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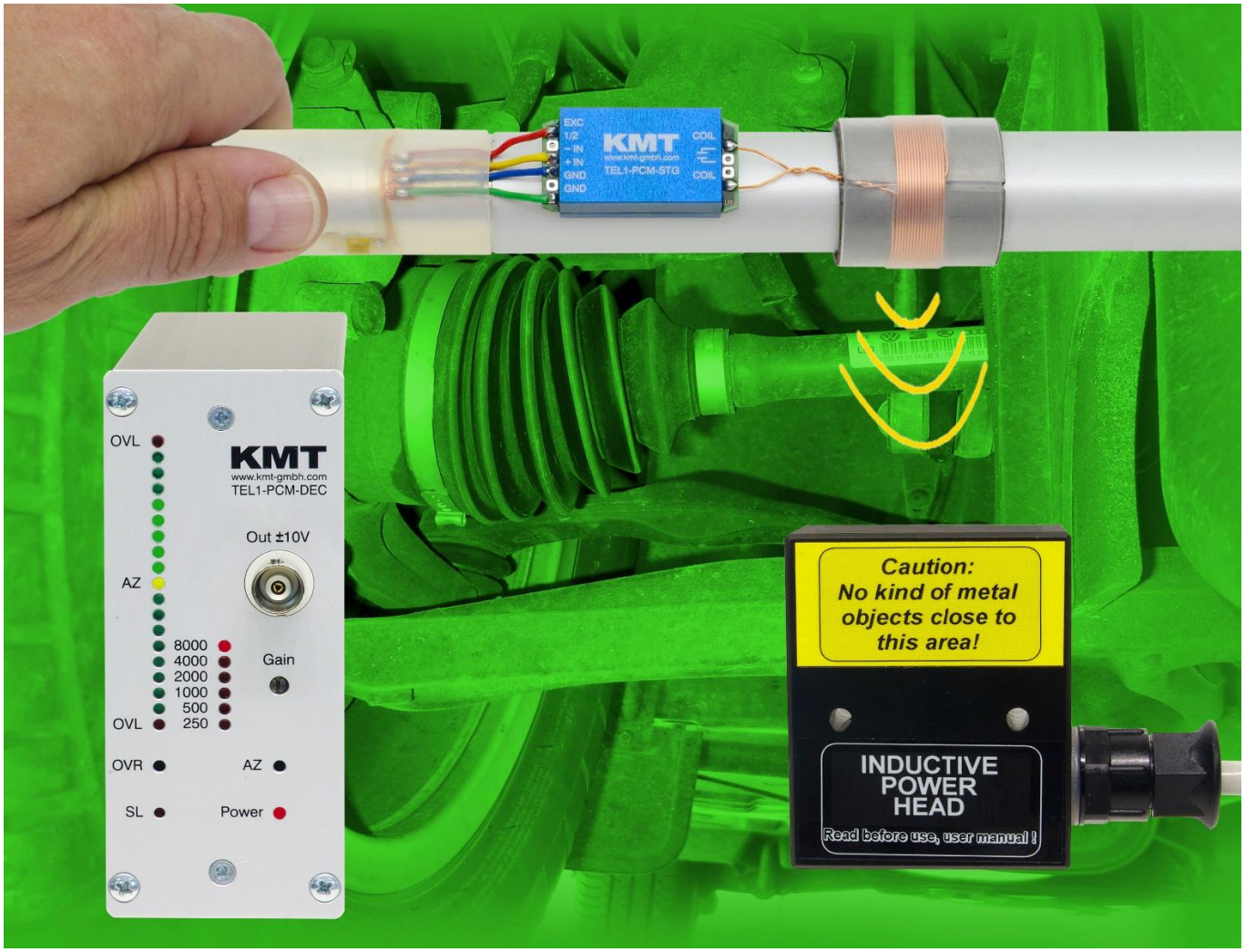
TEL1-PCM

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**
- **Overload indication**
- **Digital transmission realized inductively**
- **Distance up to 25mm (35mm Optional)**
- **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)**
- **System accuracy <0.2%**

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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.

Powering of the transmission part and the digital data transfer between transmitter and receiver is realized inductively.

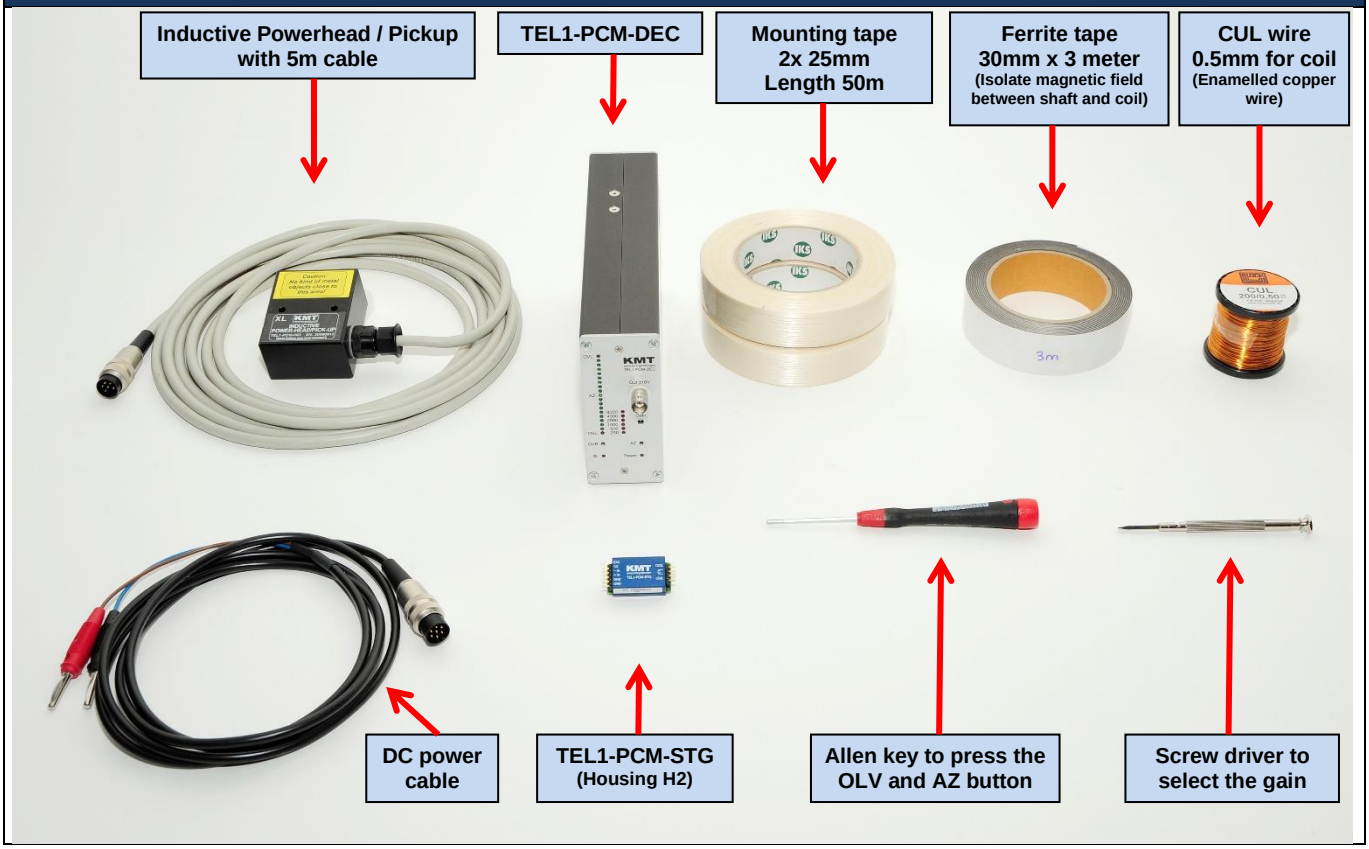
Functional Description

The TEL1-PCM transmitter provides a pulse code modulated signal (PCM) to an induction winding around the *shaft (max. diameter 500mm, other on request!)*. The magnetic field of this winding enables the inductive transmission of the signal to the pickup coil. From there the signal is transferred by cable (5m) to the receiver. The maximum distance between the transmitter coil and the pickup is 25mm with standard head, optional 35mm

The receiver unit offers a BNC connector at the front panel with analog outputs ± 10 V and an optional a digital output for *PCM-LAN IP-Interface* or a current output 4-20mA. 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. The AZ setting is stored in a Flash-RAM and thus is not lost during power-off. Use only shielded sensor cable.

TEL1-PCM Set Contains:



Technical Data Transmitting Part:

With built-in 220nF capacitor for shaft up to 400mm recommend! Standard version!

Without built-in capacitor. Only with external capacitor! E. g. 100nF for larger shaft >400mm! Specify at order!

TEL1-PCM-STG

Strain gage: Full and 1/2 bridge >=350 Ohm,
Excitation: 4 VDC (fixed)
Gain: 250; 500; 1000; 2000; 4000; 8000 (selectable 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%

AZ: Auto Zero calibration (selectable from receiver side)
Analog signal bandwidth: 0 - 1200 Hz (-3 dB)
Operating temperature: - 40 to + 85 °C
Sampling rate 6.944kHz
Dimensions: 35 x 18 x 12mm (without connectors)
Weight: each module 13 grams (with epoxy resin)
Powering: Inductive
Housing: splash-water resistant IP65 (except the connector pins)

with female K type thermocouple connector

with solder pins for thermocouple

Analog signal bandwidth: 0 - 10 Hz (-3 dB)
Accuracy: +/-0.5 % (without sensor)
Operating temperature: - 40 to + 85 °C
Dimensions: 35 x 18 x 12mm (without th-connector)
Weight: each module 13 grams (with epoxy resin)
Powering: Inductive
Housing: splash-water resistant IP65
(except the connector pins)

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!

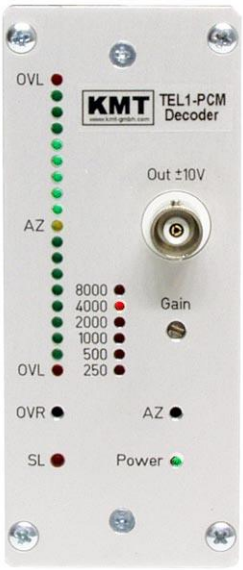
°C	Output at receiver (DEC) Normal (V)	Min. (V)	Max. (V)
-50	-0,508	-0,450	-0,550
0	-0,005	-0,050	0,050
50	0,508	0,450	0,550
100	1,012	0,950	1,050
150	1,505	1,450	1,550
200	2,000	1,950	2,050
250	2,505	2,450	2,550
300	3,010	2,950	3,050
350	3,511	3,450	3,550
400	4,014	3,950	4,050
450	4,511	4,450	4,550
500	5,011	4,950	5,050
550	5,511	5,450	5,550
600	6,010	5,950	6,050
650	6,507	6,450	6,550
700	7,007	6,950	7,050
750	7,507	7,450	7,550
800	8,007	7,950	8,050
850	8,505	8,450	8,550
900	9,003	8,950	9,050
950	9,502	9,450	9,550
1000	9,999	9,950	10,050

If no thermocouple is connected, output is -1000°C = -10V

Common characteristics / Environment (rotating parts)

Vibration (random): 0.05 g²/Hz (20 Hz to 2 kHz)
Vibration (sine): 10 g (20 Hz to 2 kHz)
Shock (½ sine): 500 g peak (11 ms)
Static Acceleration: 3000 g (depends on mounting!)
Operating temperature: -40 to +85°C
Humidity: 95 % (not condensing!)

Technical Data Receiving Part



Front

Rear

TEL1-PCM-DEC

Front side:

Analogue output: +/-10V via BNC

(delay between analog IN/OUT 15mS constant!!)

Digital output for *PCM-LAN-IP-Interface* **OPTION or**

Current output 4-20m output **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 = distance to far

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: - 40 to +70 °C

Dimensions: 200 x 105 x 44 (without connectors!)

Weight 950 grams

Static acceleration: up to 200g

System accuracy*: +/- 0.2 %

<*measure with gain 1000, 350ohm (0.1%) full bridge - test bridge!!>

PH-PU Standard with ride side cable out

PH-PU-CRS with cable rear side out

TEL1-PCM-Powerhead/Pickup (standard version)

Function: Inductive powering of the TEL1-PCM-STG unit and receiving PCM magnetic field in PCM modulated code

Inductive frequency is 60kHz

Distance between the transmitter coil and the pickup is 25mm

(25mm at diameter <300mm with 5m cable, 15mm with 10m cable)

(Optional 35mm at diameter <300mm - see table)

Output to TEL1-PCM-Decoder: Via 6pol. Tuchel Plug incl. 5m cable

Operating temperature: - 40 to +85 °C

Dimensions: 53x66x30mm (without cable)

Weight: 200 grams (without cable!)

Housing: splash-water resistant IP65 (except connector).

Cable length standard 5m! 10m optional!

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