

## TEL1-PCM-BATT

### Digital 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
- External shunt calibration
- Digital transmission realized inductively
- Distance up to 150mm
- Powering of transmitter part [via battery 6-9V](#)
- No influence through radio frequency
- Many systems can operated at the same time
- Signal bandwidth 0...1200Hz (-3dB)
- Output +/-10V and digital for interface (Option)
- Output 4-20mA (Option)
- System accuracy <0.2%

## General Description

The TEL1-PCM single-channel telemetry system offers the easiest handling for the wireless transmission of strain gage signals from rotating shafts. The very small encoder 35 x 18 x 12 mm with a weight of 13g. The transmitter (encoder) part is simply mounted on the rotating shaft with a special fiber reinforced tape.

The data transfer between transmitter and receiver is digital. The powering of the transmission part by the TEL1-PCM BATT is supplied by 6-9V battery.

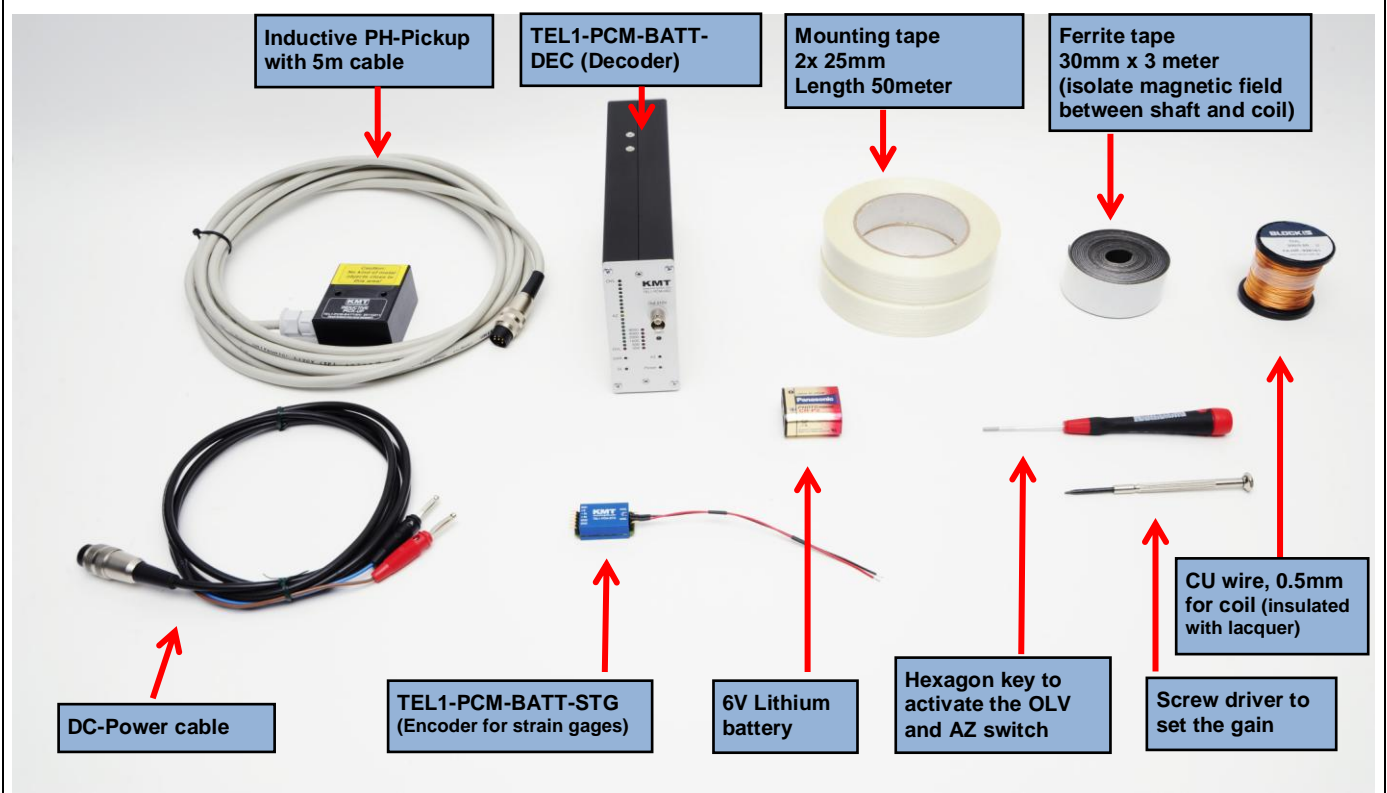
## Functional Description

The TEL1-PCM-BATT transmitter provides a pulse code modulated signal (PCM) to an induction winding around the shaft. The magnetic field of this winding enables the inductive transmission of the signal from coil to pickup. From there the signal is transferred by cable (5 m) to the receiver. The maximum distance between the transmitter coil and the pickup is 150mm.

The receiver unit offers a BNC connector at the front panel with analog outputs  $\pm 10$  V and a optional a digital output for PCM interface ECIA100 (for notebooks) or IF16 (PCI Desktop). 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. The yellow LED flashes as long as the AZ is in progress. 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.

## TEL1-PCM-BATT Set Contains:



## Technical Data



### TEL1-PCM-STG-BATT

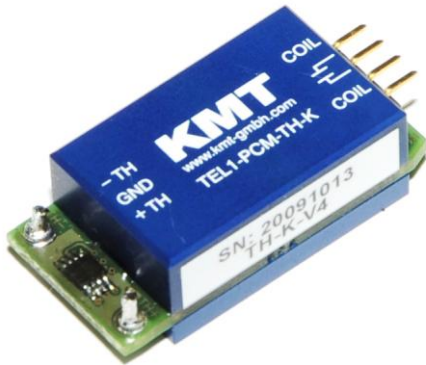
Strainage: Full and 1/2 bridge >350 Ohm,  
Excitation: 4 VDC (fixed)  
Gain: 250; 500; 1000; 2000; 4000; 8000 (select able from receiver side)

Gain	Resolution	Autozero range
250	12 bit	100%
500	12 bit	200%
1000	12 bit	400%
2000	12 bit	400%
4000	12 bit	400%
8000	11 bit	400%

Analog signal bandwidth: 0 - 1200 Hz (-3 dB)  
Operating temperature: - 10 to + 80 °C  
Sampling rate 6.944kHz  
Dimensions: 35 x 18 x 12mm (without connectors)  
Weight: 13 grams  
Static acceleration: up to 1000g  
TEL1 PCM BATT Powering: By battery 6-9V  
Power consumption: 70mA  
Housing: splash-water resistant (except the connector pins)



with female K type thermocouple connector



with solder pins for thermocouple

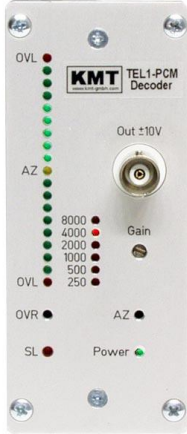
### TEL1-PCM-TH-K - Select Gain 250!

At Gain 500 multiply the values x2, Gain 1000 with x4  
Max. Voltage output at receiver is +10V!

°C	Calibrator out (mV)	Output at receiver (DEC)		
		Normal (V)	Min. (V)	Max. (V)
0	-1.203	0,06	0,01	0,11
50	0.820	0,50	0,45	0,55
100	2.893	1,00	0,95	1,05
150	4.935	1,50	1,45	1,55
200	6.935	1,98	1,93	2,03
250	8.950	2,46	2,41	2,51
300	11.005	2,98	2,93	3,03
350	13.090	3,45	3,40	3,50
400	15.194	3,95	3,90	4,00
450	17.313	4,46	4,41	4,51
500	19.441	4,96	4,91	5,01
550	21.573	5,47	5,42	5,52
600	23.702	5,99	5,94	6,04
650	25.822	6,49	6,44	6,54
700	27.926	6,99	6,94	7,04
750	30.010	7,49	7,44	7,54
800	32.072	7,99	7,94	8,04
850	34.110	8,46	8,41	8,51
900	36.123	8,94	8,89	8,99
950	38.110	9,42	9,37	9,47
1000	40.072	9,90	9,85	9,95

**Calibrator OMEGA CA71S3, measure at a clamping point temperature of 30°C (after 30 min run time)**

Analog signal bandwidth: 0 - 10 Hz (-3 dB)  
Accuracy: +/-0.5 % (without sensor)  
Operating temperature: - 10 to + 80 °C  
Dimensions: 35 x 18 x 12mm (without th-connector)  
Weight: each module 13 grams (with epoxy resin)  
Static acceleration: up to 3000g  
(housing not filled with epoxy resin)  
Static acceleration: up to 10000g  
(housing filled with epoxy resin and without solder pins and external capacitor!)Powering: Battery with 6-9V, Power consumption: 70mA  
Housing: splash-water resistant IP65  
(except the connector pins)



Front side



Rear side

### TEL1-PCM-DEC

#### Front side:

Analogue output: +/-10V via BNC (Optional 4-20mA)  
**(delay between analog IN/OUT 15mS constant!!)**  
 Digital output for PCM Interface IF16 (ECIA100) OPTION  
 Gain setting : via screw switch  
 Auto Zero setting: via micro switch  
 Overload LED's (Red ON) reset: via micro switch  
 Green LED's: Bargraph +/-  
 Autozero LED:  
 Yellow ON- successful AZ  
 Yellow OFF- not successful AZ  
*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:

Output to Powerhead: via 6pol. Tuchel  
 Fuse LED: Flashing if fuse is defect  
 Powering: 10-30V DC (min. 24Watt), 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: upto 200g  
 System accuracy\*: +/- 0.2 %  
 <\*measure with gain 1000, 350ohm (0.1%) full bridge - test bridge!>



### TEL1-PCM-Pickup

#### Function:

Receiving PCM magnetic field in PCM modulated code  
 Distance between the transmitter coil and the pickup is 5-150mm  
 Output to TEL1-PCM-Decoder: Via 6pol. Tuchel Plug incl. 5m cable  
 Operating temperature: - 10 to + 80 °C  
 Dimensions: 53x66x30mm (without cable)  
 Weight: 200 grams (without cable!)  
 Housing: splash-water resistant IP65 (except connector).  
 Cable length standard 5m! Longer on request, but max. 50m!

## Block diagram

