

## Torque Module Technical Description

The Torque Module measures torque and angle from a transducer. The torque module can connect to a transducer via a cable or by an RF connection.

The torque module connects to a transducer via a 25 way connector. The torque signals are then amplified by op amps (U8 and U9) and then digitized by an ADC in the STM processor (U1).

The angle signals are counted in U10, and the angle result is passed to the processor (U1).

The alternative path is: the results are sent wirelessly to U15, which is an nRF24LE1 from Nordic Semiconductor. This is an "On chip", "Off the shelf" ultra low power wireless system. This connects via a UART connection to U1. U1 then sends the final results, via a USB 2.0 connection, to an external tablet.

The radio transmitter has an operating frequency of between 2.400GHz and 2.4835GHz.

There are 79 selectable channels within this frequency range that can be used.

It uses GFSK frequency modulation.

The output power is programmed to 0dBm.

The air data rate is programmed to 250Kbps.

The antenna is a Wurth 7488910425 smd chip antenna with a peak gain of 3.0 dBi and an average gain of 1.0dBi.

The antenna is integral to the main pcbs' construction and cannot be separated.