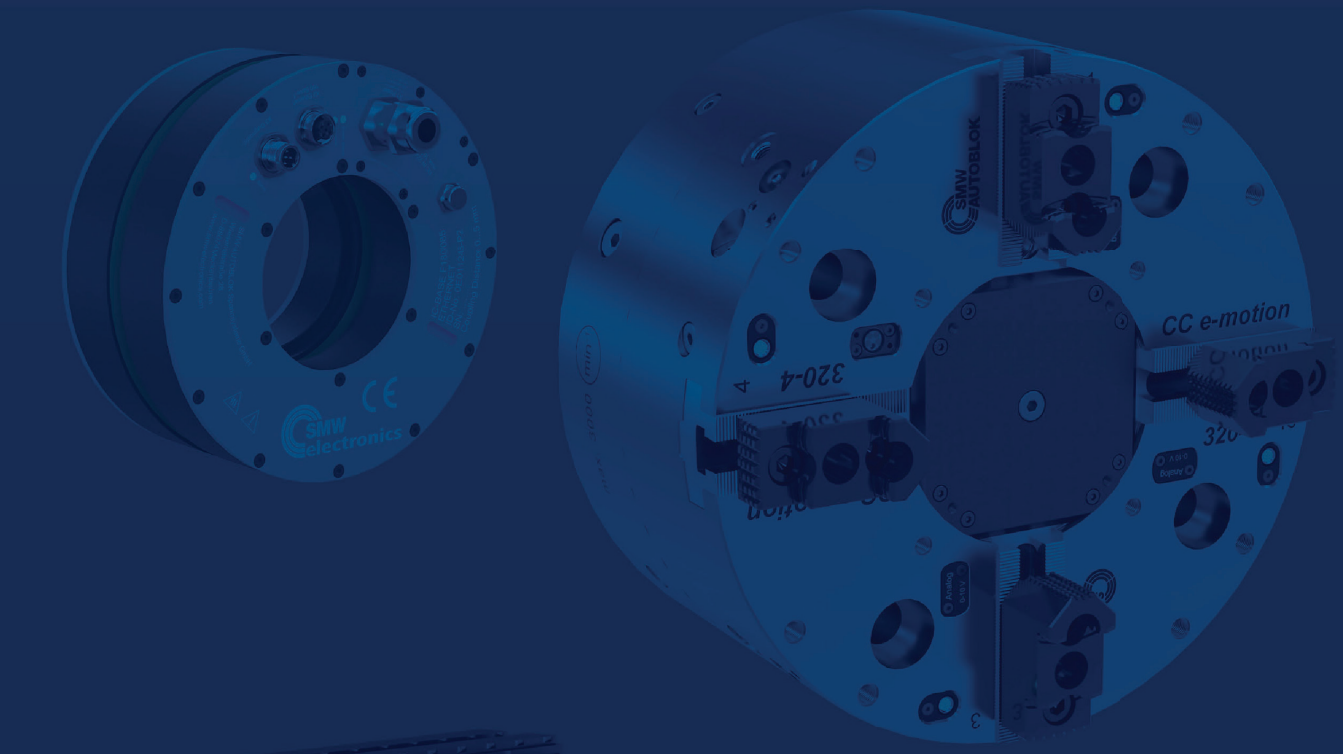
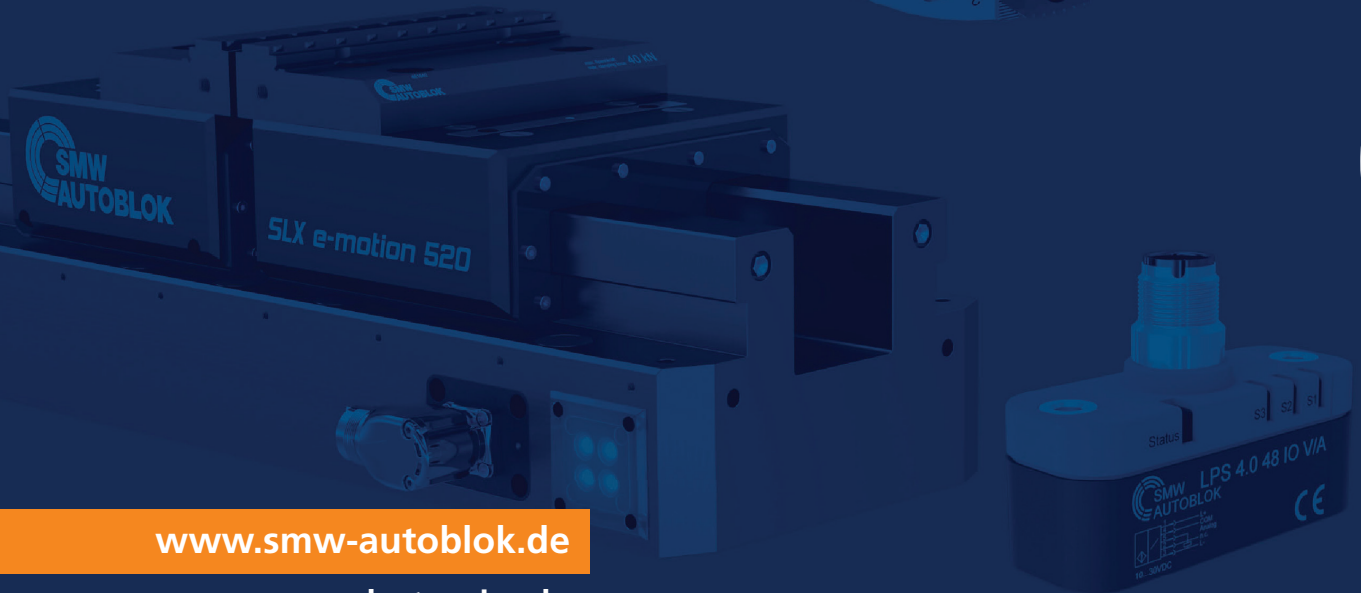
SMW AUTOBLOK

DIGITIZED WORKHOLDING



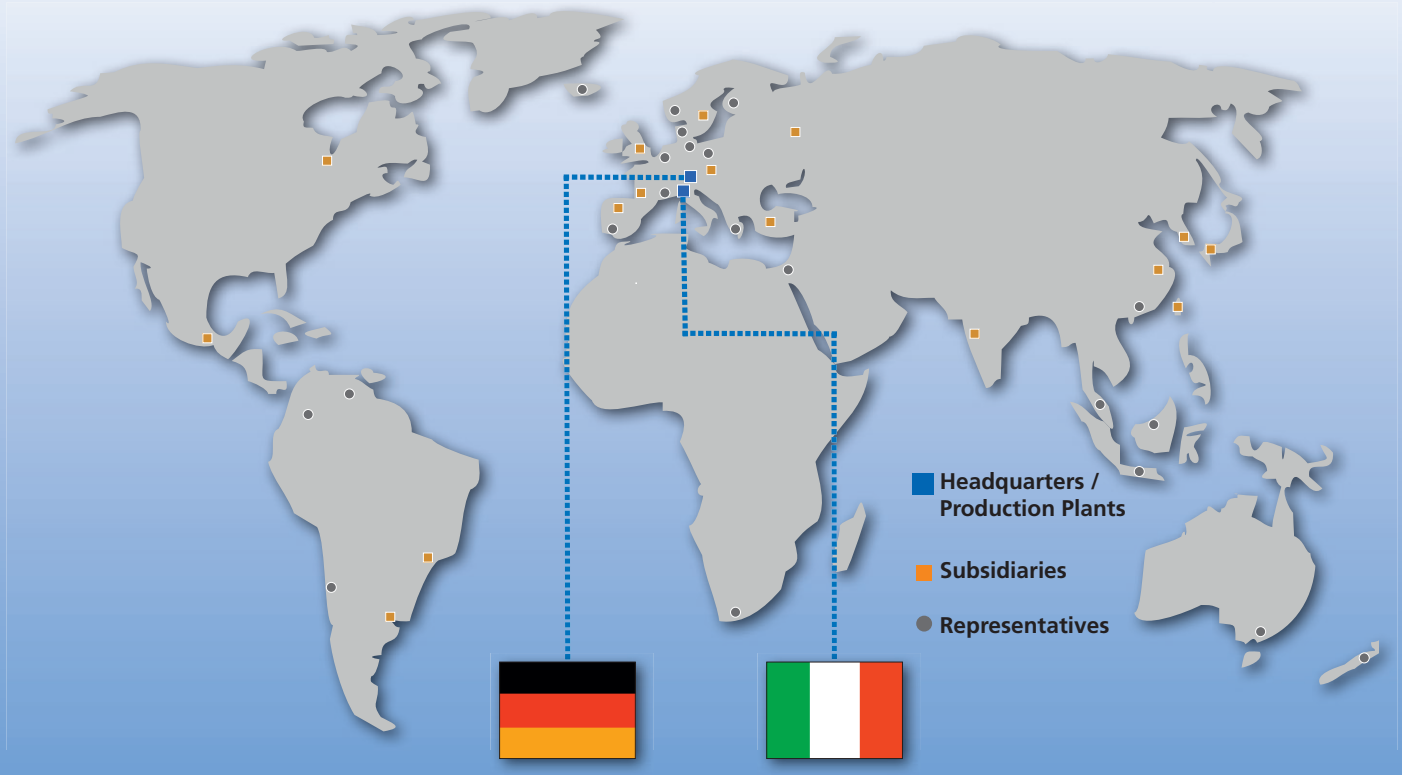


DIGIT

www.smw-autoblok.de

www.smw-electronics.de

SMW-AUTOBLOK worldwide



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

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

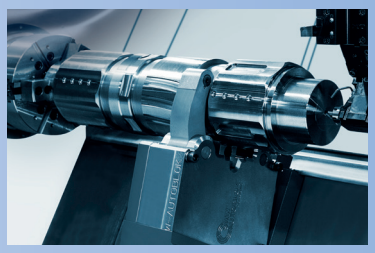
SMW-AUTOBLOK technology and logistics center Meckenbeuren

Visit our webseite: www.smw-autoblok.de

www.smw-electronics.de

Market sectors

Automotive

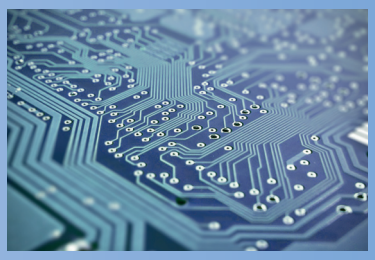


Industrial Equipment

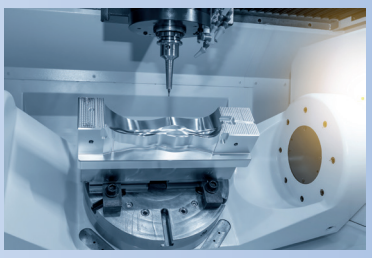
OCTG

Aerospace

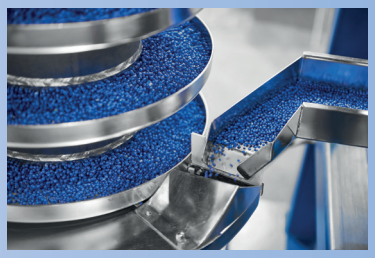
Off Highway



Electronics



Mold Industry



Plastics

Automation
and Handling

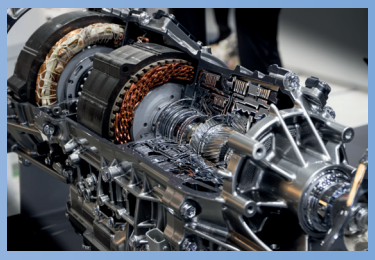
Mining Industry
Cranes

Robots / Cobots

Medical Technology

Intralogistics

Packaging Industry



Powertrain

Product range

Page 10

ZeroAct *e-motion*

Mechatronic zero point clamping system

- Mechatronic actuation
- Integrated safety systems
- e-sensing: Inductive workpiece detection
- Flat design (48 mm)
- **proofline®**= fully sealed - low maintenance

Page 14

SLX *digit*

Hydraulic long-stroke vise

- Digitized by to integrated sensoric
- Automated quick jaw change
- Self-centering clamping
- **proofline®**= fully sealed - low maintenance

Page 18

SLX *e-motion*

Mechatronic long-stroke vise

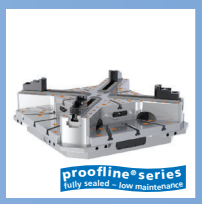
- Mechatronic clamping
- Clamping force monitoring
- Jaw position monitoring
- Pre-positioning of the jaws
- High-low clamping
- **proofline®**= fully sealed - low maintenance

Page 22

RT *e-motion*

Mechatronic tombstone

- Each workholding can be controlled individually
- Clamping stations can be individually equipped
- Contact free transmission of power and signals via inductive coupler
- **proofline®**= fully sealed - low maintenance

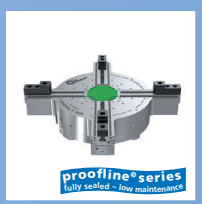


Page 26

Centco4 *digit*

Hydraulic chuck

- Digitized by integrated sensor technology
- Monitoring of different process parameters even during processing
- Non-contact power supply for sensors and signal output by means of inductive couplers
- **proofline®**= fully sealed - low maintenance



Page 30

MM *e-motion*

Mechatronic power chuck

- High precision single jaw actuation
- Precise clamping force setting
- High-Low clamping
- Automatic traversing and correction possible
- Contact free transmission of energy and data via inductive coupler
- **proofline®**= fully sealed - low maintenance

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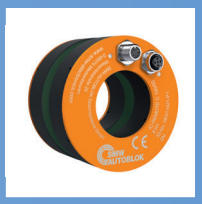
CC *e-motion*

Mechatronic power chuck

- High precision single jaw actuation
- Precise clamping force setting
- High-Low clamping
- Automatic traversing and correction possible
- Contact free transmission of energy and data via inductive coupler
- **proofline®**= fully sealed - low maintenance



Page 40

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

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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: 100 mm / through-hole: 50 mm

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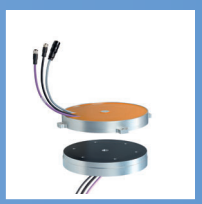
Inductive Coupling System F180 Ethernet

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 46

Inductive Coupling System F280

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 48

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

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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 52

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

Continuation on the next page

Product range

Page 54

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 56

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

Page 58

e-sensing

Digital workpiece stop

- Inductive workpiece detection /distance measurement
- High-precision, multidimensional position control
- Parameterizable sensor system
- For e-motion chucks (MM,CC) or as a retrofit solution

Page 60

Linear position measuring systems

- Position measuring systems: LPS 4.0 14, 48, 80,120
- Inductive measuring system
- Output analog and IO-Link interface

Page 66

Accessories

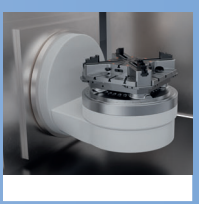
- IO-link Hub 16 DIO, 16 DI
- Connecting cables
- Mounting brakets M12, M18, M30

Page 74

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



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Application examples

- LPS 4.0 use of measuring systems
- Inductive couplers
- Digitized workholding

Page 80

Integration

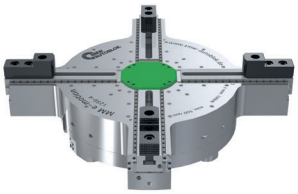
Plug & Play

- Overview: integration e-motion products

Continuation from previous page

OUR DIGITAL PACKAGE

Digitized workholding - Plug & Play

Digitized workholding Hybrid / Electric	Inductive Coupling System Energy + Data	PLC- Software Modules	HMI
			

SMW-AUTOBLOK, the technology leader of digitized workholding, offers a complete product range.

- **Hybrid workholding** are conventionally actuated workholding which are additionally equipped with sensoric. The integrated sensoric is supplied with power contact free by means of an inductive coupling system. It also transmits the signals from the sensors to the machine control system.

- **Mechatronic workholding** have an electric actuation in addition to the sensor technology used. The energy required for the electric actuation is also provided contact free by the inductive coupling system.

Digitized workholding are quickly installed thanks to Plug & Play and existing PLC software modules and offer the user significant Customer benefits as well as maximum safety.

Customer benefits

Digitized workholding

- Highest safety by integrated sensoric and complete safety concepts
- Can be automated (robot loading and unloading, automated set-up, pallet change)
- Universal clamping profiles due to single jaw actuation
- Precise clamping force adjustment and pre-positioning
- Plug & Play by integrated intelligence in the workholding and PLC software modules
- Compatibility with all common communication interfaces (e.g. Profinet, CAN, IO-Link)
- Sustainable and environmentally friendly due to the elimination of hydraulics - Energy efficient and CO_2 emission reducing.

OVERVIEW

Conventional / hybrid and electric workholding

	Conventional	Hybrid	Electric
WORKHOLDING ACTUATION	▪ manual ▪ pneumatic ▪ hydraulic	▪ manual ▪ pneumatic ▪ hydraulic	▪ mechatronic driven by means of actuators
DIGITALIZATION	no	**DIGITIZED** *by sensor technology*: ▪ Position monitoring of the jaws ▪ Pressure monitoring ▪ Clamping force measurement ▪ e-sensing: Inductive workpiece detection ▪ Stroke monitoring	**DIGITIZED** *by sensor technology*: ▪ Position monitoring of the jaws ▪ Pressure monitoring ▪ Clamping force measurement ▪ e-sensing: Inductive workpiece detection ▪ Stroke monitoring
MEDIA-INTERFACE	**Rotary distributor**	**Rotary distributor + Inductive coupler** for contact free power transmission for sensoric supply / signal transmission	**Inductive coupler** for contact free power transmission for sensoric and actuation / signal transmission
SAFETY	▪ Clamping pressure control ▪ Self-locking	▪ End position control ▪ Pressure monitoring ▪ Clamping position monitoring ▪ Mechanical self-locking	▪ End position control ▪ Clamping position monitoring ▪ Motor brake ▪ Clamping force monitoring ▪ Mechanical self-locking

low **high**

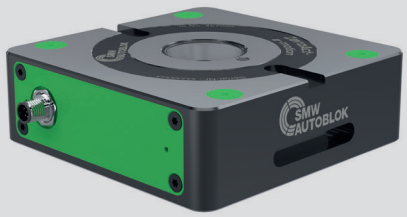
LEVEL OF DIGITALIZATION

ZeroAct *e-motion*

Mechatronic zero point clamping system

Mechatronic clamping module

- Mechatronic actuation
- Safety sensors integrated
- e-sensing for inductive workpiece detection



proofline® series
fully sealed – low maintenance

Application/customer benefits

- Mechatronic actuation
- Safety sensors integrated
- Can be automated
- e-sensing: inductive workpiece detection
- 100% electric, ideal for measuring machines and clean room applications
- Large Z-travel due to flat design (48 mm)
- High flexibility as the clamping bolts are compatible with APS / WPS / ZeroAct
- Mechanical self-locking in the clamped position
- Orientation keyways

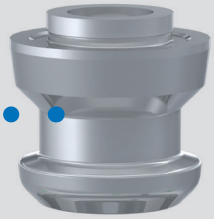
Technical features

- Pull-down force 15 kN
- Repeatability < 5 µm
- Holding force 35 / 50 / 75 kN (M10 / M12 / M16) depending on thread of clamping pin
- 2 holding slides for maximum hold while clamping
- Connection M12 x 1, 8 - pole for power and signals
- **proofline®** = fully sealed - low maintenance

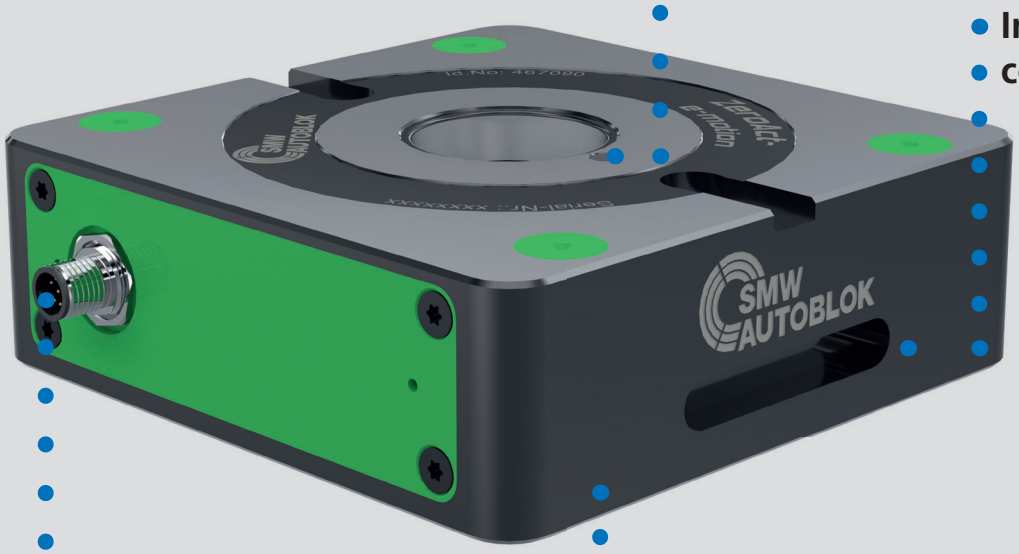
ZeroAct *e-motion*

CLAMPING PLATE

Clamping bolts (suitable to APS / WPS / ZeroAct)



- e-sensing: inductive
- workpiece detection

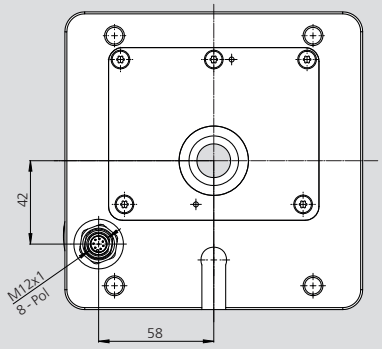


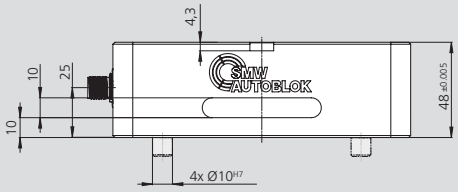
- Integrated
- control unit

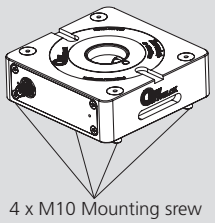
Connection for power + signals from the side or from bottom

- Sensoric for signals
- „clamped“ or „unclamped“

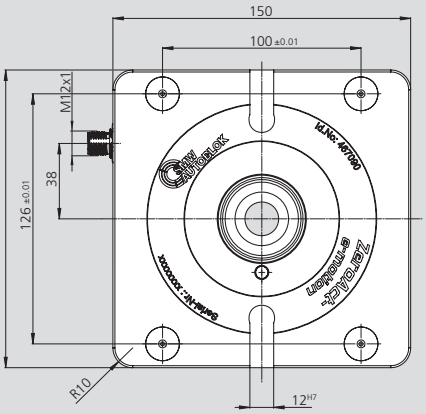
Option: Connection for power + signals from bottom

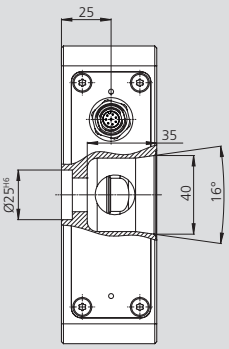






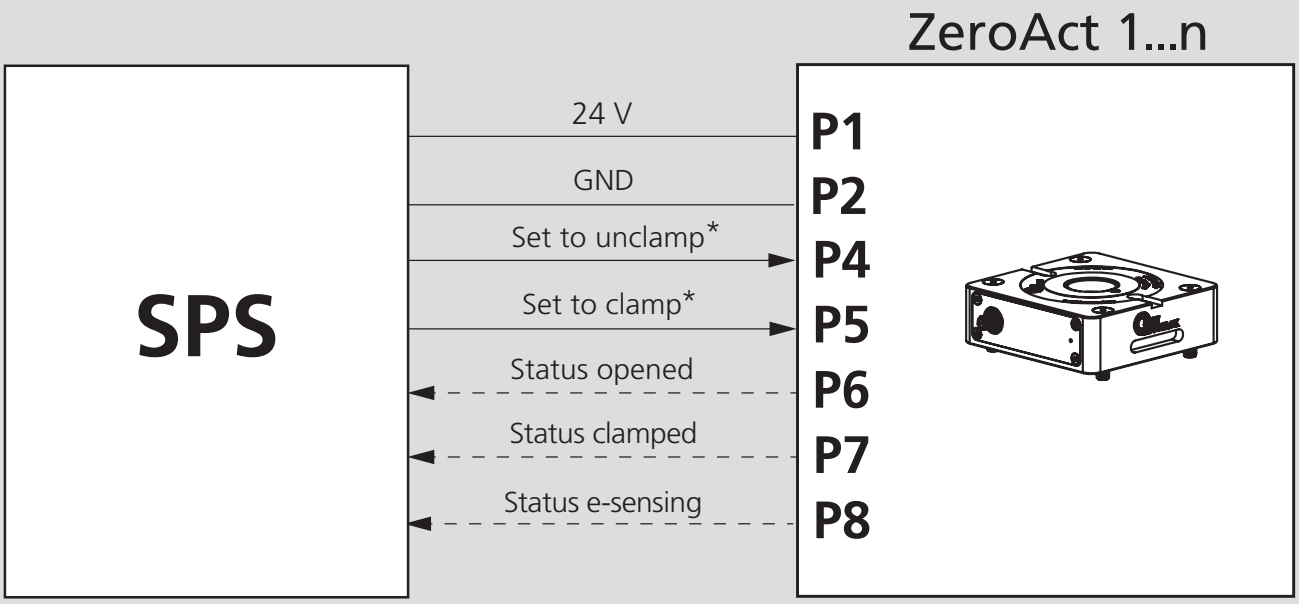
4 x M10 Mounting srew





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

SMW-AUTOBLOK Type		ZeroAct *e-motion*
Id. No.		**467090**
Pull-down force	kN	15
Repeatability	mm	< 0.005
Holding force clamping pin M10	kN	35
Holding force clamping pin M12	kN	50
Holding force clamping pin M16	kN	75
Weight	kg	7
Current consumption / voltage		2A
Pin 1		+ 24 VDC (2A)
Pin 2		GND
Pin 3		n.c.
Pin 4		Set to unclamp
Pin 5		Set to clamp
Pin 6		Status opened
Pin 7		Satus clamped
Pin 8		Satus e-sensing

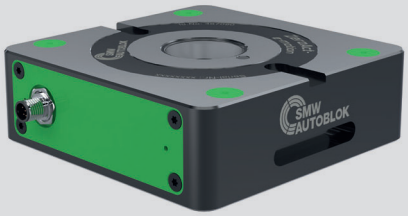


* Control unit 24 V

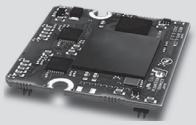
Overview signals

Pin	P6	P7	P8
ZeroAct opened	24 V	-	-
ZeroAct closed	-	24 V	-
ZeroAct in clamping movement / process	-	-	-
Not permitted	24 V	24 V	-
e-sensing (inductive workpiece detection)	-	-	24 V

Plug & Play



Zero Act *e-motion*



Integrated control

Type A | Type B | Type C

Application/customer benefits

- Fixing and positioning on the ZeroAct *e-motion* clamping systems
- Wear resistant due to extra hard protective coating
- Large infeed radii for easy and safe loading

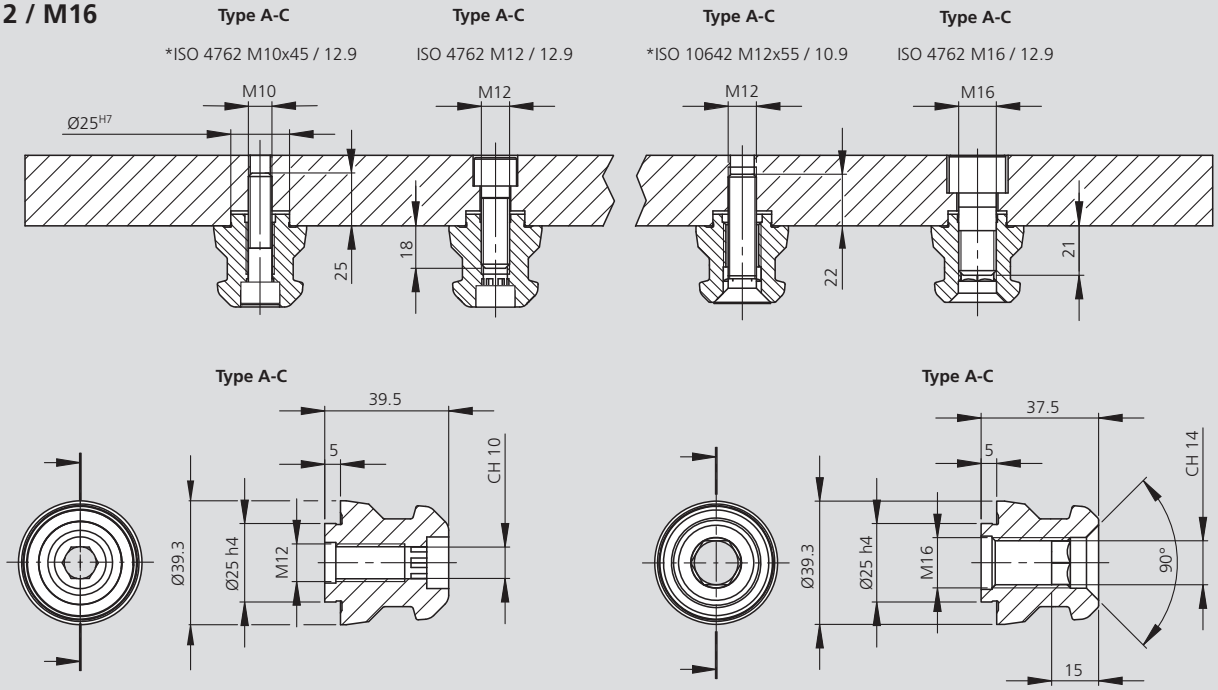
Technical features

- Centering bolt type A (standard)
- Sword bolt type B (positioning pin)
- Clamping bolt type C (with centering clearance 0.1 mm)

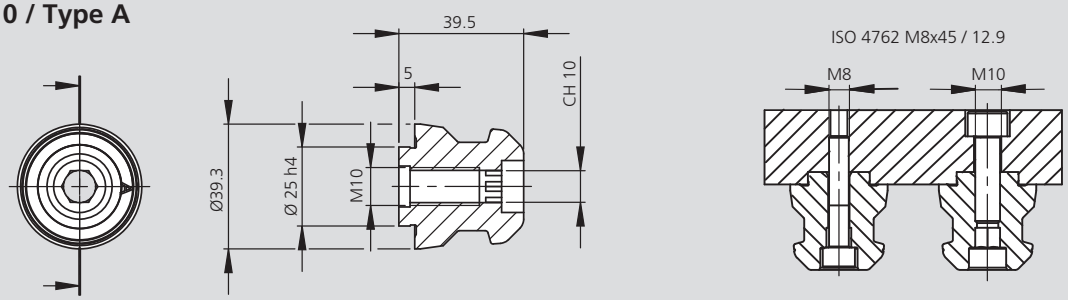
Scope of delivery

Clamping bolt with fixing screw

M12 / M16



M10 / Type A



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

Order numbers

Type	Thread	Type A Id. No.	Type B Id. No.	Type C Id. No.	Weight [kg]
Clamping bolt ZeroAct *e-motion*	M10 / 12.9	467008	on request	-	0.3
Clamping bolt ZeroAct *e-motion*	M12 / 12.9	46162355	on request	46162357	0.3
Clamping bolt ZeroAct *e-motion*	M16 / 12.9	46162455	on request	46162457	0.3

SLX *digit*

Hydraulic long-stroke vise

- Digitized through integrated sensor technology
- Automated quick jaw change
- Self-centering clamping

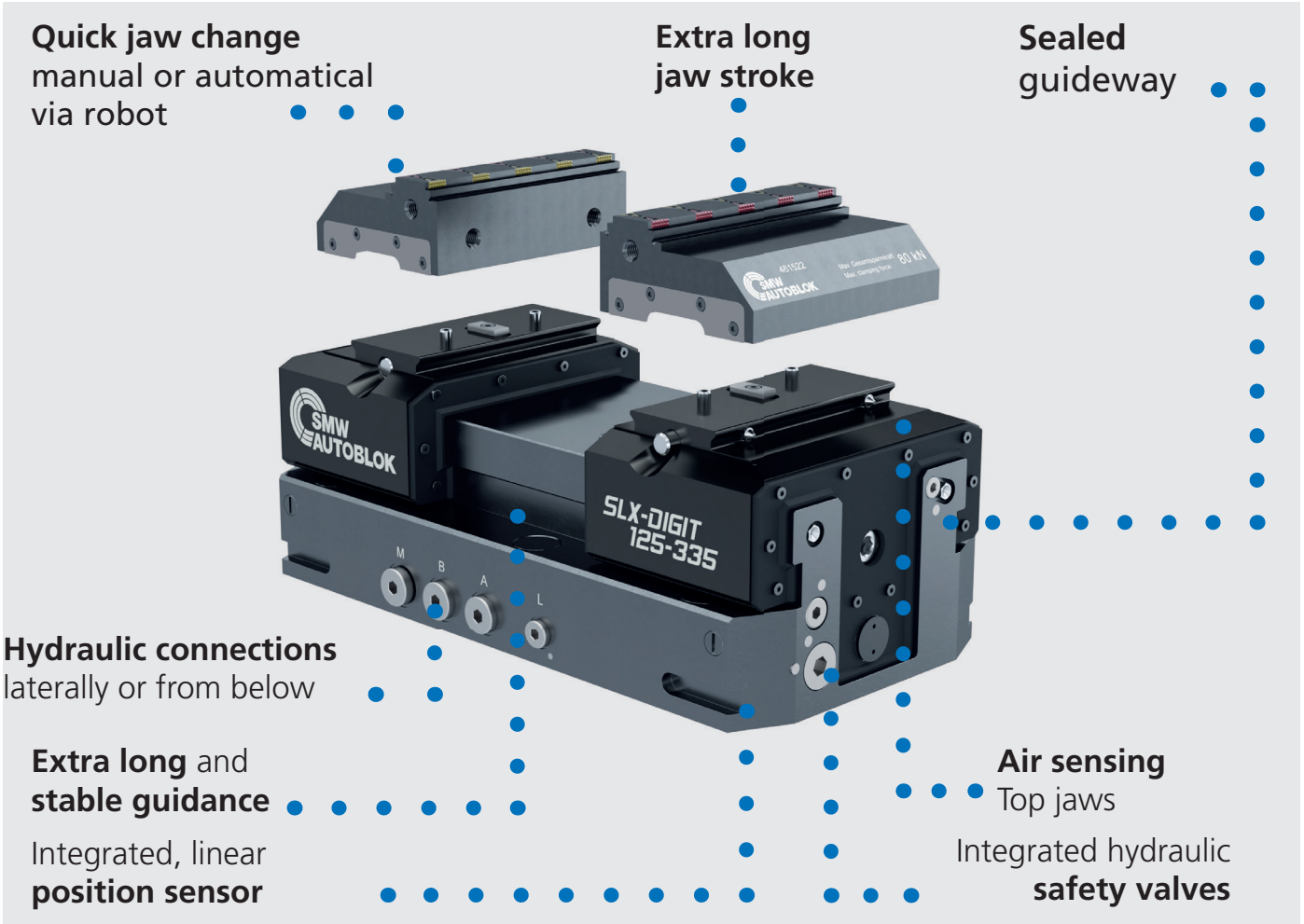
Application/customer benefits

- Integrated sensor technology: Measuring system for jaw position
- Quick jaw change for shortest changeover times, also automatically via robot
- High clamping force for high cutting performance
- Extra long clamping stroke for maximum flexibility
- Integrated safety valves to maintain clamping force in case of pressure drop
- Connection for pressure monitoring
- Hydraulic connection laterally or from below through the connecting plate for highest flexibility

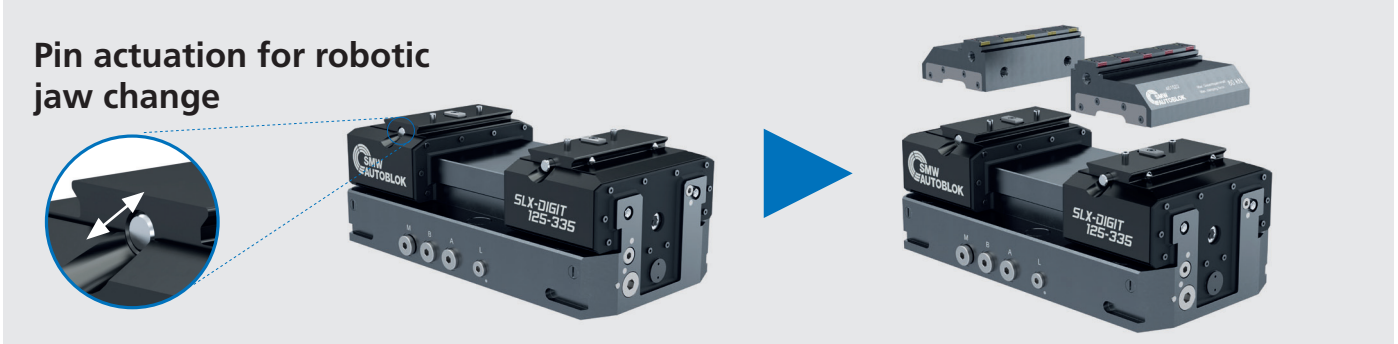
Technical features

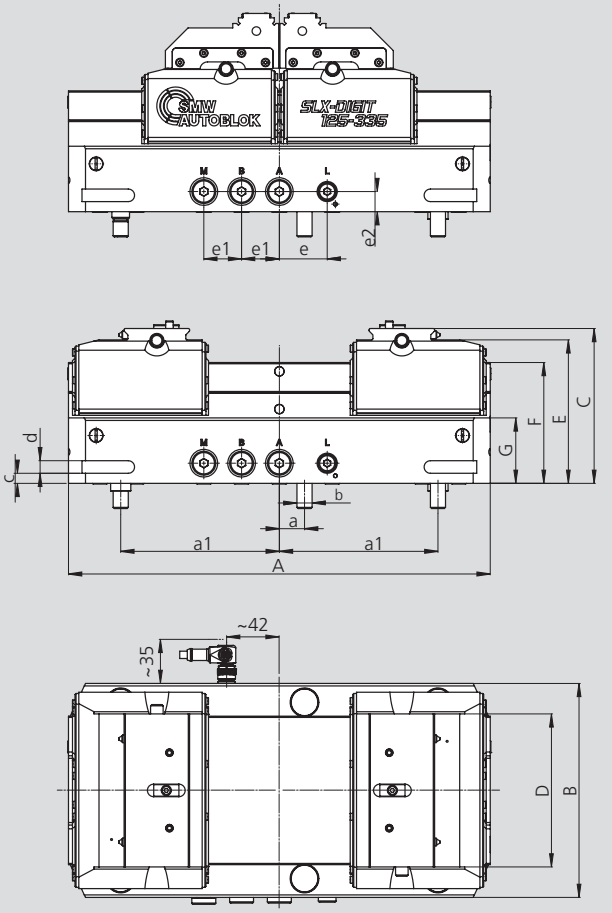
- Hydraulic actuation max. 250 bar
- Clamping force max. 75 kN
- Jaw stroke 55 mm (per jaw)
- Only suitable for O.D. clamping
- **proofline® =** fully sealed - low maintenance

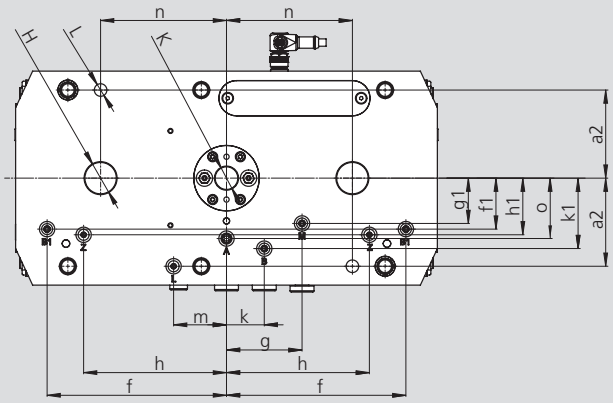
SLX *digit*



Quick jaw change / automated by robot







Connection	
A	Open
B	Clamping
B1	Clamping with non-return valve
L	Air sensing top jaw
M	Connection for pressure monitoring
Z	Control connection non-return valve

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

SMW-AUTOBLOK Type SLX *digit*			125-335
Length	**A**	mm	335
	B	mm	170
	C	mm	123
Jaw width	**D**	mm	121.6
	E	mm	114
	F	mm	96
	G	mm	52
Fit	**H**	mm	Ø25^{H7} x 5.5
Fit	**K**	mm	Ø18^{H7} x 5.5
	L	mm	Ø10^{H7} x 12
Mounting hole	**a / a1 / a2**	mm	20 / 126 / 70
	b	mm	6 x M12
	c	mm	8
	d	mm	10
	e / e1 / e2	mm	38 / 30 / 16
	f / f1	mm	142.5 / 40.5
	g / g1	mm	60 / 36
	h / h1	mm	113.5 / 45
	k / k1	mm	30 / 56
	m	mm	42
	n	mm	100
	o	mm	48
Max. clamping force at 250 bar		kN	75
Max. operating pressure		bar	250
Stroke per jaw		mm	55
Weight		kg	35.5

Type	Output signal	Id. No. Standard actuation	Id. No. External stop valve actuation
SLX digit connection sideways	0 - 10 V	461750	461745
SLX digit connection sideways	4 - 20 mA	461751	461746
SLX digit connection below	0 - 10 V	461752	461747
SLX digit connection below	4 - 20 mA	461753	461748
SLX digit without position monitoring	-	461754	461749

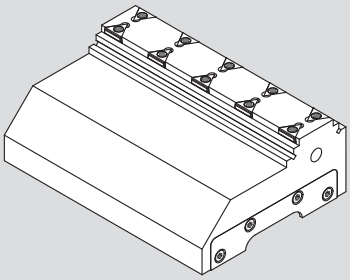
SLX *digit*

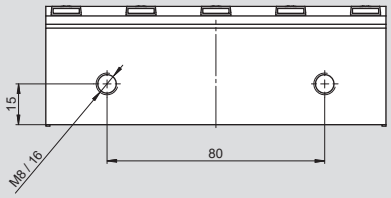
Hydraulic long-stroke vise

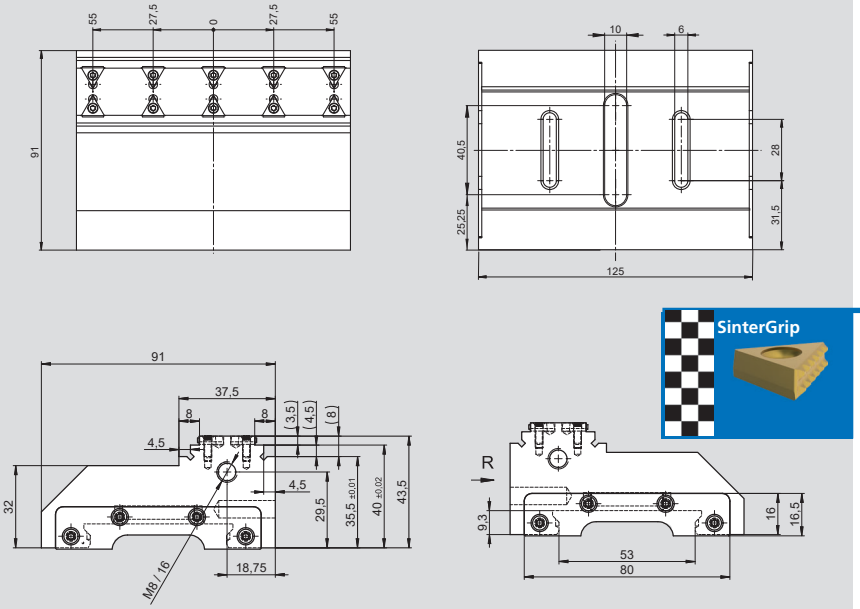
Accessories

- Top jaws
- Connecting cables LPS 4.0

SLX-125-335
Top jaw SinterGrip

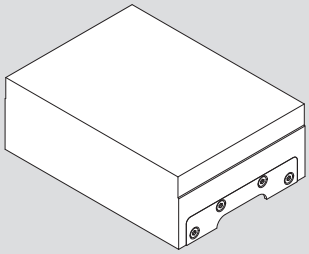


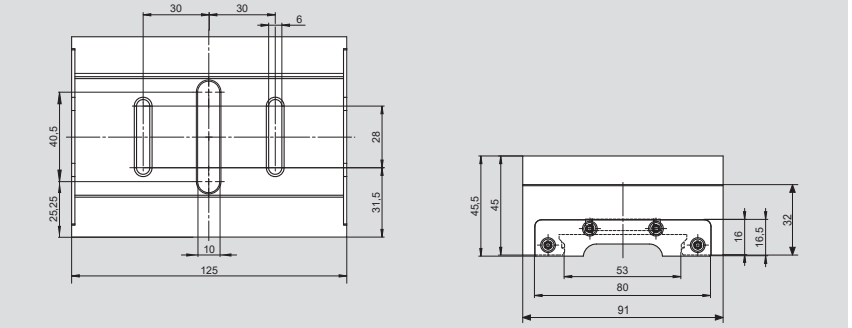




Type	Id. No.	max. total clamping force	Clamping range A / B with SinterGrip	Clamping range A / B smooth
SLX-125-335	461521	75 kN	14,5-223,5 / 123-232 mm	9-118 / 116-225 mm

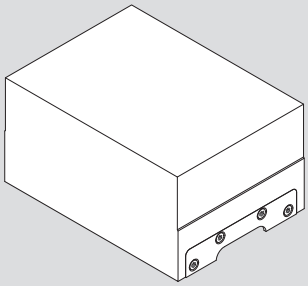
SLX-125-335-H45
Soft top jaw

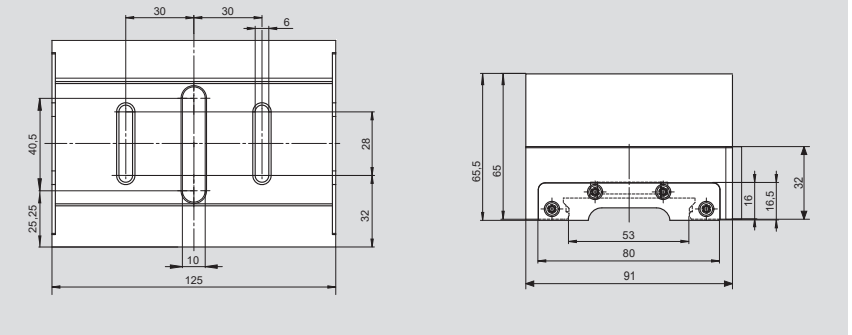




Type	Id. No.	max. total clamping force	min. jaw height	Weight
SLX-125-335-H45	461523	75 kN	32 mm	3,5 kg

SLX-125-335-H65
Soft top jaw high



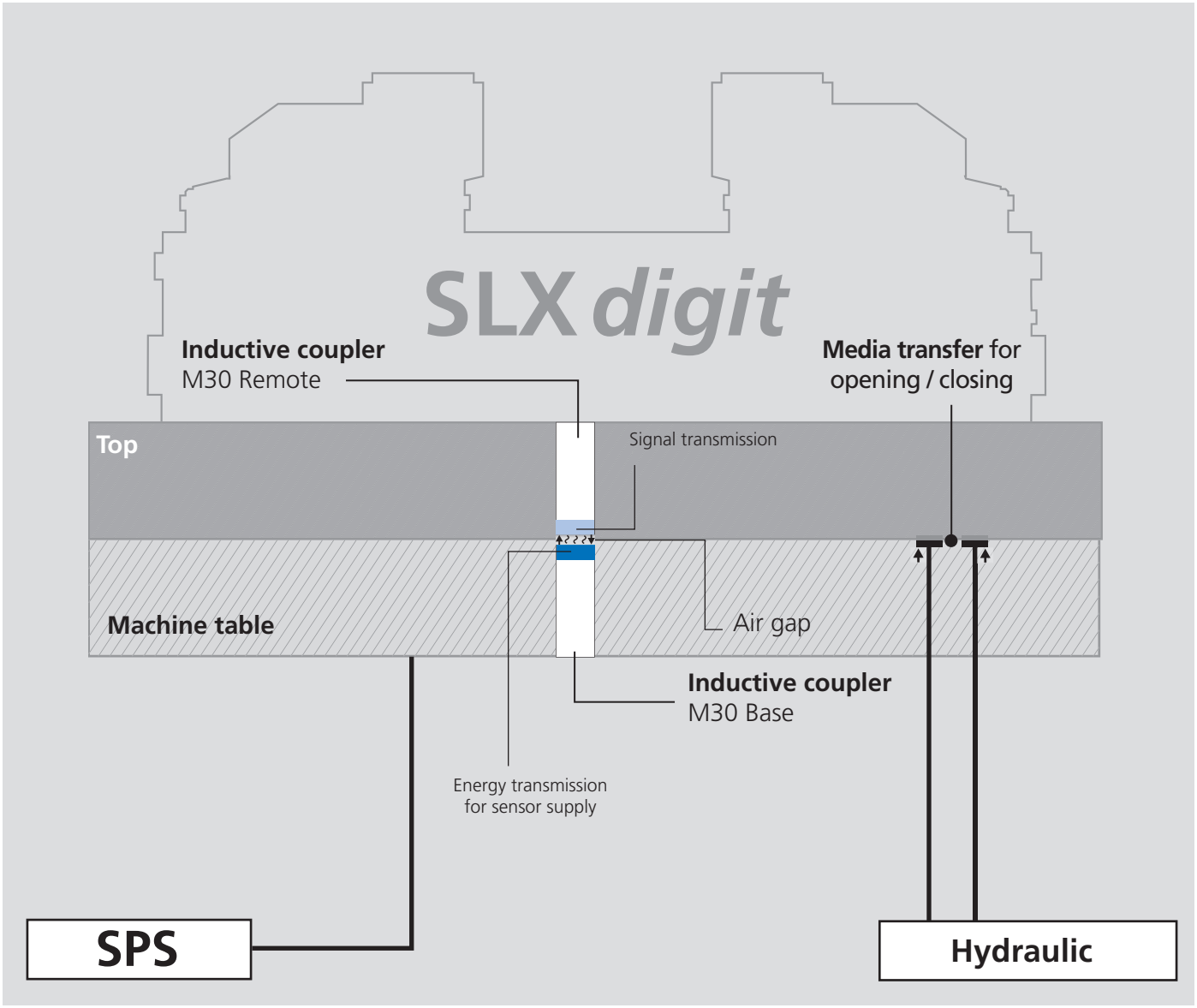


Type	Id. No.	max. total clamping force	min. jaw height	Weight
SLX-125-335-H65	461525	75 kN	32 mm	5,2 kg

Cable* for LPS 4.0 80 IO	Length	Id. No.
Connecting cable with straight plug M12 x 1 5-pole	5 m 10 m 15 m	208244 208245 208246
Connecting cable with angled M12 x 1 5-pole	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.

Integration example with inductive coupling system



Inductive coupling system:
further information at www.smw-electronics.de

SLX e-motion

Mechatronic long-stroke vise

- Monitoring of the jaw position / clamping force
- Mechanical maintenance of clamping force in case of power failure
- High-Low clamping

proofline® series
fully sealed – low maintenance

Application/customer benefits

- Mechatronic clamping drive with maintenance of clamping force due to self-locking, spring pack and engine brake
- High total clamping force* up to 40 kN for high cutting performance
- Extra long jaw stroke, 99 mm per jaw
- Monitoring of the clamping force and jaw position
- High-Low clamping possible
- Side / bottom connections for power and sensors

Technical features

- Total clamping force* max. 40 kN, Close / Open
- Jaw stroke 99 mm - repeatability ± 0.02 mm
- Self centering clamping (only O.D. clamping)
- Jaw width 160 mm
- Power supply 48 V / 10 A
- Communication interface Profinet
- 2 STO Signals
- **proofline® =** fully sealed - low maintenance

* Arithmetic total of all moving clamping

SLX *e-motion*

Self centering function via mechanical synchronisation

Monitoring of the clamping force and jaw position

Sealed jaw guideway

Extra long **jaw stroke**

Mechanical maintenance of clamping force in case of power failure

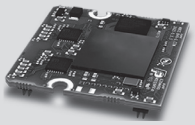
M23 hybrid plug
Power 48 V / 10 A
Profinet

LED for status

Plug & Play

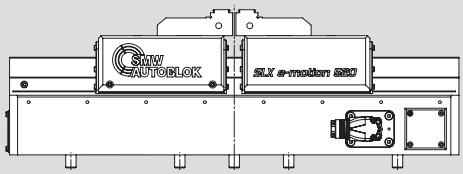
SLX e-*motion*

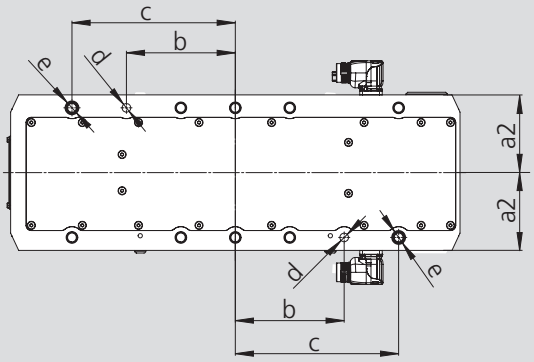
+

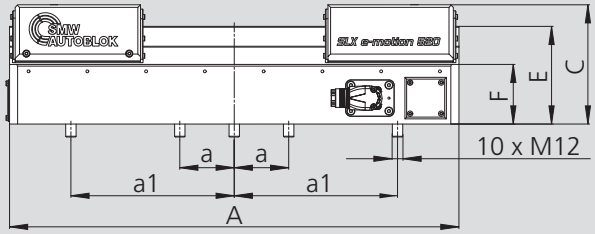


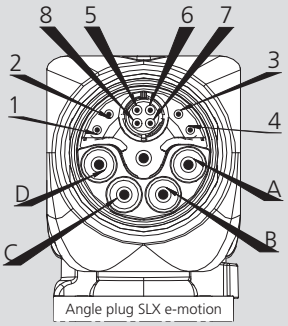
Integrated control

Dimension and technical data

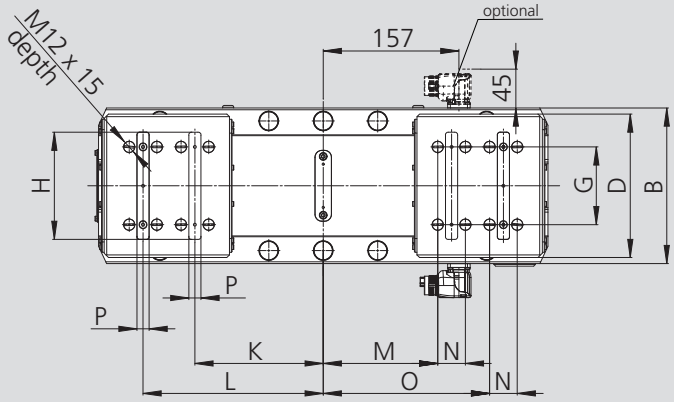








Angle plug SLX e-motion

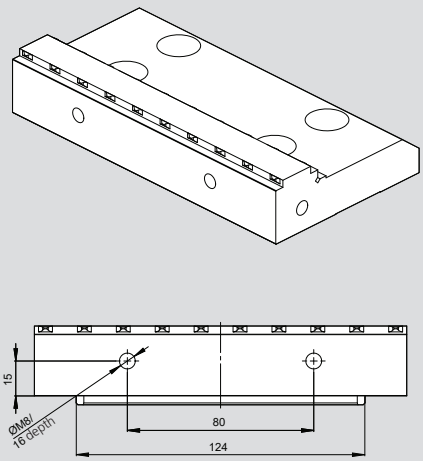


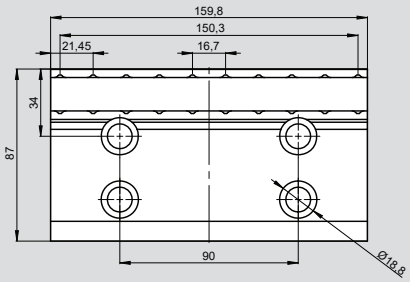
PIN assignment M23 hybrid plug			
PIN	**Core Color**	**Function**	**Description**
A	black 1	24 V	Logic Power
B	black 2	GND	Logic GND
C	black 3	48 V	Last Power
D	black 4	GND	Last GND
PE	green / yellow	Ground	Ground wire
1	violett	STO A	Safe hold A
2	brown	STO B	Safe hold B
3	green	STO GND	Safe hold GND
4	black 5	Nc	-
5	blue	Data RX-	ProfiNet
6	yellow	Data TX+	ProfiNet
7	white	Data RX+	ProfiNet
8	orange	Data TX-	ProfiNet

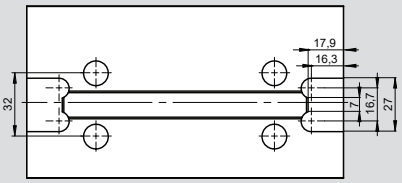
Subject to technical changes.
For more detailed information please ask our customer service.

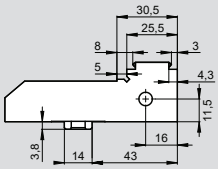
SMW-AUTOBLOK Type			**SLX *e-motion* 520**
Id.-No.			**461600**
Length	**A**	mm	520
	B	mm	180
	C	mm	138
Jaw width	**D**	mm	166
	E	mm	113
	F	mm	69
	G	mm	90
	H	mm	124
Min. / Max.	**K**	mm	49.5 / 148.5
Min. / Max.	**L**	mm	109.5 / 208.5
Min. / Max.	**M**	mm	33.5 / 132.5
	N	mm	32
Min. / Max.	**O**	mm	93.5 / 192.5
	P	mm	14 H^7 / 4 tief
	a / a1 / a2	mm	63 / 189 / 75
	b	mm	126 ±0.02
	c	mm	189 ±0.02
	d	mm	Ø10 H^7
	e	mm	Ø16 H^7
	-	mm	-
Max. clamping force		kN	40
Stroke per jaw		mm	99
Max. workpiece weight		kg	400
Mass		kg	70
Voltage		V	48
Power		A	10
Protection class		IP	67

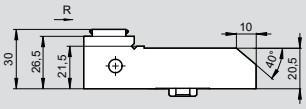
Hardened top jaw











*1 Set = 2 pieces

Type	Id. No.	max. total clamping force	min. jaw height	Weight
SLX-520 e-motion	461640	40 kN	20,5 mm	2,5 kg

Notes

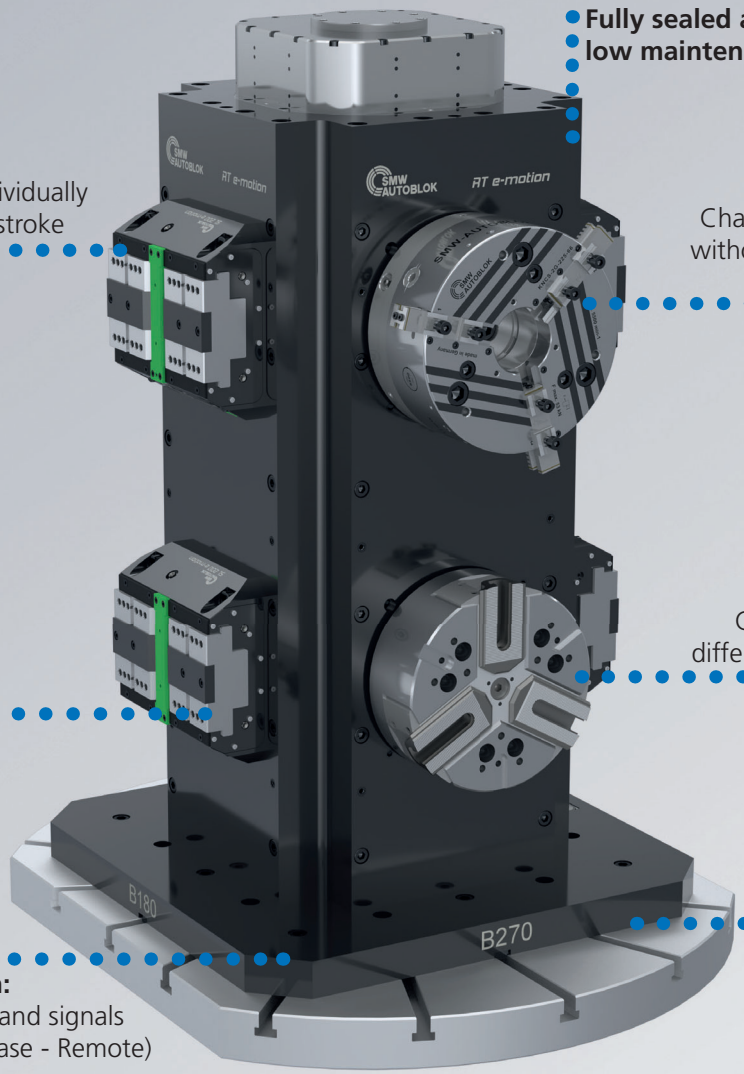
RT e-motion

Mechatronic tombstone with 8 integrated drives

Fully sealed and low maintenance

Flexible:
Each clamping device individually controllable in force and stroke

Sensitive clamping:
Change of clamping force without unclamping of the workpiece



Universal:
Can be equipped with different clamping devices

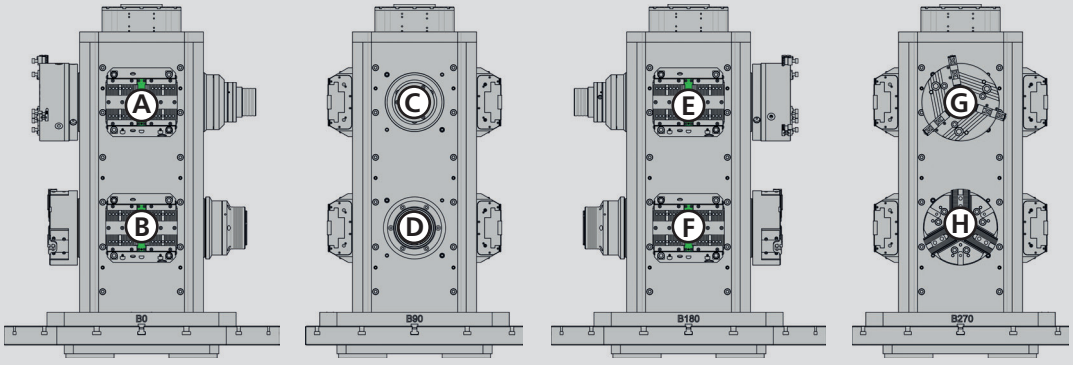
Energy efficient:
Energy only needed while operating the clamping device

Plug & Play:
Easy set up

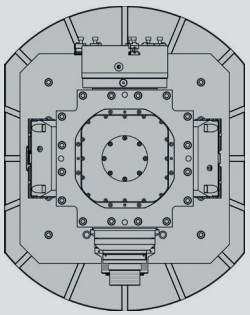
Wireless transmission:
Transmission of energy and signals by inductive Coupler (Base - Remote)

Arrangement of actuating drives

Per clamping station - one actuating drive



View from top



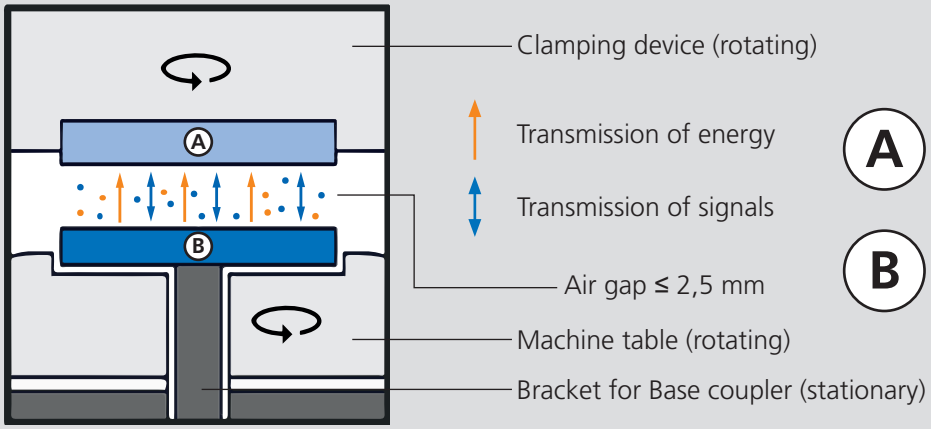
Example:
4-sided RT e-motion

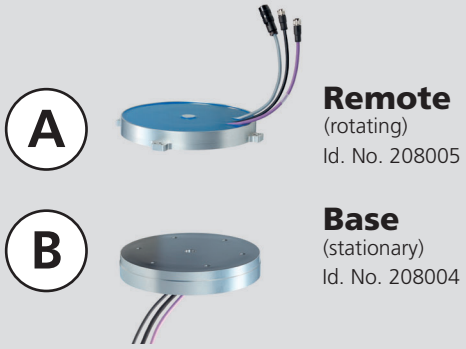
A)	Clamping device 1	**E)**	Clamping device 5
B)	Clamping device 2	**F)**	Clamping device 6
C)	Clamping device 3	**G)**	Clamping device 7
D)	Clamping device 4	**H)**	Clamping device 8

Each clamping device with own electromechanical drive. All clamping devices are individually configurable.

Function of the inductive coupler

Inductive transmission of energy and signals





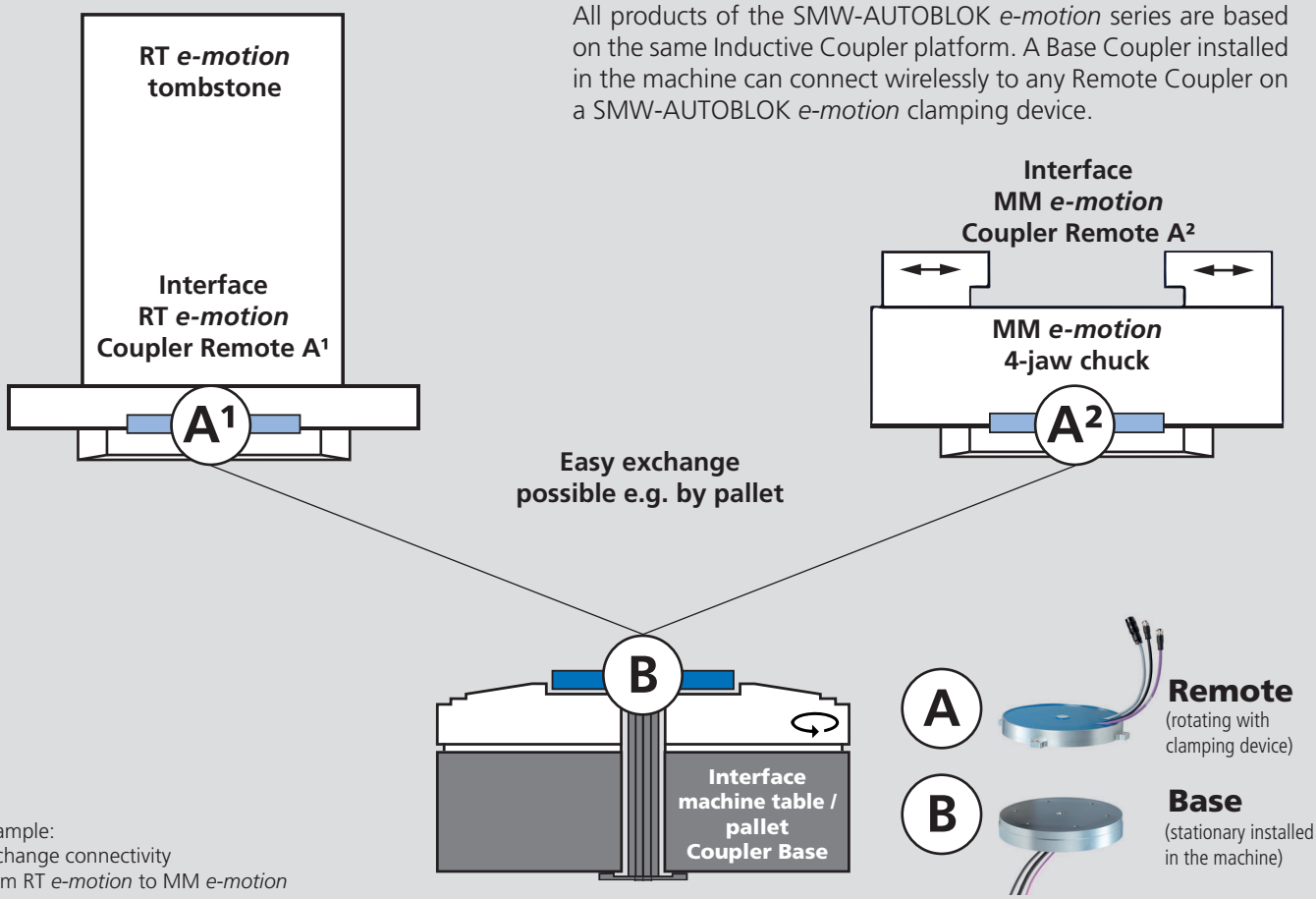
Remote
(rotating)
Id. No. 208005

Base
(stationary)
Id. No. 208004

Exchange connectivity

Exchange within SMW-AUTOBLOK *e-motion* series possible

All products of the SMW-AUTOBLOK *e-motion* series are based on the same Inductive Coupler platform. A Base Coupler installed in the machine can connect wirelessly to any Remote Coupler on a SMW-AUTOBLOK *e-motion* clamping device.



Remote
(rotating with clamping device)

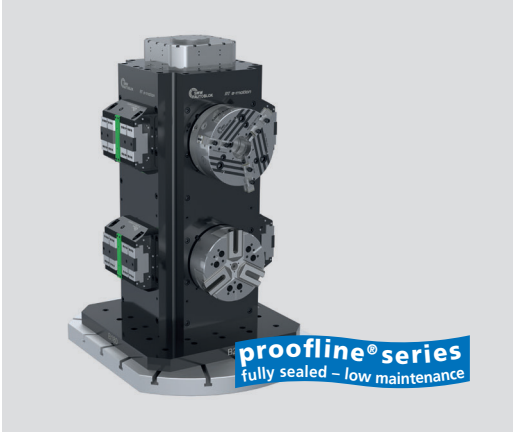
Base
(stationary installed in the machine)

Example:
Exchange connectivity
from RT *e-motion* to MM *e-motion*

RT *e-motion*

Mechatronic tombstone

- **Each clamping device can be controlled individually**
- **Contact free transmission of energy and data**



Application/customer benefits

- Each clamping device can be controlled individually
- Contact free transmission of energy and signals via inductive Coupler system
- Clamping stations can be equipped individually
- Permanent monitoring of the clamping force and clamping positions
- Various strokes and forces individually programmable
- Plug & Play

Technical data

- Sensitive clamping / change of the clamping force without unclamping the workpiece
- Max. operating force for each clamping device 35 kN
- Axial stroke for each clamping device 21 mm
- **proofline®** = fully sealed – low maintenance

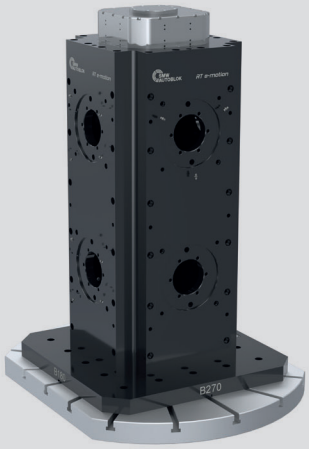
Standard equipment

RT *e-motion* tombstone incl. actuating drives without clamping device

Occupancy options of the clamping stations

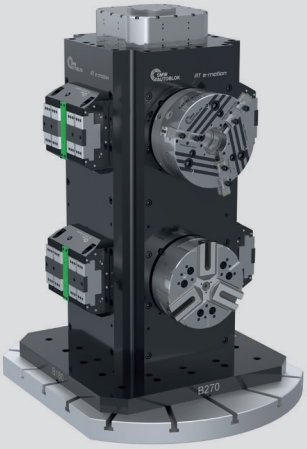
RT *e-motion*:

Display of tombstone incl. actuating drives without clamping devices.



RT *e-motion* with clamping devices:

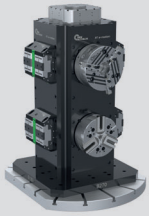
Display of RT *e-motion* incl. actuating drives with clamping devices.



Different clamping devices RT *e-motion*:

- Power vises
- Power chucks
- Pull-down chucks
- Compensating chucks
- Quick jaw change power chucks
- 6-jaw chucks
- Collet chucks
- Grippers
- Mandrels

Plug & Play



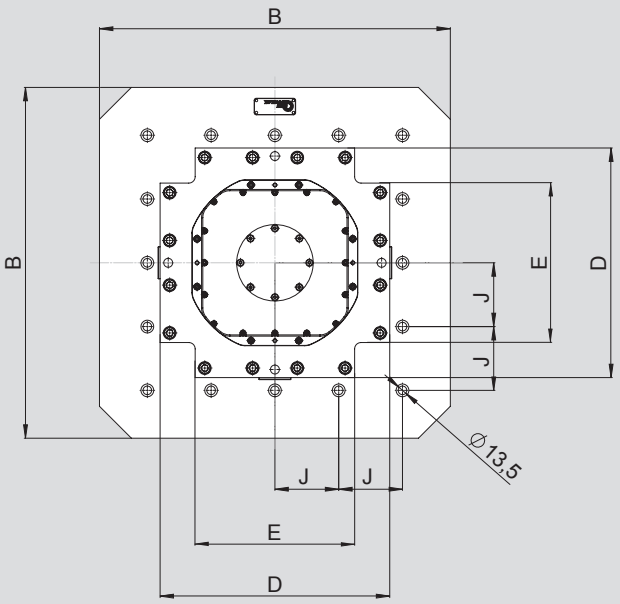
RT *e-motion* tombstone

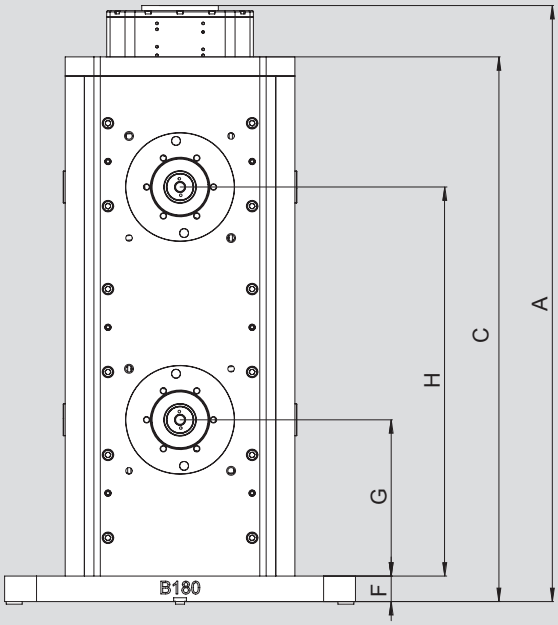
F280 Inductive couple (Base / Remote)

AC-MM controller (2 pcs. needed)

PLC software module Input mask

HMI Operating screen





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

SMW-AUTOBLOK Type			RT *e-motion*
Id No.			**463080**
Height	**A**	mm	934.5
Width	**B**	mm	550
Height tombstone	**C**	mm	854
Total width of clamping station	**D**	mm	360
Support width of clamping station	**E**	mm	250
Height baseplate	**F**	mm	40
Clamping station	**G**	mm	245
Clamping station	**H**	mm	610
Position mounting holes	**J**	mm	100
Max. actuation force		kN	35
Max. effective axial actuation stroke		mm	21
Number of clamping stations		pcs.	8
Weight (without clamping devices)		kg	485

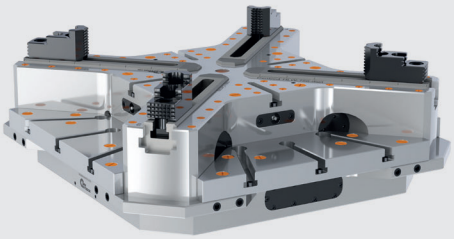
Customized designs on request.

Centco4 *digit*-HLW

INCH
SERRATION

Hydraulic 4-jaw power chuck

■ **Digitized by integrated sensor technology**



proofline® series
fully sealed – low maintenance

Application/customer benefits

- Chuck with integrated sensoric technology
- Monitoring of different process parameters even during machining
- Non-contact power supply for sensors and signal output by means of inductive couplers
- Integrated hydraulic actuation with safety system

Technical data

- Clamping force 130 kN
- Max. Operating pressure 80 bar
- Jaw stroke 12 mm
- **proofline®** = fully sealed – low maintenance

Standard equipment

4-jaw chuck

Ordering example

4-jaw chuck
Centco4 *digit*-HLW

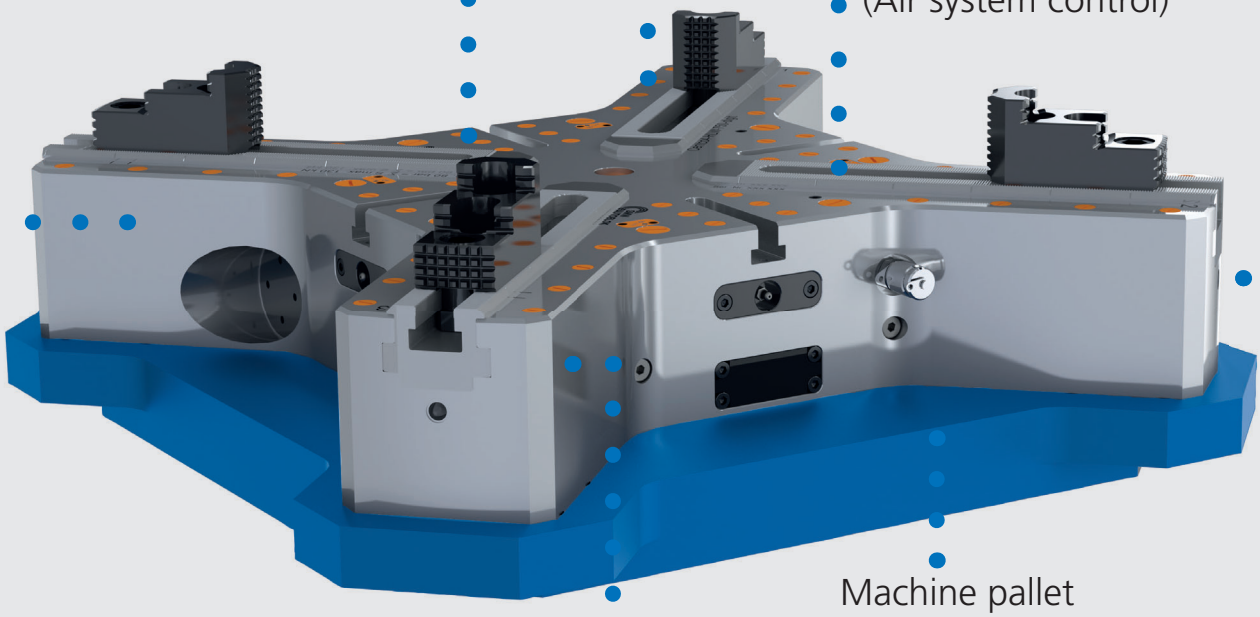
Centco4 *digit*-HLW

Safety features:
Integrated sensoric
- Pressure monitoring (optional Profinet Safe)
- Position monitoring
- End position monitoring

Mechanical interlock (optional)

4 x IO-Link Interfaces

4 x Air Sensing
(Air system control)



Integrated pressure accumulator
to maintain the clamping force

Machine pallet
customized

Weight optimized
chuck body

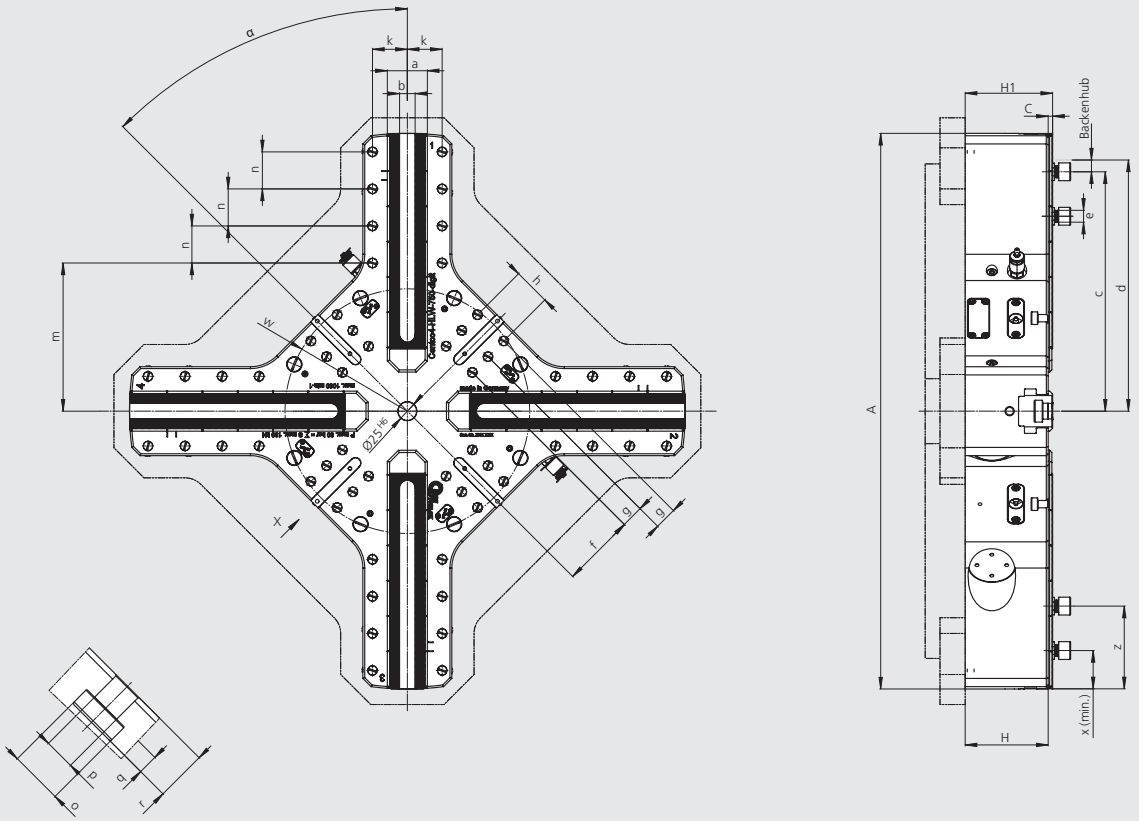
Low profile design
thanks to innovative
tangential piston technology

Hydraulic 4-jaw power chuck

■ Dimension and technical data

Centco4 *digit*-HLW

INCH
SERRATION



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

SMW-AUTOBLOK Typ Centco4 *digit*-HLW			750-4
Id.-No.			**On request**
Outside diameter	**A**	mm	750
Base plate height	**B**	mm	
	C	mm	6
Chuck height	**H**	mm	112
	H1	mm	118
Jaw width	**a**	mm	54
Slot width	**b** H8	mm	21
Jaw position min.	**c**	mm	363
Jaw position max.	**d**	mm	375
Bolt ISO4762-12.9	**e**	mm	M16
	f	mm	99
	g	mm	2 x 30
	h	mm	50
	k	mm	47
	m	mm	200
	n	mm	3 x 50
T-slot width	**o**	mm	24
T-slot width	**p**	mm	14
Height of width **o**	**q**	mm	9
Total depth T-slot	**r**	mm	23
	s/s¹	mm	
	t/t¹	mm	
	u/u¹	mm	
	w	mm	330.2
Min.	**x**	mm	12.5
Min. / max.	**z**	mm	25 / 245
	α	deg.	45°
	β	deg.	
	γ	deg.	
Serration		inch	1/16"x 90°
Max. speed		min^{-1}	1000
Max. total clamping force		kN	130
Stroke per jaw		mm	12
Compensation stroke per jaw		mm	10
Weight (without jaws)		kg	Customized
Moment of inertia		$kg{\cdot}m^2$	Customized

Centco4 *digit*-HLW

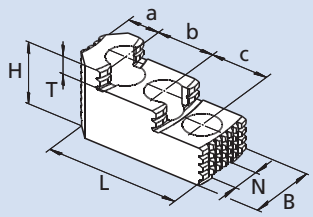
INCH
SERRATION

Accessories

■ Jaws*

MHB-D (INCH SERRATION)

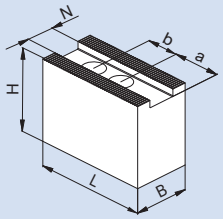
Hard, reversible stepped
Top jaws



Centco4 *digit*-HLW	750-4
Jaw type	MHB-D 251
Id. No.	12083038
Serration	1/16" x 90°
B	45
H	56
L	106.2
T	13.5
N	21
a	26
b	30
c	30
kg / set	2.9

MWB-D (INCH SERRATION)

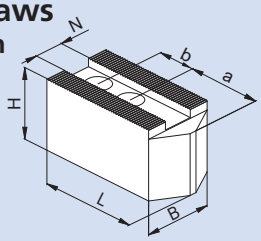
Soft top jaws
Tall version



Centco4 *digit*-HLW	750-4
Jaw type	MWB-D 250
Id. No.	5319680
Serration	1/16" x 90°
B	50
H	80
L	120
N	21
a	62
b	28
kg / set	9.2

AWB-D (INCH SERRATION)

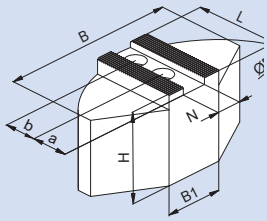
Soft top jaws
Low version



Centco4 *digit*-HLW	750-4
Jaw type	AWB-D 250
Id. No.	5319681
Serration	1/16" x 90°
B	50
H	50
L	120
N	21
a	70
b	28
kg / set	5.4

SBS-D (INCH SERRATION)

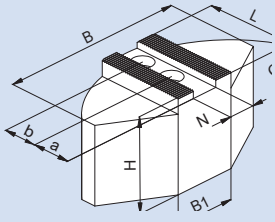
Soft pie jaws



Centco4 *digit*-HLW	750-4
Jaw type	SBS-D 600/4
Id. No.	5322250
Serration	1/16" x 90°
B	330
B1	50
D	190
H	85
L	140
N	21
a	75
b	29
kg / set	56.3

SBA-D (INCH SERRATION)

Soft pie jaws aluminum
Light version

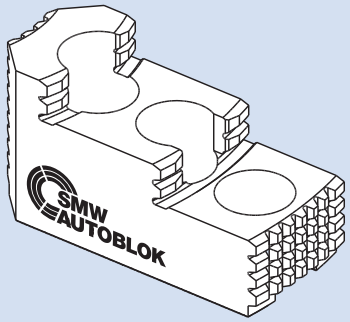


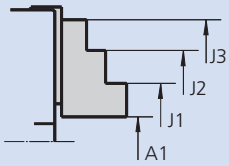
Centco4 digit-HLW	750-4
Jaw type	SBA-D 600/4
Id. No.	5322254
Serration	1/16" x 90°
B	330
B1	50
D	190
H	85
L	140
N	21
a	75
b	29
kg / set	20.1

* SMW-AUTOBLOK is recommending not to clamp any diameters, that are larger than the chuck O.D. For more detailed information please ask our customer service.
SMW-AUTOBLOK Jaws-catalog Request or download: www.smw-autoblok.de

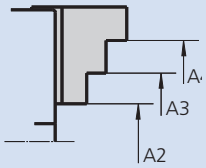
MHB-D (INCH SERRATION)

Hard, reversible stepped
Top jaws





Clamping ranges



Centco4 *digit*-HLW	750-4
Jaw type	MHB-D200
Id. No.	12083038
A1	101-609
A2	-
A3	236-698.5
A4	321-750*
J1	155-662
J2	239-747.5
J3	311-750*

Note: min. 1 mm Residual jaw stroke
min. 1 mm Clamping stroke
* Not larger than chuck OD

Important for maintenance and safe operation, to be ordered with the chuck

Grease K67

Special grease for manual and power chucks

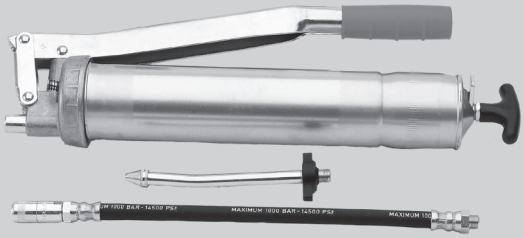
Cartridge 14 Oz. (DIN 1284)
Grease content 500g
Id. No. 10731223

Can 1000 g
Id. No. 10731224

- High adhesion
- High resistance against coolant
- High load bearing capacity
- Low friction coefficient
- Avoids tribocorrosion

Grease gun

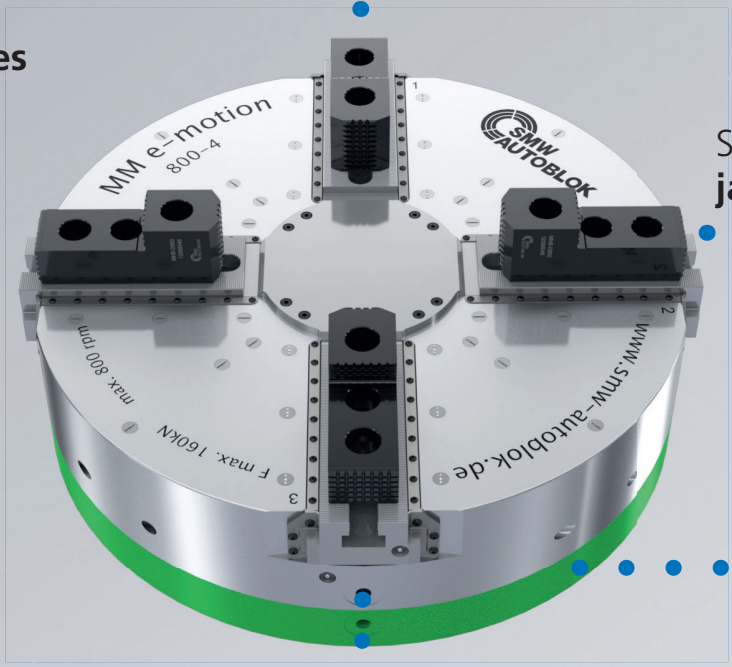
Grease gun (DIN 1283) for cartridges 14 Oz. (DIN 1284)



Lubrication set Id. No. 083726
Supply range
- Grease gun
- 1 Adapter flexible for high pressure grease nipple
- 1 Adapter for cone grease nipple

MM e-motion

4 Mechatronic individual jaw drives



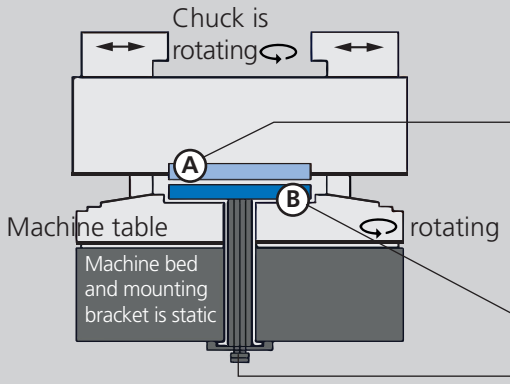
Standard **jaw interface**

Sealed and **low maintenance**

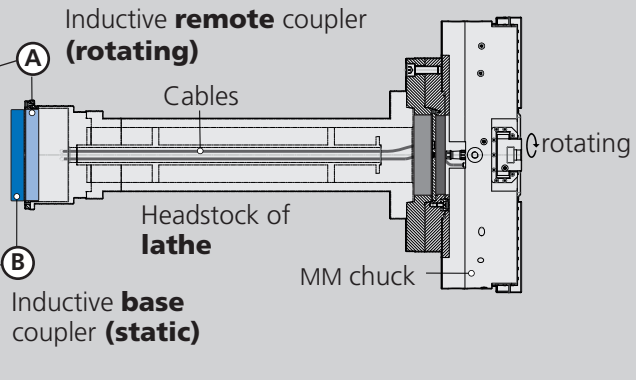
Cable connection to remote coupler

Schematic of chuck and coupler system

Application on vertical millturn center:

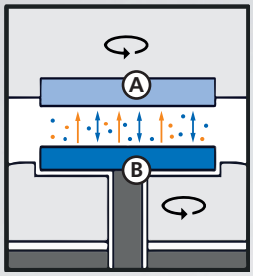


Application on horizontal lathe:



Function of the inductive coupler system

Inductive transmission of energy and data



Power transmission
Transmission of signals
Airgap ≤ 2,5 mm

A

Remote
(rotating)
Id.-Nr. 208005

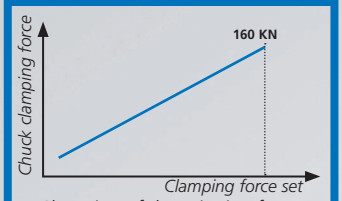
B

Base
(static)
Id.-Nr. 208004

Benefits to the user

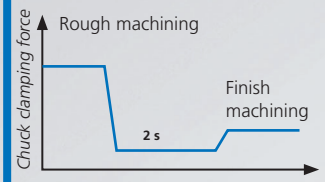
- For deformation-sensitive and high-precision workpieces
- For a wide range of workpiece geometries
- Clamping repeatability < 5 µm

Sensitive clamping



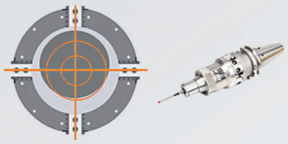
- Changing of the gripping force without unclamping the part
- Each jaw driven and controllable via e-motor

High-Low claming



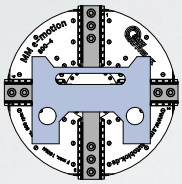
- Clamping force increase or -reduction in tensioned state possible

Automatic adjustment



- MM800 can center the part automatically by using touch probe

Clamping profiles

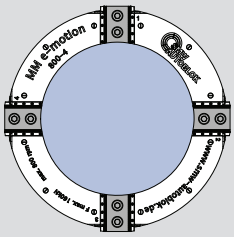


- Different wall thickness
- Special geometrical forms
- I.D. and O.D. clamping

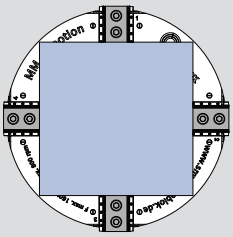
Motion profiles

Clamping of different work piece geometries

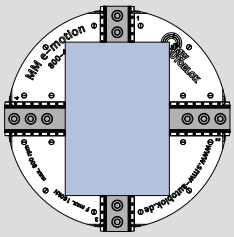
Round



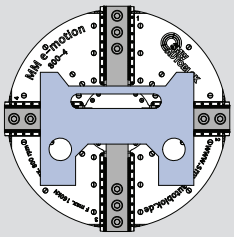
Square



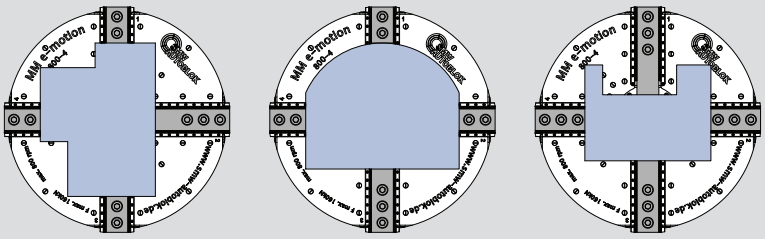
Rectangular



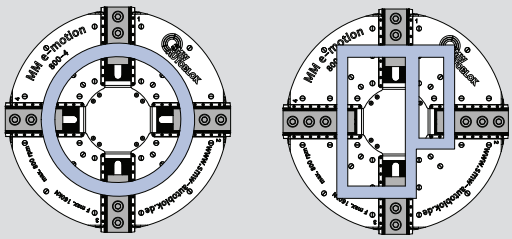
Work pieces with different wall thicknesses



Irregular geometry

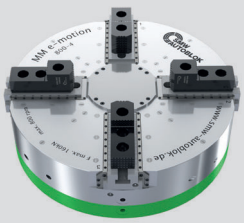


Easy deformed work pieces



Plug & Play

Full solution MM e-*motion*



MM 800 *e-motion*
Chuck

+

F280 Inductive coupler system
(Base / Remote)

+

AC-MM control
(2 pcs.)

+

PLC software module
Input mask

+

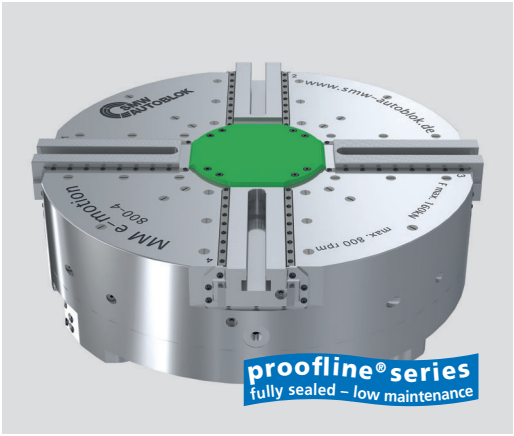
HMI Operating screen

MM *e-motion*

INCH SERRATATION

Mechatronic power chuck

- **Mechatronic single jaw drive**
- **Automatic correction function**



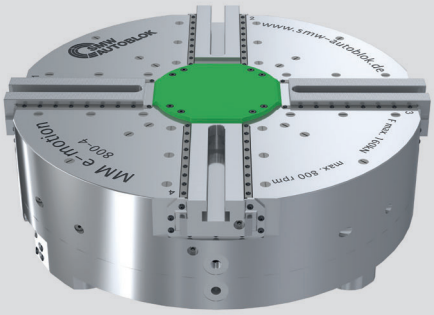
Application/customer benefits

- Mechatronic single jaw drive
- Precise clamping force adjustment
- High-Low clamping possible
- Auto correction of the workpiece center
- Contact free transmission of power and signals via inductive coupler system
- *e-sensing*: inductive component detection / distance measurement (optional)
- Plug & Play

Technical features

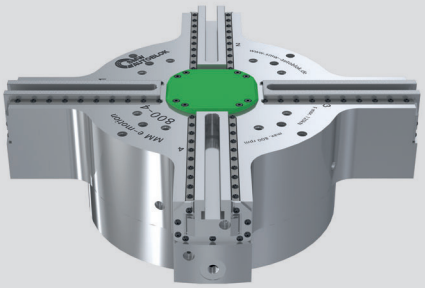
- O.D. and I.D. clamping
- Programmable movement profiles of the jaws
- 2-fold safety system (STO and mechanical)
- Clamping repeatability < 5 µm
- **proofline®** = fully sealed - low maintenance

MM *e-motion*



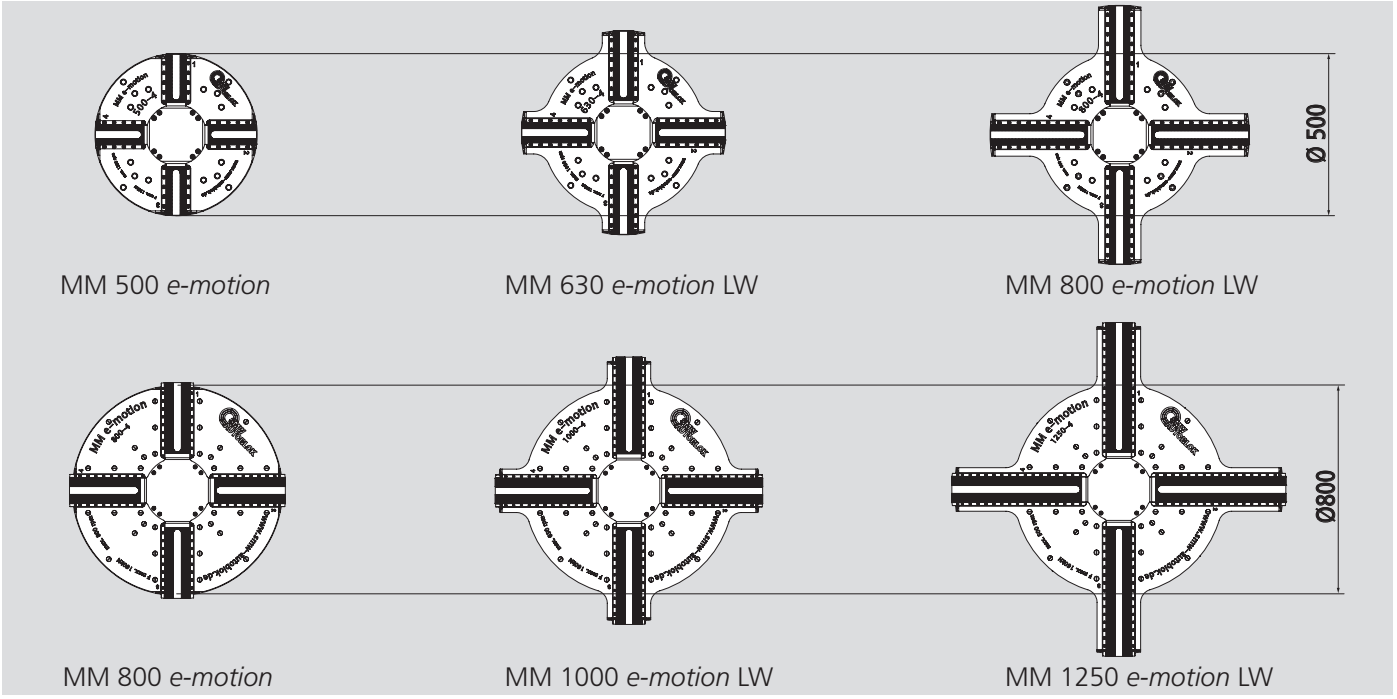
- Each jaw is operated and controlled via an individual electro motor
- Inductive wireless transmission of power and sensor system
- Auto correction of the work piece center
- Permanent monitoring of grip force and clamping position also under rotation
- Fully sealed, low maintenance

MM *e-motion* LightWeight



- MM *e-motion* LigthWeight (LW): weight optimized version
- Same functionality as MM *e-motion*
- Less chuck weight allows higher work piece weight
- Lower chuck profile allows more useable Z stroke
- Monoblock chuck body for highest rigidity

Overview of sizes



MM 500 *e-motion*

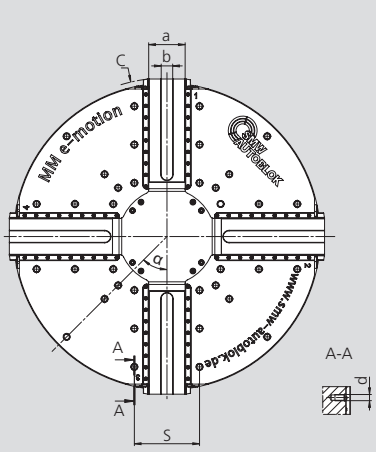
MM 630 *e-motion* LW

MM 800 *e-motion* LW

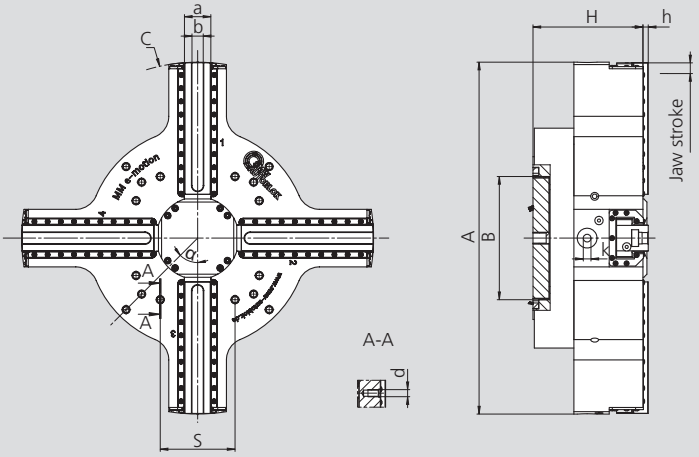
MM 800 *e-motion*

MM 1000 *e-motion* LW

MM 1250 *e-motion* LW



MM *e-motion*



MM *e-motion*
LightWeight (LW)

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

SMW-AUTOBLOK Type			MM 500 *e-motion*	MM 630 *e-motion* LW	MM 800 *e-motion* LW	MM 800 *e-motion*	MM 1000 *e-motion* LW	MM 1250 *e-motion* LW
Id. No.			**055739**			**055270**		
Chuck size	**A**	mm	500	630	800	800	1000	1250
Inductive coupler diameter	**B**	mm	280	280	280	280	280	280
Interference Ø	**C**	mm	500	630	800	828	1028	1278
Chuck height	**H**	mm	250	250	250	326,5	326,5	326,5
	S	mm	180	180	170	170	170	170
	a	mm	55	55	95	95	95	95
	b	mm	21 H7	21 H7	30 H7	30 H7	30 H7	30 H7
	d	mm	M16 (24x)	M16 (24x)	M16 (36x)	M16 (36x)	M16 (36x)	M16 (36x)
	h	mm	12	12	12	12	12	12
	α	deg.	45	45	45	45	45	45
Speed max.		min^{-1}	1200	1000	800	800	650	500
Grip force max.		kN	100	100	100	160	160	160
Jaw stroke per jaw		mm	10	10	10	15	15	15
Moment of inertia		$kg \cdot m^2$	10.7	12.5	19.1	62.5	79.8	110.6
Weight (without top jaws)		kg	282	310	360	770	850	950

CC *e-motion*

INCH
SERRATION

Mechatronic power chuck

- Mechatronic single jaw drive
- Automatic correction function
- Centrifugal force compensation

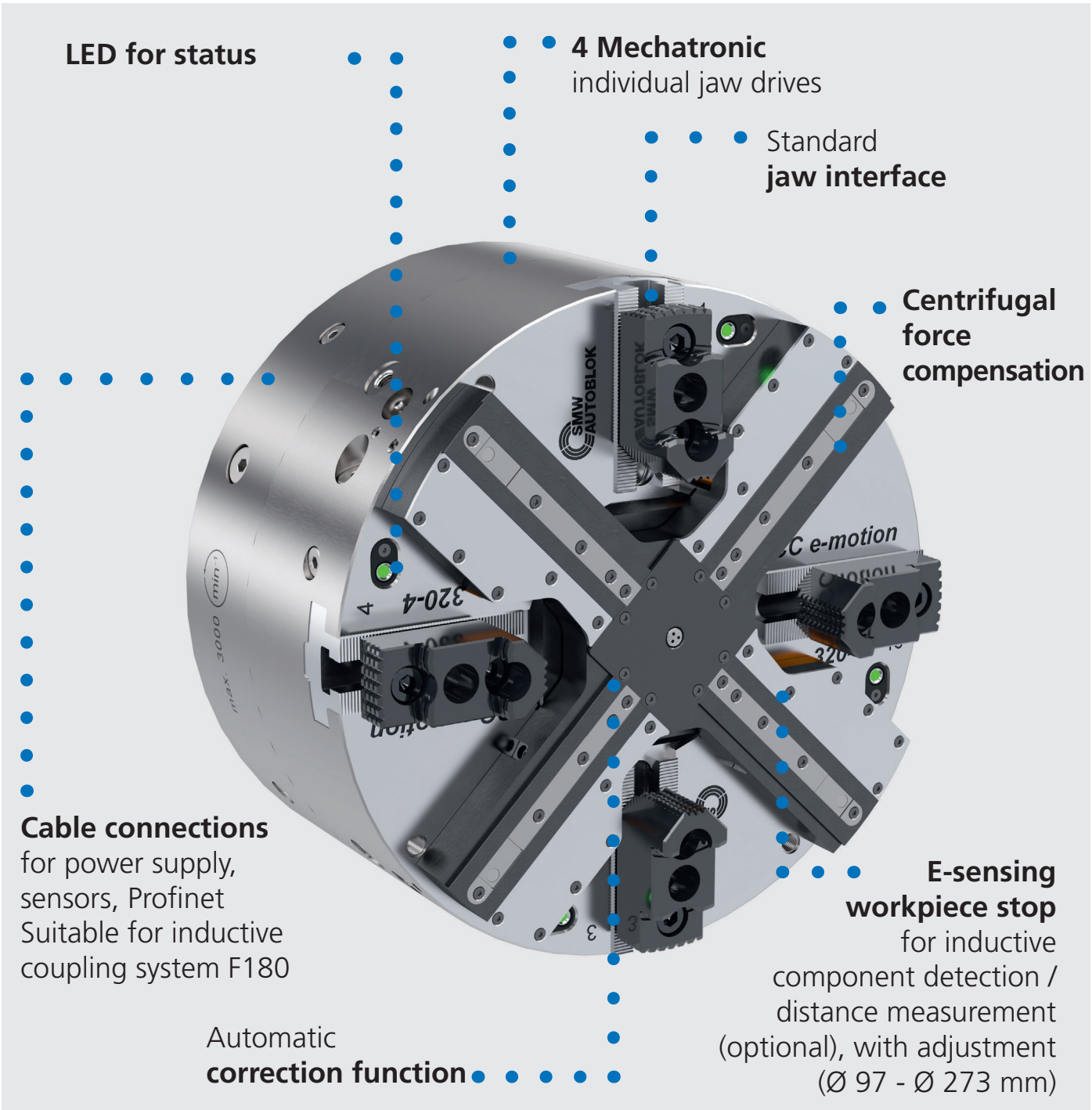
Application/customer benefits

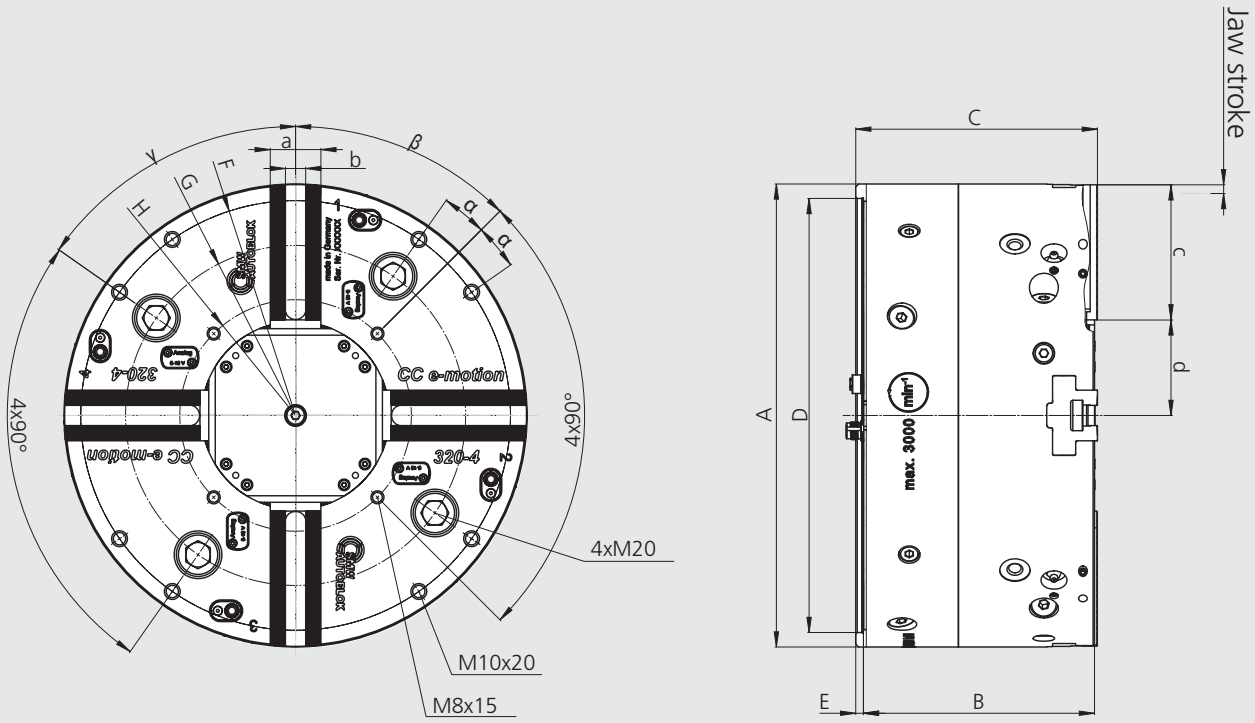
- Mechatronic single jaw drive
- Precise clamping force adjustment
- High-Low clamping possible
- Auto correction of the workpiece center
- Contact free transmission of power and signals via inductive coupler system
- e-sensing: inductive component detection / distance measurement (optional)

Technical features

- Clamping force max.100 KN
- Centrifugal force compensation
- Speed max. 3,000 rpm
- Clamping repeatability < 5 µm
- **proofline®** = fully sealed - low maintenance

CC *e-motion*



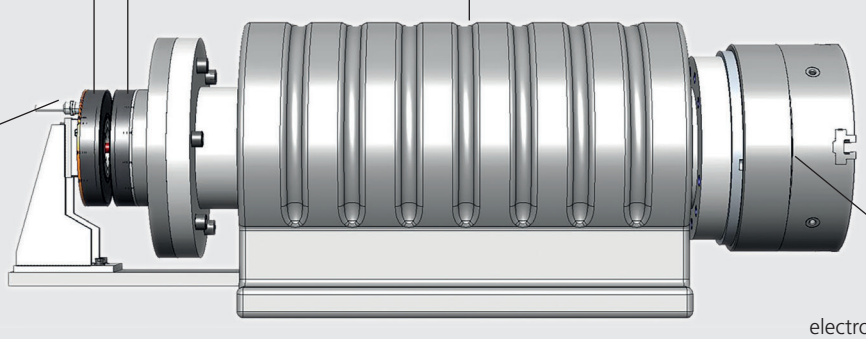


Subject to technical changes. For more detailed information please ask our customer service.

SMW-AUTOBLOK Type CC e-motion			320-4
Outside diameter	**A**	mm	Ø 320
	B	mm	159.7
	C	mm	167
	D	mm	Ø 300
	E	mm	5.3
Bolt circle	**F**	mm	Ø 297
Bolt circle	**G**	mm	Ø 235
Bolt circle	**H**	mm	Ø 160
Jaw position	**a**	mm	35
Slot width	**b**	mm	14
	c	mm	~ 93
Min. / max.	**d**	mm	~61.5 / ~ 66
	-	mm	-
	α	Degree	10
	β	Degree	45
	γ	Degree	55
Serration		Zoll	1/16“x 90°
Max. speed		min^{-1}	3000
Max. total clamping force		kN	100
Stroke per jaw		mm	4,5
Compensation stroke per jaw		µm	< 5

Mechanical installation on the machine

F180 coupling system
Contact free power and signal transmission via air gap up to 6 mm distance.

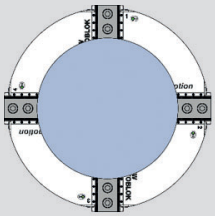


Application examples: Clamping of different workpiece geometries

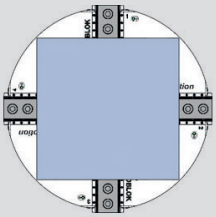
Clamping profile

- 4 jaws self centering
- 4 jaws self centering / compensating
- High / low grip force
- Automatic correction function

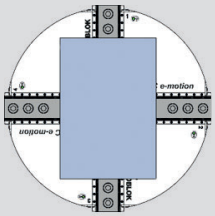
Round



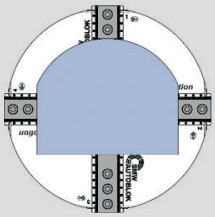
Square



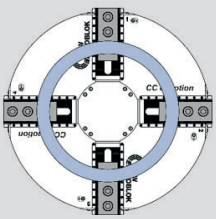
Rectangular

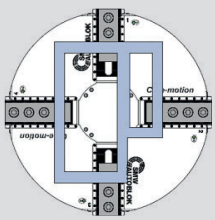


Irregular shaped



Easy deformed





Plug & Play

CC *e-motion* 320

Integrated control

F180 Ethernet Coupler
(Base/Remote)

PLC/ software module
Input mask

HMI
Operating screen

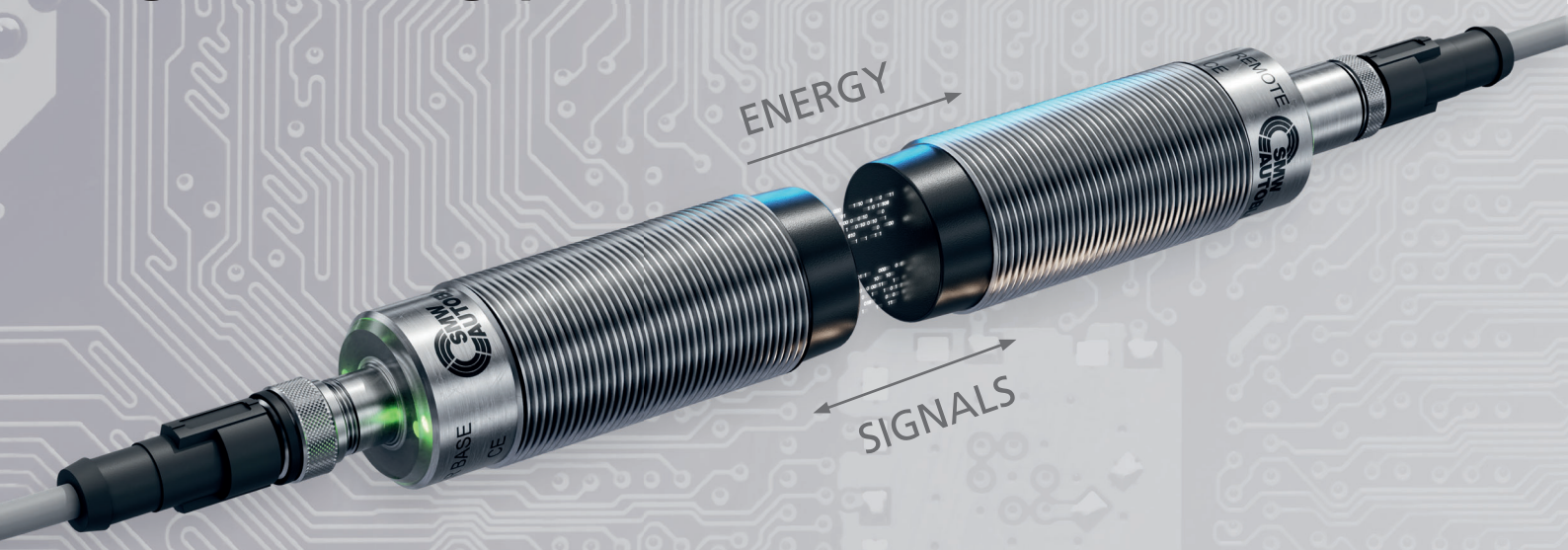
Technical data CC *e-motion*		
Chuck diameter	mm	320
Clamping force	kN	100
Max. speed	min^{-1}	3000
Stroke per jaw	mm	4.5
Repeatability	µm	< 5

Technical data F180 Ethernet		
Power supply	V	24 / 48
Transmission distance	mm	0 - 5
Transmission standard		100 T-Base
Power transmission	V	24 / 48
Power transmission	W	400

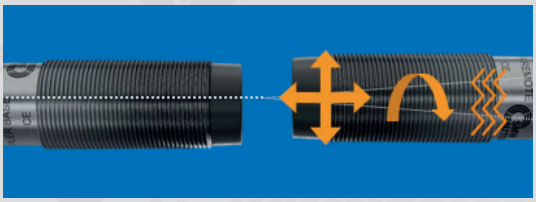
Notes

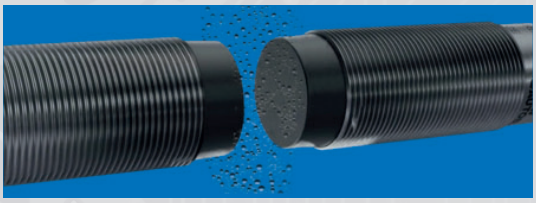
Inductive transmission of energy and signals

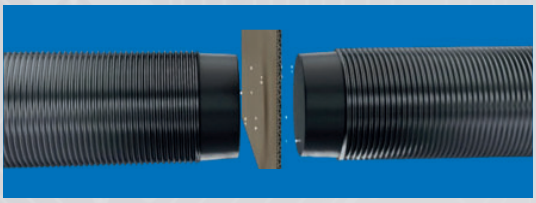
Contact free transmission of energy and signals via air gap

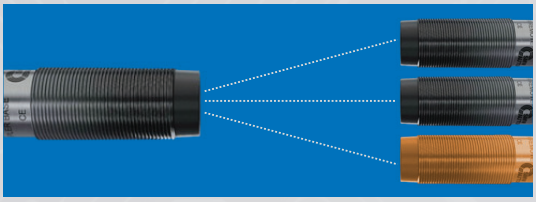


Benefits









- 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

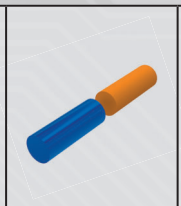
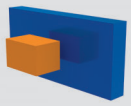
- Safe transmission even through non-metallic obstacles

- 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**

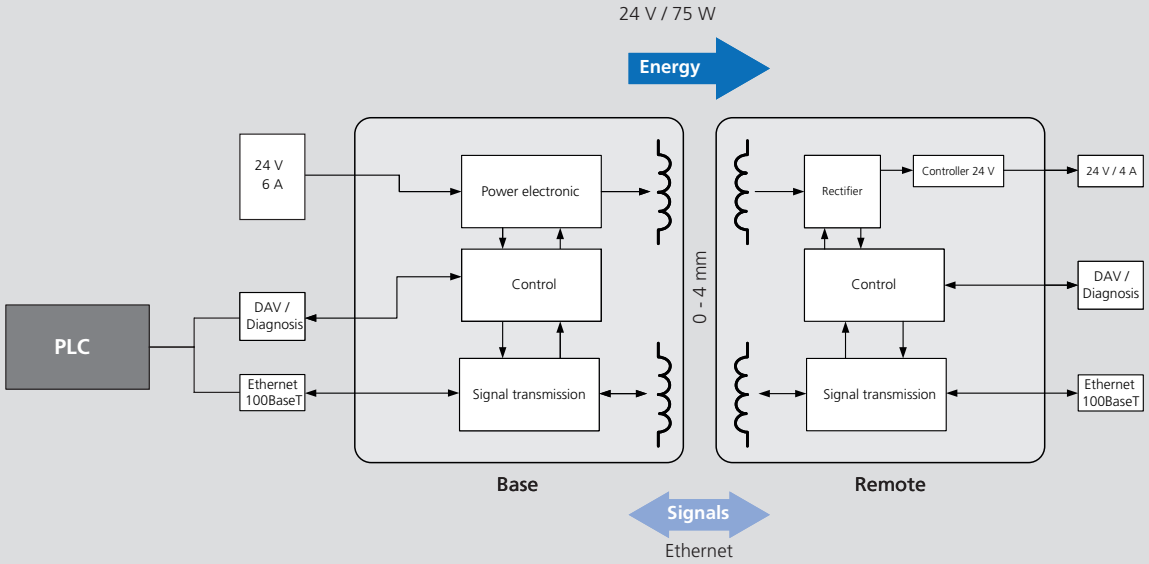
Application/customer benefits

- 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	

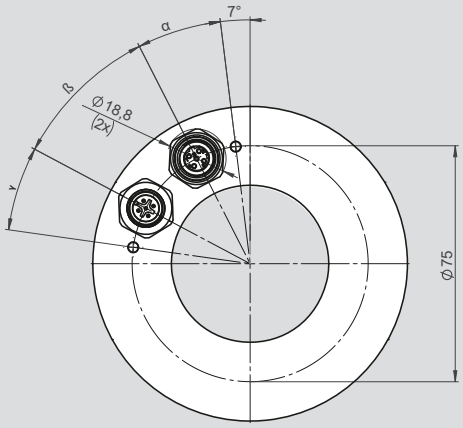
Inductive Coupling System

■ Stationary unit - Base
■ Mobile unit - Remote

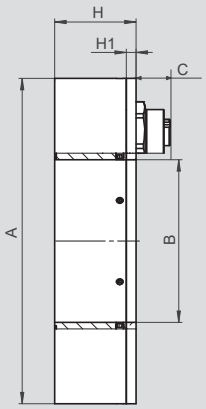
F100 Ethernet

Axial coupler

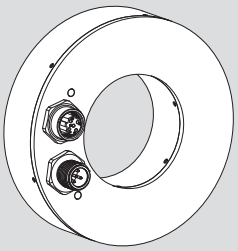
Base / Remote:



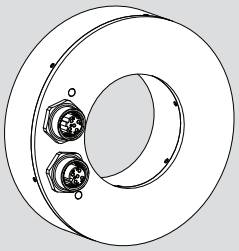
Base / Remote:



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)

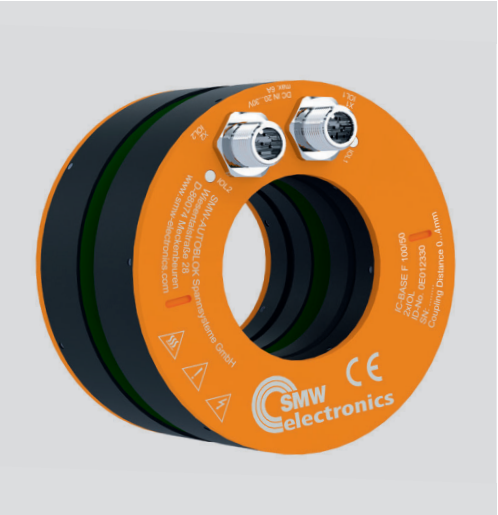
Function Remote	
LED Power	
Color	Green / red
Function	Off » Unit not paired
	On (green) » Unit paired, voltage output ok
	Flashes 2 Hz red » Paired but short circuit
	Flashes 5 Hz red » Internal error
LED Signal transmission Ethernet	
Color	Yellow / red
Function	Off » No mobile unit detected
	On / yellow » 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



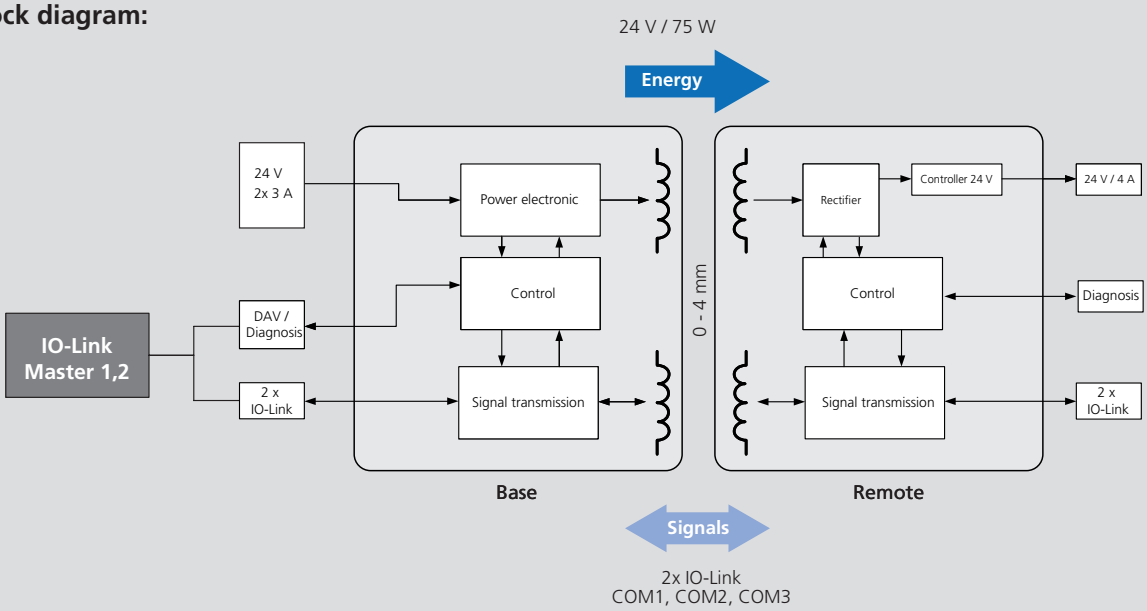
Application/customer benefits

- 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	

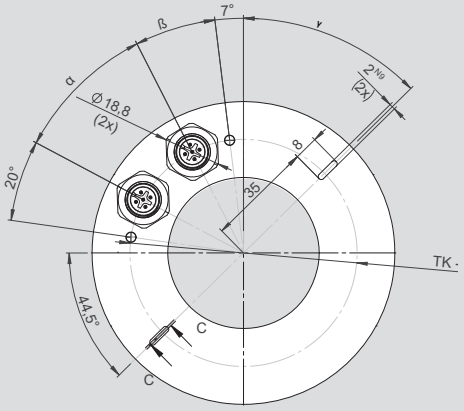
Inductive Coupling System

■ Stationary unit - Base
■ Mobile unit - Remote

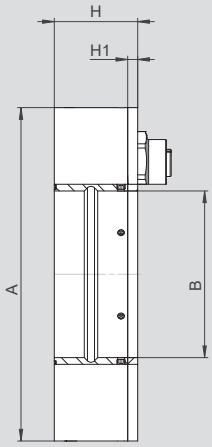
F100-2IOL

Axial coupler

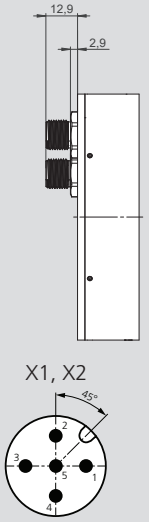
Base / Remote:



Base / Remote:



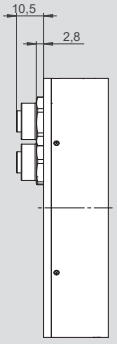
Base:



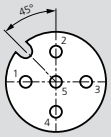
X1, X2

2x Male connector 5-pin
M 12 x 1

Remote:



X1, X2



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

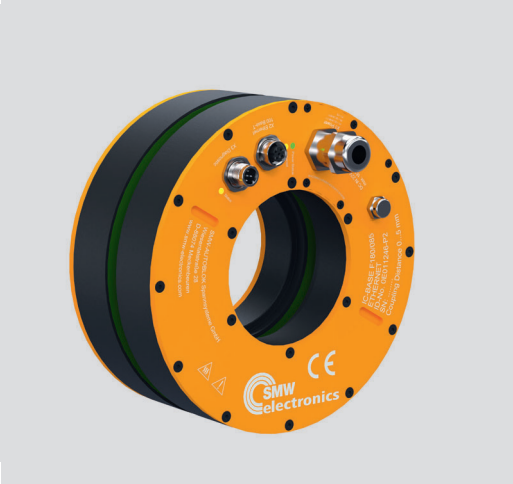
PIN assignment	PIN	X1 Base	X2 Base	X1 Remote	X2 Remote
Supply voltage	1	24 V IN	24 V IN	24 V OUT	24 V OUT
Data-Valid	2	DAV 24 V	-	-	-
Ground	3	GND	GND	GND	GND
IO-Link Signal	4	IO-Link CQ	IO-Link CQ	IO-Link CQ	IO-Link CQ
-	5	-	-	-	-

F180 Ethernet

Axial coupler

Inductive Coupling System

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



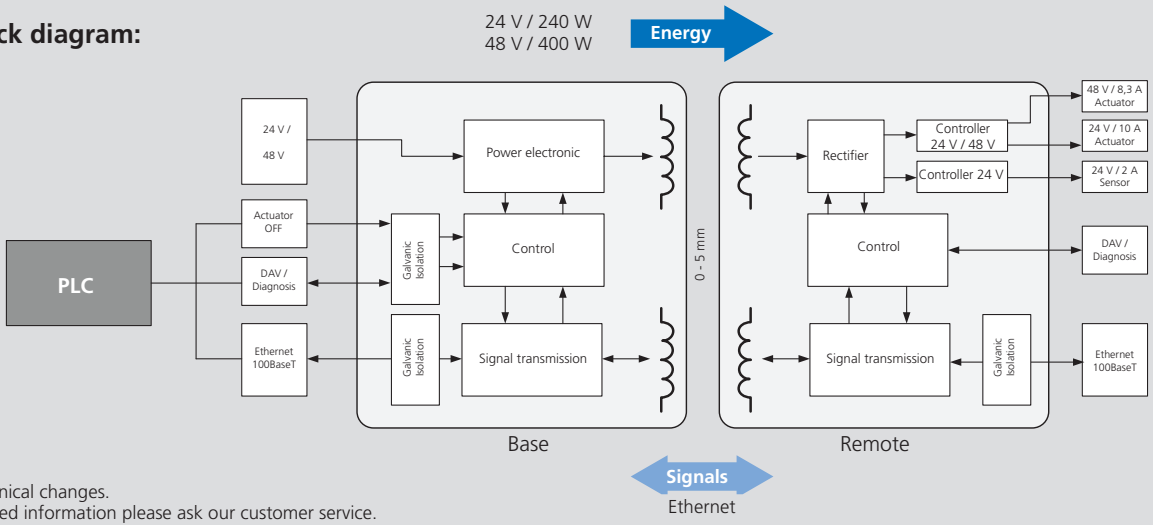
Application/customer benefits

- 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

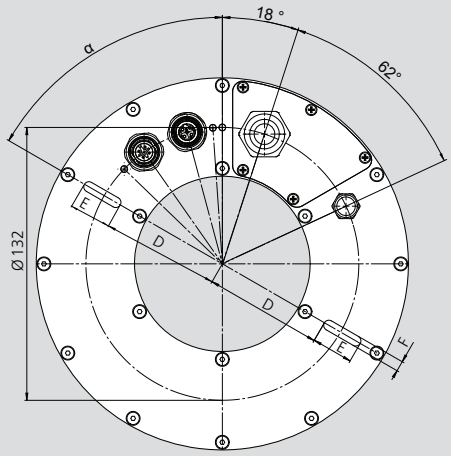
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

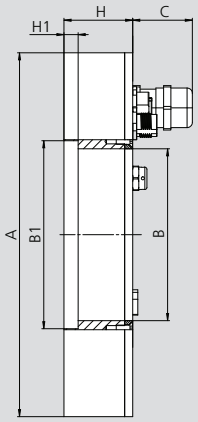
F180 Ethernet

Axial coupler

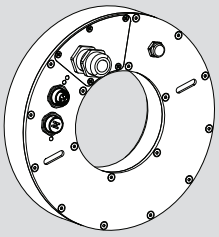
Base / Remote:



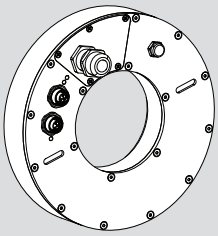
Base / Remote:



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

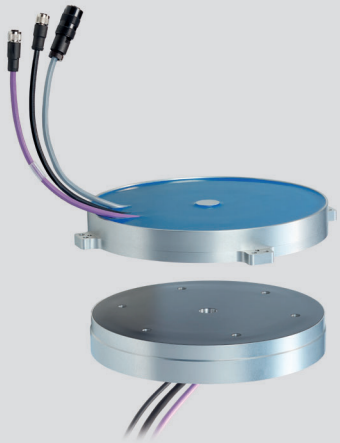
Function Remote	
LED Actuator	
Color	Green/red
Function	Off » Unit not paired
	On (green) » Unit paired, voltage output actuator ok
	Flashes 2 Hz red » Unit paired but short circuit on actuator
	Flashes 5 Hz red » Internal error
LED Sensor supply	
Color	Green/red
Function	Off » Unit not paired
	On (green) » 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**



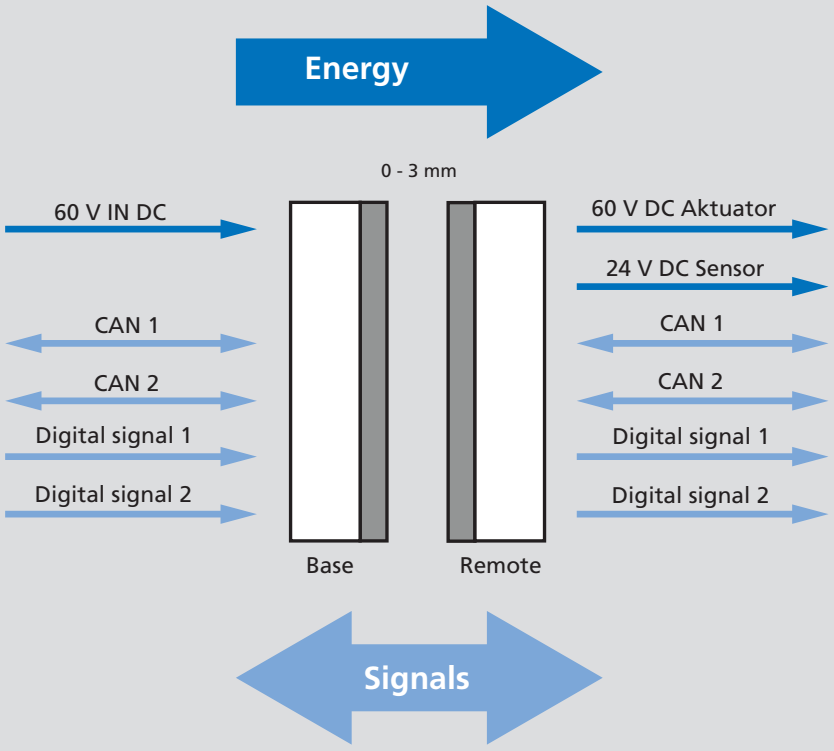
Application/customer benefits

- 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

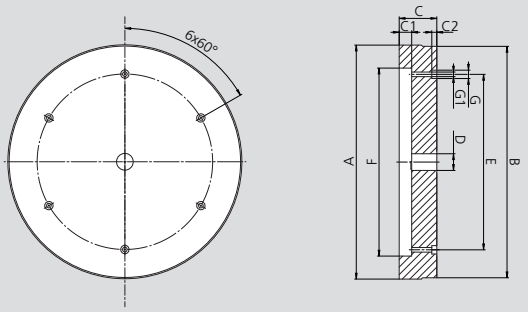
- Operating voltage 60 V ± 10%
- Energy transmission: 60 V / 1100 W (18 A) actuators, 24 V (2 A) sensors
- Signal transmission: Bus system 2x CAN BUS
- Signal transmission: Digital 2 x 24 V switching signal remote to base
- Diameter 280 mm
- Transmission distance 0 - 3 mm
- Inverse-polarity protection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

Block diagram:

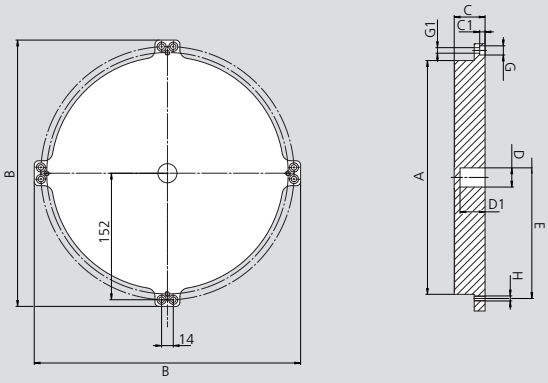


Subject to technical changes.
For more detailed information please ask our customer service.

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

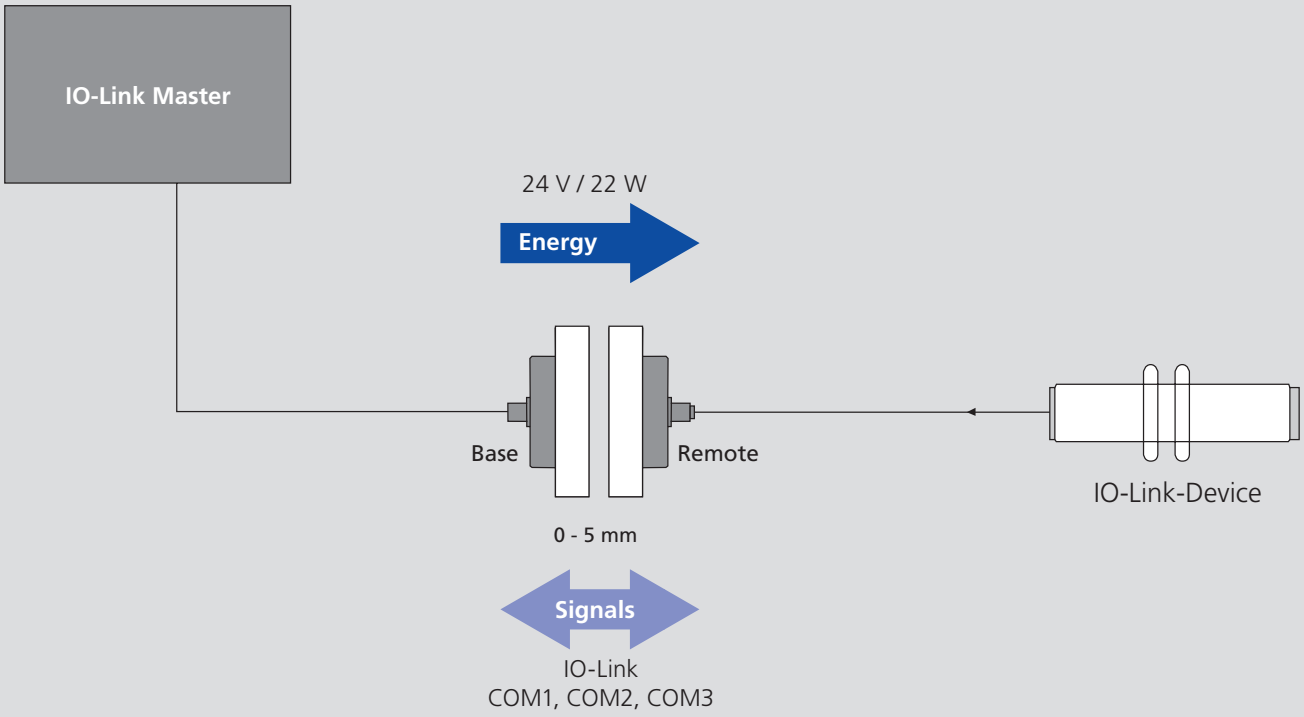
Application/customer benefits

- 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

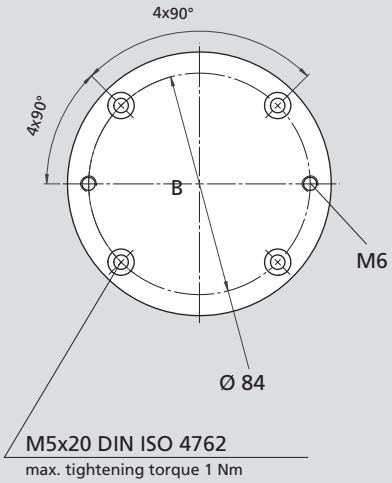
Inductive Coupling System

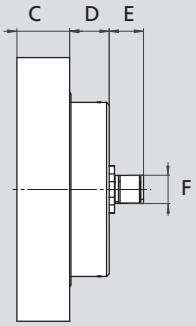
F100/66-IOL

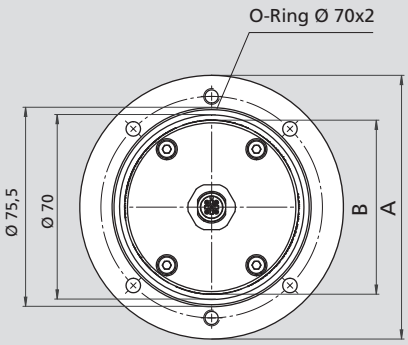
- Contact free transmission of energy and signals
- Ideal for pallet change applications

Axial coupler

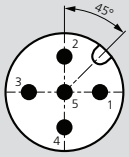
Base/ Remote:





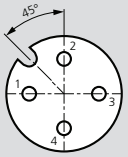


Base



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	-

M12-2

Axial coupler

Inductive Coupling System

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

Application/customer benefits

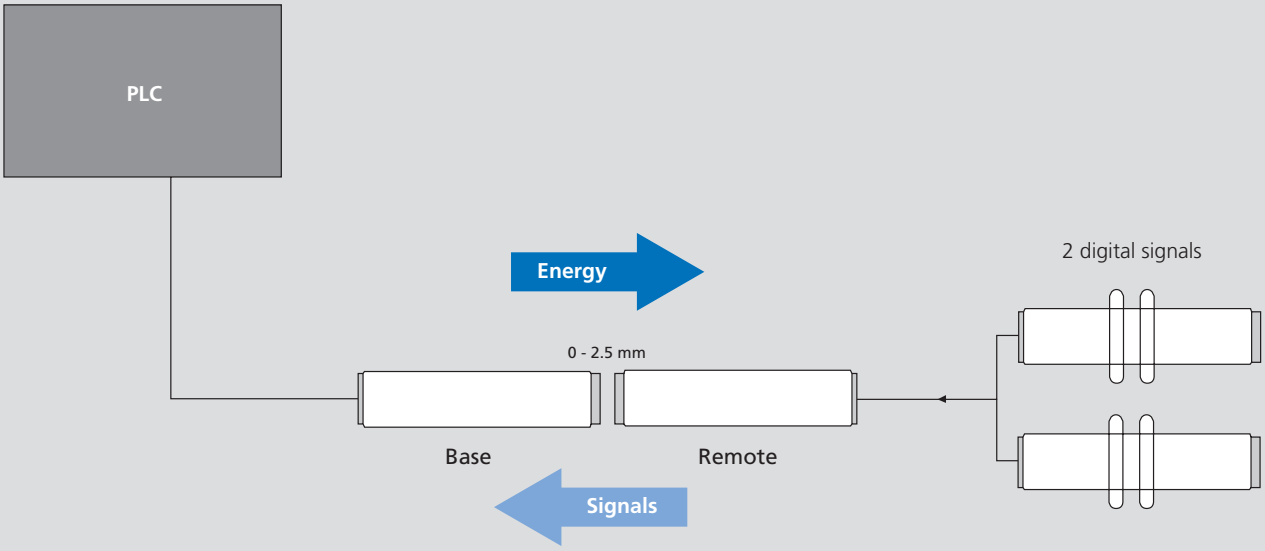
- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Supply of mobile sensors, supply and monitoring of remote systems, monitoring of door contacting
- Dynamic Pairing
- Wear and maintenance free
- Operating display

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.

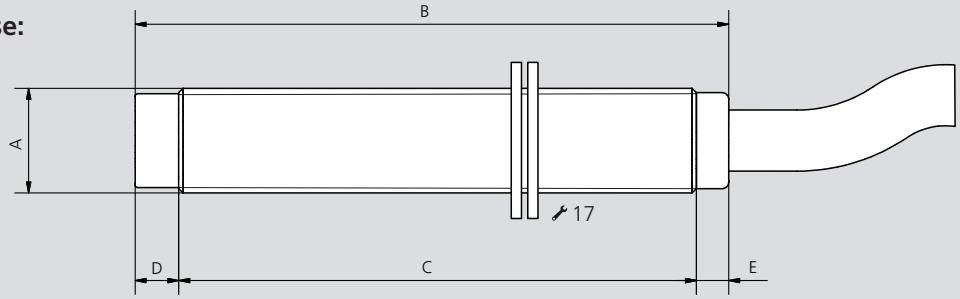
Inductive Coupling System

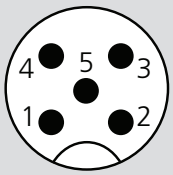
■ Stationary Unit - Base
■ Mobile Unit - Remote

M12-2

Axial coupler

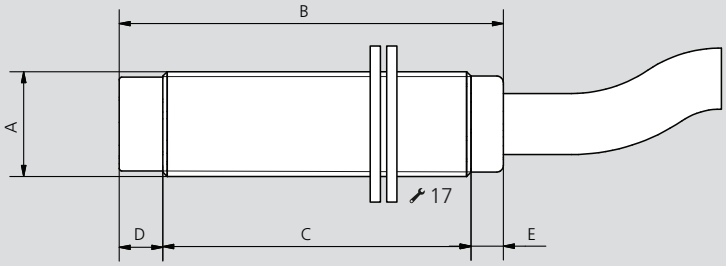
Base:





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

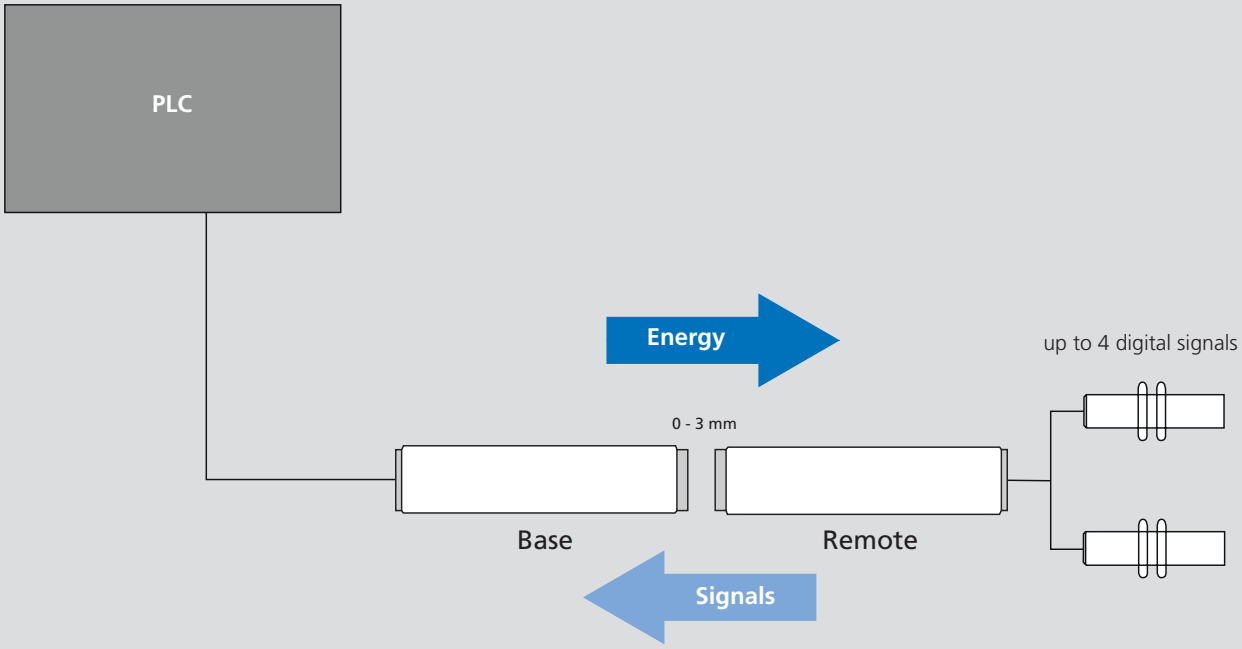
- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Automation, piloting of magnet valves, reading of status signals, online monitoring of sensor signals in the remote area, contacting at rotary tables, plug replacement for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

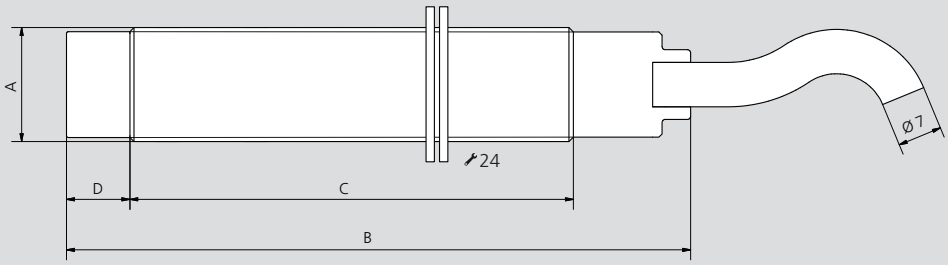
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

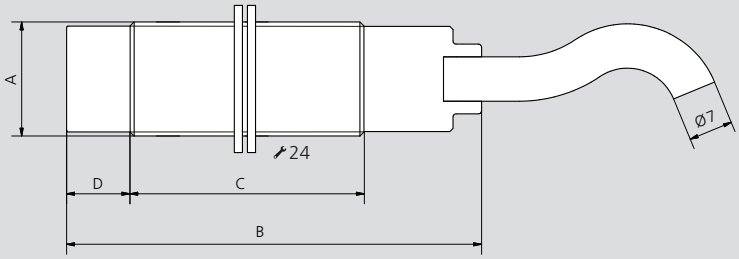
M18-4

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-IOL

Axial coupler

Inductive Coupling Sytem

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

IO-Link

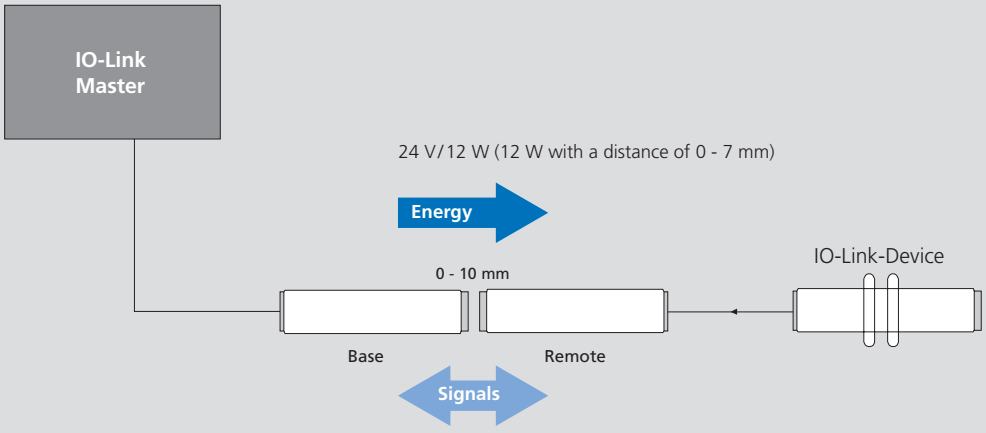
Application/customer benefits

- 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

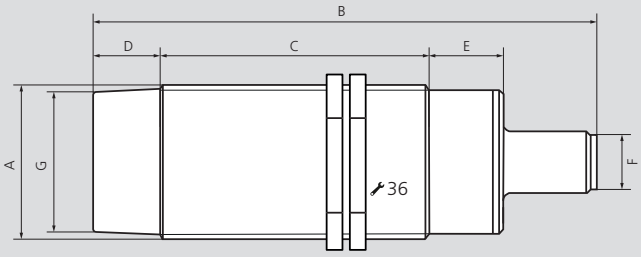
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

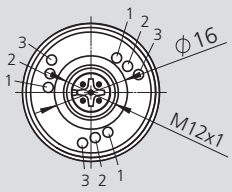
M30-IOL

Axial coupler

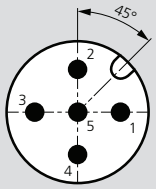
Base / Remote



Display Base LED

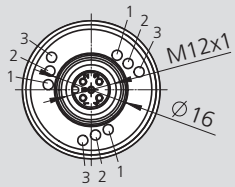


Base

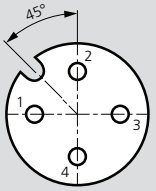


Male connector 5-pin
M 12 x 1

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

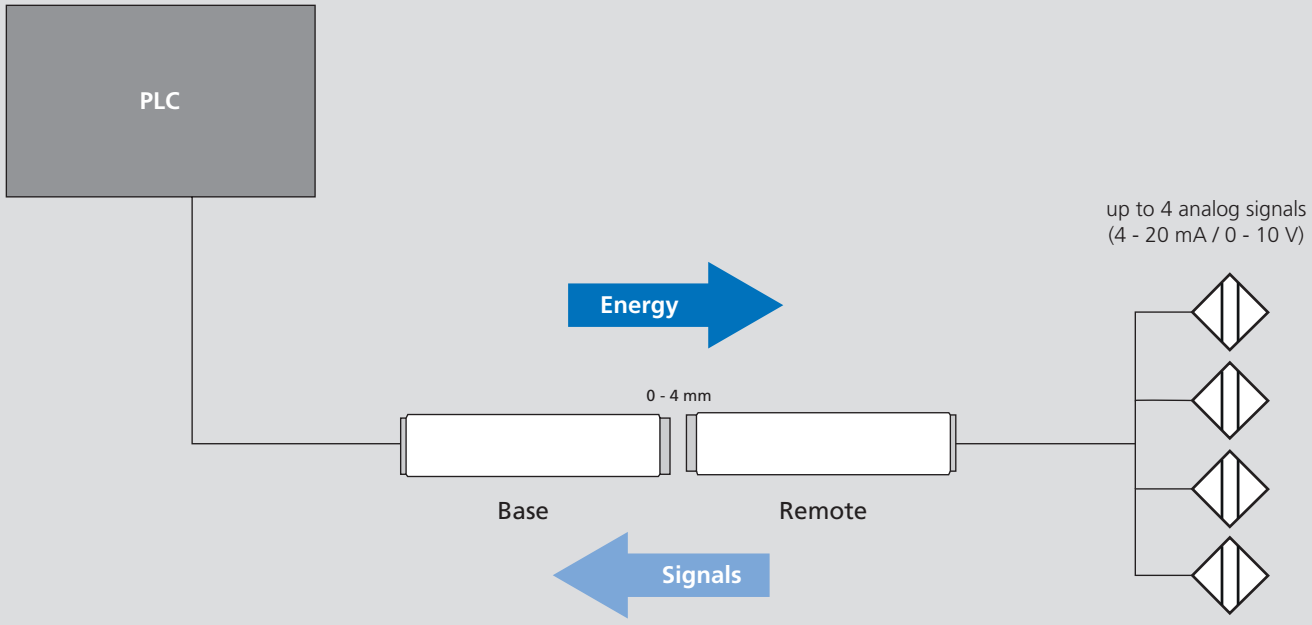
- Contact free, safe transmission of energy and signals between moving / rotating and stationary components
- Application examples: Process monitoring edibles, manufacturing of plastic, test engineering, machine tools
- Dynamic Pairing
- Wear and maintenance free
- Operating display

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.

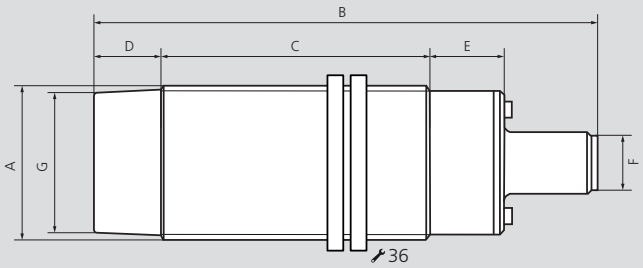
Inductive Coupling System

■ Stationary Unit - Base
■ Mobile Unit - Remote

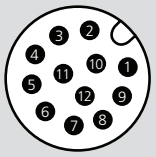
M30-4A

Axial coupler

Base / Remote:

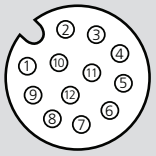


Base



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

e-sensing

Digital workpiece stop

Application example: e-sensing on MM *e-motion*

Application/customer benefits

- Inductive component detection / distance measurement
- High-precision, multi-dimensional position control
- Parameterizable sensor technology
- Communication interfaces IO-Link or analog signal
- Available for e-motion chucks (MM,CC) or as retrofit solution

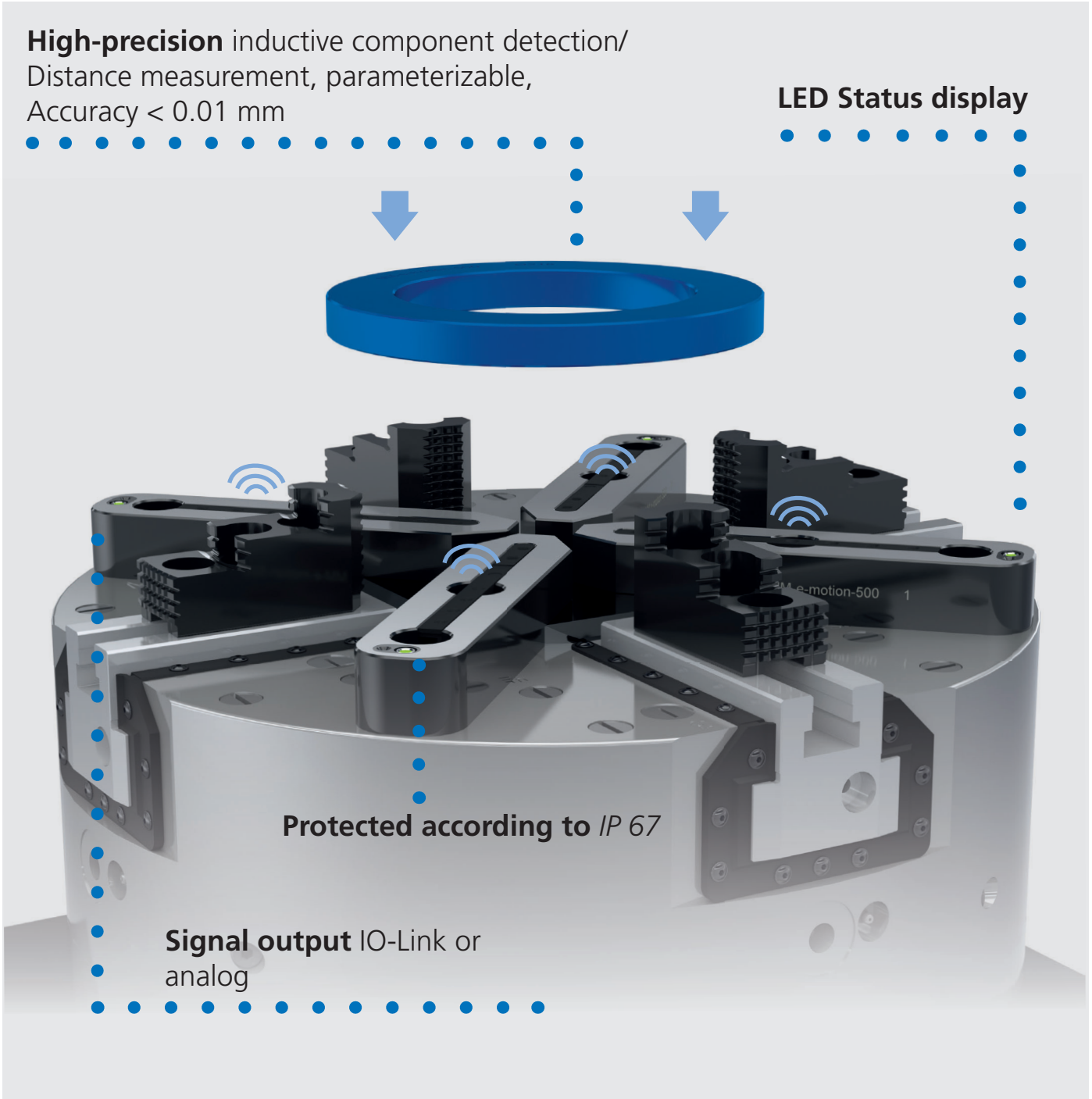
Technical data

- Accuracy < 0.01 mm
- Signal output IO-Link or analog signal 0 - 10 V
- **proofline®** = sealed - low maintenance

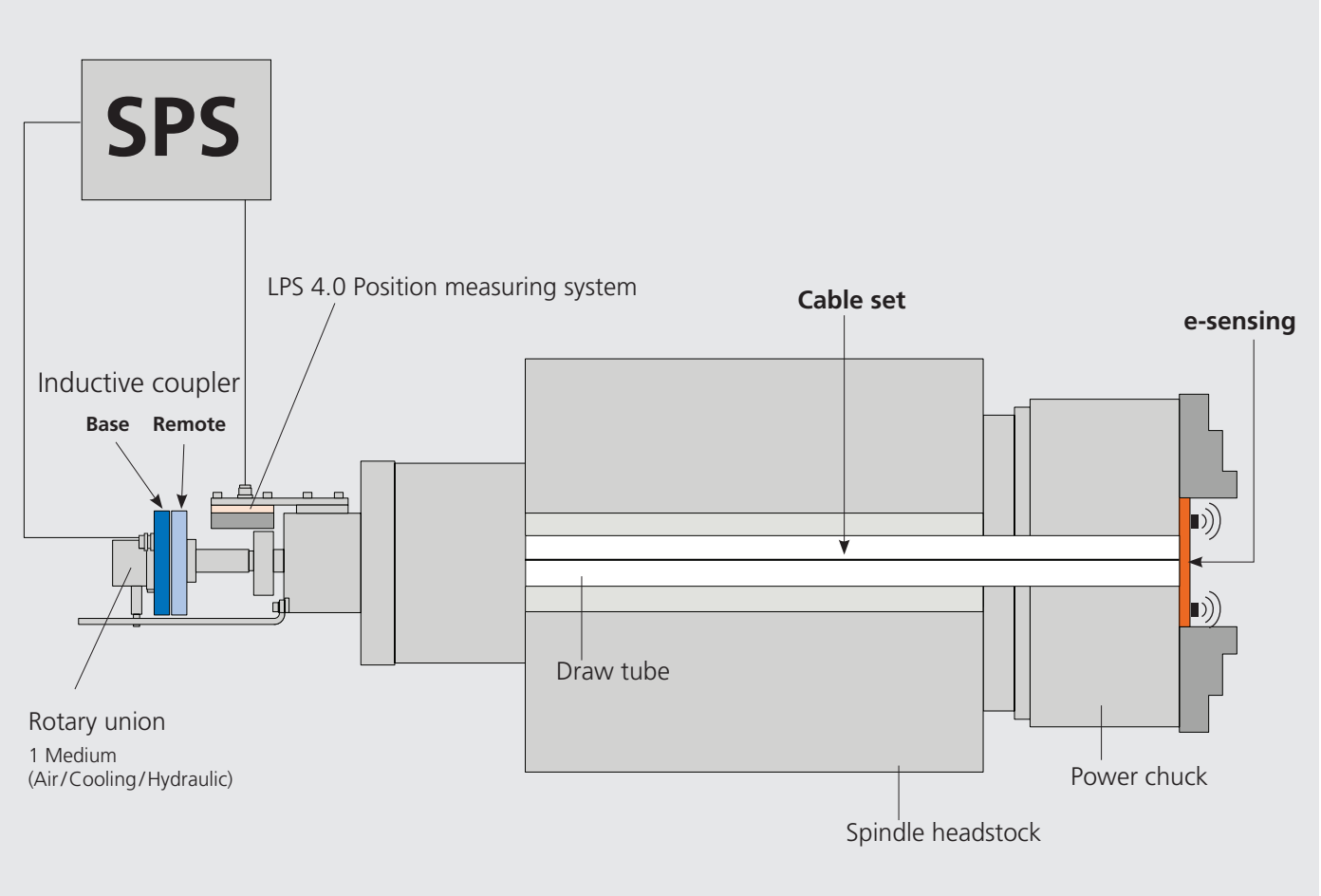
Ordering example

- on request

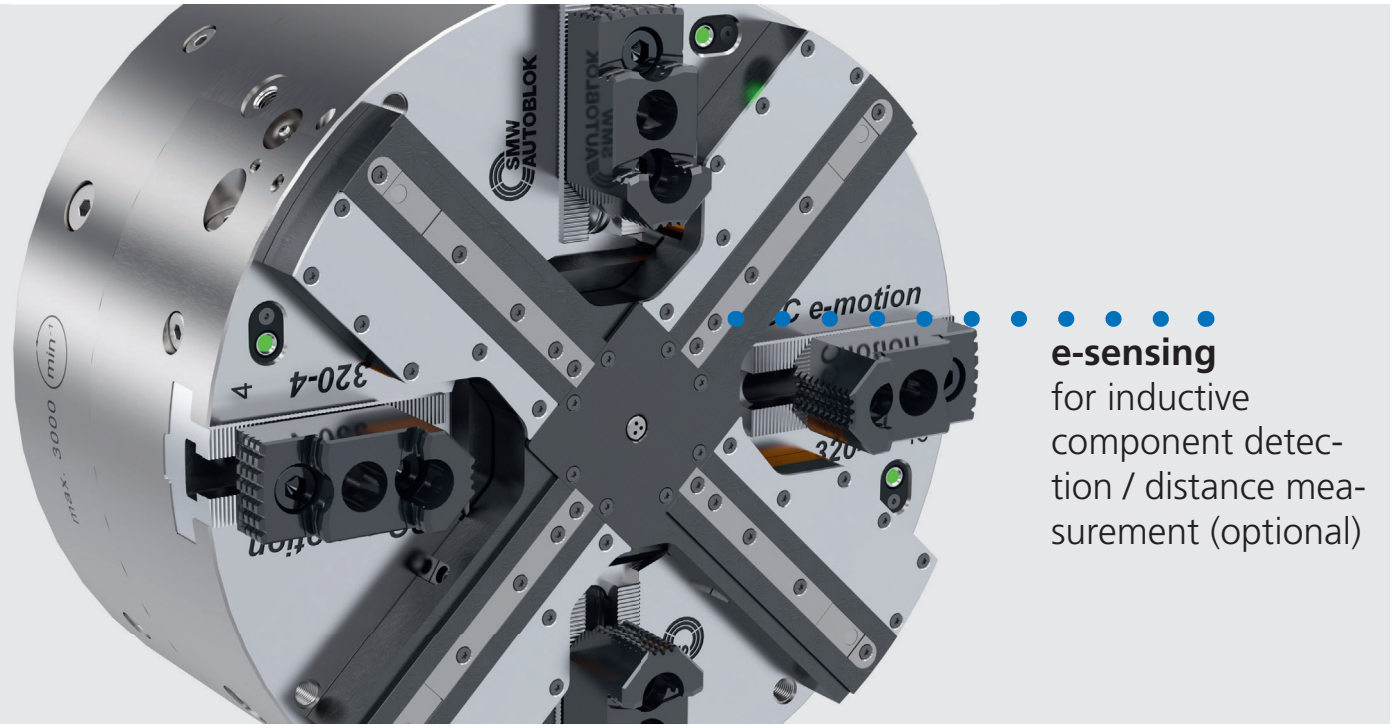
e-sensing



Integration power chuck scheme



Example of integration CC *e-motion*



e-sensing
for inductive component detection / distance measurement (optional)

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

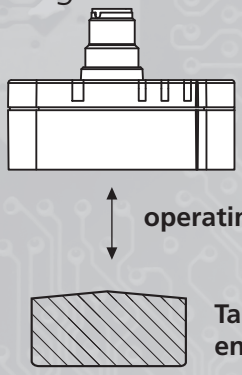
Standard connection
M12 x 1(5 Pole)

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

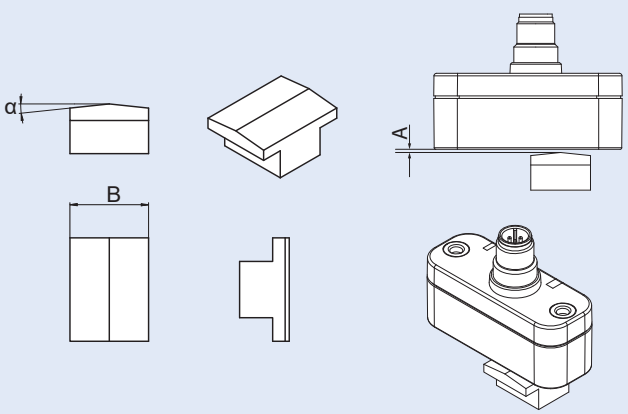
Inductive position measurement
by target / encoder unit



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

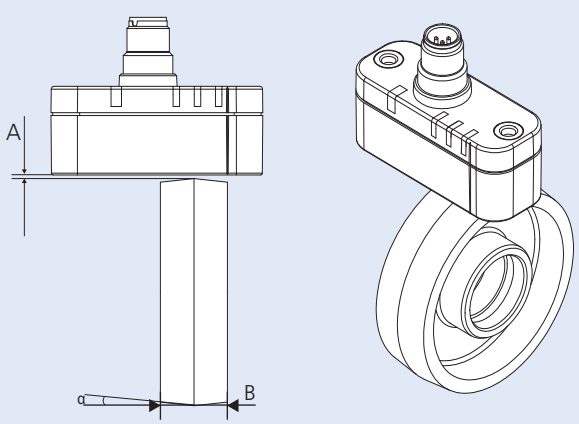
Dimensions	Remark
Operating distance A = 1.0 mm ± 0.25	A = Required distance (light and parallel) between measuring surface and the operating ring
Width B = 19 mm	B = Required width of the operating cam or operating ring
Angle α = 6°	α = Angle min. 6°

Cam



Example:Target / encoder unit (cam geometry)

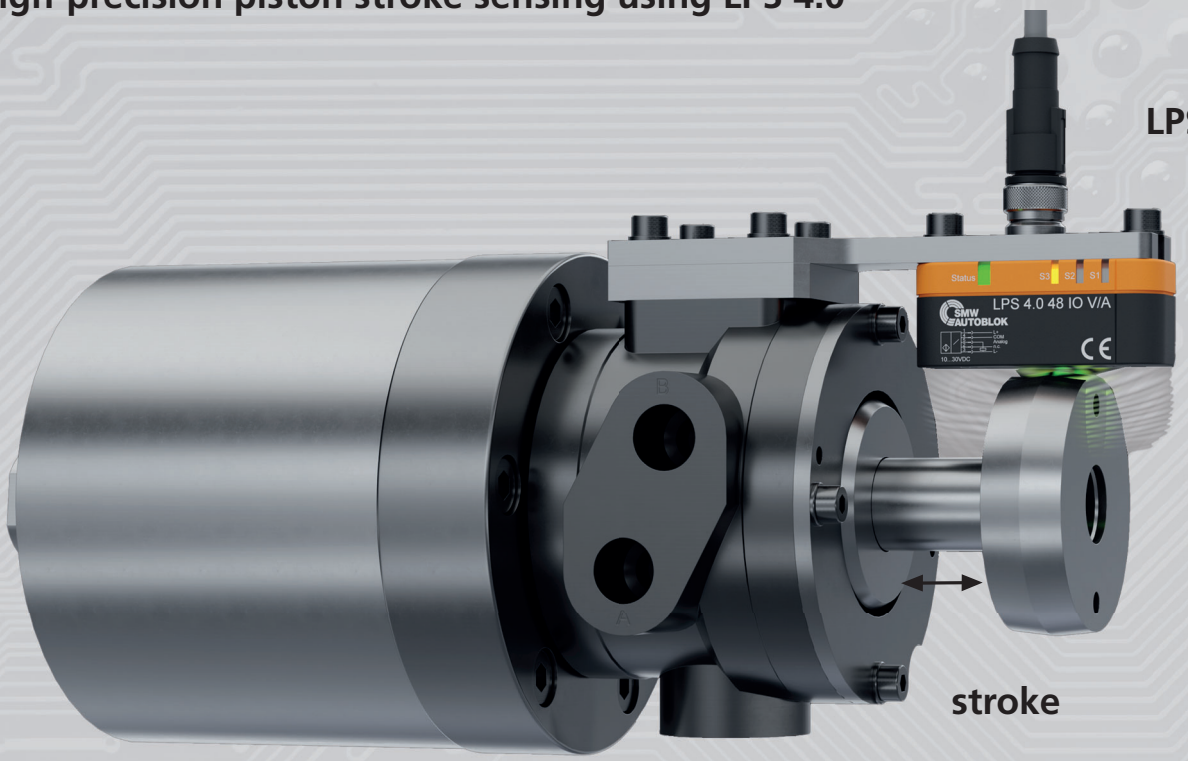
Ring



Example:Target / encoder unit (ring geometry)

Application example

High-precision piston stroke sensing using LPS 4.0



Clamping cylinder

Benefits:

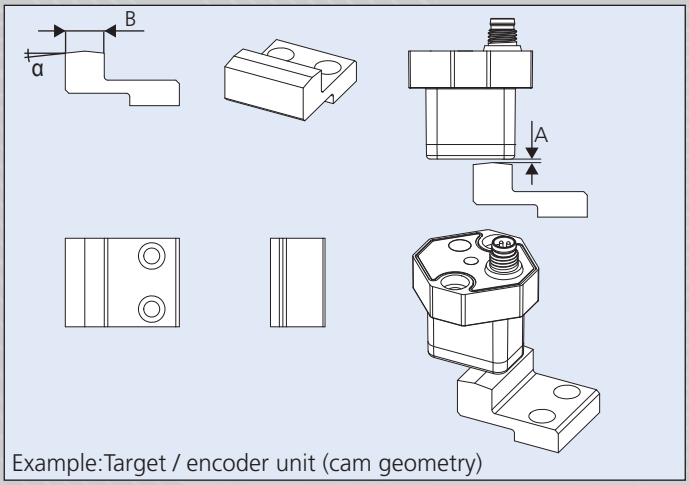
- Measuring ranges from 0 - 120 mm
- Wear-free, due to contact free function
- Highest repeatability and precise positioning
- IO-Link and analog signal (0 - 10 V, 4 - 20 mA)
- Plug & Play integration
- Extremly robust + protected according to IP67/69K

TARGET / ENCODER UNIT DESIGN

Required dimensions: **LPS 4.0 14**

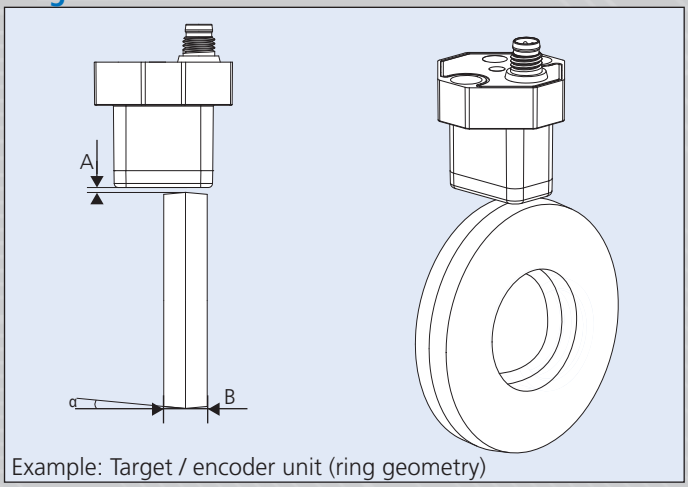
Dimensions	Remark
Operating distance A = 1.0 mm ± 0.25	A = Required distance (light and parallel) between measuring surface and the operating ring
Width B = 11 mm	B = Required width of the operating cam or operating ring
Angle α = 6°	α = Angle min. 6°

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

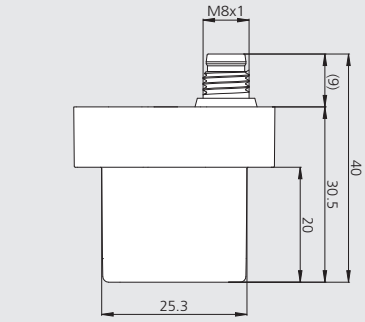
- Inductive measuring system
- No interference from magnetic fields
- Measuring range = 14 mm
- Compact design / simple installation
- Analog output 0 - 10 V (Id. No. 208106)
- IO-Link standard interface
- Protection class IP 67

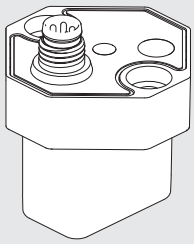
Standard equipment

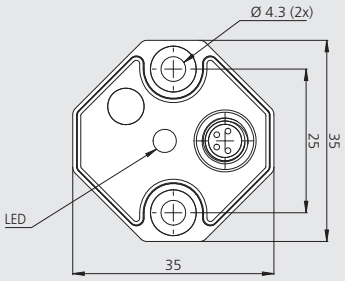
LPS 4.0 14 IO without cable

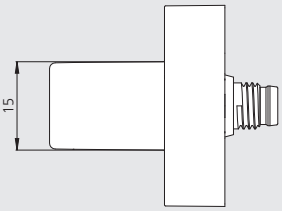
Ordering example

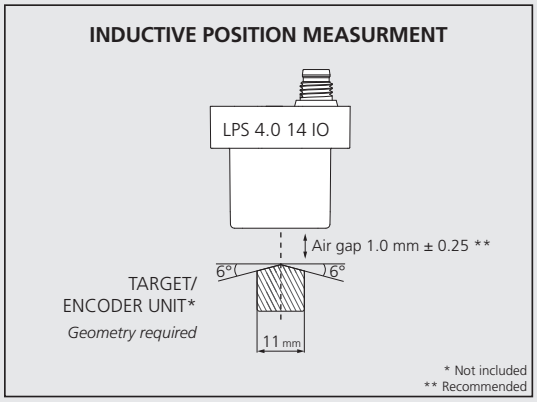
LPS 4.0 14 IO 0 - 10 V
Id. No. 208106
Cable with elbow plug 5 m
Id. No. 208241











Pin Assignment

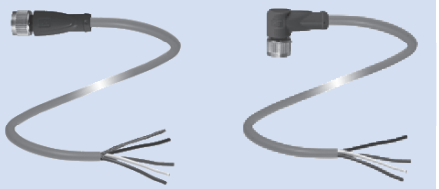
Pin	Description
1	24 V DC
2	Signal output 0 - 10 V
3	GND
4	C/Q (IO-Link)

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

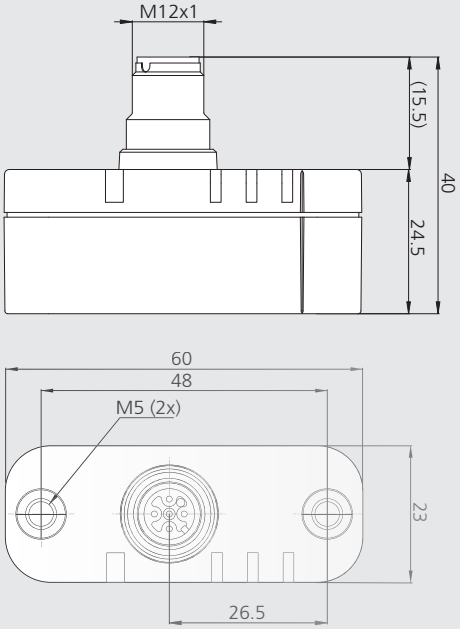
- Inductive measuring system
- No interference from magnetic fields
- Measuring range = 48 mm
- Compact design / simple installation
- Analog output 0 - 10V (Id. No. 208108) / 4 - 20mA (Id. No. 208107)
- IO-Link standard interface
- Protection class IP 67
- LEDs for operating status

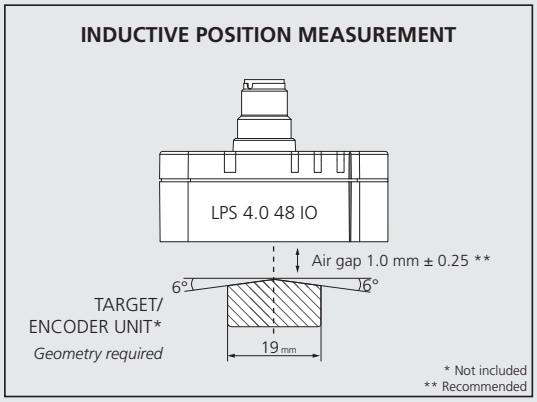
Standard equipment

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

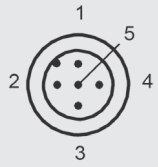




Pin Assignment

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)

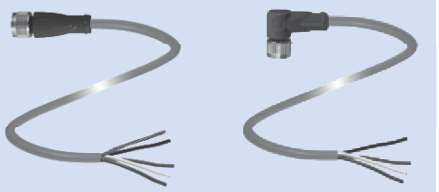
Male connector
M 12 x 1



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

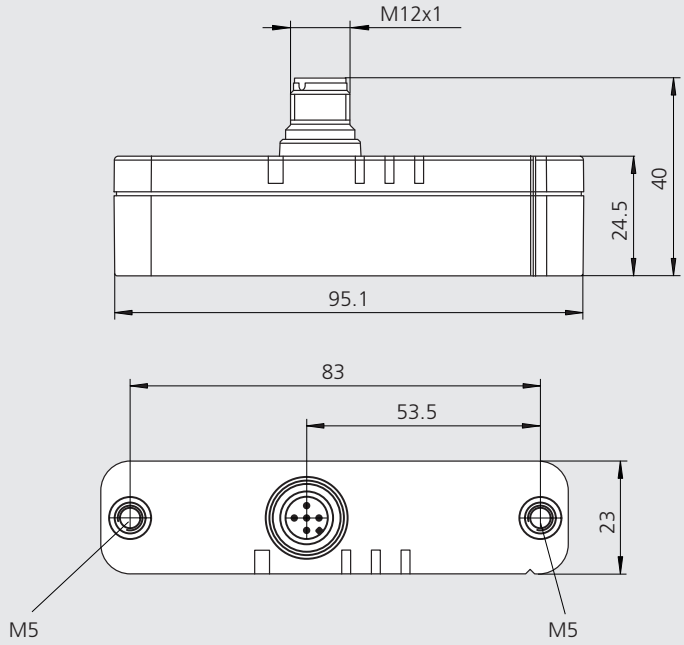
- Inductive measuring system
- No interference from magnetic fields
- Measuring range = 80 mm
- Compact design / simple installation
- Analog output 0 - 10 V / 4 - 20 mA
- IO-Link standard interface
- Protection class IP 67
- LEDs for operating status

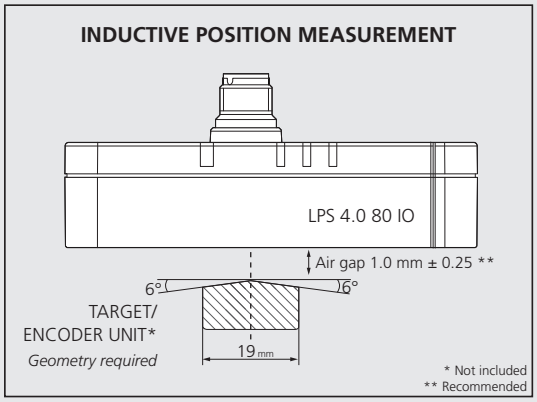
Standard equipment

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

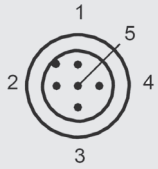




Pin Assignment

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)

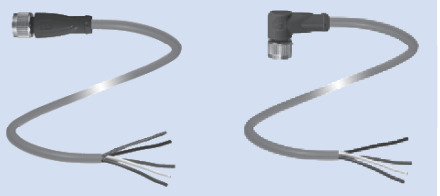
Male connector M12 x 1



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

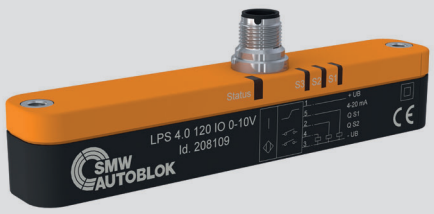


* Shielded PUR cable, 1 side cable end, 1 side with socket M12 x 1, machined and gold-plated contacts.

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

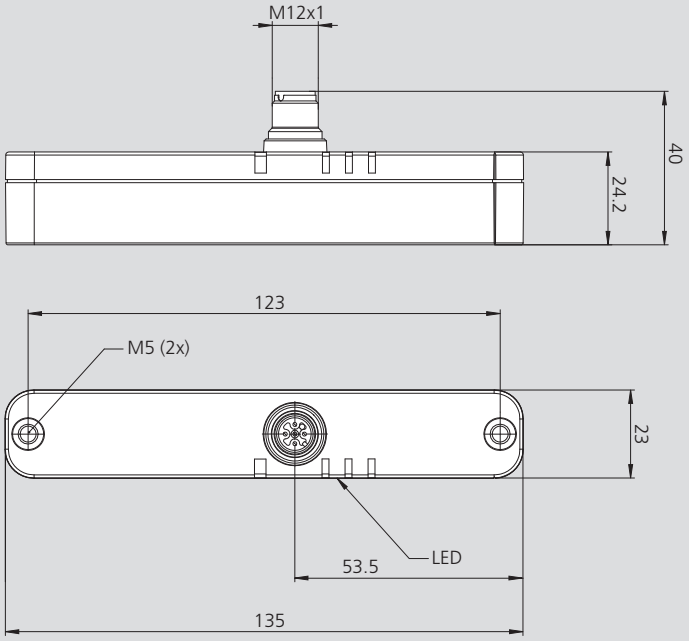
- Inductive measuring system
- No interference from magnetic fields
- Measuring range = 120 mm
- Compact design / simple installation
- Analog output 0 - 10V (Id. No. 208110) / 4 - 20mA (Id. No. 208109)
- IO Link standard interface
- Protection class IP 67
- LEDs for operating status

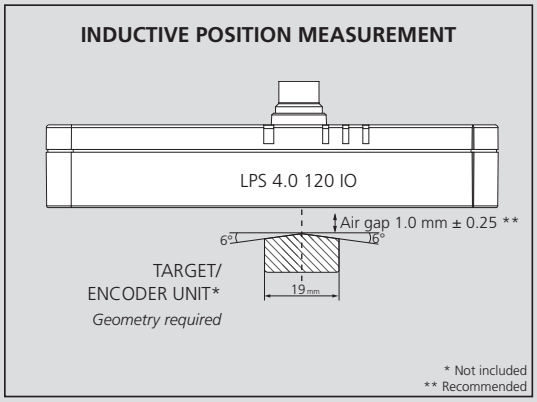
Standard equipment

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

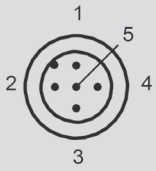




Pin Assignment

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)

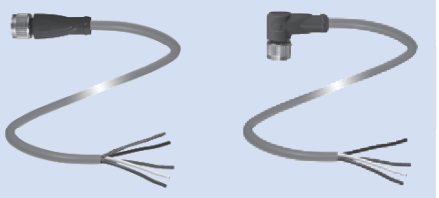
Male connector
M12 x 1



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	
MTTFd	271 a	
Mission time (TM)	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.

IO-Link Hub 16DI

Input module for up to 16 signals (IN)

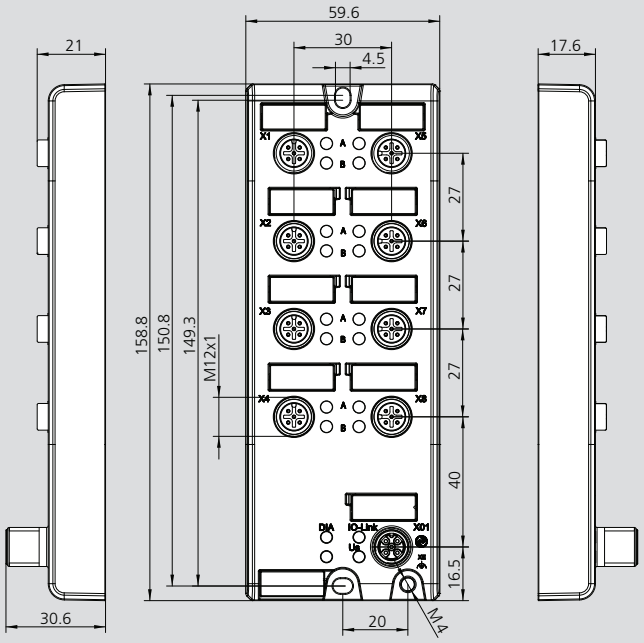
IO-Link

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

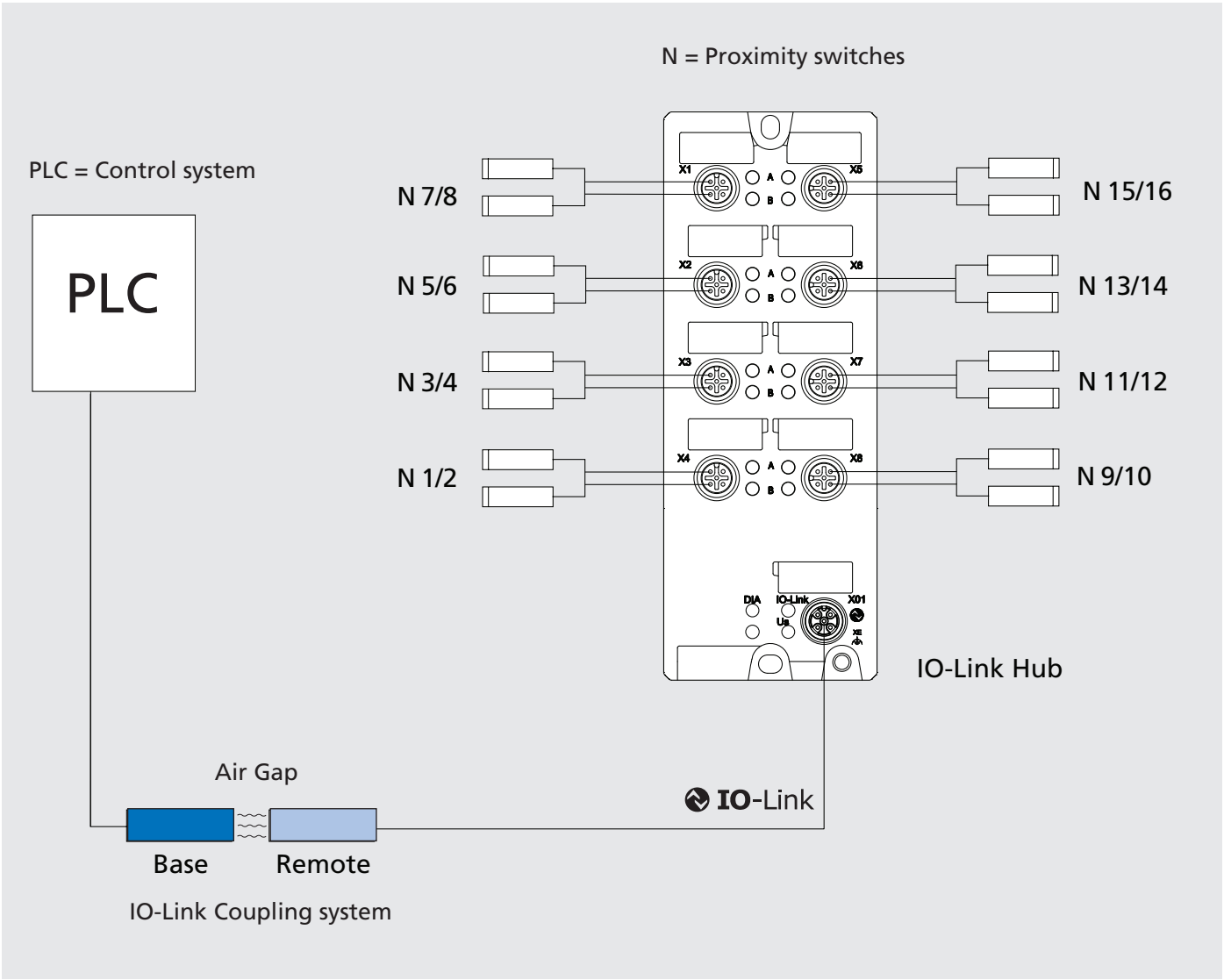


Subject to technical changes.
For more detailed information please ask our customer service.

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

IO-Link Hub 16DIO

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

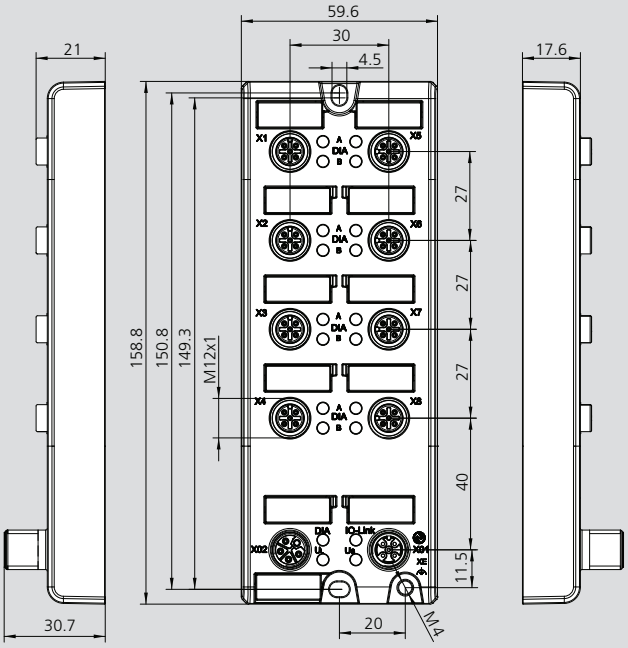
IO-Link

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)

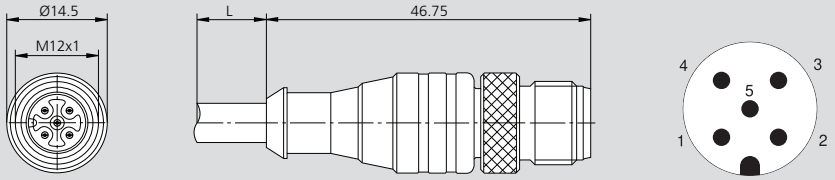
Cables

Accessories

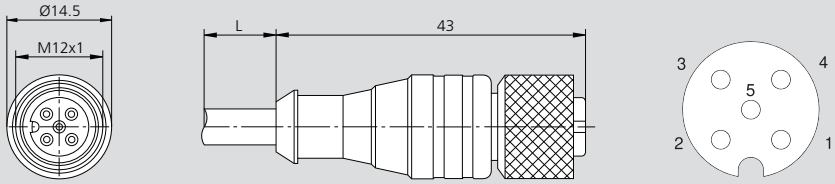
- Sensor-/ actuator connection cable
- Power cable

Sensor actuator cable - 1 meter

Male connector 5-pin:



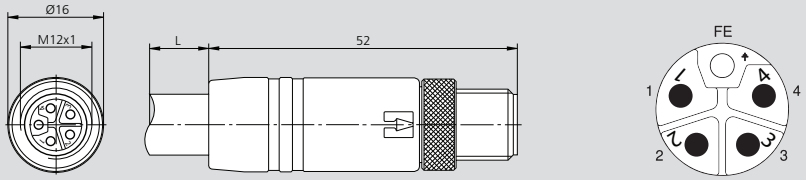
Female connector 5-pin:



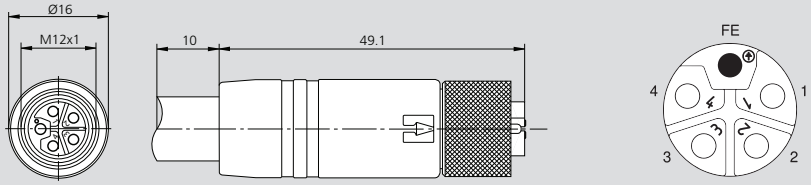
SMW-electronics Type	Connection cable M12 pin straight to M12 socket straight	
Id. No.	**0E011405**	**0E011406**
Number of poles	Side 1 = 5, side 2 = 5	
Coding	A	
Material contact	CuSn, gold-plated	
Cable sheath	PUR black	
Cable construction	5 x 0.5 mm²	
UL approval	UL 2238; cURus	
IP protection class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

Power cable for IO-Link hub

Male connector 5-pin:



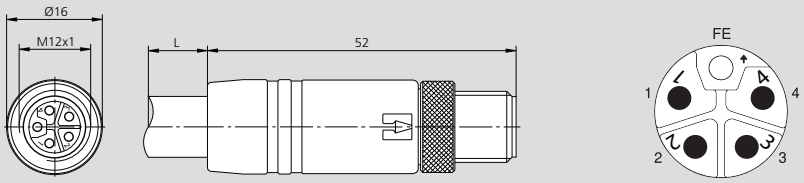
Female connector 5-pin:



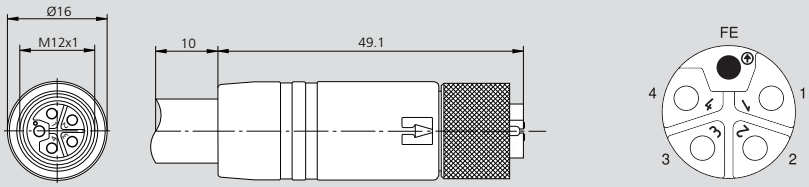
SMW-electronics Type	M12 power connection cable: socket, straight
Id. No.	**0E011407**
Number of poles	5 (4+FE)
Coding	L
Material contact	CuNi, gold-plated
Cable sheath	PUR grey
Cable construction	5 x 1.5 mm²
UL approval	UL 2237; cULus
IP protection class	IP65, IP67, IP68, IP69K
Length	5 m
Shielding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

Power cable for IO-Link hub (0E011404)

Male connector 5-pin:



Female connector 5-pin:



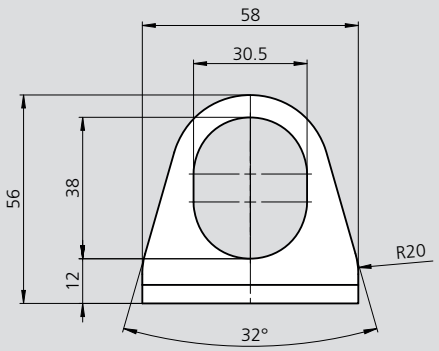
SMW-electronics Type	M12 power connection cable: socket, straight
Id. No.	**0E011407**
Number of poles	5 (4+FE)
Coding	L
Material contact	CuNi, gold-plated
Cable sheath	PUR grey
Cable construction	5 x 1.5 mm^2
UL approval	UL 2237; cULus
IP protection class	IP65, IP67, IP68, IP69K
Length	5 m
Shielding	unshielded
Operating voltage	63 V
Rated current	16 A

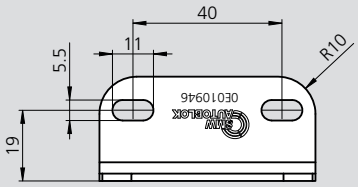
Mounting brackets

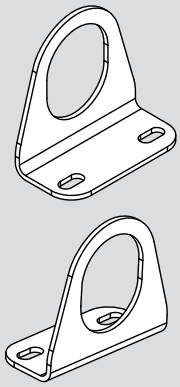
Accessories

■ For Inductive couplers M30, M18 and M12

Mounting bracket for inductive coupler M30



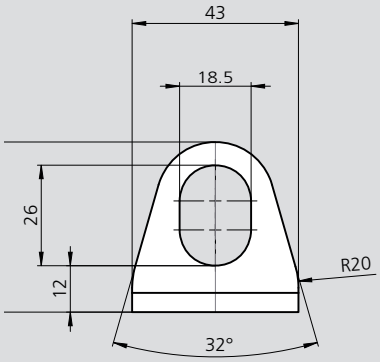


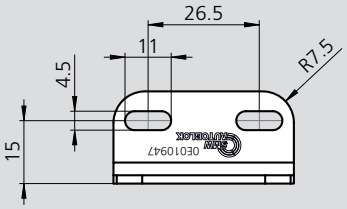


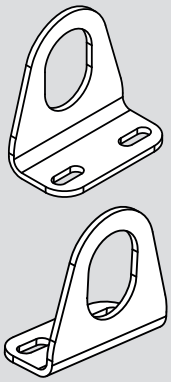
Scope of delivery: 1 piece

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

Mounting bracket for inductive coupler M18



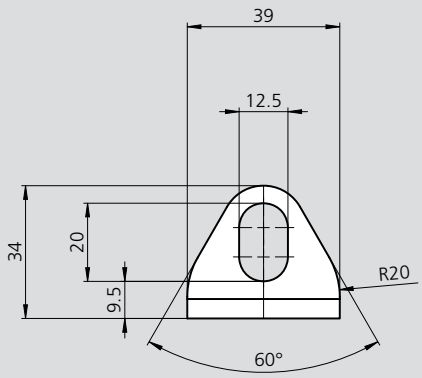


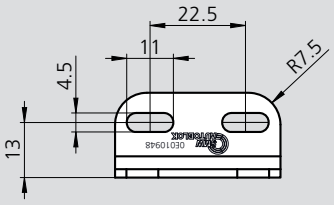


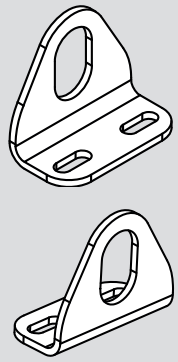
Scope of delivery: 1 piece

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

Notes

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.

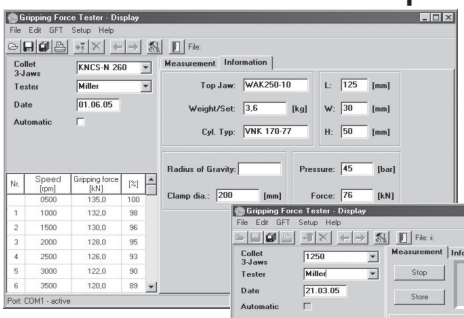
Input

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

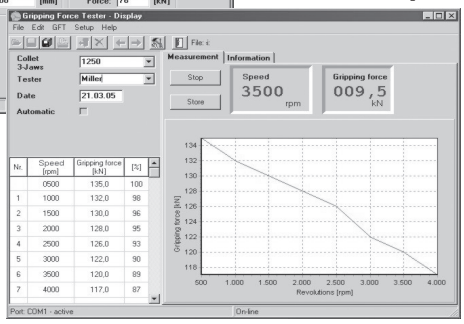
Output

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

Input



Output



Technical data

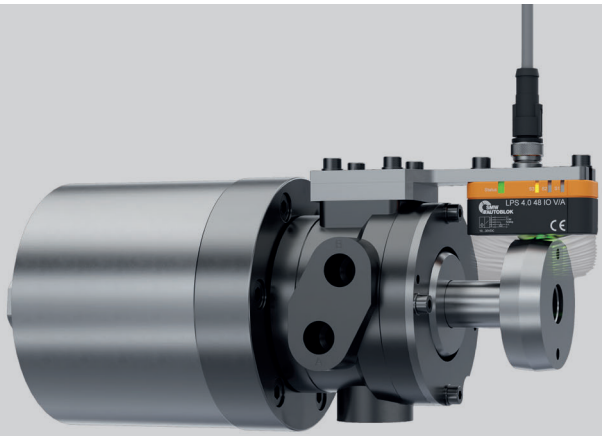
Tablet	
Display / Grip force F – speed	Display in kN / lbf - r.p.m
Data transfer	Bluetooth 4.0
Power supply / Transformer	100 / 240 V AC, 50 to 60 Hz
Distance Tablet / Measuring head	1-4 m (appr.)
Interface PC / Laptop	USB 2.0
Operating temp.	0 to 40° (32°-100 °F)
Protection class	IP 67

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

Application examples

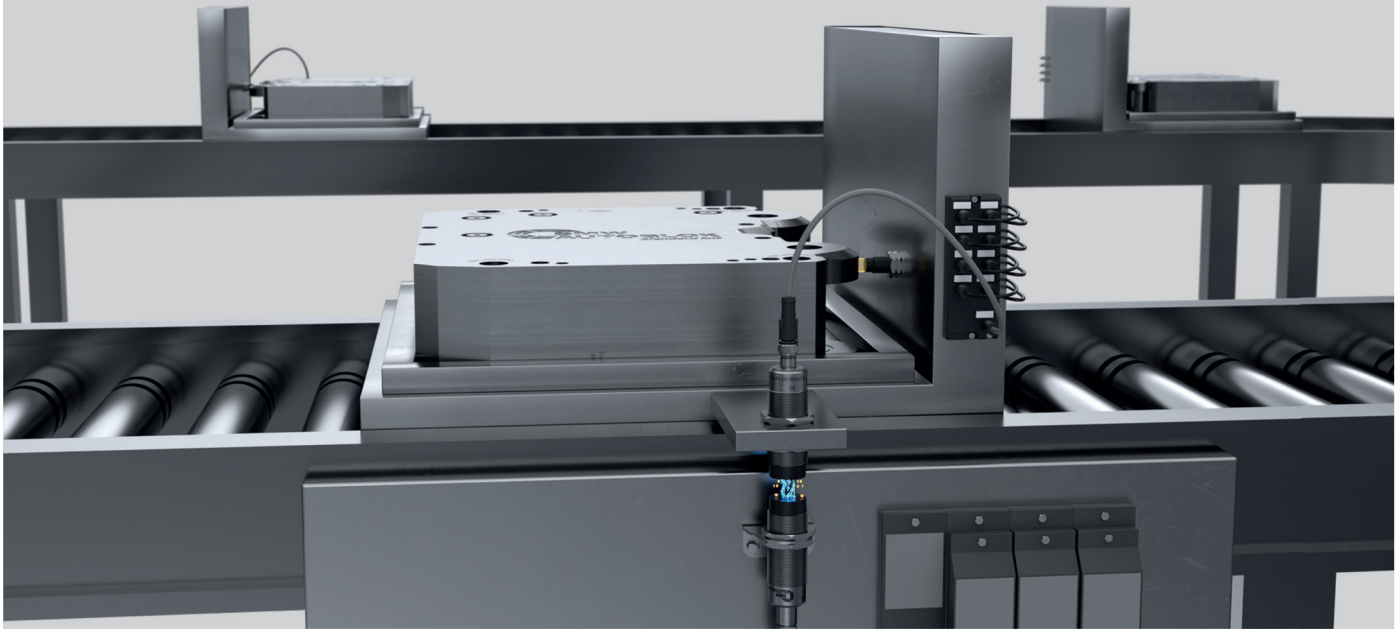


Application:
Cylinder stroke sensing with linear position sensor LPS 4.0

- 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

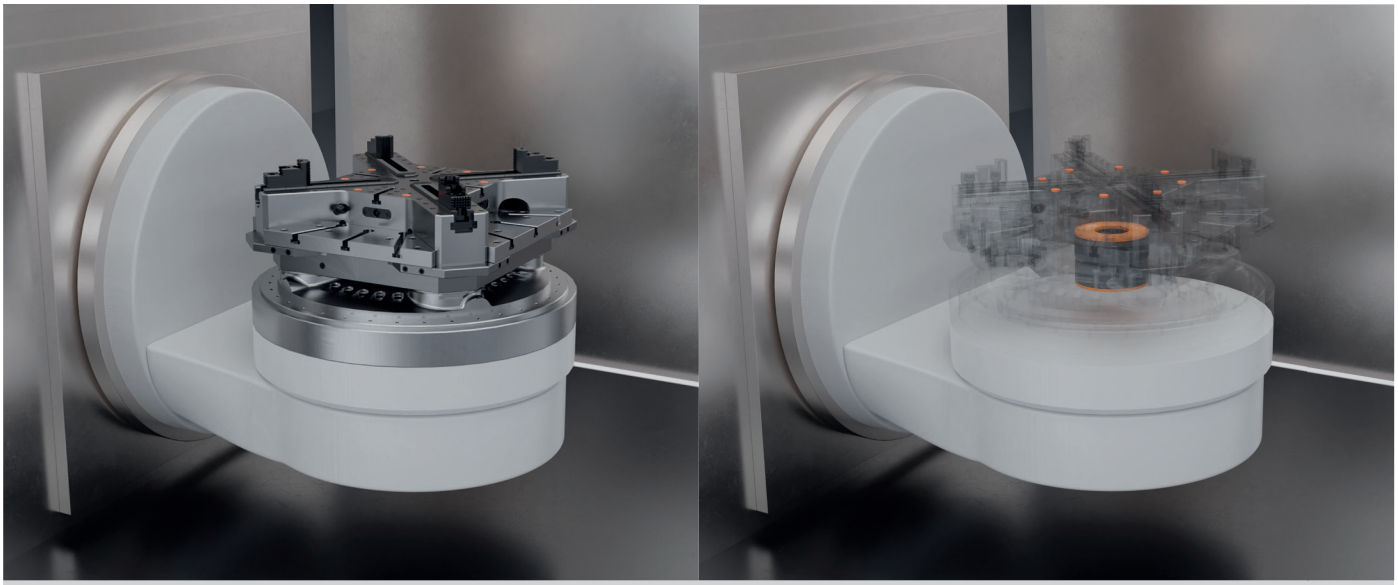
- Inductive transmission of energy and signals
- Very fast connection set-up between base and remote system
- Dynamic pairing: 1 base system connects to several remote units
- Suitable for clean room applications
- Different signals possible (IO-Link, digital signals, analog signals)



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

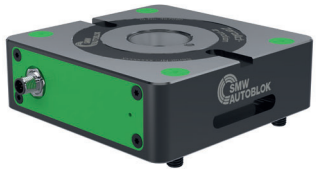
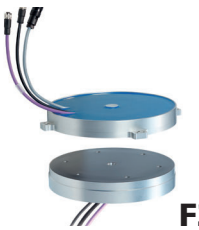
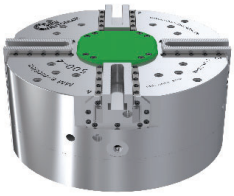
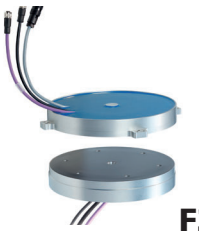
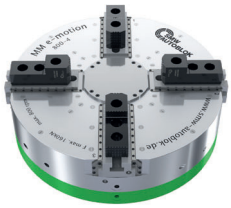
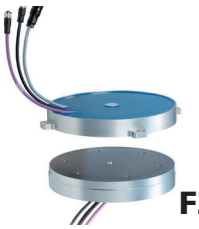
- Inductive transmission of energy and signal between machine table and pallet
- Digitized clamping devices: Monitoring of different process parameters even during machining by using integrated sensor technology
- Ethernet or IO-Link

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

INTEGRATION OVERVIEW

PLUG & PLAY

PRODUCT		CONTROL	INDUCTIVE COUPLING SYSTEM
ZeroAct *e-motion*		**Integrated** (DIGITAL)	**Optional**
SLX *e-motion*		**Integrated** (PROFINET)	**Optional**
RT *e-motion*		 **AC-MM** (PROFIBUS)	 **F280**
MM 500 *e-motion*		 **AC-MM** (PROFIBUS)	 **F280**
MM 800 *e-motion*		 **AC-MM** (PROFIBUS)	 **F280**
CC 320 *e-motion*		**Integrated** (PROFINET)	 **F180**

CABLE SET	**SOFTWARE** PLC modules	**HMI** Operating screen APP
Standard **Sensor/actuator cable M12x1**	Machine side **not necessary**	Machine side **not necessary**
		Machine side **not necessary**
Integrated		
		
		
		

Notes

Notes

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