

### **danST Individual Throttle Bodies Quick Start Guide.**

This guide is intended for use by anyone who has purchased our individual throttle body kit and Motorsport Electronics engine management (ME221, ME360, ME442). It should be noted that this is a quick start guide intended to cover the basic checks for a first start. The complete Motorsport Electronics manual ([here](#)) is incredibly comprehensive and should also be referred to for anything not covered here and for more in-depth features and functionality. Other useful resources can be found on the danST Engineering and Motorsport Electronics Youtube Channels:

[danST Engineering Youtube](#)  
[Motorsport Electronics Youtube](#)

#### **Wiring Connections:**

This guide is going to assume that the ECU has been connected to the bare minimum of engine sensors and components that are required for the engine to function, these are:

#### **Power Connections:**

Battery Live  
Ignition Live  
Ground

#### **Inputs:**

Crank Position Sensor  
Coolant Temperature Sensor  
Air Inlet Temperature Sensor  
Throttle Position Sensor (located on the throttle shaft)

#### **Outputs:**

Injectors  
Coilpack

**If any of the above are not connected this will likely result in a no-start situation.**

## **Connecting to the ECU and Pre Start Checks**

### **1) Connecting to the ECU.**

We will assume that a suitable laptop has been connected to the ECU with the MEITE software installed and the ECU has been connected to. For guidance on connecting to the ECU please see here:

<https://motorsport-electronics.co.uk/onlinehelp/html/SerialConnection.html>

### **2) Engine Calibration Basic Pre-Start Checks**

Under the 'START' tab (top left of the top bar in MEITE) the Engine Driver, Ignition Driver and Injection Driver are found. Here we see all the 'engine specific' parameters. This guide will only cover the basic, fundamental parameters that we consider common sense checks - a cut down, quick start guide. For a fully comprehensive guide please see here:

<https://motorsport-electronics.co.uk/onlinehelp/html/8222.html>

With that in mind, whilst most ECU's are pre-loaded with a basemap/calibration, but the below are a 'sanity check' set of parameters that are worth scanning over and checking prior to startup:

#### **Engine Driver.**

**Trigger Pattern** - pertains to the tooth pattern for the crank sensor of the engine you are working with. By far the most popular are 36-1 (Ford) and 60-2 (Vauxhall/GM).

**Cam A Pattern** - pertains to the tooth pattern for the cam sensor of the engine you are working with. If in doubt, set to none for initial getting started - so long as the injection driver is set to 'grouped' and ignition mode is set to 'wasted spark' then a cam sensor is not required.

**Trigger Offset** - the angle that the crank sensor sees the missing tooth/teeth before TDC. This value will be pre-set for the popular basemaps but can need adjustment if the timing is found to be out when using a timing gun.

**Primary Load** - must be set to TPS.

#### **Injection Driver.**

**Fueling Mode** - Should be set to 'Grouped' for the most basic/easy startup. Fully Sequential can be initiated once a start has been achieved and a cam pattern selected.

**Injector CC** - refers to the injector size being used. This will depend on the exact injectors being used. This figure can also be used as a quick-fire way of increasing or decreasing the amount of fuel in the entire calibration (reducing injector cc will increase fueling, decreasing injector cc will decrease fueling). More on that later.....

## Ignition Driver

**Mode** - Wasted Spark is by far the most commonly used, for any Ford or GM based wasted spark coilpack.

With the above parameters checked we can move on to checking our sensor inputs.

**IMPORTANT NOTES WHEN EDITING PARAMETERS!!** Many of the parameters in the above drivers require a power cycle to take effect. This will be signified by the 'Power Cycle' indicator at the bottom of the screen going red. In this case the ignition should be switched off until the laptop loses communication with the ECU. Then power up and re-connect, the power cycle indicator should no longer be red and your changes should have taken effect. On a similar theme any value that requires the user to type in a value will need the 'Enter' key to be pressed. **If a field into which a value has been typed goes orange then this value has not yet been accepted and enter will need to be pressed.**

### 3) Sensor Inputs Validation and Calibration.

Once connected, verify that both 'Intake Air Temp' and 'Coolant Temp' sensors are reading sensibly - to do this navigate to the 'Sensor Cals' tab along the top bar in MEITE. As long as these values seem sensible given the current temperatures (give or take a few degrees) then we can proceed. If not then please refer to the manual for further sensor information:

<https://motorsport-electronics.co.uk/onlinehelp/html/AnalogSensors.html>

Next we must calibrate the throttle position sensor. To do this please follow the guide here

<https://motorsport-electronics.co.uk/onlinehelp/html/CalibratingtheThrottlePositionSe.html>

Once the above procedure has been completed you should see the yellow crosshair follow the line on the TPS HRT graph, from 0-100% as you open and close the throttle.

Assuming all of the above have been checked and calibrated and we have fuel pressure (please see [here](#) for running a fuel pump from the ECU) then the engine is ready to try for a startup.

- 4) **Cranking/Startup Checks.** For cranking our preferred screen for monitoring the ECU would be the 'Mapping' tab. Below are the values that we are particularly interested in when cranking, these should be monitored and can be useful in any fault finding:

**RPM** - Does the ECU report RPM? If not the engine will not start

**Sync Status** - we need to see a minimum of 'crank sync' here during cranking for the engine to start. A 'not sync'd' status means neither the coilpack nor the injectors will be fired.

**Battery Voltage** - Does this look sensible prior to cranking and does it remain sensible when cranking? Any serious drop in voltage can result in a momentary loss of ECU function and can trigger loss of sync and other issues that will prevent a successful start

If the RPM reading is present and we have a sync status of either 'Crank Sync' or 'Full Sync' then the coilpack and injectors should fire and the engine should start.

If Sync is not being achieved or RPM is not reading then this suggests that there is an issue with the crank sensor and trigger wheel not picking up. The first check in this case would be to navigate to the diagnostics tab. Here when cranking monitor the Crank IRQ's, these should steadily count up during cranking as the crank sensor sees the teeth. If they do not count up, the only ECU setting we recommend changing in this instance would be to change 'crank trigger edge' to Falling/Rising (whichever you have not tried) in the engine driver. Attempt to crank again and monitor if the RPM/Sync situation has changed and if the IRQ's now count up. If this does not make any difference then it is likely an issue with the crank sensor or physical wiring.

If the battery voltage when cranking is low (dropping to 8V or less), the screen freezes or communication is lost with the laptop this suggests that the ECU may be dropping out due to low voltage and this will need to be addressed (booster pack, charge battery or address bad earthing). Until this is resolved the ECU will not get consistent Sync and startup will not happen.

If sync is achieved and RPM is reading but the engine is not starting it would be prudent to check for a physical spark. As previously stated if the ECU has sync then it should be firing the coils and thus a lack of spark may indicate an issue with wiring or the coilpack itself.

If there is a physical spark then it is reasonable to assume the injectors are also being fired. In this case a no-start possibly means not enough fuel is being supplied by the calibration. As previously mentioned a quick-fire way to increase fueling would be to decrease the injector cc size in the injection driver (typically by 50cc increments) to apply more fuel in the entire map.

It is always prudent to apply the 'mechanics basics' during all of the above - checking for spark and fuel. Removing plugs periodically and inspecting can tell us a lot about what is

happening. If the plugs are wet then this can prevent starting so again it is important to keep a check on the state of the plugs. If they continually come out wet then it may be worth increasing the injector cc value to lessen the fuel delivery.

If all of the above has been carried out but there are no signs of an engine start then please [contact us](#) for further advice/support.