

APPLICATION AND PRINCIPLES OF OPERATION



Fig. 1: INPUD B8 System for 8 PNP sensors

Application

INPUD systems are used where fixed wiring is a problem, for example on rotary tables, rotating shafts etc., and where the use of slip rings is precluded by the presence of dust, water or oil. These systems are also used to replace slip rings due to their susceptibility to rapid mechanical wear, which leads to machine failure and downtime.

Principles of operation

The detector senses an object and sends a signal to the transmitter. The latter passes the signal to the receiver, which in turn sends it to the control. The receiver communicates with the detector / transmitter unit inductively, providing it with the necessary operating voltage.

The yellow *DATA* LED comes on to indicate error-free data transmission (*signals*).

The green *POWER ON* LED comes on to indicate that the rotating unit is able to sufficiently power the detectors.

Should the green LED go off momentarily, this is an indication that the system is in the regulating phase (< 1 second).

Maintenance

Since no mechanically contacting parts are used, this technology completely eliminates all service and maintenance work. It is recommended that the mechanical fixturing be checked regularly, as well as the size of the air gap.

Sensors, Supply and Data are connected as it is shown in figure 2.

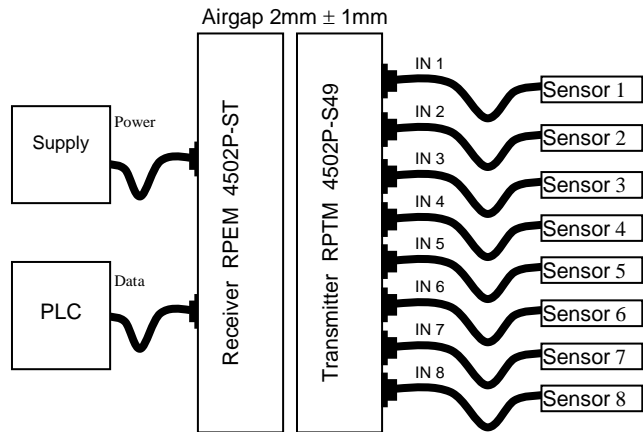


Fig 2: Principles of connecting supply, data and 8 PNP sensors

Inductive transmission

The transmission is working on an inductive way, therefore contactless. The recommended airgap between transmitter and receiver is 2 mm, we guarantee a transmission up to 3mm distance.

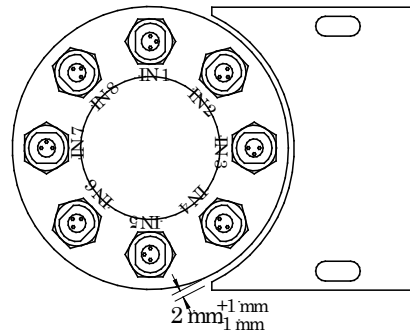


Fig. 3: Airgap between transmitter and receiver

INSTALLATION

The following installation notes must be observed!

Caution :

- **The receiver must not be powered if the transmitter unit is not located opposite it.**
- **The detector plugs of the transmitter (IN1 to IN8) must not be supplied with voltage.**
- **Depending on the operating condition, modules can get hot.**

Installation in metal surrounding

When installing in metal, the specified minimum distances must be observed, since otherwise the transmission distance between transmitter and output sensor will change. The transmission distance can also be affected by the type of metal surrounding.

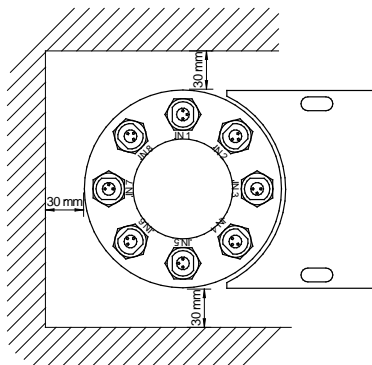


Fig.4: Distances to surrounding metal

The system must have 30 mm of separation from a metallic surface on the underside.

Mutual interference

To prevent mutual interference from adjacent transmitters or receiver, the indicated separations must be maintained:

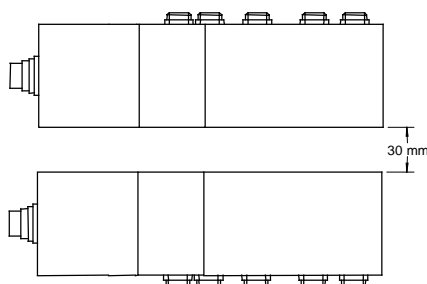


Fig.5: Separation between two systems

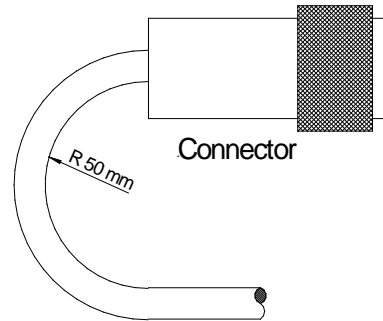


Fig.6: Least bending radius

Cable routing

Note the following when routing cable:

- Double check the connections.
- When routing cables, avoid proximity to high voltage lines in order to prevent noise coupling. Especially critical is inductive interference caused by AC harmonics, against which the cable offers no protection.
- Note the least bending radius of the cable, see figure 6.

Power supply

The INPUD B8 System is supplied by 24 V_{dc} and a current less than 0.8A

The current draw of the receiver depends on the size of the air gap and the load; the load is made up of the sum of all connected detectors.

Only power supplies bearing the CE Marking may be used. Excessive ripple or an unregulated output voltage may result in RF disturbances.

The CE Marking attests that our products meet the requirements of the EC Directives 89/336/EWG (EMC) and the EMC Law.

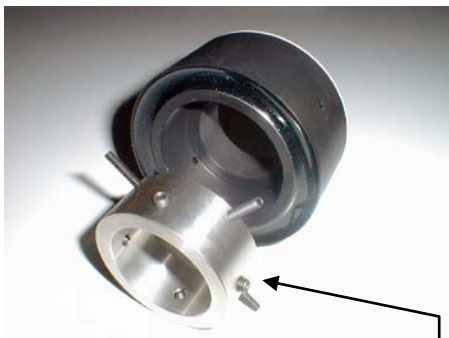
Testing in an EMC Laboratory, which is accredited by the DATech for Testing of Electromagnetic Compatibility, has confirmed that MESA products fulfill the EMC requirements of the following standards:

- EN 50 081-2 (Emission) and
- EN 50 081-2 (Noise Immunity)

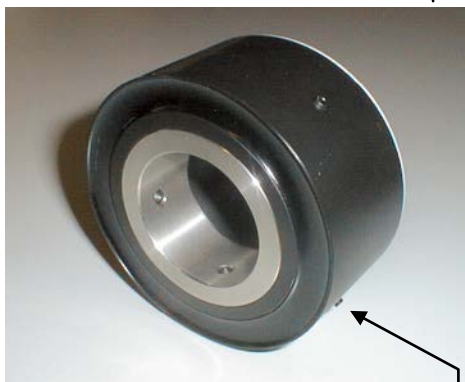
INSTALLATION

Installation procedure

- A red arrow is adhered to each transmitter and each receiver. When installing, make sure both arrows point in the same direction.
- Attach metal ring to the shaft using the M6x8 stud screws; *(included)*
 ↳ See Step 1
- Attach rotating module to metal ring using M4x20 stud screws; *(included)*
 ↳ See Step 2
- When using shaft diameters less than 45 mm, attach using a suitable set collar.
- Connect detectors to IN 1 through IN 8; to ensure IP67 protection, cover unused plugs with seal caps
- Install stationary module; adjust to an air gap of 2mm; the distance should be set such that imbalance or vibration on the rotating shaft will not allow the two systems to make mechanical contact
- Turn on system; current draw should be < 1A.



Step 1:
 Attach metal ring to the shaft using the M6x8 stud screws



Step 2:
 Attach rotating module to metal ring using M4x20 stud screws

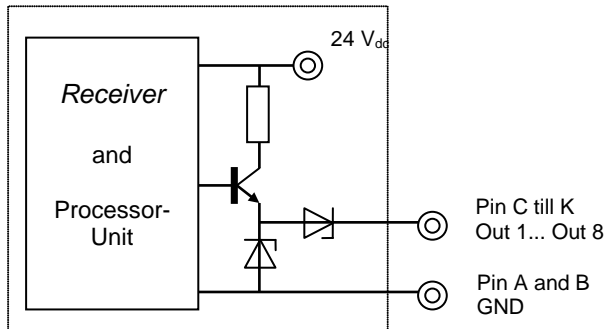


Fig. 7: Internal circuit off Out1..Out8

12-pin flange socket DATA

PIN L, Power On, green LED (see p. 4, Connections)

The output is active when the transmitter unit is able to sufficiently supply the connected detectors. If the LED is not on but the system is functioning anyway, check the air gap (may be too large). The current draw by the detectors is greater than 160 mA.

Should the green LED go off momentarily, this is an indication that the system is in the regulating phase.

PIN M, Data, yellow LED

The output is active when there is error-free data transmission from the transmitter to the output sensor. If the LED is not on, check the air gap

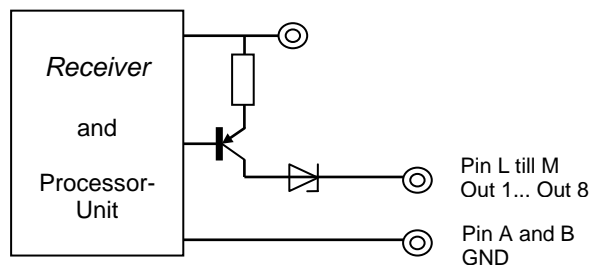


Fig. 8: Internal circuit off the signals „Power on“ and „Data“

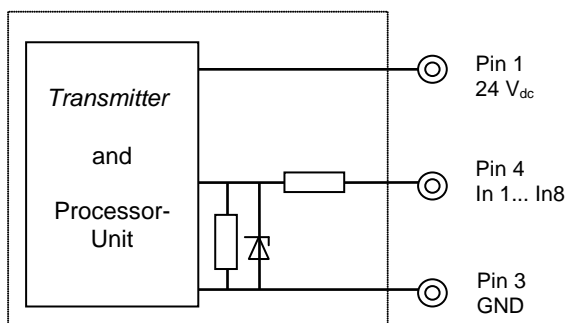


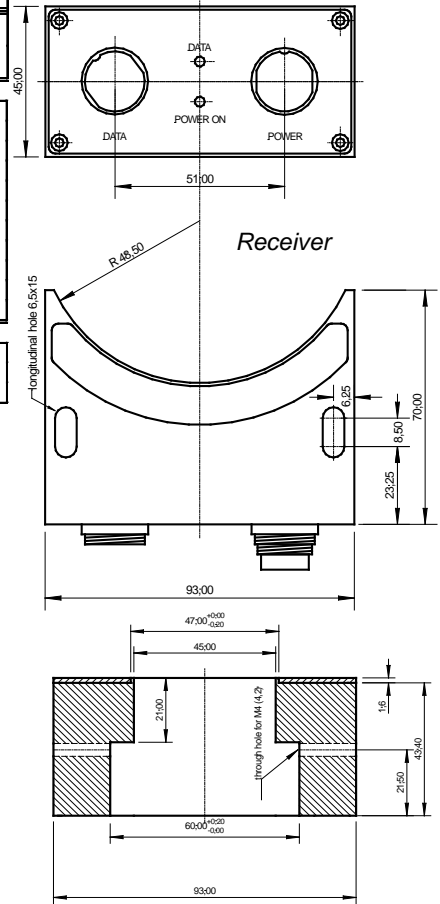
Fig. 9: Internal circuit off IN1..IN8

CONNECTIONS AND TECHNICAL DATA

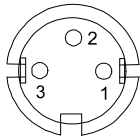
Connector	Names of in-/outputs	Pin	Wire colors	Cable type
Power Receiver Stationary module Binder Series 423	GND	1 ; 3	white; green	Corresp. Coupling incl. 5m cable PUR 3x0,25mm ²
	24 V _{dc}	2	brown / yellow	
Data Receiver Stationary module Binder Series 423	GND	A ; B	black ; gr/pk	Corresp. Coupling incl. 5m cable PUR 14x0,14mm ²
	Out 1	C	brown	
	Out 2	D	pink	
	Out 3	E	yellow	
	Out 4	F	green	
	Out 5	G	blue	
	Out 6	H	violet	
	Out 7	J	gray	
	Out 8	K	white	
	„Power on“ Signal	L	green / white	
„Data“ Signal	M	green / brown		
824 V _{dc} ¹⁾	Detector connection 8 x M	1	Connecting detectors; ²⁾	
IN1 till IN8		4		
GND ¹⁾		3		

¹⁾ galvanically isolated from the stationary side; do not connect to GND or 24 V_{dc} stationary (Receiver)
²⁾ to ensure IP67 protection, cover unused plugs with seal caps

Technical Drawing:

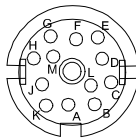


Power



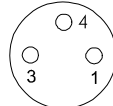
Flange plug front view
Stationary module „Power“ in
Binder Series 723 3-pin

Data



Flange socket front view
Stationary module „Data“ out
Binder Series 723 12-pin

Sensor

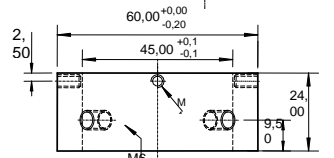
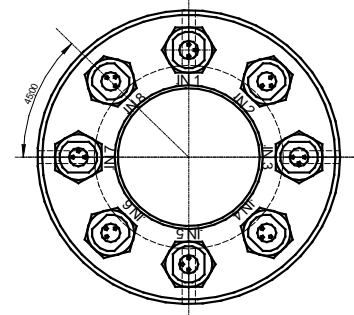


Flange socket front view
Rotating Module
8 x M8 detector connection
e.g.: Binder Series 718 3-in

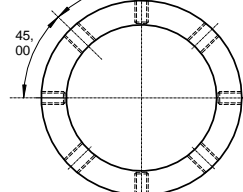
Technical Data

	Receiver Stationary module	Transmitter Rotary module
Dimensions	70mm x 93mm x 45mm	d _{in} =45mm ; d _{out} = 93mm
Installation type	Fixed	Rotating on a shaft d = 45mm
Assured transmission distance	2 mm, ± 1mm	2 mm, ± 1mm
Supply voltage U _b Including ripple	24 V ± 5%	± 1mm
Voltage drop	≤ 1,5V DC	24 V DC (-5%)
Current draw	0,2...0,8 A	≤ 160mA
Axial offset	± 1mm	30mA
Output voltage		75 V DC
Output current		Detector sensing rate 1kHz
Rated current per output		0°..70° C
Rated isolated voltage U _i	75 V DC	
Switching frequency		
Delay time	2,5 ms	
Ambient temperature T _a	0°..70° C	
Function / Operating voltage display	LED's and Signal output as open collector to ground	
Enclosure rating	IP67	IP67
Contamination protection	Water, Dust, Oil	Water, Dust, Oil
Housing material	POM	POM
Potting material	Wepuran	Wepuran
Connection type	Power Binder Series 423 3-polig Data Binder Series 423 12-polig	8 x M8 x 1 3-polig e.g. Binder Series 718
Recommended connecting cable	PUR 3 x 0,25mm ² PUR 14 x 0,14mm ²	
Weight	250 gr	650 gr

Transmitter



M4 (metric) not all the way through
Material: stainless steel



Metal ring: