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KMT
TELEMETRY

CT2-Wheel
2 Channel Wheel Telemetry System
Including signal conditioning for STG, Th-K, Pt100, ICP, POT
or high-level inputs

- STG offset via potentiometer or optional Auto Zero calibration

- 12 bit ADC resolution, simultaneous sampling of all channels

- Signal bandwidth: 2 x 0-375Hz (40kbit) up to 2x12000Hz (1280kbit)

- Water protected housing (IP65)

- Output analog (+/- 5V) and digital for PC interface at the receiver side

- Universal mounting adapter for fast and exactly montage on the wheel

- 4x carrier frequencies enable (40kbit) measurements at 4 Wheels for one car

- Accumulator powered (12h)

General functions CT2-Wheel:

2x Sensor cables **CT2-Wheel Encoder/ Transmitter** **CT2-Wheel Decoder/ Receiver**

CT-Charger for battery **Hexagon screw driver** **OPTION AC/DC adapter** **DC power cable** **Receiving antenna**
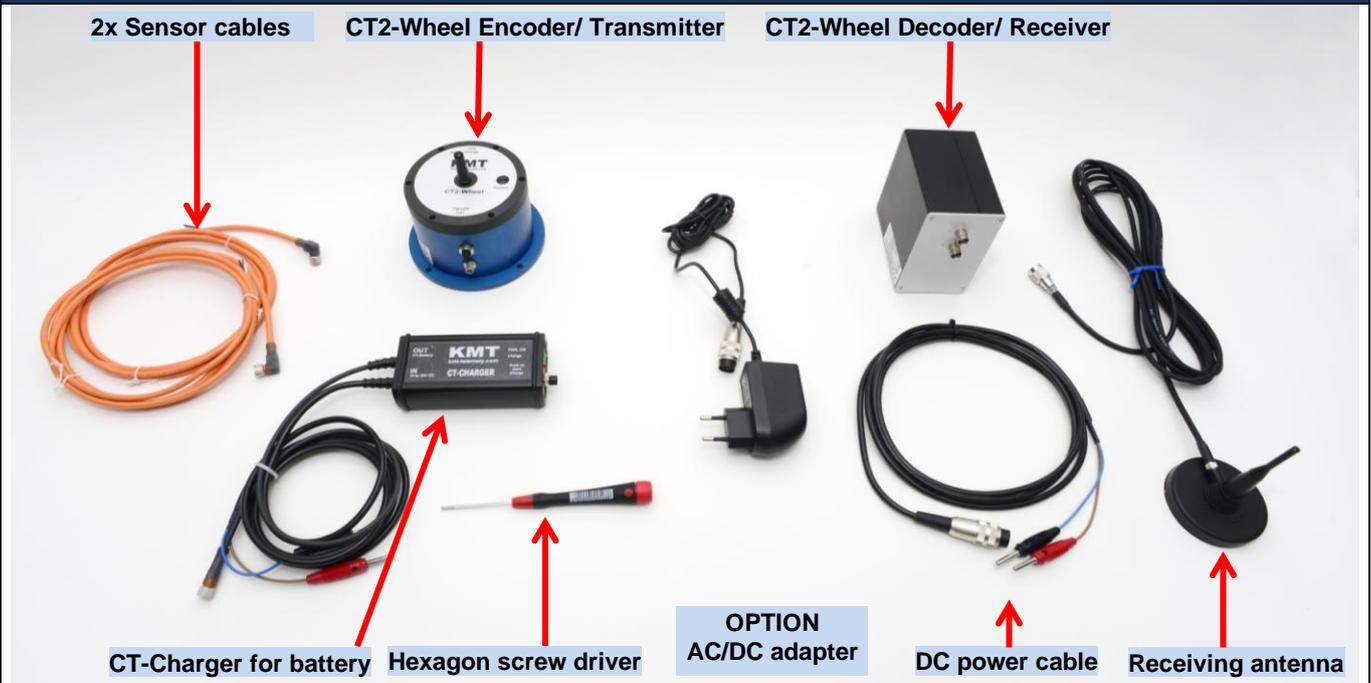
CT2-Wheel Telemetry system with accessories

CT2-Wheel is a telemetry system designed for easy mounting onto rotating wheels to provide non-contact transmission of measured parameters such as pressure, force, temperature, acceleration and voltage.

Sensors inputs are connected via screw on, waterproof connectors. Measured values are prepared in analog format, digitized and transmitted via radio frequencies. Four different carrier frequencies are provided, this allows up to four systems (e.g. for four wheels) to operate in parallel. The complete transmitter assembly is waterproofed to IP65 specifications.

The following sensors can be connected to the system: (STG) Strain gages sensors in full-, half- and quarter-bridge configuration (350 ohm or greater), Type K Thermocouples -50 to 1000°C **(full galvanic isolated)**, ICP and capacitive sensors. Voltage inputs of +/-5V and +/-10V are available.

The measured values are processed and output as +/-5V analog signals at the BNC sockets (optional digital output for special PCM interface into a PC) on the stationary receiver located in a vehicle.

Resolution of 12 bits is standard; this enables an amplitude dynamic of 72 dB. The analog signal bandwidth is 0-95 Hz (-3dB) when configured as an eight channel unit, other bandwidth on request! The measurement accuracy is +/-0.25 % (without sensor). The CT2-Wheel is suited for operation at ambient temperatures of -20 to +70°C. The transmission distance between transmitter and receiving antenna is of the order of 10m (30 feet) - depend of application!
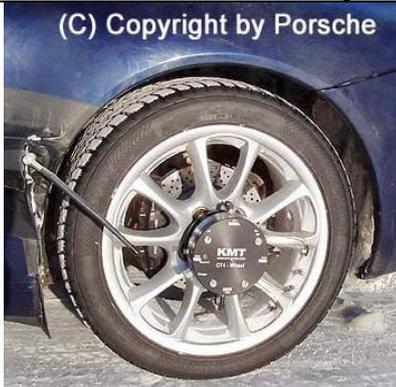
Application pictures of CT8-Wheel

Bit rate	Cut off frequency from anit-aliasing filter - sampling rate (see red) per channel
40 kbit/s	375 Hz (-3dB) (1428 Hz)
320 kbit/s	3000 Hz (-3dB) (11428 Hz)
640 kbit/s	6000 Hz (-3dB) (22857 Hz)
1280 kbit/s	12000 Hz (-3dB) (45714 Hz)

CT2-Wheel Transmitting Unit Technical Data (Encoder)

CT-STG-V1:

Sensor:	strain gage, > 350 Ohms
Bridge completion:	full and half bridge
Excitation:	4 VDC (fixed), short-circuit protection up to 20mA
Gain:	200 or 1000 - selectable by solder jumpers **Optional Gain: 250-500-1000-2000 with new CT-STG-V2 module**
Offset	Zero adjustment by potentiometer or <u>optional</u> Auto-zero function (which is not lost by power-off), offset range up to 80% of full scale.
Signal bandwidth:	0...375 Hz -3dB <u>(optional</u> 3000, 6000 or 12000 Hz)

CT-ICP:

Constant current:	4mA (fixed)
Gain:	2x, 4x, 8x, 16x or 32x
Signal bandwidth:	3...375 Hz -3dB (<u>optional</u> 3000, 6000 or 12000 Hz)

CT-POT:

Sensor:	Potentiometer Sensor >350 Ohms to 10kOhms
Excitation:	4 VDC (fixed)
Signal bandwidth:	0...375 Hz -3dB <u>(optional</u> 3000, 6000 or 12000 Hz)

CT-TH-K-ISO:

Sensor:	thermo-couple, type K (with cold junction compensation)
Temperature measuring range:	-50°C to +1000°C (other on request) **with galvanic isolation, Accuracy 1%**
Signal bandwidth:	0...10 Hz -3dB

CT-PT100:

|	
Sensor:	resistance temperature detectors (RTDs) with resistance of 100 ohm
Temperature measuring range:	-100°C to +500°C

CT-VOLT:

High-level inputs:	+/- 5 Volt or +/- 10 Volt
Signal bandwidth:	0...375 Hz -3dB <u>(optional</u> 3000, 6000 or 12000 Hz)

System Parameters:

Channels:	2
Resolution:	12 bit A/D converter with anti aliasing filter, simultaneous sampling of all channels
Line-of-sight distance:	20m with 10mW transmitting power, (868MHz Band, FSK modulation)
Powering:	7.2mA Li-Ion battery 2000mAh **12h operating time**
Power consumption:	100 mA with 2 STG sensors at 350 Ohms full bridge
Analog signal bandwidth:	2 x 0 … 375Hz with 40 kbit/s transmitter (-3dB cut-off frequency at receiver side)
Transmitter carrier frequency:	4 HF-Channels in the 868MHz range
Transmission:	Digital PCM Miller format - FSK
Transmission Power:	10mW, range of 10m
Dimensions:	Diameter 102mm, bottom plate diameter 122mm, height 94mm
Weight:	0.900 kg without cables
Operating temperature:	- 20 … +70°C
Housing:	Aluminum anodized, waterproofed (IP65)
Humidity:	20 ... 80% no condensing
Vibration:	5g Mil Standard 810C, Curve C
Static acceleration:	100g in all directions, max. 3000 RPM
Shock:	200g in all directions

Technical data:
Receiving Unit CT2-Wheel DEC (Decoder)

Front view

Rear view

BNC socket for analog
signal outputs 1 … 2

BNC-socket for
receiving antenna

Antenna

Field strength indicator

RF Level

ON/OFF - LED

ON/OFF - switch

Sync-Loss Indicator LED

On

Sync

7- pole TUCHEL-socket for
Voltage supply cable (10–30V)

DC POWER CABLE

BLACK

3 7 4

2 5 0V

1 6

TUCHEL_7_MALE

RED

+POWER

DC 10…30V

IF16

Dig. Out for
Interface (Option)
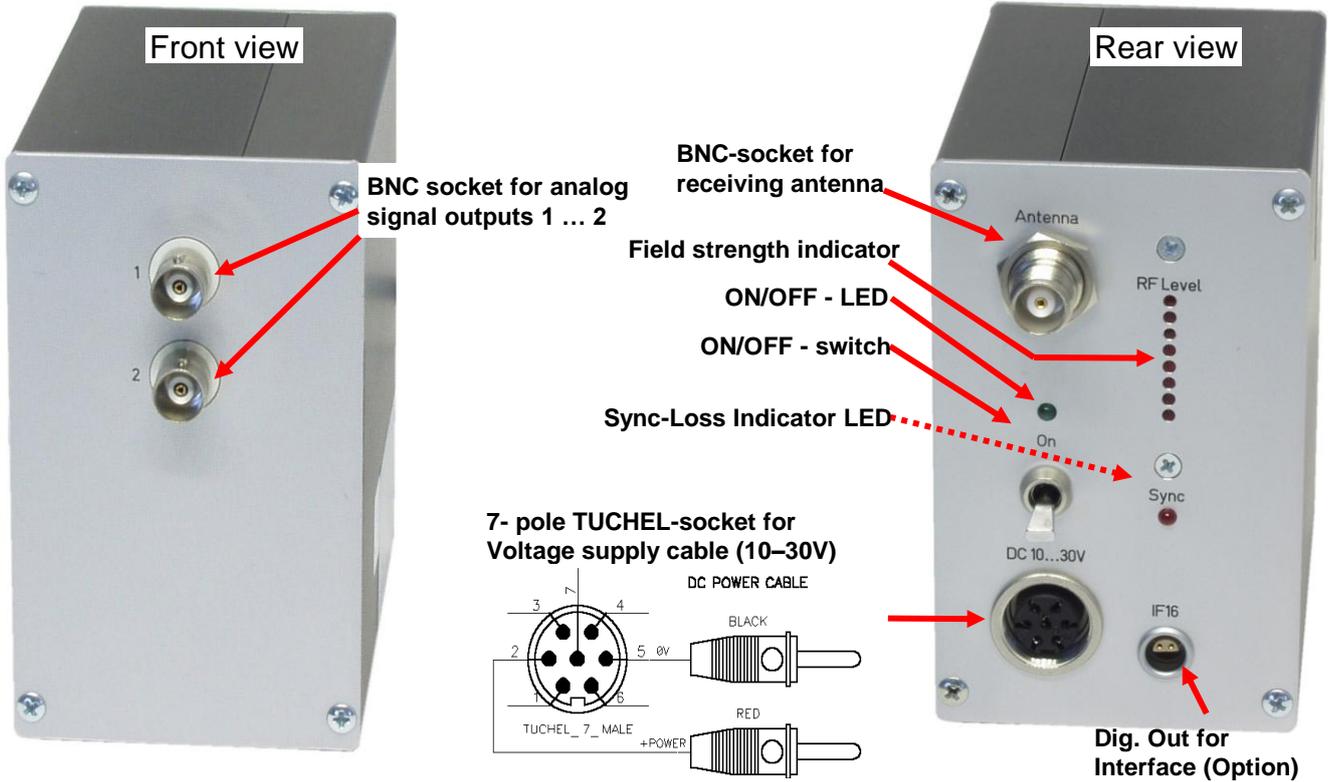
System Parameters:

Channel:	2 analog outputs via (BNC) +/-5V
Resolution:	12 bit D/A converter, with smoothing filter
Dynamic:	72dB
Power supply input:	10-30 VDC
Current consumption:	300mA at 10V, 100mA at 30V
Carrier frequencies:	4 HF-Channels in the 868MHz range with 40 kbit/s transmitting rate FSK modulation
Dimensions:	105 x 105 x 65mm
Weight:	0.60 kg without cables and antenna
Overall system accuracy between encoder input and decoder output:	+/-0.25% without sensor influences
Environmental	
Operating:	-20 … +70°C
Humidity:	20 ... 80% not condensing
Vibration:	5g Mil Standard 810C, Curve C
Static acceleration:	10g in all directions
Shock:	100g in all directions

Technical specifications are subject to change without notice!