Augment Automotive Technical Manual Title: Wideband Connection and Calibration Guide Document Number: AUG/MAN/011 Version: 001 Author: Tom Barker Date: 28/03/2022	

Introduction

This manual is intended to help users of our AugTronic ECU and 3D Tuner software to connect a wideband sensor with a 0-5V analogue output to the AugTronic ECU to allow the ECU to read the Air Fuel Ratio (AFR) for the purpose of data logging and display and closed loop fuel control.

Connection to the AugTronic ECU

The 0-5V output of the wideband gauge must be connected to the breakout box Analogue 1 connection. The output wire must be connected to Analog one and the accompanying ground wire to the adjacent GND connection.

Warning: The power ground for the wideband must <u>not</u> be connected to the breakout. This is only for the 0-5V signal ground to ensure the accuracy of the measurement.

Calibration

In order for the AugTronic ECU to correctly interpret the 0-5V signal and convert it into AFR the wideband sensor output data must be loaded into the ECU calibration. The correct values must be entered into the configuration settings window. The values required are typically found in the wideband sensor manual and can be converted into the correct values for the ECU using the information in the tables below.

Tip: Don’t forget to save the values using the ‘Set EEPROM’ feature in 3D Tuner. Otherwise settings will be lost on ECU power loss.

Configuration Option	Value
Wideband min value	The minimum value output by the wideband sensor multiplied by 100 e.g. 850 for (8.5:1 AFR)
Wideband max value	The maximum value output by the wideband sensor multiplied by 100 e.g. 1800 for (18:1 AFR)
Wideband min offset	The minimum voltage offset in bits (255 is 5V) e.g. for 0.5V value = 0.5 / (5 / 255) = 25
Wideband max offset	The maximum voltage offset in bits (255 is 5V) e.g. for 4.5V value = 4.5 / (5 / 255) = 230

Once these settings have been entered when the engine is running the ECU should calculate the AFR and it can be displayed in 3D Tuner. It is recommended to check the output voltage of the sensor with a multimeter and then calculate the AFR manually before checking against the 3D Tuner value. If the wideband sensor has a gauge it can be checked against the displayed value.