

CTP16-Rotate

16 channel telemetry for rotating applications like wheels or rotors, high signal bandwidth, 16bit, software programmable



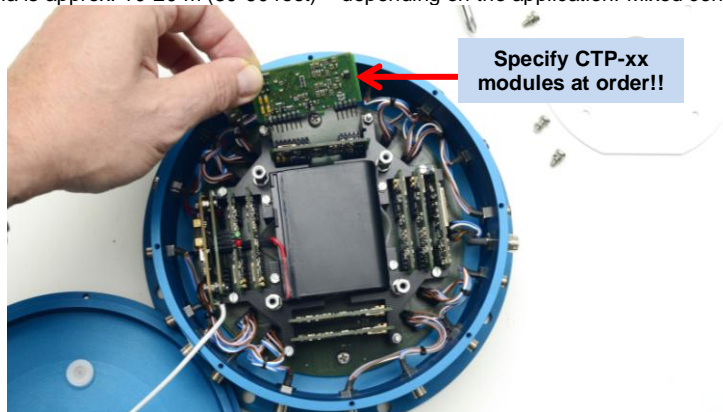
- Inputs for STG, TH-K, ICP or VOLT
- Simultaneous sampling
- 16 bit resolution
- Software programmable
- Signal bandwidth: 16 x 0-3000Hz
- Battery power up to 8-10h
- Radio telemetry transmission
- Output analog +/- 10V
- Digital data interface to PC (option)
- Waterproofed ENC housing (IP65)

General functions:



The CTP16-Rotate is a 16-channel telemetry system for rotating applications with integrated signal conditioning for sensor signals, wireless digital transmission and analog reproduction. In the encoder/transmitter unit the sensor signals are conditioned, filtered (anti-aliasing) and digitized (16-bit). Simultaneous sampling is provided for all channels. Finally the PCM encoded data is transmitted via radio frequencies to the receiver. Various configurations of different sensor modules are available incl. signal conditioning for strain gages (STG), thermocouples type K (TH-K), ICP sensors, potentiometer sensors (POT) and also voltage inputs. Mixed configuration available (2-CH-steps). All sensor modules are software programmable via LAN-Adapter. The LAN-Adapter has an integrated web interface and enables easy access!

The stationary receiver provides 16 +/-10V analog outputs via Sub-D male socket (option: digital PC interface). The analog signal bandwidth is 0-375 Hz (320kbit) and up to 0-3000Hz (2500kbit) for 16 channels. The measurement accuracy is $<\pm 0.2\%$ (without sensor). The CTP16-Rotate is specified for operational temperatures from -20°C to $+70^{\circ}\text{C}$. The maximum distance between transmitter and receiving antenna is approx. 10-20 m (30-60 feet) – depending on the application! Mixed configuration available (2-CH-steps).



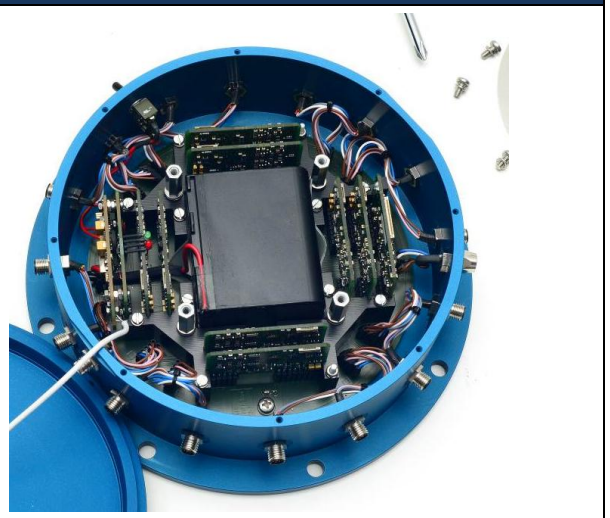
| Frequency table | Cut off frequency from anit-aliasing filter (-3dB) and sampling rate (see red) |
|-----------------|--|
| Bit rate | 16 CH. |
| 2500kbit | 3000Hz (7812.50Hz) |
| 1250kbit | 1500Hz (3906.25Hz) |
| 625kbit | 750Hz (1953.125Hz) |
| 312.5kbit | 375Hz (976.56Hz) |

| CAR wheel | Truck wheel | Helicopter rotor |
|---------------------------------|-------------|------------------|
| <p>(C) Copyright by Porsche</p> | | |

CTP16-Rotate Transmitting Unit Technical Data (Encoder)

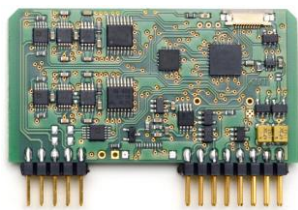


Encoder in IP65 Aluminum housing

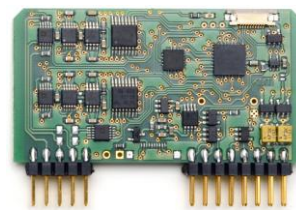


Encoder inside

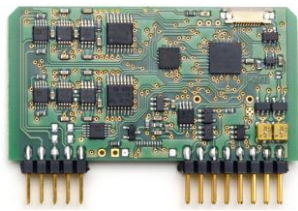
CTP acquisition modules (rotor side)



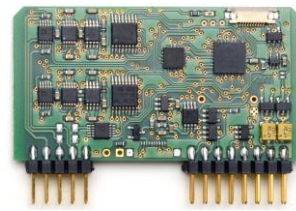
CTP-STG-V3
 Acquisition module for 2 strain gages
 Full, half and quarter bridge ($\geq 350\Omega$)
 Fixed excitation 4V DC
 Offset calibration by auto zero
 Manual offset shifting after auto zero
 Gain: 125-250-500-1000-2000
 Test shunt-cal step
 Signal bandwidth 0Hz to 3000Hz*
 Resolution 16bit
 Accuracy <0.2%
 Current consumption with full bridge 350 ohm 75mA



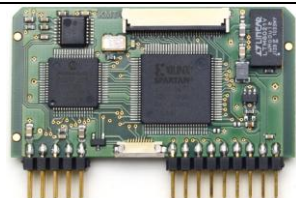
CTP-VOLT-V3
 Acquisition module for 2x high level inputs
 Range: $\pm 0,625V$, $\pm 1,25V$, $\pm 2,5V$, $\pm 5V$, $\pm 10V$
 Signal bandwidth 0Hz to 3000Hz*
 (*see table of cut-off-frequency)
 Resolution 16bit
 Accuracy <0.2%
 Current consumption 60mA



CTP-ICP[®]-V3
 Acquisition module for 2 ICP sensors
 Current EXC. 4mA
 Gain: 1-2-4-8-16-32
 Signal bandwidth 3 Hz to 3000Hz*
 (*see table of cut-off-frequency)
 Resolution 16bit
 Accuracy <0.2%
 Current consumption 100mA



CTP-TH-K-V3
 Acquisition module for 2x TH-K
Inputs galvanic isolated
 Range -50 to 1000°C, -50 to 500°C
 or -50 to 250°C
 Cut-off filter 30Hz (more on request)
 Resolution 16bit
 Accuracy: 0.2% at 1000°C range
 Current consumption 110mA



CTP-CONTROL-V3
 Controller 1- 32 acquisition modules
 Output: PCM
 Programmable via LAN adapter
 Current consumption 40mA, with LAN-adapter 140mA

System Parameters ENCODER:

| | |
|--------------------------|---|
| Channels: | 16 |
| Resolution: | 16 bit A/D converter with anti-aliasing filter, simultaneous sampling of all channels |
| Line-of-sight distance: | up to 20m (depends of application and bit rate) |
| Powering: | Li Ion Accumulator 7.2V, capacity up to 8-10 hours |
| Power consumption: | 700 mA using 16x STG full bridge sensors 350 Ohms |
| Analog signal bandwidth: | See table |
| Transmission: | Digital PCM Miller format - FSK |
| Transmission Power: | 10mW! |
| Dimensions: | Diameter 190mm, bottom plate diameter 220mm, height 70mm (without antenna) |
| Weight: | 2.3 kg without sensor cables and antenna |
| 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, 2000 RPM |
| Shock: | 200g in all directions |

Technical specifications are subject to change without notice!

CTP-DEC16 Receiver unit for max 16 Channels output via 37 pol. Sub D (radio transmission version with diversity receiver 312.5 ... 1250kbit)

Front side view

Female 37 pole Sub-D for analog signal output, CH 1 to 16



Rear side view

Auto Zero LED
Bright on, if analog output is over 60mV

LED on at approx. 20% battery capacity!

Power Switch

Transmission error LED
Fuse of powering defect LED

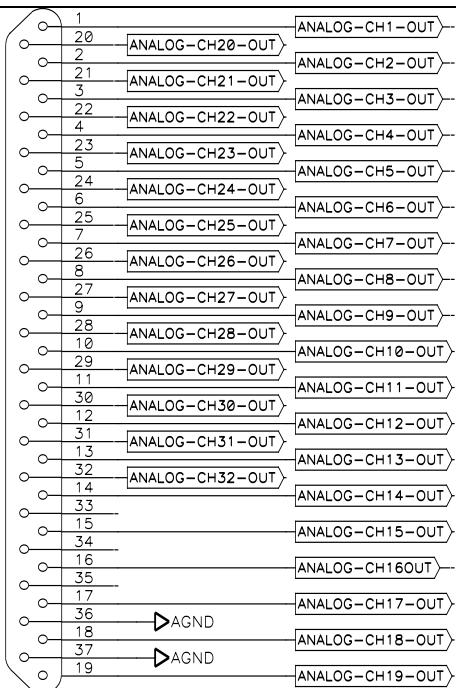
7-pole female TUCHEL connector for power supply input (10-30V DC)

PCM out for IP-LAN-Interface (Opt.)

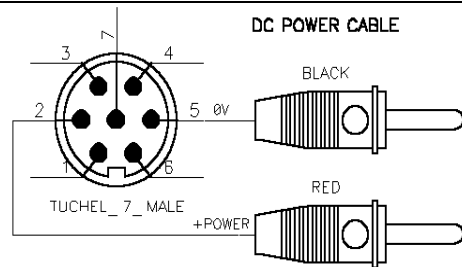


HF-Field strength display

SMA antenna connector with active LED of antenna (diversity)



Plug-side

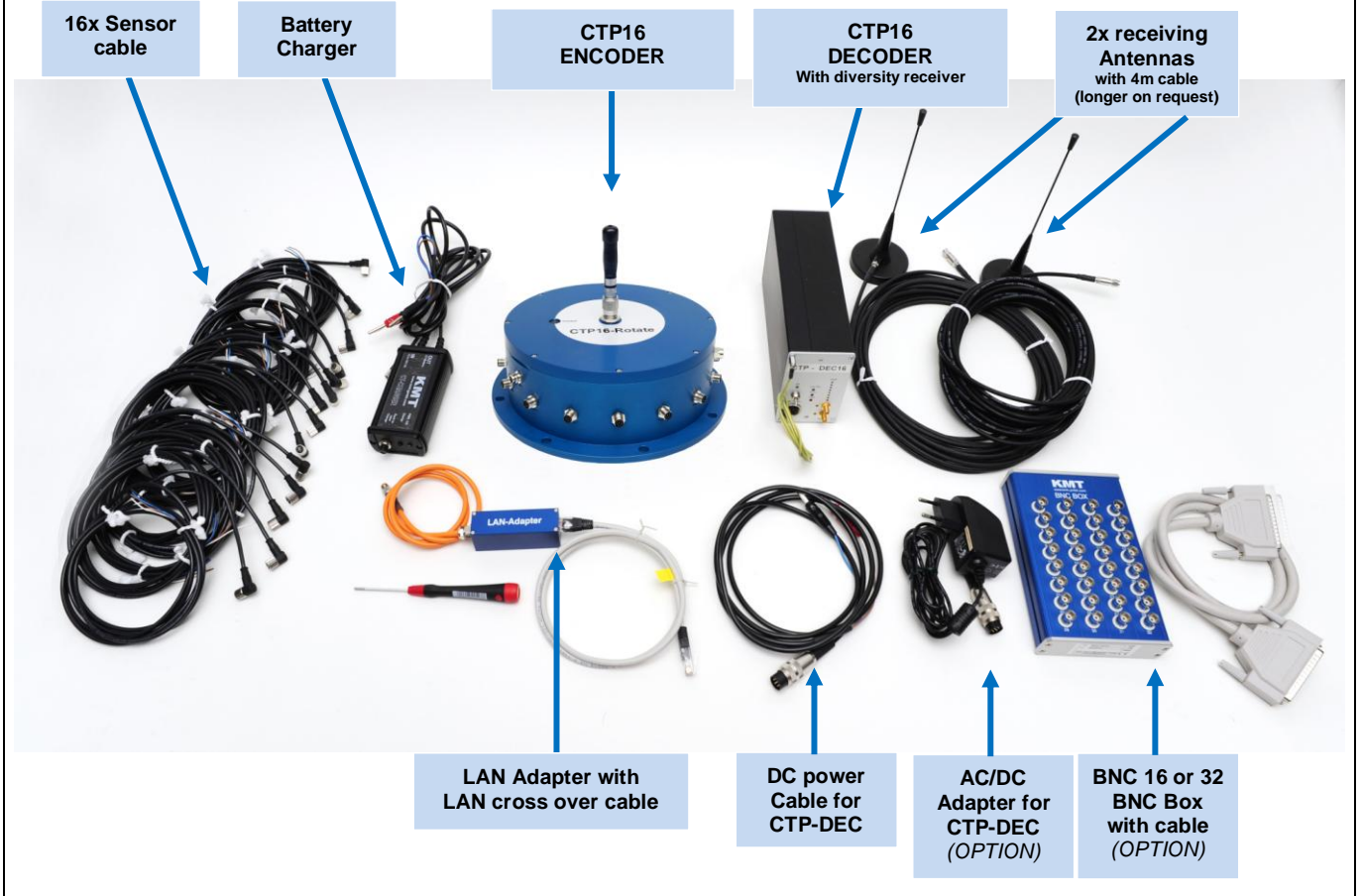


Optional BNC16Box. Connect on 37pol Sub-D

CTP-DEC16 System Parameters:

| | |
|---|---|
| Channel: | 16 x +/- 10V analog outputs via Sub-D male socket |
| Resolution: | 16 bit D/A converter, with smoothing filter |
| Power supply input: | 10-30 VDC, power consumption <24 Watt |
| Transmission: | Digital PCM Miller Format – FSK, |
| Dimensions: | 205 x 105 x 65mm |
| Weight: | 1.25 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 |
| Static acceleration: | 10g in all directions |
| Shock: | 100g in all directions |

SET of CTP16-Rotate 315.5k...1250kbit telemetry



Web interface address:
IP 192.168.0.110

Settings:

STG

Gain 125-250-500-1000-2000
 Half- and full bridge
 Make Auto Zero YES/NO

ICP

Gain 1-2-4-8-16

VOLT

Range $\pm 0,625V$, $\pm 1,25V$, $\pm 2,5V$,
 $\pm 5V$, $\pm 10V$

TH-K

Range -50 to 1000°C, -50 to 500°C
 or -50 to 250°C

Selectable for each channel!

KMT MT-PRO Analog Channel Setup

| Channel | Type | Gain | Make Autozero |
|------------|--------------|------|--------------------------|
| Channel 1 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 2 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 3 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 4 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 5 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 6 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 7 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 8 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 9 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 10 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 11 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 12 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 13 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 14 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 15 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 16 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 17 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 18 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 19 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 20 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 21 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 22 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 23 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 24 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 25 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 26 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 27 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 28 | Strain Gauge | 1000 | <input type="checkbox"/> |
| Channel 29 | ICP | 1 | <input type="checkbox"/> |
| Channel 30 | ICP | 1 | <input type="checkbox"/> |
| Channel 31 | ICP | 1 | <input type="checkbox"/> |
| Channel 32 | ICP | 1 | <input type="checkbox"/> |

Upload Parameters to MT-PRO and perform Autozero

Download Parameters from MT-PRO

*** Download success ***

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