

## CTP8-Rotate

**8 (4) channel telemetry for rotating applications like wheels or rotors, high signal bandwidth, 16bit, software programmable**



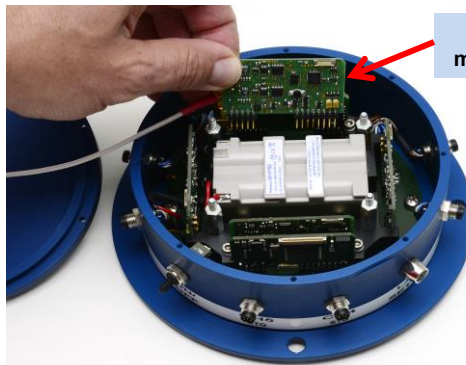
- Inputs for STG, TH-K, ICP or VOLT
- Simultaneous sampling
- 16 bit resolution
- Software programmable
- Signal bandwidth: up to 24kHz (4 CH)
- Battery power up to 10h
- Radio telemetry transmission
- Output analog +/- 10V
- Digital data interface to PC (option)
- Waterproofed ENC housing (IP65)

## General functions:



The CTP8-Rotate is a 8-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 8x +/-10V analog outputs via BNC socket (option: digital PC interface). The analog signal bandwidth is 0-750 Hz (320kbit) and up to 0-12000Hz (5000kbit) for 8 channels. On request is a 4 CH version with 0-24000Hz (5000kbit) also available. The measurement accuracy is  $\leq \pm 0.2\%$  (without sensor). The CTP8-Rotate is specified for operational temperatures from  $-20^{\circ}\text{C}$  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).



Specify CTP-xx modules at order!!

Frequency table	Cut off frequency from anit-aliasing filter (-3dB) and sampling rate (see red)	
Bit rate	4 CH (Option)	8 CH.
50000kbit	24000 Hz (62500 Hz)	12000 Hz (31250 Hz)
2500kbit	12000 Hz (31250 Hz)	6000 Hz (15625 Hz)
1250kbit	6000 Hz (15625Hz)	3000 Hz (7812.5 Hz)
625kbit	3000 Hz (7812.5 Hz)	1500 Hz (3906.25 Hz)
312.5kbit	1500 Hz (3906.25 Hz)	750 Hz (1953.125 Hz)

### Different applications:

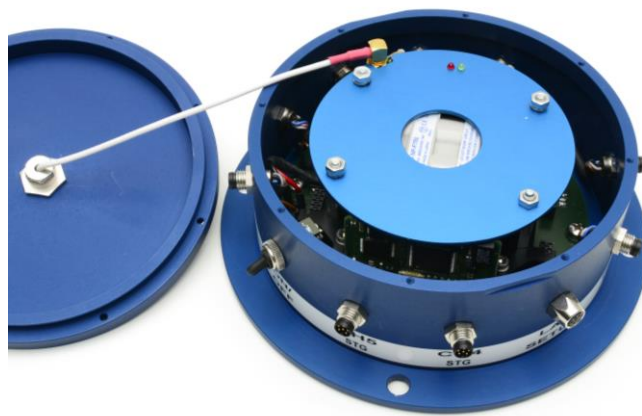
CAR wheel	Truck wheel	Helicopter rotor
<p>(C) Copyright by Porsche</p>		



## CTP8-Rotate Transmitting Unit Technical Data (Encoder)

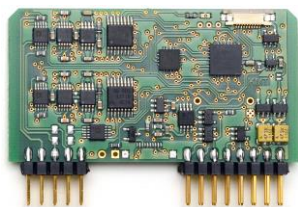


Encoder in IP65 Aluminum housing



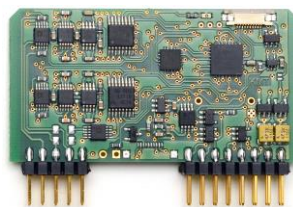
Encoder inside

### CTP acquisition modules (rotor side)



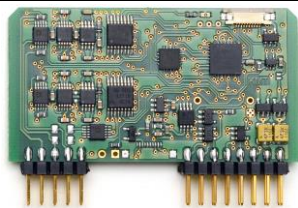
#### CTP-STG-V3

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 24000Hz\*  
Resolution 16bit  
Accuracy <0.2%  
Current consumption with full bridge 350 ohm 75mA



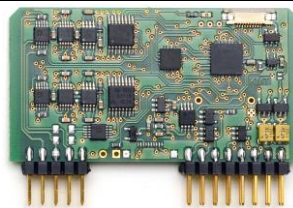
#### CTP-VOLT-V3

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 24000Hz\*  
(\*see table of cut-off-frequency)  
Resolution 16bit  
Accuracy <0.2%  
Current consumption 60mA



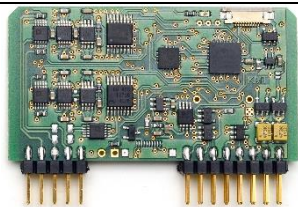
#### CTP-ICP-V3

Acquisition module for 2 ICP sensors  
Current EXC. 4mA  
Gain: 1-2-4-8-16-32  
Signal bandwidth 3 Hz to 24000Hz\*  
(\*see table of cut-off-frequency)  
Resolution 16bit  
Accuracy <0.2%  
Current consumption 100mA



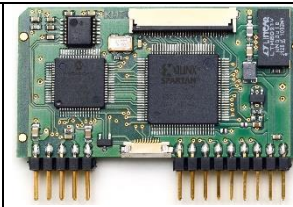
#### CTP-TH-K-V3

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-Pt100/1000 (RTD) V3

Acq. module for 2 RTD sensors  
Range -100 to 600°C, -50 to 300°C  
or -25 to 150°C  
Type Pt100 or Pt1000  
Current EXC. 1mA  
Connection: 4-, 3- and 2 wire  
Sensor break detection  
Signal bandwidth 6Hz  
Resolution 16bit  
Accuracy <0.2%  
Current consumption 60mA



#### CTP-CONTROL-V3

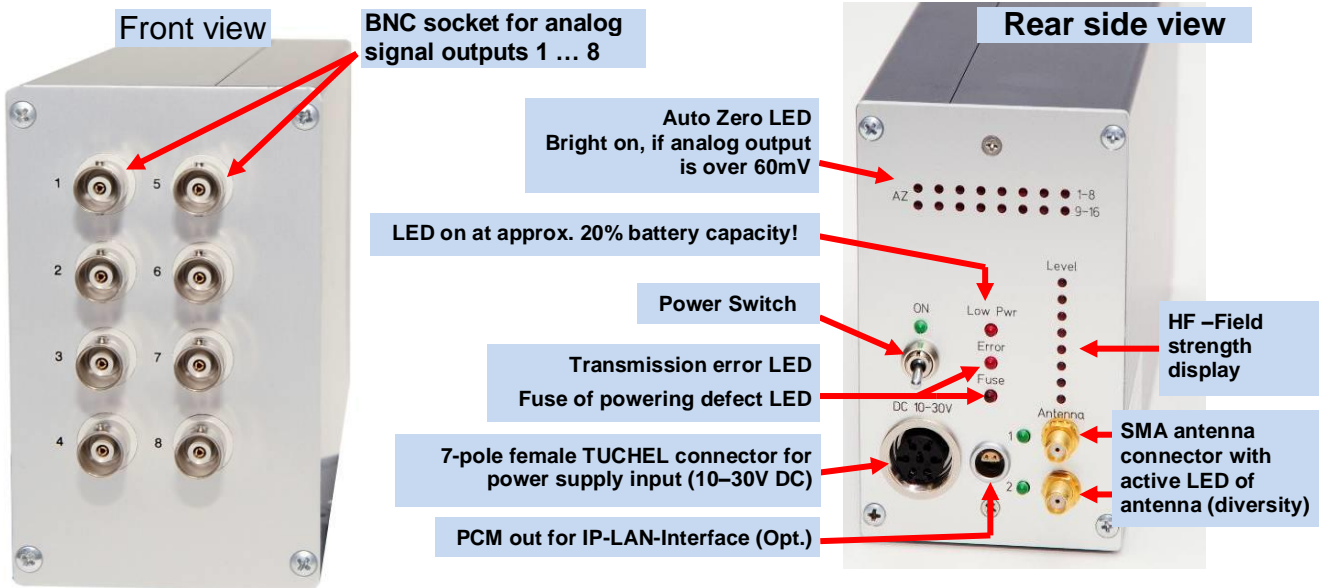
Controller 1- 32 acquisition modules  
Output: PCM  
Programmable via LAN adapter  
Current consumption 40mA, with LAN-adapter 140mA

#### System Parameters ENCODER:

Channels:	8 (optional 4 on request)
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 4600mAh, capacity up to 10 hours
Power consumption:	400 mA using 8x STG full bridge sensors 350 Ohms
Analog signal bandwidth:	See table
Transmission:	Digital PCM Miller format - FSK
Transmission Power:	10mW!
Dimensions:	Diameter 145mm, bottom plate diameter 175mm, height 62mm (without antenna)
Weight:	1.3 kg without sensor 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, 3000 RPM
Shock:	200g in all directions

*Technical specifications are subject to change without notice!*

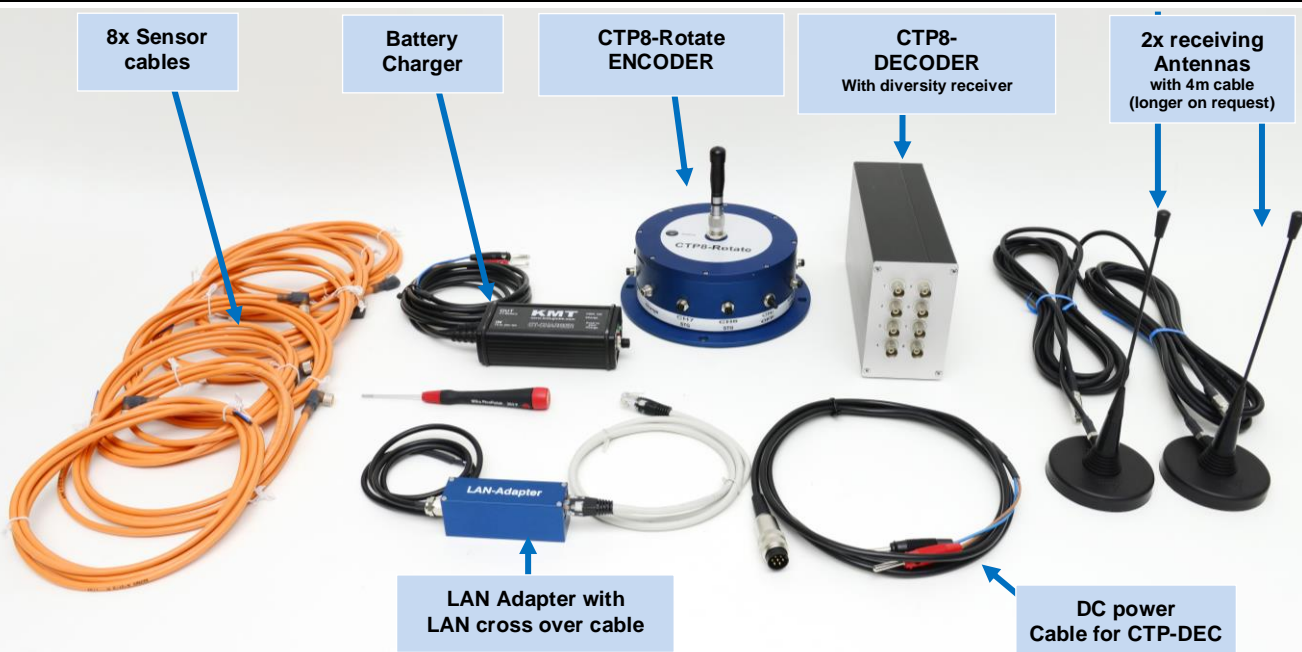
## CTP-DEC8 Receiver unit for max 8 Channels output BNC (radio transmission version with diversity receiver 312.5 ... 1250kbit)



### CTP –DEC8 System Parameters:

Channel:	8 x +/-10V analog outputs BNC socket
Resolution:	16 bit D/A converter, with smoothing filter
Power supply input:	10-30 VDC, power consumption <24 Watt
Transmission:	Digital PCM 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 CTP8-Rotate 315.5k...1250kbit telemetry



## Settings CTP-Rotate-ENC

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!**

## Programmable via web interface

**KMT MT-PRO Analog Channel Setup**

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

Upload Parameters to MT-PRO and perform Autozero

Download Parameters from MT-PRO

\*\*\* Download success \*\*\*

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