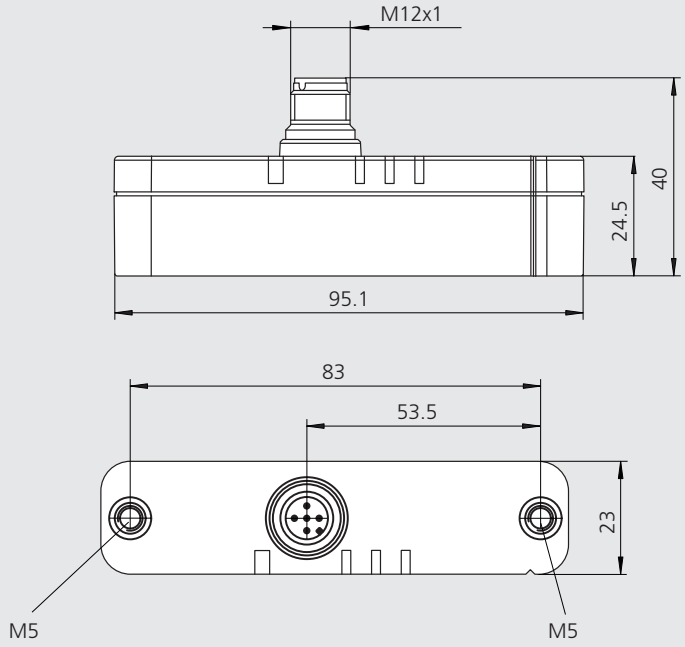
- Inductive measuring system
- No interference from magnetic fields
- Measuring range = 80 mm
- Compact design / simple installation
- Analog output 0 - 10 V / 4 - 20 mA
- IO-Link standard interface
- Protection class IP 67
- LEDs for operating status

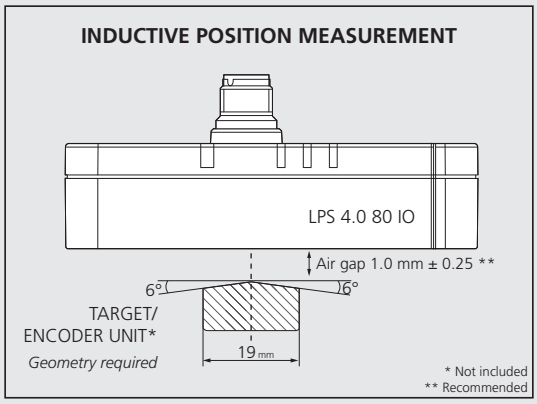
Standard equipment

LPS 4.0 80 IO without cable

Ordering example

LPS 4.0 80 IO 0 - 10 V
Id. No. 212001
Cable with elbow plug 5 m
Id. No. 208247

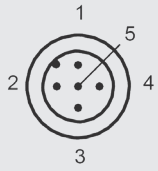




Pin Assignment

Pin	Description
1	24 V DC
2	not used
3	GND
4	C/Q (IO-Link)
5	Signal output 0 - 10 V (Id. No. 212001) Signal output 4 - 20 mA (Id. No. 212000)

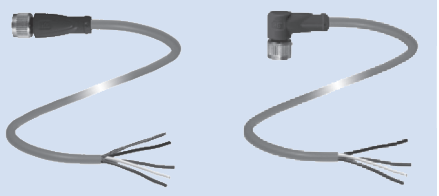
Male connector M12 x 1



Technical data

SMW-AUTOBLOK Type	LPS 4.0 80 IO 0 - 10 V	LPS 4.0 80 IO 4 - 20 mA
Id. No.	212001	212000
Measuring range	80 mm	
Output signal	0 - 10 V	4 - 20 mA
Power supply	24 V DC	
Repeat accuracy	± 0.1 mm	
Linearity	± 0.2 mm	
Temperature drift	0.25 mm	
Operating temperature	10 - 60°	
Protection class	IP 67	
Interface	IO-Link 1.1	
$MTTF_d$	311 a	
Mission time (T_M)	20 a	
Diagnostic Coverage (DC)	0%	

Cables for LPS 4.0 80 IO*	Length	Id. No.
Sensor connection cable straight plug M12 x 1 5-pin	5 m 10 m 15 m	208244 208245 208246
Sensor connection cable elbow plug M12 x 1 5-pin	5 m 10 m 15 m	208247 208248 208249

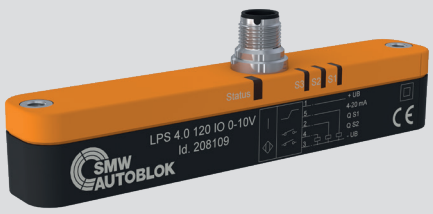


* Shielded PUR cable, 1 side cable end, 1 side with socket M12 x 1, machined and gold-plated contacts.

Linear Position Sensor

LPS 4.0 120 IO

Measuring range 120 mm



IO-Link

Application/customer benefits

- High precise inductive linear position measuring system
- Ready for Industry 4.0

Technical features

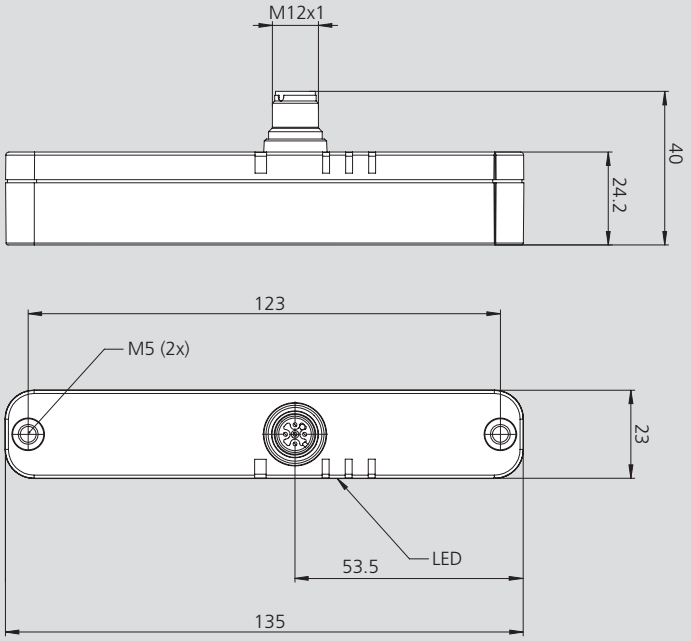
- Inductive measuring system
- No interference from magnetic fields
- Measuring range = 120 mm
- Compact design / simple installation
- Analog output 0 - 10V (Id. No. 208110) / 4 - 20mA (Id. No. 208109)
- IO Link standard interface
- Protection class IP 67
- LEDs for operating status

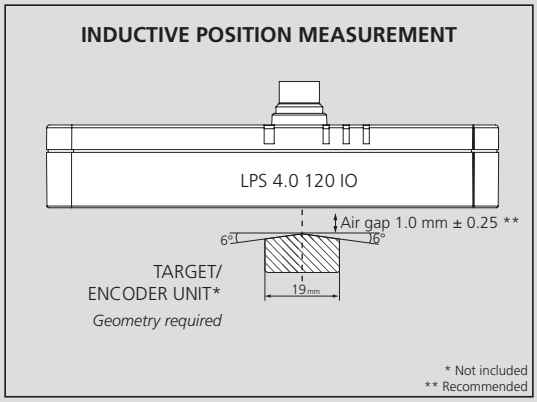
Standard equipment

LPS 4.0 120 IO without cable

Ordering example

LPS 4.0 120 IO 0 - 10V
Id. No. 208110
Cable with elbow plug 5 m
Id. No. 208247

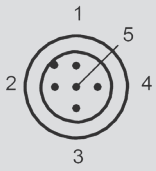




Pin Assignment

Pin	Description
1	24V DC
2	not used
3	GND
4	C/Q (IO-Link)
5	Signal output 0 - 10V (Id. No. 208110) Signal output 4 - 20mA (Id. No. 208109)

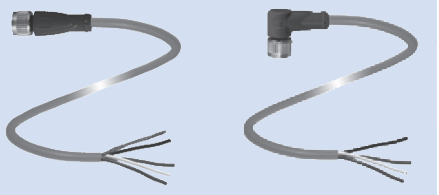
Male connector
M12 x 1



Technical data

SMW-AUTOBLOK Type	LPS 4.0 120 IO 0 - 10 V	LPS 4.0 120 IO 4 - 20 mA
Id. No.	208110	208109
Measuring range	120 mm	
Output signal	0 - 10 V	4 - 20 mA
Power supply	24 V DC	
Repeat accuracy	± 0.1 mm	
Linearity	± 0.2 mm	
Temperature drift	0.25 mm	
Operating temperature	0 - 70°	
Protection class	IP 67	
Interface	IO-Link 1.1	
$MTTF_d$	271 a	
Mission time (T_M)	20 a	
Diagnostic Coverage (DC)	0%	

Cables for LPS 4.0 120 IO*	Length	Id. No.
Sensor connection cable straight plug M12 x 1 5-pin	5 m 10 m 15 m	208244 208245 208246
Sensor connection cable elbow plug M12 x 1 5-pin	5 m 10 m 15 m	208247 208248 208249



* Shielded PUR cable, 1 side cable end, 1 side with socket M12 x 1, machined and gold-plated contacts.

USP 4.0 250

Measuring range 25 - 250 mm

Ultrasonic Positioning Sensor

Application/customer benefits

- Non-contact distance measurement using ultrasonic technology
- Ready for Industry 4.0
- Selectable sound lobe width
- Analog output signal and adjustable switching signals
- Very large measuring range

Technical features

- Ultrasonic measuring system
- No interference from magnetic fields
- Measuring range = 25 - 250 mm
- Compact design / simple installation
- Analog output 0 - 10 V (Id.-Nr. 211501) / 4 - 20 mA (Id.-Nr. 211500)
- Protection class IP 67
- Reverse polarity protection

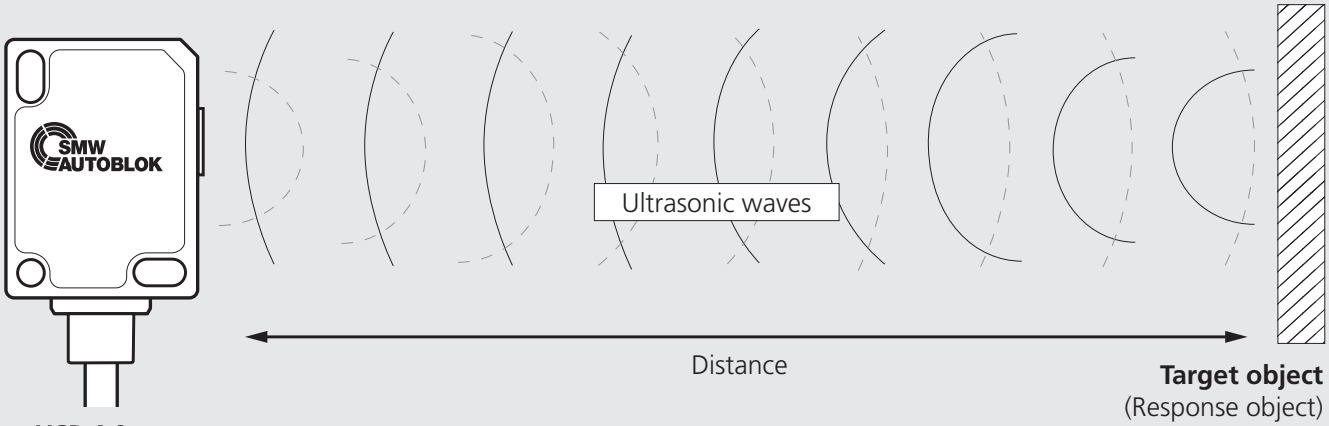
Standard equipment

USP 4.0

Ordering example

USP 4.0 20 - 250 mm
ID.-Nr. 211500

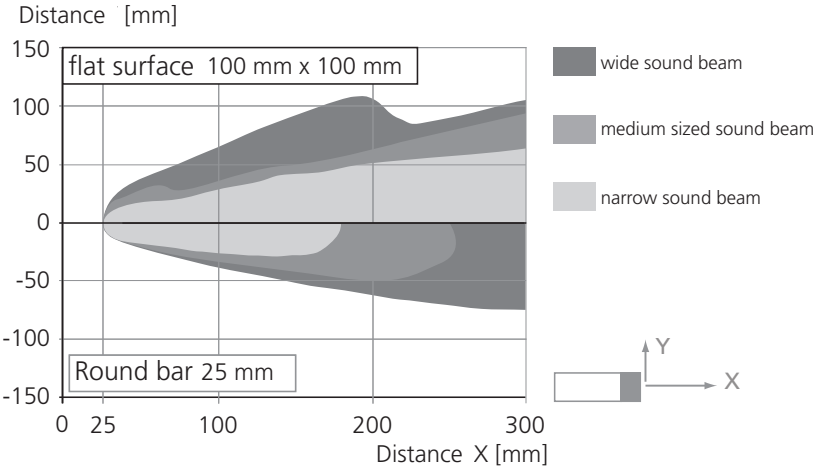
Function



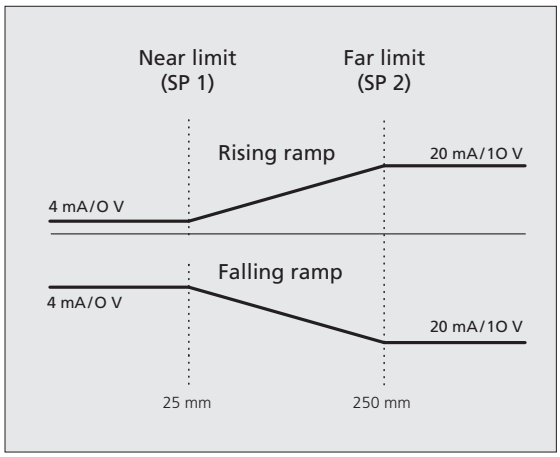
The **USP 4.0 Ultrasonic Positioning Sensor** measures the distance to objects without contact. The sensor emits ultrasonic waves. If these hit an object, they are reflected. The resulting echo is picked up by the sensor and the distance to the object is calculated from the time between the transmission and reception of the sound pulse.

The **USP 4.0 Ultrasonic Positioning Sensor** for distance measurement makes it possible to detect objects made of different materials such as metal, wood or plastic. Only sound-absorbing materials, such as absorbent cotton or smooth sloping surfaces, can be poorly detected by the ultrasonic sensor.

Characteristic response curve



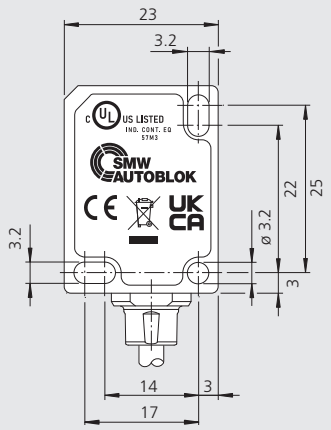
Analog output / switching signal

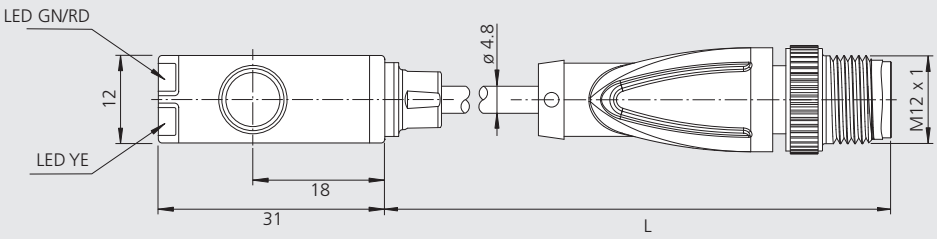


Ultrasonic Positioning Sensor

USP 4.0 250

Measuring range 25 - 250 mm

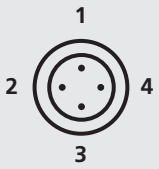




Pin Assignment

Pin	Description
1	24 V DC
2	not used
3	GND
4	Signal output 0 - 10 V (Id. No. 211501) Signal output 4 - 20 mA (Id. No. 211500)

Male connector
M 12 x 1



SMW-AUTOBLOK Type			USP 4.0 25 - 250 0 -10 V	USP 4.0 25 - 250 4 - 20 mA
Id. No.			**211501**	**211500**
Sensing range			25 - 250 mm	
Adjustment range			25 - 250 mm	
Output signal			0 - 10 V	4 - 20 mA
Power supply			18 ... 30 V DC	
Repeat accuracy			< ± 0.1%	
Linearity			< ± 1.0 %	
Operating range			-25 - 60°	
Protection class			IP 67	
Material			PC	
Weight			21 g	
Blind zone			0 ... 20 mm	
Standard taget plate			10 mm x 10 mm	
Response delay			min. 8 ms (Factory setting: 29ms)	
Sensor cycle time			≥ 8 ms (Factory setting), parameterizable to 60 s	
Memory				
Non-volatile memory			EEPROM	
Write cycles			300000	
Displays/controls				
LED green		permanently on flashing	Power on Standby-Operation / IO-Link Kommunication	
LED yellow		permanently on flashing	Object in the evaluation area Programming the limits, object detected	
LED red		permanently on flashing	Malfunction Programming the limits, object not recognized	
Electrical data				
No-load current	I_0		≤ 50 mA	
Power input	P_0		≤ 500 mW	
Standby delay	t_v		≤ 300 ms	
Cable				
length	L		200 mm	
Mounting position			any	
Tightening torque	mounting screws		max. 0.2 Nm	
Factory setting				
Output		close border distant border output mode	25 mm 250 mm rising ramp	
Beam width			wide	
Pin assignment				
Pin 1		brown BN	24 V DC	
Pin 2		wihte WH	-	
Pin 3		blue BU	GND	
Pin 4		black BK	0 - 10 V	4 - 20 mA

Multi Device
CLAMPING FORCE MEASURING DEVICE + ASSISTANCE SYSTEM GFT-X 4.0

Wireless gripping force and speed measuring of jaw chucks and collet chucks in dynamic or static measuring mode.

Measuring heads

M3/M4
Measuring heads for jaw chucks
Clamping-Ø 72 to 108 mm

Measuring head convertible for 2 and 3 jaws

Measuring head	Range/gripping force	
	2 Jaws	3 Jaws
M3	0 to 180 kN	0 to 270 kN
	Id. No. 207074	
M4	0 to 30 kN	0 to 45 kN
	Id. No. 207259	

Separate measuring head for 2, 3 and 6 jaws

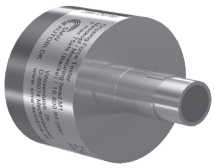
Measuring head	Range/ gripping force
	6 Jaws
M3-6	0 to 270 kN
	on request
M4-6	0 to 45 kN
	on request

M2
Measuring head for collet chucks
Clamping-Ø 42 mm

For collets with 3 segments

Measuring head	Range/ gripping force
	Collets
M2	0 to 120 kN
	Id. No. 207258

M1
Measuring head for collet chucks
Clamping-Ø 18 mm



For collets with 3 segments

Measuring head	Range/ gripping force
	Collets
M1	0 to 75 kN
	Id. No. 207257

Features GFT-X 4.0

- **Wireless data transfer** from measuring head to table via Bluetooth for the measuring of dynamic and static clamping forces and speed (with included bracket)
- **Built-in camera** in tablet
- **Assistance systems**: Manuals, Jaw Finder, Chuck Finder, Technical calculations
- **Rechargeable battery**, operation time in use: 8 h
- **Smart user interface**
- Tablet suitable for **industrial use** (Protection class IP 67)
- **Display** kN or lbf
- **Languages:** German, English, Spanish
- **Measured clamping forces can be evaluated** by the integrated software or by the display software on Laptop / PC
- **4 Measuring heads** for jaw chucks and **2 Measuring heads** for collet chucks

Gripping force tester – GFT-X 4.0 with measuring head

GFT-X 4.0

Wireless gripping force measuring

Multifunctional Gripping Force Tester

Ordering overview and technical data

Standard equipment with GFT-X 4.0

Case with:

- Large Multi Device Tablet.
- Measuring head M3 (2 and 3 jaws) for jaw chucks with extensions and loading device.
- Torx-key T15 and spare screws.
- Bracket with magnet for measuring of speed.
- Loading cable with USB port.
- USB cable for Tablet.
- Adapter for USA, UK and Southern Europe.

Ordering data

GFT-X 4.0 case incl. Tablet, Measuring head M3 (2 and 3 jaws)	Id. No.	206844

Option:

Measuring head M1 (for collet chucks)	Id. No.	207257
Measuring head M2 (for collet chucks)	Id. No.	207258
Measuring head M3 (2 and 3 jaws)	Id. No.	207074
Measuring head M4 (2 and 3 jaws, high-precision)	Id. No.	207259
Measuring head M3 (6 jaws)	Id. No.	207586
Measuring head M4 (6 jaws, high-precision)	Id. No.	207587

Display software PC / Laptop

- The data transfer is via an USB interface.
- The software can be run under all standard windows systems.

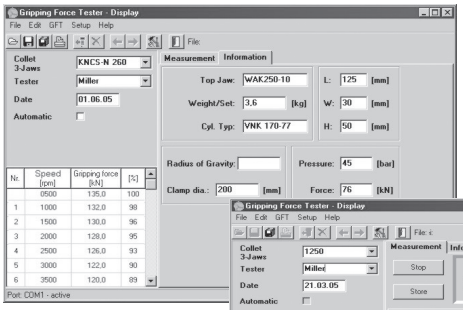
Input

- Automatic measuring of the data (gripping force - speed).
- The number of measuring steps can be programmed free.

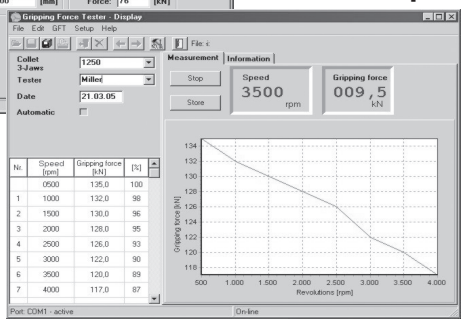
Output

- Table gripping force / speed.
- Diagram gripping force / speed.

Input



Output



Technical data

Tablet	
Display / Grip force F – speed	Display in kN / lbf - r.p.m
Data transfer	Bluetooth 4.0
Power supply / Transformer	100 / 240 V AC, 50 to 60 Hz
Distance Tablet / Measuring head	1-4 m (appr.)
Interface PC / Laptop	USB 2.0
Operating temp.	0 to 40° (32°-100 °F)
Protection class	IP 67

Warning: Machine door must be closed while measuring head is rotating!

Measuring heads	Measuring head M1	Measuring head M2	Measuring head M3	Measuring head M4
Application	collet Ø 18	collet Ø 42	chuck 2 / 3 or 2 / 3 / 6 jaws	
Clamping diameter	18 mm	42 mm	72 to 108 mm	72 to 108 mm
No. of jaws	collet 3 x slotted	collet 3 x slotted	2 and 3 jaws / 6 jaws	
Power supply	internal rechargeable capacitor			
Capacity of power supply	ca. 1.5 h at 50 % d.c.			
Data transfer	Bluetooth 4.0			
Range / gripping force F max.	0 to 75 kN	0 to 120 kN	0 to 180 kN (2-jaws) 0 to 270 kN (3 / 6-jaws)	0 to 30 kN (2-jaws) 0 to 45 kN (3 / 6-jaws)
Speed r.p.m	<10.000 r.p.m.	<8.000 r.p.m.	<6.000 r.p.m.	<6.000 r.p.m.
Accuracy (F / r.p.m)	<5% / <1% fsr	<5% / <1% fsr	<3% / <1% fsr	<1.5% / <1% fsr

Notes

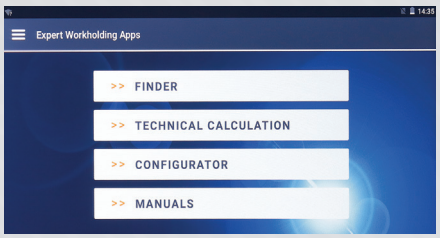
Digital products

Customized software programming

Efficient development process:

1 - Requirements analysis
2 - Design
3 - Implementation
4 - Test cycle
5 - Release
6 - Customer test

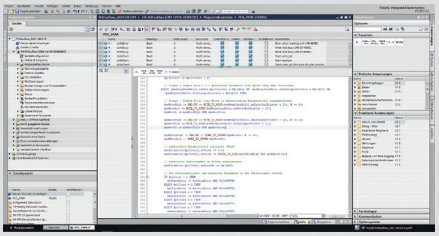
Software solutions



App programming
Solutions for PC / Laptop
and Tablets / Smartphones

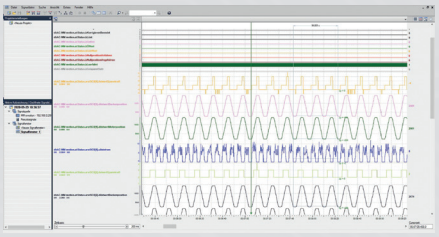
Cloud solutions
Cloud-based individual solutions

OPC UA
Secure data exchange using
the latest technology standards



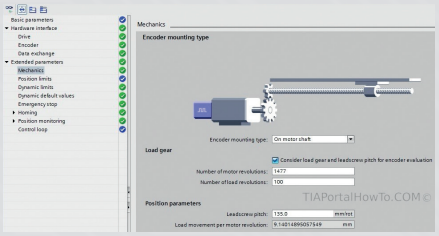
SPS programming

Control technology solutions for
the digitalised production process



Monitoring / analysis software

Software for monitoring
and evaluation of processes



Motion Control

Software for motion control in the range
of mechatronics / automation / robotics

Software mechatronic clamping systems

- S7 TIA
- Codesys
- IEC 61131

IO-Link Hub 16DIO

Input / output module for up to 16 signals (IN/OUT)

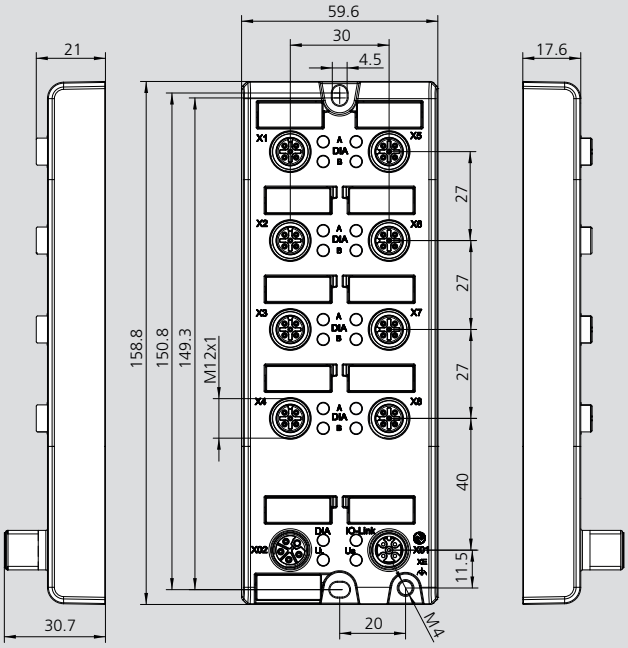
IO-Link

Application/customer benefits

- Module for 16 digital input and output signals
- 8 x M12 plug connections
- Solid metal housing
- Plug & Play

Technical features

- IO-Link Hub
- 8 x M12 A-coded I/O connection
- 16 digital signals (IN/OUT)
- Reverse polarity protection, short circuit proof
- M12, 5-poles, L-coded power connection
- Protection class: IP69K



Subject to technical changes.
For more detailed information please ask our customer service.

SMW-electronics Type	IO-Link Hub 16DIO
Id. No.	**0E011403**
Housing material	Metal, zinc die-cast
Protection degree / IP rating	IP69K
Dimensions (WxHxD)	60 mm x 31 mm x 159 mm
Weight	400 g
Ambient temperature (operation)	-20 °C to 70 °C
Contact base material	gold-plated

Input / output module for up to 16 signals (IN/OUT)

IO-Link Hub 16DIO

SMW-electronics Type	IO-Link Hub 16DIO
Id. No.	0E011403
IO-Link	
Connection	M12, 5-poles, A-coded
Specification	V1.1.2
Transmission rate / COM mode	COM 3 (230.4 kbps)
Power supply	
Connection module supply voltage	M12, 5-poles, A-coded
Supply voltage	18...30 V
Reverse polarity protection	Yes
Status indicator	LED green
Diagnostic indicator	LED red
Connection sensor supply voltage	M12 power, 5-poles, L-coded
Number of connections	1
Sensor supply voltage	18...30 V
Digital input channels	
Number of digital input channels	16
Connection	M12, 5-poles, A-coded
Number of ports	8x, X1 to X8
Input wiring	2-, 3-, 4-wire
Nominal voltage	24 V DC via US (module power supply)
Digital output channels	
Number of digital output channels	16
Connection	M12, 5-poles, A-coded
Number of ports	8x, X1 to X8
Output wiring	2-, 3-wire
Nominal voltage	24 V DC (supplied PIN 2 / 4 of M12 power connector)

IO-Link Hub 16DI

Input module for up to 16 signals (IN)

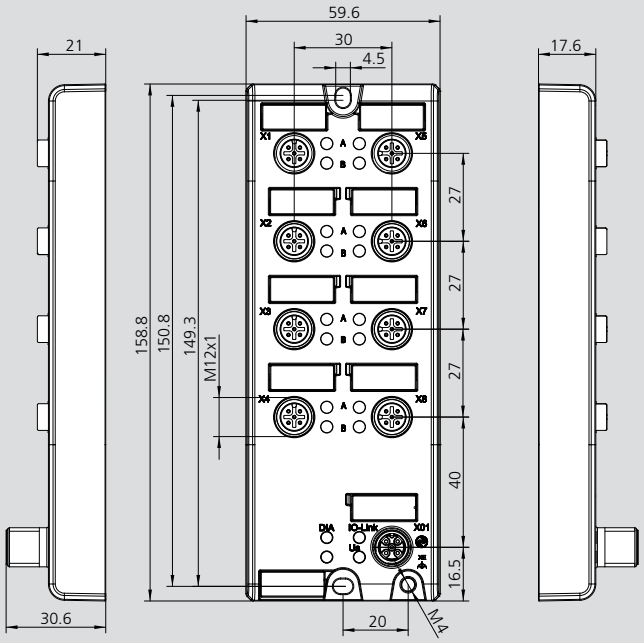
IO-Link

Application/customer benefits

- Input module for up to 16 digital input signals
- 8 x M12 plug connections
- Solid metal housing
- Plug & Play

Technical features

- IO-Link Hub
- 8 x M12 A-coded I/O connection
- 16 digital signals (IN)
- Reverse polarity protection, short circuit proof
- M12, 5-poles, L-coded power connection
- Protection class: IP69K

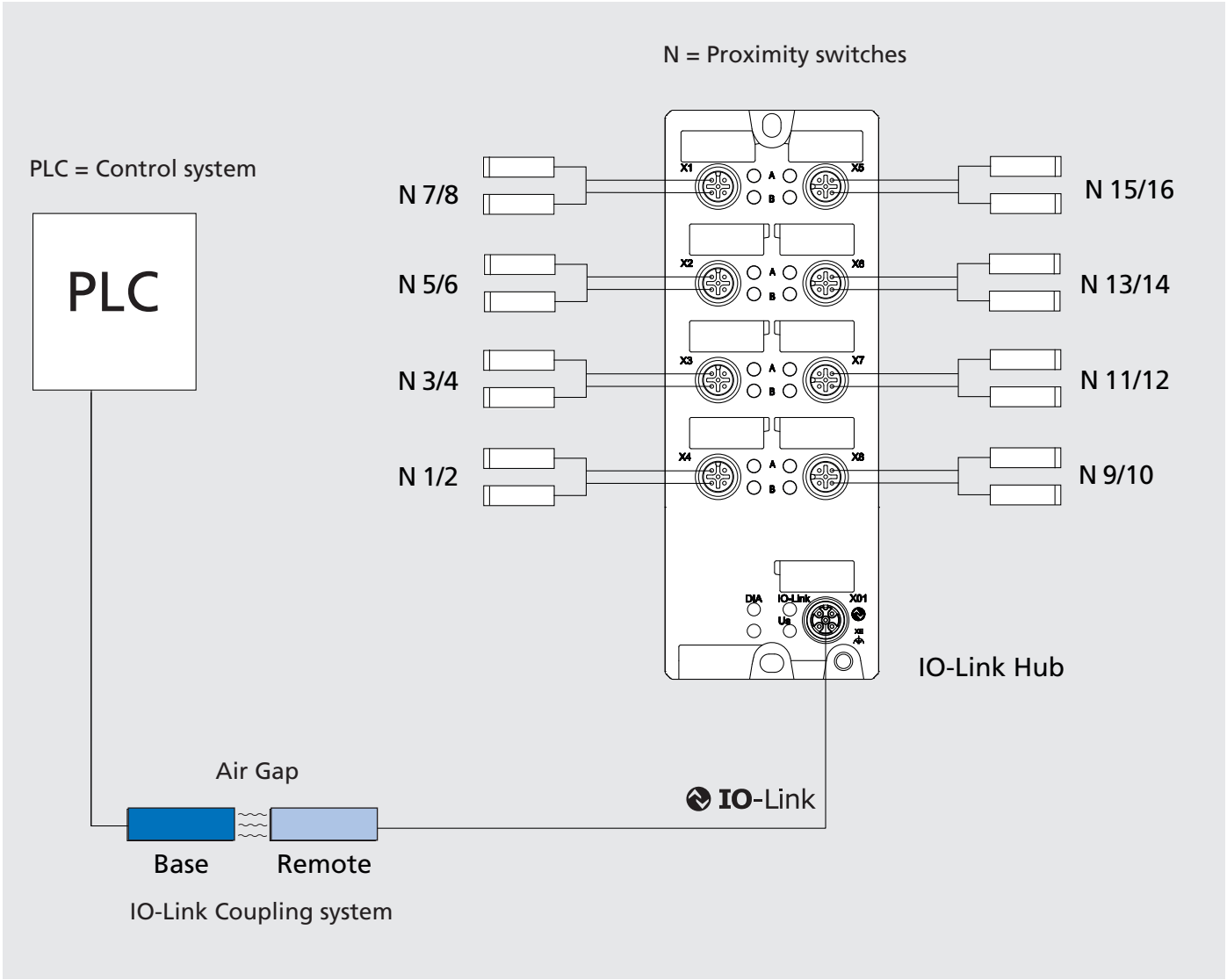


Subject to technical changes.
For more detailed information please ask our customer service.

SMW-electronics Type	IO-Link Hub 16DI
Id. No.	**0E011404**
Housing material	Metal, zinc die-cast
Protection degree / IP rating	IP69K
Dimensions (WxHxD)	60 mm x 31 mm x 159 mm
Weight	390 g
Ambient temperature (operation)	-20 °C to 70 °C
Contact base material	gold-plated

IO-Link Hub 16DI

Application example with an inductive coupling system



SMW-electronics Type	IO-Link Hub 16DI
Id. No.	0E011404
IO-Link	
Connection	M12, 5-poles, A-coded
Specification	V1.1.2
Transmission rate / COM mode	COM 3 (230.4 kbps)
Power supply	
Connection module supply voltage	M12, 5-poles, A-coded
Power supply	18...30 V
Reverse polarity protection	Yes
Status indicator	LED green
Diagnostic indicator	LED red
Connection sensor supply voltage	M12 power, 5-poles, L-coded
Sensor supply voltage	18...30 V
Digital input channels	
Number of digital input channels	16
Connection	M12, 5-poles, A-coded
Number of ports	8x, X1 to X8
Input wiring	2, 3-wire
Nominal voltage	24 V (module power supply)
Sensor type	PNP

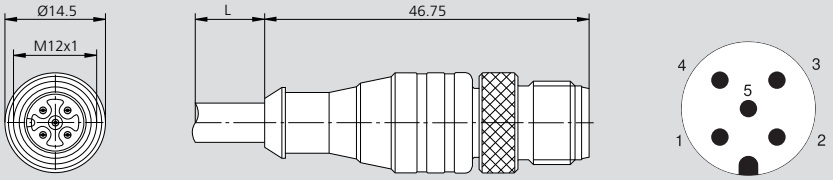
Cables

Accessories

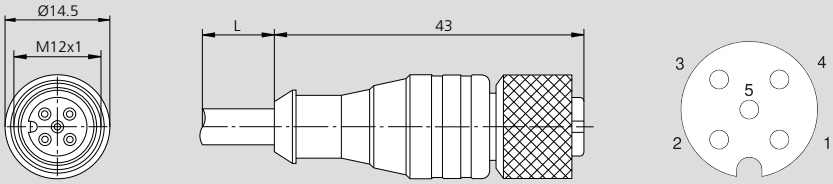
- Sensor-/ actuator connection cable
- Power cable

Sensor actuator cable - 1 meter

Male connector 5-pin:



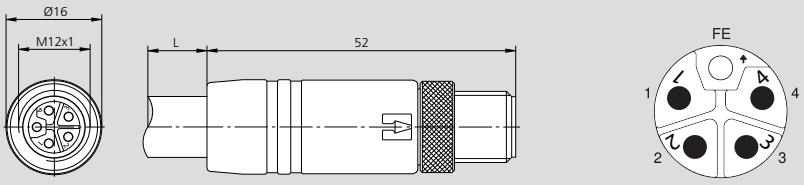
Female connector 5-pin:



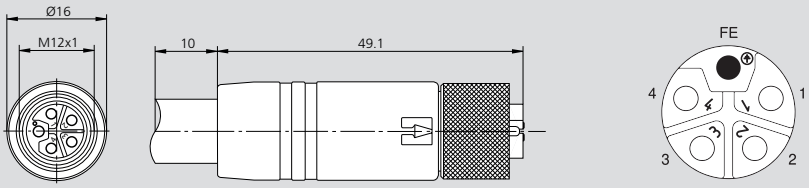
SMW-electronics Type	Connection cable M12 pin straight to M12 socket straight	
Id. No.	**0E011405**	**0E011406**
Number of poles	Side 1 = 5, side 2 = 5	
Coding	A	
Material contact	CuSn, gold-plated	
Cable sheath	PUR black	
Cable construction	5 x 0.5 mm²	
UL approval	UL 2238; cURus	
IP protection class	IP 65, IP 67, IP 68, IP 69K	
Length	1 m	3 m

Power cable for IO-Link hub

Male connector 5-pin:



Female connector 5-pin:



SMW-electronics Type	M12 power connection cable: socket, straight
Id. No.	**0E011407**
Number of poles	5 (4+FE)
Coding	L
Material contact	CuNi, gold-plated
Cable sheath	PUR grey
Cable construction	5 x 1.5 mm²
UL approval	UL 2237; cULus
IP protection class	IP65, IP67, IP68, IP69K
Length	5 m
Shielding	unshielded
Operating voltage	63 V
Rated current	16 A

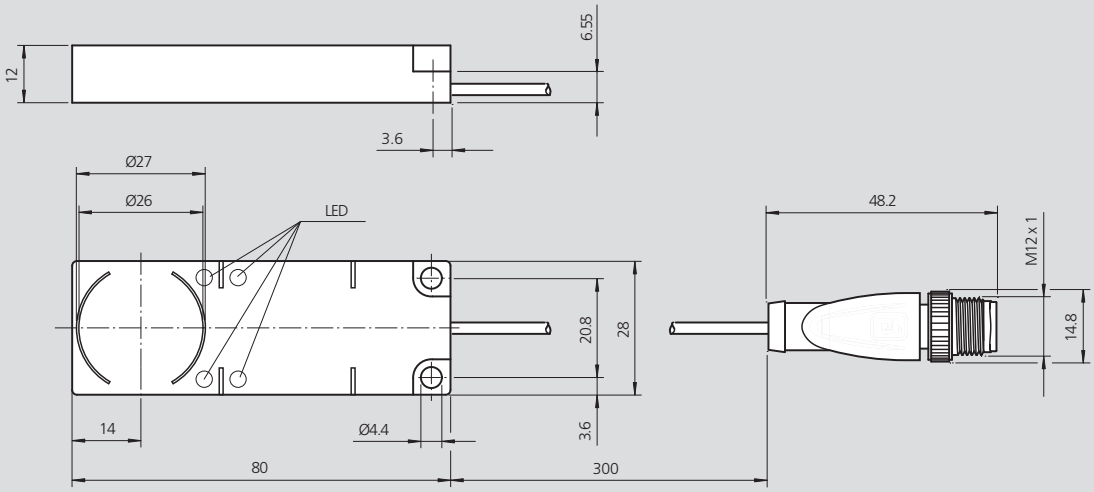
Notes

Application/customer benefits

- RFID read/write stations with IO-Link interface
- Frequency range 13.56 MHz according to standard ISO15693
- The unit supports transponders according to standard ISO 15693
- Plug and Play - Easy integration
- Proven and flexible recognition system
- LEDs for function display
- Particularly flat design
- Mountable on metal

Technical features

- Protection class IP67
- Connection Plug connector M12 x 1
- IO-Link interface V1.1 (COM 3)
- Read / write distance 0 - 55 mm
- Dimensions 80 x 28 mm
- Operating frequency 13.56 Mhz



Subject to technical changes.
For more detailed information please ask our customer service.

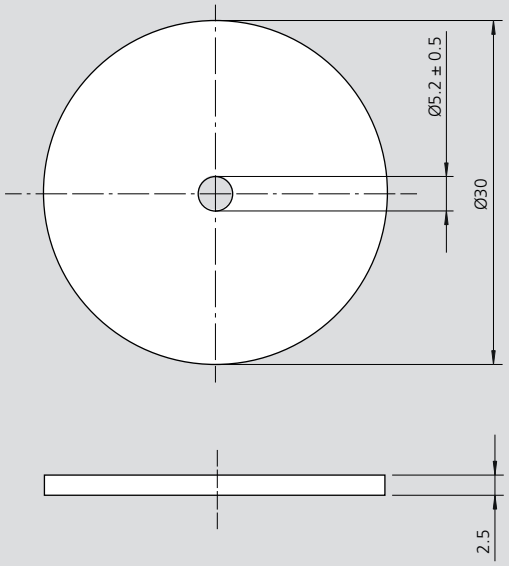
SMW-electronics Type	RFID read / write station
Id. No.	**0E011400**
General data	
Operating frequency	13.56 MHz
Transmission rate	26 kBit/s
Read distance	0 ... 55 mm
Write distance	0 ... 55 mm
Functional safety characteristics	
$MTTF_d$	280 a
Diagnostic coverage (DC)	0 %
Displays / controls	
LED green	ON: Power ON / flashing: IO-Link communication
LED yellow	Data carrier detected
LED red	Flashing: IO-Link communication disturbed
LED blue	Write / read attempt is being carried out
Interface	
Interface type	IO-Link
Mode	COM 3
Environmental conditions	
Ambient temperature	-25 ... 70°C (-13 ... 158°F)
Mechanical data	
Protection class	IP 67
Connection	Connector M12 x 1

Application/customer benefits

- 2000 bytes of memory freely available
- Readable and writable from both sides
- Simple mounting due to fixing hole
- Can be rewritten as often as required

Technical features

- Protection class IP 68
- Operating frequency 13.56 Mhz
- 64 bit fixed code

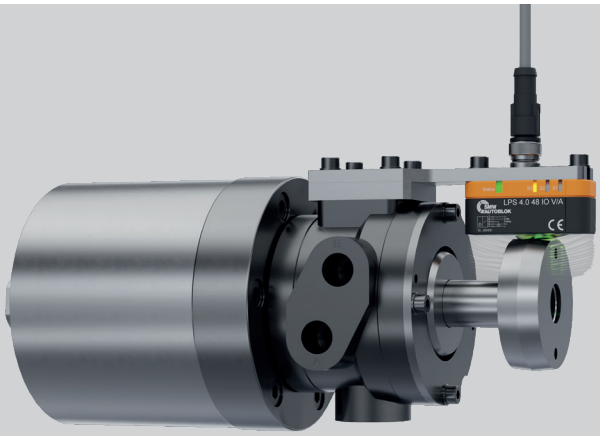


Subject to technical changes.
For more detailed information please ask our customer service.

SMW-electronics Type	RFID Transponder
Id. No.	**0E011401**
General data	
Operating frequency	13.56 MHz
Transmission rate	26 kBit/s
Memory	
Chip type	FRAM MB89R118 (Fujitsu)
FRAM	16 kBit
UID	64 Bit
Memory organisation	8 Byte / Block
Read cycles	unlimited
Write cycles	unlimited
Data retention time	10 years
Environmental conditions	
Ambient temperature	-40 ... 90 °C
Mechanical data	
Protection class	IP 68

Note: Other versions available on request.

Application examples

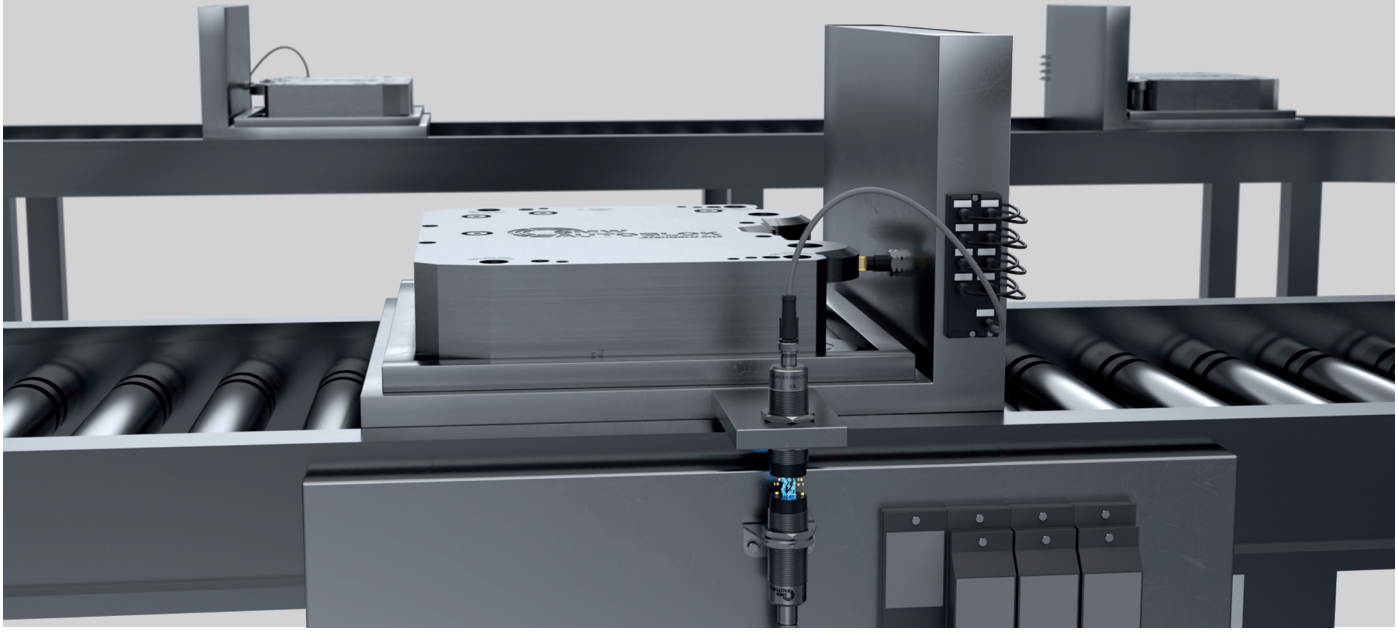


Application:
Cylinder stroke sensing with linear position sensor LPS 4.0

- Inductive position monitoring
- Highest accuracy
- Signal output IO-Link, analog signal
- Various measuring lengths:
  14, 48, 80 and 120 mm

Application: Status query transport system with inductive coupler M30

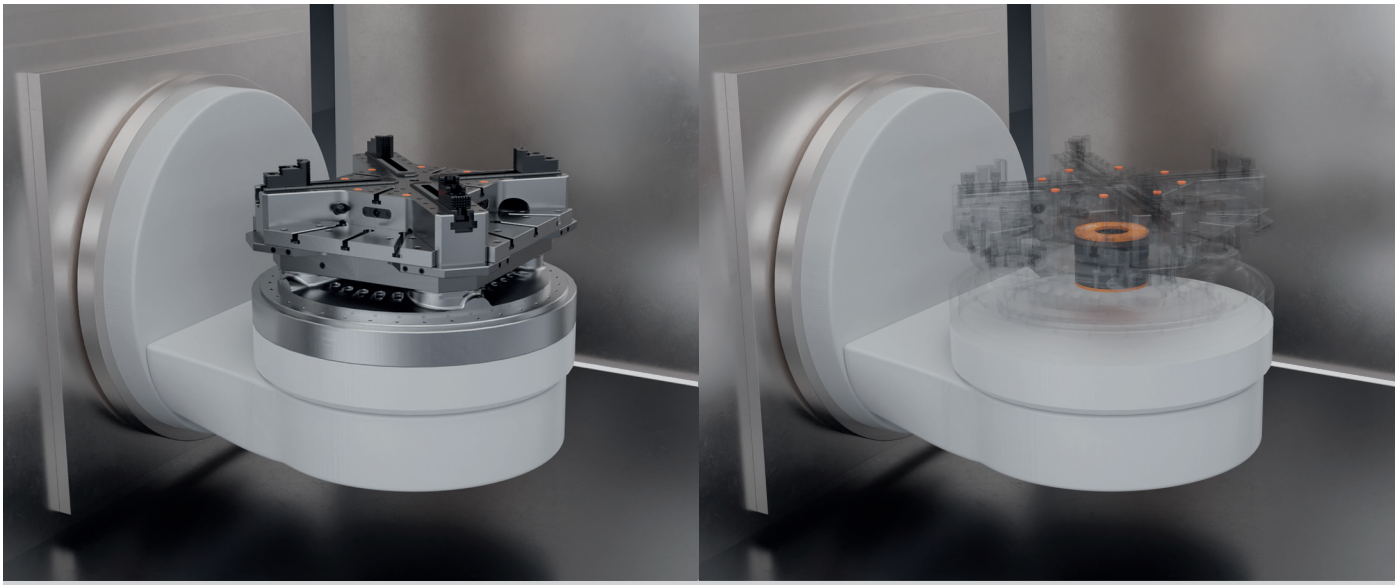
- Inductive transmission of energy and signals
- Very fast connection set-up between base and remote system
- Dynamic pairing: 1 base system connects to several remote units
- Suitable for clean room applications
- Different signals possible (IO-Link, digital signals, analog signals)



Application: Robotics End of Arm Tooling

- Inductive transmission of energy and signals
- Contact free Ethernet transmission for ultra-fast data transmission for camera application
- Power supply for camera and electro-mechanical gripper, also contact free
- Suitable for clean room applications
- Endless rotating gripper motion possible
- Sensitive gripping of components
- Variable adjustment of the gripping force

Application examples



Application: Machine tool

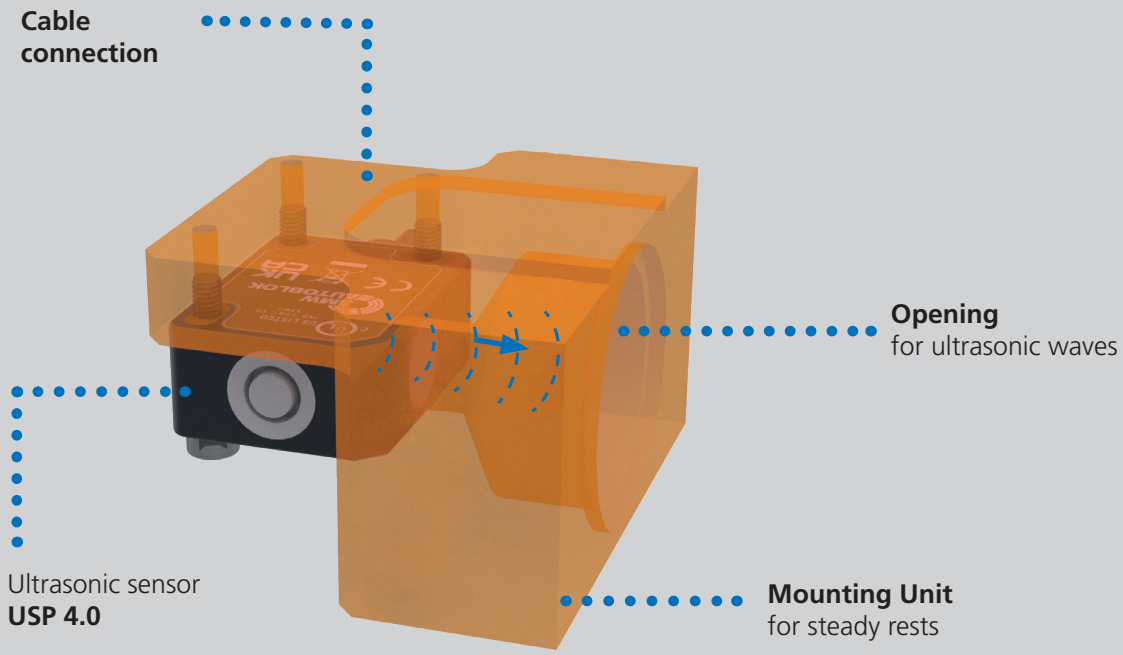
- Inductive transmission of energy and signal between machine table and pallet
- Digitized clamping devices: Monitoring of different process parameters even during machining by using integrated sensor technology
- Ethernet or IO-Link

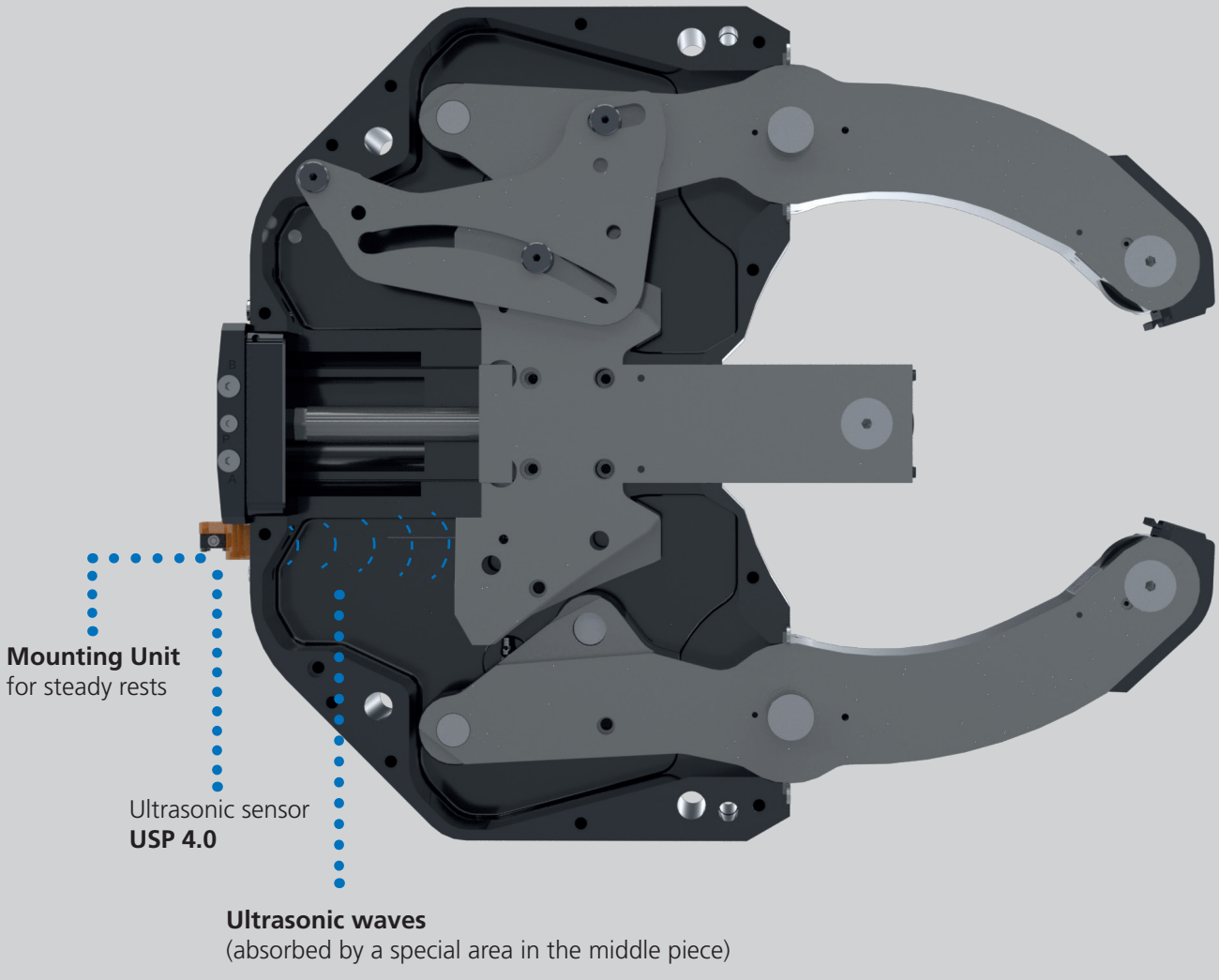
Application: Off Highway

- Inductive transmission of energy and signal
- Plug replacement for safe communication between excavator and attachment tool
- Wear-resistant (even with a high degree of degree of contamination) and maintenance-free
- Quick and manless tool change

Application examples

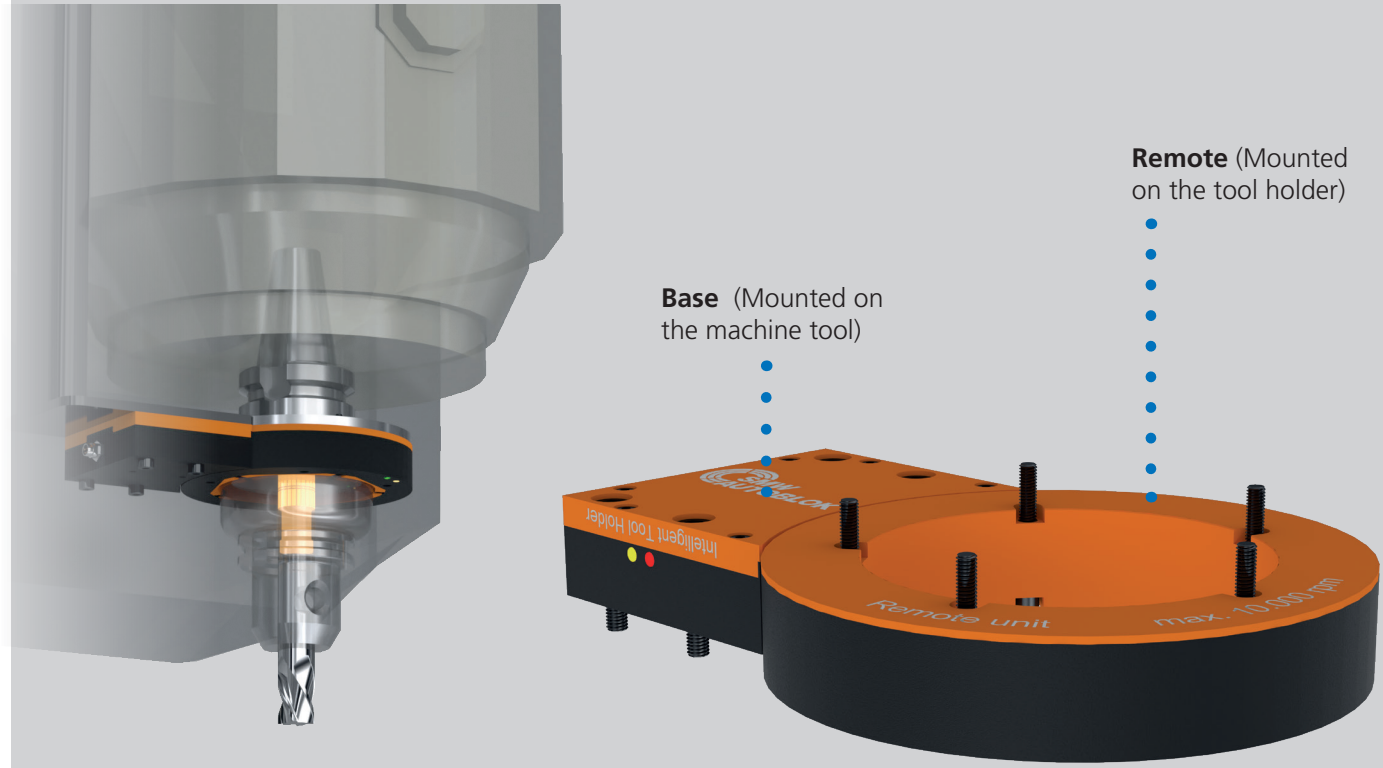
Application: Clamping position monitoring for steady rests with USP 4.0





Application examples

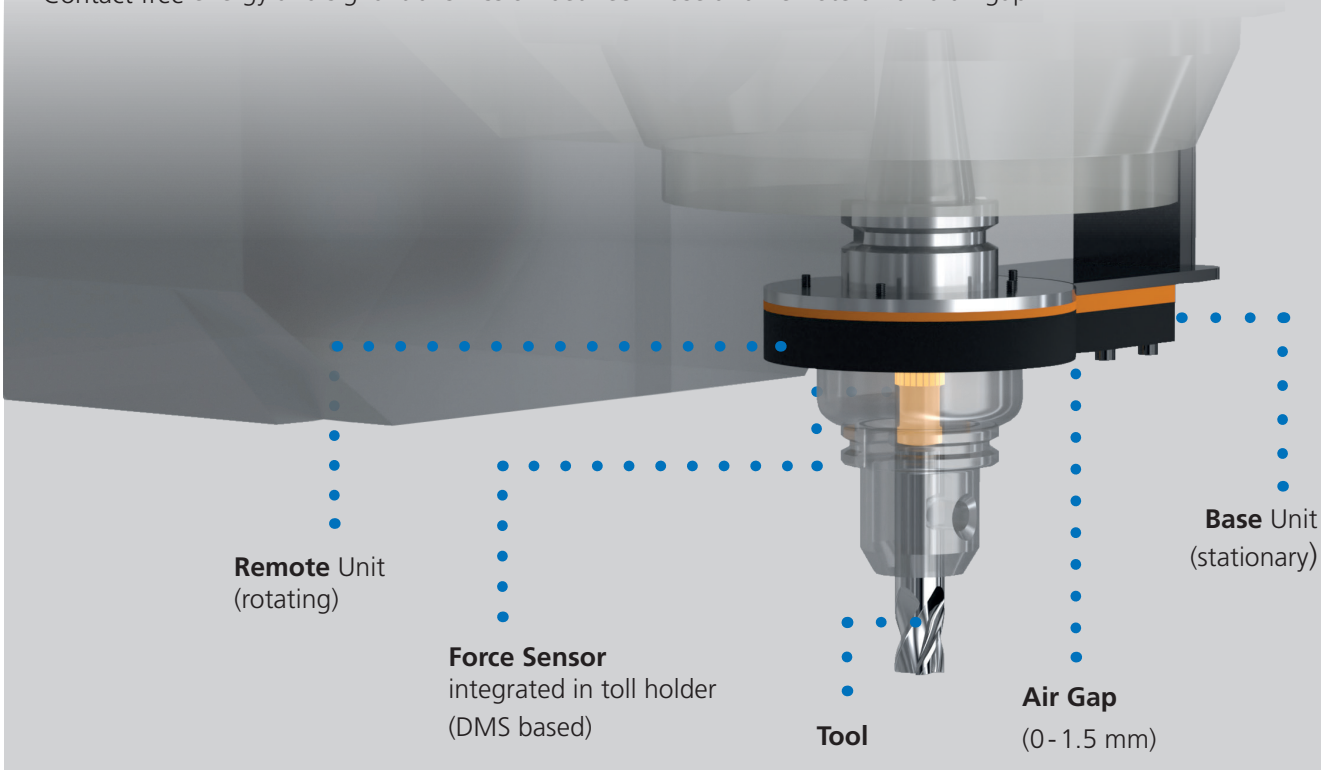
Application: Inductive coupling system for intelligent tool holder



- Signal transmission for force (with integrated DMS technology) from an intelligent tool holder to the machine tool
- Contact free energy transmission for sensor supply

Force sensor in tool holder

- Contact free energy and signal transmission between Base and Remote unit via air gap.



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