MT1-PCM

Digital Radio Telemetry System for Strain Gage Applications on Rotating Shafts

"Gain and Auto Zero setting direct from Receiver Side!"

- **Easy to assemble and operate**
- **Strain gage sensors (>350 Ohm)**
- **Full- and half bridge configuration**
- **Excitation fixed 4 Volt DC**
- **Auto-Zero adjustment - Setting receiver side**
- **Gain: 250-8000 - Setting receiver side**
- **Powering through Lithium battery, >12h work time**
- **Distance 1-10 meter (rotating application)**
- **Up to 8 system can work in different radio freq.**
- **Signal bandwidth 0…500Hz (-3dB)**
- **Output +/-10V**
- **System accuracy <0.2%**

General Description

The MT1-PCM single-channel telemetry system offers the easiest handling for the wireless radio transmission of strain gage signals from rotating shafts.

The encoder has dimensions (MT1-PCM-STG) of 62x27x11mm (without connectors) and transmitter (40k-Tx) of 62x27x11mm (without connectors). Each module has a weight of about 30g. The encoder/transmitter parts are simply mounted on the rotating shaft with a special fiber reinforced tape and add steel trip.

Powering of the transmission part is with battery 6-9V, power consumption 90-100mA. The digital data transfer between transmitter and receiver is realized by radio frequency 433MHz or 868MHz, transmitting power 10mW
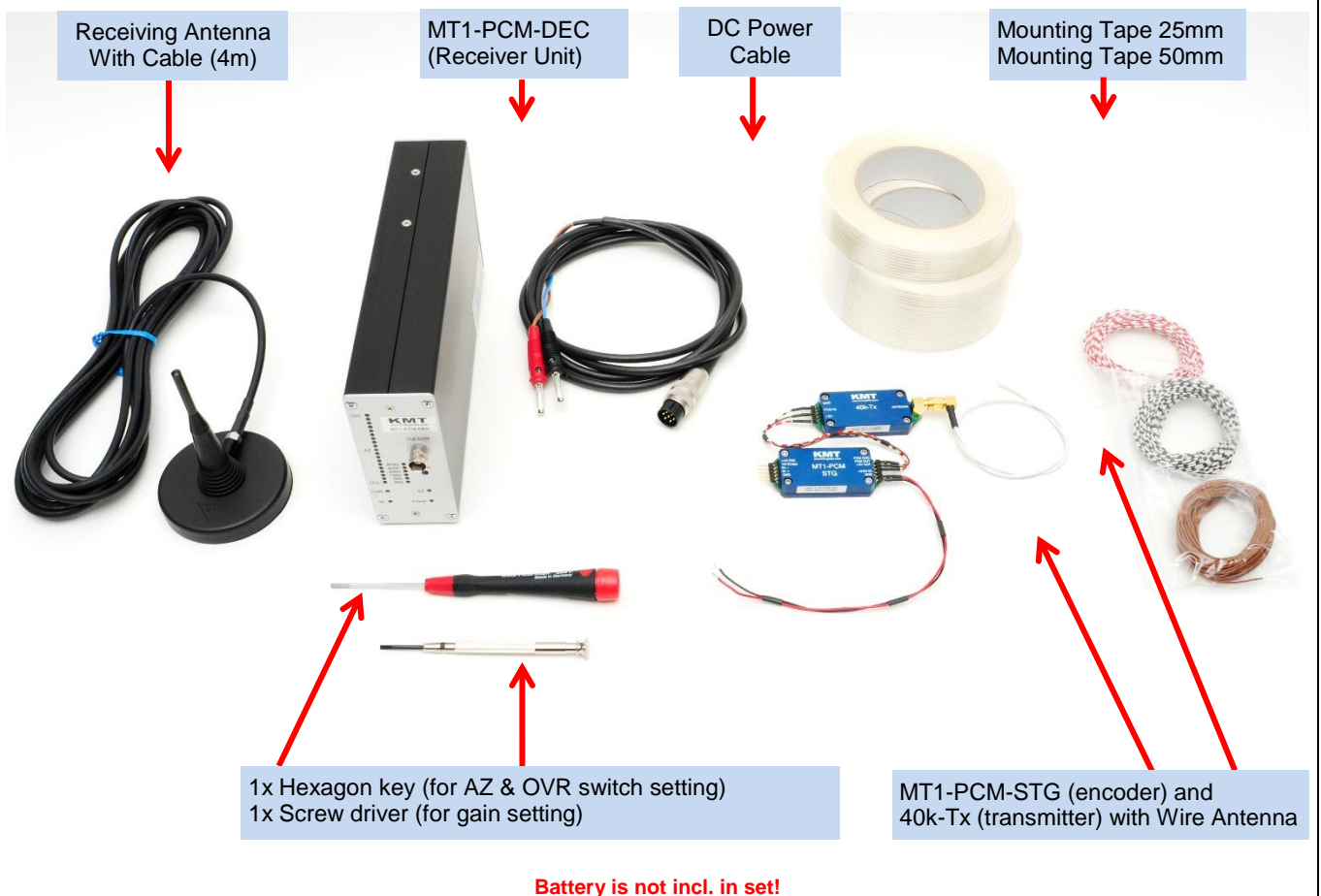
Functional Description

The MT1-PCM transmitter transmits a digital radio frequency signal to the receiver. The distance between transmitter and receiver (depends of application) is 1-10 meter. "Not rotating Point to Point application upto 100m at free view"
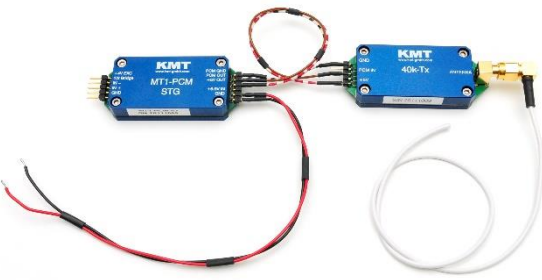
The receiver unit offers a BNC connector at the front panel with analog outputs ± 10 V. An LED bar indicator shows the actual level and a successful Auto Zero calibration. Overload is indicated by the last LED´s in pos. or neg. direction of the bar graph. These OVL-LED´s operate in peak-hold mode and are reset by pressing the overload switch.

Strain gage sensors (>350 Ohm) in full- and half- bridge configuration can be directly connected to the transmitter. The excitation is fixed to 4 Volt DC and the gain is set by the gain switch on the receiver side. An auto-zero (AZ) adjustment is executed by pressing the AZ button on the front side of the receiver. The successful AZ operation is indicated by a yellow LED in the middle of the LED bar indicator. When the AZ completes the LED continuously illuminates. A continued flashing of the yellow LED indicates some error in the AZ electronics. In this case please contact the support of KMT. The AZ setting is stored in a Flash-RAM and thus is not lost during power-off. Use only shielded sensor cable.

MT1-PCM Set Contains:

Receiving Antenna With Cable (4m)

MT1-PCM-DEC (Receiver Unit)

DC Power Cable

Mounting Tape 25mm
Mounting Tape 50mm

1x Hexagon key (for AZ & OVR switch setting)
1x Screw driver (for gain setting)

MT1-PCM-STG (encoder) and
40k-Tx (transmitter) with Wire Antenna

Battery is not incl. in set!

Technical Data - Transmitter

MT1-PCM-STG

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Straingage:	Full and 1/2 bridge >350 Ohm,
Excitation:	4 VDC (fixed)
Gain:	250; 500; 1000; 2000; 4000; 8000 (select able from receiver side)

Gain table

Gain	Autozero range
250	100%
500	200%
1000	400%
2000	400%
4000	400%
8000	400%

Shunt Cal:	Via external resistor for positive and negative calibration
Analog bandwidth:	**0 - 500 Hz (-3 dB)**
Operating temperature:	- 10 to + 80 °C
Sampling rate:	2000 Hz
Resolution:	12bit (ADC)

40k-Tx transmitter:

Carrier frequency:	433MHz or 868MHz, 10mW transmitting power
Dimensions:	MT1-PCM-STG = 62x27x11mm (without connectors)
	40k-Tx = 62x27x11mm (without connectors)
Weight:	each about 30 gram (without cables)
Static acceleration:	**up to 3000g (only with inductive power!) with lithium battery about 1000g**
Powering:	MT1-PCM-STG By battery 6-9V
	(powering **40k-Tx** trough MT1-PCM-STG, +5V/GND)
Power consumption:	90mA
Operating time	with CR-P2 Lithium 1600mAh battery about >12h

Optional:	*Inductive powering*
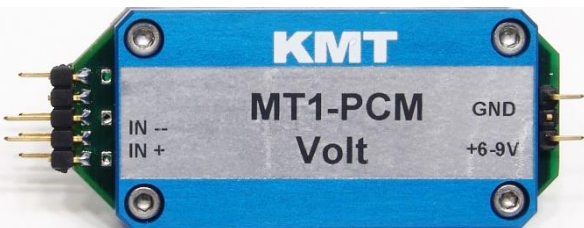
MT1-PCM-VOLT

High level inputs:	+/- 20, 10V, 5V, 2.5V, 1.25V or 0.625V
Range:	250; 500; 1000; 2000; 4000; 8000 (select able from receiver side)

Gain table

INPUT range	Gain
+/- 20V	250
+/- 10V	500
+/- 5V	1000
+/- 2.500V	2000
+/- 1.250V	4000
+/- 0,625.V	8000

Analog bandwidth:	**0 - 500 Hz (-3 dB)**
Operating temperature:	- 10 to + 80 °C
Sampling rate:	2000 Hz
Resolution:	12bit (ADC)

40k-Tx transmitter:

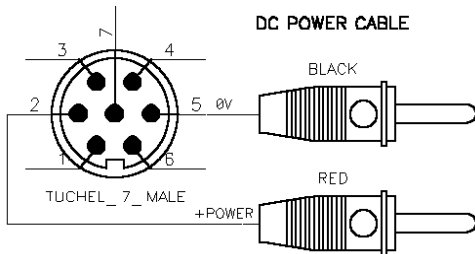|	
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Optional:	*Inductive powering*

Front side   Rear side

DC POWER CABLE

MT1-PCM-DEC

Font side:

Analogue output:	+/-10V via BNC
Resolution:	12bit (DAC)
Gain setting :	via screw switch
Auto Zero setting:	via micro switch
Overload LED's	(Red ON) reset: via micro switch
Autozero LED:	
	Yellow ON- successful AZ (output signal <+/-30mV)
	Yellow OFF- not successful AZ (output sign. >+/-30mV)
	if flashing, call support of KMT, error in EPROM
Green LED's:	Bargraph +/-
SL LED:	Red ON = if error of data transmitting
SL LED:	Red Flashing = if the battery is empty
Power ON LED:	Red ON = if power switch on

Rear side:

Antenna:	Input for receiving antenna
RF Level:	LED indicator for radio frequency
Fuse LED:	Flashing if fuse is defect
Powering:	10-30V DC, Input via 7pol. Tuchel
Switch:	ON/OFF
Operating temperature:	- 10 to + 70 °C
Dimensions:	200 x 105 x 44 (without connectors!)
Weight:	950 grams
Static acceleration:	up to 200g
System accuracy	(without sensor): +/- 0.2 %