



COTERENA

TORQUEMETER

CT02





The main function of the torque metre, consists of having of a monitoring tool of high precision for the effective control of the torsion (power), flexion (flector/bending moment), push (axial force/thrust), etc..., on an engine or a system of transmission.

The equipment developed entirely by Coterena, incorporates one sensor for the measurement of the range of rotation, being no necessary to install any other element or additional accessory. With this characteristic, it is possible to determine the potency transmitted by an axis without need to install a tachometer, optimizing the services and availability of information.

The installation does not need of modifications in the work place, and due to the structural hardness, the equipment is designed for a period of long-term performance.

The torque metre allows carrying out the measurement of mechanical requests so much in fixed elements like mobile ones, adapted to different diameters of rotary axes.

The feeding of the equipment is realized by an electromagnetic system, contributing with a voltage of 24 or 12V, allowing a continuous feeding of the torque metre without need of external equipments.

Coterena realizes the whole management of the working life of the equipment, up from its manufacture and adaptation to the needs of the customer; till the formation in the handling and comprehension of the values of measurement; as well as the achievement of interpretation reports of the behaviour of the equipment (predictive/proactive mechanics) and all technical assistance.

EQUIPMENT DESCRIPTION

The torque metre consists in two basic working elements:

TRANSMITTER MODULE

The emitting module enables the connection till four sensors (torque, flexion, thrust etc.). For this purpose it disposes of four independent measure channels.

As follows, we will mention below the basic characteristics of the transmitter module:

- Independent feeding for each measuring sensor, with a value of 2,5 Vdc.
- Independent reconditioning of the signal of each sensor. It is feasible to modify the gain as well as the offset of each measure channel.
- Simultaneous analog-to-digital conversion of the four measuring channels with a resolution of 15 bits ($2^{15} = 32768$ pixels) and programmable amplitude/frequency sampling rate from 025 ksps to 64 ksps.
- Digital Signal Processing of each measure channel with DSP module.
- Determination of the rotation range (in case of an axis).
- Wireless transmission of the signal to the reception module by Bluetooth technology.
- Specific temperature sensor incorporated.
- Feeding of the module with battery, from 4Vdc till 18 Vdc (it is preferable a supply voltage near to 4 Vdc).

RECEIVER MODULE

The receiver module enables to establish the connection with the transmitter module for its control and performance. Also it is used as an interface for the connection with the torque metre and the control equipment or data acquirement, e.g. a computer or automata.

- It is composed by two ports of communication: one serial port RS232 and an Ethernet port:
 - Serial port RS232 port with the following communication parameters: data speed of 115000 baud, 8 bits of data, no parity, 1 stop bit, no communication control.
 - Ethernet port: compatible with networks 10/100/1000Base-T. The communication protocol used is TCP/IP.

On the other side it also permits a possible connection to a LCD graphic display of 128x64 pixels. The dimensions of the screen are 68x51 mm.

The supply voltage of the receiver module is of 24 Vdc.

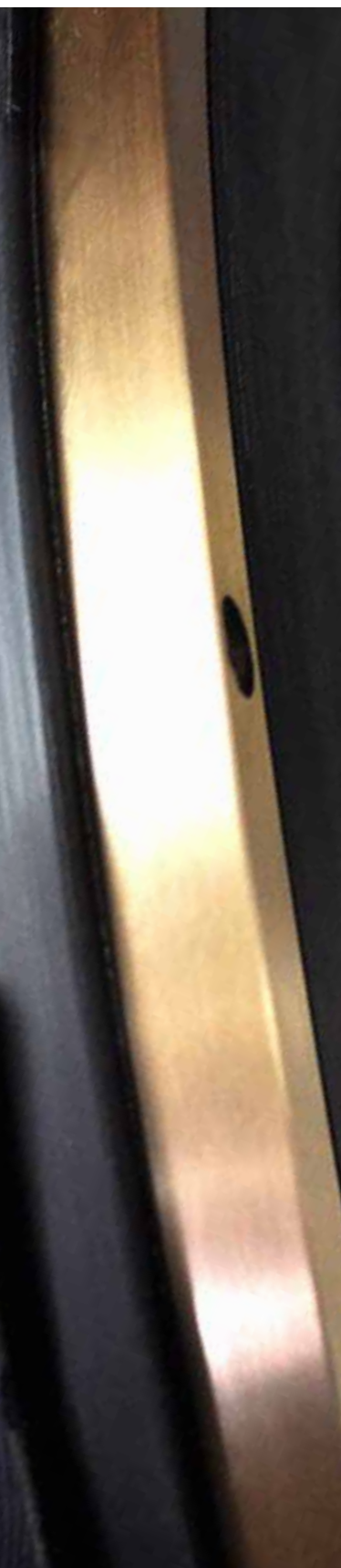
In some special apps it could run without the receiver module. In this case it is necessary to have a computer (laptop, computer, industrial or control bridge) with Bluetooth communication port. In this case it is necessary to install the accurate software.

TECHNICAL SPECIFICATIONS

Find here the technical specifications of the torque meter components: Transmitting and Receiver Module.

Transmitting module: specifications

Supply voltage:	6,5 to 26 Vdc
Current consumption (with 350 ohm gauge):	
Transmitting data:	200 mA
Standby:	80 mA
Nominal voltage drive of the gauge:	2.5 Vdc ($\pm 0.08\%$, 5 ppm/ $^{\circ}$ C)
Current output:	100 mA (máx.)
Gauge resistance:	350 a 1000 ohm
Input voltage range ($\pm S$ a $-E$):	0.6 a 3.8 V
Input offset voltage:	2V
Input offset voltage deviation:	65 nV/ $^{\circ}$ C
Differential voltage gain:	1.6 % (máx.)
Differential temperature coefficient:	15 ppm/ $^{\circ}$ C
Common Mode Rejection Ratio (CMRR):	96 dB (mín.)
ADCs resolution-measure channel:	15 bits ($2^{15} = 32768$ ptos)
Sample rate:	0.25ksps a 64ksps
Signal to noise ratio SNR:	94.5 dB
Bandwidth (-3 dB):	0.055 to 13.5 kHz
ADCs resolution - logger sensor:	12 bits ($2^{12} = 4096$ ptos)
Sample rate:	500 ksps (máx.)
Signal-to-noise and distortion ratio (SINAD):	69.5 dB
Rotation speed range:	2 to 2000 rpm
ADCs resolution-temperature sensor and voltage:	12 bits ($2^{12} = 4096$ ptos)
Sample rate:	500 ksps (máx.)
Signal-to-noise and distortion ratio (SINAD):	69.5 dB
Temperature interval:	-30 to 85 $^{\circ}$ C
RVoltage ratio:	0 to 32.0 V
Data exchange technology:	Bluetooth v4.0 (2.4 GHz)
Antenna long-range:	300 m (máx.)
Operating temperature range:	-30 to 85 $^{\circ}$ C
Dimensions:	96 mm x 60 mm x 15 mm
Weight (without battery):	100 gram



Receiver module: specifications

Supply voltage:	24 Vdc
Current consumption:	150 mA
RS232 port:	
Data speed:	115.000 bauds
Data bits:	8
Parity bit:	no parity
Stop bits:	1
Flow regulator:	none
Ethernet port:	
Network:	10 Base-T (compatible with nets 10/100/1000Base-T)
Protocol:	TCP/IP
Communication system:	Full and Half-duplex
IP direction:	192.168.0.xxx
Netmask:	255.255.255.0
LCD Display:	
Resolution:	128x64 píxels (8x21 characters)
Dimensions:	68 mm x 51 mm
Data exchange technology:	Bluetooth v4.0 (2.4 GHz)
Antenna long-range:	300 m (máx.)
Operating temperature range:	-20 to 70 °C
Dimensions:	70 mm x 80 mm x 40 mm
Weight (without display):	100 gram



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