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INDUSTRIAL EQUIPMENT


OFF HIGHWAY


AEROSPACE

MANUAL

Inductive Coupler System M18

Validity

0E010954	Inductive Coupler M18 Base	28.04.2022	V1.2	EN
0E010955	Inductive Coupler M18 Remote	28.04.2022	V1.2	EN

Original

Content

Safety instructions

Important!
Vor Inbetriebnahme ist die Betriebsanleitung sorgfältig zu lesen.

Intended use

The device is designed to transmit energy and signals without contact. The system must not be used in applications where the safety of persons depends on the device function.

Liability claims against the manufacturer expire in the event of damage caused by:
- unauthorized tampering
- use not in accordance with the intended purpose
- use, installation, handling contrary to the regulations of these operating instructions.

Authorized personnel

Installation and commissioning are only permitted by trained specialist personnel.

Duties of the operator

The operator must ensure that the locally applicable national and international safety regulations are observed. The unit may only be operated with an approved power supply.

Operating faults

In case of defective and unrecoverable device malfunctions, put the device out of operation and secure it against unauthorized use.

Meaning of the warnings

It is essential to observe the warnings in this manual and the measures described to avoid danger. The warnings contain the following signal words, which indicate the seriousness of the danger:

⚠ Danger

Denotes an immediate hazard that will result in serious injury or death to persons if not avoided.

⚠ Caution!

Indicates a potential hazard that can lead to minor injury to persons or damage to property if it is not avoided.

Attention

Indicates a situation which, if not avoided, may result in property damage.
The following warnings apply to the handling of the present product.

Caution!

Danger of burns from hot surfaces!
The active surface heats up even under normal operating conditions.
Keep hands and objects away from the active surface.
Avoid contact of metallic objects on the active surface. Fire hazard!

Certification

With the CE mark we confirm that our products comply with the requirements of the EC Directives 2004/108/EC (EMC) and the EMC Act.

In an accredited EMC laboratory, proof was provided that the products meet the EMC requirements of the basic technical standards:
- EN 61000-6-4 (emitted interference) and
- EN 61000-6-2 (immunity to interference)

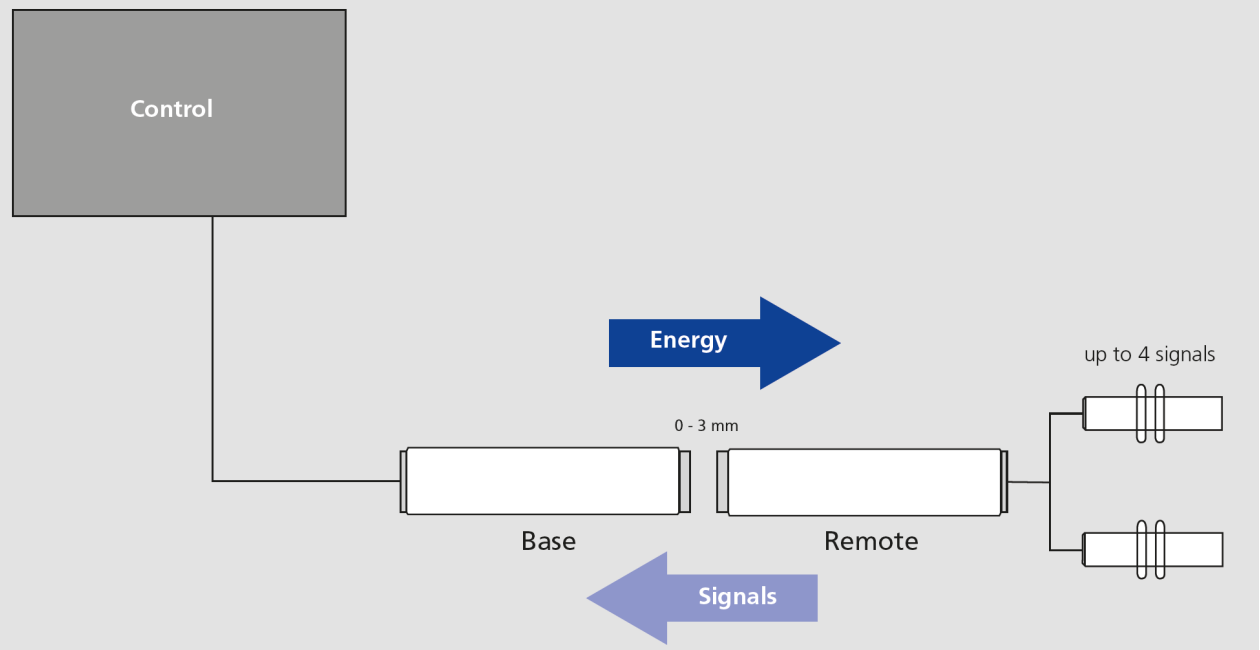
Protection against electromagnetic fields during operation and assembly

The permissible values according to VDE 0848 Part 3-1 are observed from a distance of >3 mm. Persons with physical aids (e.g. pacemakers) may be exposed to health hazards due to the magnetic fields emitted by the coupler system. The minimum distance for this group of persons is >5 mm. The operator must ensure that this minimum distance is also maintained during operation by taking suitable measures.

Function

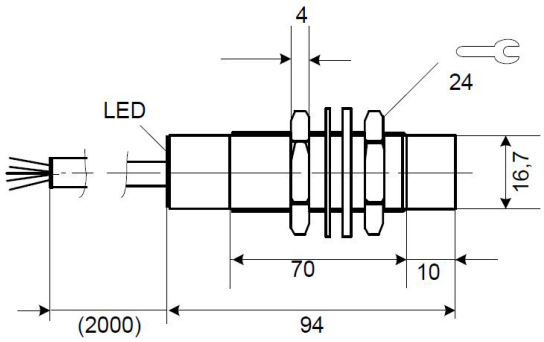
The coupler system transmits 4 binary sensor signals (PNP) from the mobile unit (remote) via the air gap to the stationary unit (base). In addition to signal transmission, the coupler system supplies the sensors connected to the remote with electrical energy.

The maximum permissible transmission distance between base and remote is 3.0 mm, with a permissible axial offset of ± 3 mm.



Technical Data Base 0E010954

Dimension



Mechanical Data

Housing	1.4305
Front	PA6 GF 30% schwarz
End	PC GF30% (Polycarbonat)
Protection class	IP67 (in the screwed state)
Thread	M18 x 94, Thread M18 x 1
Wrench size nut	SW 24
Connection	PUR Cable with open wire end
Weight	350 g

Operating Conditions

Transmission Distance	0 … 3 mm
Offset	± 3 mm
Operating temperature T_a	0°C … 50°C, thermal overload protection
Storage temperature	-10°C … 70°C

Electrical Data

Power supply	**24 V DC ± 10 %**
Input current in operation	≤ 500 mA
Input current	≤ 100 mA
Signal delay	≤ 80 ms
Function display Slow flashing Continuous light (static) Fast flashing	green Power on, no Remote unit detected Connected Overload/ short circuit
Digital outputs (0/24 V)	4
DAV Digital control signal (0/24 V)	24 V Signal transmission valid 0 V Signal transmission invalid
Current load per output	< 50 mA
Reverse polarity protection	Yes
Overload protection	Yes

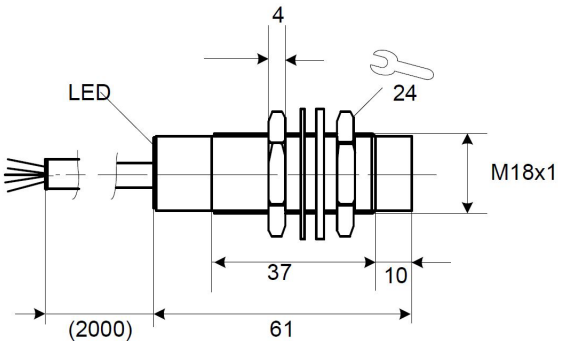
Electrical Connection

Cable PUR			
Pin	**Name**	**Color**	Cable PUR with open end, 7x0,34mm², Length 2000mm
1	+24V	WH	
2	GND, 0V	BU	
3	Digital output channel DAV* 0/24V	GY	
4	Digital output channel 1 0/24V	BN	
5	Digital output channel 2 0/24V	PK	
6	Digital output channel 3 0/24V	YE	
7	Digital output channel 4 0/24V	GN	

* DAV = Digital control signal (Data Valid)

Technical Data Remote 0E010955

Dimensions



Mechanical Data

Housing	1.4305
Front	PA6 GF 30% black
End	PC GF30% (Polycarbonat)

Protection class	IP67 (in the screwed state)
Thread	M18 x 94, Thread M18 x 1
Wrench size nut	SW 24
Connection	PUR Cable with open wire end
Weight	310 g

Operating Conditions

Transmission Distance	**0 … 3 mm**
Offset	± 3 mm
Operating temperature Ta	0°C … 50°C, Thermal overload protection
Storage temperature	-10°C … 70°C

Elektrical Data

Power supply	**12 V DC ± 10 %**
Output current	< 100mA (in verbundenem Zustand)
Permissible capacitive load	≤ 20 uF
Permissible inductive load	≤ 200 mH
Function display Continuous light (static) Fast flashing	green Verbindung aufgebaut Overload/ short circuit
Signal delay	≤ 80ms
Digital outputs (0/24 V)	4
DAV Digital control signal (0/24 V)	24 V Signal transmission valid 0 V Signal transmission invalid

Reverse polarity protection	Yes
Short circuit protection	Yes
Overload protection	Yes
Digital inputs (0/12V)	4 PNP

Electrical Connection

Cable PUR			
Pin	**Name**	**Farbe**	Cable PUR with open end, 7x0,34mm², Length 2000mm
1	+12V	WH	
2	GND, 0V	BU	
3	Digital input channel 1 0/24V	BN	
4	Digital input channel 2 0/24V	PK	
5	Digital input channel 3 0/24V	YE	
6	Digital input channel 4 0/24V	GN	
7	NC	GY	

Integration

Commissioning can only take place after a complete transmission chain with base and remote unit has been set up.

Damage to the coupler possible due to induction effects, metallic objects near the coil cap lead to overheating. When installing in metal, the specified minimum distances must be observed.

After switching on the supply voltage of 24 V for the first time, the following steps should be carried out to check the correct function:

Function display	green
Slow flashing	Power on, no Remote unit detected
Continuous light (static)	Connected
Fast flashing	Overload/ short circuit

Installation/ Safety regulations

⚠ Attention

The integration of the stationary and the mobile unit of the contactless transmission is carried out by mounting in an axial orientation, taking into account the limit distance. The assembly must take place in the (electrical) voltage-free state.

The following sections describe important installation instructions that must be observed for correct operation.

Distance

A prerequisite for the operation of a module pair is the correct arrangement of base and remote unit in axial alignment. The following figure shows the optimum operating position of the modules in which power transmission and signal exchange can take place.

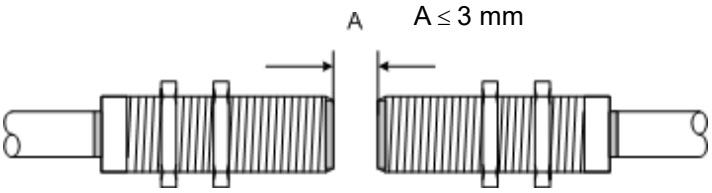


Figure 1 Units in operating position

Mutual interference

To prevent mutual interference with adjacent Bases or Remotes, the specified minimum distances must be ≥ 30 mm.

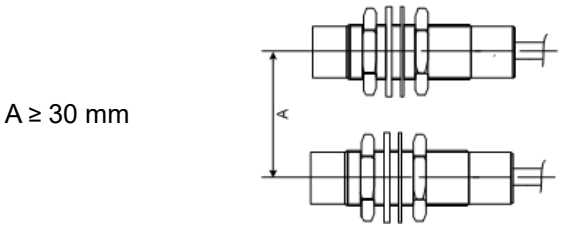


Figure 2 Mutual influence

Permissible angular misalignment

The permissible angular misalignment enables function in special installation positions.

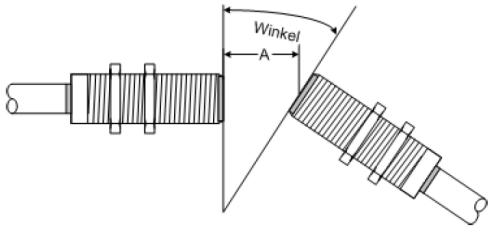


Figure 3 Angular misalignment

Distance D	Angle °
1 mm	15°
2 mm	8°
3 mm	5°

Permissible offset

The maximum lateral offset between the stationary and mobile unit is ± 3.0 mm.

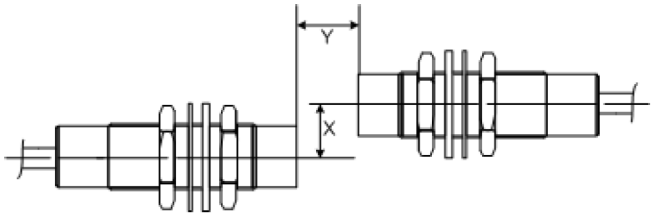


Figure 4 Offset

	Angle °
1 mm	15°
2 mm	8°
3 mm	5°

Installation in metal

Damage to the device due to induction effects. Metallic objects on the coil cap cause the objects to heat up. The components must be installed in such a way that no metallic objects can accumulate on the active surface.

Metallic objects near the coil cap lead to overheating and possibly to failure of the coupler system. When installing in metal, the specified minimum distances must be observed.

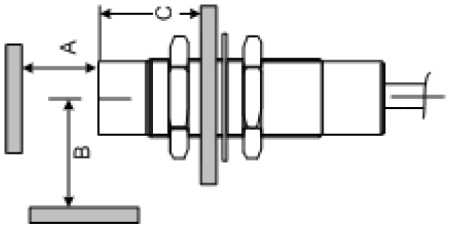


Figure 5 Installation in metal

A (mm)	B (mm)	C (mm)
≥ 4	≥ 15	≥ 20

Troubleshooting

The occurrence of faults will primarily be noticeable by the absence of the secondary output voltage, missing PLC signals or the occurrence of non-plausible switching operations. Troubleshooting should be carried out according to the following checklist:

- Measurement of voltage supply and current consumption
- Check the green LED on the Base unit
- Check the green LEDs on the Stationary Box
- Checking for wire breakage at the plug and cable connections
- Identification of possible EMI - interferers in the environment by switching off possible and suspicious sources
- If no obvious faults can be identified, replacement of components with spare parts, replacement of the entire system if necessary

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