
AUTOMOTIVE


OCTG


INDUSTRIAL EQUIPMENT


OFF HIGHWAY


AEROSPACE

MANUAL

Inductive Coupler System M12

Validity

0E010956	Inductive Coupler M12 Base	22.02.2021	V1.3	EN
0E010957	Inductive Coupler M12 Remote	22.02.2021	V1.3	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 two binary sensor signals 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 2.5 mm, with a permissible axial offset of ± 2 mm.

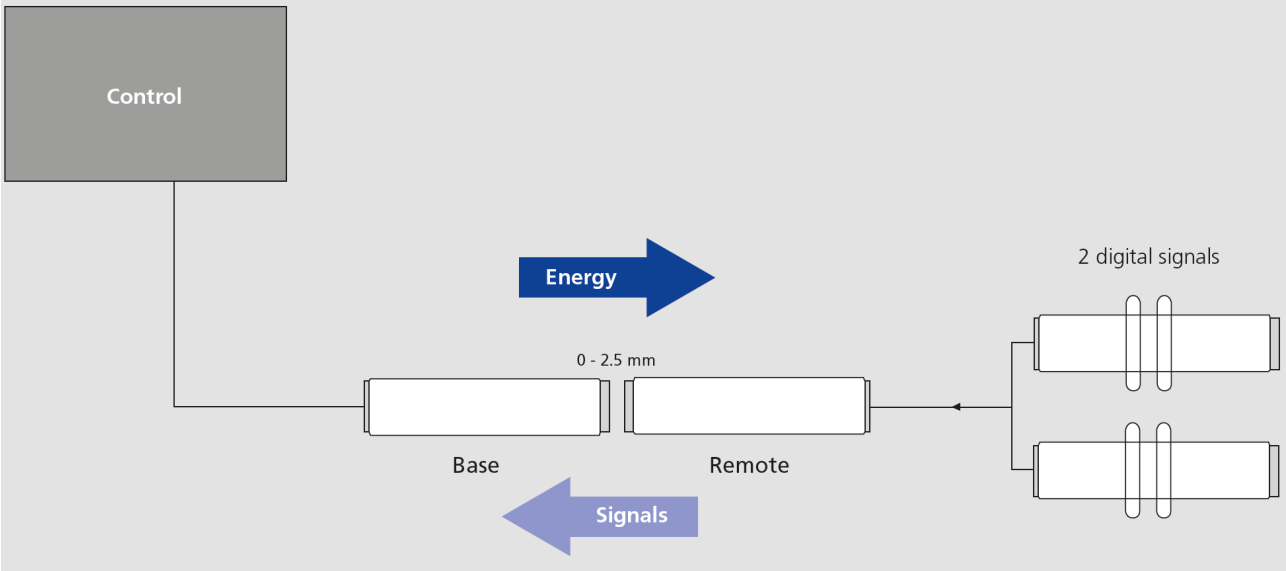
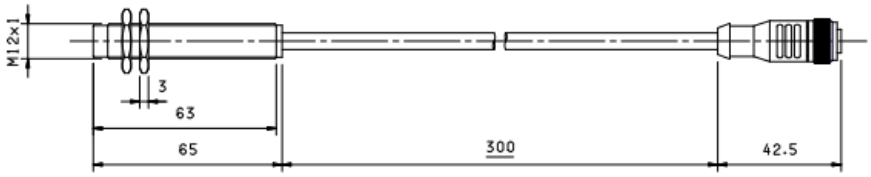


Figure 1 Inductive Coupler System M12

Technical Data Base 0E010956

Dimensions



Mechanical Data

Housing	Messing, CuZn beschichtet
Front	PA6.6 GF 30% black
End	PC GF30% (Polycarbonat)
Protection class	IP67 (in the screwed state)
Thread	M12x1
Wrench size nut	SW 17
Connection	M12 Plug 5 Pin
Weight	40 g

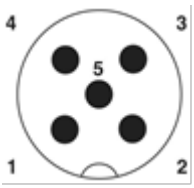
Operating Conditions

Transmission Distance	0 … 2.5 mm
Offset	± 2 mm
Operating temperature T_a	-10°C … 55°C, thermal overload protection
Storage temperature	-25°C … 70°C

Electrical Data

Power supply	**24 V DC ± 10 %**
Input current in operation	< 400 mA
Input current	< 100 mA
Signal delay	< 20 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)	2
DAV Digital control signal (0/24 V)	24 V Signal transmission valid 0 V Signal transmission invalid
Current load per output	< 50mA
Reverse polarity protection	Yes

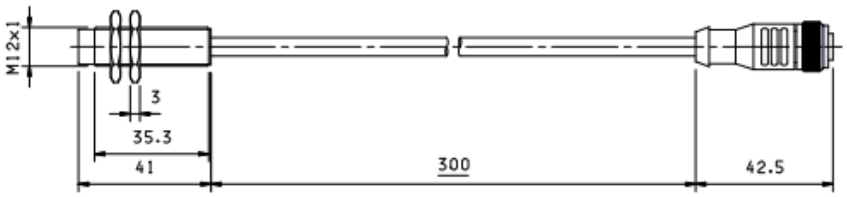
Electrical Connection

Plug (M12) Base Unit			
Pin	**Name**	**Color***	Pin assignment plug (M12, 5 Pin, plug)
1	+24 V	braun	
2	Digital output channel 1 0/ 24 V	white	
3	GND, 0V	blue	
4	Digital output channel 2 0/ 24 V	black	
5	Digital output channel DAV 0/ 24 V	grey	

* DAV = Digital control signal (Data Valid)

Technical Data Remote 0E010957

Dimensions



Mechanical Data

Housing	Brass, CuZn coated
Plastic cap front	PA6.6 GF 30% black
End cap	PC GF30% (Polycarbonat)
Protection claas	IP67 (in the screwed state)
Thread	M12x1
Wrench size nut	SW 17
Connection	M12 Socket 5 Pin
Weight	30 g

Operating Conditions

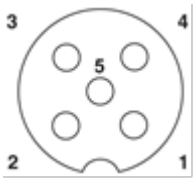
Transmission Distance	0 … 2.5 mm
Offset	± 2 mm
Operating temperature Ta	-10°C … 55°C
Storage temperature	-25°C … 70°C

Electrical Data

Power supply	**24 V DC ± 10 %**
Output current	< 50mA (in connected state)
Permissible capacitive load	< 10 uF
Permissible inductive load	< 200 mH
Short circuit protection	Yes
Signal delay	< 20ms
Digital inputs (0/24V)	Reverse polarity protection

Electrical Connection

Socket (M12) Remote Unit			
Pin	**Name**	**Color**	Pin assignment socket (M12, 5 Pin, socket)
1	+24 V	brown	
2	Digital input channel 1 0/ 24 V	white	
3	GND, 0V	blue	
4	Digital input channel 2 0/ 24 V	Black	
5	NC	grey	



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.

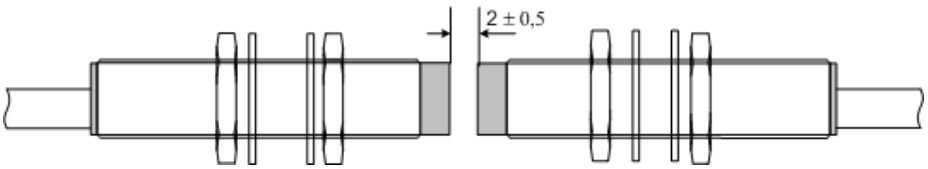


Figure 2 Units in operating position

Mutual influence in parallel operation

Attention!

Improper assembly can impair the function of the system and lead to damage. The values specified for the installation must therefore be observed.

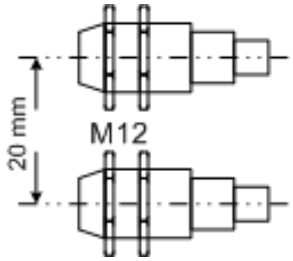


Figure 3 Influence each other

Permissible angular misalignment

The permissible angular misalignment enables function in special installation positions.

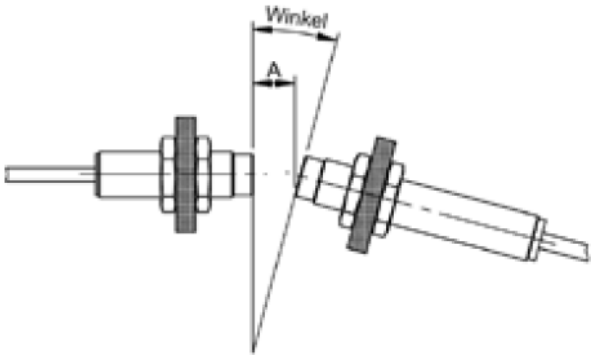


Figure 4 Angular misalignment

Distance D	Angle °
0.5 mm	20°
1 mm	15°
2 mm	7°

Permissible offset

The maximum lateral offset between the stationary and mobile unit is ±2 mm.

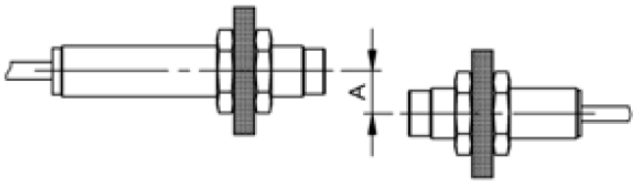


Figure 5 Offset

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.

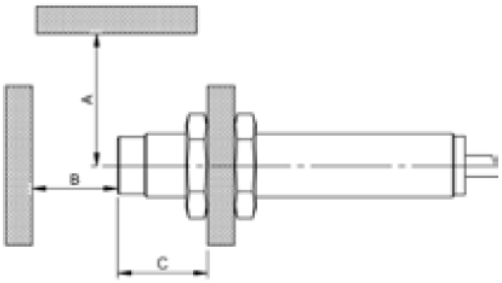


Figure 6 Installation in metal

A (mm)	B (mm)	C (mm)
≥ 15	≥ 8	≥ 6

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

SMW-AUTOBLOK Spannsysteme GmbH
Wiesentalstraße 28
88074 Meckenbeuren

Tel.: +49 7542 405-0
Fax: +49 7542 405-171
E-Mail: info@smw-electronics.de