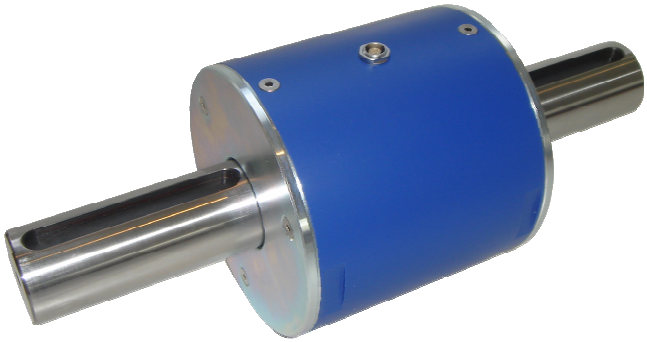
Torque Transducer:
Quatras

www.dpfsensors.com



- **Measurement range: ± 1,0 up to ± 1000 Nm**
- **Repeatability: < 0,1%**
- **Dynamic & Static use**
- **No Signal drift**
- **Standardised output signal**
- **Diagnostic capable**
- **Signal bandwidth: 3 kHz**
- **Optional: Computerised filter capability**
- **Optional: Interface RS232/USB**
- **Excellent Cost performance ratio**

Product Description

HIGH Repeatability: **The Quatras Torque Sensors from NCTE sets new standards in the range of "Industrial Torque Measurement". These Sensors are characterised by high accuracy, outstanding dynamic performance and no tuning required.**

HIGHE DYNAMIC: **The dynamic features of the Quatras sensor provides very high output signal bandwidth (5 kHz), high speed rotation (up to 30.000 rpm*) and allowes a real-time torque measurements. Thus the sensor is able to detect and measure sudden and dynamic torque changes that other sensors may not be capable off.**

MORE FLEXIBLE: **Due to internal analog and digital signal processing, the signal output range and the supply voltage can be adjusted to the customer needs. The signal output is analog and / or digital RS232c / USB to buffer, process and provide the measurement values as required. The mechanical connections are realised through standardised key ways.**

HIGHER SECURITY:: **The new sensor has an integrated diagnostic function to ensure that the sensor is working correctly. The internally stored sensor values (serial number, sensor calibration, nominal torque) allow the externally connected data acquisition system to stay in close communication about the sensors functions.**

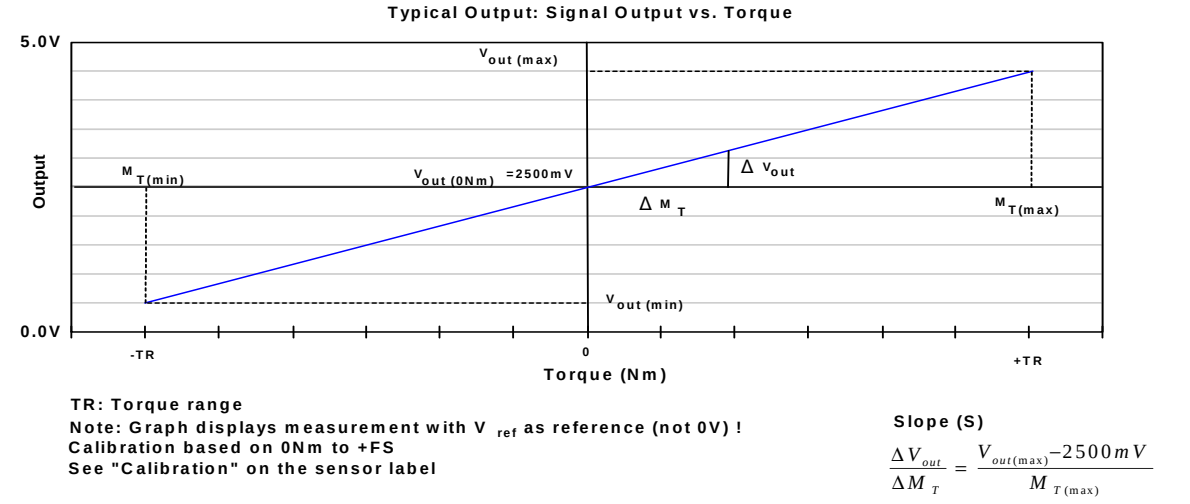
GUEMISA (Electrónica Guerra y Miró Guemisa S.L.)
Sta. Virgilia, 29 - local - 28033 Madrid (Spain)
Tlfno.: (034) 91 764 21 00 Fax.: (034) 91 764 21 32
Email.: ventas@guemisa.com Web.: www.guemisa.com

Specification

Type		Q400-XXXX[1]										
Accuracy class		**0,5**										
Torque measuring system												
Description	**Unit**	**400-1**	**400-2**	**400-5**	**400-10**	**400-20**	**400-50**	**400-100**	**400-200**	**400-500**	**400-1000**	**Remark**
Nominal torque M_{nom}	Nm	1	2	5	10	20	50	100	200	500	1000	
Output signal at 0 Nm (have to be checked before measurement)	V	2,5										offset due assembly not included
Long-term drift over 48 h	mV	<±1										normally not existent
Cut-off frequency (-3db)	Hz	2.000 (up to 5000)										(optional)
Power supply												
Nominal excitation voltage (separated extra low voltage)	V	+12 (6…16)										
Current consumption in measurement mode	mA	<25										
Current consumption at start up	mA	<80										Only for 5 ms
Nominal power consumption	W	<0,4										
Signal Output												
Interfaces												
Analog	V	0….+5.0										
Digital		USB										optional
		RS 232										optional
Signal Output resistance	Ω	62										
Measurement type		Static and dynamic										
Characteristic curve deviation related to the nominal sensivity	%	<±0,5										
RSU (rotational signal uniformity)	%	<±0,5										
Repeatability, related to the change in output signal	%	<±0,05										according to DKD-R 3-5
Temperature Drift	% / K	<±0,03										Over the whole temperature range
Degree of protection according to EN 60 529		IP 40										
Electromagnetic compatibility		EN 55011, EN 6100-4-3,EN 6100-4-6, EN 6100-4-4, EN 6100-4-2, EN 50204, EN 50081-3, EN 50082-2. Not intended for medical use										

[1] X describes the nominal torque range of the sensor

Typical Sensor Output



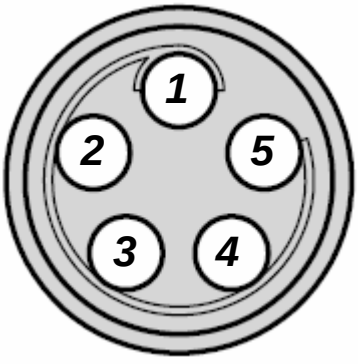
$V_{out(max)}$ and $V_{out(min)}$ are defined by the slope of each sensor. This means, the output is capable to be between 0.5V and 4.5V; the actual signal output range depends on the calibration value and the torque range.

Terminal Diagram

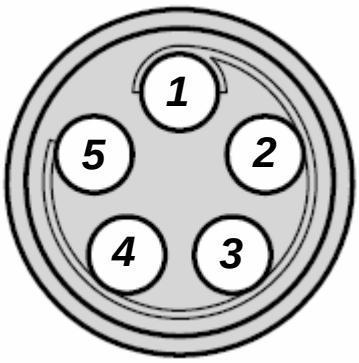
Terminal diagram of plug and socket. View looking at the connection side.

Pin	Colour	Description
1	Red (White TLI)	Supply Voltage Vcc
2	Black (Black TLI)	Supply Ground
3	White (Brown TLI)	Signal Output Vout
4	Blue (not used TLI)	Signal Ground
5	Not used (Grey TLI)	Not used (Reference Voltage 2.5V)

Plug



Socket



Operating Instructions

8.1 Field of Application
The torque sensor is intended for use in an industrial environment (e. g. in test stands).
8.2 Scope of Delivery
The torque sensor set consists of the sensor unit (signal detector head and signal conditioning electronics integrated into sensor housing), and one installation and instruction manual.
8.3 Sensor Installation and Removal
The shafts connected to the torque sensor must be properly aligned. A shaft coupling should be selected to eliminate or minimize backlash, angular misalignment of the shafts, end-float, or other mechanical situations that would affect the performance or operation of the torque sensor. Secure the sensor utilizing the 8mm guides on the sensor body (optional sensor holder). Using a cable or connector other than supplied by NCTE, or a similar cable that is of a different length may affect the overall performance of the sensor.
Prior to removing the sensor from operation, remove all lateral forces or torque stored in the mechanical assembly. Remove the keys from the shafts before loosening the mounting screws.
DO NOT REMOVE THE SHAFT WITH TORQUE APPLIED TO THE SENSOR.
8.4 Offset Adjustment
The sensor is preset at the factory setting to have an output signal at 0 Nm of 2.5 V.
8.5 Interface description
Mechanical interface:
For transmission on both ends of the shafts are keyways available.
Electrical interface:
On the sensor outside is a 5 pole plug for power supply and signal lines (see Terminal diagram).
8.6 Operation (Normal, Optimisation)
For optimal measurement results, do not exceed the rated torque when using the sensor. Do not operate the sensor at the maximum rotational speed for extended periods of time. Observe the prescribed operating conditions to ensure trouble-free and maintenance-free operation of the sensor.
8.7 Operation Outside Specified Conditions, Corrective Action
External magnetic fields may have an adverse effect on the measurement results. Excessive mechanical stress on the sensor (e. g. longitudinal forces / loads outside the specified limits, strong vibrations) may cause damage to the sensor and thus lead to incorrect signal outputs. Contact the manufacturer for assistance.
8.8 Commissioning
After sensor installation, observe the following procedure:
•Switch on the power supply unit and check the supply voltage. Peak voltages to the sensor must be avoided! Be sure to verify the power supply voltage prior to connecting the sensor!
•Using the supplied sensor plug, connect the sensor to the power supply unit.
•Connect the sensor output to a high-resistance device such as an A/D converter, oscilloscope, PLC analogue board, PC measurement board, etc.
•With the sensor under no mechanical load (zero torque condition) determine the output signal voltage.
8.9 Service and Maintenance
Service Hotline:
Phone: +49 89 66 56 19 0 Fax: +49 89 66 56 19 29
There are no required maintenance operations for the sensor.
8.10 Disposal
Please return the device to the manufacturer for disposal.
8.11 Handling and Transportation
During sensor handling, storage and transportation, it is important to ensure that the sensor is not exposed to any magnetic or electromagnetic fields higher than specified by the electromagnetic compatibility. Static or dynamic loads on the sensor must be avoided.
8.12 Safety Precautions
1. Do not open the sensor housing under any circumstances.
2. Do not remove or loosen the locating rings on the shaft ends.
3. Do not loosen or tighten the nut of the flange-mounting socket-connector (1).
Carrying out any of the above operations (1.-3.) results in loss of sensor calibration. The sensor does no longer operate regularly and must be returned to NCTE for calibration and certification.
4. Use only power supplies that are properly isolated from the electrical mains.
5. Observe the specifications regarding maximum electrical and mechanical loads on the sensor, as shown on the sensor label and under Specification.
6. Protect the sensor from exposure to any electric or magnetic fields higher than specified by the electromagnetic compatibility.