

EPAS Lite Parameters

1 Introduction

This document provides additional information on the parameters used by the EPAS Lite Electronic Power Assisted Steering Controller.

These parameters allow some aspects of the operation of the controller to be adjusted for an individual application.

Parameter adjustments are normally made using the EPAS Desktop application. See the EPAS Desktop User Manual or on-line help for more details on how parameters are viewed and altered.

WARNING: Care must be observed when changing EPAS ECU parameters. Using the wrong values could damage both the EPAS ECU and the steering unit.

2 Parameters

Currently, the following four parameters are defined:

- Torque deadband
- Torque zero
- Steering control range
- Current limit

These will be described in detail in the following sections

2.1 Torque Deadband

The torque deadband, measured in bits, defines the amount that the steering torque sensor value needs to move from the zero value before any steering power assistance is delivered.

The default value for the torque deadband is 4 bits.

Decreasing the torque deadband value can make the steering more responsive but can also lead to ‘hunting’ where the control unit constantly attempts to counteract a very small steering torque offset.

Increasing the torque deadband value will make the steering less responsive but can compensate for a drifting or noisy torque sensor.

2.2 Torque Zero

The torque zero, measured in bits, defines the steady state torque reading where no steering torque is applied. All the steering torque sensors encountered so far have a zero of 128 ± 10 bits.

The default value for the torque zero is 128 bits.

The torque zero parameter value is normally altered using the zeroing procedure built into the firmware of the unit which does not need a computer to be connected. In this procedure the power to the unit is switched on and then off (before the fault LED has gone out) three times in succession. The next time power is applied the fault LED will flash while the torque zero parameter is updated. It is important that, during this procedure, no steering torque is applied otherwise a false zero value will be set.

If the torque zero parameter is incorrect then the steering will tend to be more responsive, or lighter, in one direction than the other.

2.3 Steering Control Range

The steering control range, measured in bits, defines the effect that the steering control switch has on the operation of the system. It effectively acts as a scaling factor and gives applications that require minimal steering assistance more usable control switch positions.

Depending on the steering hardware the default value is either 128 or 255 bits. A value of 255 bits means that full motor power is available whilst a value of 128 means that the available motor power is reduced to 50%.

Decreasing the steering control range value decreases the maximum steering assistance delivered by the system.

Increasing the steering control range value increases the maximum steering assistance delivered by the system.



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2.4 Current Limit

The current limit, measured in steps of 100mA, sets the point at which the system will reduce power to the motor in order to limit the current draw.

The default value for the current limit is 200, i.e. $200 \times 100\text{mA} = 20\text{A}$.

Decreasing the current limit value will cause the current limit to activate at a lower current.

Increasing the current limit value will cause the current limit to activate at a higher current.

The maximum current limit value is 255 (or 25.5A). The current limit function can be disabled completely by setting the current limit value to zero.

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