

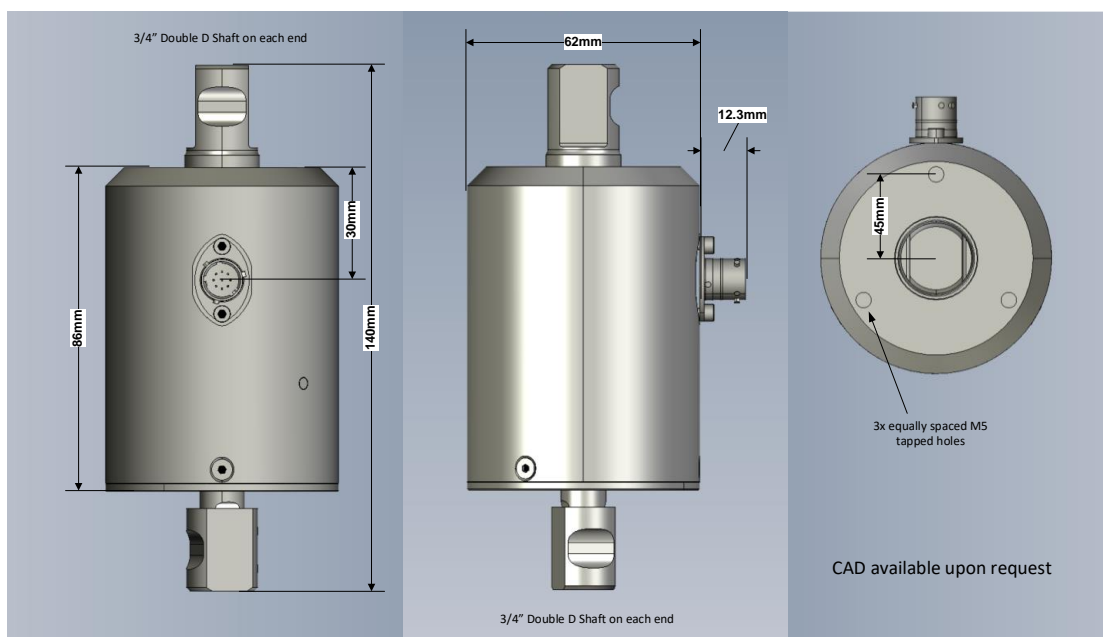
## EPAS14 CTAS (Contactless Torque & Angle Sensor)



The DC Electronics CTAS device is designed to be fitted in line with the steering column and can be used to transmit torque and steering angle signals to the vehicle datalogger to aid with vehicle set up, or it can be used to directly connect these signals to the DC Electronics range of power steering ECUs, when used as part of an electric power steering system.

The sensor transmits x2 torque signals and x1 steering angle signal via CAN bus as well as 0V to 5V analogue channels making the sensor compatible with many aftermarket dataloggers.

All electronics are contained within the sensor making this a lightweight, compact device.



To stop the sensor rotating, the CTAS body should be mounted to the chassis with the 3 x M5 tapped holes. These holes should be at the opposite end of the sensor to the steering wheel.

### Technical Specification

Operating Voltage	10-28VDC
IP Rating	54
Weight	0.55kg
Torque Rating	-50 to +50 Nm
Maximum Load	-75 to +75 Nm
Update Rate	5ms
Accuracy	0.1% at full scale
Digital Output	CAN 2.0b (unterminated)
Analogue Output 1 – Torque A -50Nm to +50Nm	0V to 5V (2.5V at rest rising for clockwise torque input)
Analogue Output 2 – Torque B +50Nm to -50Nm	0V to 5V (2.5V at rest falling for clockwise torque input)
Analogue Output 3 – Steering Angle +/-810 Degrees	0V to 5V (2.5V at centre position)

### Electrical Connection

- Mating connector is ASDD606-09SD-HE.
- All 3 Ground Supply pins must be connected to chassis ground\*

Connector Pin Out	
Pin	Function
1	+12V Supply
2	Ground Supply*
3	CAN Hi (unterminated)
4	CAN Lo (unterminated)
5	Analogue Output 1
6	Analogue Output 2
7	Analogue Output 3
8	Ground Supply*
9	Ground Supply*

### CAN Specification

- CAN 2.0b
- 11-bit Identifiers
- 200Hz (5ms) update rate
- 1Mbit/s baud

ID: **0x29C** – Transmitted Data:

Byte	Direction	Description	Example
D0	Tx	Steering angle, 8-bit version (bits)	0 bits = -810°, 255 bits = +810°
D1	Tx	Steering angle, 10-bit version MSB (bits)	0 bits = -810°, 1023 bits = +810°
D2	Tx	Steering angle, 10-bit version LSB (bits)	
D3	Tx	Torque Signal A, 8-bit (bits)	0 bits = -50Nm, 255 bits = +50Nm
D4	Tx	Torque Signal B, 8-bit (bits)	0 bits = +50Nm, 255 bits = -50Nm
D5	Tx	Battery / Position Warning Flags	Bit 0: Battery Warning (voltage between 3.05 and 3.15V) Bit 1: Battery Error (voltage below 3.05V) Bit 2: Invalid Position (multiturn counter and position need initializing)
D6	Tx	Not Used	
D7	Tx	Proprietary	

ID: **0x610** – Received Data to Zero Steering Angle:

Send this message to the CTAS to zero the steering angle analogue and CAN output values:

Byte	Direction	Value (hex)
D0	Rx	0x55
D1	Rx	0xAA
D2	Rx	0x00
D3	Rx	0x00
D4	Rx	0x00
D5	Rx	0x00
D6	Rx	0x00
D7	Rx	0x00

**BEWARE** – this **must** be the only message sent on the bus on this ID. Other messages may yield undesirable steering results.

Upon completion of sending the steering angle zeroing message, the CTAS will transmit the following message to report either a successful or unsuccessful event:

ID: **0x620** – Pass/Fail Response

Byte	Direction	Value (hex)
D0	Tx	0 = zeroing failed, 1 = zeroing passed
D1	Tx	0
D2	Tx	0
D3	Tx	0
D4	Tx	0
D5	Tx	0
D6	Tx	0
D7	Tx	0

## Installation

The DC Electronics CTAS device is designed to be fitted in line with the steering column. Industry standard 3/4" (19mm) x DD male splines are fitted at each end of the sensor allowing off the shelf couplers and universal joints to be sourced for the mechanical installation.

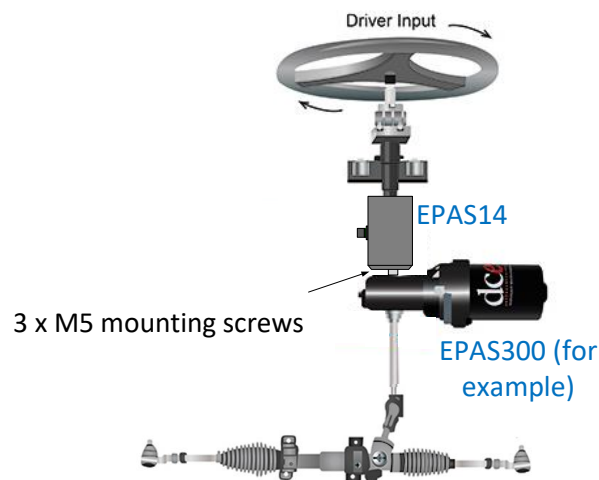
The sensor should be fitted so that the 3 x M5 holes in the end cap are at the opposite end of the sensor to the driver (to ensure the steering angle sensor performs correctly).

For use with a DCE Electric Power Steering system, the steering angle voltage must decrease when the steering wheel is turned left.

Installing the sensor as describes will make the steering angle voltage act as a DCE EPAS system desires.

These 3 x M5 holes should also be used to secure to a bracket that can be attached to the vehicles chassis to prevent the sensors outer casing from rotating during use.

The sensor can be installed with the Autosport connector pointing in any direction to ensure the best possible fit.



## Steering Angle Memory

The EPAS14 CTAS uses an internal battery to monitor and store the steering angle position when the unit is not powered by an external 10-32V supply.

When the external 10-32V supply is switched off, the steering can be rotated by any angle within its +/- 810° range. When the 10-32V supply is switched on, the EPAS14 CTAS will report the correct steering angle.

The internal battery has an expected life of 3 – 5 years. The status of the battery is reported via CAN.

The internal battery is only used when the external 10-32V supply is switched off.

Should the internal battery voltage decrease beyond the required operating voltage and the external 10-32V supply is switched off, the steering can only be rotated by +/- 90° for the EPAS14 CTAS to report the correct steering angle upon reapplying the external 10-32V supply.

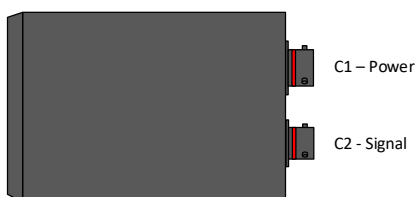
For replacement of the internal battery, please return the EPAS14 CTAS to DCE.

## Connecting the CTAS to a DCE EPAS18 / EPAS18A ECU

Here is a typical schematic for connecting the CTAS to a DCE EPAS ECU.

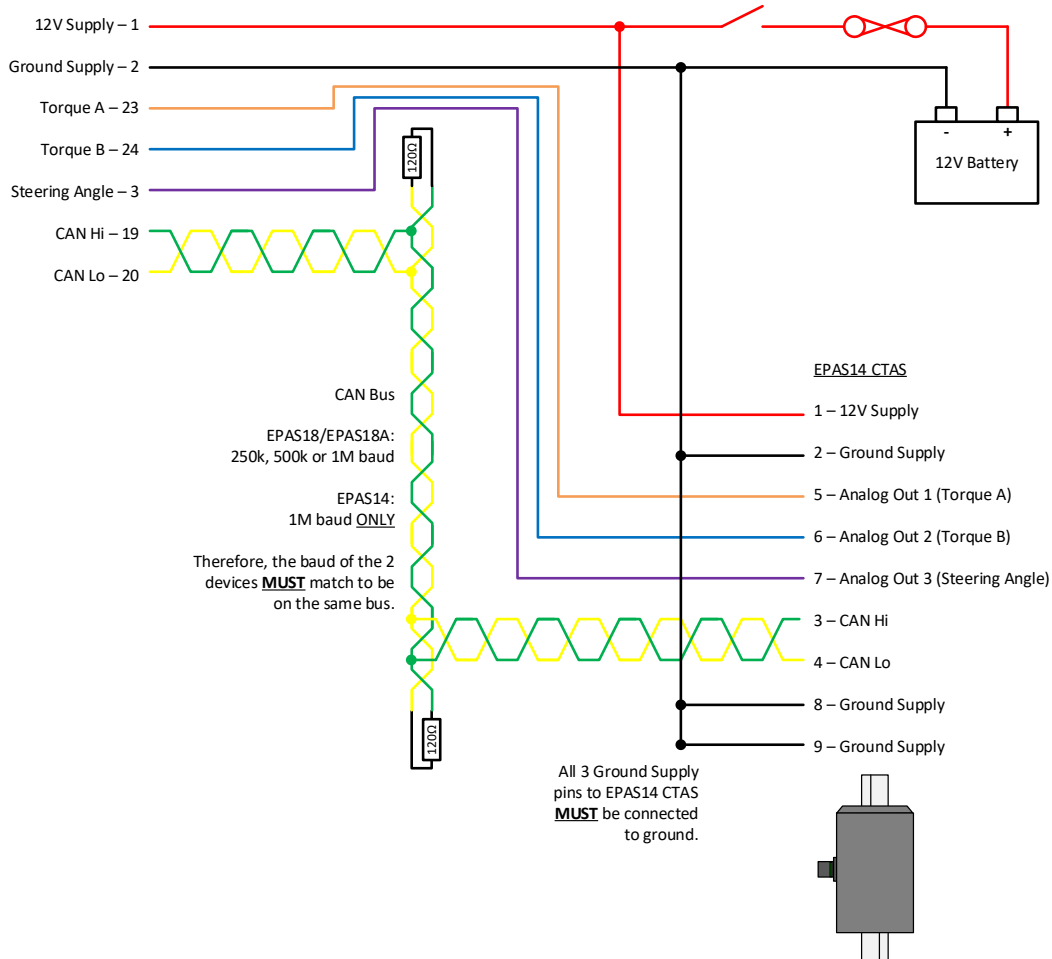
Consult DCE for options of integrating the CTAS into other systems.

Note: there are further connections required to the EPAS18 / EPAS18A ECU. Consult DCE for further information.



### EPAS18/EPAS18A ECU

#### C2 Signal Connector



Contact us for more details:

UK Office: [sales@dcemotorsport.com](mailto:sales@dcemotorsport.com)  
US Office: [salesusa@dcemotorsport.com](mailto:salesusa@dcemotorsport.com)  
[www.dcemotorsport.com](http://www.dcemotorsport.com)