

## Datum Electronics 425 Connect Series Outputs Guidance

### Datum Connect Wi-Fi Application

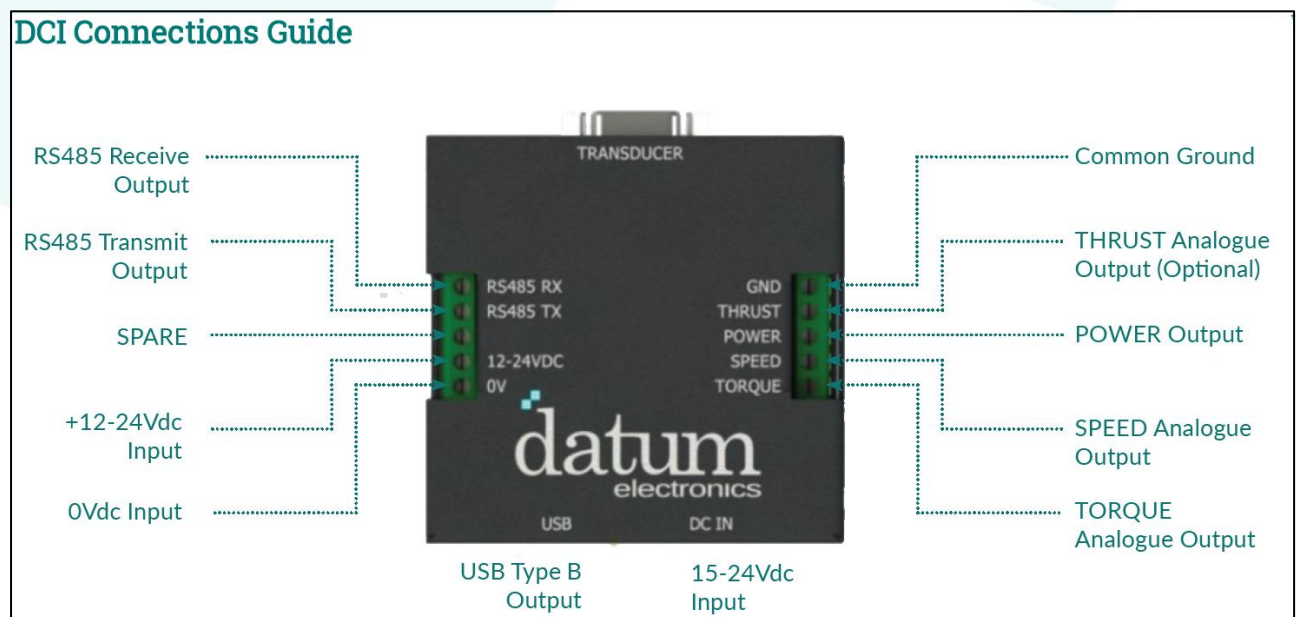
Datum Connect Transducers have a Wireless broadcast from the torque sensor that customers can connect to and use their smart device, Android or Apple, to use this as the display and logger.

Datum Connect Application is freely available on Android & Apple download stores and can be installed onto smartphones or tablet devices.

The Datum Connect App can also be accessed through the Microsoft App store so that you can use your own PC's wireless adapter to communicate with the Datum 425 Connect Sensor. You can use this link to access this: <https://apps.microsoft.com/store/detail/datum-connect/9N8SR8X45T1T?hl=en-gb&gl=gb>

### Datum Connect Interface Outputs

All other outputs are accessible through the Datum Connect Interface [DCI]



## Analogue Outputs

The DCI has the following calibrated analogue output options available at 25SPS  
4 configurable analogue outputs for Torque, Speed\*, Power and Thrust.

### Unipolar Bipolar

4-20mA/4-12-20mA

0-5Vdc+/-5Vdc

0-10Vdc+/-10Vdc

These are selectable using the Datum Connect Application

The full-scale value for these will have been set to either requested levels at order placement or to transducer max specification as shown on your torque sensor data sheet.

E.g. M425 Size 1-D 0 - 100Nm

- Max Torque = 100Nm
- Max Speed = 10,000RPM
- Max Power = 105KW

If you need the maximum full scale values adjusting please contact Datum Electronics support team: [support@datum-electronics.co.uk](mailto:support@datum-electronics.co.uk)

## RS485 Output

Please see below string output information if you wish to connect via RS485 and create your own software application

Output Baud Rate: 3000000

Data Bits 8

Stop Bits 1

Parity None

Data is transmitted as a 6 byte frame

Bit 7 (MSB) of each byte is used to synchronise the frame, with the first byte having bit 7 set (=1) & all other bytes having bit 7 cleared (=0)

;Byte1 1xxxxxxx bit 7 = start, 0-6 = MSB Torque Data (signed)  
 ;Byte2 0xxxxxxx bit 7 = 0, 0-6 = NMSB Torque Data (signed)  
 ;Byte3 0xxxxxxx bit 7 = 0, 0-6 = LSB Torque Data (signed)  
 ;Byte4 0xxxxxxx bit 7 = 0, 0-6 = MSB Speed Data (unsigned)  
 ;Byte5 0xxxxxxx bit 7 = 0, 0-6 = LSB Speed Data (unsigned)  
 ;Byte6 0xxxxxxx bit 7 = 0, 0-6 = Supply Data (unsigned)

The first 3 bytes contain torque data, transmitted as a representation of mV/V as measured from the strain sensing element.

The 7 bits of data from each byte are stacked (Byte1 = MSD) to form a 21 bit 2's compliment signed number which equates to  $mV/V * 10000$

e.g.

000000000000000000000000 = 0.0mV/V

000000000000000000000001 = +0.0001mV/V

111111111111111111111111 = -0.0001mV/V

Bytes 4 & 5 contain 14bits of speed data in rpm

The 7 bits of data from each byte are stacked (Byte4 = MSD) to form a 4 bit number which equates to integer rpm (If not used will be set to 0)

Byte 6 contains a 7 bit representation of on-shaft supply voltage scaled as  $V \times 10$ . This rolls over from 127 0 @ 12.8V (If not used, this number is indeterminate)

The mV/V torque value can be calculated as follows (numbers are decimal)

1. Acquire & store the 1st 3 bytes of data
2. Subtract 128 from the 1st byte to remove the frame start ident bit
3. Calculate  $(Byte1 * 16384) + (Byte2 * 128) + Byte3$
4. If the result is  $> 1048576$ , subtract it from 0 (makes the data bipolar for +/- Torque)
5. Divide by 10,000 to get mV/V
6. The torque can be calculated by dividing by the mV/V calibration figure (e.g. 1.652) and multiplying by the calibration range value (e.g. 100Nm)

## USB Output

Datum Electronics provide test software which can be used through USB as an alternative to the Datum Connect Application. This test software is called TorqueLog Connect and has a specific installation process that must be followed for this to work successfully.

Please refer to the instructions supplied with your torque sensor on the USB memory stick or discuss with Datum Support Team.