



Operating manual

Evaluation Unit AW_P

1-Channel, PCM

Manner Sensortelemetrie GmbH
Eschenwasen 20
D-78549 Spaichingen

Telephone: +49 (0)7424 9329-0
Fax: +49 (0)7424 9329-29

E-mail: info@sensortelemetrie.de
Internet: www.sensortelemetrie.de

11030, 1, en_US

Revision History:

Document code	Date	Modification	Approval
11030, 1, en_US	2019-08-28	Creation of documentation	2019-08-28, von Borcke

Copyright

All rights for duplicating, photomechanical reproduction – also extracts - are explicitly reserved by the enterprise Manner Sensortelemetrie. Trade marks and trade names were used without verification of the free applicability.

Disclaimer Documentation

The texts and examples were prepared with care. Mistakes can not be excluded. The enterprise Manner Sensortelemetrie will assume no liability for missing or incorrect information and resulting consequences, neither judicial nor otherwise.

Modifications

The enterprise Manner Sensortelemetrie GmbH may change or upgrade hardware and software – or parts of them - as well as the provided documents (operation instructions, start-up instructions, spare parts lists) – or parts of them – without notification.

We would be pleased for suggestion for improvement and notes about mistakes.
©August 2019, Manner Sensortelemetrie GmbH

Table of contents

1	Safety	4
	1.1 Definition of Warnings.....	4
	1.2 General Warnings.....	4
2	Conventional Usage	6
3	Technical Data	7
	3.1 Measuring System.....	7
	3.2 Evaluation Unit.....	8
	3.2.1 Connection of Evaluation unit, Supplied by the Customer.....	10
4	Mounting / Starting	11
	4.1 Coupling / Installation.....	11
5	Options	13
6	Maintenance	14
7	Contact	15

1 Safety

1.1 Definition of Warnings



DANGER!

Hint for possible dangerous situation. Ignoring the security terms may cause death or serious injury.



WARNING!

Hint for possible dangerous situation. Ignoring the security terms may cause injury.



CAUTION!

Hint for possible damage of property, if the corresponding protective measure were disregarded.



Further information

1.2 General Warnings

The system startup has to be carried out by trained qualified personnel, who is able to evaluate the potential risks. All chapters of this instruction manual had to be read and fully understood before startup.

On non-observance it's not possible to assert a claim for the incurred losses from the manufacturer. Any changes to the system, except those described in the instruction manual and customer documentation, will invalidate any warranty.



DANGER!

Risk of Injury by Incorrect Installation

Incorrect installation can cause injury to persons directly while the installation or during the subsequent startup

Note the Mounting Hint (see chapter 4, installation instruction)

The system startup has to be carried out by instructed qualified personnel that's familiar with

- the professional handling of security relevant components,
- the valid regulations for operational safety und rules for accident prevention.



DANGER!

Risk of Injury by Unintentional Startup

Rotating or moving of parts by inadvertent startup of the machine can cause injury .

During all mounting, demounting or repairing the system has to be powered-off. Note the mounting instructions.

**DANGER!****Risk of Injury by Movable Parts**

While normal operation, as well as inadvertent loosening of parts of the telemetry system during operation, present persons may be injured if protective equipment is absent.

Check the safety function of the protective equipment particularly

- before each startup
- after each replacement of a component
- after a longer standstill
- after each defect

Independent thereof the safety function of the protective equipment must be checked in suitable time intervals as part of the maintenance work!

**WARNING!****Risk of Burn Injury**

While operation the sensor signal amplifier and the stator antenna may become warm.

Avoid contact.

**CAUTION!****Risk of Property Damage**

If the connectors disconnected / connected while the system is powered on the telemetry system as well as the connected devices can be damaged.

Plug connectors must not be disconnected / connected when the system is powered on.

2 Conventional Usage

Sensor telemetry systems are used for contact-free data and power transfer from passive and active sensors (e.g. on rotating shafts).



DANGER!

Risk of Subsequent Damages caused by Malfunctions

If the telemetry system is used for controlling or regulating functions it is not conceivable for, subsequent damages up to injury to persons can be caused.

The delivered system has to be used exclusively used for the purpose for which it was ordered.

The operator must take care of his health and safety.

The operator of the equipment must prevent subsequent errors following faulty measuring results. This is particularly necessary if the telemetry system is used in controlling or regulating functions.

The customer, as the builder of a system with an integrated sensor telemetry system, is responsible for the correct and conform operation and also assumes the responsibility for ensuring that the system at start-up complies with all provisions of Directives 2014/53/EU and 2014/35/EU.

Scope of Delivery

A telemetry system normally contains:

- Evaluation unit
- Stator antenna
- Rotor antenna
- Sensor signal amplifier
- HF cable



For the detailed purchased parts package of the delivered telemetry system mind the corresponding shipping ticket.

3 Technical Data

3.1 Measuring System

Technical Data Telemetry System

Term	Value
HF frequency	13.56 MHz
Number of channels	1
Bandwidth	0 to 1 kHz (-3dB)
Linearity	<0.1%

General Measuring Configuration

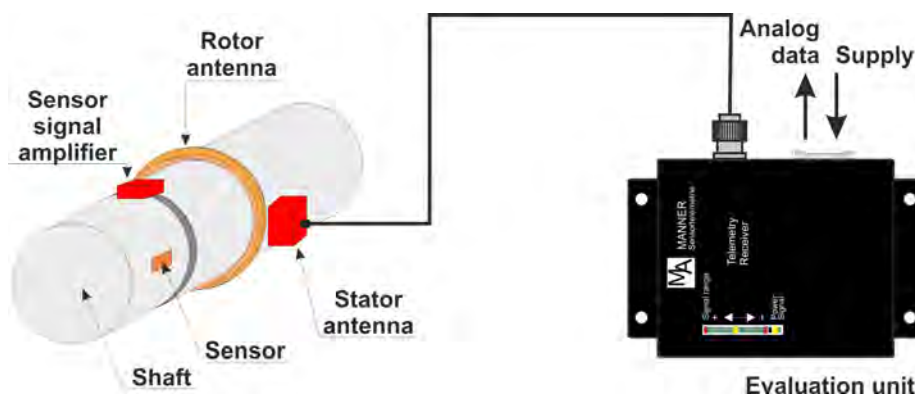


Fig. 1: General measuring configuration

Block Diagram

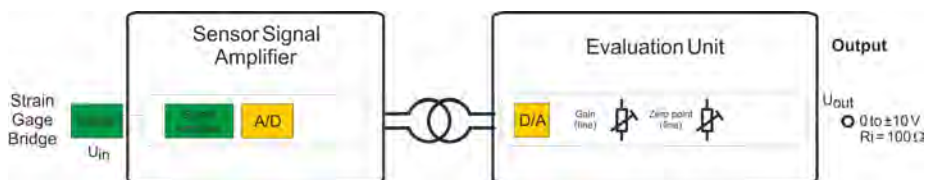


Fig. 2: Block diagram

Energy and Data Flow

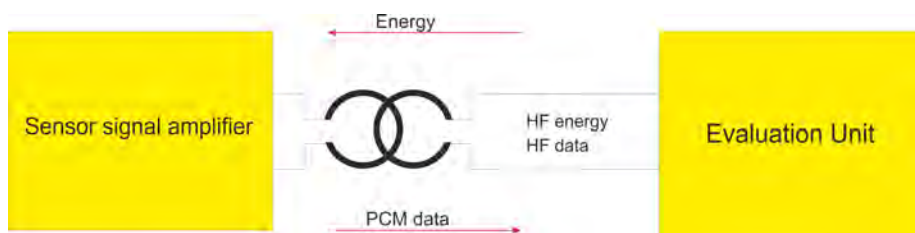


Fig. 3: Energy and data flow

3.2 Evaluation Unit

Technical Data Evaluation Unit

Term	Value
Evaluation unit type	AW_P_PCM16
Supply voltage evaluation unit	10 to 36 V DC
Maximum current drain	1.1 A
HF power	3 W
HF frequency	13.56 MHz
Channel sample rate	6.62 kS/s
Number of channels	1
Output voltage [U_{out}]	0 to ± 10 V, $R_i = 100 \Omega$
Max. mechanical stress	Acceleration $< 25 \text{ m/s}^2$ Vibration $< 65 \text{ Hz}$ to all 3 axes
Protection class	IP20
Temperature range	-10 to $+70^\circ\text{C}$

Scale Drawing Evaluation Unit



WARNING!

Risk of Burning

While operation the evaluation unit may become warm.

Avoid contact.



CAUTION!

Damaging of Electronic, Faulty Measuring Values

While overheating of the evaluation unit the built-in electronics may be damaged

Mount the evaluation unit onto a heat-conductive base.



The BNC connector (shield) and the housing are connected to pin 5 (GND voltage supply) .

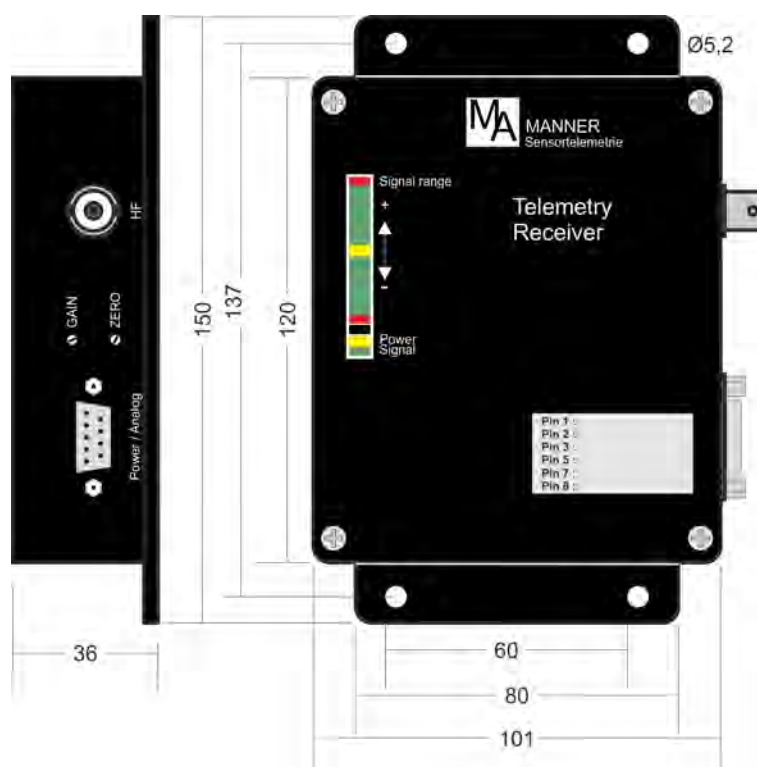
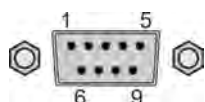


Fig. 4: Evaluation unit AW_P_PCM16

Control LEDs

	o.k.	no signal	Disruption to stator-antenna	CRC error
yellow LED (signal indicator)	on	on	flashing	on
green LED (CRC error indicator)	on	off	off	off / flashing

Pin Assignment D-Sub connector, male (Power / Analog Out)



Pin 1	Analog output 0 to ±10 V
Pin 2	Analog output GND
Pin 3	Cal. signal (active low) to pin 5
Pin 4	do not connect
Pin 5	GND power supply
Pin 6	do not connect
Pin 7	Power supply 10 to 36 V DC
Pin 8	do not connect
Pin 9	do not connect

3.2.1 Connection of Evaluation unit, Supplied by the Customer

Application Only with several GND side grounded appliances and not-grounded battery.

Notice The MANNER evaluation unit is operationally connected to the BNC connector between GND supply and housing (internal).

- Fault**
- the additional appliance and the MANNER evaluation unit GND supply are grounded
 - the additional appliance is connected to the "+" supply
 - the additional appliance "GND" power is separated (faulty / disconnected)

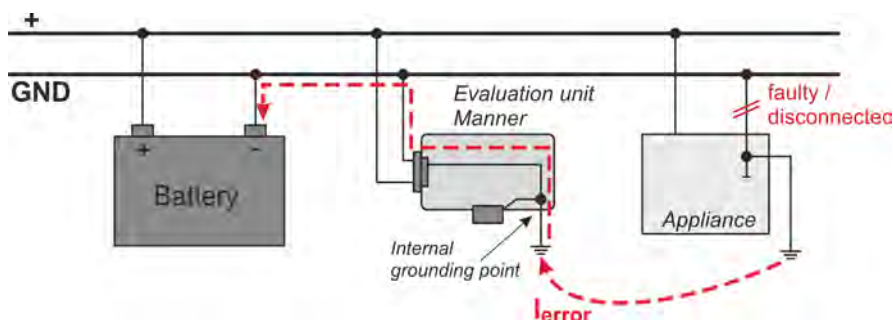


Fig. 5: Wiring diagram, error case

Effect A fault current flows (internal) back to the battery through the MANNER evaluation unit. This can cause damages to the internal electronics of the MANNER evaluation unit.

Corrective



Fig. 6: Socket connection cable

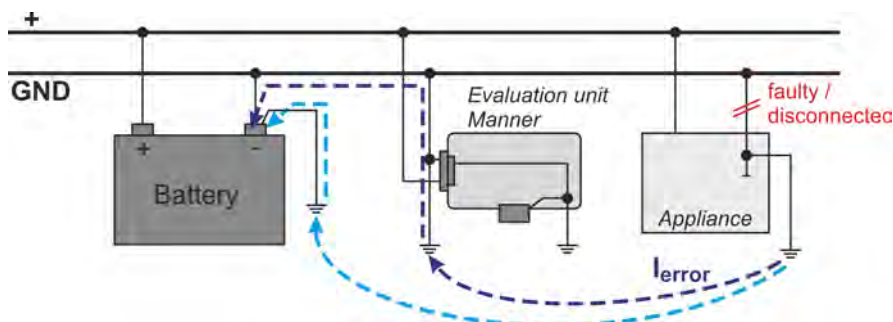


Fig. 7: Wiring diagram, correct



To avoid damaging the evaluation unit by ground currents, on customer side (socket connection cable) pin 5 must be connected to the socket housing! - See Fig. 6 + Fig. 7

The supply of the vehicle battery must be grounded.

4 Mounting / Starting

4.1 Coupling / Installation

Antenna Coupling



DANGER!

Risk of Faulty Measuring Data and Resulting Subsequent Errors, up to Injury to Persons

Damaging, modifications or disturbance of the coaxial cable(s) may falsify the measuring results and optionally cause subsequent errors according to operation purpose.

Do not buckle the coaxial cable!

Do not modify the coaxial cable!

Do not keep data cable and the coaxial cable together with energy- / high-power current cables!

The connectors of the HF energy and / or HF data coaxial cable must not have connection to the grounding of the machine!

Permissible bending radii for coaxial cables:

- RG58 → $R_B = 25$ mm
- RG400 → $R_B = 30$ mm static / 50 mm dynamic
- RG178 → $R_B = 15$ mm
- RG213 → $R_B = 50$ mm
- RG316 → $R_B = 15$ mm

The bending radii of the used coaxial cables must not be undercut



CAUTION!

Damaging of Antenna System

Contact between rotor antenna and stator antenna while operating may cause mechanical damages of the antennas

The stator antenna must not touch the rotor antenna.



CAUTION!

Risk of Damaging of Electronic, Faulty Measuring Data

While overheating of the evaluation unit the built-in electronics may be damaged

An overheated evaluation unit may cause faulty measuring values and respectively subsequent errors

The evaluation unit must be mounted onto a heat conductive base.



CAUTION!

Damaging of Evaluation Unit Caused by High Vibrancy

High Vibrancy of the evaluation unit may cause damaging

While mounting in environments with high vibrancy (e.g. in vehicles) the evaluation unit must be mounted vibration damped, e.g. by rubber buffer.



The stator antenna must be mounted directly opposite to the rotor antenna

The stator antenna must be mounted in the middle of the moving range of the rotor antenna

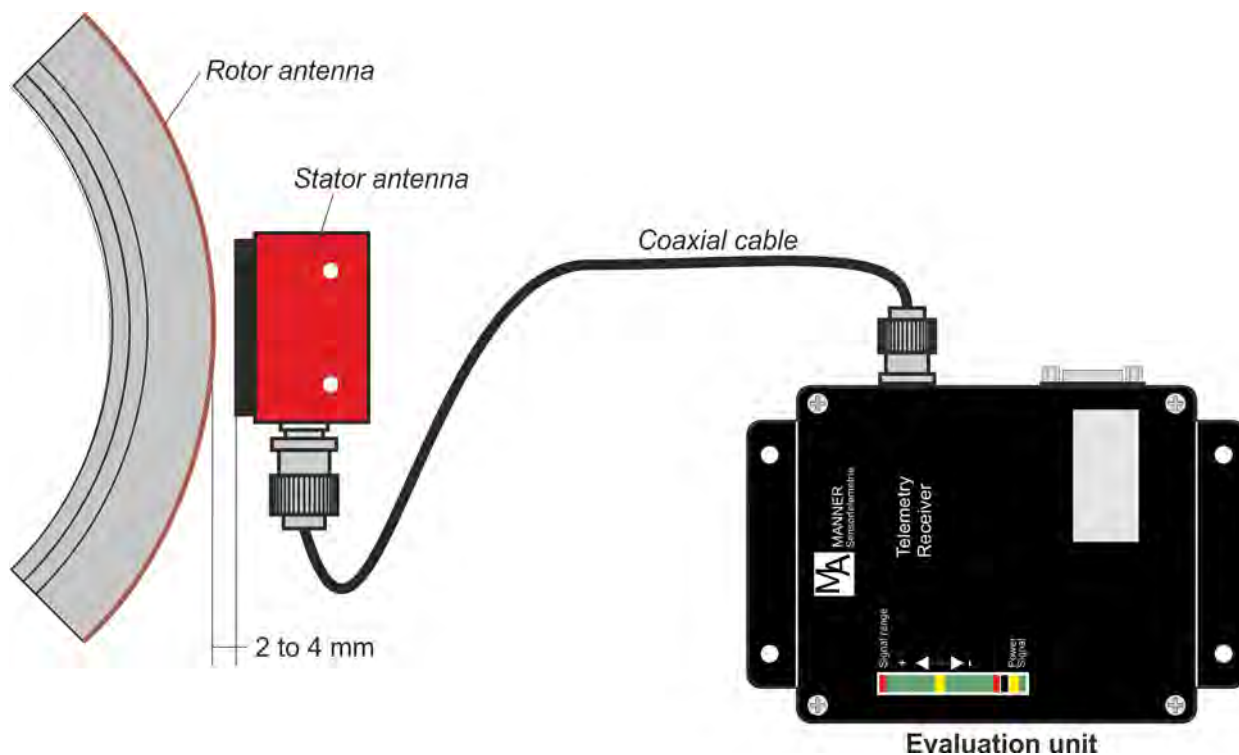


Fig. 8: Coupling

Start-Up



DANGER!
Risk of Injury

Incorrect installation can cause injury to persons directly while the installation or during the subsequent startup

Follow mandatory the rules for accident prevention!

1. ▶ Mount the rotoring with sensor signal amplifier
2. ▶ Place the stator antenna correct to the rotor antenna
3. ▶ Connect stator antenna with the evaluation unit
4. ▶ Switch the evaluation system on
5. ▶ Release measuring position completely
6. ▶ Adjust the output signal to 0.000 V by turning the screw '0' .
7. ▶ Load the measuring position with nominal load or set the cal. signal permanently
8. ▶ Set the output signal to +10.000 V by adjusting the screw 'G' and measuring the 'analog signal output' or set to the calibration value indicated in the calibration protocol.
9. ▶ Release the measuring point completely or remove the cal. signal
10. ▶ Check the output signal to zero. Repeat step 5 to 10, if necessary

5 Options

Optionally available

- Remote Control (USB- oder CAN-Schnittstelle erforderlich)
- waterproof (Protection class IP42)



If you have any questions regarding customer-specific solutions, please contact our sales department.

6 Maintenance

The systems of Manner Sensortelemetrie are low-maintenance.



DANGER!

Risk of Injury Caused by Defects on System Built-Up

Particularly loose or damaged parts may endanger present persons

Carry out the maintenance regularly and assiduously.

Within a periodical repeating maintenance following operations have to be done:

- Clean the antenna system, vacuuming of dust deposit
- Check the antenna system for scrub marks or mechanical damages
- Check the fastening of the stator antenna for a fix seat and tighten of the screwed fastenings where necessary.
- Check the plug connections and cables



Document the completed annual maintenance

7 Contact



MANNER Sensortelemetrie GmbH

Eschenwasen 20

D - 78549 - Spaichingen

Tel.: +49 7424 9329-0

Fax: +49 7424 9329-29

www.sensortelemetrie.de

info@sensortelemetrie.de