# KMT - Kraus Messtechnik GmbH

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# CTP32-Rotate

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


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- Inputs for **STG, POT, TH-K, ICP, VOLT ..**
- Simultaneous sampling
- 16 bit resolution
- Software programmable
- Signal bandwidth: 32 x 0-3000Hz
- Battery power up to 6h
- Radio telemetry transmission
- Output analog +/- 10V
- Digital data interface to PC (option)
- Waterproofed ENC housing (IP65)


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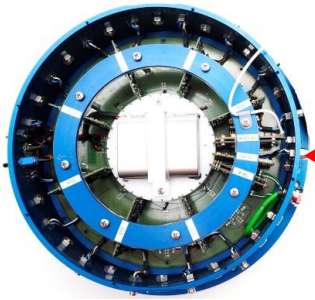
## General functions:


The CTP32-Rotate is a 32-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 32 +/-10V analog outputs via Sub-D male socket (option: digital PC interface).
The analog signal bandwidth is 0-190 Hz (320kbit) and up to 0-3000Hz (5000kbit) for 32 channels. The measurement accuracy is <±0.2 % (without sensor). The CTP32-Rotate is specified for operational temperatures from -20° C to +70° 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).



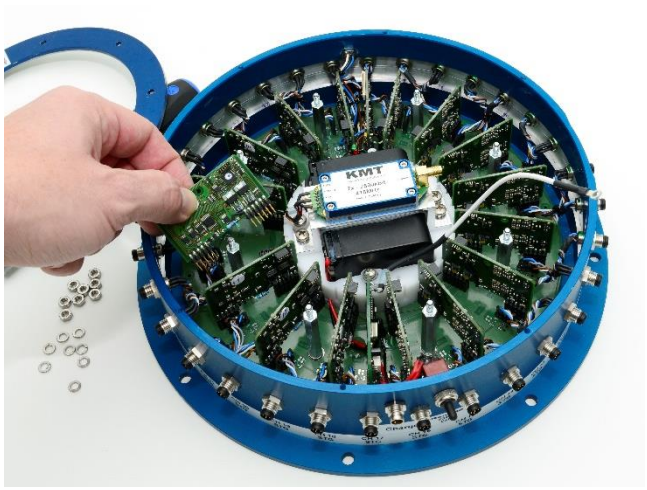
**Specify CTP-acquisition modules at order!!**

| Frequency table | Cut off frequency from anit-aliasing filter (-3dB) and sampling rate (see red) |
|---|---|
| **Bit rate** | **32 CH.** |
| **5000kbit** | 3000 Hz (7812.50Hz) |
| **2500kbit** | 1500 Hz (3906.25 Hz) |
| **1250kbit** | 750 Hz (1953.125 Hz) |
| **625kibt** | 375 Hz (976.56 Hz) |
| **312.5kbit** | 190 Hz (488.28 Hz) |

| CAR wheel | Truck wheel | Helicopter rotor |
|---|---|---|
|  |  |  |

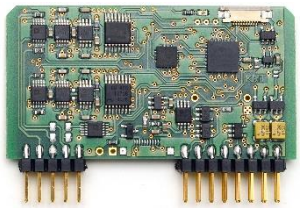
# CTP32-Rotate Transmitting Unit Technical Data (Encoder)


Encoder in IP65 Aluminum housing

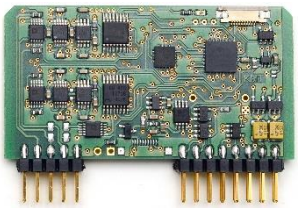



Encoder inside

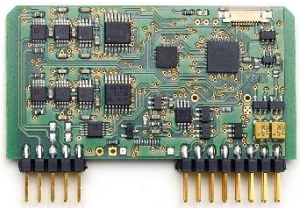
## CTP acquisition modules (rotor side)



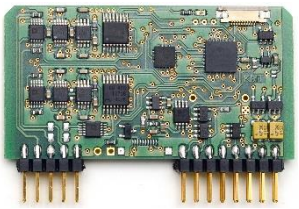
**CTP-STG V3**
Acquisition module for 2 strain gages
Full, half and quarter bridge (≥350Ω)
Fixed excitation 4V DC
Offset calibration by auto zero
Gain: 125-250-500-1000-2000
Signal bandwidth 0Hz to 3000Hz*
Resolution 16bit
Accuracy <0.2%
Current consumption with full bridge 350 ohm 75mA



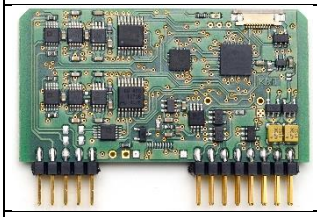
**CTP-VOLT V3**
Acquisition module for 2x high level inputs
Range: ±0,625V, ± 1,25V, ±2,5V, ± 5V, ±10V
Signal bandwidth 0Hz to 3000Hz*
(*see table of cut-off-frequency)
Resolution 16bit
Accuracy <0.2%
Current consumption 60mA



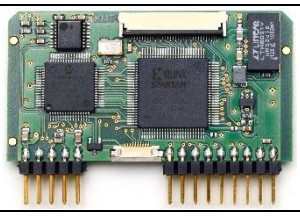
**CTP-ICP® V3**
Acquisition module for 2 ICP sensors
Current EXC. 4mA
Gain: 1-2-4-8-16-32
Signal bandwidth 3 Hz to 3000Hz*
(*see table of cut-off-frequency)
Resolution 16bit
Accuracy <0.2%
Current consumption 100mA



**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-POT V3**
Acquisition module for 2 poti-sensors
with ≥350Ω ... 10kΩ **(typical 1kΩ)**
Fixed excitation 4V DC
Signal bandwidth 0Hz to 3000Hz*
Resolution 16bit
Accuracy <0.2%
Current consumption about 70mA



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

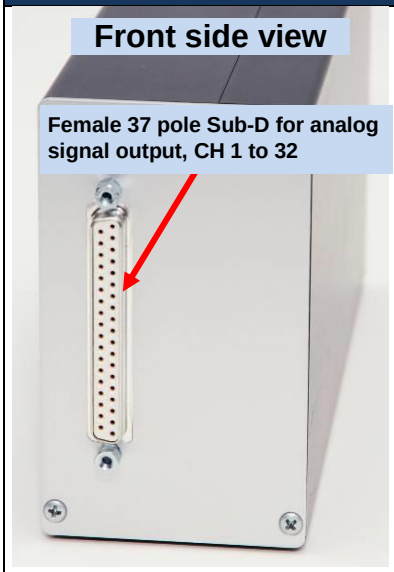
**System Parameters ENCODER:**

| | |
|---|---|
| Channels: | 32 |
| 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, 7800mA capacity up to 6 hours |
| Power consumption: | about 1300mA using 32x STG full bridge sensors 350 Ohms |
| Analog signal bandwidth: | See table |
| Transmission: | Digital PCM Miller format - FSK |
| Transmission Power: | 10mW |
| Dimensions: | Diameter 250mm, bottom plate diameter 280mm, height 80mm (without antenna), 160 with antenna! |
| Weight: | 3.60 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, **1000 RPM** |
| Shock: | 200g in all directions |

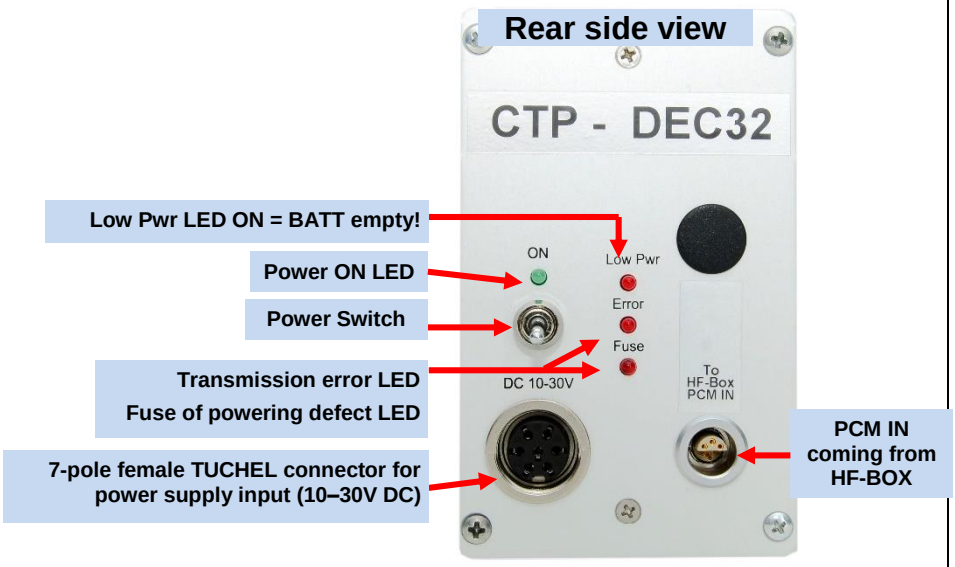
*Technical specifications are subject to change without notice!*

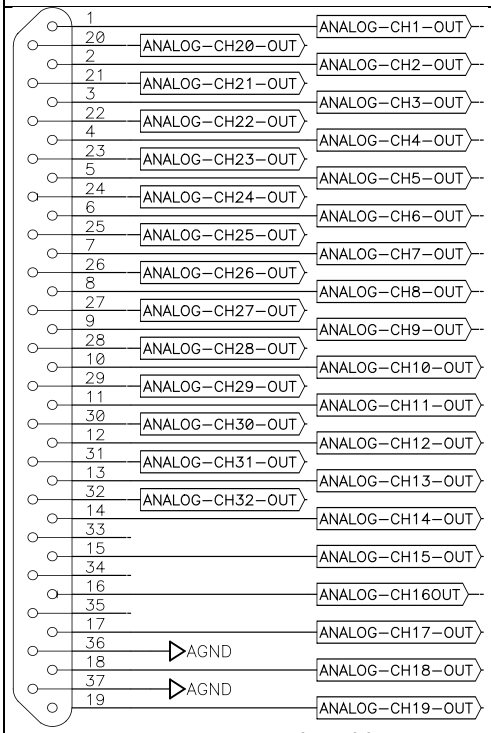
## CTP-DEC32 Receiver unit for max 32 Channels output via 37 pol. Sub D (radio transmission version via quad receiver 1250 and 5000kbit)

### Front side view

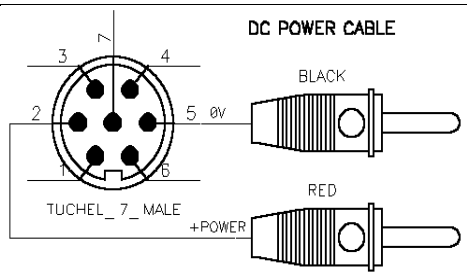



### Rear side view




Plug-side





**Optional BNC32Box. Connect on 37pol Sub-D**

## CTP –DEC32 System Parameters:

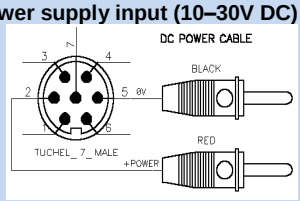
| | |
|---|---|
| Channels: | 32 x +/-10V analog outputs via Sub-D male socket |
| Resolution: | 16 bit D/A converter, with smoothing filter |
| Power supply input: | 10-30 VDC, power consumption <24 Watt |
| Analog signal bandwidth: | see frequency table |
| Transmission: | Digital PCM Format |
| Dimensions: | 205 x 105 x 65mm |
| Weight: | 1.00kg without cables and antenna |
| Overall system accuracy between encoder input and decoder output: | +/-0.2% 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 |

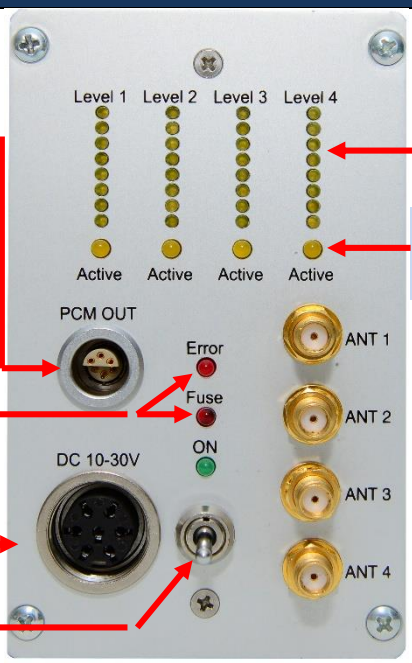
## CTP-DEC32 Receiver unit for max 32 Channels output via 37 pol. Sub D (radio transmission version with HF BOX Quad with 4 receiver 1250-5000kbit)

**PCM OUT**
**Pin 1 -----**
**Pin 2 = PCM + (pink wire)**
**Pin 3 = PCM -- (blue wire)**
**Pin 4/5 = common GND & shield (black/green)**
**Pin 6 -----**

**Transmission error LED**
**Fuse of powering defect LED**

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



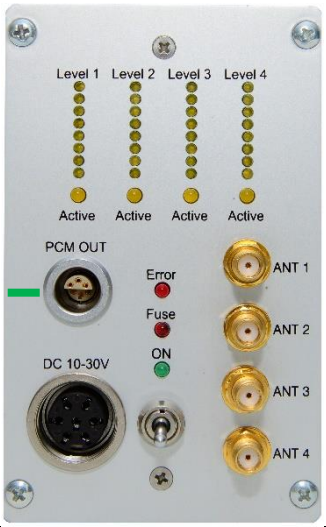

**4x HF Level display**

**Active DATA LED, up to 2 receivers can be active! If a fault data is identified, it will switch automatically to a valid data from other receiver**

**4x SMA inputs for RX antenna**

**Power Switch**


**PCM/ DATA cable Length 0,5m standard (up to 25m on request)**




## HF BOX Quad System Parameters:

| | |
|---|---|
| HF receivers | 4 |
| Antenna connection | SMA |
| Output | PCM |
| Power supply input: | 10-30 VDC, power consumption <24 Watt |
| Dimensions: | 205 x 105 x 65mm |
| Weight: | 1.050 kg without cables and antenna |
| Environmental | |
| Operating: | -20 … +70°C |
| Humidity: | 20 ... 80% not condensing |
| Vibration: | 5g |
| Static acceleration: | 10g in all directions |
| Shock: | 100g in all directions |

| Settings CTP-Rotate-ENC | Programmable via web interface |
|---|---|

Web interface address LAN adapter:
**e.g. IP 192.168.0.110 or 111, 112**
(see current IP no. on LAN-Adapter!!)
**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 ±0,625V, ± 1,25V, ±2,5V,
± 5V, ±10V

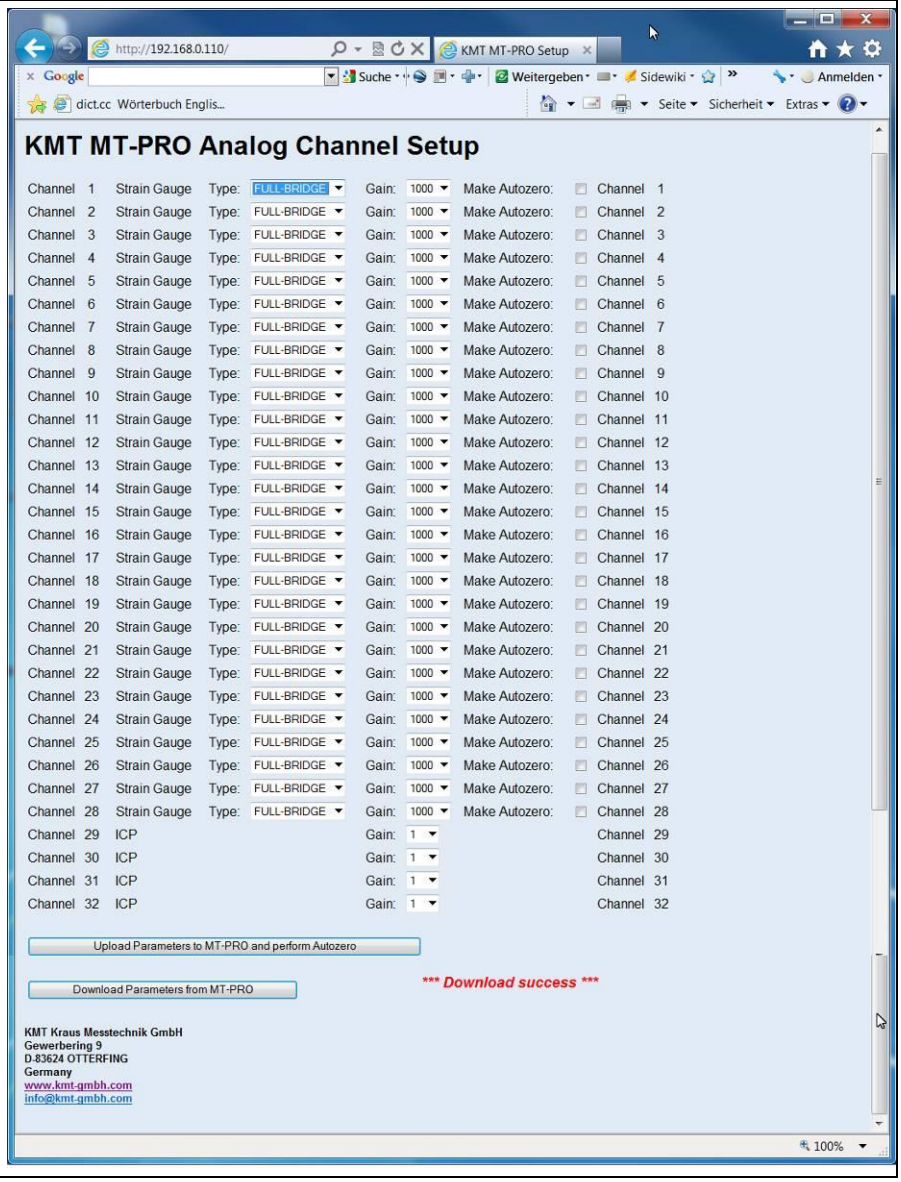
**TH-K**
Range -50 to 1000°C, -50 to 500°C
or -50 to 250°C

**PT100/1000**

| | | |
|---|---|---|
| Type: | PT100 | 4 Wire |
| | PT100 | 3 Wire |
| | PT100 | 2 Wire |
| | PT1000 | 4 Wire |
| | PT1000 | 3 Wire |
| | PT1000 | 2 Wire |

Range: -25..150 °C
-50..300 °C
-100..600 °C

**Selectable for each channel!**



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