



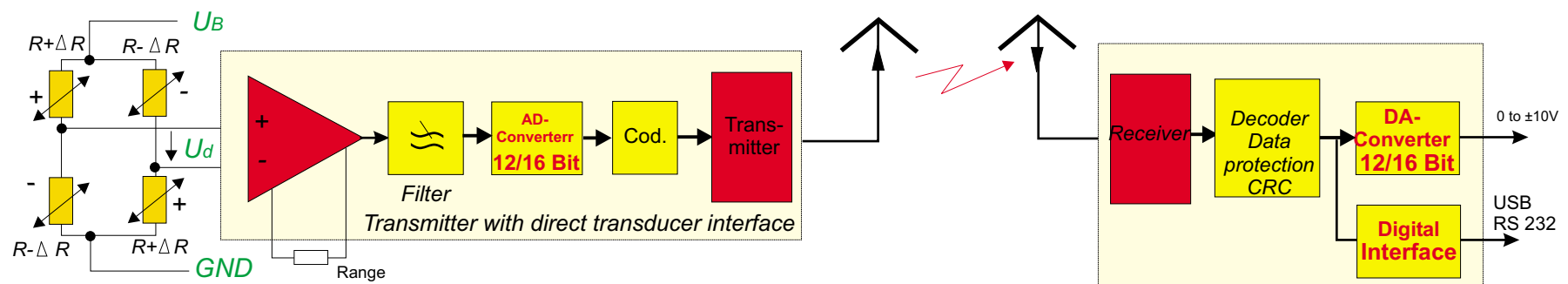
Radio Sensortelemetry

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- * Point to point page 11
- * Antenna diversity page 12
- * Multi channel telemetry page 13 ... 16
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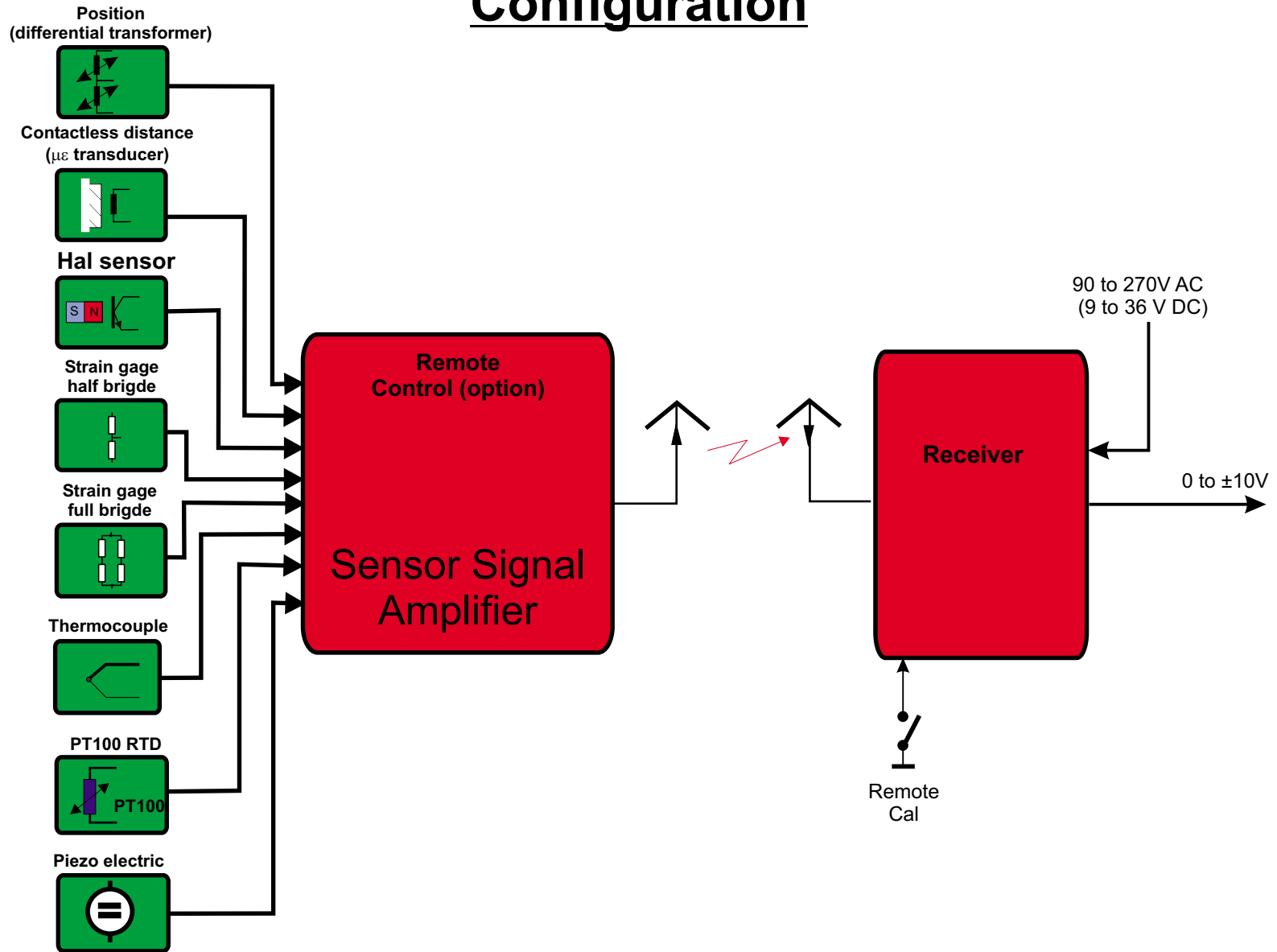
Short Description of Manner Radio-Sensortelemetry

The Manner Radio Telemetry was special developed for working in heavy environment conditions. The consists of radio transmitter and miniaturized Sensor Signal Amplifier. Strain gage brigdes and thermocouples, RTD (PT100) are direct interfaced with the Sensor Signal Amplifier. The signal from the transducer will be enforced, filtered due to the Antialaising and digitized. The resolution of the signal can be 12 Bit or 16 Bit (option). The digital data will then be coded and a special checksum word will be generated. This special checksum word garantees absolut noisefree data transmission. The data word and special checksum word will be FM-modulated of the RF carrier 433/868 MHz. The garanties wireless transmitting over about 50 meters in free aera. The system is available in single an multi channel version (2, 4, 8, 16 channels). For every channel exists a seperate power supply, amplifier, AD-Converter and DA-Converter. There no crosstalk between the channels and no backslash in case a short circuit. The range adjustment, auto zero can be programmed electricly remote by a PC.

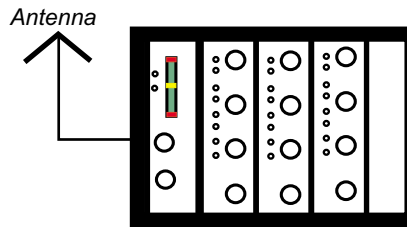
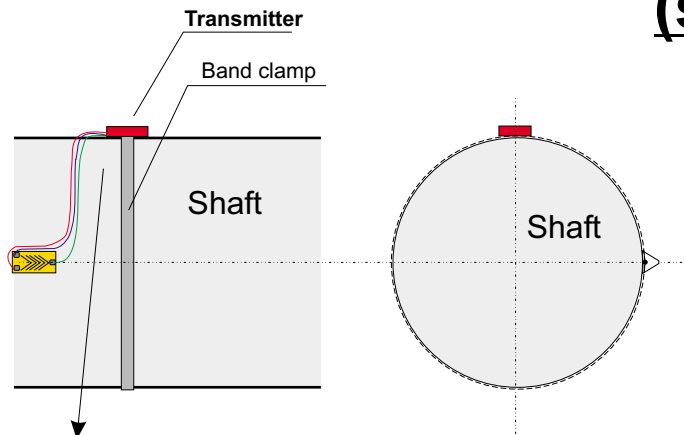
Diagramm of one channel



Configuration



MANNER Radio Sensortelemetry (shaft - stationary)



Receiver

Type: AW_T_<bandwidth>_<channels>_<supply>_<output>_<mod>_F



Type: SV_4_<bandwidth>_<accuracy>_<temp>_<mod>_F



Features:

Easy mounting

with Accu-supply 3,6 V Lithium, max 35 hours (one cycle)

Channel count: max. 16

Samplerate: 4000 Sample/s (1 channel)

Samplerate: 1100 Sample/s /channel at 8 channels

Digital transmitting: 12/16 Bit resolution with checksum (CRC)

Transmitting: Radio $f = 433/868$ MHz, 16 different frequencies

RF-Power: 10 mW; range: 50 m in open field

Integrated data protection by checksum 16 Bit CRC

Low current consumption by low power C-MOS technique: 3,6 V supply

Integrated transducer amplifier range: 0,1 mV/V to 20 mV/V

Range adjustable by solderable resistors

or optional electrical remote programmable range with 12 Bit resolution

Transducer: Strain gage, full- / half bridge, Thermocouple type K

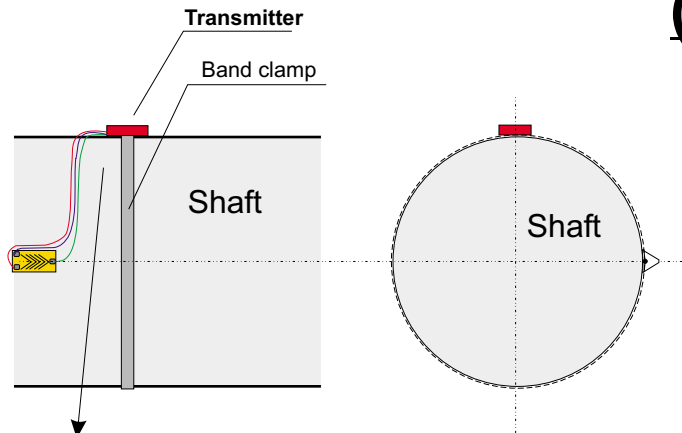
Zerodrift / Gaindrift: 0,01 %/°C (0,003 %/°C optional)

Optional inductive supply

Max. acceleration: 1500 g

Optional -40 to +120°C environmental temperature

MANNER Radio Sensortelemetry (shaft - stationary)



Type: SV_4_<bandwidth>_<accuracy>_<temp>_<mod>_F



Type: AW_M_<bandwidth>_<supply>_<output>_<mod>_F

Features:

Easy mounting

with Accu-supply 3,6 V Lithium, max 35 hours (one cycle)

Channel count: 1

Samplerate: 4000 Sample/s (1 channel)

Digital transmitting 12/16 Bit resolution with checksum (CRC)

Transmitting: Radio $f = 433/868$ MHz, 16 different frequencies

RF-Power: 10 mW; range: 50 m in open field

Integrated data protection by checksum 16 Bit CRC

Low current consumption by low power C-MOS technique: 3,6 V supply

Integrated transducer amplifier range: 0,1 mV/V to 20 mV/V

Range adjustable by solderable resistor

or optional electrical remote programmable range with 12 Bit resolution

Transducer: Strain gage, full- / half bridge, Thermocouple type K

Zerodrift / Gaindrift: 0,01 %/°C (0,003 %/°C optional)

Optional inductive supply

Max. acceleration: 1500 g

Temperature range: -10 to +85°C

Optional -40 to +120°C environmental temperature

Torque Meter based on Radio Telemetry



Type: MF_<range>_<bandwidth>_<precision>_<mod>_F

Further information:
see "Meßflansch"



Type: AW_M_<bandwidth>_<supply>_<output>_<mod>_F

Features:

- Universal torque meter for short term use
 - Ranges available: 10 Nm to 50 kNm
 - Linearity and hysteresis: 0,2 %
 - High bandwidth 0 to 1 kHz(-3 dB)
 - High reliable digital transmitting 16 Bit resolution
 - Zerodrift / Gaindrift: 0,01 %/°C (0,003 %/°C optional)
 - Easy mounting
 - Transmitting: Radio f = 433/868 MHz
 - RF-Power: 10 mW; range: 40 m in open field
 - Integrated data protection by checksum (16 Bit CRC)
 - Low current consumption by low power C-MOS technique: 3,6 V supply with Accu-supply 3,6 V Lithium, max 35 hours (one cycle)
 - Max. radial acceleration: 1500 g
 - Temperature range: -10 to +85°C
 - Optional -40 to +120°C environmental temperature
 - Supply receiver: 9 to 36 V DC, 100 mA
 - Output voltage: 0 to ±10 V, 0(4) to 20 mA, USB
 - Type system: type: MF_<range>_<precision>_<bandwidth>_<mod>_<AW>_F
- | | | | | |
|--------|-------|--------|-------|------|
| 10 Nm | 0,25% | 10 Hz | PCM12 | AW_M |
| to | | 100 Hz | PCM16 | AW_T |
| 50 kNm | 0,1% | 1 kHz | | |

Climate Compressor Torque Meter based on Radio Telemetry



Type: **MFC**_
 <range>_
 <precision>_
 <bandwidth>_
 <mod>_F



Type: **AW_M**_
 <bandwidth>_
 <supply>_
 <output>_
 <mod>_F

Features:

- Climate compressor torque meter for short term use
 - Ranges available: 20 Nm to 50 kNm
 - Linearity and hysteresis: 0,25 %
 - High bandwidth 0 to 1 kHz(-3 dB)
 - High reliable digital transmitting 16 Bit resolution
 - Zerodrift / Gaindrift: 0,01 %/°C (0,003 %/°C optional)
 - Easy mounting
 - Transmitting: Radio f = 433/868 MHz
 - RF-Power: 10 mW; range: 40 m in open field
 - Integrated data protection by checksum (16 Bit CRC)
 - Low current consumption by low power C-MOS technique: 3,6 V supply with Accu-supply 3,6 V Lithium, max 25 hours (one cycle)
 - Max. radial acceleration: 1500 g
 - Temperature range: -10 to +85°C
 - Optional -40 to +120°C environmental temperature
 - Supply receiver: 9 to 36 V DC, 100 mA
 - Output voltage: 0 to ±10 V, 0(4) to 20 mA, USB
 - Type system: type: **MFC**_
 <range>_
 <precision>_
 <bandwidth>_
 <mod>_
 <AW>_F
- | | | | | |
|-------|-------|--------|-------|------|
| 20 Nm | 0,25% | 10 Hz | PCM16 | AW_M |
| to | | 100 Hz | | |
| 50 Nm | | 1 kHz | | |

Wheel Torque Meter based on Radio Telemetry



Type: MFW_<range>_<precision>_<bandwidth>_<mod>_F



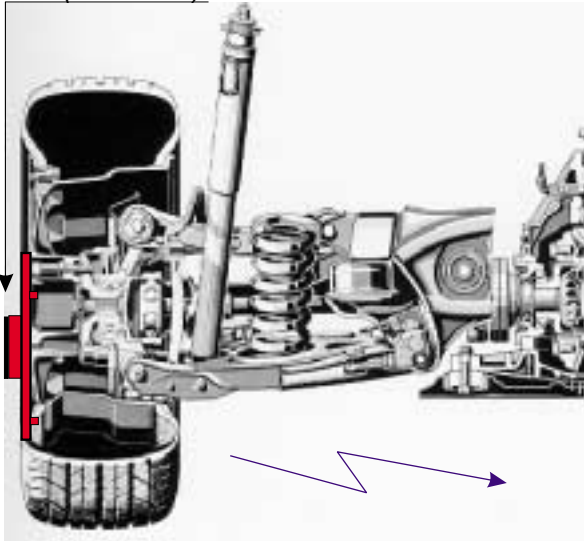
Type: AW_M_<bandwidth>_<supply>_<output>_<mod>_F

Features:

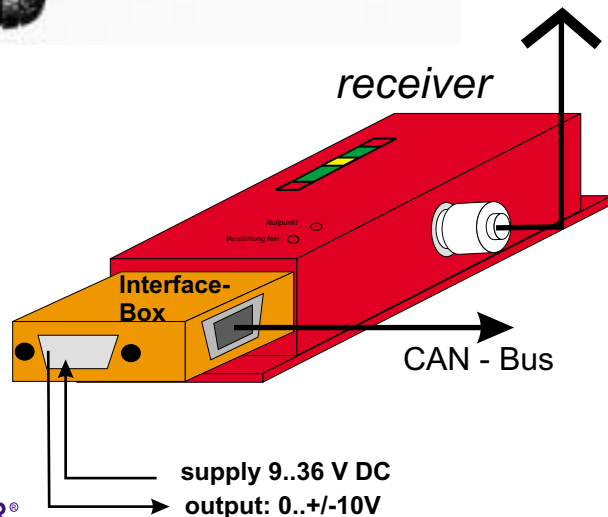
- Wheel torque meter for cars
 - Ranges available: 500 Nm to 4 kNm
 - Linearity and hysteresis: 0,1 %
 - Based on titanium with overload protection
 - High bandwidth 0 to 1 kHz(-3 dB)
 - High reliable digital transmitting 16 Bit resolution
 - Zerodrift / Gaindrift: 0,01 %/°C (0,003 %/°C optional)
 - Easy mounting
 - Transmitting: Radio f = 433/868 MHz, 16 different frequencies
 - Integrated transmitting antenna, waterproof
 - RF-Power: 10 mW; range: 20 m in open field
 - Integrated data protection by checksum (16 Bit CRC)
 - Low current consumption by low power C-MOS technique: 3,6 V supply with Accu-supply 3,6 V Lithium, max 35 hours (one cycle)
 - Max. radial acceleration: 1500 g
 - Temperature range: -25 to +85°C
 - Optional -40 to +120°C environmental temperature
 - Supply receiver: 9 to 36 V DC, 100 mA
 - Output voltage: 0 to ±10 V, 0(4) to 20 mA, USB, CAN-Bus
 - Type system: type: MFW_<range>_<precision>_<bandwidth>_<mod>_<AW>_F
- | | | | | |
|--------|------|--------|-------|------|
| 500 Nm | 0,1% | 100 Hz | PCM16 | AW_M |
| to | | 1 kHz | | |
| 4 kNm | | | | |

Wheel Radio Telemetry with CAN-Bus Interface

Multichannel transmitter with integrated strain gage amplifier (with Accu)



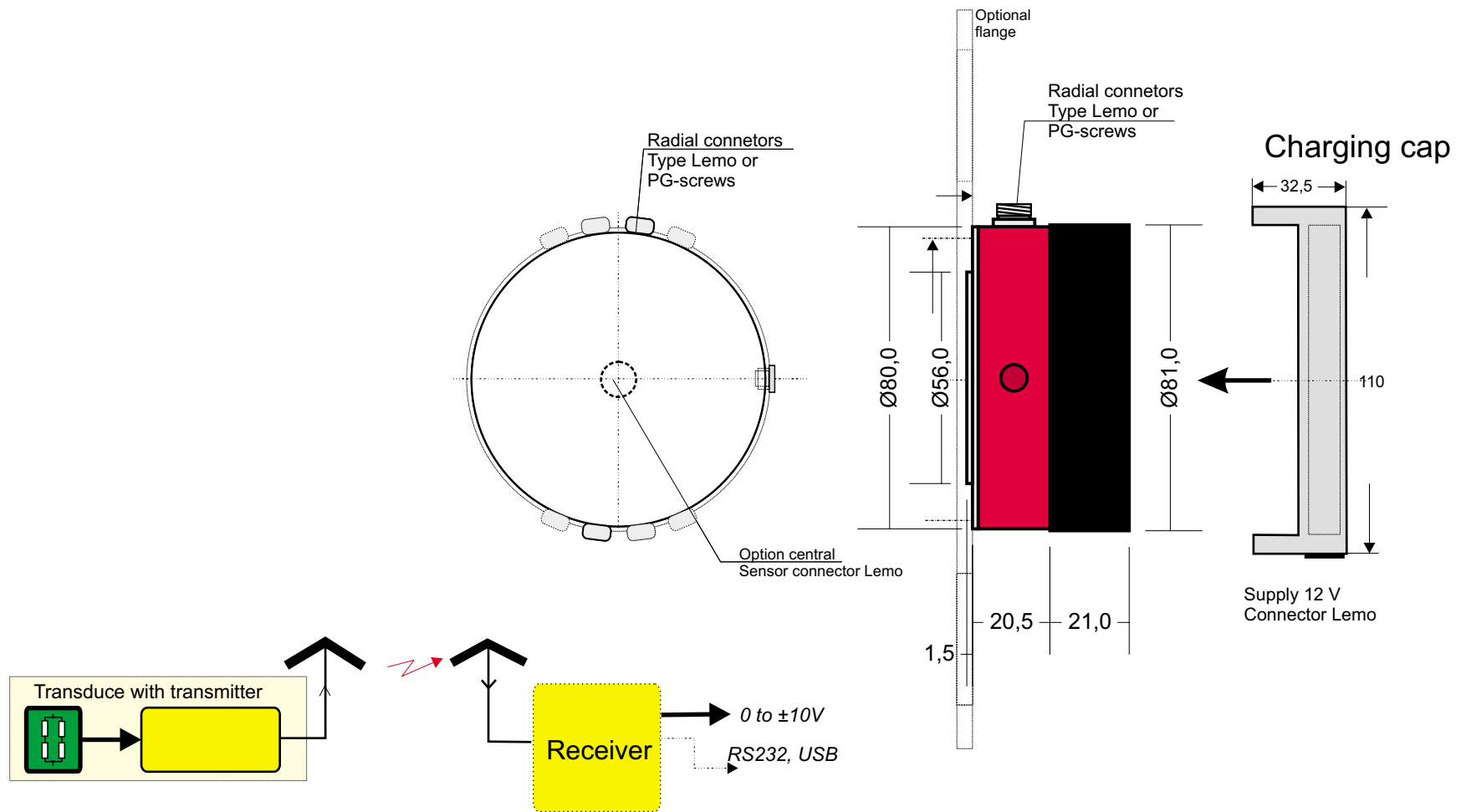
or



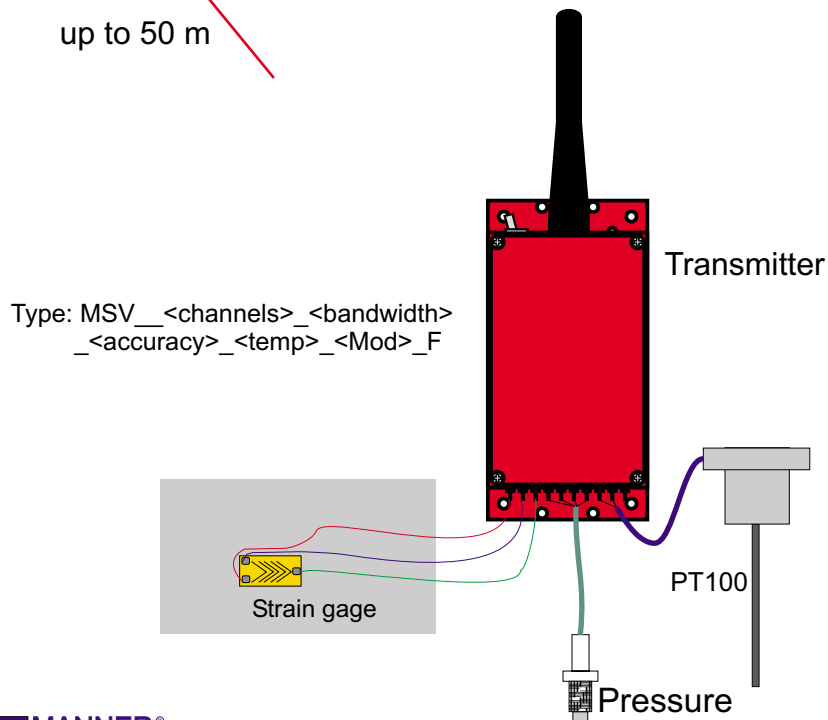
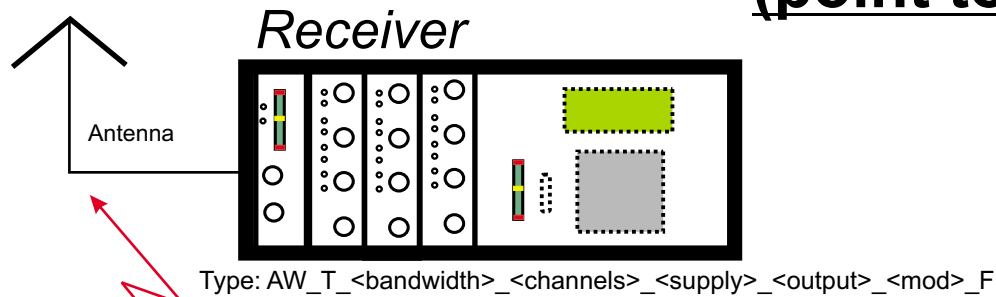
Features:

- Easy mounting
- with Accu-supply 3,6 V Lithium, max 35 hours (one cycle)
- Channel count: 1 or multi channel (max. 16)
- Samplerate: 4000 Sample/s 1 channel)
- Samplerate: 1100 Sample/s /channel at 8 channels
- Digital transmitting 12/16 Bit resolution with checksum (CRC)
- Transmitting: Radio $f = 433/868$ MHz, 16 different frequencies
- RF-Power: 10 mW; range: 30 m in open field
- Low current consumption by low power C-MOS technique: 3,6 V supply
- Integrated transducer amplifier range: 0,1 mV/V to 20 mV/V
- Range adjustable by solderable resistors
- or optional electrical remote programmable range with 12 Bit resolution
- Transducer: strain gage, full- / half bridge, Thermocouple type K
- Zerodrift / Gaindrift: 0,01 %/°C (0,003 %/°C optional)
- Optional inductive supply
- Max. acceleration: 1500 g
- Optional -40 to +120°C environmental temperature

Dimensions



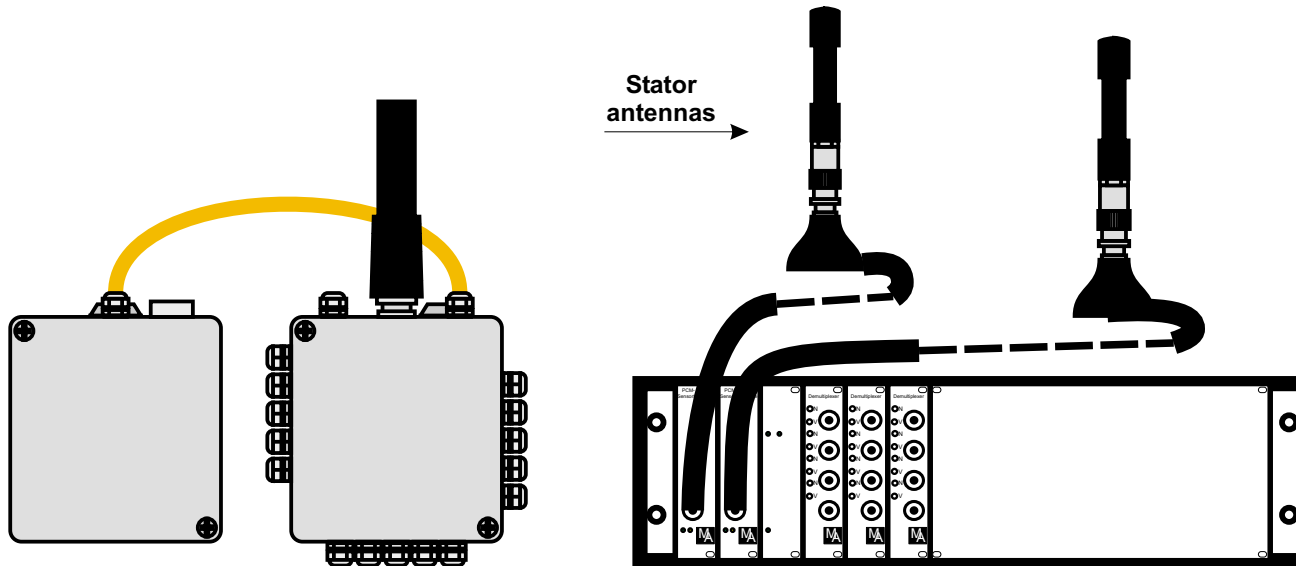
MANNER Radio Sensortelemetry (point to point)



Features:

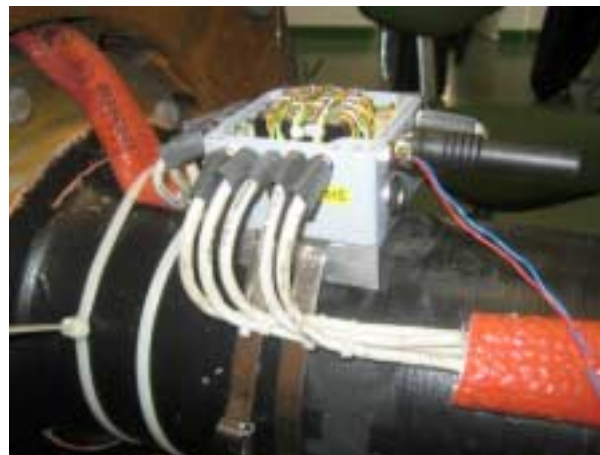
- Easy mounting
- with Accu-supply 3,6 V Lithium, max 35 hours (one cycle)
- Channel count: max. 16
- Samplerate: 4000 Sample/s 1 channel)
- Samplerate: 1100 Sample/s /channel at 8 channels
- Digital transmitting 12/16 Bit resolution with checksum (CRC)
- Transmitting: Radio f = 433/868 MHz, 16 different frequencies
- RF-Power: 10 mW; range: 50 m in open field
- Integrated data protection by checksum 16 Bit CRC
- Low current consumption by low power C-MOS technique: 3,6 V supply
- Integrated transducer amplifier range: 0,1 mV/V to 20 mV/V
- Range adjustable by solderable resistors
- or optional electrical remote programmable range with 12 Bit resolution
- Transducer: Strain gage, full- / half bridge, Thermocouple type K
- Zerodrift / Gaindrift: 0,01 %/°C (0,003 %/°C optional)
- Optional inductive supply
- Max. acceleration: 1500 g
- Optional -40 to + 120°C environmental temperature

MANNER Radio Sensortelemetry special for Train Application with Antenna Diversity

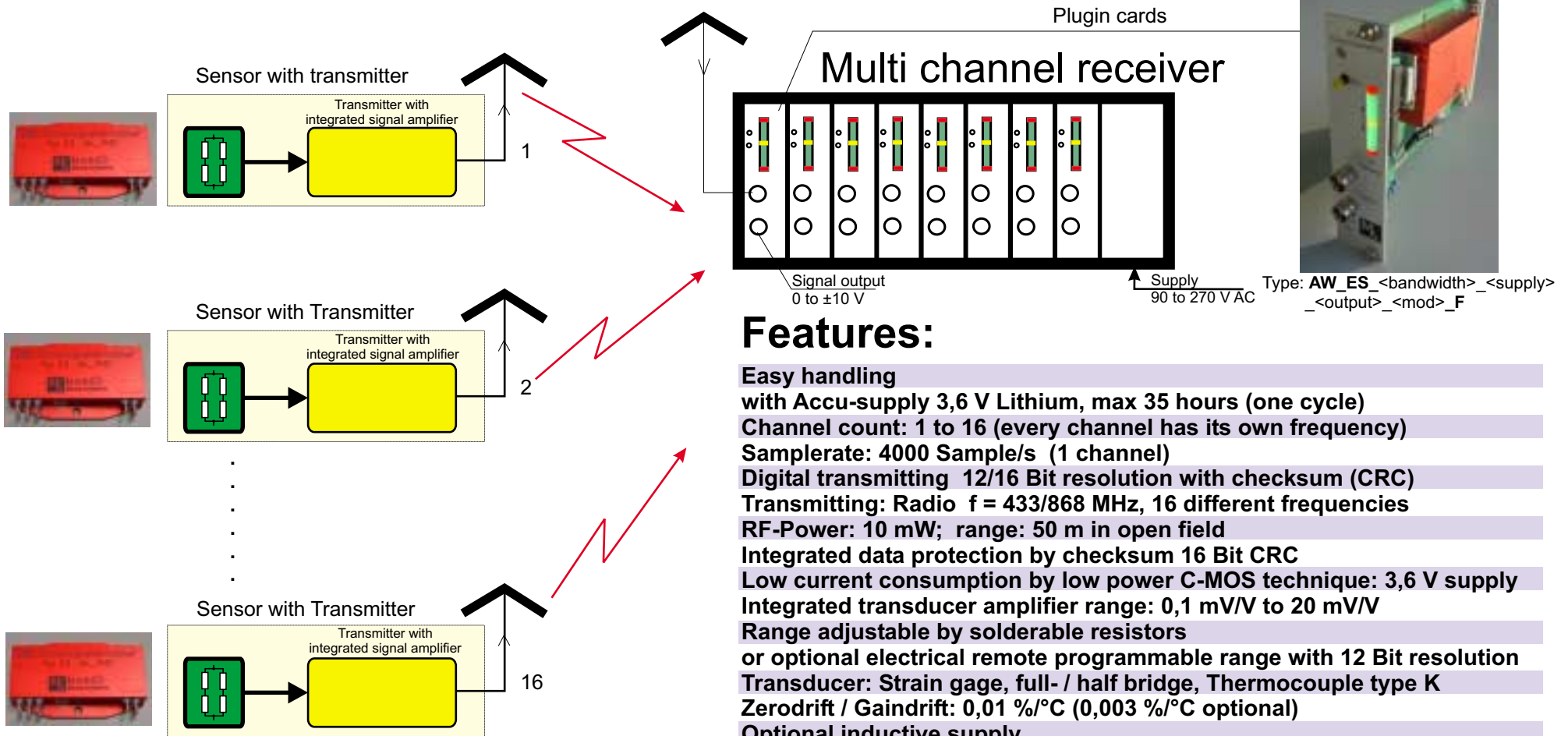


Features:

- Easy mounting
- with Accu-supply 3,6 V Lithium,
- Max 35 hours (one cycle)
- Channel count: 16 (max. 32)
- Samplerate: 4000 Sample/s 1 channel)
- Samplerate: 750 Sample/s at 16 ch.
- Digital transmitting 12/16 Bit resolution with checksum (CRC)
- Transmitting: Radio $f = 433/868$ MHz,
- 16 different frequencies
- RF-Power: 10 mW; range: 30 m
- integrated Data protection
- Antenna diversity for improved reception by checksum 16 Bit CRC
- Low current consumption by low power C-MOS technique: 3,6 V supply
- Integrated transducer amplifier range: 0,1 mV/V to 20 mV/V
- Electrical remote programmable range with 12 Bit resolution
- Transducer: Strain gage, full- / , half bridge, Thermocouple type K
- Zerodrift / Gaindrift: 0,01 %/°C
- Optional inductive supply
- Max. acceleration: 1500 g
- Temperature -40 to +85°C



Multi Channel Radio Sensortelemetry (separate frequencies)



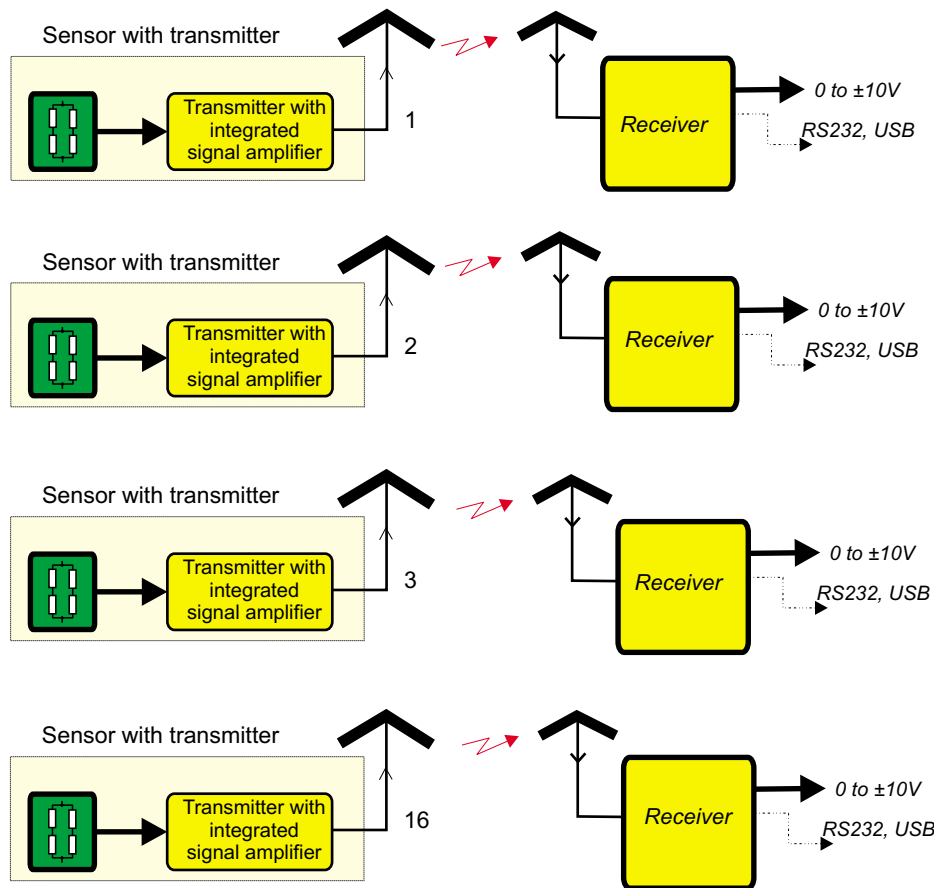
Type: SV_4_<bandwidth>_<accuracy>_<temp>_<mod>_F

Features:

- Easy handling
- with Accu-supply 3,6 V Lithium, max 35 hours (one cycle)
- Channel count: 1 to 16 (every channel has its own frequency)
- Samplerate: 4000 Sample/s (1 channel)
- Digital transmitting 12/16 Bit resolution with checksum (CRC)
- Transmitting: Radio $f = 433/868$ MHz, 16 different frequencies
- RF-Power: 10 mW; range: 50 m in open field
- Integrated data protection by checksum 16 Bit CRC
- Low current consumption by low power C-MOS technique: 3,6 V supply
- Integrated transducer amplifier range: 0,1 mV/V to 20 mV/V
- Range adjustable by solderable resistors
- or optional electrical remote programmable range with 12 Bit resolution
- Transducer: Strain gage, full- / half bridge, Thermocouple type K
- Zerodrift / Gaindrift: 0,01 %/°C (0,003 %/°C optional)
- Optional inductive supply
- Max. acceleration: 1500 g
- Temperature range: -10 to +85°C
- Optional -40 to +120°C environmental temperature

Multi Channel Radio Sensortelemetry

(separate frequencies, point to point)



or



Features:

Easy handling

Channel count: 1

(16 different frequencies)

Samplerate: 4000 Sample/s (1 channel)

Digital transmitting 12/16 Bit resolution with checksum (CRC)

Transmitting: Radio $f = 433/868$ MHz, 16 different frequencies

RF-Power: 10 mW; range: 50 m in open field

Integrated data protection by checksum 16 Bit CRC

Low current consumption by low power C-MOS technique: 3,6 V supply

Integrated transducer amplifier range: 0,1 mV/V to 20 mV/V

Range adjustable by solderable resistors

or optional electrical remote programmable range with 12 Bit resolution

Transducer: Strain gage, full- / half bridge, Thermocouple type K

Zerodrift / Gaindrift: 0,01 %/°C (0,003 %/°C optional)

Max. acceleration: 1500 g

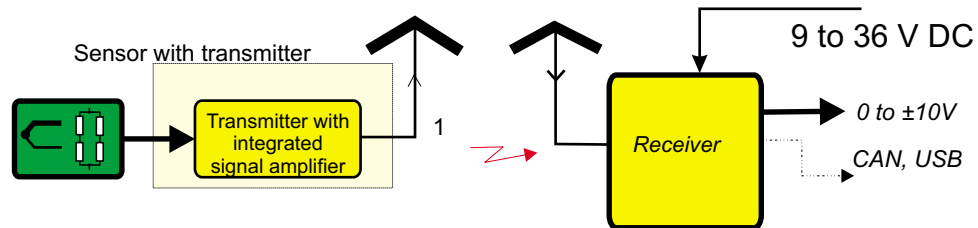
Temperature range: -10 to +85°C

Optional -40 to +120°C environmental temperature

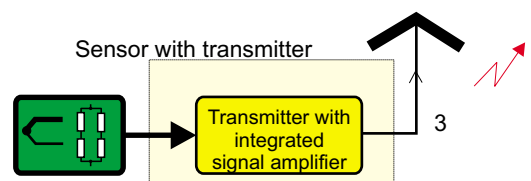
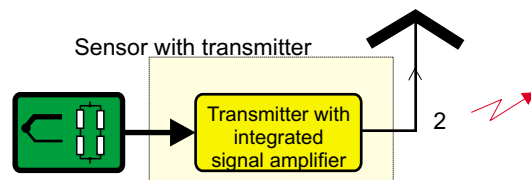
with Accu-supply 3,6 V Lithium, max 35 hours (one cycle)

Multi Channel Radio Sensortelemetry

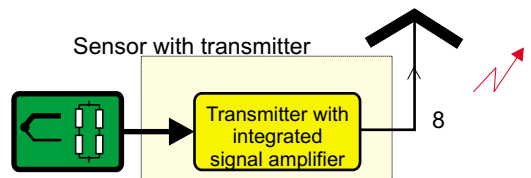
(multiplex mode, one frequency, multi point to point, low speed application)



Type: AW_M_<bandwidth>_<supply>_<output>_<mod>_F



Type: SV_8_<bandwidth>_<accuracy>_<temp>_<mod>_F

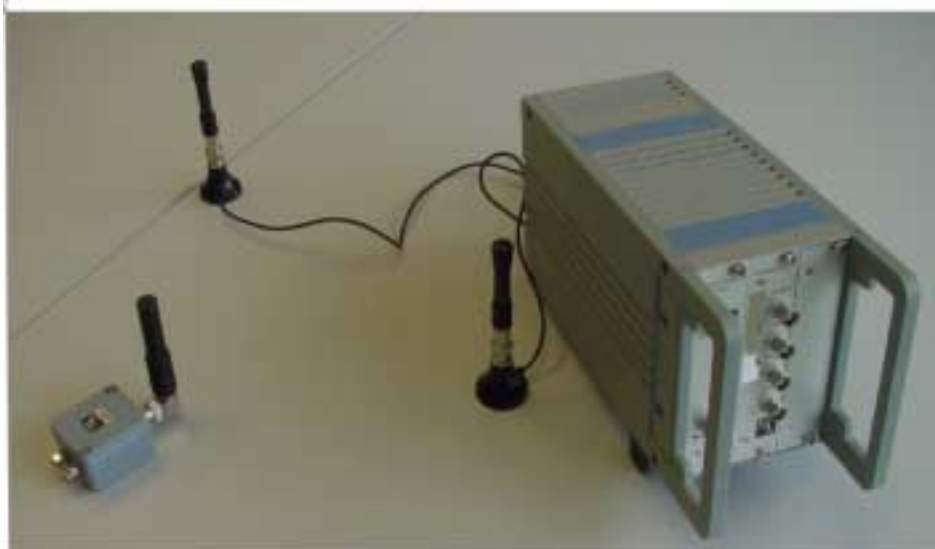
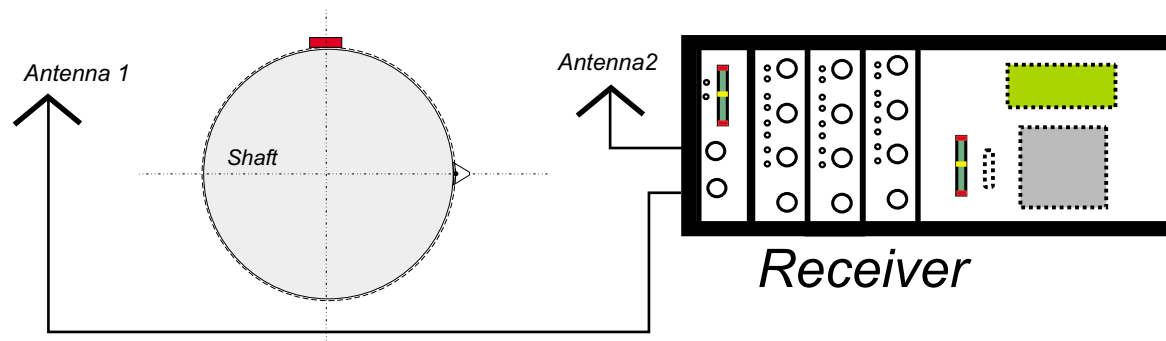


Features:

- Easy handling
- Multichannel (time multiplex)
- Channel count (max): 8
- (16 different frequencies)
- Samplerate: 10 Sample/s/channel
- Digital transmitting 12/16 Bit resolution with checksum (CRC)
- Transmitting: Radio f = 433/868 MHz, 16 different frequencies
- RF-Power: 10 mW; range: 50 m in open field
- Integrated data protection by checksum 16 Bit CRC
- Integrated transducer amplifier range: 0,1 mV/V to 20 mV/V
- Range adjustable by solderable resistors
- or optional electrical remote programmable range with 12 Bit resolution
- Transducer: Strain gage, full- / half bridge, Thermocouple type K
- Zerodrift / Gain drift: 0,01 %/°C (0,003 %/°C optional)
- Max. acceleration: 1500 g
- Temperature range: -10 to +85°C
- Optional -40 to +120°C environmental temperature
- Low power mode, low power C-MOS technique: 3,6 V supply
- with Accu-supply 3,6 V Lithium, max 150 hours (one cycle)

Option Radio Sensortelemetry with Antenna Diversity

(improvement of the security of data transmitting by use of 2 antennas)



Features:

Improvement of reception by 1000 times in case interferences

2 receiver system with 2 antennas

Diversity combiner chooses at every time the best signal

Avoiding of lost of sensor data in case of bad reception or interferences

Digital transmitting 12/16 Bit resolution with checksum (CRC)

Transmitting: Radio $f = 433/868$ MHz, 16 different frequencies

RF-Power: 10 mW; range: 50 m in open field

Integrated data protection by checksum 16 Bit CRC

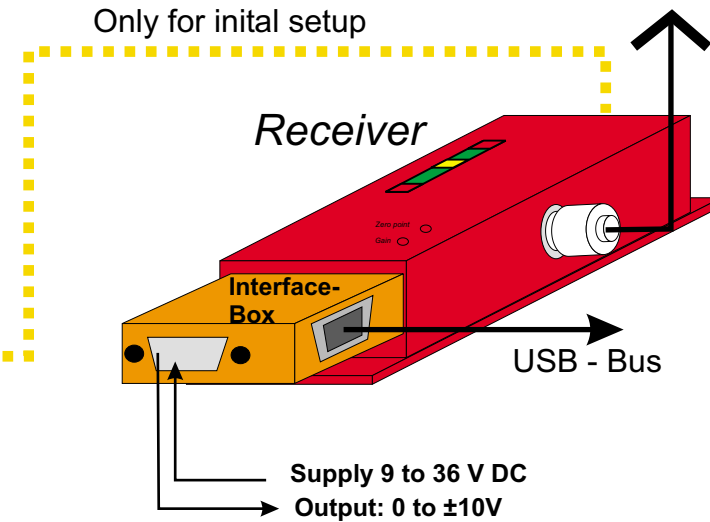
Special for big shafts

Special for train application

Special for hard environment

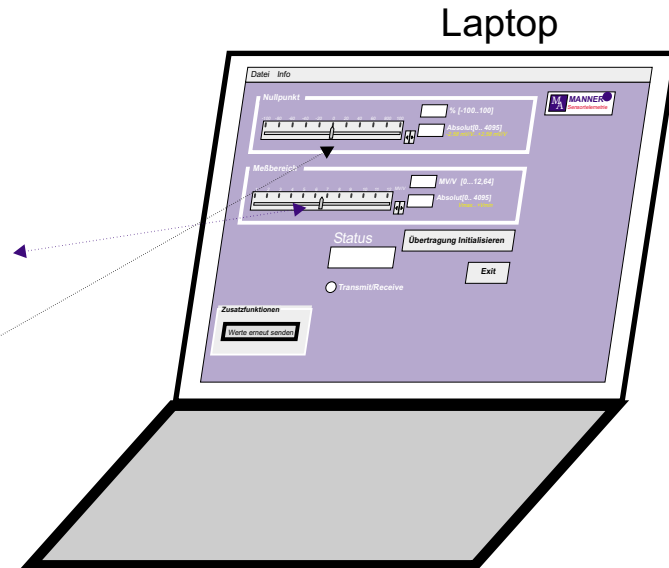
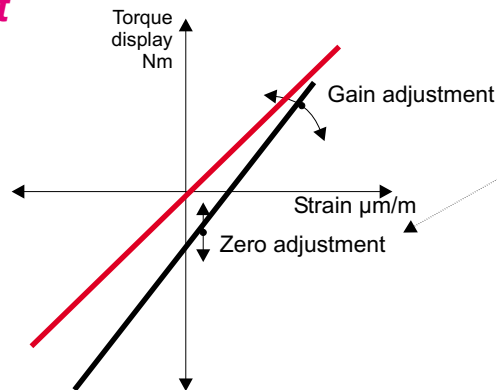
Option RMC Sensortelemetry

For initial remote setup of the of strain gage application at installation

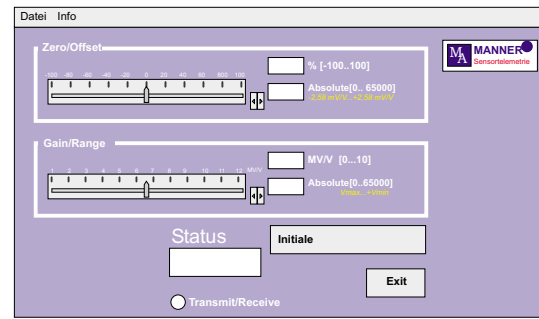
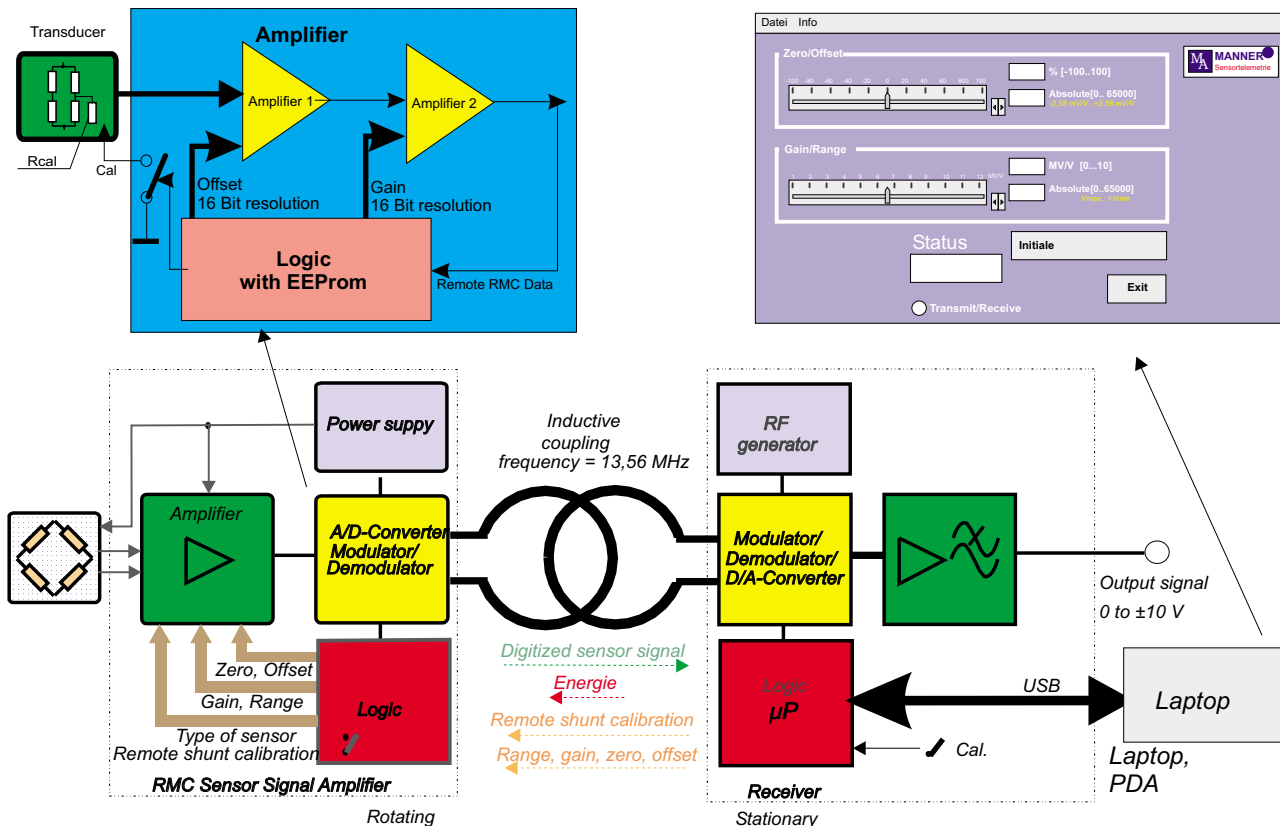


**Auto zero,
Adjusting tolerances in zero point
Adjusting tolerances in gain**

**Remote online re-conditioning
without opening of the
amplifier**



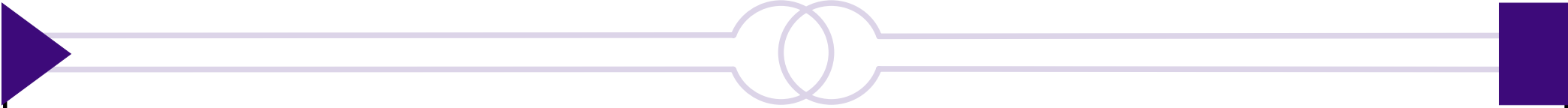
How does RMC Sensortelemetry work?



Features:

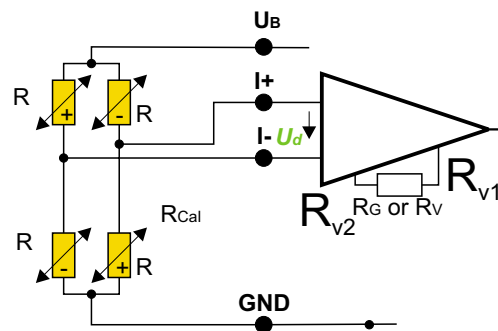
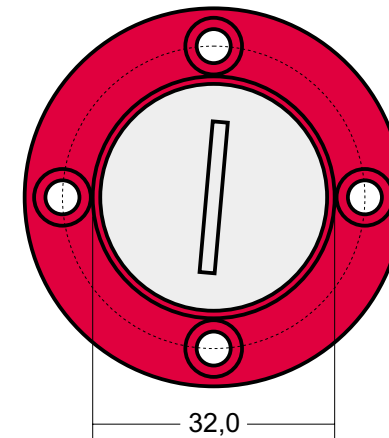
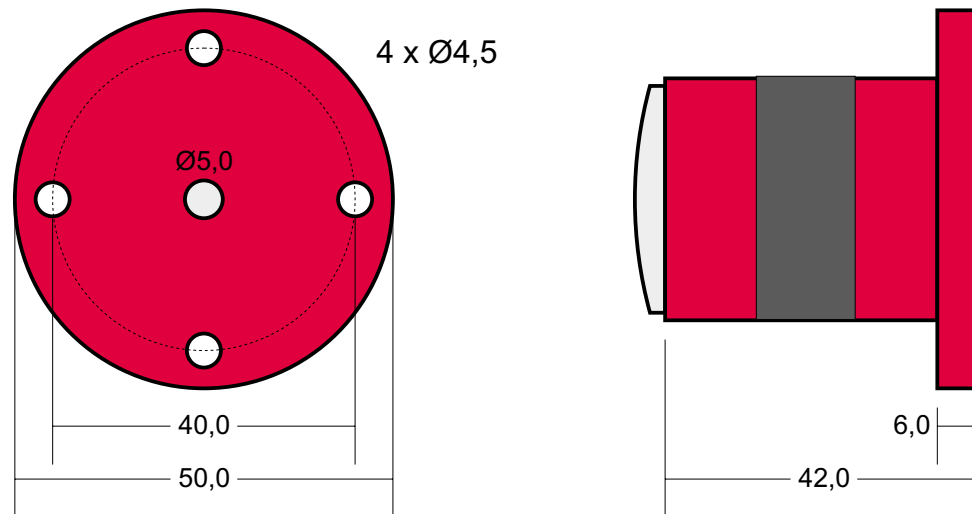
- * Remote high resolution adjustment (16 Bit) of gain, range (0,05 to 10 mV/V)
- * Auto zero
- * Remote high resolution adjustment (16 Bit) of zero, offset ($\pm 500\%$ from the adjusted range)
- * Digitizing of sensor signal with 16 Bit resolution inside the sensor signal amplifier
- * Integrated sensor signal amplifier for direct interface of strain gage:
Standard: strain gage, PT100
Option: Thermocouple, piezo electric, ICP, LVDT
- * Remote shunt calibration (option)
- * Integrated power supply for transducer and amplifier
- * Very small zero/gain drift: 0,003 %/°C
- * Very good linearity: <0,003 %
- * Environment temperature: -25 to +125°C (-45 to +120°C option)
- * Protection: IP67
- * Integrated speed sensor (option)
- * Serial interface USB, direct control of gain and auto zero by Laptop, PDA

The control data for gain and zero will be online transferred via the telemetry channel



Radio-Sensortelemetrie Components

Sensor Signal Amplifier Type 2 End of shaft



1 Channel Radio Sensortelemetry transmitter

For strain gage, PT100, Thermocouple

Sensitivity: 0,02 to 20 mV/V

Bandwidth (10 Hz / 0 Hz to 1 kHz

Bridge supply: 3 V

Strain gage: 350 Ω

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 14 Bit (16 Bit)

Drift zero: 0,02 (0,01, 0,005 option)

Supply: 3,3 to 12 V, 50 mA

Remote range control, auto zero (option)

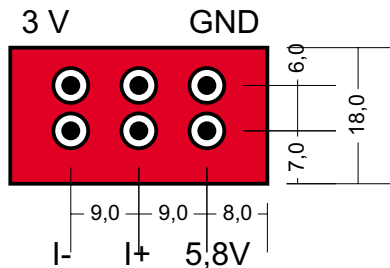
Environmental temperature: -25 to +85°C (120°C)

Max load: 1 000 g (depends on fixing)

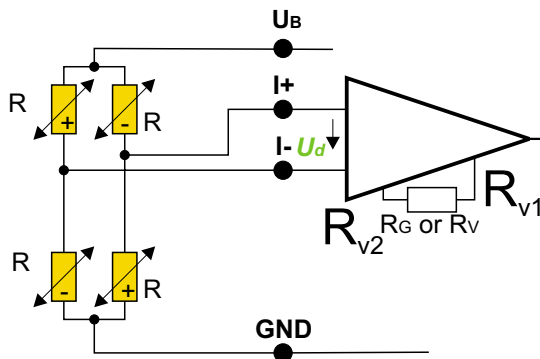
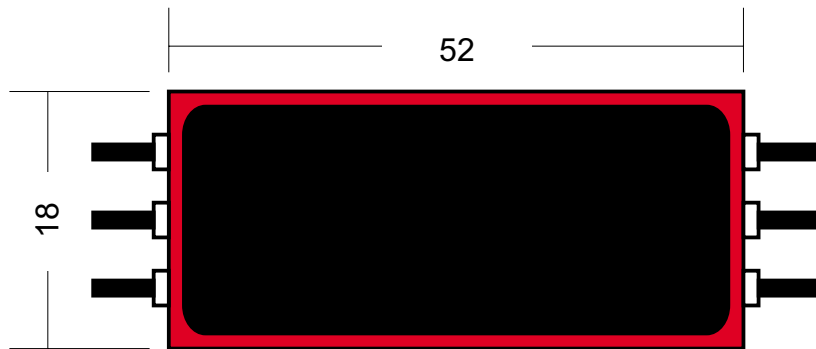
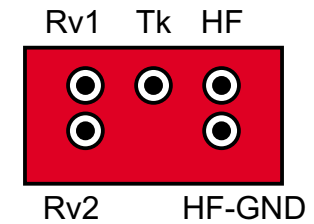
Type: SV_2_<bandwidth>_<accuracy>_<temp>_<mod>_F

| | | | |
|-------|-------|-----|-------|
| 1 kHz | 0,02 | 85 | PCM12 |
| | 0,01 | 120 | PCM16 |
| | 0,005 | | |

Sensor Signal Amplifier Type 3C



Weight: about 12g



1 Channel Radio Sensortelemetry transmitter

For strain gage, PT100, Thermocouple

Sensitivity: 0,02 to 20 mV/V

Bandwidth (10 Hz / 0 Hz to 1 kHz)

Bridge supply: 3 V

Strain gage: 350 Ω

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 14 Bit (16 Bit)

Drift zero: 0,02 (0,01, 0,005 option)

Supply: 3,3 to 12 V, 50 mA

Remote range control, auto zero (option)

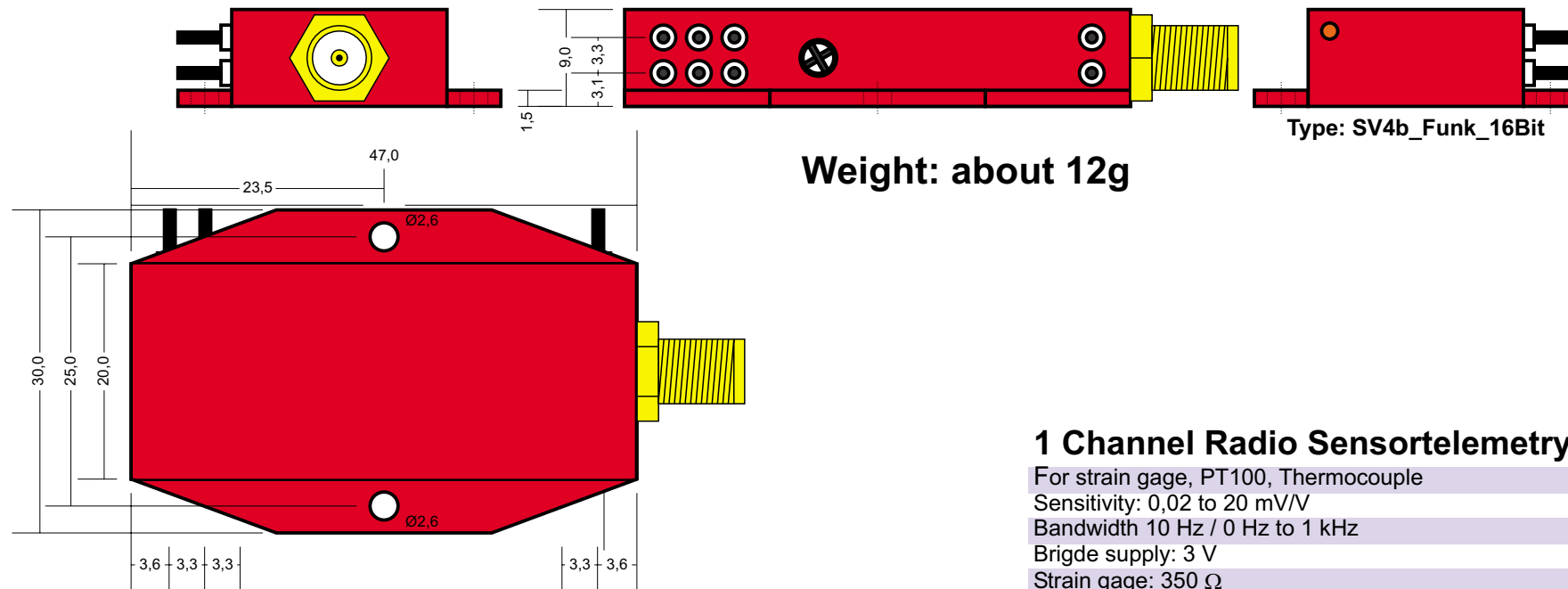
Environmental temperature: -25 to +85°C (120°C)

Max load: 1 000 g (depends on fixing)

Type: SV_3c_<bandwidth>_<accuracy>_<temp>_<mod>_F

| | | | |
|-------|-------|-----|-------|
| 1 kHz | 0,02 | 85 | PCM12 |
| | 0,01 | 120 | PCM16 |
| | 0,005 | | |

Sensor Signal Amplifier Type 4B



Type: SV4b_Funk_16Bit

Weight: about 12g

1 Channel Radio Sensortelemetry transmitter

For strain gage, PT100, Thermocouple

Sensitivity: 0,02 to 20 mV/V

Bandwidth 10 Hz / 0 Hz to 1 kHz

Bridge supply: 3 V

Strain gage: 350 Ω

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 14 Bit (16 Bit)

Drift zero: 0,02 (0,01, 0,005 option)

Supply: 3,3 to 12 V, 50 mA

Remote range control, auto zero (option)

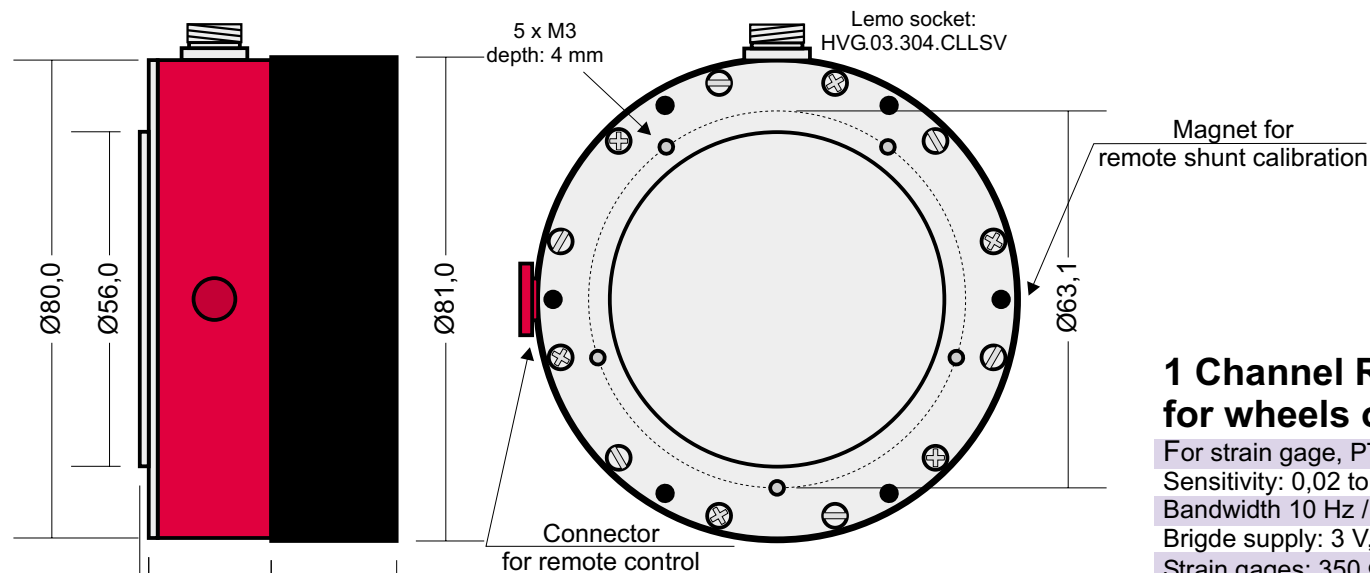
Environmental temperature: -25 to +85°C (120°C)

Max load: 1 000 g (depends on fixing)

Type: SV_4b_<bandwidth>_<accuracy>_<temp>_<mod>_F

| | | | |
|-------|-------|-----|-------|
| 1 kHz | 0,02 | 85 | PCM12 |
| | 0,01 | 120 | PCM16 |
| | 0,005 | | |

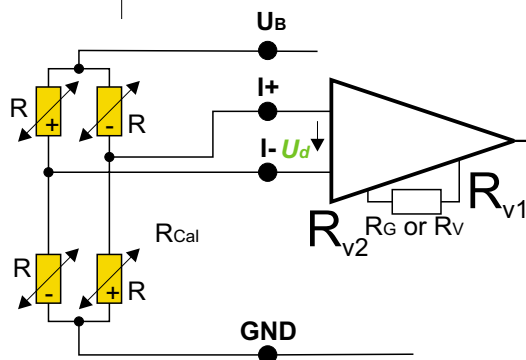
Sensor Signal Amplifier Type 5d



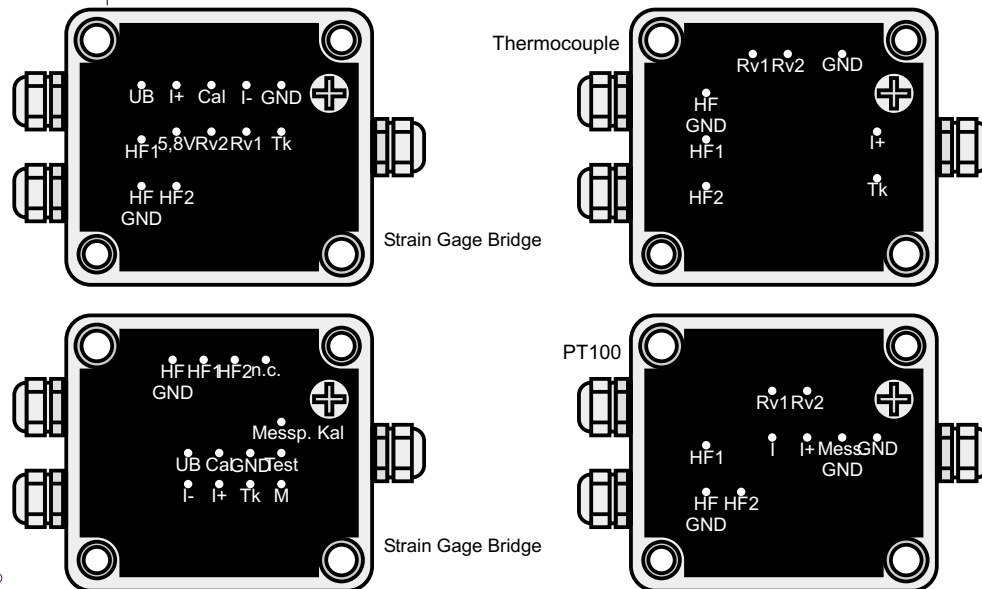
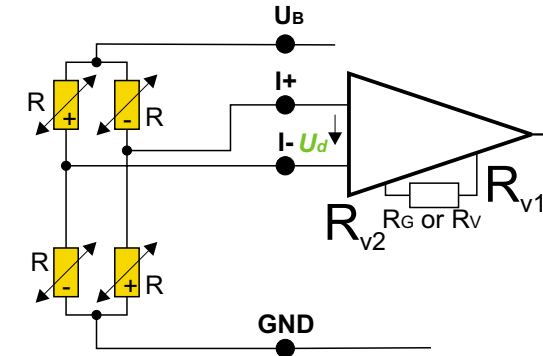
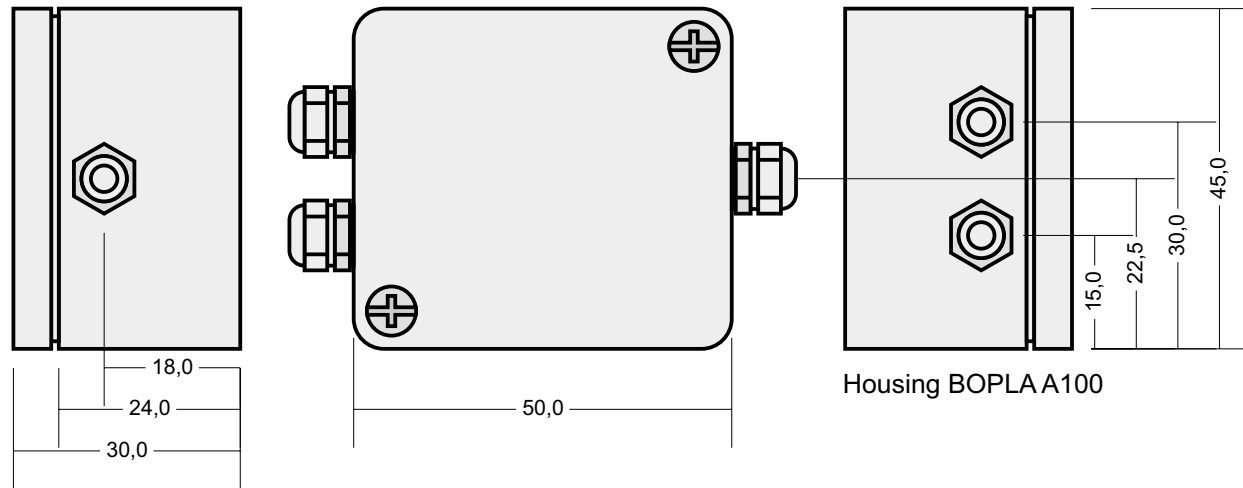
1 Channel Radio Sensortelemetry transmitter for wheels or end shaft applications

- For strain gage, PT100, Thermocouple
- Sensitivity: 0,02 to 20 mV/V
- Bandwidth 10 Hz / 0 Hz to 1 kHz
- Bridge supply: 3 V, Accu rechargeable
- Strain gages: 350 Ω
- Transmission: Radio Sensortelemetry PCM
- Diameter: 80 mm, height: 43 mm
- Resolution: 12 Bit (16 Bit)
- Drift zero: 0,02 (0,01, 0,005 option)
- Recharging by inductive recharging cap (contactless)
- Operating time between recharging: 30 hours
- Activating by switch
- Remote range control, auto zero (option)
- Environmental temperature: -25 to +85°C (120°C)
- Protection: IP67
- Max load: 1 000 g (depends on fixing)
- Type: SV_5d_<bandwidth>_<accuracy>_<temp>_<mod>_F

| | | | |
|-------|-------|-----|-------|
| 1 kHz | 0,02 | 85 | PCM12 |
| | 0,01 | 120 | PCM16 |
| | 0,005 | | |



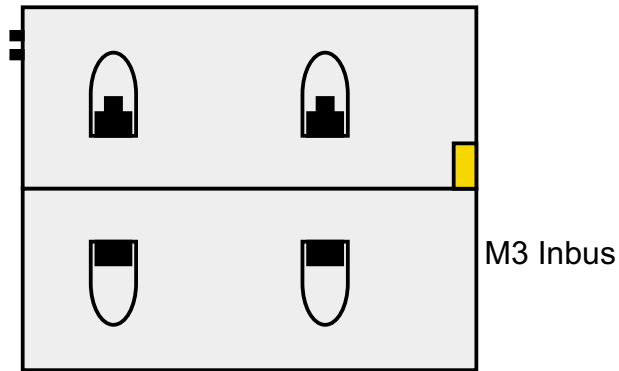
Sensor Signal Amplifier Type 8



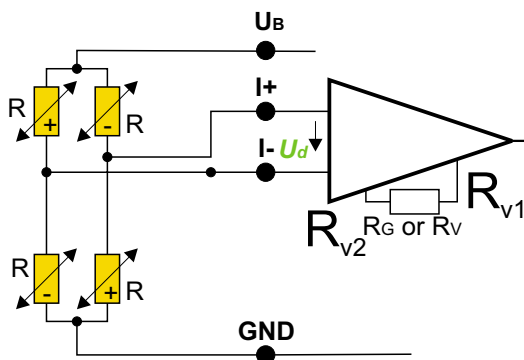
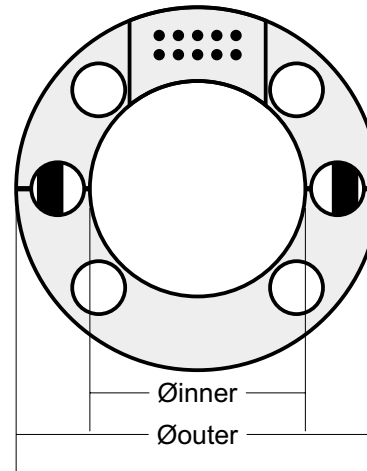
1 Channel Radio Sensortelemetry transmitter

- For strain gage, PT100, Thermocouple
 - Sensitivity: 0,02 to 20 mV/V
 - Bandwidth 10 Hz / 0 Hz to 1 kHz
 - Brigde supply: 3 V
 - Strain gages: 350 Ω
 - Transmission: Radio Sensortelemetry PCM
 - Integrated filter
 - Resolution: 14 Bit (16 Bit)
 - Drift zero: 0,02 (0,01, 0,005 option)
 - Supply: 3,3 to 12 V, 50 mA
 - Remote range control, auto zero (option)
 - Environmental temperature: -25 to +85°C (120°C)
 - Max load: 1 000 g (depends on fixing)
 - Type: SV_8_<bandwidth>_<accuracy>_<temp>_<mod>_F
- | | | | |
|-------|-------|-----|-------|
| 1 kHz | 0,02 | 85 | PCM12 |
| | 0,01 | 120 | PCM16 |
| | 0,005 | | |

Sensor Signal Amplifier Type 9



Inner diameter: 17 to 50mm
Outer diameter = Inner diameter + 20mm



1 Channel Radio Sensortelemetry transmitter

For strain gage, PT100, Thermocouple

Sensitivity: 0,02 to 20 mV/V

Bandwidth 10 Hz / 0 Hz to 1 kHz

Bridge supply: 3 V

Strain gages: 350 Ω

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 14 Bit (16 Bit)

Drift zero: 0,02 (0,01, 0,005 option)

Supply: 3,3 to 12 V, 50 mA

Remote range control, auto zero (option)

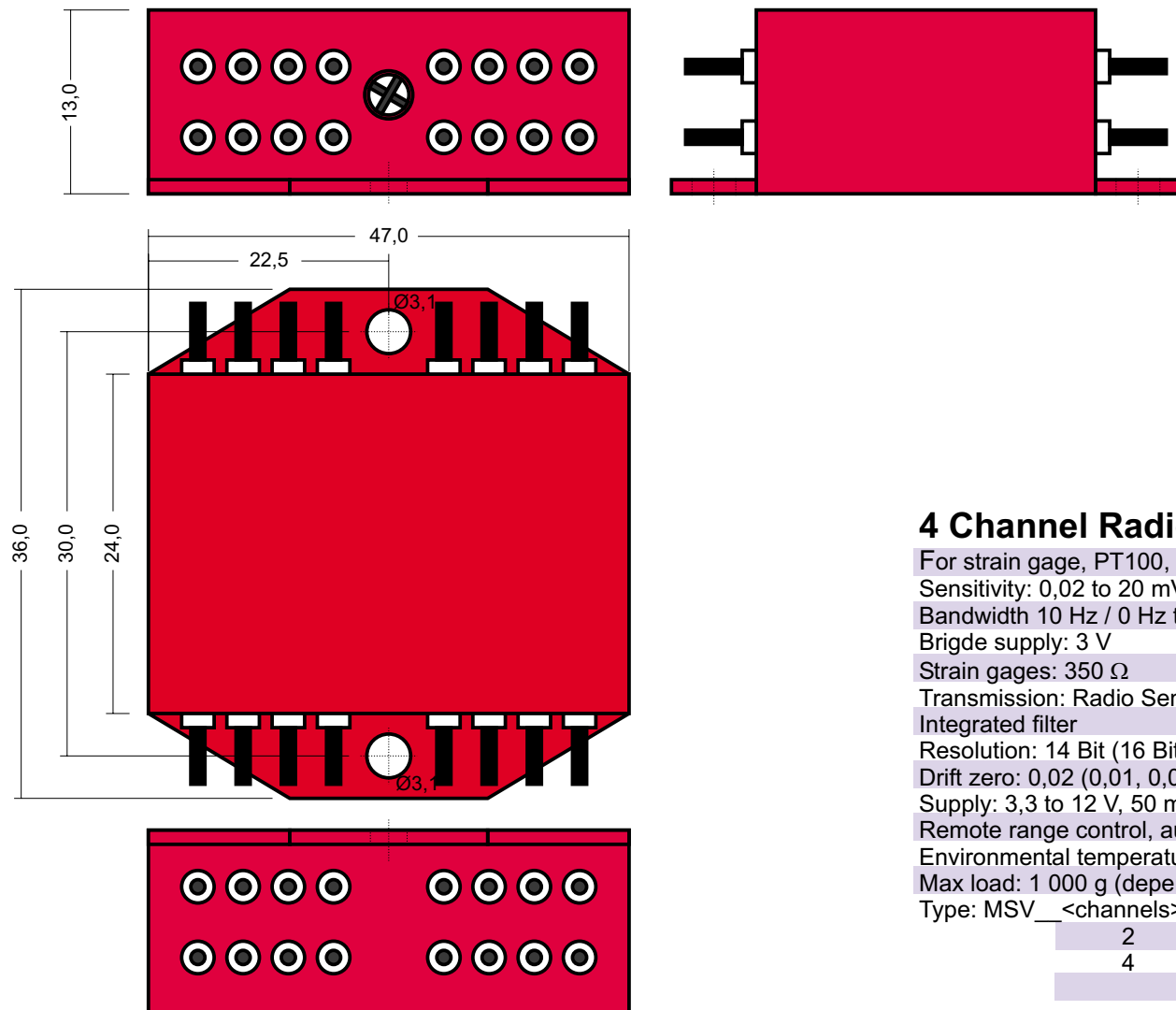
Environmental temperature: -25 to +85°C (120°C)

Max load: 1 000 g (depends on fixing)

Type: SV_8_<bandwidth>_<accuracy>_<temp>_<mod>_F

| | | | |
|-------|-------|-----|-------|
| 1 kHz | 0,02 | 85 | PCM12 |
| | 0,01 | 120 | PCM16 |
| | 0,005 | | |

2/4 Channel Radio Sensortelemetry Amplifier



4 Channel Radio Sensortelemetry transmitter

For strain gage, PT100, Thermocouple

Sensitivity: 0,02 to 20 mV/V

Bandwidth 10 Hz / 0 Hz to 1 kHz

Bridge supply: 3 V

Strain gages: 350 Ω

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 14 Bit (16 Bit)

Drift zero: 0,02 (0,01, 0,005 option)

Supply: 3,3 to 12 V, 50 mA

Remote range control, auto zero (option)

Environmental temperature: -25 to +85°C (120°C)

Max load: 1 000 g (depends on fixing)

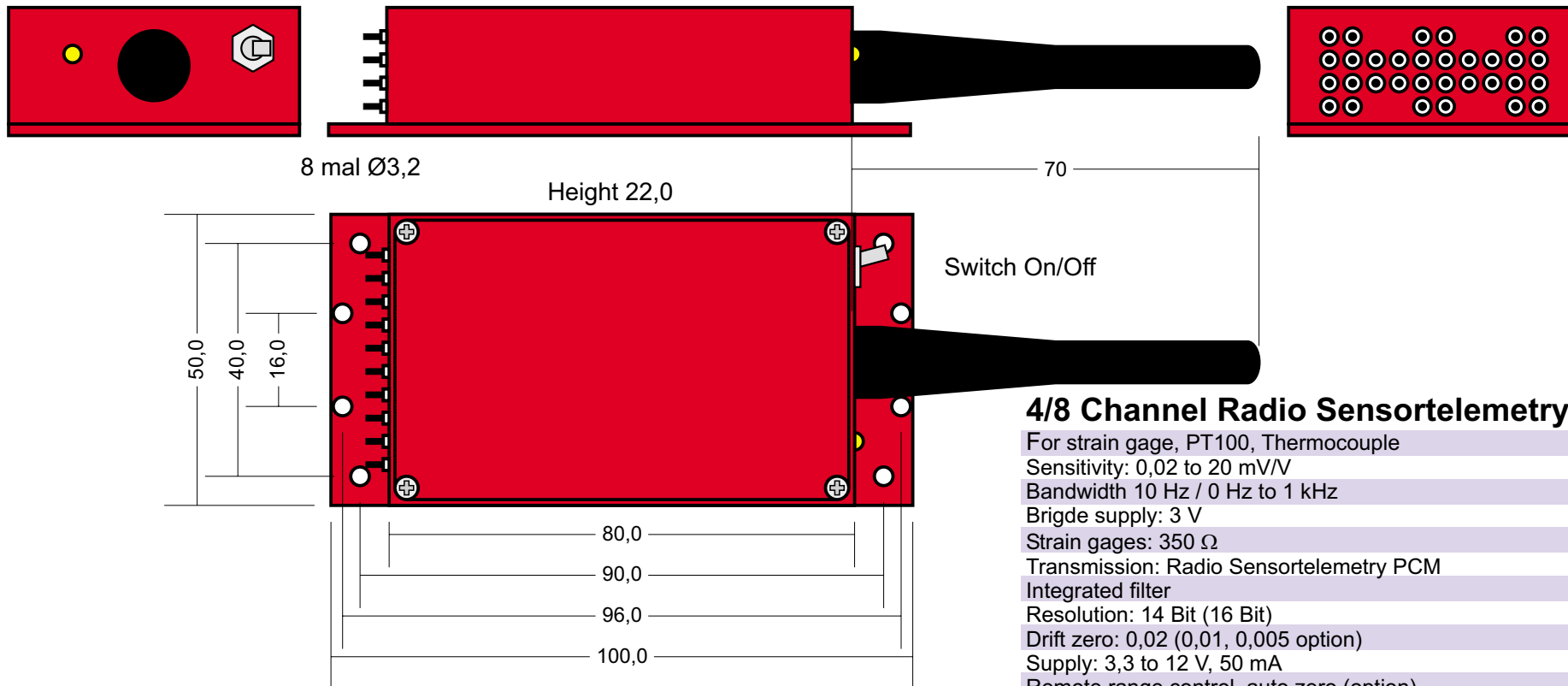
Type: MSV_<channels>_<bandwidth>_<accuracy>_<temp>_<Mod>_F

| | | | | |
|---|-------|------|----|-------|
| 2 | 1 kHz | 0,02 | 85 | PCM12 |
|---|-------|------|----|-------|

| | | | | |
|---|--|------|-----|-------|
| 4 | | 0,01 | 120 | PCM16 |
|---|--|------|-----|-------|

| | | | | |
|--|--|-------|--|--|
| | | 0,005 | | |
|--|--|-------|--|--|

4/8 Channel Sensor Signal Amplifier Type 4



Supply voltage supervision
 LED on --> supply voltage $\geq 3,6$ V
 LED off --> supply voltage $< 3,6$ V

4/8 Channel Radio Sensortelemetry transmitter

For strain gage, PT100, Thermocouple

Sensitivity: 0,02 to 20 mV/V

Bandwidth 10 Hz / 0 Hz to 1 kHz

Bridge supply: 3 V

Strain gages: 350 Ω

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 14 Bit (16 Bit)

Drift zero: 0,02 (0,01, 0,005 option)

Supply: 3,3 to 12 V, 50 mA

Remote range control, auto zero (option)

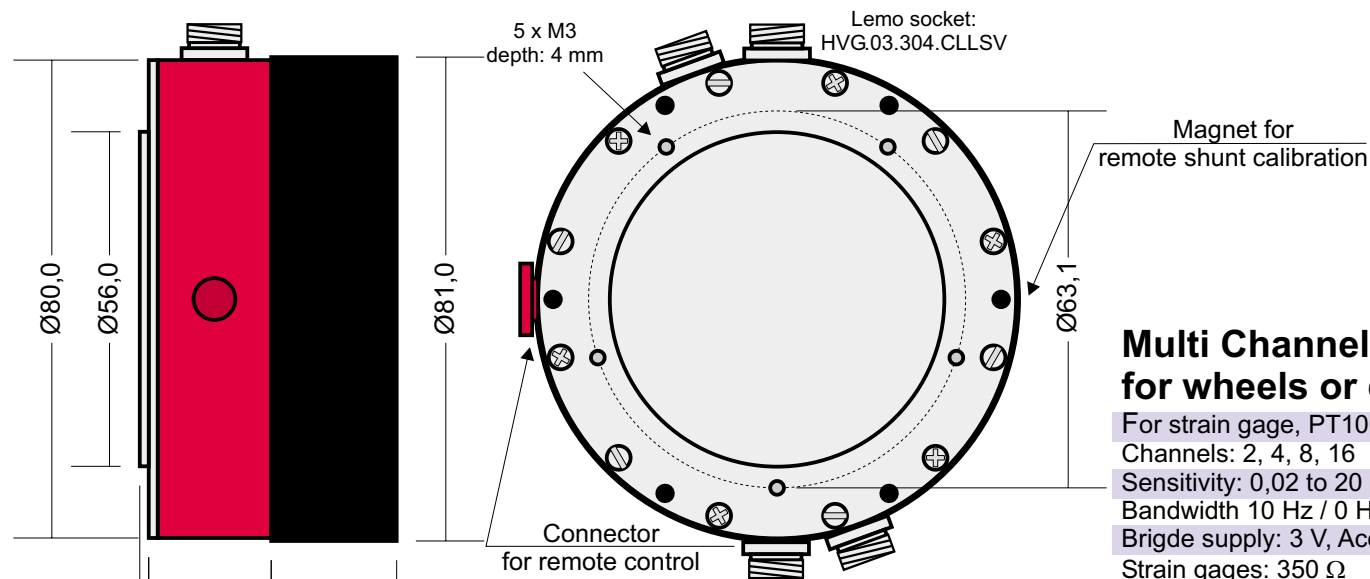
Environmental temperature: -25 to +85°C (120°C)

Max load: 1 000 g (depends on fixing)

Type: MSV__<channels>_<bandwidth>_<accuracy>_<temp>_<Mod>_F

| | | | | |
|---|---------|-------|-----|-------|
| 2 | 1000 Hz | 0,02 | 85 | PCM12 |
| 4 | 500 Hz | 0,01 | 120 | PCM16 |
| 8 | 300 Hz | 0,005 | | |

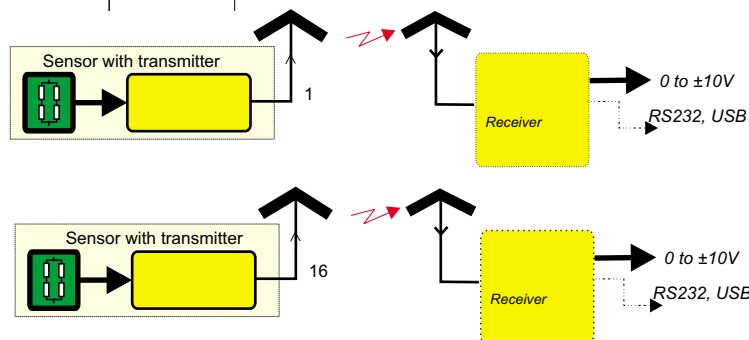
Sensor Signal Amplifier Type MSV_R



Multi Channel Radio Sensortelemetry transmitter for wheels or end shaft applications

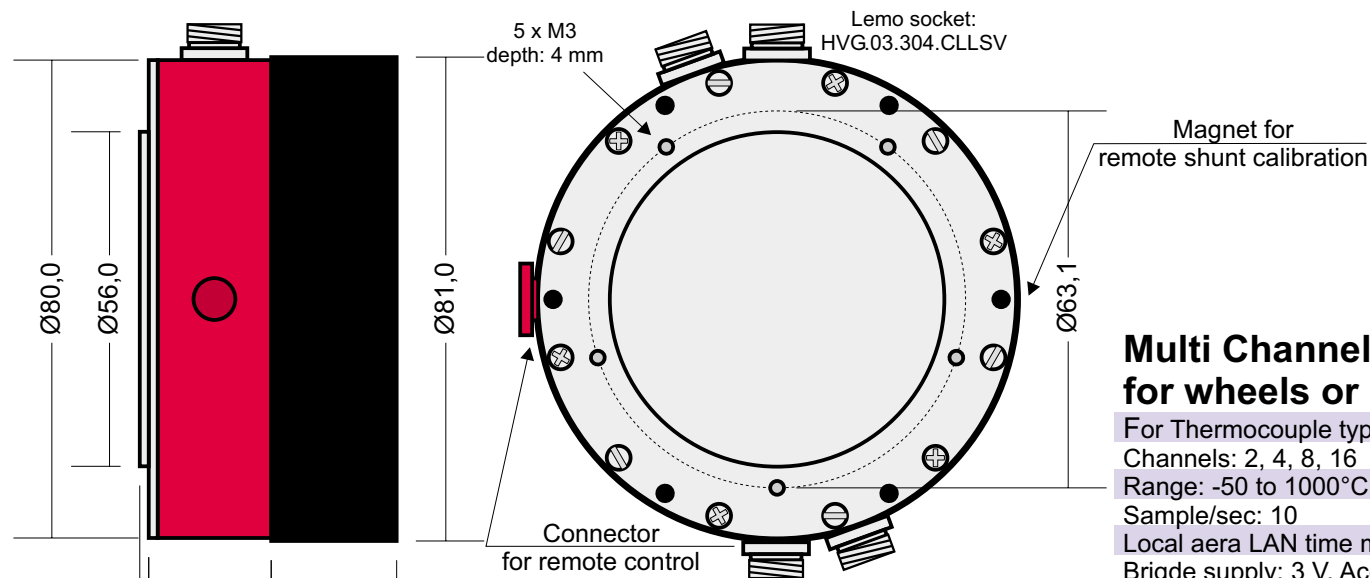
- For strain gage, PT100, Thermocouple
- Channels: 2, 4, 8, 16
- Sensitivity: 0,02 to 20 mV/V
- Bandwidth 10 Hz / 0 Hz to 1 kHz
- Bridge supply: 3 V, Accu rechargeable
- Strain gages: 350 Ω
- Transmission: Radio Sensortelemetry PCM
- Diameter: 80 mm, height: 43 mm
- Resolution: 12 Bit (16 Bit)
- Drift zero: 0,02 (0,01, 0,005 option)
- Recharging by inductive recharging cap (contactless)
- Operating time between recharging: 30 hours
- Activating by switch
- Remote range control, auto zero (option)
- Environmental temperature: -25 to +85°C (120°C)
- Protection IP67
- Max load: 1 000 g (depends on fixing)
- Type: MSV_R_<channels>_<bandwidth>_<accuracy>_<temp>_<mod>_F

| | | | | |
|-----|-------|-------|-----|-------|
| 1 | 10 Hz | 0,02 | 85 | PCM12 |
| ... | ... | 0,01 | 120 | PCM16 |
| 16 | 1kHz | 0,005 | | |



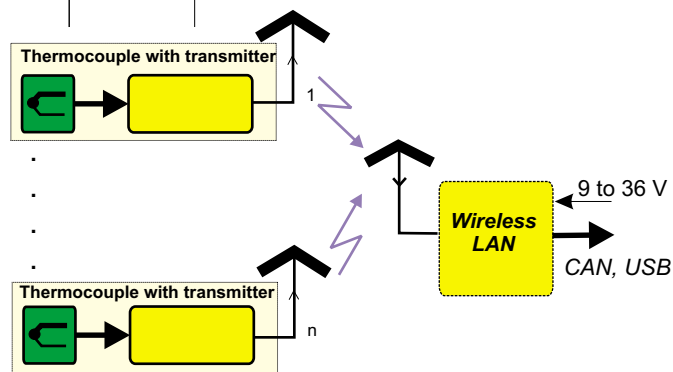
Sensor Signal Amplifier Type MSV_R

special for temperature acquisition at wheels



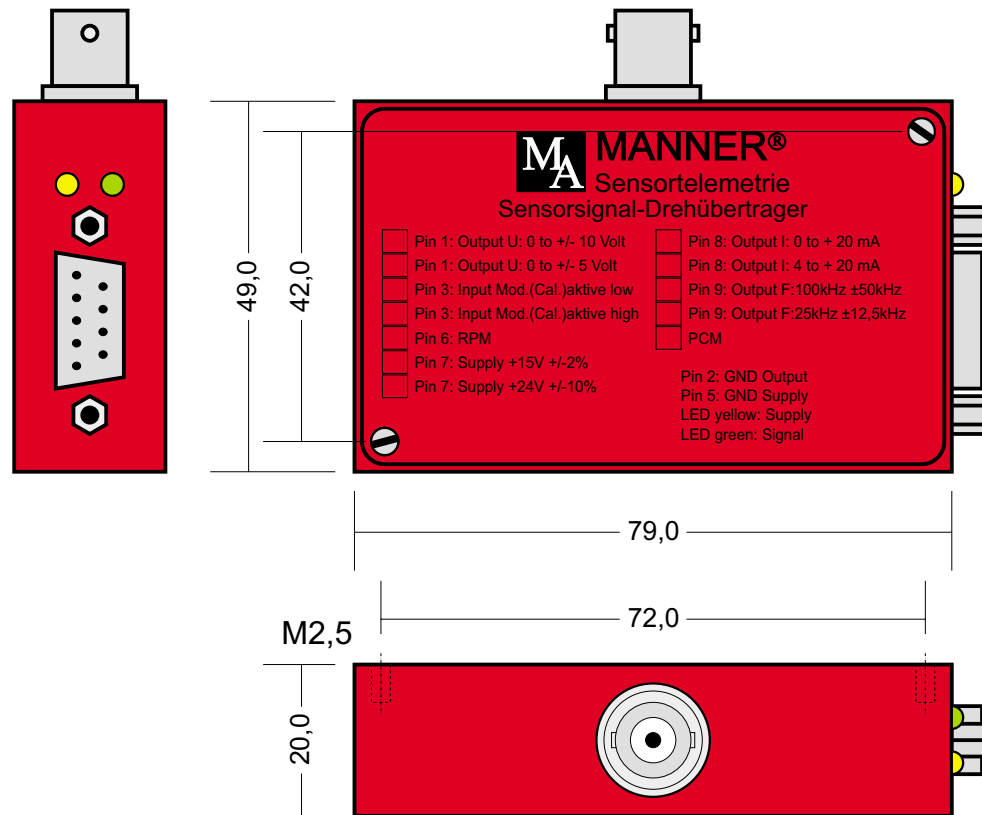
Multi Channel Radio Sensortelemetry transmitter for wheels or end shaft applications

For Thermocouple type K
 Channels: 2, 4, 8, 16
 Range: -50 to 1000°C
 Sample/sec: 10
 Local aera LAN time multiplex (one frequency
 Bridge supply: 3 V, Accu rechargeable
 Transmission: Radio Sensortelemetry PCM
 Diameter: 80 mm, height: 43 mm
 Resolution: 12 Bit (16 Bit)
 Drift zero: 0,02 (0,01, 0,005 option)
 Low power consumption, operating time between recharging. 150 hours
 Recharging by inductive recharging cap (contactless)
 Activating by switch
 Environmental temperature: -25 to +85°C (120°C)
 Protection IP68
 Max load: 1 000 g (depends on fixing)
 Type: MSV_R_<channels>_<sample>_<range>_<temp>_<mod>_F



| | | | | |
|-----|-------|-------|-----|-------|
| 1 | 0,1/s | 0,02 | 85 | PCM12 |
| ... | 1/s | 0,01 | 120 | PCM16 |
| 16 | 10/s | 0,005 | | |

Receiver (AW_D)



Pin Assignment of the D-Sub connector

- Pin 1 Output -10V to +10V
- Pin 2 GND Output
- Pin 3 do not connect
- Pin 4 do not connect
- Pin 5 GND Power Supply
- Pin 6 do not connect
- Pin 7 Power Supply 24 VDC ±10%
- Pin 8 do not connect
- Pin 9 do not connect

1 Channel Radio Sensortelemetry Receiver

Bandwidth: 0 to 1kHz

Output: ±10 V (0(4) to 20 mA, frequency, binary, USB)

RF frequency: 433 MHz

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 12 Bit (16 Bit)

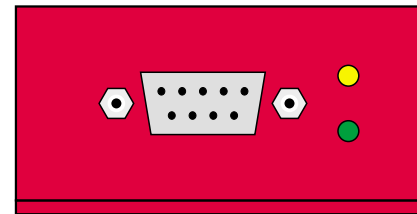
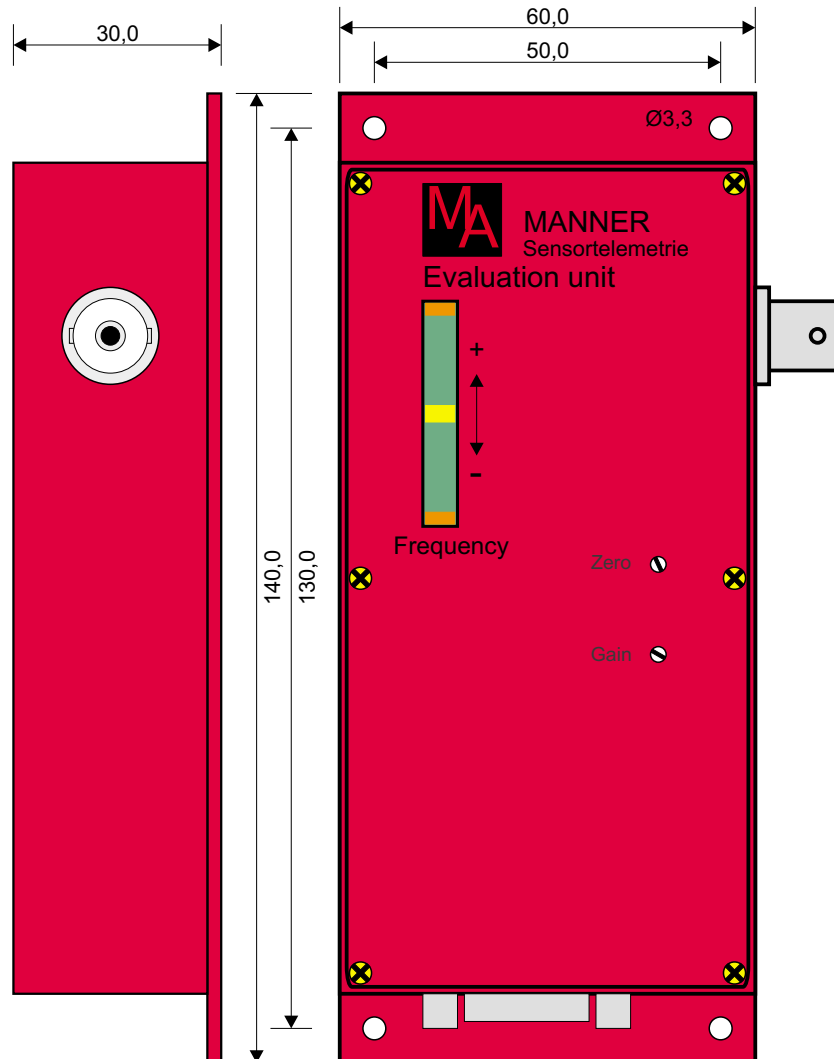
Environmental temperature: -25 to +85°C (-45 to +85°C)

Supply: 24 V (±5%), 15 V (±2%), 9 to 36 V (board supply)

Type: AW_D_<bandwidth>_<supply>_<output>_<RF-power>_<mod>_F

| | | | | |
|-------|-----|-----|----|-----|
| 1 kHz | 15 | U | 1W | PCM |
| | 24 | I | 3W | |
| | 24V | | | |
| | | B | | |
| | | USB | | |

Evaluation Unit (AW_M)



Pin Assignment of the D-Sub connector

- Pin 1 Output -10V to +10V
- Pin 2 GND Output
- Pin 3 do not connect
- Pin 4 do not connect
- Pin 5 GND Power Supply
- Pin 6 do not connect
- Pin 7 Power Supply 24 VDC $\pm 10\%$
- Pin 8 do not connect
- Pin 9 do not connect

1 Channel Radio Sensortelemetry Receiver

Bandwidth: 0 to 1kHz

Output: ± 10 V (0(4) to 20 mA, frequency, binary, USB)

RF frequency: 433 MHz

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 12 Bit (16 Bit)

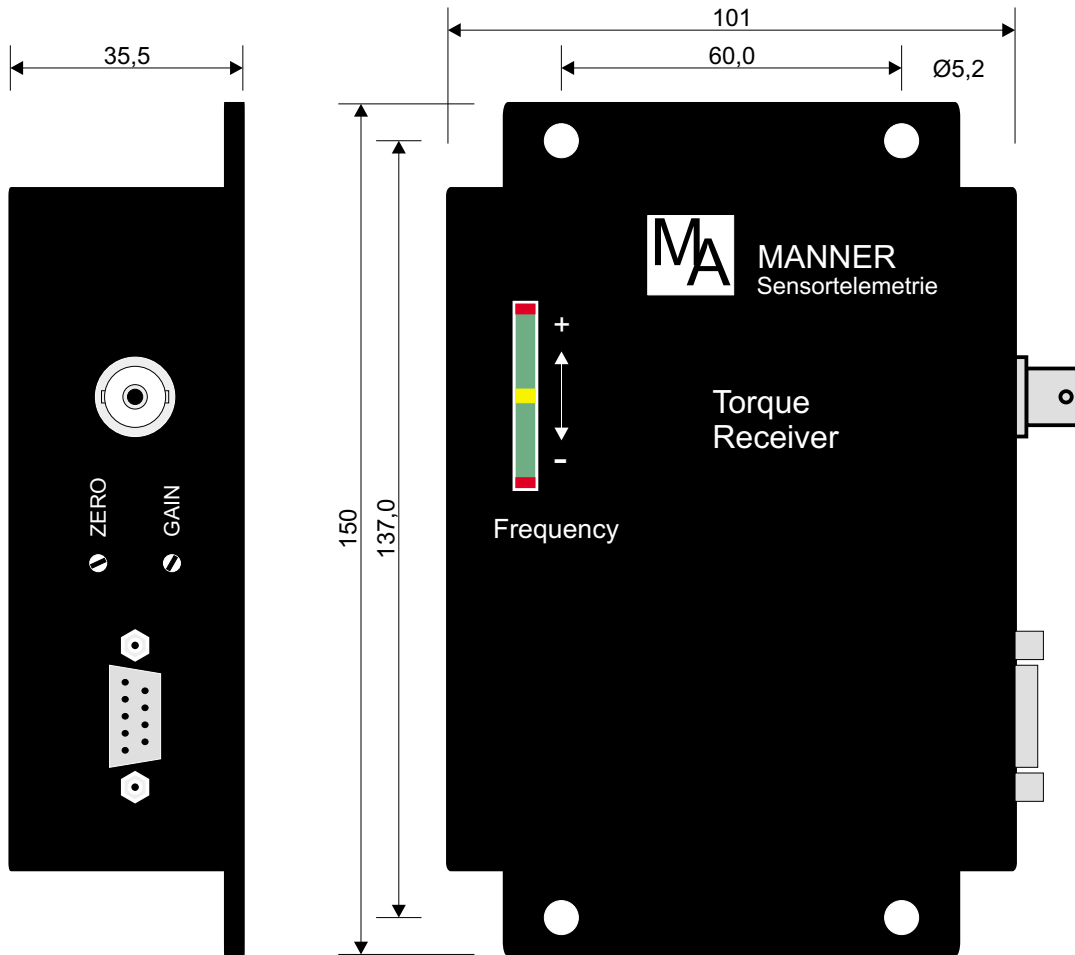
Environmental temperature: -25 to +85°C (-45 to +85°C)

Supply: 24 V ($\pm 5\%$), 15 V ($\pm 2\%$), 9 to 36 V (board supply)

Type: AW_M_<bandwidth>_<supply>_<output>_<mod>_F

| | | | |
|-------|-----|-----|-------|
| 1 kHz | 15 | U | PCM12 |
| | 24 | I | PCM16 |
| | 24V | | |
| | | B | |
| | | USB | |

Evaluation Unit (AW_P)



Pin Assignment of the D-Sub connector

- Pin 1 Output -10V to +10V
- Pin 2 GND Output
- Pin 3 do not connect
- Pin 4 do not connect
- Pin 5 GND Power Supply
- Pin 6 do not connect
- Pin 7 Power Supply 24 VDC ±10%
- Pin 8 do not connect
- Pin 9 do not connect

1/2 Channel Radio Sensortelemetry Receiver

Bandwidth: 0 to 1kHz

Output: ±10 V (0(4) to 20 mA, frequency, binary, USB)

RF frequency: 433 MHz

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 12 Bit (16 Bit)

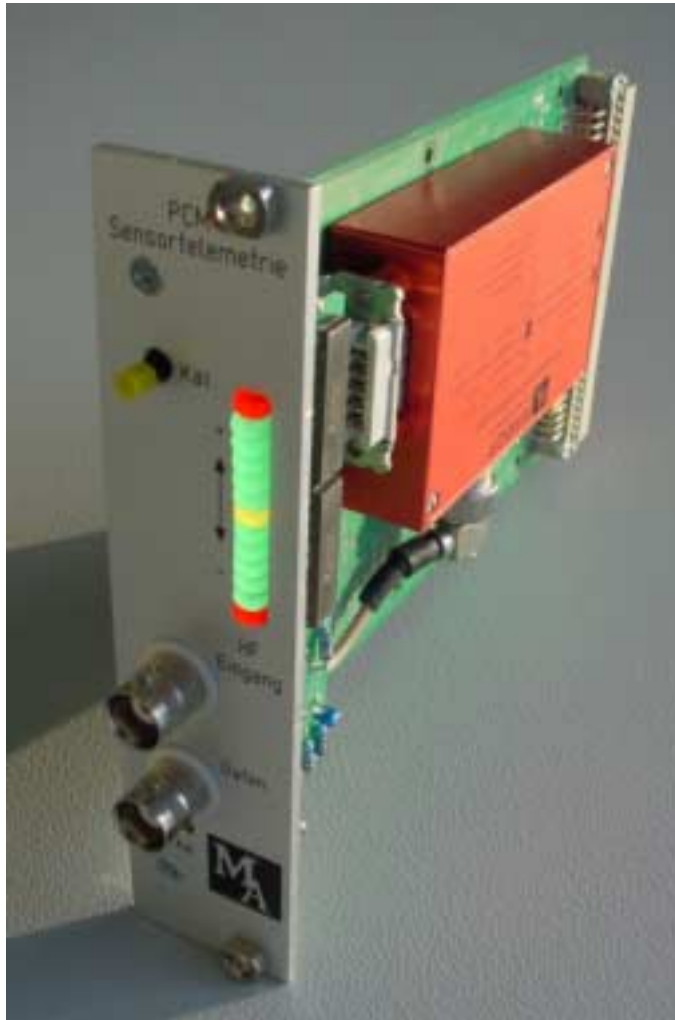
Environmental temperature: -25 to +85°C (-45 to +85°C)

Supply: 24 V (±5%), 15 V (±2%), 9 to 36 V (board supply)

Type: AW_P_<bandwidth>_<channels>_<supply>_<output>_<mod>_F

| | | | | |
|-------|---|-----|-----|-------|
| 1 kHz | 1 | 15 | U | PCM12 |
| | 2 | 24 | I | PCM16 |
| | | 24V | | |
| | | | B | |
| | | | USB | |

Evaluation Unit (AW_ES)



1 Channel Radio Sensortelemetry Receiver

Bandwidth: 0 to 1kHz

Output: ± 10 V (0(4) to 20 mA, frequency, binary, USB)

RF frequency: 433 MHz

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 12 Bit (16 Bit)

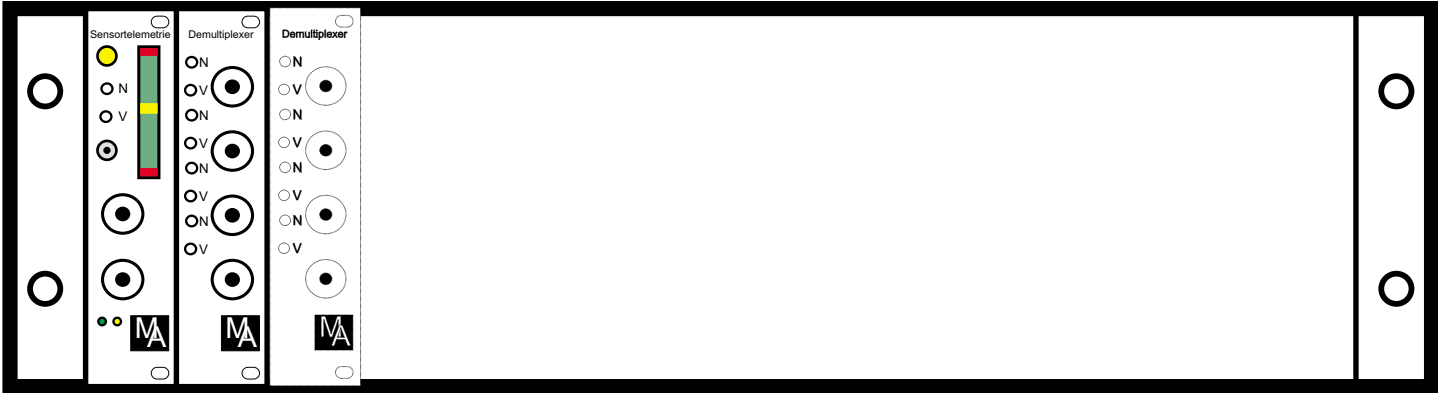
Environmental temperature: -25 to $+85^{\circ}\text{C}$ (-45 to $+85^{\circ}\text{C}$)

Supply: 24 V ($\pm 5\%$), 15 V ($\pm 2\%$), 9 to 36 V (board supply)

Type: AW_ES_<bandwidth>_<supply>_<output>_<mod>_F

| | | | |
|-------|----|---|-------|
| 1 kHz | 15 | U | PCM12 |
| | | I | PCM16 |

Evaluation Unit (84TE)



for example

Front side

1/2/4/8/16/32 Channel FM/PCM Receiver

Bandwidth: 0 to 1kHz

Output: ±10 V (0(4) to 20 mA, binary, USB)

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 14 Bit (16 Bit)

Remote shunt calibration

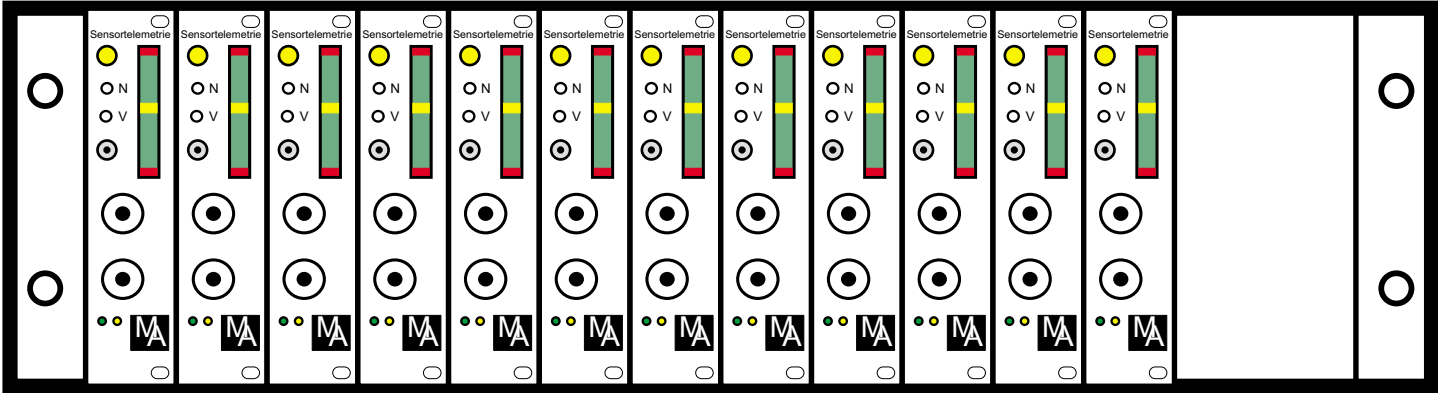
Environmental temperature: -25 to +65°C

Supply: 9 to 270 V AC, 9 to 36 V (board supply) DC

Type: AW_T_<bandwidth>_<channels>_<supply>_<output>_<mod>_F

| | | | | |
|-------|----|------|-----|-------|
| 1 kHz | 1 | 230V | U | PCM12 |
| | 2 | 24V | I | PCM16 |
| | 4 | | B | |
| | 8 | | USB | |
| | 16 | | | |

Evaluation Unit (84TE)

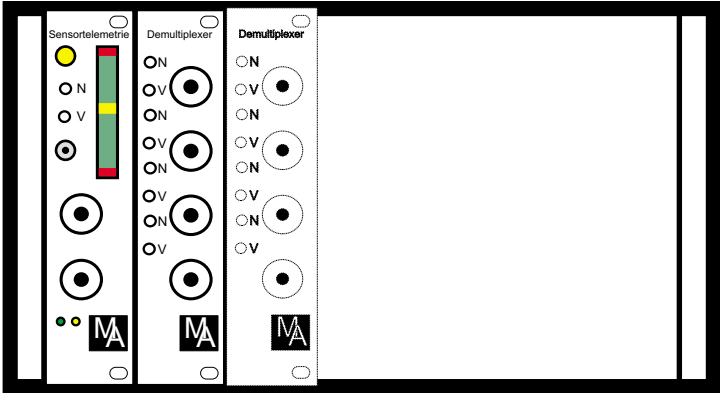


1/2/4/8 Channel PCM Receiver with Single Channels

- Bandwidth: 0 to 1kHz
- Output: ±10 V, (0(4) to 20 mA, binary, USB)
- Transmission: Radio Sensortelemetry PCM
- Integrated filter
- Resolution: 12 Bit (16 Bit)
- Max. Plugin cards: 12 (single channels)
- Environmental temperature: -25 to +65°C
- Supply: 9 to 270 V AC, 9 to 36 V (board supply) DC
- Type: AW_T_<bandwidth>_<channels>_<supply>_<output>_<mod>_F

| | | | | |
|-------|---|------|-----|-------|
| 1 kHz | 1 | 230V | U | PCM12 |
| | 2 | 24V | I | PCM16 |
| | 4 | | B | |
| | 8 | | USB | |

Evaluation Unit (42TE)



for example **Front side**

1/2/4/8 Channel PCM Receiver

Bandwidth: 0 to 1kHz

Output: ±10 V, (0(4) to 20 mA, binary, USB)

Transmission: Radio Sensortelemetry PCM

Integrated filter

Resolution: 12 Bit (16 Bit)

Remote shunt calibration

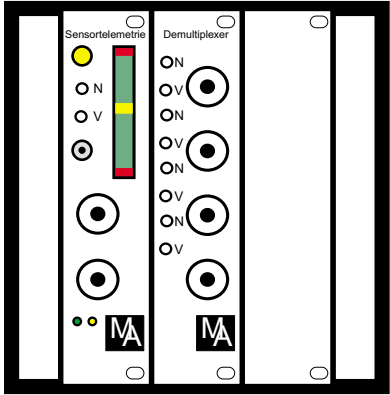
Environmental temperature: -25 to +65°C

Supply: 9 to 270 V AC, 9 to 36 V (board supply) DC

Type: AW_T_<bandwidth>_<channels>_<supply>_<output>_<mod>_F

| | | | | |
|-------|---|------|-----|-------|
| 1 kHz | 1 | 230V | U | PCM12 |
| | 2 | 24V | I | PCM16 |
| | 4 | | B | |
| | 8 | | USB | |

Evaluation Unit (22TE)



for example

Front side

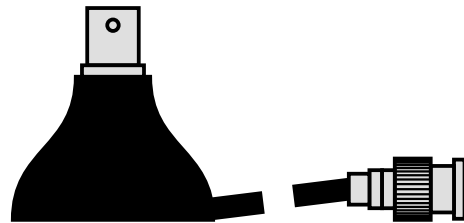
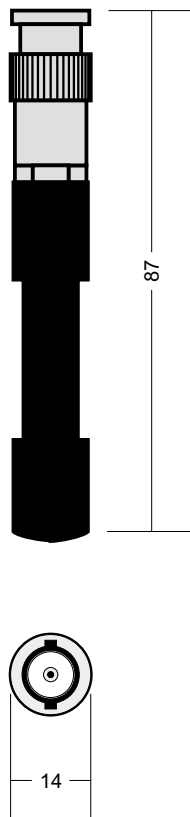


1/2/4 Channel FM/PCM Receiver

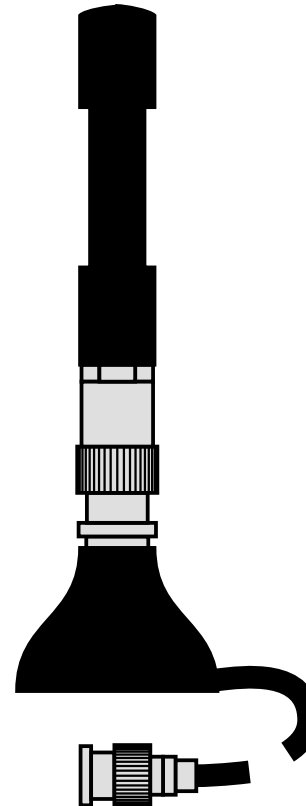
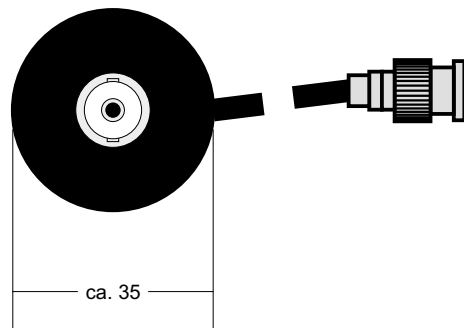
- Bandwidth: 0 to 1kHz
- Output: ± 10 V, (0(4) to 20 mA, binary, USB)
- Transmission: Radio Sensortelemetry PCM
- Integrated filter
- Resolution: 14 Bit (16 Bit)
- Remote shunt calibration
- Environmental temperature: -25 to +65°C
- Supply: 9 to 270 V AC, 9 to 36 V (board supply) DC
- Type: AW_T_<bandwidth>_<channels>_<supply>_<output>_<mod>_F

| | | | | |
|-------|---|------|-----|-----|
| 1 kHz | 1 | 230V | U | PCM |
| | 2 | 24V | I | |
| | 4 | | B | |
| | | | USB | |

Receiving / Transmitting Antenna with magnetic Foot



Coaxial cable RG58
Max. length 10 m



Feature

- Frequency 433 MHz
- Height: 87 mm
- Magnetic foot
- Coax cable 50 W
- Cable length: 5 m
- Environmental temperature: -35 to +65°C
- Type: Ant_<1>_F