



NTK4000 Uego System

The NTK4000 is a four channel Uego system which enables monitoring of four Lambda channels simultaneously and is designed for individual cylinder tuning. Four analog 0-5V outputs are provided for logging and also RS232 and CAN bus interfaces.

USER MANUAL

Version 1.9

4 Channel Uego System wiring

All wiring is via a 36 way connector see pinout below. A 15 amp inline fuse is required on the 12V supply. Sensor heater grounds are connected to chassis ground.

Sensor Channel 1
 25 Vs+
 13 Ip-
 1 Ip+
 26 Heater

Sensor Channel 3
 12 Vs+
 24 Ip-
 36 Ip+
 33 Heater

RS232
 3 Rxd
 4 Txd
 5 Gnd

0-5V Out
 7 Channel 1
 8 Channel 2
 9 Channel 3
 10 Channel 4
 18 Signal ground

Sensor Channel 2
 11 Vs+
 23 Ip-
 34 Ip+
 35 Heater

Sensor Channel 4
 27 Vs+
 14 Ip-
 2 Ip+
 28 Heater

CAN bus
 15 CAN High
 16 CAN Low

Power Supply
 20,21 +12V
 6,19 Ground

VIEWED FROM BACK OF CONNECTOR



NTK Uego sensor

NTK Uego sensor has a eight pin connector but only 5 wires are required.

Sensor Wiring

Gray	Vs+
Black	Ip-
White	Ip+
Blue	Heater
Yellow	Heater ground

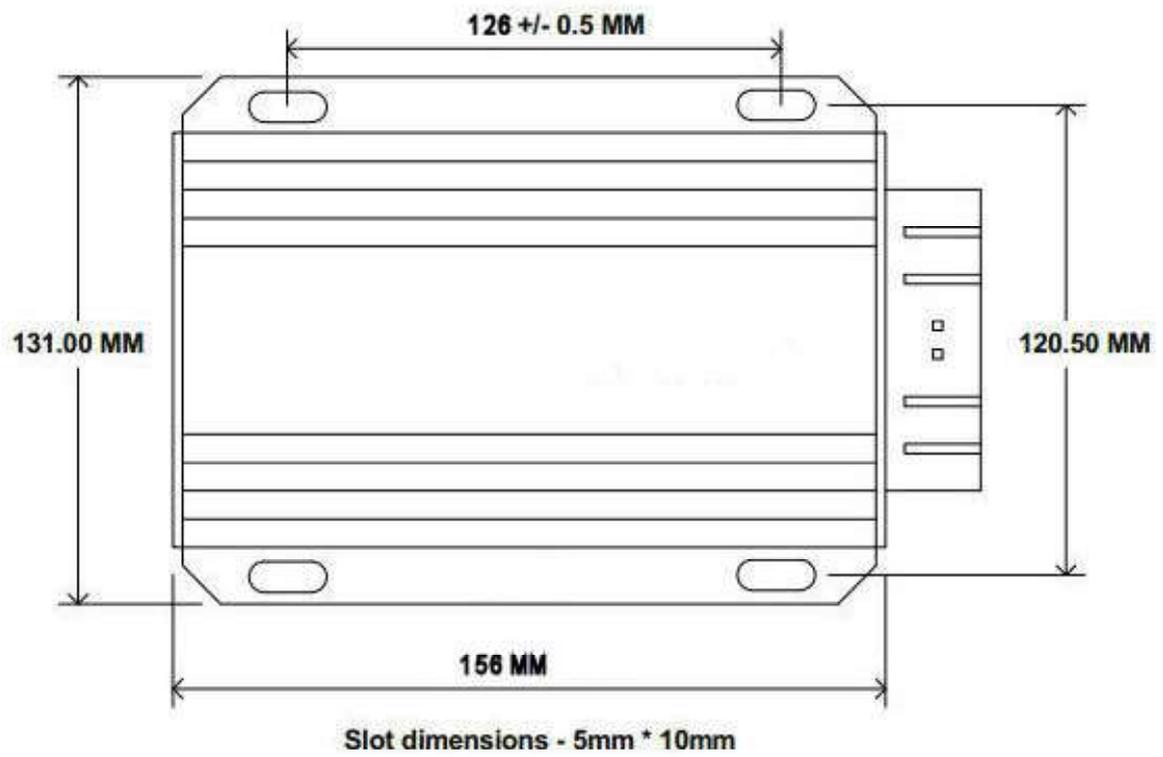


Note: the sensor contains a ceramic module and should not be subject to mechanical or thermal shock or it may be damaged.

DO NOT

- (1) Do not operate the sensor with high lead content fuels as this may reduce the sensor life to under 50 hours.
- (2) Influx of water into the exhaust will destroy the sensor if it is immersed.
- (3) Do not run the engine with the Uego sensor installed without power applied to the controller.

Case Dimensions

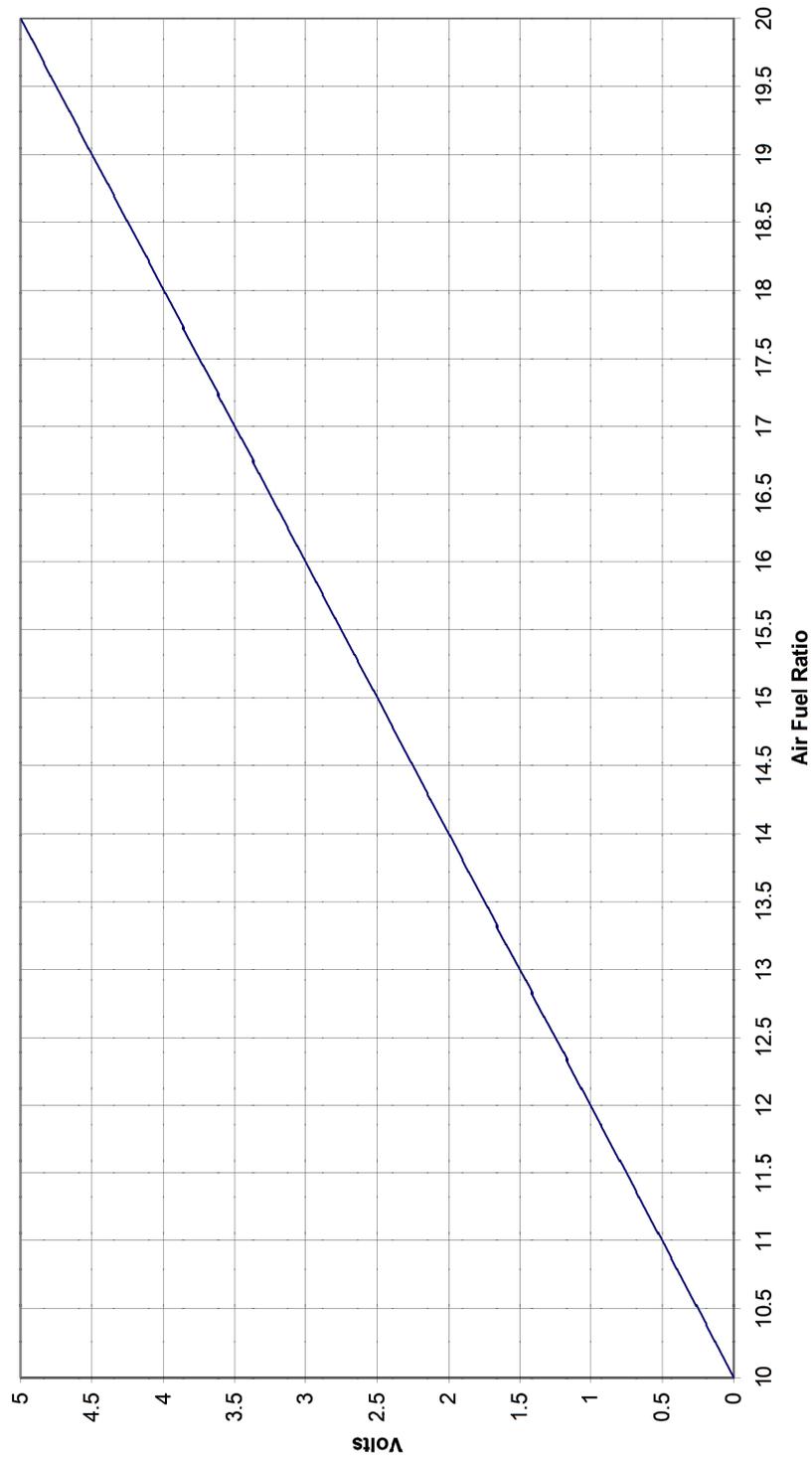


0-5V Output Scaling for Lambda

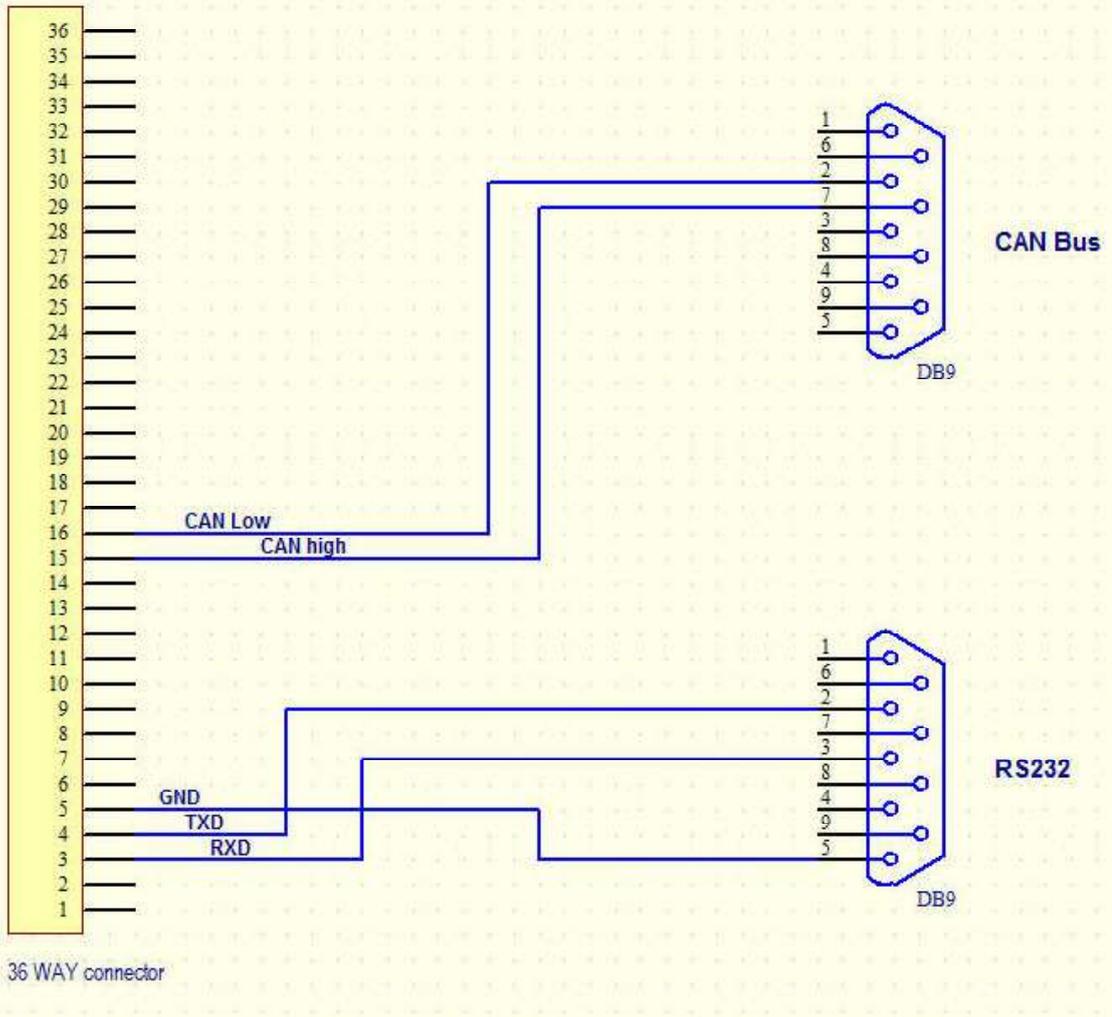
$$\text{Lambda} = 0.680 + (\text{volts} \times 0.1360)$$

$$\text{AFR (Gasoline)} = (\text{volts} \times 2) + 10$$

M&W Uego Controller Analog Output



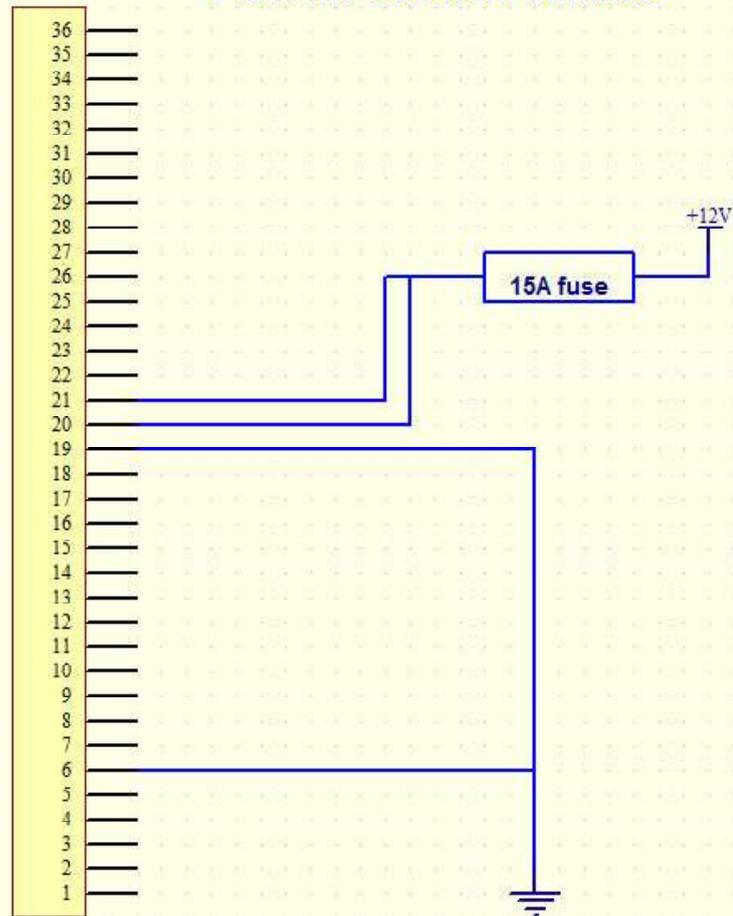
CAN Bus and RS232 wiring



VIEWED FROM BACK OF CONNECTOR



POWER SUPPLY WIRING



36 WAY CONNECTOR

VIEWED FROM BACK OF CONNECTOR



4CH UEGO CAN Data Format

The controller has two modes “warmup” or normal.

The 4CH UEGO uses two standard 8 byte CAN messages.

11 bit CAN address hex 041 (decimal 65) and hex 042 (decimal 66)

The packets are transmitted continuously every 50ms at 1000K.

Note: CAN address can be set using PC interface software.

Packet description

(Addr) hex 041 (decimal 65)

(bytes) 8

- (1) xx CH1 Lambda msb
- (2) xx CH1 Lambda lsb
- (3) xx CH2 Lambda msb
- (4) xx CH2 Lambda lsb
- (5) xx CH3 Lambda msb
- (6) xx CH3 Lambda lsb
- (7) xx CH4 Lambda msb
- (8) xx CH4 Lambda lsb

(Addr) hex 042 (decimal 66)

(bytes) 8

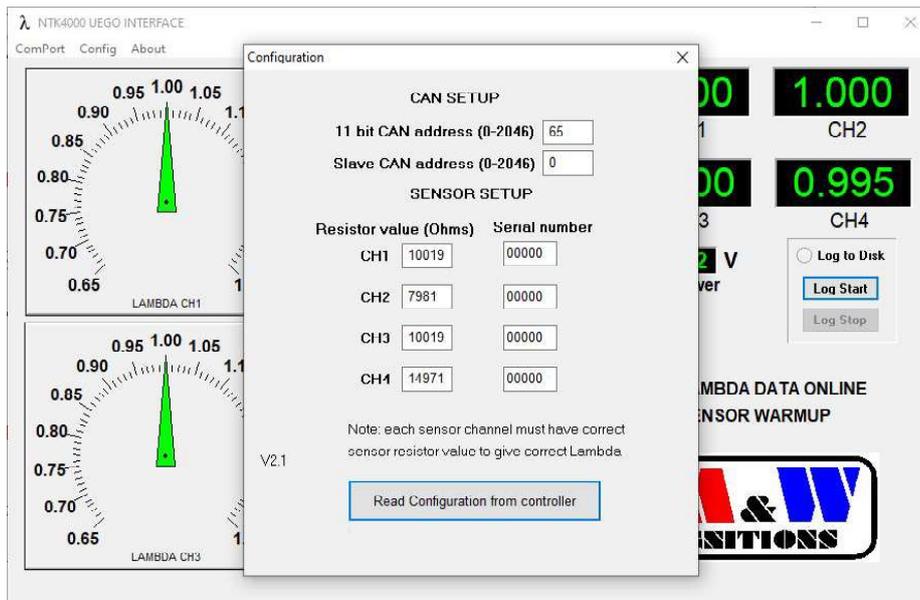
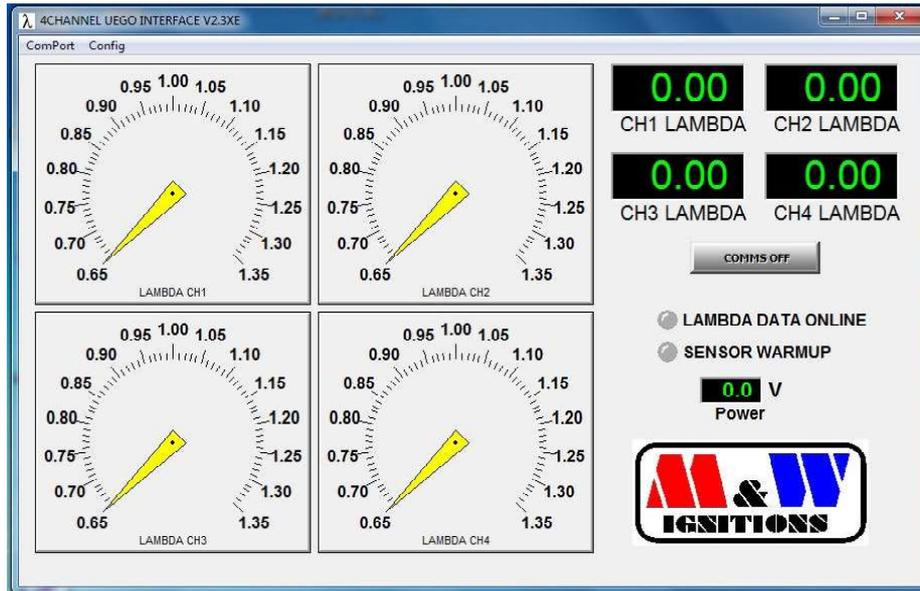
- (1)
- (2)
- (3)
- (4)
- (5) yy CH1 status byte
- (6) yy CH2 status byte
- (7) yy CH3 status byte
- (8) yy CH4 status byte

xxxx = Lambda x 1000 (ie. dec 650 = 0.650 lambda,
dec 1100 = 1.100 lambda, dec 1000 = 1.000 lambda)

yy = Status byte (ie. 00 = operating, 01 = warmup)

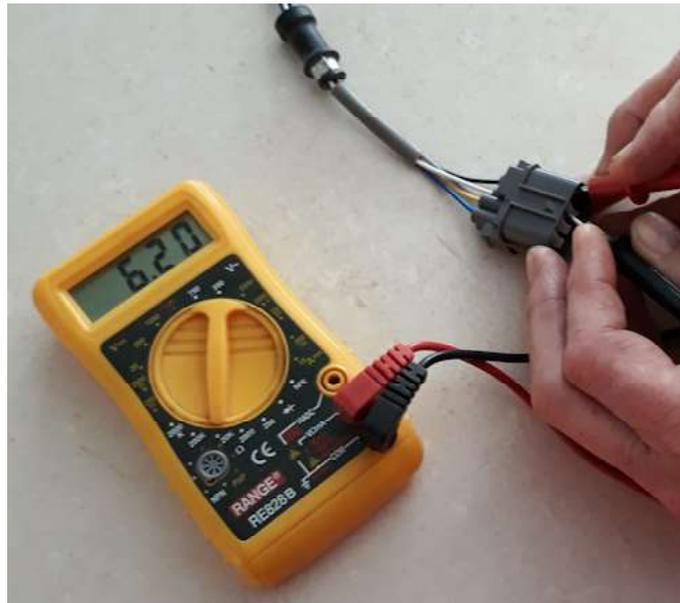
PC Interface software

PC software (using RS232 or using USB to RS232 adapter) allows display of Lambda values and configuration of sensor data and CAN address.



CALIBRATION

Use a multimeter to measure the resistance value of the calibration resistor in the connector. Select "Sensor Setup" and enter the value in ohms. For example if it was 6.3K ohms you would enter 6300 ohms. The "Serial number" field may be used to keep track of which sensor to connected to which channel.



Configuration ×

CAN SETUP

11 bit CAN address (0-2046)

Slave CAN address (0-2046)

SENSOR SETUP

	Resistor value (Ohms)	Serial number
CH1	<input type="text" value="10019"/>	<input type="text" value="00000"/>
CH2	<input type="text" value="7981"/>	<input type="text" value="00000"/>
CH3	<input type="text" value="10019"/>	<input type="text" value="00000"/>
CH4	<input type="text" value="14971"/>	<input type="text" value="00000"/>

Note: each sensor channel must have correct sensor resistor value to give correct Lambda

V2.1

SPECIFICATIONS

CONTROLLER

Processor:

10 bit with CAN bus interface

Supply voltage:

12 to 15 volts DC (negative ground only) maximum 10 amps

Weight:

560 grams

Dimensions:

See drawing

Inputs:

4 X NTK Uego sensor

Outputs:

1 X RS232 port , 1 X CAN bus port
4 X 8 bit DAC 0-5 volt DC analog output

Measuring range:

0.65 to 1.35 Lambda

Update rate CAN/Analog:

20 Hz

SENSOR

Type:

NTK LZA09-E1 wide range 5 wire sensor. (Exhaust temperature not recommended to exceed 850°C)

Warmup time:

approx 30 seconds @ 25°C ambient

Weight:

85 grams

Response time (typical):

50 mS

Heater Current 4 sensor:

5A at 12.8V typical warm, 9A peak at warmup with sensors at ambient temperature

Mounting:

M18 X 1.5 thread

NOTE: sensor is not rated for continuous operation on high lead content fuels.

Operation in this mode may limit sensor life to under 50 hours.

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