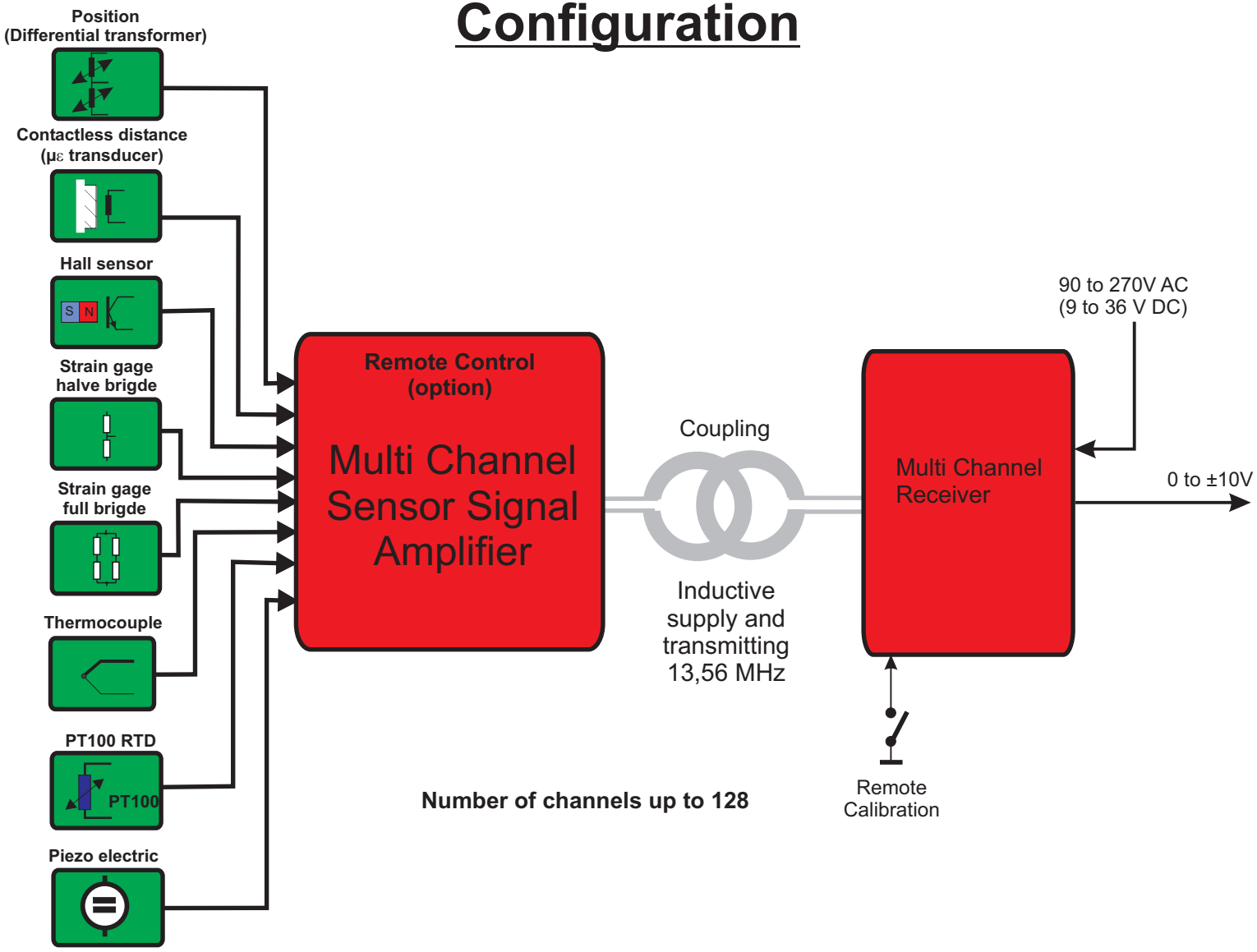
Inductive Sensortelemetry
Multi Channel Sensor Signal Amplifiers and Receivers

MANNER®
Sensortelemetrie

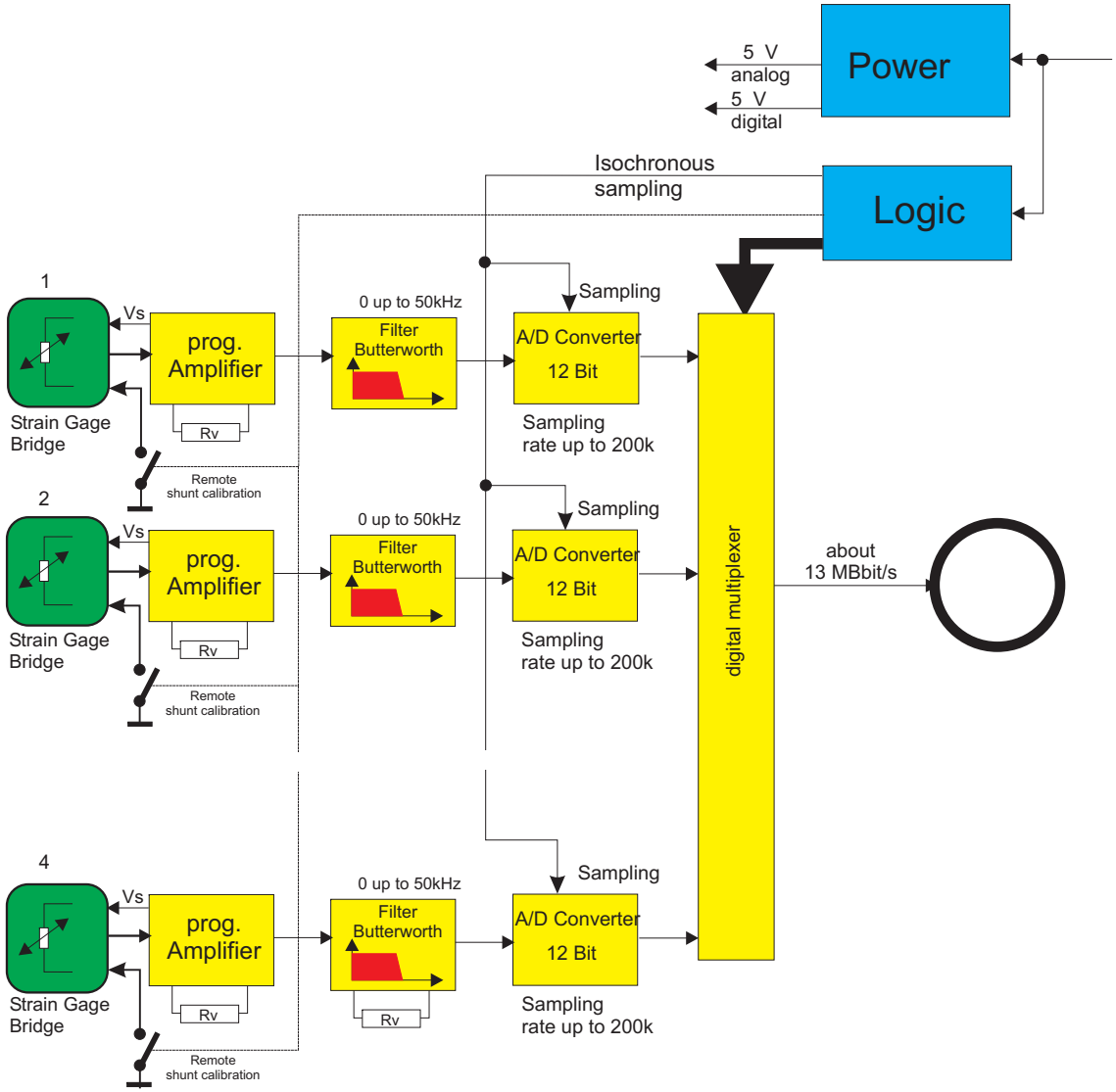
Configuration



Number of channels up to 128

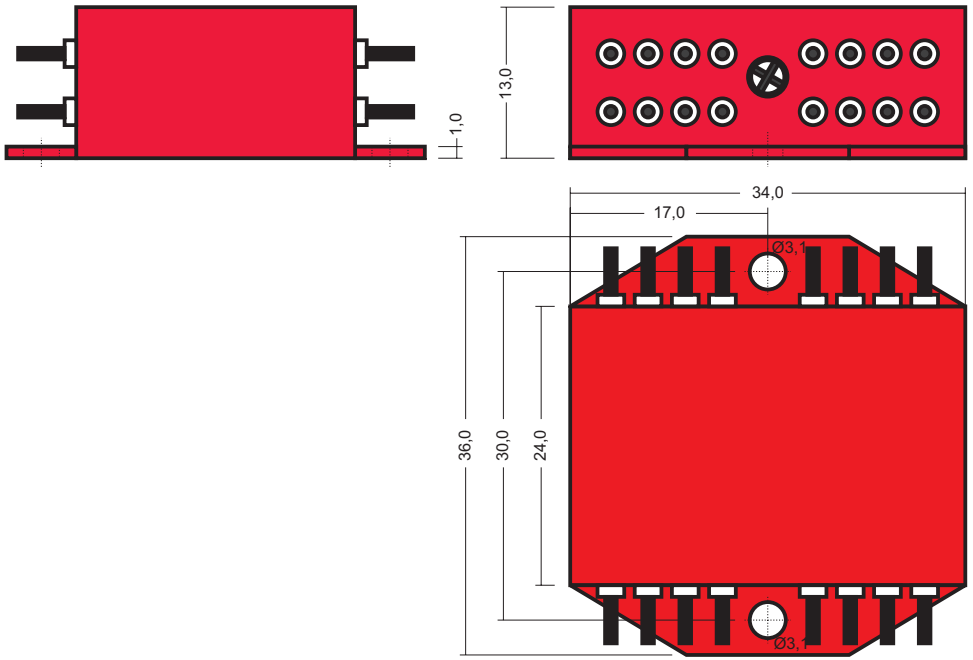
MANNER® Sensortelemetrie

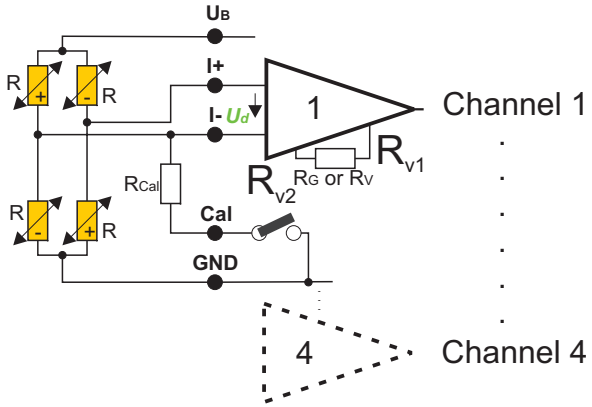
Signal Flow Diagram Sensor Signal Amplifier



Multi Channel Sensor Signal Amplifier Type M

(Standard)





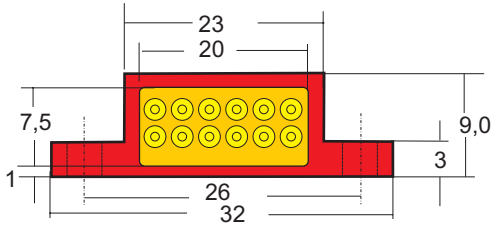
2/3/4 Channel FM Transmitter

For strain gage, PT100, thermocouple
Number of channels: 2/3/4
Sensitivity: 0,02 mV/V to 20 mV/V
Total samplerate: 2000, (10000 option)
Channel bandwidth: total samplerate / 4 / number of channals
Strain gage brigde supply: 2,5 V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM
Integrated filter
Resolution: 14 Bits
Zero point drift: 0,02, (0,01 option)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

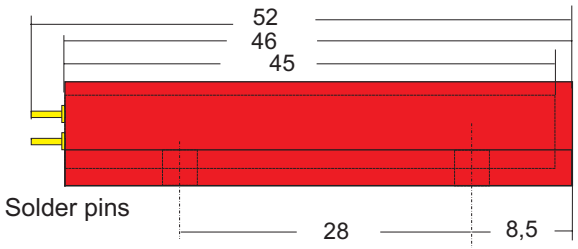
2	0,02	85	FM	1000(5000)
3	0,01	125		666 (3333)
4		150		500 (2500)

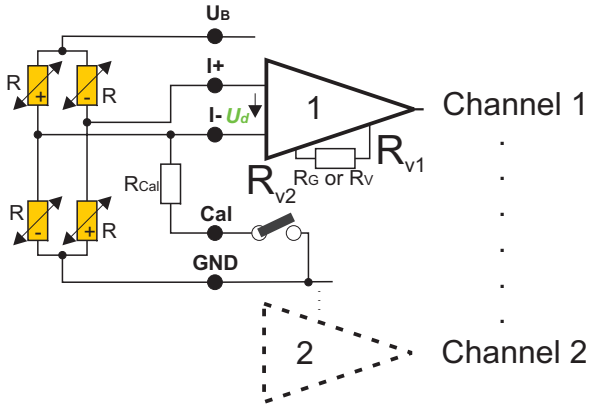
2 Channel Sensor Signal Amplifier Type M

(Standard)



Radius = 2 mm Diameter 3,2 mm





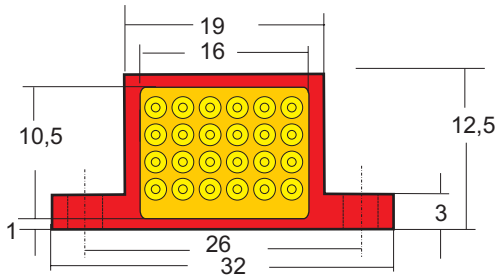
2 Channel PCM Transmitter

For strain gage, PT100, (thermocouple option)
Number of channels: 2
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 5 (3,3*) V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry PCM
Integrated filter
Resolution: 12 Bits (16 Bits)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

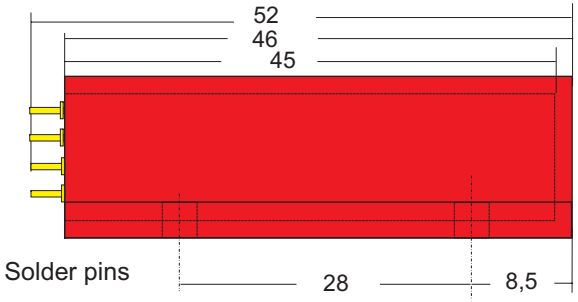
2	0,02	85	PCM	4000
	0,01	125		8000
	0,003	150		40000
				200000

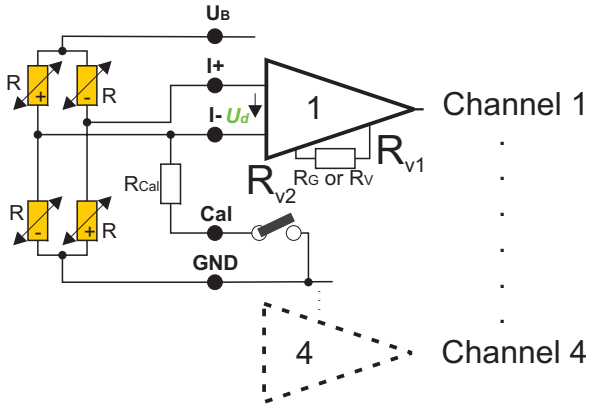
4 Channel Sensor Signal Amplifier Type M

(Standard)



Radius = 2 mm Diameter 3,2 mm





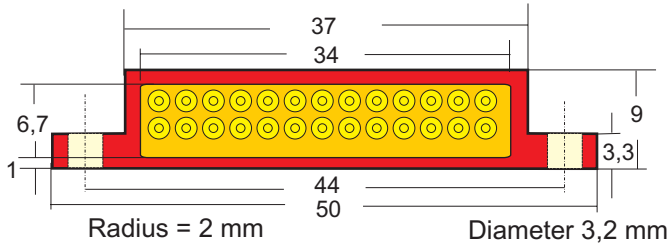
2/3/4 Channel PCM Transmitter

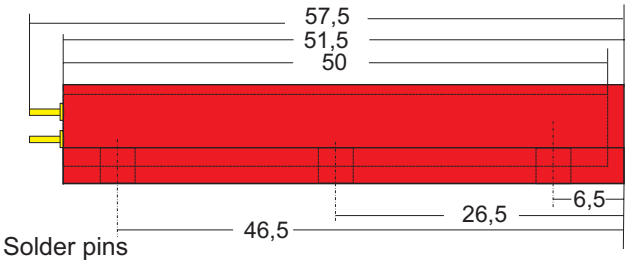
For strain gage, PT100, (thermocouple option)
Number of channels: 2/3/4
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 5 (3,3*) V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry PCM
Integrated filter
Resolution: 12 Bits (16 Bits)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

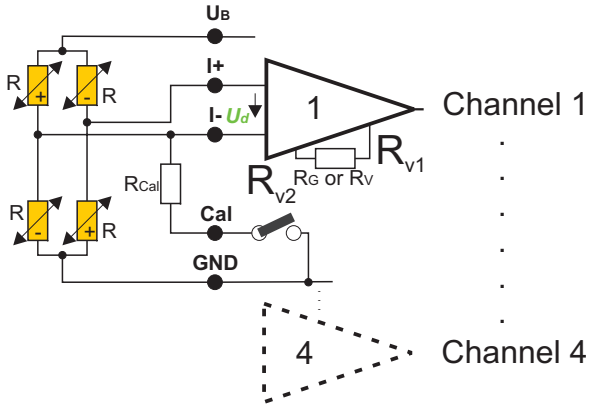
2	0,02	85	PCM	4000
3	0,01	125		8000
4	0,003	150		40000
				200000

4 Channel Sensor Signal Amplifier Type M

(Standard)







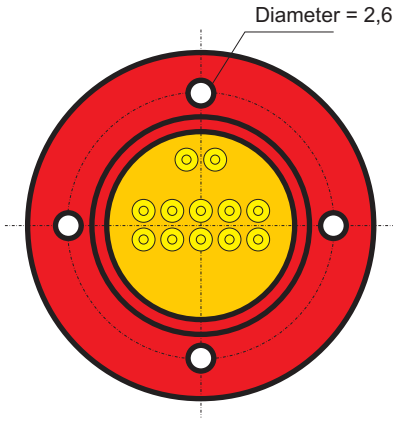
2/3/4 Channel PCM Transmitter

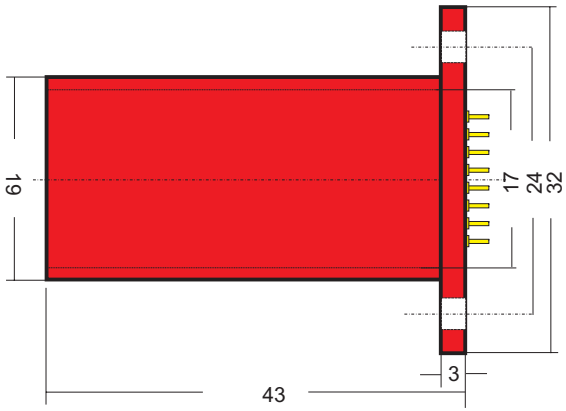
For strain gage, PT100, (thermocouple option)
Number of channels: 2/3/4
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 5 (3,3*) V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry PCM
Integrated filter
Resolution: 12 Bits (16 Bits)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

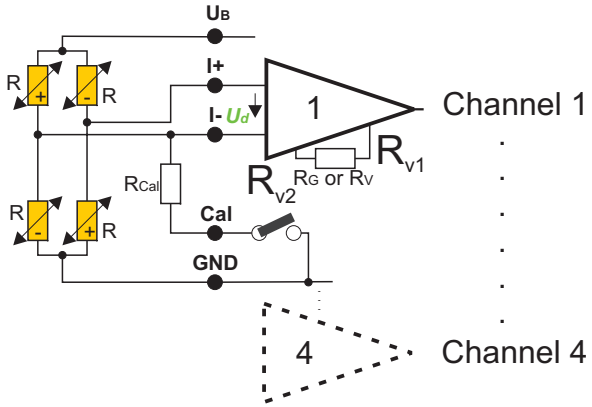
2	0,02	85	PCM	4000
3	0,01	125		8000
4	0,003	150		40000
				200000

4 Channel Sensor Signal Amplifier Type R (Cartridge)

(Standard)







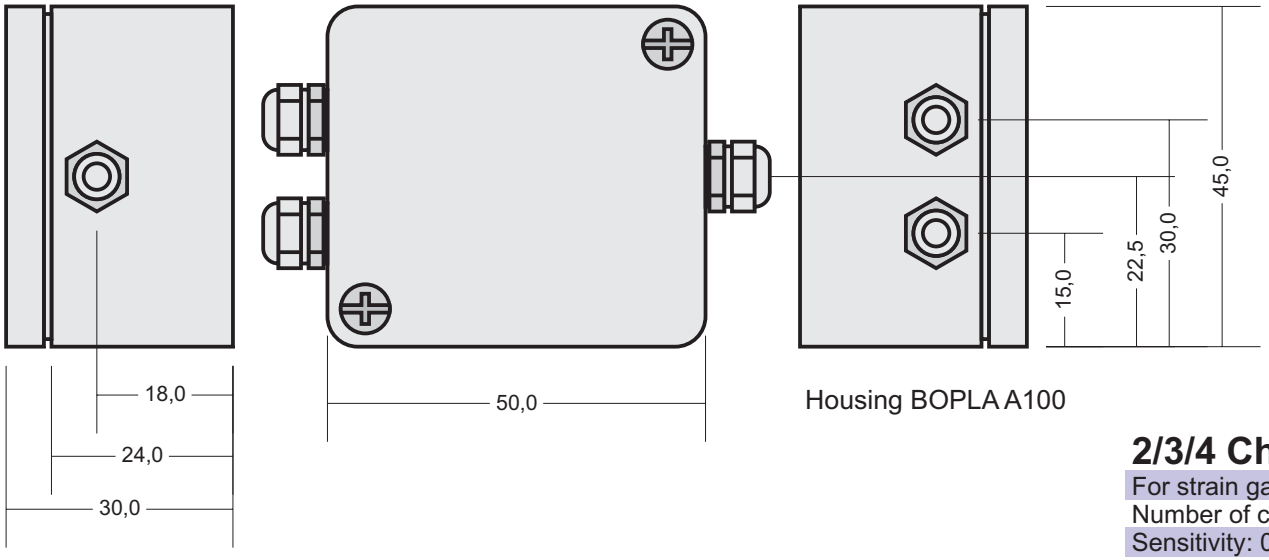
2/3/4 Channel PCM Transmitter

For strain gage, PT100, (thermocouple option)
Number of channels: 2/3/4
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 5 (3,3*) V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry PCM
Integrated filter
Resolution: 12 Bits (16 Bits)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_R_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

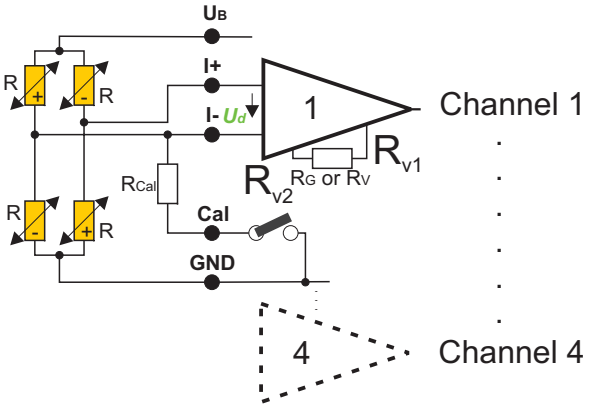
2	0,02	85	PCM	4000
3	0,01	125		8000
4	0,003	150		40000
				200000

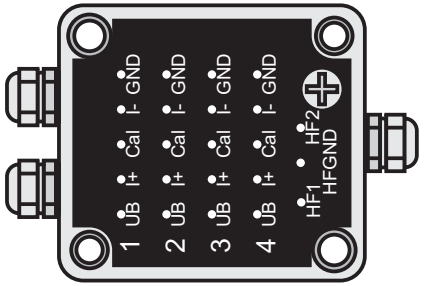
4 Channel Sensor Signal Amplifier Type M water proof

(Standard)



Housing BOPLA A100





Strain gage bridge

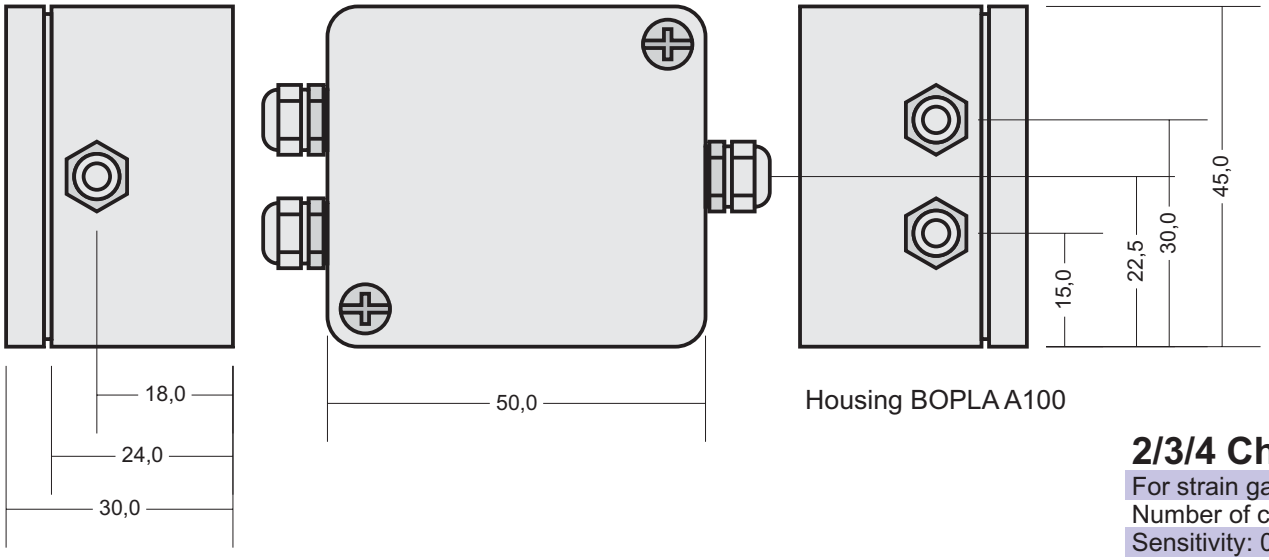
2/3/4 Channel PCM Transmitter

For strain gage, PT100, (thermocouple option)
Number of channels: 2/3/4
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 5, (3,3)* V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry PCM
Integrated filter
Resolution: 12 (16 bit option)
Zero point drift: 0,02, (0,01 option)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Protection: IP67
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_wa

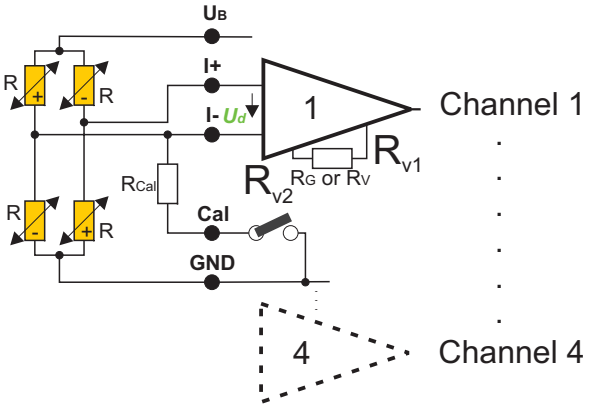
2	0,02	85	FM	1000(5000)
3	0,01	125		666 (3333)
4	0,003	150		500 (2500)

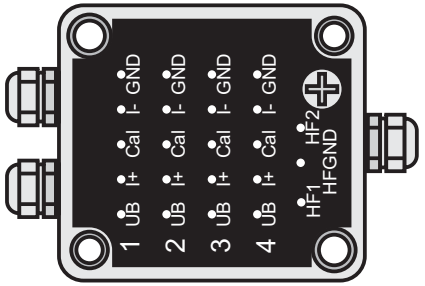
4 Channel Sensor Signal Amplifier Type M water proof

(Standard)



Housing BOPLA A100





Strain gage bridge

2/3/4 Channel FM Transmitter

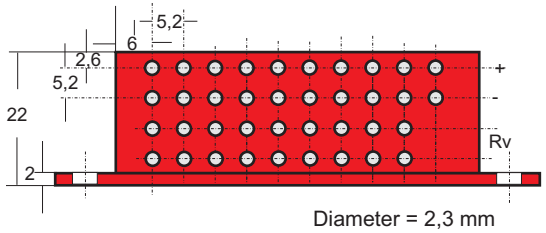
For strain gage, PT100, thermocouple
Number of channels: 2/3/4
Sensitivity: 0,02 mV/V to 20 mV/V
Total samplerate: 2000, (10000 option)
Channel bandwidth: total samplerate / 4 / number of channals
Strain gage brigde supply: 2,5 V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM
Integrated filter
Resolution: corresponding to about 13 to 14 Bits
Zero point drift: 0,02, (0,01 option)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Protection: IP67

Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_wa

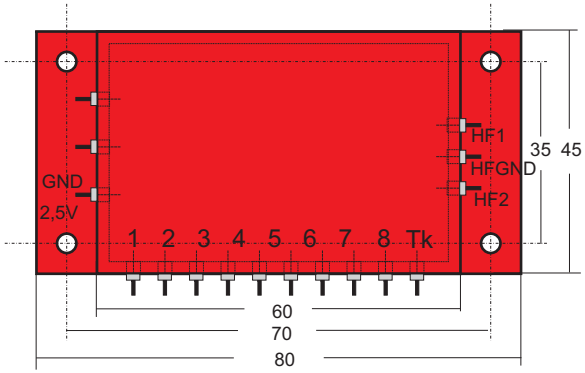
2	0,02	85	FM	4000	wa
3	0,01	125		8000	
4		150		40000	
				200000	

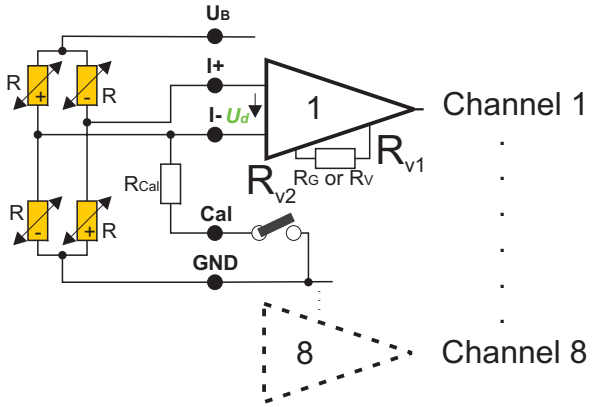
Multi Channel Sensor Signal Amplifier Type M

(Standard)



Diameter = 2,3 mm





8 Channel FM Transmitter

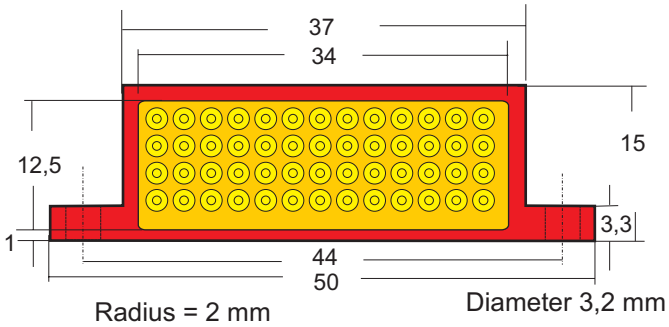
For strain gage, PT100, thermocouple
Number of channels: 8
Sensitivity: 0,02 mV/V to 20 mV/V
Total samplerate: 2000, (10000 option)
Channel bandwidth: total samplerate / 4 / number of channals
Strain gage brigde supply: 2,5 V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM
Integrated filter
Resolution: 12 Bits
Zero point drift: 0,02, (0,01 option)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

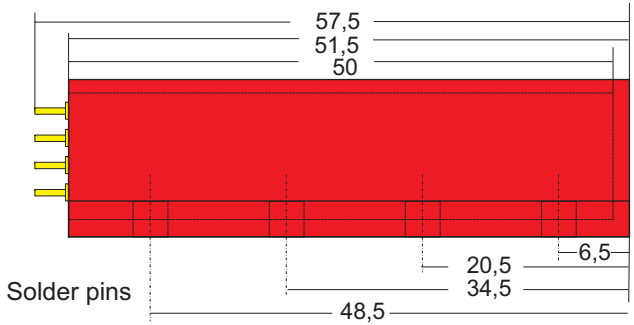
8	0,02	85	FM*	10000
	0,01	125	total samplerate	
		150		

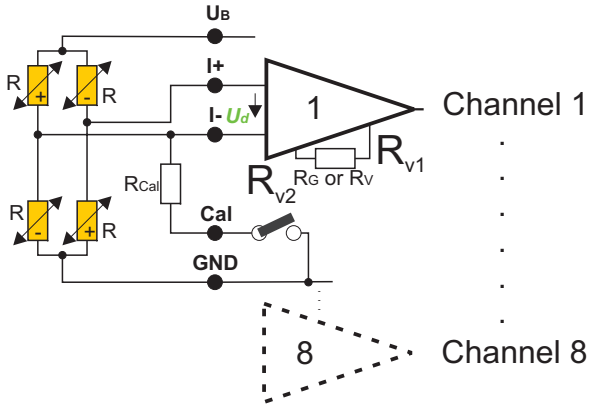
* Max. samplerate/channel = total samplerate/ No. of channels

8 Channel Sensor Signal Amplifier Type M

(Standard)







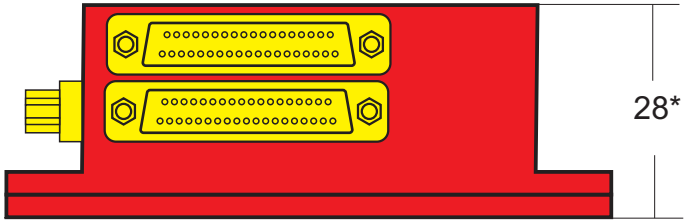
Multi Channel PCM Transmitter

For strain gage, PT100, thermocouple
Number of channels: 2/4/8/12/16
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 5 (3,3*) V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry PCM
Integrated filter
Resolution: 12 Bits (16 Bits)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

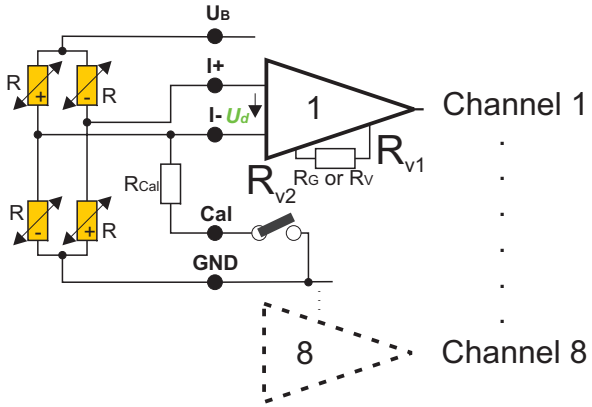
2	0,02	85	PCM12	4000
4	0,01	125	PCM16	8000
8	0,003	150		40000
12				200000
16				

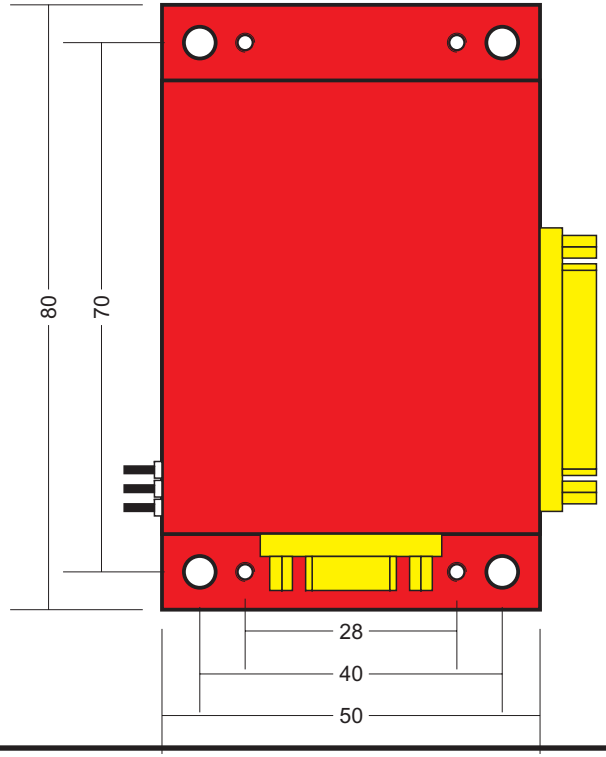
8/16 Channel Sensor Signal Amplifier Type M

(Standard)



* 8 channels: 21





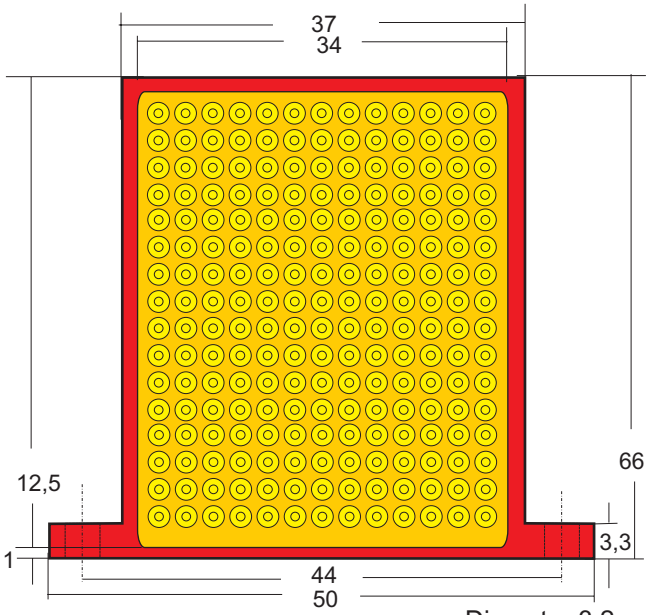
Multi Channel PCM Transmitter with Connector

For strain gage, PT100, thermocouple
Number of channels: 2/4/8/12/16/32
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 5 (3,3*) V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry PCM, Radiotelemetrie
Integrated filter
Resolution: 12 Bits (16 Bits)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 2 000 g (depending on fixing)
Type: MSV_C_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_sys

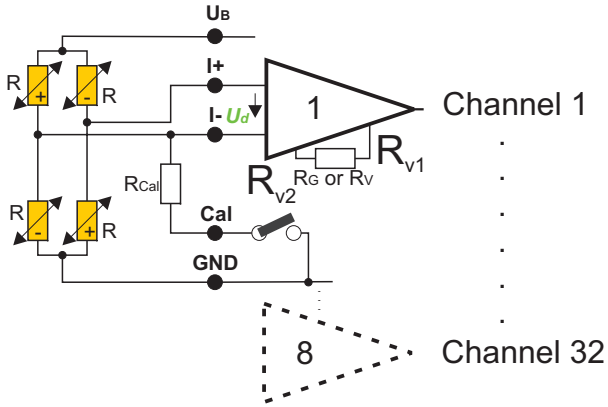
8	0,02	85	PCM12	1000	inductive
16	0,01	125	PCM16	4000	radio
	0,003	150		8000	
				40000	
				200000	

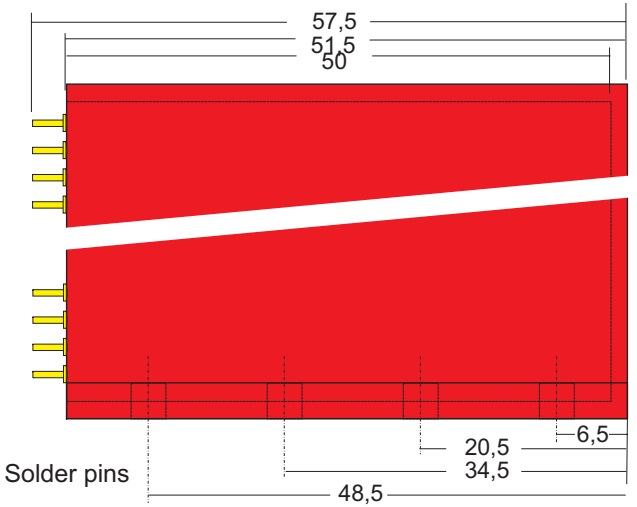
32 Channel Sensor Signal Amplifier Type M

(Standard)



Radius = 2 mm





Multi Channel PCM Transmitter with Connector

For strain gage, PT100, thermocouple
Number of channels: 2/4/8/12/16/32
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 5 (3,3*) V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry PCM, Radiotelemetrie
Integrated filter
Resolution: 12 Bits (16 Bits)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 2 000 g (depending on fixing)
Type: MSV_C_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_sys

2	0,02	85	PCM12	1000	inductive
4	0,01	125	PCM16	4000	radio
8	0,003	150		8000	
12				40000	
16				200000	
32					

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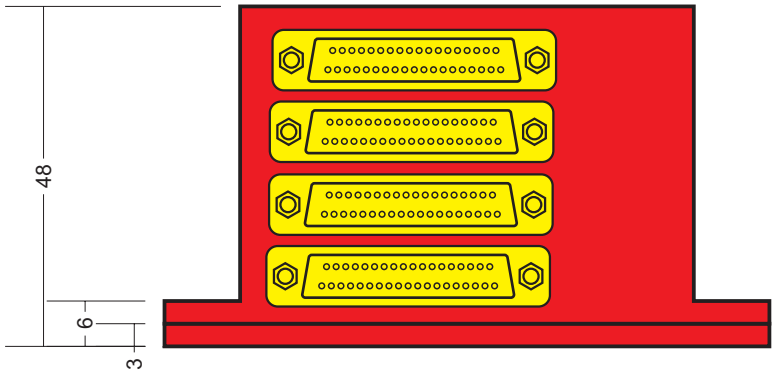
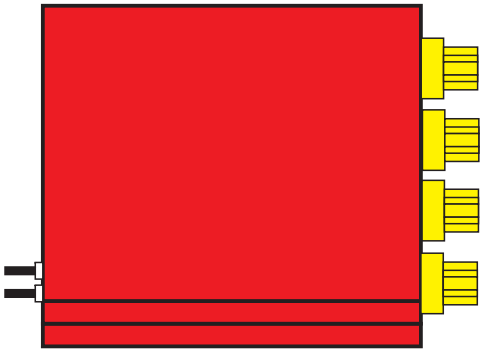
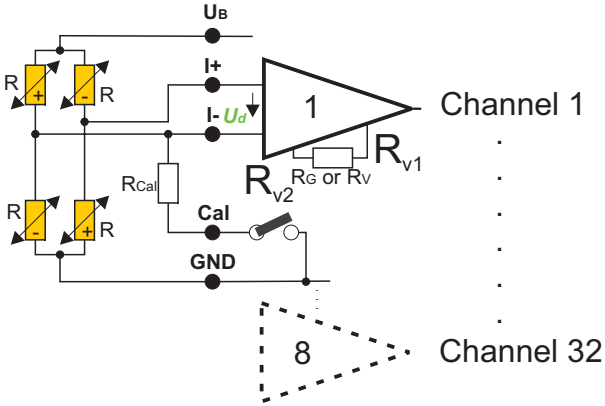
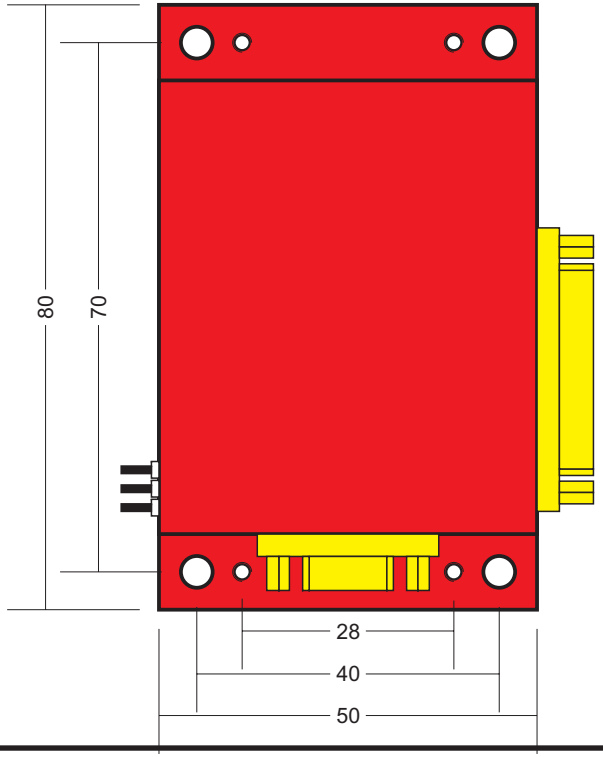
32 Channel Sensor Signal Amplifier Type C

(Standard)









Multi Channel PCM Transmitter with Connector

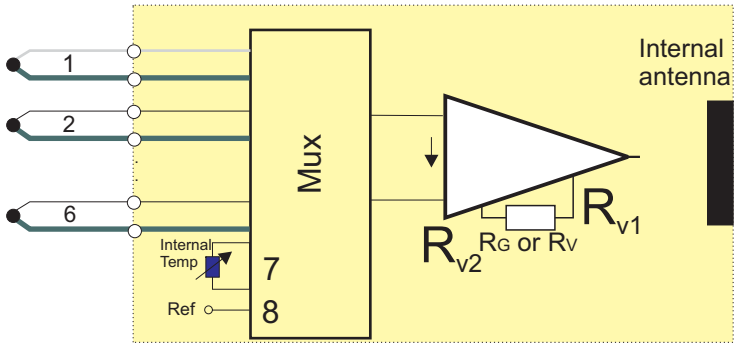
For strain gage, PT100, thermocouple
Number of channels: 2/4/8/12/16/32
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 5 (3,3*) V
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry PCM, Radiotelemetrie
Integrated filter
Resolution: 12 Bits (16 Bits)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 2 000 g (depending on fixing)
Type: MSV_C_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_sys

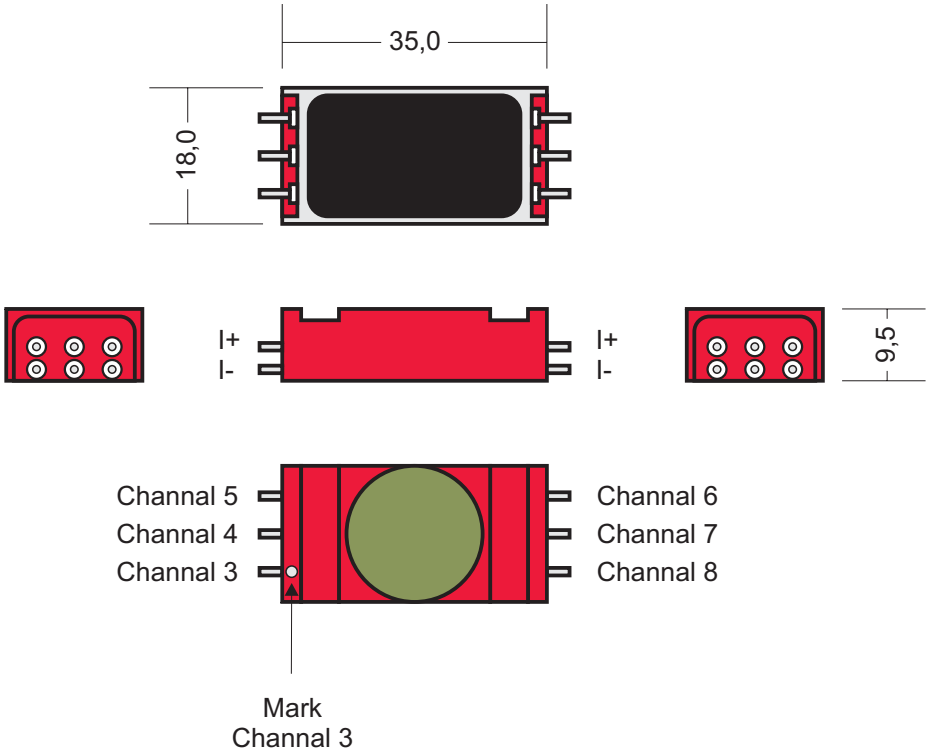
2	0,02	85	PCM12	1000	inductive
4	0,01	125	PCM16	4000	radio
8	0,003	150		8000	
12				40000	
16				200000	
32					

MANNER® Sensortelemetrie

4/8 Channel Temperature Sensor Signal Amplifier Spot

(2 internal channels)





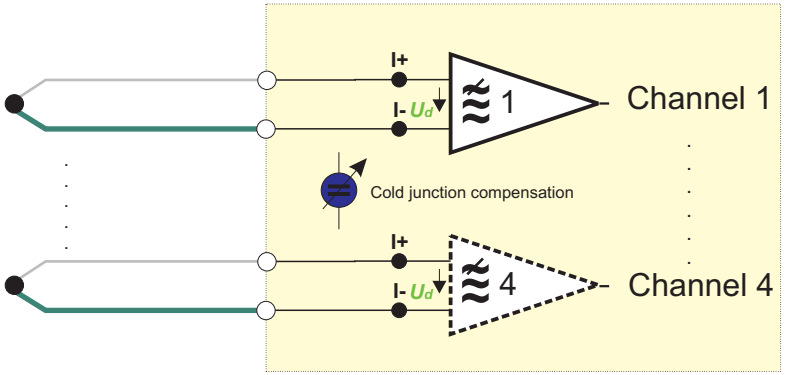
4/8 Channel PCM Transmitter Spot

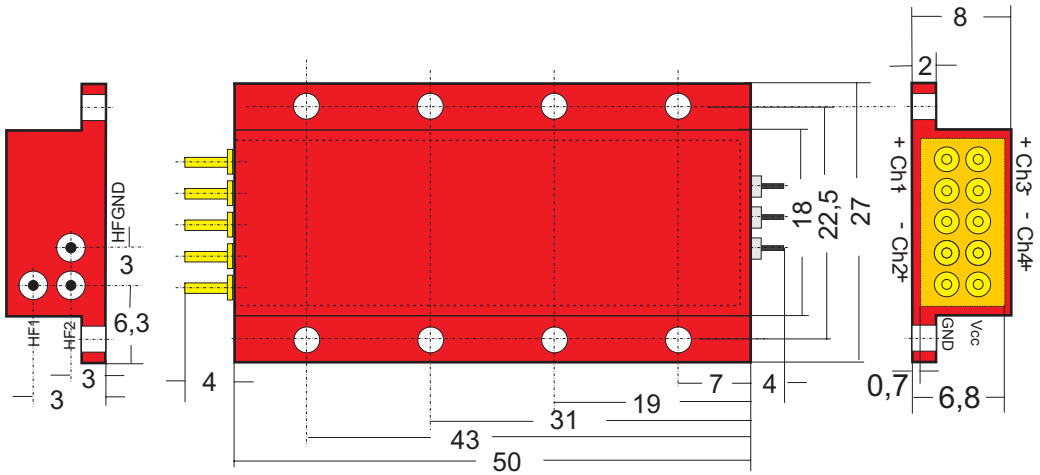
For insulated thermocouple or PT100
Number of channels: 4/8
Temperature measuring range: 0 to 500°C (different ranges option)
Thermocouple type K (NiCr-Ni) (other types option)
Transmission: inductive sensortelemetry PCM
Integrated rotor antenna
Sample time (contact time): < 1 ms
Resolution: 12 Bits
Zero point drift: 0,02, (0,01 option)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (125°C, 180°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_spot

4	0,02	85	PCM12	2000	spot
8 (2 internal)	0,01	125			
		180			

4 Channel Temperature Sensor Signal Amplifier Type M

(Standard)





Diameter 2,1 mm

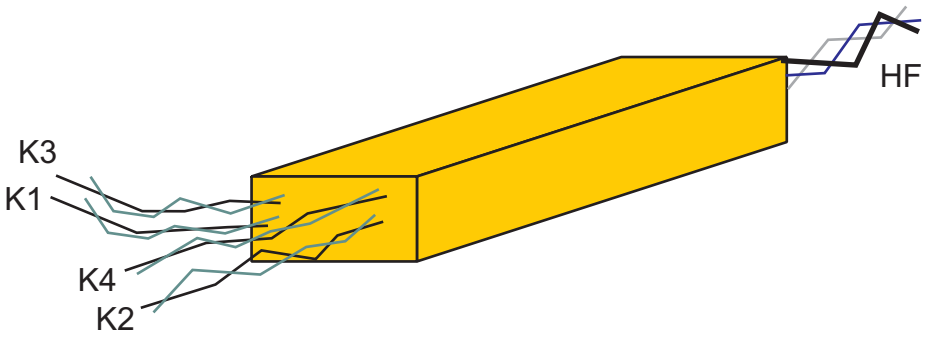
4 Channel PCM Transmitter Spot

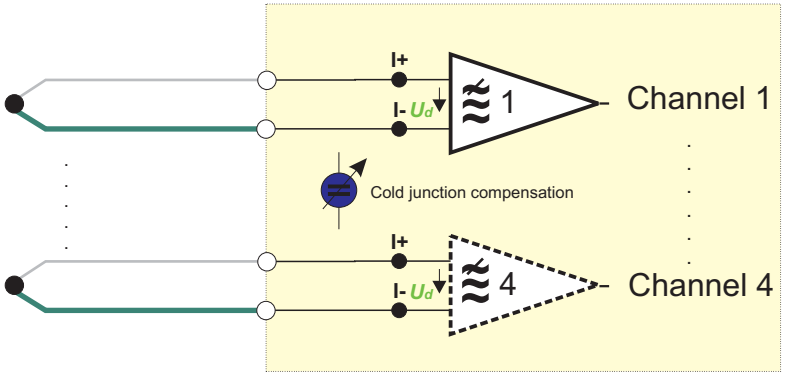
For non insulated / insulated thermocouple or PT100
Number of channels: 4
Temperature measuring range: 0 to 500°C (different ranges option)
Thermocouple type K (NiCr-Ni) (other types option)
Transmission: inductive sensortelemetry PCM
Samplingrate: 2000/sec/channels
Integrated filter 1 Hz (10 Hz) for noise supression on input lines
Resolution: 16 Bits
Zero point drift: 0,01, (0,002 option)
Enviromental temperature range: -25 to +85°C (125°C, 160°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_T

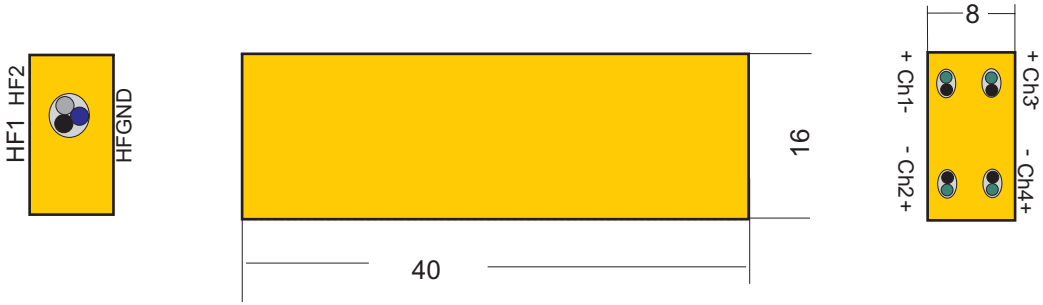
4	0,01	85	PCM16	2000
	0,002	125		
		160		

4/2 Channel Temperature Sensor Signal Amplifier Type M

(Standard)







Wire length: 100 mm

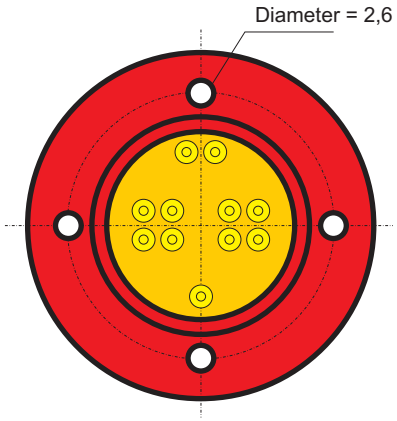
4/2 Channel PCM Transmitter Spot

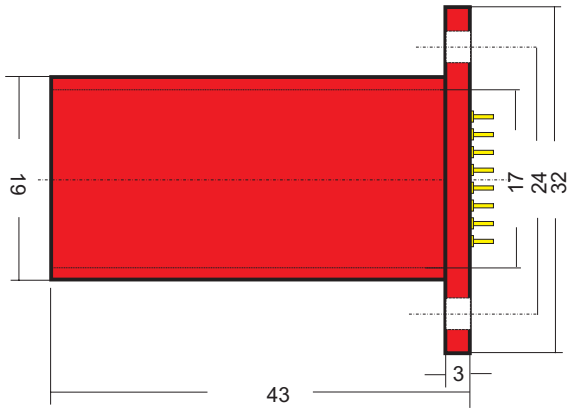
For non insulated / insulated thermocouple or PT100
Number of channels: 4
Temperature measuring range: 0 to 500°C (different ranges option)
Thermocouple type K (NiCr-Ni) (other types option)
Transmission: inductive sensortelemetry PCM
Samplingrate: 2000/sec/channels
Integrated filter 1 Hz (10 Hz) for noise supression on input lines
Resolution: 16 Bits
Zero point drift: 0,01, (0,002 option)
Enviromental temperature range: -25 to +85°C (125°C, 160°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_Ep_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_T

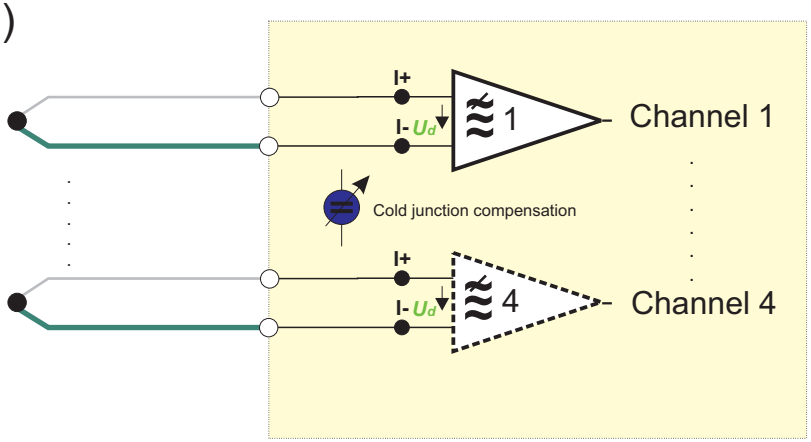
4	0,01	85	PCM16	2000
2	0,002	125		
		160		

4 Channel Temperature Sensor Signal Amplifier Type R (Cartridge)

(Standard)







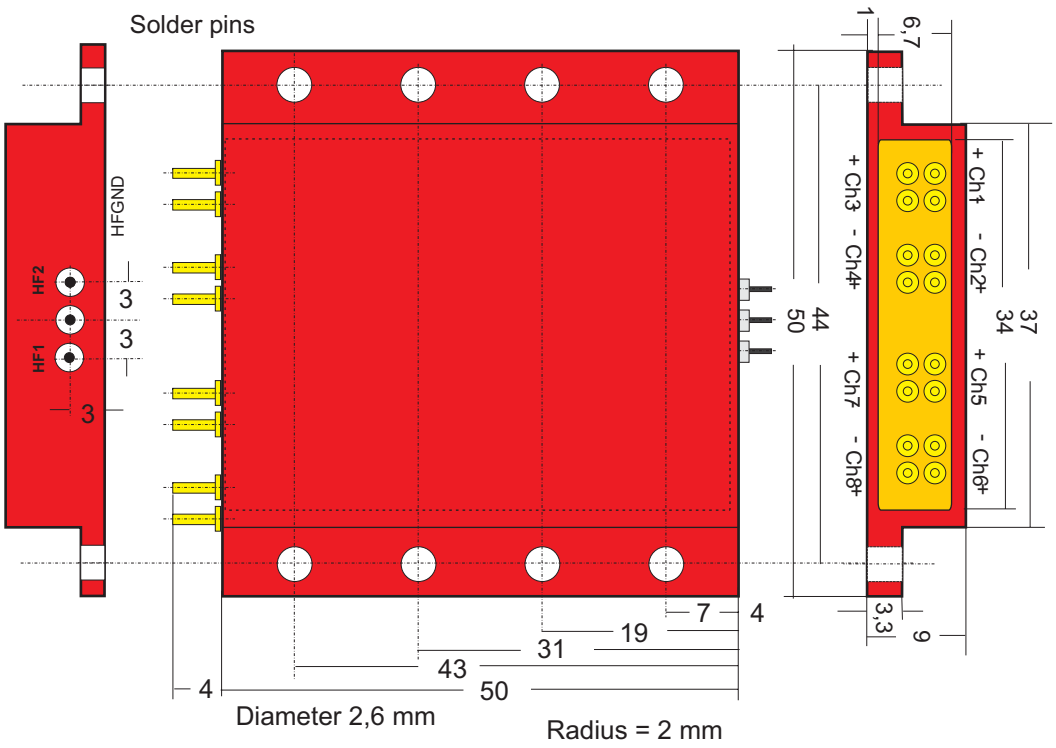
4 Channel PCM Transmitter

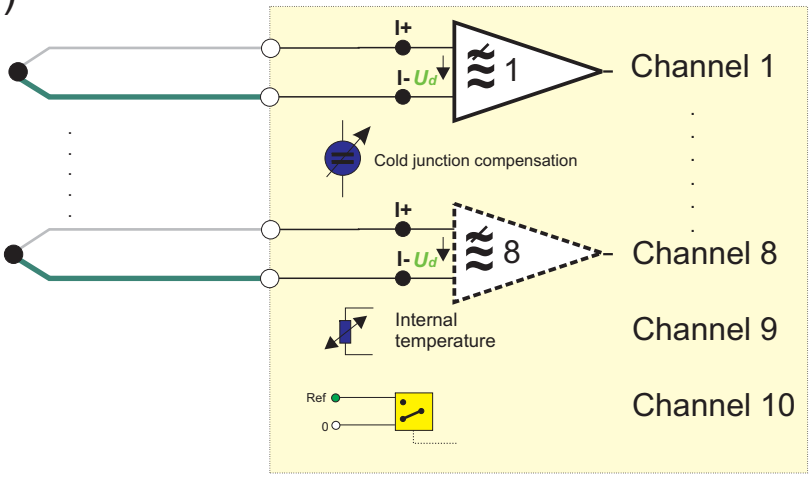
For non insulated / insulated thermocouple or PT100
Number of channels: 8 (non insulated / insulated thermocouple)
Temperature measuring range: 0 to 500°C (different ranges option)
Thermocouple type K (NiCr-Ni) (other types option)
Transmission: inductive sensortelemetry PCM
Samplingrate: 2000/sec/channels
Integrated filter 1 Hz (10 Hz) for noise supression on input lines
Resolution: 16 Bits
Zero point drift: 0,01, (0,002 option)
Enviromental temperature range: -25 to +85°C (125°C, 160°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_R_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_T

4	0,01	85	PCM16	2000
	0,002	125		
		160		

8/10 Channel Temperature Sensor Signal Amplifier Type R (Cartridge)

(Standard)





8/10 Channel PCM Transmitter

For non insulated / insulated thermocouple or PT100

Number of channels:

- 8 external (non insulated / insulated thermocouple)
- 1 internal temperature
- 1 reference, remote switchable 0/80% of selected range

Temperature measuring range: 0 to 500°C (different ranges option)

Thermocouple type K (NiCr-Ni) (other types option)

Transmission: inductive sensortelemetry PCM

Samplingrate: 2000/sec/channels

Integrated filter 1 Hz (10 Hz) for noise supression on input lines

Resolution: 16 Bits

Zero point drift: 0,01, (0,002 option)

Enviromental temperature range: -25 to +85°C (125°C, 160°C)

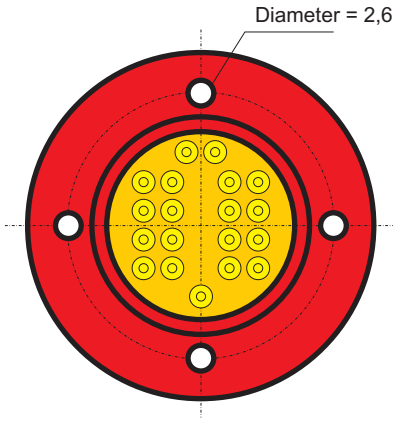
Max load: 20 000 g (depending on fixing)

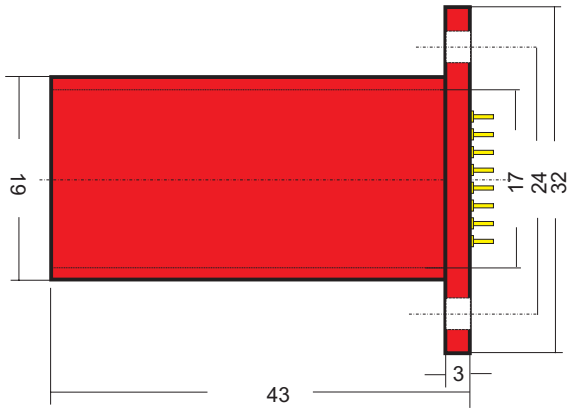
Type: MSV_R_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_T

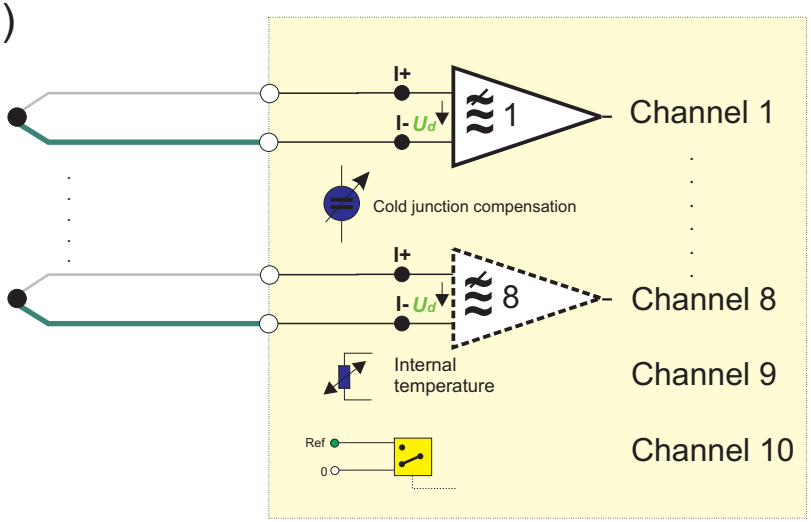
4	0,01	85	PCM16	2000
8	0,002	125		
		160		

8/10 Channel Temperature Sensor Signal Amplifier Type R (Cartridge)

(Standard)







8/10 Channel PCM Transmitter

For non insulated / insulated thermocouple or PT100

Number of channels:

- 8 external (non insulated / insulated thermocouple)
- 1 internal temperature
- 1 reference, remote switchable 0/80% of selected range

Temperature measuring range: 0 to 500°C (different ranges option)

Thermocouple type K (NiCr-Ni) (other types option)

Transmission: inductive sensortelemetry PCM

Samplingrate: 2000/sec/channels

Integrated filter 1 Hz (10 Hz) for noise supression on input lines

Resolution: 16 Bits

Zero point drift: 0,01, (0,002 option)

Enviromental temperature range: -25 to+85°C (125°C, 160°C)

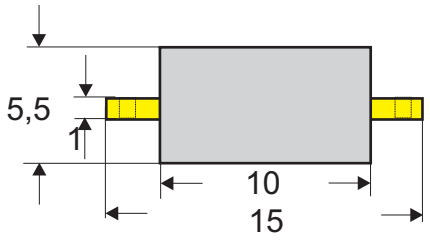
Max load: 20 000 g (depending on fixing)

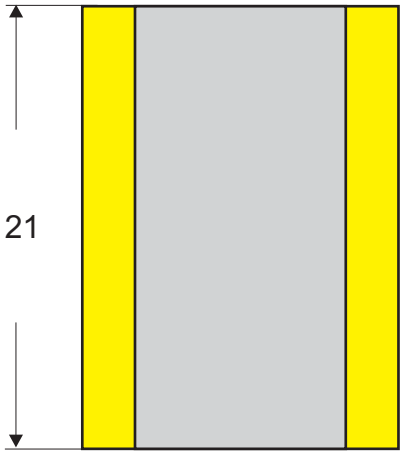
Type: MSV_R_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_T

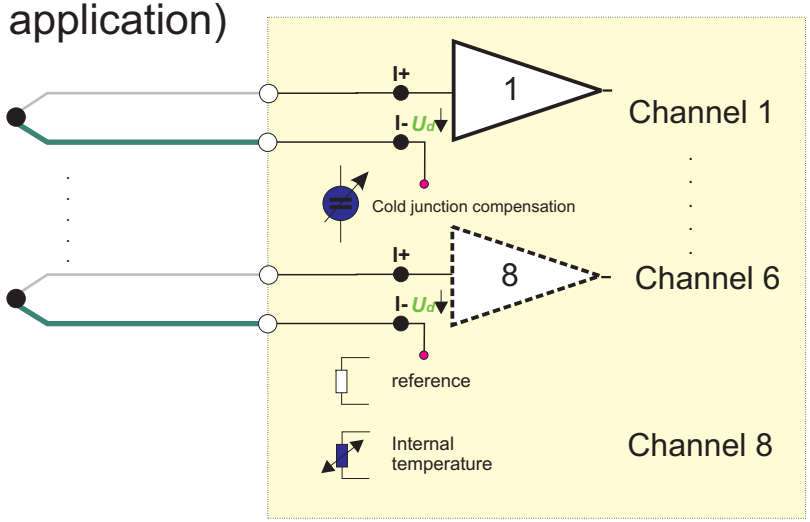
4	0,01	85	PCM	2000
8	0,002	125		
		160		

8(4) Channel Temperature Sensor Signal Amplifier Type Epoxy

(piston/conrod/clutch application)







8(4) Channel PCM Transmitter

For insulated thermocouple or PT100

Number of channels:

- 6 external (insulated thermocouple)
- 1 internal temperature
- 1 reference, 80% of selected range

Temperature measuring range: 0 to 550°C (different ranges option)

Thermocouple type K (NiCr-Ni) (other types option)

Transmission: inductive sensortelemetry PCM

Samplingrate: 2000/sec/channels

Spot mode: min. contact time: 1,4 ms for 8 channel transfer

Resolution: 12 Bits

Zero point drift: 0,02

Enviromental temperature range: -25 to+180°C

weight: 3 g

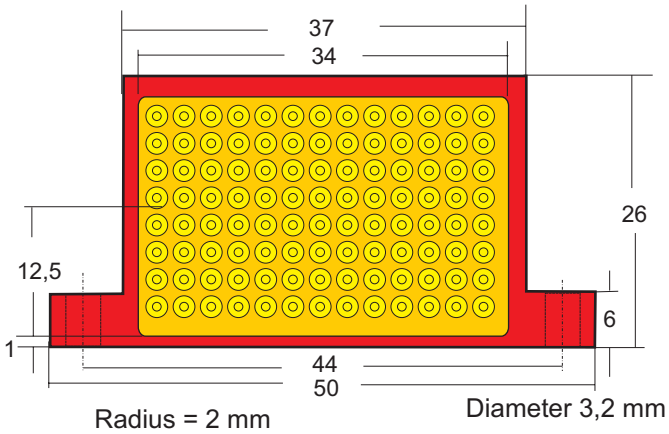
Max load: 20 000 g (depending on fixing)

Type: MSV_Ep_<channels>_<accuracy>_<temp>_<mod>_<samplerate>_T

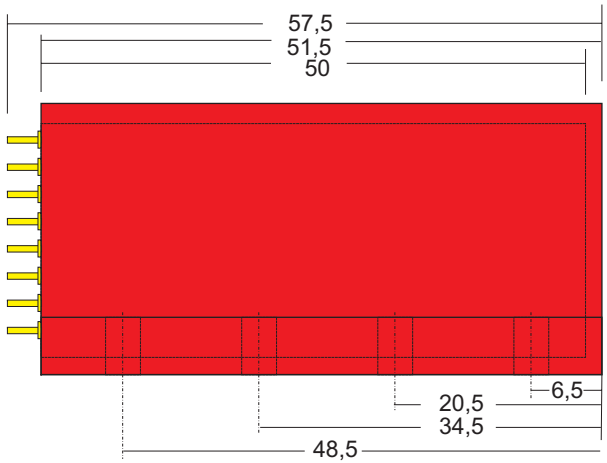
4	0,02	180	PCM	2000
8				

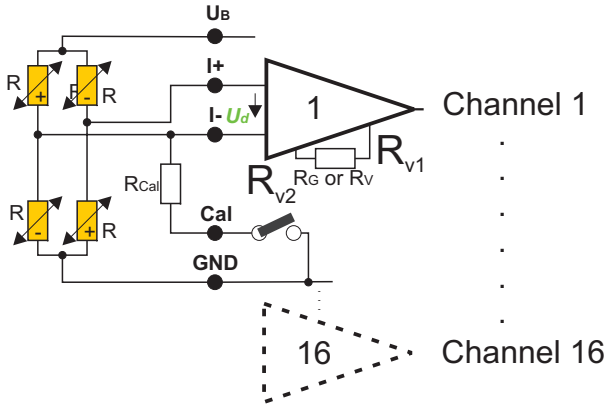
16 Channel Sensor Signal Amplifier Type M

(Standard)



Solder pins





16 Channel PCM Transmitter

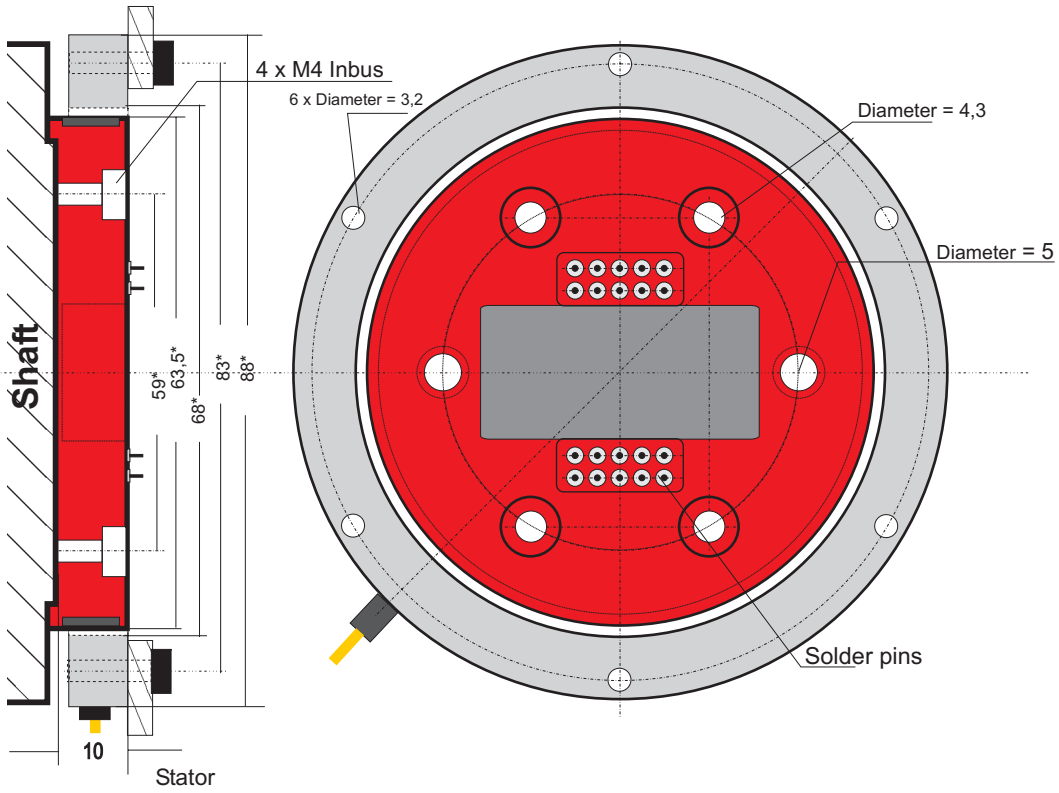
For strain gage, PT100, thermocouple				
Number of channels: 16				
Sensitivity: 0,02 mV/V to 20 mV/V				
Bandwidth: 0 to 50 kHz (-3dB)				
Strain gage brigde supply: 5 (3,3*) V				
Strain gage bridge resistance: 350 (120, 1000) Ω				
Transmission: inductive sensortelemetry PCM				
Integrated filter				
Resolution: 12 Bits (16 Bits)				
Zero point drift: 0,02, (0,01, 0,003 option)				
Remote shunt calibration				
Remote gain/zero and autozero with 12 Bits resolution (option)				
Enviromental temperature range: -25 to +85°C (125°C, 150°C)				
Max load: 20 000 g (depending on fixing)				
Type: MSV_M_<channels>_<accuracy>_<temp>_<mod>_<samplerate>				
16	0,02	85	PCM	4000
	0,01	125		8000
	0,003	150		40000
				200000

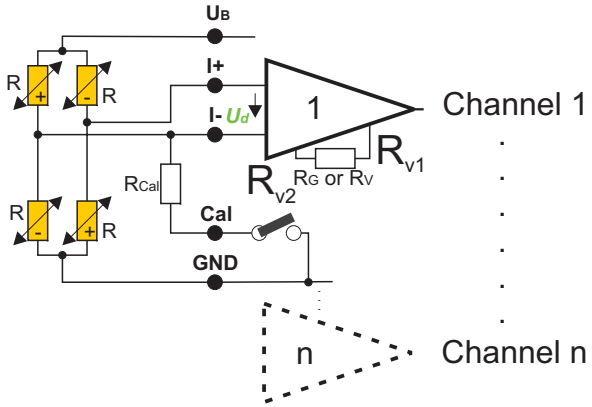
4 Channel Sensor Signal Amplifier Type Disc

(Standard)

4 Channel
Sensor Signal Amplifier

(Radial coupling)





Multi Channel FM/PCM Transmitter

For strain gage, PT100, thermocouple
Number of channels: 2, 4, 8, 12, 16, (max. 128)
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 2,5 V, (3,3 V*)
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM, PCM
Integrated filter
Resolution: 14 Bits, (16 Bits*)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 50 000 g (depending on fixing)
Type: MSV_RA_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

2	0,02	85	PCM	4000
4	0,01	125	PCM16	8000
8	0,003	150		40000
12				200000
16			FM*	2000
			total samplerate	10000

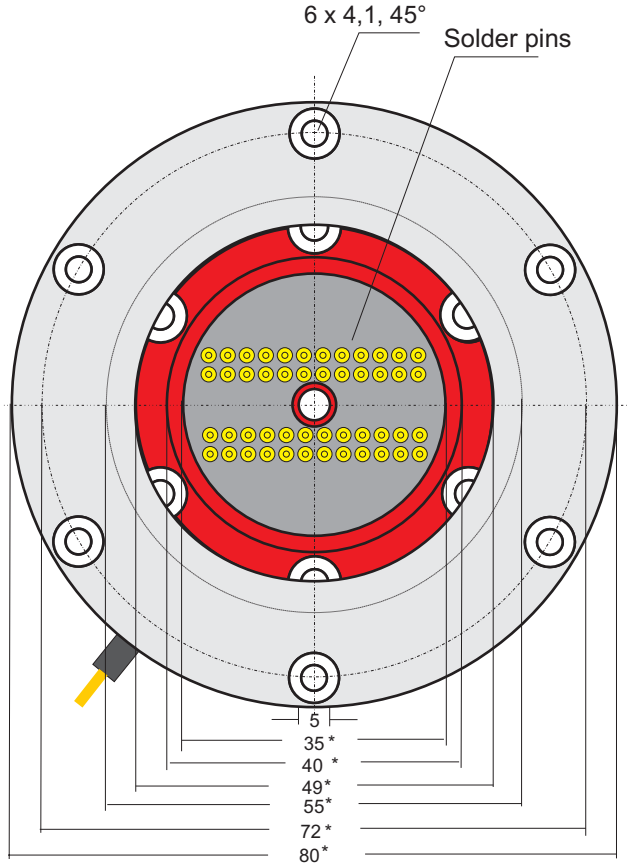
*** Dimension changes with different number ofchannels**

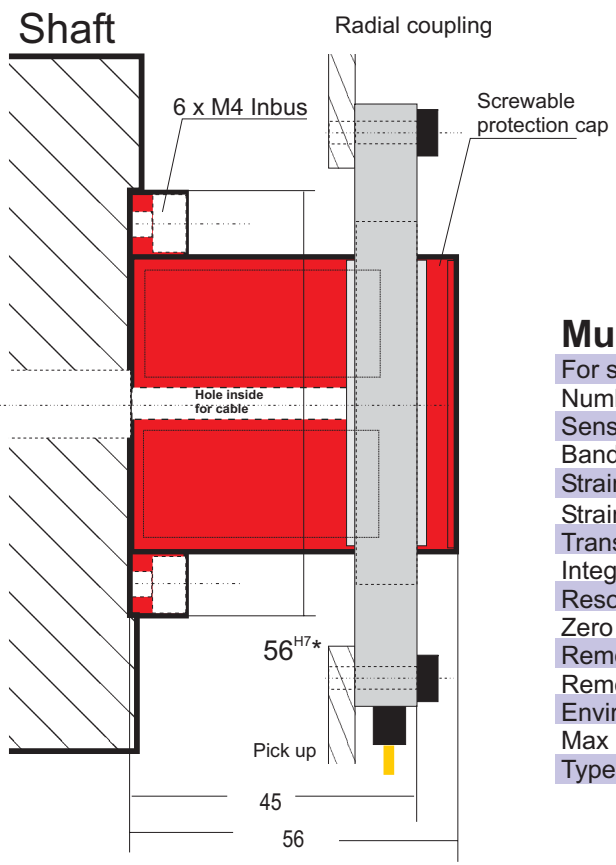
* Max. samplerate/channel = total samplerate/ No. of channels

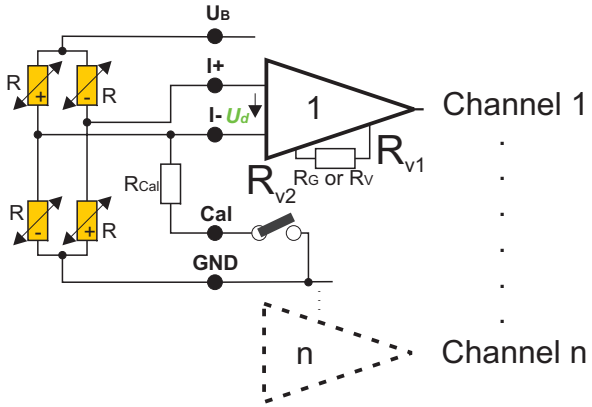
8 Channel Sensor Signal Amplifier Type Rot with Hole

(Standard)

8 Channel
Sensor Signal Amplifier







Multi Channel FM/PCM Transmitter

For strain gage, PT100, thermocouple
Number of channels: 2, 4, 8, 12, 16, (max. 128)
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 2,5 V, (3,3 V*)
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM, PCM
Integrated filter
Resolution: 14 Bits, (16 Bits*)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 50 000 g (depending on fixing)
Type: MSV_RAH_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

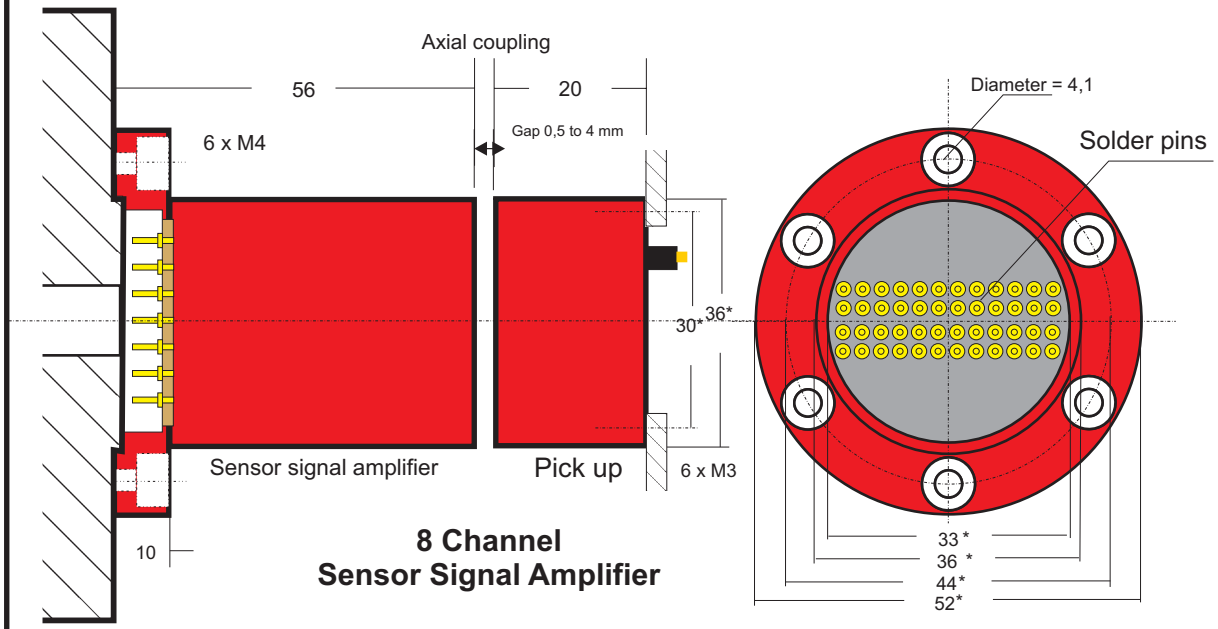
2	0,02	85	PCM	4000
4	0,01	125	PCM16	8000
8	0,003	150		40000
12				200000
16			FM*	2000
			total samplerate	10000

* Max. samplerate/channel = total samplerate/ No. of channels

*** Dimension changes with different number ofchannels**

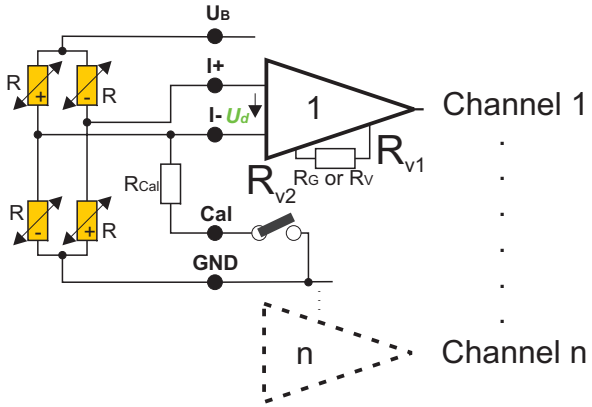
8 Channel Sensor Signal Amplifier Type Rot

(Standard)



8 Channel Sensor Signal Amplifier

Shaft



Multi Channel FM/PCM Transmitter

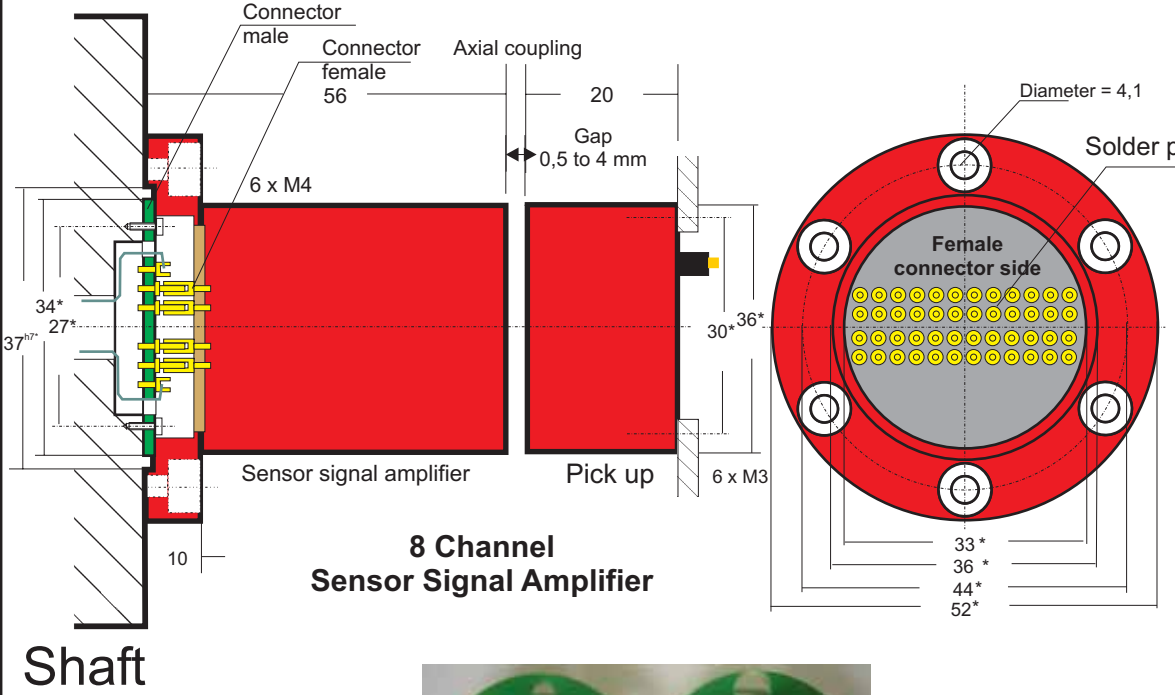
For strain gage, PT100, thermocouple				
Number of channels: 2, 4, 8, 12, 16, (max. 128)				
Sensitivity: 0,02 mV/V to 20 mV/V				
Bandwidth: 0 to 50 kHz (-3dB)				
Strain gage brigde supply: 2,5 V, (3,3 V*)				
Strain gage bridge resistance: 350 (120, 1000) Ω				
Transmission: inductive sensortelemetry FM, PCM				
Integrated filter				
Resolution: 14 Bits, (16 Bits*)				
Zero point drift: 0,02, (0,01, 0,003 option)				
Remote shunt calibration				
Remote gain/zero and autozero with 12 Bits resolution (option)				
Enviromental temperature range: -25 to +85°C (125°C, 150°C)				
Max load: 50 000 g (depending on fixing)				
Type: MSV_R_<channels>_<accuracy>_<temp>_<mod>_<samplerate>				
2	0,02	85	PCM	4000
4	0,01	125	PCM16	8000
8	0,003	150		40000
12				200000
16			FM*	2000
			total samplerate	10000

* Max. samplerate/channel = total samplerate/ No. of channels

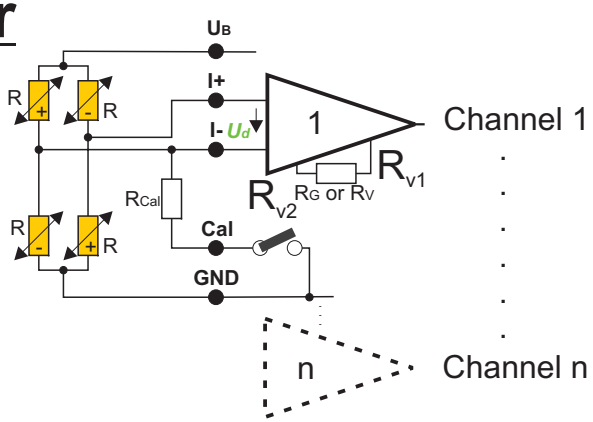
*** Dimension changes with different number ofchannels**

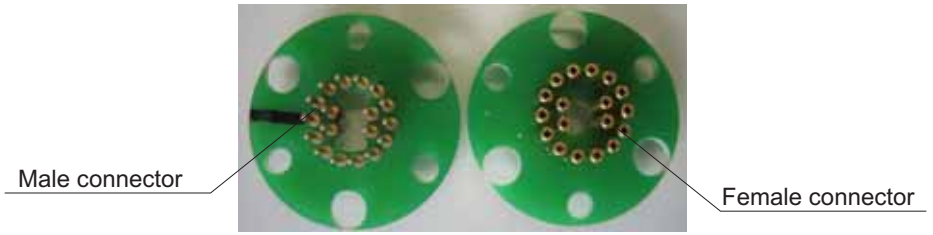
8 Channel Sensor Signal Amplifier Type Rot with Integrated Connector

(Standard)



8 Channel Sensor Signal Amplifier





Multi Channel FM/PCM Transmitter

For strain gage, PT100, thermocouple
Number of channels: 2, 4, 8, 12, 16, (max. 128)
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 2,5 V, (3,3 V*)
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM, PCM
Integrated filter
Resolution: 14 Bits, (16 Bits*)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 100 000 g (depending on fixing)
Type: MSV_RAC_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

2	0,02	85	PCM	4000
4	0,01	125	PCM16	8000
8	0,003	150		40000
12				200000
16			FM*	2000
			total samplerate	10000

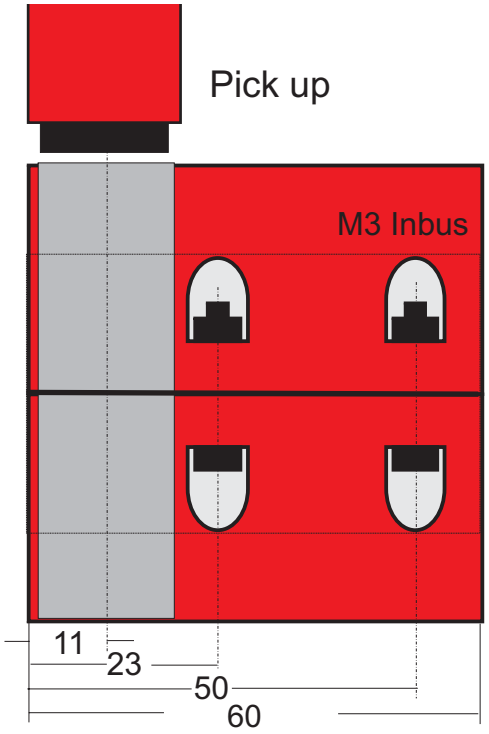
* Max. samplerate/channel = total samplerate/ No. of channels

*** Dimension changes with different number ofchannels**

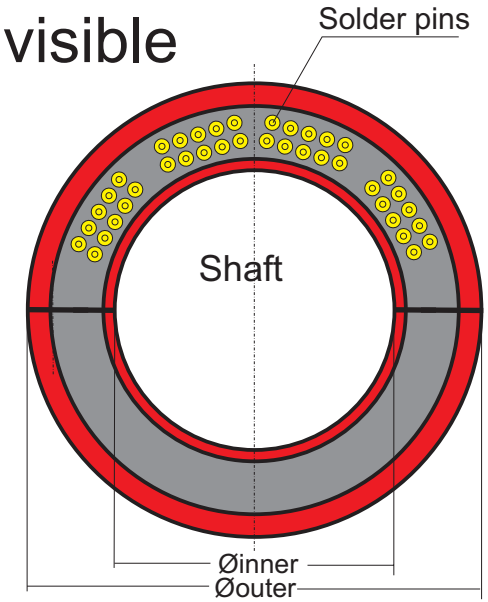
MANNER® Sensortelemetrie

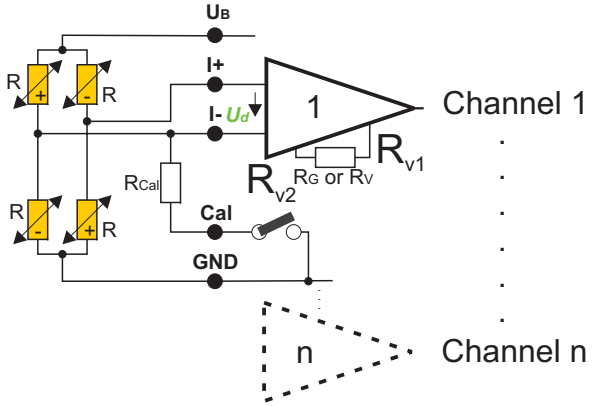
8 Channel Sensor Signal Amplifier Type Cylinder (Integrated Rotor Loop, Mounting on shaft, Divisible)

(Standard)



Divisible





Inner diameter: 17 to 300 mm
Outer diameter = Inner diameter + 25mm

Multi Channel FM/PCM Transmitter

For strain gage, PT100, thermocouple
Number of channels: 2, 4, 8, 12, 16, (max. 128)
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 2,5 V, (3,3 V*)
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM, PCM
Integrated filter
Resolution: 14 Bits, (16 Bits*)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 20 000 g (depending on fixing)
Type: MSV_RAHd_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

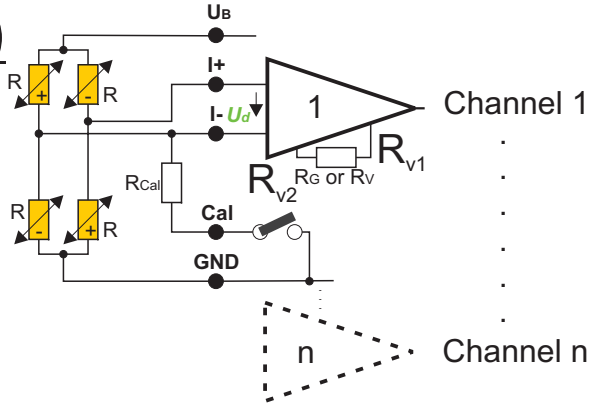
2	0,02	85	PCM	4000
4	0,01	125	PCM16	8000
8	0,003	150		40000
12				200000
16			FM*	2000
			total samplerate	10000

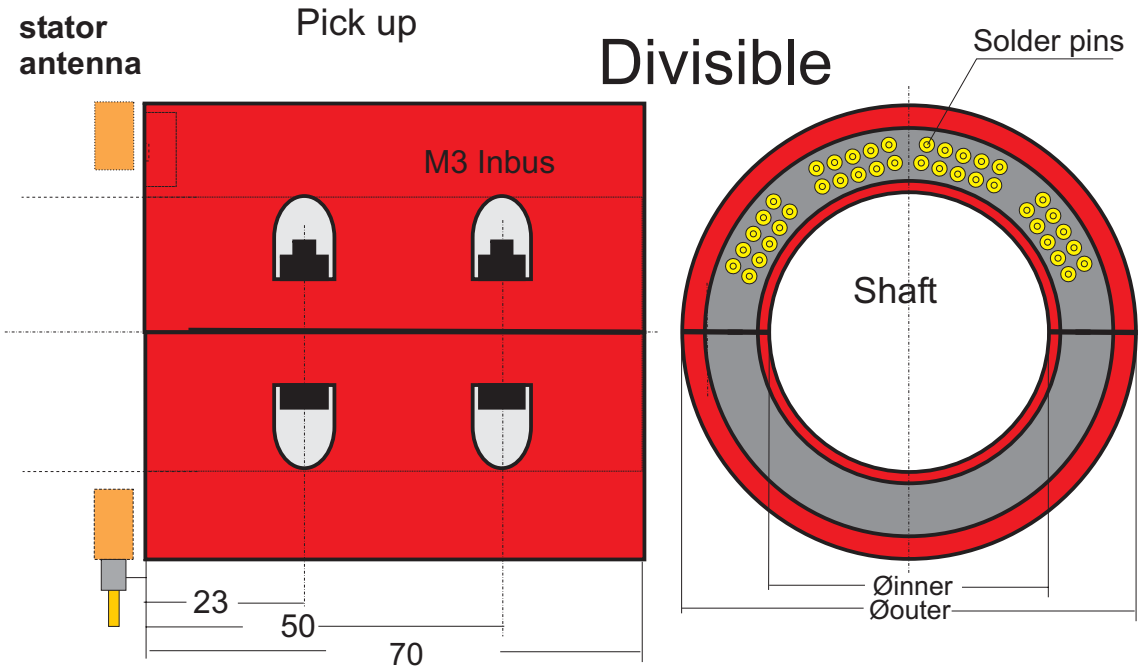
* Max. samplerate/channel = total samplerate/ No. of channels

*** Dimension changes with different number ofchannels**

8 Channel Sensor Signal Amplifier Type Cylinder (Integrated Rotor Loop, Mounting on shaft, Divisible axial signal pick up)

(Standard)





Inner diameter: 17 to 300 mm
Outer diameter = Inner diameter + 25mm

Multi Channel FM/PCM Transmitter

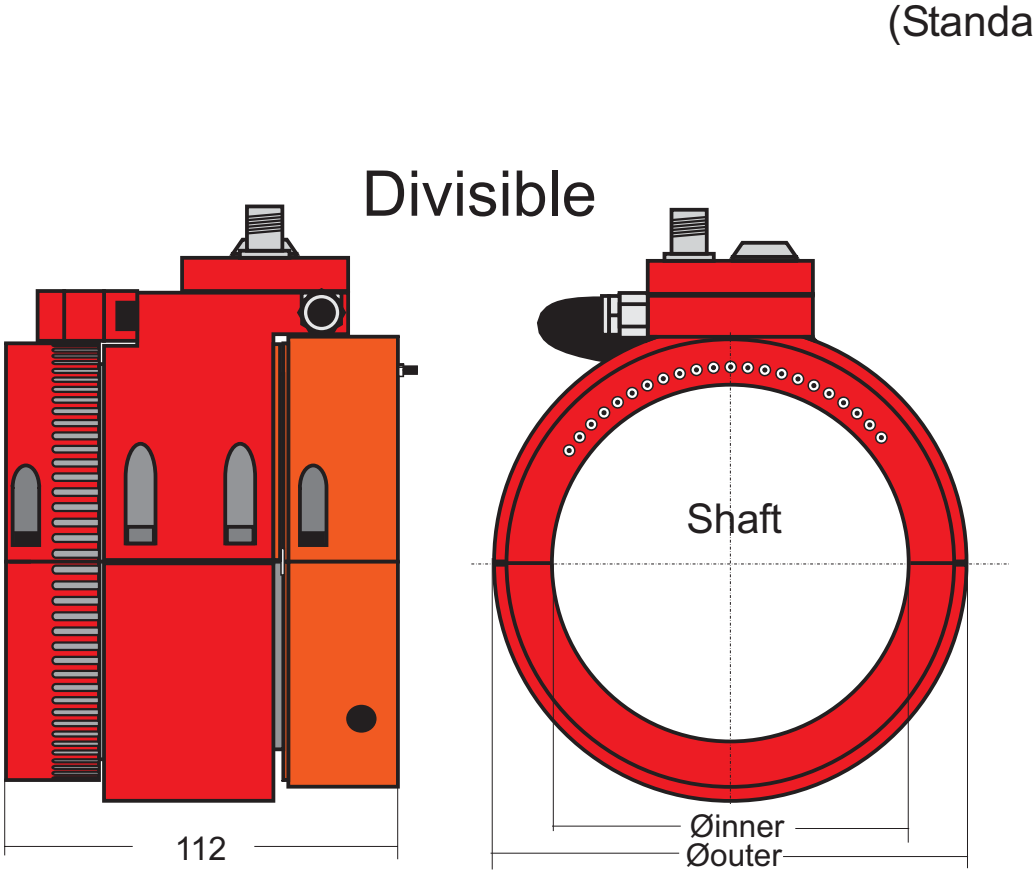
For strain gage, PT100, thermocouple				
Number of channels: 2, 4, 8, 12, 16, (max. 128)				
Sensitivity: 0,02 mV/V to 20 mV/V				
Bandwidth: 0 to 50 kHz (-3dB)				
Strain gage brigde supply: 2,5 V, (3,3 V*)				
Strain gage bridge resistance: 350 (120, 1000) Ω				
Transmission: inductive sensortelemetry FM, PCM				
Integrated filter				
Resolution: 14 Bits, (16 Bits*)				
Zero point drift: 0,02, (0,01, 0,003 option)				
Remote shunt calibration				
Remote gain/zero and autozero with 12 Bits resolution (option)				
Enviromental temperature range: -25 to +85°C (125°C, 150°C)				
Max load: 20 000 g (depending on fixing)				
Type: MSV_RAHa_<channels>_<accuracy>_<temp>_<mod>_<samplerate>				
2	0,02	85	PCM	4000
4	0,01	125	PCM16	8000
8	0,003	150		40000
12				200000
16			FM*	2000
			total samplerate	10000

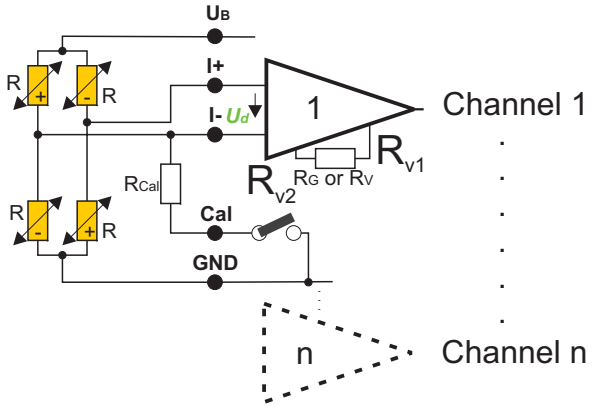
* Max. samplerate/channel = total samplerate/ No. of channels

*** Dimension changes with different number ofchannels**

4 Channel Sensor Signal Amplifier Type beared divisible Shaft Transmitter with Speed Sensor

(Standard)





Inner diameter: 30 to 60 mm
Outer diameter = Inner diameter + 30 mm

Multi Channel FM/PCM Transmitter

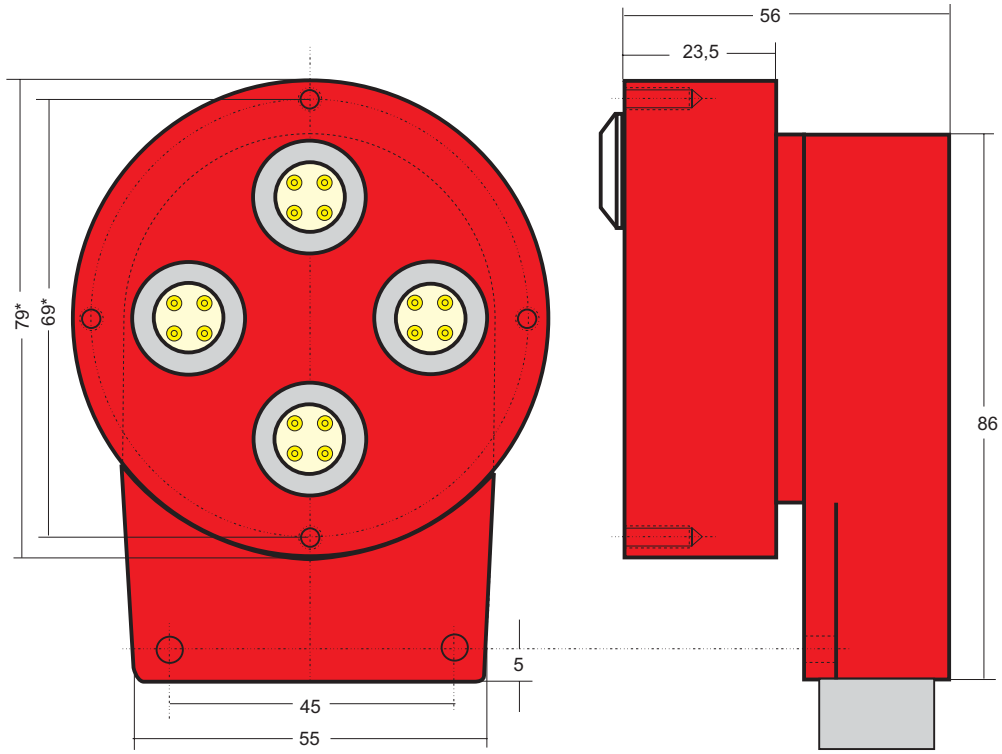
For strain gage, PT100, thermocouple
Number of channels: 2, 4
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 10 kHz (-3dB)
Strain gage brigde supply: 2,5 V, (3,3 V*)
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM, PCM
Integrated filter
Resolution: 12 Bits, (16 Bits*)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Integrated speed sensor
Pulses/turn: 48
Max. speed: 2000 rpm
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 2 000 g (depending on fixing)
Type: MSV_G_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

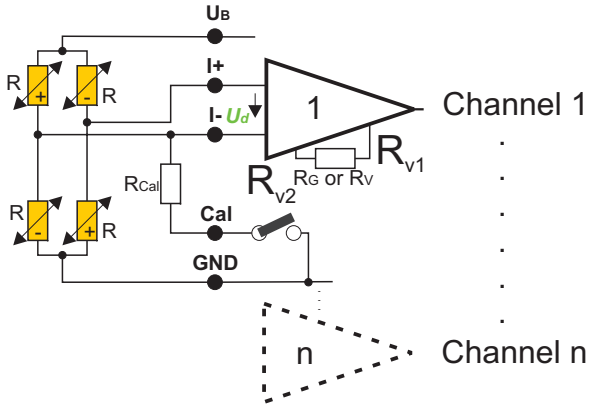
2	0,02	85	PCM	4000
4	0,01	125	PCM16	8000
	0,003			40000

*** Dimension changes with different number ofchannels**

4 Channel Sensor Signal Amplifier Type beared with Transmitter (End of Shaft)

(Standard)





Multi Channel FM/PCM Transmitter

For strain gage, PT100, thermocouple
Number of channels: 2, 4, 8, 12, 16, (max. 128)
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 2,5 V, (3,3, 5 V* option)
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM, PCM
Integrated filter
Resolution: 12 Bits, (16 Bits*)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Protection: IP65
Max load: 5 000 g (depending on fixing)
Type: MSV_RAHd_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

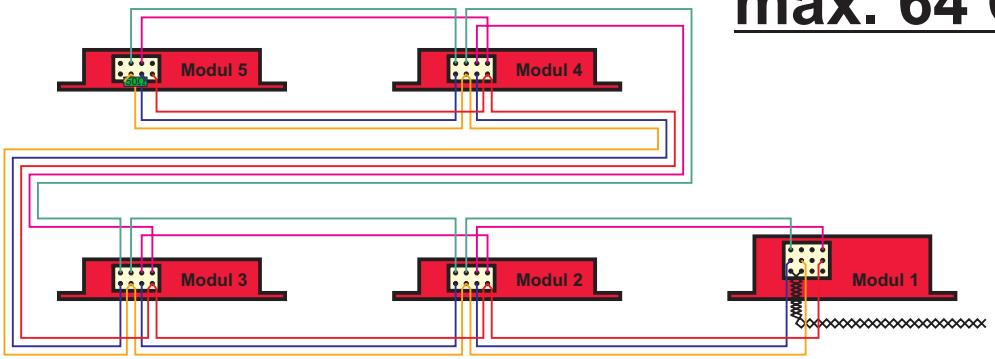
2	0,02	85	PCM	4000
4	0,01	125	PCM16	8000
8	0,003	150		40000
12				200000
16			FM*	2000
			total samplerate	10000

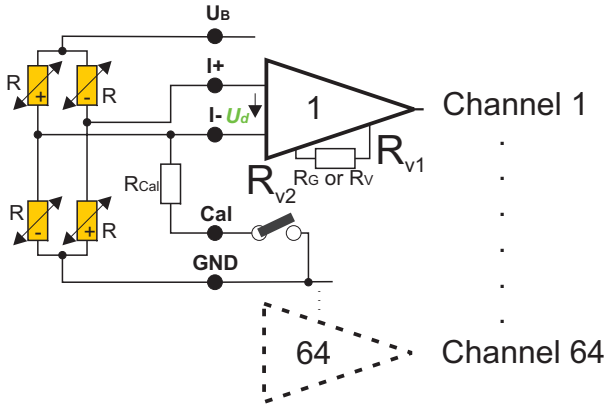
* Max. samplerate/channel = total samplerate/ No. of channels

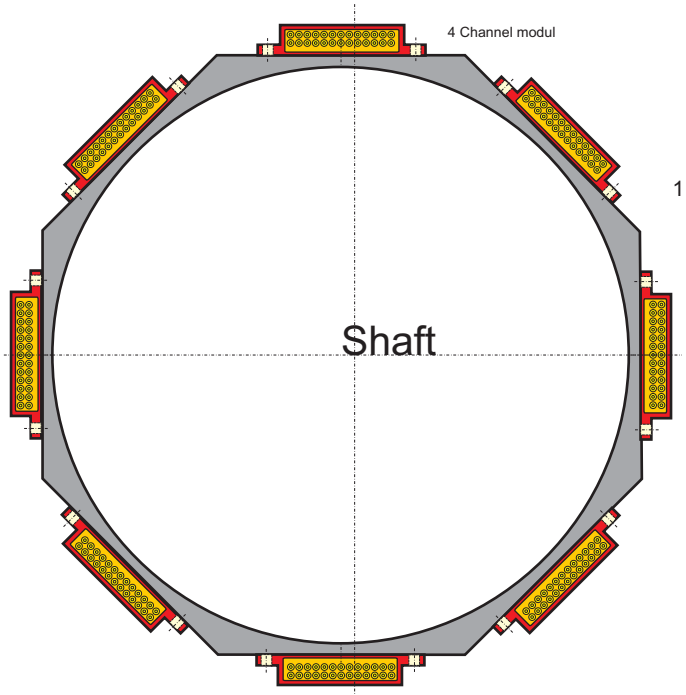
MANNER® Sensortelemetrie

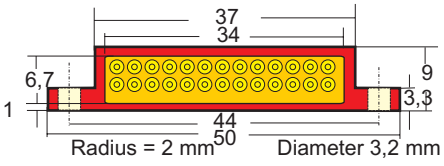
*** Dimension changes with different number ofchannels**

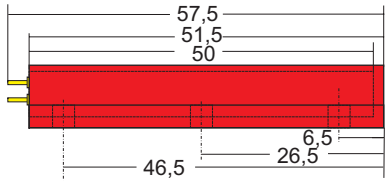
Modular Sensor Telemetry Amplifier Distributed max. 64 Channels











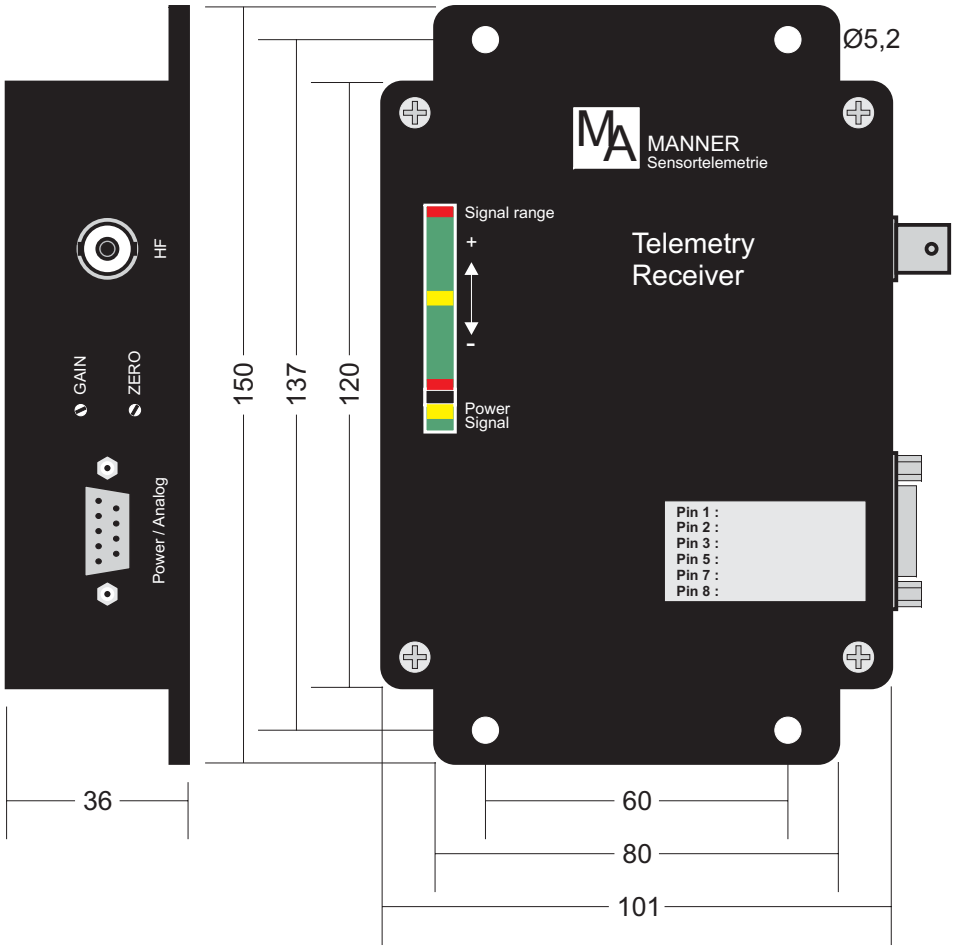
Multi Channel PCM Transmitter

For strain gage, PT100, thermocouple
Number of channels: 2, 4, 8, 12, 16, (max. 64)
Sensitivity: 0,02 mV/V to 20 mV/V
Bandwidth: 0 to 50 kHz (-3dB)
Strain gage brigde supply: 2,5 V, (3,3 V*)
Strain gage bridge resistance: 350 (120, 1000) Ω
Transmission: inductive sensortelemetry FM, PCM
Integrated filter
Resolution: 14 Bits, (16 Bits*)
Zero point drift: 0,02, (0,01, 0,003 option)
Remote shunt calibration
Remote gain/zero and autozero with 12 Bits resolution (option)
Enviromental temperature range: -25 to +85°C (125°C, 150°C)
Max load: 30 000 g (depending on fixing)
Type: MSV_RAHd_<channels>_<accuracy>_<temp>_<mod>_<samplerate>

2	0,02	85	PCM	4000
4	0,01	125	PCM16	8000
8	0,003	150		40000
12				200000
16				
32				
64				

For special shapes
for turbine / turbo charger applications:
see "Turbinen Telemetry"

Evaluation Unit (AW_P)
Analog receiver



Pin Assignment

of the D-Sub connector

Pin 1	Output1 -10V to +10V
Pin 2	GND Output
Pin 3	Remote Calibration Signal (active low)
Pin 4	Output1 -10V to +10V
Pin 5	GND Power Supply
Pin 6	not connected
Pin 7	Power Supply 9 to 36 VDC
Pin 8	not connected
Pin 9	not connected

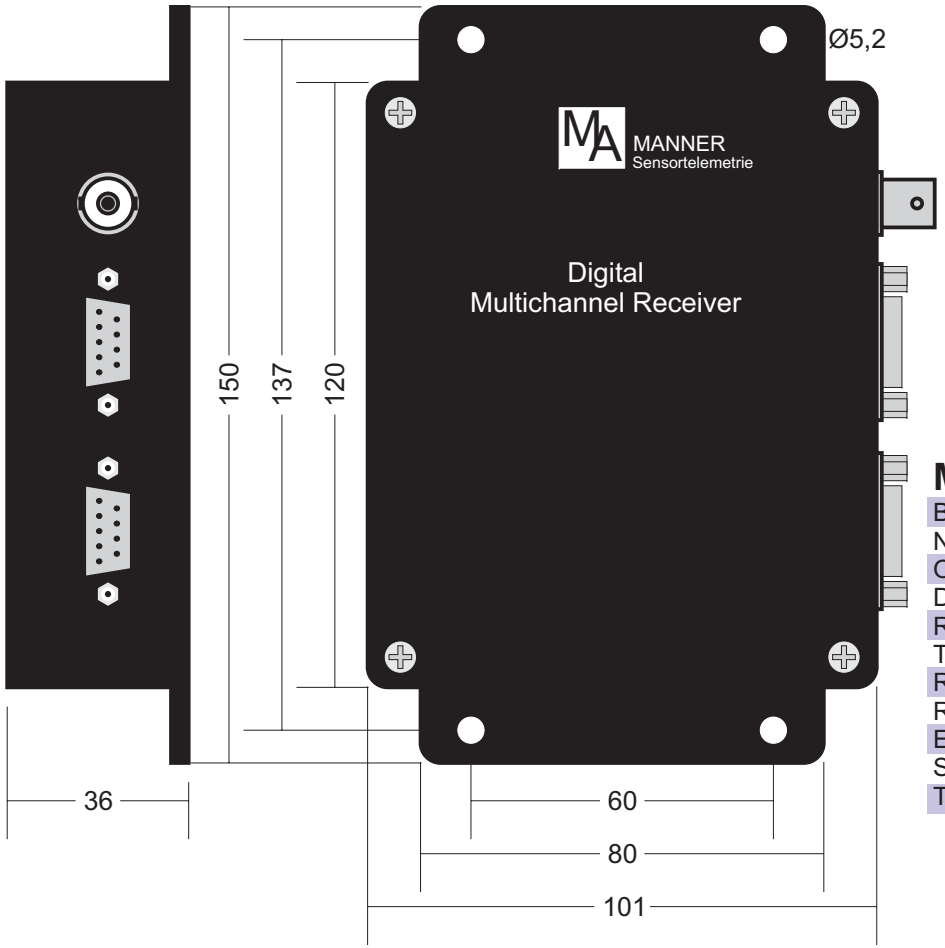
1/2 Channel PCM Receiver

Bandwidth: 0 to 1kHz (10 kHz)
Number of channels: 1/2
Output: ±10 V, (0(4) to 20 mA option)
Digital interface (option): SPI, USB
RFPower: 1, 3, 5 W
Transmission: inductive sensortelemetry PCM
Integrated filter
Resolution: 12 Bits, (16 Bit*)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (-45 to +85°C)
Supply: 24 V DC (+/-5%), 15 V DC (+/-2%), 9 to 36 V DC (board supply)
Type: MAW_P_<channels>_<accuracy>_<mod>_<samplerate>_<power>_<supply>

2	0,01	PCM12B	6700	1W	15
	0,003	PCM16B	35000	3W	24
				5W	12B

Cover 'Zero' and 'Gain' screws after adjustment if necessary

Evaluation Unit (AW_P)
Digital Receiver



Pin Assignment

of the D-Sub connector

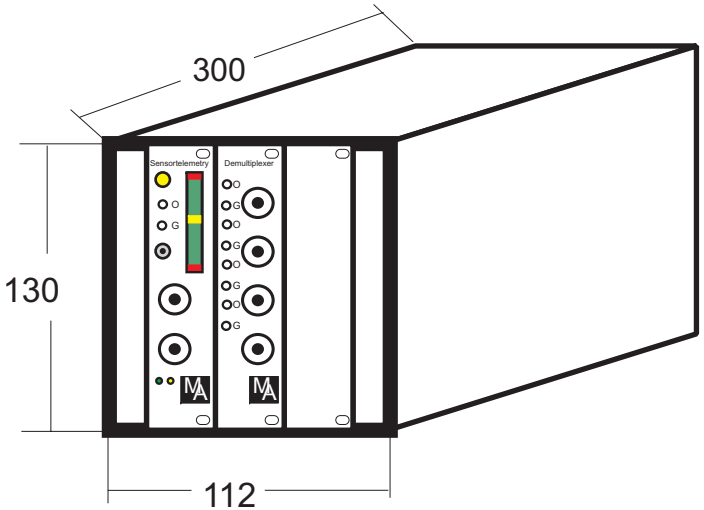
Pin 1 Data
Pin 2 GND Output
Pin 3 Remote Calibration Signal (active low)
Pin 4 Data
Pin 5 GND Power Supply
Pin 6 not connected
Pin 7 Power Supply 9 to 36 VDC
Pin 8 Data
Pin 9 Data

Multi Channel PCM Receiver

Bandwidth: 0 to 1kHz (10 kHz)
Number of channels: 1..32
Output: ±10 V, (0(4) to 20 mA option)
Digital interface (option): SPI, USB, CAN
RFPower: 1, 3, 5 W
Transmission: inductive sensortelemetry PCM
Resolution: 12 Bits, (16 Bit*)
Remote shunt calibration
Enviromental temperature range: -25 to +85°C (-45 to +85°C)
Supply: 24 V DC (+/-5%), 15 V DC (+/-2%), 9 to 36 V DC (board supply)
Type: MAW_P_<channels>_<accuracy>_<mod>_<samplerate>_<power>_<supply>_<Interface>

2	0,01	PCM12	6700	1W	15	USB
4	0,003	PCM16	35000	3W	24	CAN
8				5W	12B	TCP/IP
12						HS
16						

Evaluation Unit (22TE)



Front side

4 Channel FM/PCM Receiver 22 TE

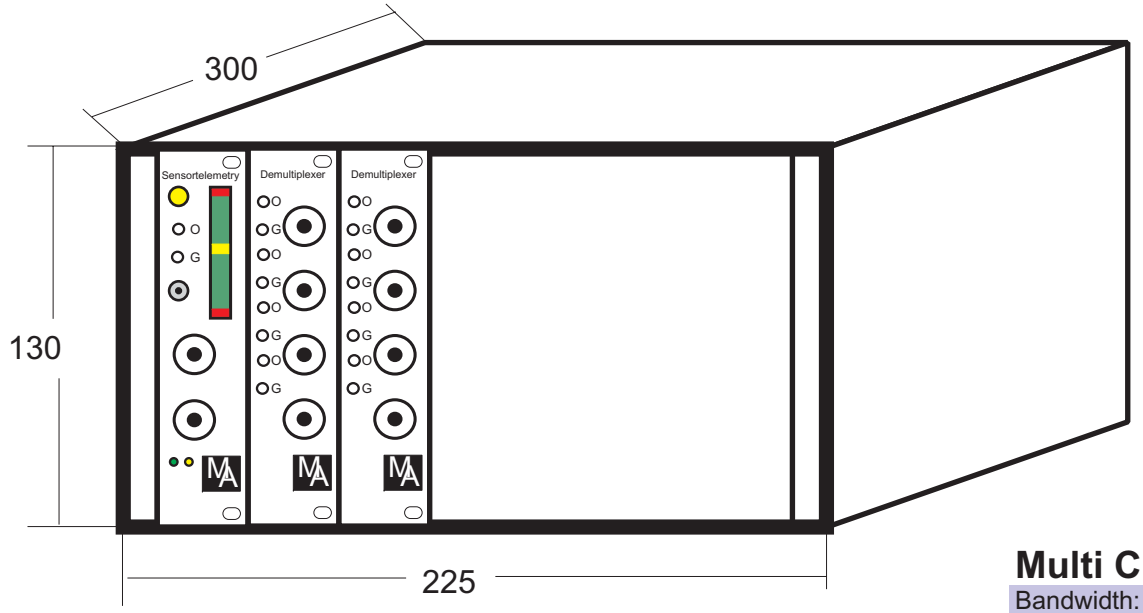
Bandwidth: 0 to 1kHz (10 kHz, 50 kHz option)
Output: ±10 V
Interfaces (option): USB
RF Power: 1, 3, 5 W
Transmission: inductive sensortelemetry FM/PCM
Integrated filter
Resolution: 12 Bits, (16 Bit**)
Remote shunt calibration
Enviromental temperature range: -25 to +65°C
Supply: 9 to 270 V AC, 9 to 36 V DC (board supply)
Type: MAW_22TE_<channels>_<accuracy>_<mod>_<samplerate>_<power>__supply

4	0,01	F	4000	1W	230VAC
	0,003	PCM12B	8000	3W	12B
		PCM16B	40000	5W	
			200000		
		FM*	2000		
		total sample rate	10000		

** only for PCM-Version

* Max. samplerate/channel = total samplerate/ No. of channels

Evaluation Unit (42TE)



Front side

Multi Channel FM/PCM Receiver 42 TE

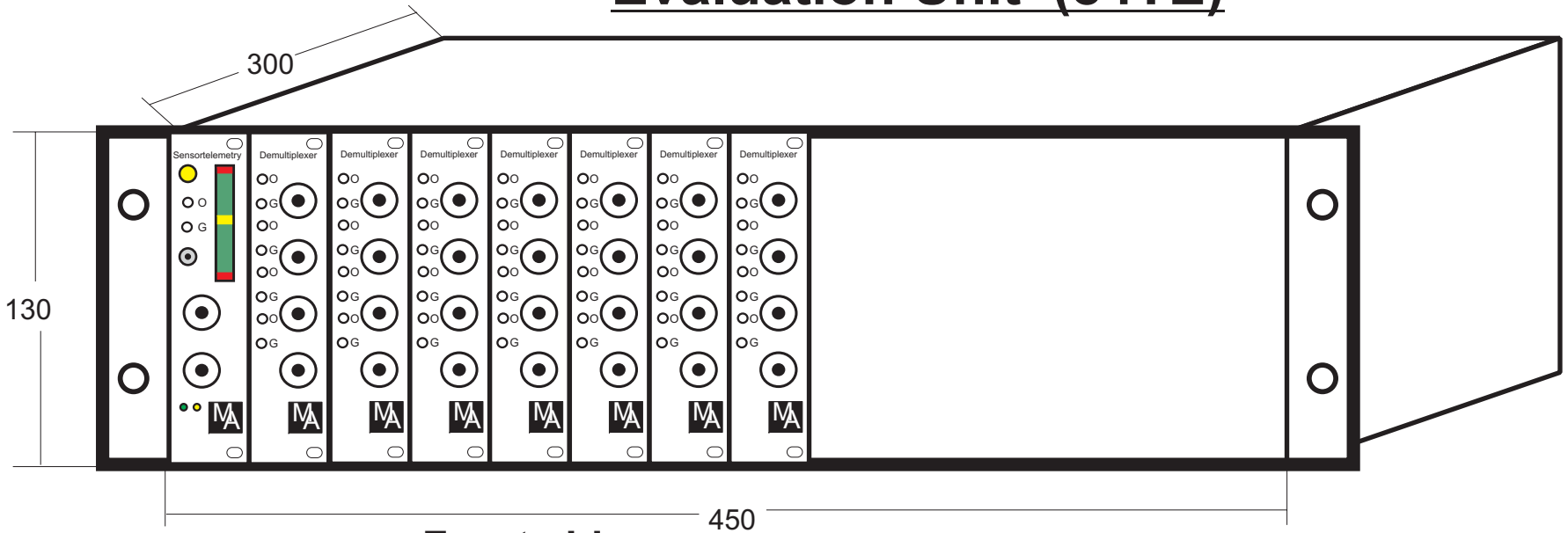
Bandwidth: 0 to 1kHz (10 kHz, 50 kHz option)
Output: ±10 V
Interfaces (option): USB, 16 Bit parallel, Ethernet 100 MB
RF Power: 1, 3, 5, 10 W
Transmission: inductive sensortelemetry FM/PCM
Integrated filter
Resolution: 12 Bits, (16 Bit**)
Remote shunt calibration
Enviromental temperature range: -25 to +65°C
Supply: 9 to 270 V AC, 9 to 36 V DC (board supply)
Type: MAW_42TE_<channels>_<accuracy>_<mod>_<samplerate>_<power>__supply

4	0,01	F	1000	1W	230VAC
8	0,003	PCM12B	4000	3W	12B
12		PCM16B	8000	5W	
16			40000	10W	
			200000		
		FM*	2000		
		total sample rate	10000		

** only for PCM-Version

* Max. samplerate/channel = total samplerate/ No. of channels

Evaluation Unit (84TE)



Front side

Multi Channel FM/PCM Receiver 84 TE

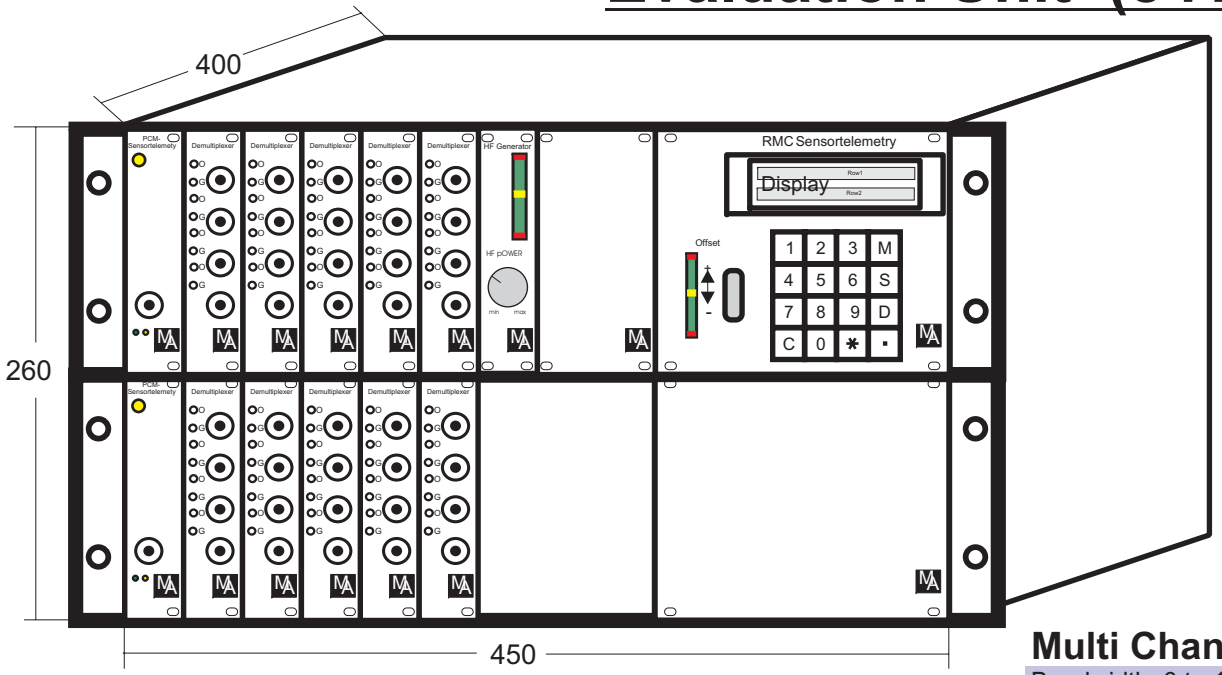
Bandwdith: 0 to 1kHz (10 kHz, 50 kHz option)
Output: ±10 V
Interfaces (option): USB, 16 Bit parallel, Ethernet 100 MB
RF Power: 1, 3, 5, 10 W
Transmission: inductive sensortelemetry FM/PCM
Integrated filter
Resolution: 12 Bits, (16 Bit**)
Remote shunt calibration
Enviromental temperature range: -25 to +65°C
Supply: 9 to 270 V AC, 9 to 36 V DC (board supply)
Type: MAW_84TE_<channels>_<accuracy>_<mod>_<samplerate>_<power>__supply

4	0,01	F	1000	1W	230VAC
8	0,003	PCM12B	4000	3W	24B
12		PCM16B	8000	5W	
16			40000	10W	
32			200000		
		FM*	2000		
		total sample rate	10000		

** only for PCM-Version

* Max. samplerate/channel = total samplerate/ No. of channels

Evaluation Unit (84TE, 6HE)



Front side

Connection to the rotor antenna at the rear side

Multi Channel FM/PCM Receiver 84 TE

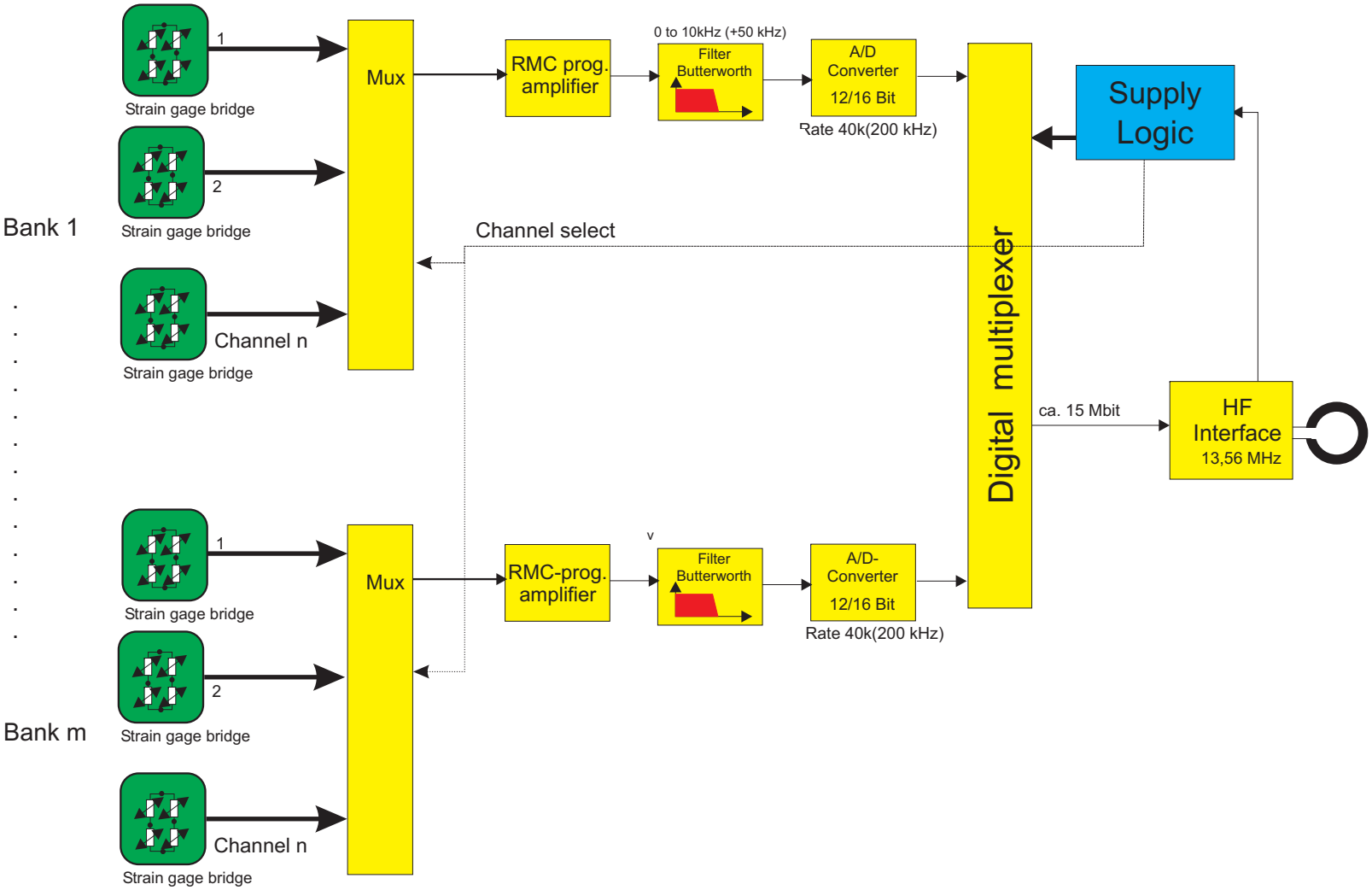
Bandwidth: 0 to 1kHz (10 kHz, 50 kHz option)
Output: ±10 V
Interfaces (option): USB, 16 Bit parallel, Ethernet 100 MB
RF Power: 1, 3, 5, 10 W
Transmission: inductive sensortelemetry FM/PCM
Integrated filter
Resolution: 12 Bits, (16 Bit**)
Remote shunt calibration
Enviromental temperature range: -25 to +65°C
Supply: 9 to 230 V AC, 9 to 36 V DC (board supply)
Type: MAW_84TE_<channels>_<accuracy>_<mod>_<samplerate>_<power>__supply

4	0,01	F	4000	1W	230VAC
8	0,003	PCM12B	8000	3W	12B
12		PCM16B	40000	5W	
16			200000	10W	
32		FM*	2000		
		total samplerate	10000		

* Max. samplerate/channel = total samplerate/ No. of channels

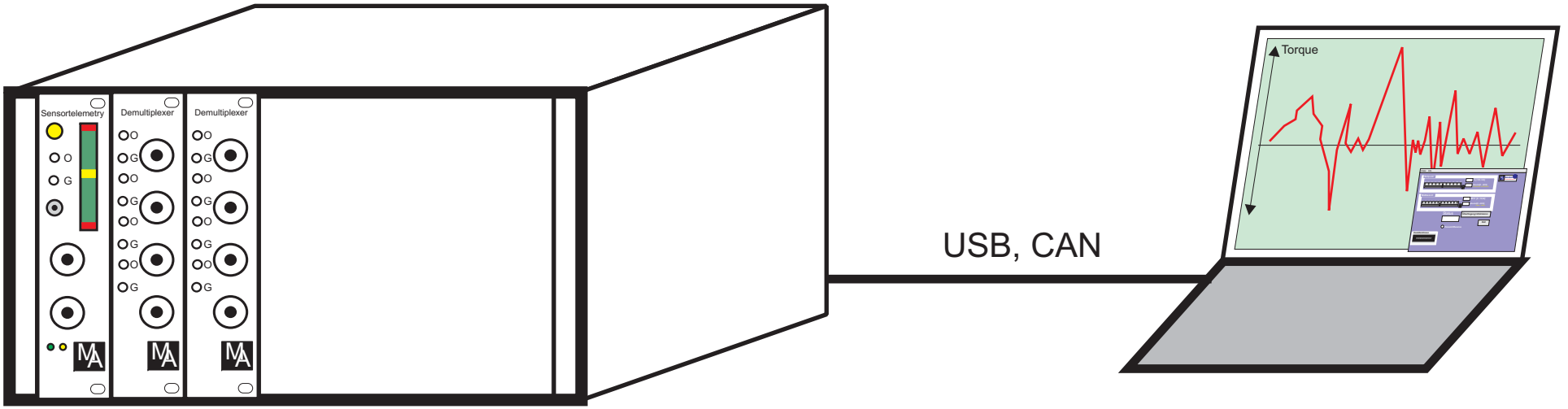
Block Diagram (Transmitter)

(remote control channel select (max. numbers of channels nxm))



Interface Technique

(direct signal data acquisition)



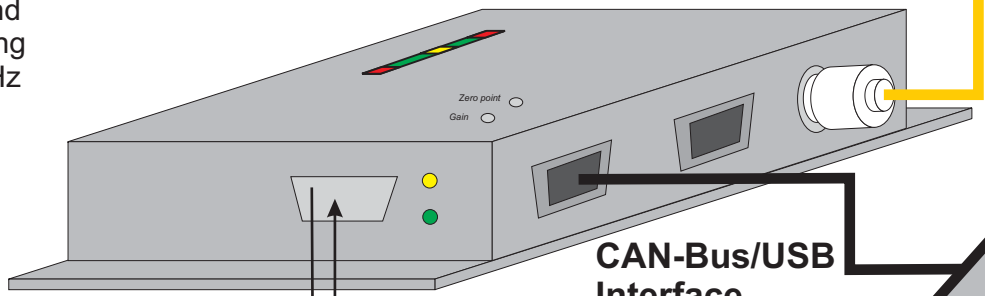
Very Compact Digital Multi Channel Receiver with Digital Interface Technique

(direct signal data acquisition, no analog output)

Multi channel sensor signal amplifier

Coupling

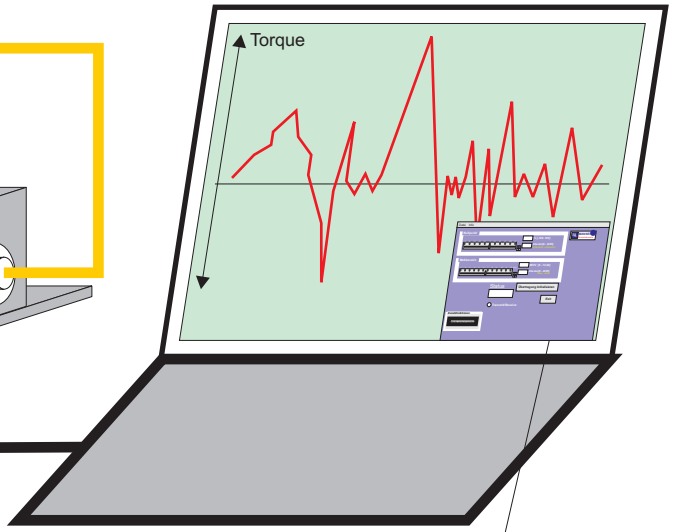
Inductive supply and transmitting 13,56 MHz



CAN-Bus/USB Interface

Supply 9 to 36 V DC

0 to ±10 V



Adjustment zero, gain, auto zero

Verwendung des Interface-USB-Programmes 1/2

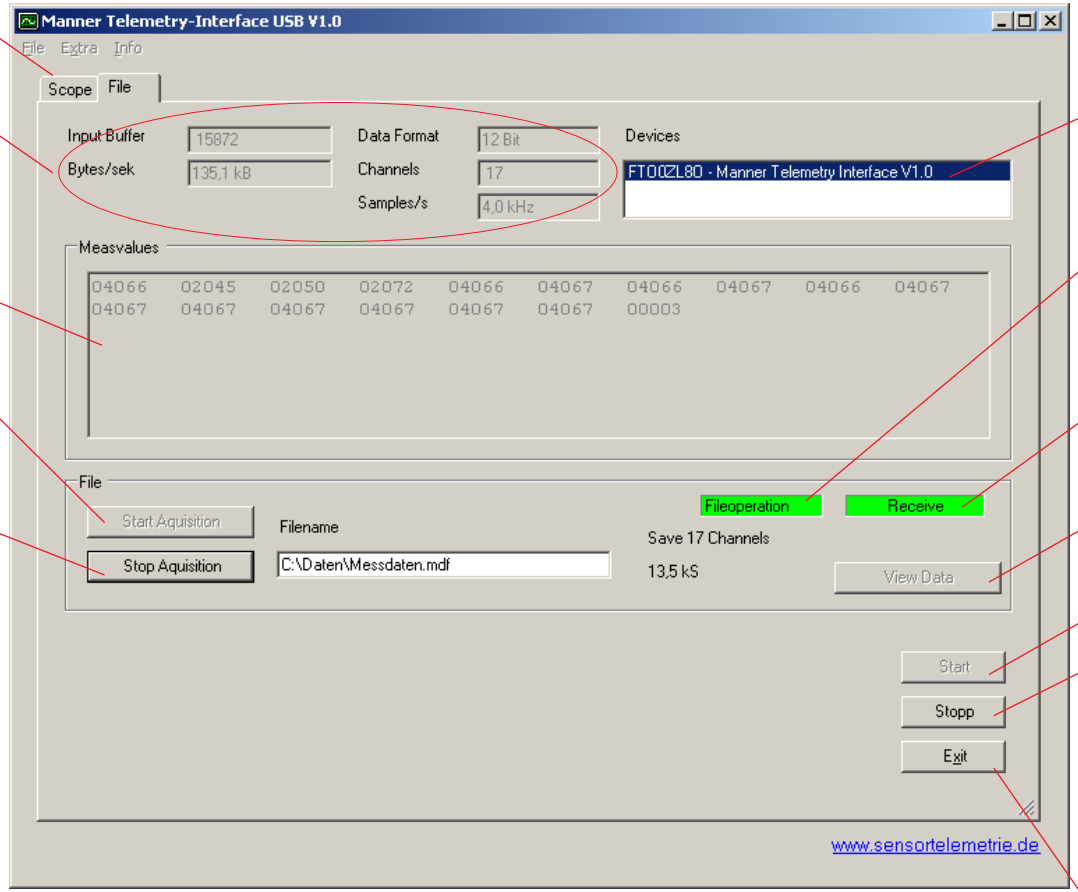
Umschaltung zur Ansicht Anzeige / Oscilloscope

Informationsfeld Datenrate, Samplerate etc.

Anzeigefeld Binärwerte in der Reihenfolge, wie sie übermittelt werden (umgekehrt zur Ausgabe am Tischgerät)

Start Abspeichern in Datei

Stop Abspeichern in Datei



Anzeige ausgewähltes Gerät

Aktivitätsanzeige (grün) bei Dateioperation

Aktivitätsanzeige (grün) bei Datenempfang von Telemetriesystem

Anzeige der Daten mit externem Viewer PVIEW - sofern installiert

Start Datenanzeige

Stop Datenanzeige

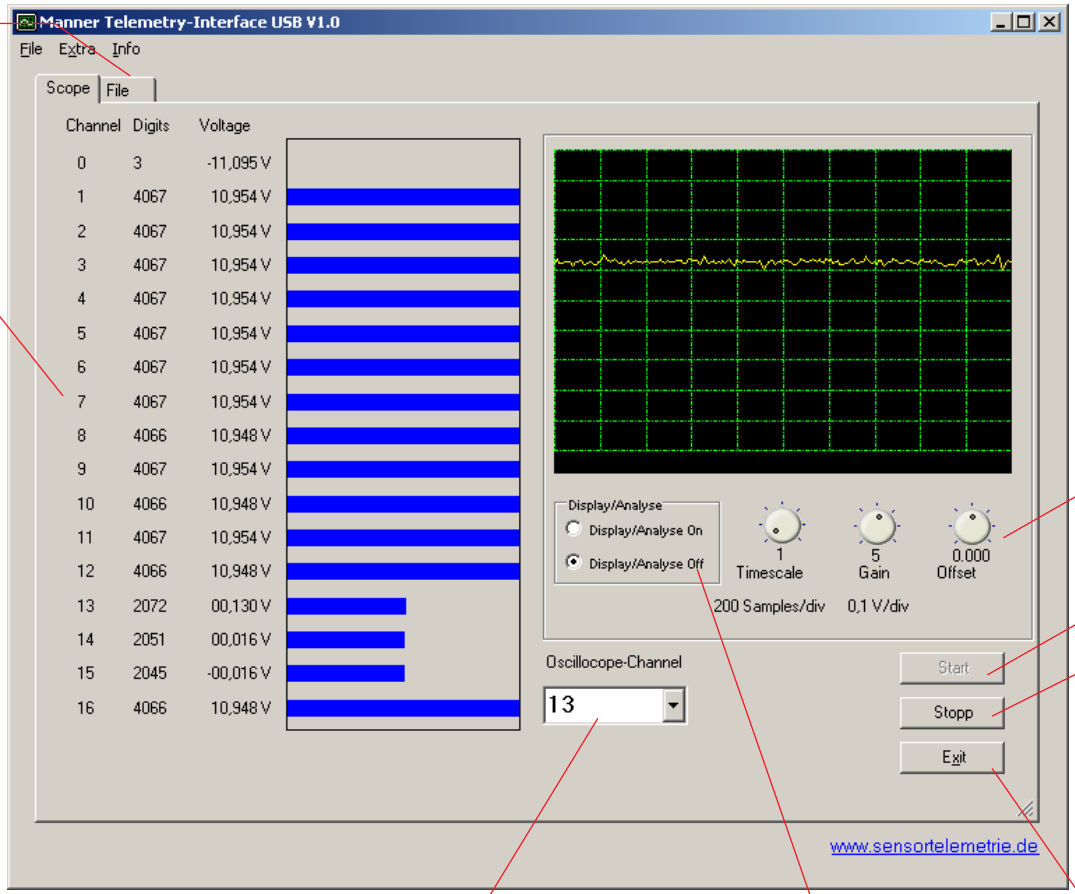
Programm beenden
Zuvor sollte bei Datei-Operationen die Aufzeichnung beendet werden, um Datenverlust zu verhindern

Während des Speicherbetriebes dürfen keine weiteren Anwendungen auf dem Rechner ausgeführt werden, da dies zu Datenverlust während der Aufzeichnung führen kann.

Verwendung des Interface-USB-Programmes 2/2

Umschaltung zur Ansicht Dateioperation

Anzeige der empfangen Messkanälen mit den Digitalwerten und den auf den Analogausgang ausgebebenen Spannungen mit Balkendiagramm



Einstellmöglichkeit für Zeitablenkung, Verstärkung und Offset

Start Datenanzeige

Stop Datenanzeige

Programm beenden
Zuvor sollte bei Datei-Operationen die Aufzeichnung beendet werden, um Datenverlust zu verhindern

Auswahl des Oscilloscop-Kanales
(nicht verfügbar währen des Speicherbetriebes)

Einblenden einer Informationsleiste im Oscilloscop

Datenformat

Die Daten werden im MDF-Format abgelegt.
Dieses besteht aus einer Binärdatei mit der Endung .DAT und einer zugehörigen Beschreibungsdatei mit der Endung .MDF.
Diese Beschreibungsdatei wird von dem Datenviewer PVIEW der Firma Stiegele Datensysteme GmbH benötigt.

Die Binärdatei kann von beliebigen Datenanzeige/Datenanalysesystemen verwendet werden, welche es erlauben über eine Konfiguration die einzulesenden Daten zu importieren.

Aufbau der Binärdatei (.DAT)

Nomenklatur: LB= Low Byte, HB=High-Byte, Kx = Kanal x (z.B. K1 = Kanal 1 enstprechend der Analogausgabe am Gerät)
Es wird zuerst das Low-Byte, danach das High-Byte eines Kanales ausgegeben.
Der Wertebereich bei einem 12-Bit-System ist von 0 bis 4095, der Wertebereich eines 16-Bit-Systemes ist von 0 bis 65535

Zuordnung zu den Analogwerten:
Ausgabe 0V 50% vom Wertebereich (2048 bei 12Bit-Systemen, 32768 bei 16Bit-Systemen)
Ausgabe +10V: 95,4% vom Wertebereich (3909 bei 12Bit, 62543 bei 16 Bit-Systemen)
Ausgabe -10V 4,56% vom Wertebereich (187 bei 12 Bit, 2993 bei 16 Bit-Systemen)
Werte die über bzw. Unter diesem Bereich sind, liegen ausserhalb des Messbereiches und werden von den anaolgen Komponenten des Messverstärkers nicht mehr richtig abgebildet.

Das gezeigte Bespiel zeigt die Datenausgabe eines 17-Kanalsystemes:

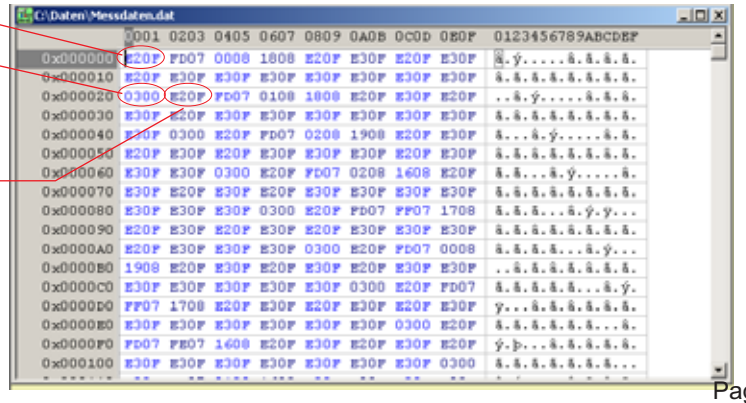
Low-Byte-Kanal 17, High-Byte Kanal 16, Low-Byte-Kanal 15, High-Byte Kanal 15, ... Low-Byte-Kanal 1, High-Byte Kanal 0, (erster Datensatz)
Low-Byte-Kanal 17, High-Byte Kanal 16, Low-Byte-Kanal 15, High-Byte Kanal 15, ... Low-Byte-Kanal 1, High-Byte Kanal 0, (zweiter Datensatz)
....
(Weitere Datensätze)
Low-Byte-Kanal 17, High-Byte Kanal 16, Low-Byte-Kanal 15, High-Byte Kanal 15, ... Low-Byte-Kanal 1, High-Byte Kanal 0, (letzter Datensätze)

Beispieldatei angezeigt mit einem Hex-Viewer

Kanal 17
E2=Low Byte Kanal 17
0F=High Byte Kanal 17

Kanal 1

Kanal 16 nächster Datensatz



Kanalzuordnung

Reihenfolge in der Binärdatei	zugehöriger Analogausgangskanal	Beschreibung
1	16	PT100
2	15	ICP
3	14	unbenutzt
4	13	unbenutzt
5	12	DMS-Kanal 12
6	11	DMS-Kanal 11
7	10	DMS-Kanal 10
8	9	DMS-Kanal 9
9	8	DMS-Kanal 8
10	7	DMS-Kanal 7
11	6	DMS-Kanal 6
12	5	DMS-Kanal 5
13	4	DMS-Kanal 4
14	3	DMS-Kanal 3
15	2	DMS-Kanal 2
16	1	DMS-Kanal 1
17	--	Drehwinkel