



Subaru Impreza WRX V11

[linkecu.com](http://linkecu.com)

**G4X**



# Product Warranty Statement

## LINK ENGINE MANAGEMENT LTD – LIMITED LIFETIME WARRANTY

All Engine Control Units (ECUs) manufactured or distributed by Link Engine Management Ltd are subject to the following LIMITED LIFETIME WARRANTIES, and no others.

Link Engine Management Ltd warrants only to the original purchaser of the ECU, for the lifetime of the ECU, (subject to the limitations set out below), that the ECU shall be free from defects of materials and workmanship in the manufacturing process. This warranty ceases to apply and does not apply to ECUs that have not been manufactured or distributed by Link Engine Management Ltd for a period of greater than one year.

An ECU claimed to be defective must be returned to the place of purchase. Link Engine Management Ltd, at its sole option, may replace the defective ECU with a comparable new ECU or repair the defective ECU.

This limited lifetime warranty is not transferable and does not apply to any ECU not properly installed or properly used by the purchaser or end user, or to any ECU damaged or impaired by external forces. The above warranties are the full extent of the warranties available on the ECU. Link Engine Management Ltd has no liability to the original purchaser or any other person for any loss, injury or damage to persons or property resulting from the use of the ECU or any failure of or defect in the ECU whether by general, special, direct, indirect, incidental, consequential, exemplary, punitive, or any other damages of any kind or nature whatsoever. Link Engine Management Ltd specifically disclaims and disavows all other warranties, express or implied, including, without limitation, all warranties of fitness for a particular purpose, warranties of description, warranties of merchantability, trade usage or warranties of trade usage.

For off-road use only, not intended for highway vehicles. This ECU contains a user-configurable software programme, which is updated by Link Engine Management Ltd from time to time. The user must ensure the current correct version of this programme is downloaded from the website of Link Engine Management Ltd and installed in the ECU prior to use. This limited lifetime warranty does not apply where the ECU has been installed with the incorrect version of the software programme. The user is solely responsible for the setup and testing of all user-configurable features.

### Link Engine Management Ltd License Agreement

The software programme in this ECU is licensed not sold. Link Engine Management Ltd grants the user a license for the programme only in the country where the programme was acquired. No other rights are granted under this license and the programme may only be used on one machine at a time. If the programme is transferred a copy of this license and all other documentation must be transferred at the same time. The license may be terminated by the user at any time. Link Engine Management Ltd may terminate the licence if the user fails to comply with the terms and conditions of this license. In either event the copy of the programme must be destroyed.



# Table of Contents

<b>Part I Plug-In ECU Installation Manual</b>	<b>6</b>
<b>1 Introduction</b>	<b>6</b>
Safety Notice	6
Disclaimer	6
Support Options	6
<b>2 Pre-Installation</b>	<b>7</b>
Compatibility Check	7
WRXLink (11)	7
Board Switch Settings	7
WRXLink (11)	8
Injector Impedance	8
Subaru Impreza WRX VI-11 ECU	8
<b>3 Installation</b>	<b>8</b>
ECU Handling Procedures	8
Fitting the ECU	9
WRXLink (11)	9
<b>4 Additional Sensors/Functions</b>	<b>11</b>
MAP Sensor	11
WRXLink (04), WRXLink (07) & WRXLink (11)	11
IAT Sensor	12
WRXLink (04), WRXLink (07) & WRXLink (11)	12
E-Throttle Output	12
WRXLink (04), WRXLink (07) and WRXLink (11)	12
<b>5 Expansion Connector</b>	<b>12</b>
<b>6 PC Tuning</b>	<b>13</b>
Installing USB Drivers	13
Installing PCLink Tuning Software	13
Communicating With Your ECU	13
<b>7 Pre-Start Configuration</b>	<b>13</b>
Firmware Version	14
Base Configuration	14
WRXLink (11)	14
MAP Sensor Calibration	14
TPS Calibration	15
IAT Sensor Selection	15
Input and Output Setup	15
Trigger Calibration	16
<b>8 First Time Startup</b>	<b>16</b>
<b>9 Pinouts</b>	<b>18</b>
WRXLink (11)	18
<b>10 CAN Information</b>	<b>23</b>
WRXLink (11)	23
<b>11 Known Issues</b>	<b>24</b>
WRXLink (11)	25

# I Plug-In ECU Installation Manual

## I.1 Introduction

Thank you for purchasing your Link Plug-In Engine Control Unit (ECU), an advanced, fully programmable microprocessor controlled Engine Management System.

Link software employs high resolution fuel and ignition tables with configurable load and RPM centres. When coupled with up to six dimensional fuel and ignition mapping, barometric pressure compensation, fuel pressure compensation, intake air temperature correction and more this gives an unprecedented level of tuning accuracy. All Link G4X ECUs are in-field upgradeable, there is no need to return the unit for firmware or software updates.

All Link Plug-In Engine Management Systems are designed with flexibility and ease of installation in mind. Link Plug-In systems are designed to replace the factory ECU and in most cases are designed to fit inside the factory ECU's ECU enclosure. This provides an invisible install that requires minimal modification to vehicle wiring and ECU mounting.

Installing and tuning any after market engine management system is not to be taken lightly. Link ECUs give the tuner the control & flexibility that only top after-market engine management systems in the world can provide. While every effort has been made to keep Link ECUs as user friendly as possible, it should be recognised that added features bring added complexity.

The complete setup of your ECU can be divided into two important tasks:

1. This manual covers the installation of your G4X ECU. While it is not strictly essential that this work is performed by an automotive electrician, the knowledge and tools available to these professionals makes it highly recommended. Regardless of who does the installation, it is of utmost importance that instructions provided in this manual are followed exactly throughout the installation.
2. Once the ECU has been installed it will need to be tuned using a laptop computer with PCLink software. Information on the configuration and tuning of the ECU is detailed in the help section of PCLink. Link Plug-In ECUs are shipped pre-loaded with a base configuration that should be close enough to get most engines running after a few application specific adjustments have been made. While hearing the engine running on the new ECU for the first time is always a satisfying feeling, it is important to realise that the job is not complete. The amount of tuning performed and the experience of the tuner are the two most important factors in determining how happy you will be with your engine management system.

### I.1.1 Safety Notice

Your Link Plug-In ECU is designed to enhance the performance of your vehicle. However in all cases, your vehicle must be operated in a safe manner. Do not tune your vehicle while operating it on public roads.

**WARNING!**

Failure to follow all installation and operating instructions may result in damage to the Link ECU, personal injury, or harm to property.

### I.1.2 Disclaimer

All care has been taken to ensure the pin outs and interconnections of the ECU to the vehicles wiring harness are correct. However due to variations between vehicle models it is the installers responsibility to check wiring connections BEFORE installing the ECU. Link will not be held responsible for any damage caused by the incorrect installation of this product.

### I.1.3 Support Options

Should any issues arise during installation, the following options exist for technical support:

1. PCLink help, press F1 while running PCLink
2. Contact your nearest Link dealer. A Link dealer list is available on our website.
3. Link website: [www.linkecu.com](http://www.linkecu.com) with Online Discussion Forum.
4. Technical Support Email: [tech@linkecu.com](mailto:tech@linkecu.com)

The majority of questions received by the technical support team are clearly answered in the manuals. Please consult the manuals to make sure that your question has not already been answered.

## 1.2 Pre-Installation

Before installing the Link ECU into the vehicle some pre-installation checks must be performed.

### 1.2.1 Compatibility Check

It is essential that a compatibility check is performed before installing the ECU into the vehicle. Failure to do so may void the warranty. There are some cases where the same ECU connector is used on very similar vehicle models but with a completely different pinout.

#### 1.2.1.1 WRXLink (II)

Link has two different plug-in ECU models to suit the WRX11, these are called WRX11 and WRX11USDM.

WRX11 supported models:

- 2007-2014 WRX and WRX STI with GR/GV/GH/GE chassis codes, for JDM/AUDM/SADM/EURO markets, with turbocharged EJ20 or EJ25 engines.
- 2008-2010 USDM models which have the common international Denso ECU pinout.
- 2015-2021 WRX STI with VA chassis code, for JDM/AUDM/SADM/EURO markets, with turbocharged EJ20 or EJ25 engines.

WRX11USDM supported models that were sold new in USA or Canada:

- 2011-2014 WRX STI hatch or sedan, GR/GV chassis code, manual transmission only. (note 2010 and earlier models used a different pinout which is supported by our WRX11 ecu).
- 2015-2021 WRX STI VA chassis code, must have EJ series engine, manual transmission only. (FA20 engine not supported).

If vehicle origin or year is in doubt then the easiest way to tell if you need a WRX11 or WRX11USDM ecu is to check the main ecu header for presence of wires in plug B134, positions 1, 2 & 3. If there are wires in these 3 cavities you need the USDM ecu, if no wires are present then the WRX11 is needed. Note some factory documentation uses different pin numbering conventions so reference below image or view WRX11 plug-in manual for full image.

Unsupported features:

- The Security/Key lamp will remain illuminated in some models.
- Secondary Air pump (emissions).
- AC Request and CE lamp (CAN bus controlled) has been reported as not working on some 2013-2014 models. This should be a simple firmware update to fix but we haven't yet been able to find a car with this specific problem to test. Please contact tech support if you suffer this problem and are technically capable of helping investigate.

Supported features:

- Factory DCCD system
- SiDrive (can be setup to adjust anything you like in ecu)
- MFD display, trip computer and gear display.
- ABS, stability control and all factory safety functionality.
- Hill start assist
- Brake pressure, all 4 wheel speeds, rear demister, handbrake, Trac mode, diff mode, steering wheel position and other CAN data able to be used for logging or other strategies.
- All other dash gauges and warning lamps working per factory. CE Lamp can be used for other functions such as shift light or knock warning.

### 1.2.2 Board Switch Settings

Some Link Plug-In ECUs require switches on the board to be set before installation.

### **I.2.2.1 WRXLink (II)**

The WRX11 ECU has 4 jumpers on the circuit board, these jumpers are used to redirect analog inputs from certain pins on the main header that aren't commonly used in performance applications to the expansion connector so they can be repurposed for other uses such as extra sensors. For example the MAF sensor is not commonly used in a performance application, so if an extra analog input is required the MAF input pin (AN Volt 8) can be redirected to the expansion connector by moving the jumper to the right position.

## **I.2.3 Injector Impedance**

Injector impedance is important and needs consideration before installing the ECU.

### **I.2.3.1 Subaru Impreza WRX VI-II ECU**

The G4X Subaru V1-11 Plug-In ECUs are NOT designed to be used directly with low impedance injectors. All models this ECU is designed for are fitted with high impedance injectors from factory. This ECU has been designed to be used with HIGH impedance (greater than 6 Ohms) injectors. Ballast resistors must be wired if low impedance injectors are to be used. This means that the ECU is plug-in compatible with factory fitted injector combinations on all models, however if fitting low impedance injectors then ballast resistors must be wired. Contact your nearest Link dealer to purchase a ballast resistor pack if required.

## **I.3 Installation**

This guide provides information on correctly and safely installing your new Link Plug-In ECU.

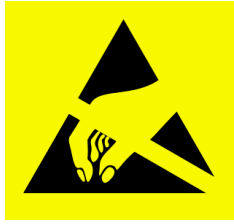
### **I.3.1 ECU Handling Procedures**

#### **WARNING!!!**

The following installation process will require handling of both the Link ECU and factory ECU. Both of these are highly sensitive to electrostatic discharge and are easily damaged. Follow the anti-static precautions given in this manual carefully to avoid damaging electronic components. Warranty claims for ECUs damaged by electrostatic discharge will NOT be accepted.



## ANTI-STATIC HANDLING GUIDELINES



Your body builds up an electrical charge as you move around. This charge can reach very high voltages. Whenever given the opportunity this energy will attempt to discharge (usually through your finger tips!). This can be fatal to most electronic components. Most people have experienced an electrostatic discharge when they step out of their car or touch a metal bench top.

The following guidelines describe precautions that can be taken to reduce the possibility of damaging your ECU:

1. Work only on a conductive surface. A clean steel bench is suitable.
  2. Always wear a wrist strap that is electrically connected to the conductive working surface. An Anti-static wrist strap is included for use during install
  3. Touch the working surface regularly.
  4. Do NOT touch components on the circuit board.
  5. Where possible, only handle the ECU by its plastic header.
  6. Do NOT carry the ECU around without anti-static packaging.
  7. Do NOT touch the bare terminals in the ECU header.
- Observing the above procedures will minimise the chance of damaging the ECU. Note that failure due to static damage often does not appear until well after it was caused.

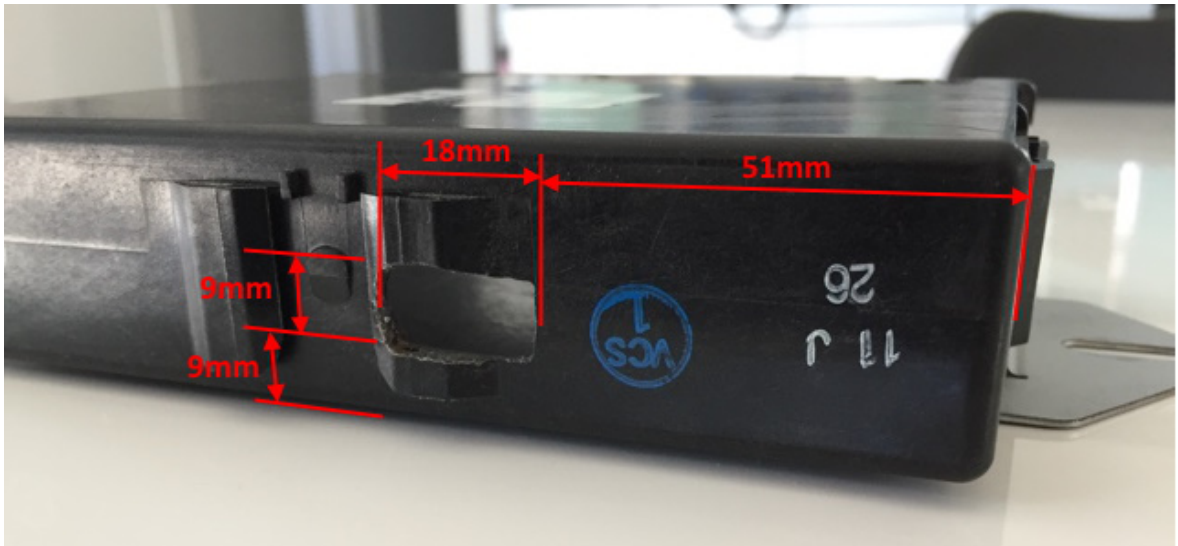
### 1.3.2 Fitting the ECU

Information is provided to assist in fitting the ECU into the vehicle.

#### 1.3.2.1 WRXLink (II)

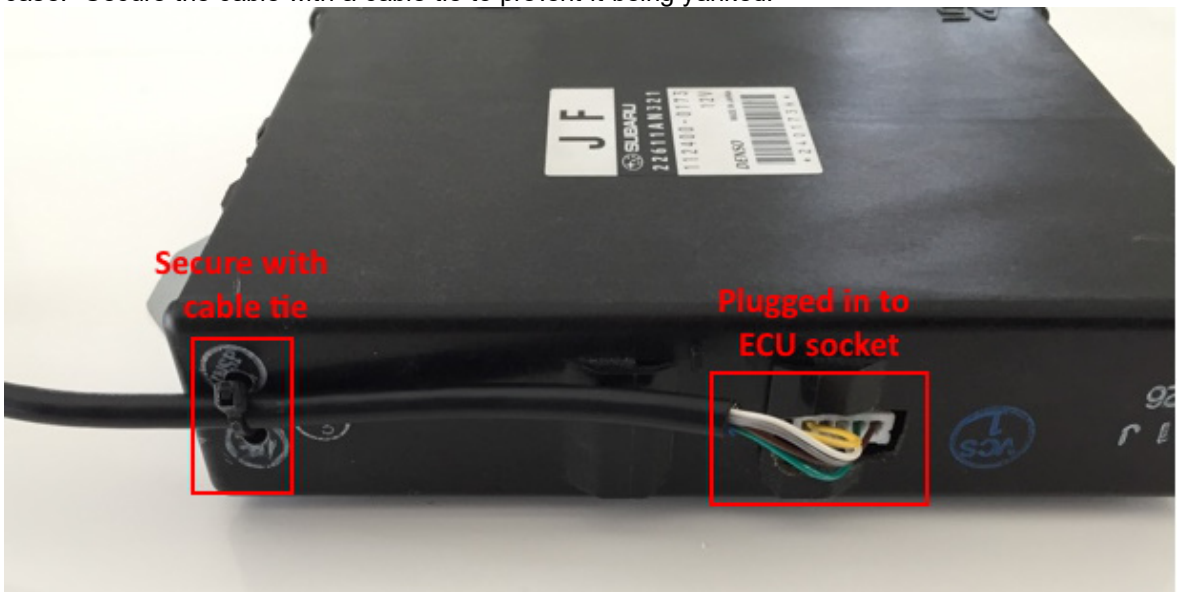
The following steps outline the installation procedure for Subaru Plug-In ECUs:

1. Remove the factory ECU from the vehicle: Ensure the key is in the OFF position.  
In 2007-2014 models the factory ECU is located under a steel cover on the passenger's side floor (below the passengers feet). Lift the carpet, remove the cover panel.  
In 2015+ models the ECU is located behind the glovebox, it is easier to access by removing the glovebox and lower trim panel.  
Unplug the wiring harness from the factory ECU. Remove the 6mm bolts (10mm socket) that retain the ECU and remove the ECU from the vehicle. DO NOT touch the exposed pins in the factory ECU connector.
2. Remove the factory ECUs circuit board from its enclosure: Ensure you are following the given anti-static guidelines and ARE WEARING A CONDUCTIVE WRIST STRAP connected to a conductive working surface. Remove the top and cover from the ECU enclosure by removing the side retaining screws. Remove the circuit board by removing the retaining screws. Hold it only by the plastic header and place it aside.
3. Cut a rectangular hole in the back wall of the ECU case as per the picture below to allow the USB cable to pass through. Suggest also adding two small holes in the back wall to allow a cable tie to strain relieve the USB cable



USB Cable Hole

4. Fit the Link Plug-In ECU: Remove the ECU from its packaging, unplug the USB cable from the socket on the topboard and place ECU into the factory enclosure. Ensure the PCB is slotted into the slots inside the case. Place the factory ECU in the packaging your Link ECU came in for its protection.
5. Refit the front cover then plug the USB cable into the socket through the hole in the back wall of the ecu case. Secure the cable with a cable tie to prevent it being yanked.



USB Cable Fitting

6. If an expansion cable or CAN cable is required these are easiest to pass through the front cover beside the header in the area shown below.



CAN &amp; Expansion Cable Fitting

7. Fit the ECU back to the vehicle.
8. Connect the ECU to the factory wiring loom.
9. Do **NOT** attempt to start the vehicle. Proceed to read through the remaining sections of this manual first.

## 1.4 Additional Sensors/Functions

Link Plug-In ECUs offer various options for the installation of additional sensors and devices. As a minimum it is recommended that all ECUs are installed with a Manifold Absolute Pressure (MAP) sensor and Intake Air Temperature (IAT) sensor. These parts can be purchased if required from your nearest Link dealer.

### 1.4.1 MAP Sensor

It is important that the pressure source for a MAP sensor be taken from a stable pressure source after the throttle body. It is common to 'T' into the fuel pressure regulators pressure signal. Do NOT share this signal with other devices such as boost gauges or blow off valves.

**Note:** Internal MAP Sensors on new plug-in ECUs have changed from 4Bar to 7Bar. The 7Bar versions should be identifiable by a sticker on the bottom board and can also be confirmed by comparing MAP and BAP when the MAP vacuum line isn't connected to see if they match with the calibration being used.

#### 1.4.1.1 WRXLink (04), WRXLink (07) & WRXLink (11)

The Link G4X WRXLink (04), WRXLink (07) & WRXLink (11) plugins support several options for fitting of a MAP sensor, any one of the following options can be used:

1. Factory MAP Sensor – From factory, all models supported by this ECU are fitted with a factory MAP sensor. The factory MAP sensor is wired to An Volt 1. The factory sensor is good for 160kPa (23psi) of boost.
2. Factory MAP Sensor Upgrade – The factory MAP sensor can be upgraded by simply replacing the factory MAP sensor. Contact your nearest Link dealer for upgrade options.

Make sure that the correct MAP sensor input has been selected in PCLink and a MAP calibration has been performed before attempting to start the vehicle.

**Note:** We have found two different MAP sensor calibrations used in the WRXLink (11). Most STI's use the "Subaru V9" calibration and the more basic WRX's use the "Subaru V7-8" calibration. The correct selection can be confirmed by checking that the BAP runtime matches the MAP runtime. See section 1.6.3

## 1.4.2 IAT Sensor

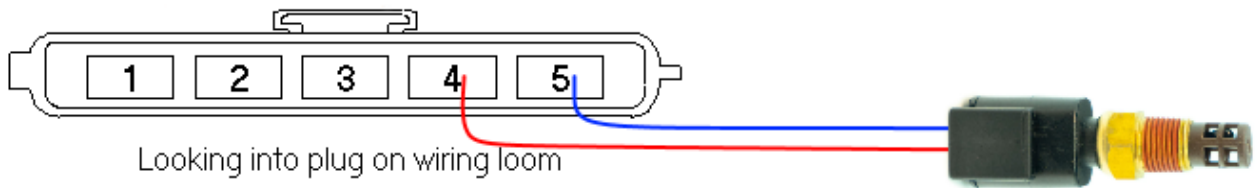
It is highly recommended that an IAT sensor be fitted in all applications to provide an input for correction of fuel and ignition based on the engines air charge temperature.

An IAT sensor should be fitted in the intake system in a location that accurately represents intake temperature. The most common location is just prior to the throttle body. Installing in the manifold is not recommended due to heat soak issues. A fast response sensor must be used in all forced induction applications.

### 1.4.2.1 WRXLink (04), WRXLink (07) & WRXLink (11)

Some STI's have a factory fitted IAT sensor near the throttle body, if your car has this it is suitable for use as is. This STI sensor is connected to AN Temp 3.

The AFM has a factory fitted IAT sensor. Due to its location this sensor is not suitable for tuning. A suitable IAT sensor can however be wired to the AFM wiring. The AFMs IAT signal is wired to An Temp 2. Factory AFM wiring information follows:



- 1 +14V
- 2 Ground
- 3 Mass Air Flow Meter (Typically An Volt8)
- 4 Intake Air Temperature (An Temp 2)
- 5 Ground

**Note:** It is important that the factory IAT sensor is completely disconnected as not to affect the after market IAT sensor signal.

An IAT sensor can also be wired in using any spare An Temp or An Volt pin (several are available on the expansion connectors). Note spare An Volt channels require a pullup resistor (to +5V) to be added for temperature input use.

## 1.4.3 E-Throttle Output

### 1.4.3.1 WRXLink (04), WRXLink (07) and WRXLink (11)

This vehicle has E-Throttle from factory.

The E-Throttle Output pins are Aux 9 & 10 and the E-Throttle Relay is Aux Ignition 8. If the E-Throttle is found to be operating in the wrong direction this can be rectified by changing the Aux 9 Active State (Electronic Throttle -> E-Throttle 1 -> E-Throttle Setup or by swapping the +ve and -ve pins at the throttle plug.

## 1.5 Expansion Connector

Expansion connectors are provided to allow easy connection of additional ECU inputs. An "expansion cable" can be purchased from your Link dealer.

Important points when wiring to the expansion connector:

- Do not overload the +5V Out pin. Although this is protected against ECU damage the +5V out signal also provides power for other sensors.
- Do not connect the ground pin to chassis ground. This could cause ground loops and introduce unnecessary interference. Use this pin only to ground external sensors that are isolated from chassis ground.

The Expansion connectors available for each ECU can be found under the Pinouts Section.

## I.6 PC Tuning

Link ECUs require PC/laptop tuning using the PCLink Tuning Software application running on a Windows based computer. PCLink may be downloaded from [www.linkecu.com](http://www.linkecu.com). Note that when new versions of PCLink are released they are posted on the website and may be downloaded at no cost. Also note that ECUs must be used with the correct version of PCLink.

### **IMPORTANT!**

The Link ECU has on board USB.

BEFORE connecting the ECU to your laptop, the USB drivers must be installed.

Failure to install the drivers on your laptop first may result in windows assigning incorrect drivers. These drivers may not work with the Link ECU and are difficult to uninstall. The correct USB drivers are installed as part of PCLink installation, as described in the following section.

### I.6.1 Installing USB Drivers

Before connecting the ECU to your laptop or PC, the ECU USB drivers must be installed. These drivers are installed as part of PCLink installation as described in the following section.

### I.6.2 Installing PCLink Tuning Software

The latest version of PCLink is available on the Link website: [linkecu.com](http://linkecu.com)

Should access to an Internet connection be impractical, download the latest version of PCLink elsewhere to a USB drive, and then install on your laptop.

#### **Installing from the web**

1. Go to the above website and navigate to the Products -> Software -> PCLink section.
2. Download the latest version of PCLink. When prompted to run or save the file, select save. It is recommended to save this file on the desktop.
3. Double click the saved file and follow on screen instructions.
4. When prompted to install USB drivers, select yes. This may take some time.
5. When installed, open PCLink by double clicking on the icon that has been placed on the desktop.

### I.6.3 Communicating With Your ECU

After PCLink installation, you will be able to connect the Link ECU to the laptop to perform set-up and tuning work.

1. Connect the ECU to your laptop using the appropriate ECU USB Cable. If not supplied with the ECU, these can be purchased from a Link dealer. No other adapter or cabling is required. Connect the cable to the connector labelled USB (typically has a red O-ring on the end of the cable).
2. Start PCLink by double clicking on the PCLink icon on the windows desktop.
3. Switch the key to the ON position. This will provide power to the ECU.
4. In PCLink, under the 'Options' menu, select 'Connection'. The connection options dialogue will open. Selecting USB will give you the fastest connection, the 'Auto' connection port option will search for ECUs on Wifi, USB and COM Ports before displaying a list of possible devices to connect to.
5. PCLink offers both mouse and keyboard control. To establish a connection between the PC and ECU press the F3 key. The same process can be used to disconnect. If a successful connection is established, PCLink will download settings from the ECU, otherwise you will be warned that an error has occurred.
6. Make sure the connection shows "ONLINE" in the top right corner of PCLink.
7. To permanently STORE any changes made to the ECU press F4. If this is not done before turning the ECUs power off all changes made will be lost.

## I.7 Pre-Start Configuration

Before starting the vehicle, important pre-start configurations need to be made.

## 1.7.1 Firmware Version

It is recommended to ensure that the ECU is running the most up to date firmware. Firmware version information can be obtained by connecting to the ECU with PCLink and selecting 'ECU Information' under the Help menu.

The latest firmware can be downloaded from our website with PCLink.

It is recommended that firmware updates are performed by an experienced Link dealer as new features may need to be properly configured.

The firmware can be updated by selecting 'Update Firmware' under the 'ECU Controls' menu in PCLink, follow the on screen instructions to complete the firmware update process.

## 1.7.2 Base Configuration

All Plug-In ECUs are shipped with base configuration settings. Note that these are provided to reduce initial setup and tuning times. They are NOT recommended tuning values. PCLink includes base configurations for various models. Download the appropriate base configuration into your ECU with PCLink by connecting to the ECU (described in the Connecting To PCLink section of this manual), then selecting 'Open' under the 'File' menu. Select the appropriate .pclx or .pcl5 file and then select 'Open'. Downloading large configuration files can take up to a few minutes. Be patient and acknowledge any messages PCLink shows.

### 1.7.2.1 WRXLink (11)

The WRX 11 covers many model variations, for this reason there are several sample maps available in PC Link which will cover most of the common set up differences, load the map that matches your year range and "starter type" closest. Due to the large range of regional and optional spec variations, the supplied sample maps may still need some further manual setting changes to match the vehicle. The main variations to be aware of follow:

- CAN Mode – there are several CAN variations, If you have ABS or DCCD warning lamps remaining on the dash then try the other modes for the same year range that are available in the list. Do not be concerned about using a "key start" CAN mode in a "button start" car or AUDM CAN mode in a USDM car. Note the ignition needs to be power cycled after changing CAN mode.
- EJ20 Vs EJ25 – change the "engine capacity" setting to match your engine.
- AVCS on intake only or Intake and exhaust. All our sample maps are set up for 4 AVCS cams. If your engine doesn't have exhaust AVCS then go to >VVT Control>Bank 1/2>Exhaust Bank 1/2 and set the Cam Sensor Input to OFF and PWM Output to None to prevent errors being generated.
- USDM O2 sensor heater output. The WRX11USDM ecu uses a different output for the O2 sensor heaters. Go to >Auxiliary Outputs>GP Output>GP Output 1 and change the output to Aux 16 and change the Active state to High.
- MAP Sensor – Most cars use the "Subaru (V9)" MAP sensor calibration, but we have found some sample models use the "Subaru (V7-8) calibration.

## 1.7.3 MAP Sensor Calibration

At key on and engine not running the Manifold Absolute Pressure (MAP) Sensor should always match the Barometric Absolute Pressure (BAP) Sensor. As well as providing altitude correction, the BAP sensor also allows the MAP sensor to be calibrated prior to tuning.

Link ECUs use an on-board barometric sensor that is calibrated prior to dispatch. This ensures that all PCLink tune files (.pclx Files for G4X or .pcl5 for G5) give a consistent state of tune throughout the ECU range. This allows a tune file to be transferred between G4X or G5 based ECUs giving an equivalent state of tune providing all factors affecting volumetric efficiency are equal.

Without the ability to calibrate all the available types of MAP Sensors to the BAP Sensor there would be significant affects on the accuracy of the resulting tune, especially when tuning with Manifold Gauge Pressure (MGP) as a load index.

To calibrate the MAP sensor:

1. Connect a laptop/notebook PC to the ECU and connect to the ECU using PCLink.
2. Under the Analog Inputs menu, select 'MAP' then set the Source setting to the correct Analog Input and set the Calibration value to the correct option for your MAP sensor.
3. Either in the MAP window or under the 'ECU Controls' menu, select 'MAP sensor calibration'.
4. Follow the on screen instructions.

5. Open the Runtime View (F12 or 'R') and select the 'General' tab.
6. Compare the MAP and BAP values and ensure they have a similar reading (within 1 kPa).
7. Perform a 'Store' by pressing F4.

A more in depth explanation is provided in the PCLink help Manual under PCLink G5 Users Manual -> Tuning Operating Procedures -> ECU Controls -> MAP Sensor Calibration.

## 1.7.4 TPS Calibration

### E-Throttle Vehicles:

The Throttle Position Sensors (TPS Main and Sub) and Accelerator Position Sensors (APS Main and Sub) are used by the ECU to control the throttle blade position and to calculate various engine management parameters used by functions such as idle speed control, acceleration enrichment and motor sport features. It is very important that these inputs are setup correctly and the E-Throttle operation is tuned properly before starting or driving the vehicle, failure to do so can result in damage to the Throttle body, engine, vehicle and even the operator and bystanders. The following procedure shows how to calibrate the APS and TPS sensors:

1. Connect a laptop/notebook PC to the ECU and connect to the ECU using PCLink.
2. Open Electronic Throttle -> Accelerator Position Sensor and ensure that the APS (Main) Source and APS (Sub) Source settings are set to the correct inputs. Refer to the Pinouts section of this manual for details.
3. In the same window double-click on 'APS Calibration' and follow the instructions on the screen.
4. Open Electronic Throttle -> E-Throttle 1 -> Throttle Position Sensor and ensure that the TPS (Main) Source and TPS (Sub) Source settings are set to the correct inputs. Refer to the Pinouts section of this manual for details.
5. In the same window double-click on 'TPS Calibration' and follow the instructions on the screen.
6. If your vehicle has two E-Throttles then repeat the above two steps for TPS 2(Main) and TPS 2 (Sub) in E-Throttle 2.
7. Select the 'General' tab in the Runtime Values window (F12 or 'R').
8. Ensure the APS (Main) and APS (Sub) values read 0% when the pedal is released and 100% when fully depressed.
9. Perform a 'Store' by pressing F4.

## 1.7.5 IAT Sensor Selection

This section only applies when an Intake Air Temperature (IAT) sensor has been wired and fitted to the intake system. It is important that the ECU is calibrated to match the sensor installed in the engine. This procedure is as simple as selecting the correct sensor type as follows:

1. Connect a laptop/notebook PC to the ECU and connect to the ECU using PCLink.
2. Click on 'Analog Channel' in the configuration tree.
3. Select the An Temp channel the sensor has been wired to.
4. Ensure that channel (and only that channel) is set to 'Inlet Air Temperature'.
5. Select the correct 'Temp Sensor Type'.
6. Select the 'Analog Inputs' tab in the runtime values section of PCLink (lower part of the screen).
7. Ensure that IAT reads the correct temperature.
8. Perform a 'Store' by pressing F4.

## 1.7.6 Input and Output Setup

As the Link G4X & G5 Plug-In ECUs are often designed to run several models there are a few items that must be set-up to make the ECU specific to your model.

The Pinouts section of this manual gives a list of the functions of each channel based on the target vehicle. It is the tuners responsibility to make sure that the following channels are set-up correctly for the vehicle model the ECU is fitted to:

### *All Auxiliary Output Channels*

Use the 'Test On' or 'Test PWM' (at 10 Hz) functions to test the wiring of channels.

### *All Digital Inputs*

Look at the Digital tab in the Runtime Values window (F12 or 'R') to confirm each channels operation.

### *All Analog Volt and Temperature Inputs*

Look at the Analog tab in the Runtime Values window (F12 or 'R') to confirm each channels operation.



### 1.7.7 Trigger Calibration

The following instructions assume that all pre-start set-up instructions given in previous sections have been completed. Only after all pre-start checks have been made should an attempt be made to crank the engine. The following steps must be performed before an attempt is made to start the engine to ensure the Link ECU is calibrated to precisely measure engine position.

1. Connect the ECU to PCLink.
2. Select Fuel -> Fuel Setup -> Fuel Main:
  - a. Set 'Injection Mode' to OFF. This will prevent the engine from trying to start while the triggers are calibrated.
  - b. Perform a Store (press F4) to make sure fuelling is not re-enabled if power to the ECU is lost.
3. Select Triggers -> Calibrate and then open the Set Base Timing window.
4. Perform the correct trigger calibration procedure specific to your vehicle as described in the PCLink help (Press F1).

Note that trigger calibration must be performed again once the engine is running. Due to the acceleration and deceleration of the crankshaft at low speeds, an inaccurate measurement of engine timing is usually made. Also it is often harder to see timing marks with a timing light at slow engine speeds. Trigger calibration should be checked again at between 2000-4000 RPM where engine speed is stable and a more consistent timing reading can be obtained.

A more in depth explanation is provided in the PCLink help Manual under ECU Tuning Functions -> Triggers -> Calibration.

## 1.8 First Time Startup

For further help on any of the settings discussed below, consult the Help in PCLink Tuning Software. Help can be invoked by pressing F1, or right clicking any item and selecting 'What's this?'.

### Pre-set-up Checks

Before attempting to configure the ECU, ensure the following tasks have been completed:

1. Ensure the ECU and all associated components are connected and correctly wired/installed.
2. Fully charge the vehicle's battery, as the engine will be required to be cranked during the set-up procedure.
3. Check all oil and water levels are correct.

#### Connecting to PCLink Tuning Software

Use the following procedure to establish a connection between your Link ECU and PCLink Tuning Software tuning software.

1. Make sure your laptop battery is fully charged or plugged in to mains power.
2. Connect the ECU to your laptop and connect to PCLink as described in the 'Communicating with your ECU' section of this manual.

### First Time Startup

After performing all set-up instructions given in previous sections, including trigger calibration, the engine is now ready to be started. The following procedure should be used for first time start-up.

1. Turn the ignition key OFF then ON. The fuel pump should prime momentarily upon power up.
2. Connect the ECU to PCLink.
3. Access the runtimes values by pressing the F12 Key, click the 'Analog' tab:
  - a. TPS – spans from 0 to 100% when throttle is pressed. If not, perform a TPS Calibration. If the vehicle has an E-Throttle confirm that APS (Sub), APS (Main), TPS (Sub), TPS (Main) all operate correctly and that the throttle blade tracks the target correctly.
  - b. MAP – should read approx 101 kPa (at sea level, compare to BAP if not at sea level) with the engine not running. If not, check the MAP Sensor Type setting and perform a MAP Calibration.
  - c. ECT – should read current engine temperature.
  - d. IAT – should read current intake air temperature.
  - e. Digital Inputs (click the 'Digital' tab) – Operate switches connected to any digital inputs while watching the runtime value to ensure they operate as expected.
4. Rectify any faults found in Step 3.
5. Ensure the basic Fuelling setup is correct.



- a. If using Traditional Fuel Equation Mode then locate the 'Master Fuel' setting in the ECU Settings Menu under: *Fuel > Fuel Setup > Fuel Main*. This will need to be adjusted during or just after start-up.
  - b. If using one of the Modelled Fuel Equation Modes then navigate to *Fuel > Fuel Setup > Fuel main* and enter the correct engine capacity, correct base fuel pressure, and correct fuel properties. Navigate to *>Fuel>Fuel Setup>Injector Setup*, enter correct injector flow rate and rated pressure.
6. Crank the engine until it starts. Some throttle may be required for first time start-up due to imperfect tuning.
  - a. If using Traditional Fuel Equation Mode the Master Fuel setting can be used to enrich/lean the engine (increase to enrich).
  - b. If using one of the Modelled Fuel Equation Modes the Injector Flow Rate can be decreased to add more fuel, this will need to be changed back to the correct value later but works well for first start purposes.
7. If the engine fails to start after several attempts, do not crank it endlessly. Stop and determine the problem before continuing.
8. Check the Trigger Error Counter (found under the Triggers runtime values tab). If this value increases during cranking/running then there is a trigger setup fault. It is not unusual for this number to count one or two on the first engine revolution.
9. Once the engine starts:
  - a. If using Traditional Fuel Equation Mode adjust the Master Fuel setting to achieve best possible running
  - b. If using one of the Modelled Fuel Equation Modes adjust the Injector Flow Rate setting to achieve best possible running, this will need to be changed back to the correct value later but works well for first start purposes.
10. The engine should now be allowed to fully warm up. It may be necessary to readjust 'Master' several times to maintain smooth running. Don't forget to keep an eye on engine temperature.
11. Once the engine is warmed up and running well, perform another trigger calibration (known as "setting the base timing").
12. Perform a Store by pressing F4.

## Essential Tuning Adjustments

It is assumed that at this stage all set-up procedures described in previous sections have been completed and the engine is running. The following steps detail correct set-up procedures for some of the more critical ECU parameters (note that MAP Sensor Calibration should have already been completed by now):

### Injector Voltage (Dead-time) Correction

There is always a delay between the injector being energised and the injector actually opening. Likewise, there is a small delay between the injector being de-energised and the injector closing. The opening time is considerably longer than the closing time, however the overall result is that less fuel will flow for a given pulse width than would be expected with an 'ideal injector'. To compensate for this the injector pulse widths are increased to compensate for this 'dead-time'. The dead-time for a given injector is a function of the battery voltage, differential fuel pressure and the type of injector driver (saturated or peak and hold). A typical dead-time at 3 Bar differential fuel pressure and 14 volts is just under 1ms (ms = millisecond = 1 thousandth of a second).

In applications with a linear 1:1 fuel pressure regulator (i.e. not a rising rate regulator), the differential fuel pressure (difference between manifold pressure and fuel pressure) will be constant. Therefore the only variable that is changing will be the battery voltage (this changes with electrical load and sometimes engine speed). Without correction, the changes in dead-time will cause the engine to run lean when the voltage drops. If the Injector Voltage Correction is properly set-up then changes in the battery voltage will not affect the air/fuel ratio.

The injector dead-time table allows the dead-time for different battery voltages to be entered. The values represent the dead-time in milliseconds. These should increase with falling system voltage.

Injector dead-time for a particular set of injectors can be determined using a flow bench or on a running engine.

To determine the injector dead-time using a flow bench, the injectors need to be operated at the intended operating pressure (normally three bar) and at a constant duty cycle as well as a set voltage. Vary the supply voltage to the injector and measure minimum pulse width at which the injectors will flow for a particular voltage. This is the required dead-time for that injector at that tested voltage.

To determine injector dead-time on a running engine, with the engine fully warmed and operating at stable air/fuel ratios (a very precise AFR meter is required – a narrow band O2 sensor will not suffice), electrical

drain needs to be applied to the system; the preferred method is disconnecting the alternator main fuse. Battery load testers are also useful here too.

Watching the air fuel ratios change while the battery voltage drops, the dead-time table can be trimmed to maintain the same stable air/fuel ratio. Injector dead-time can be viewed as a row graph. A smooth curve needs to be maintained at all times.

NOTE: any change to the fuel pressure or injectors will require a recalibration of the injector dead-times.

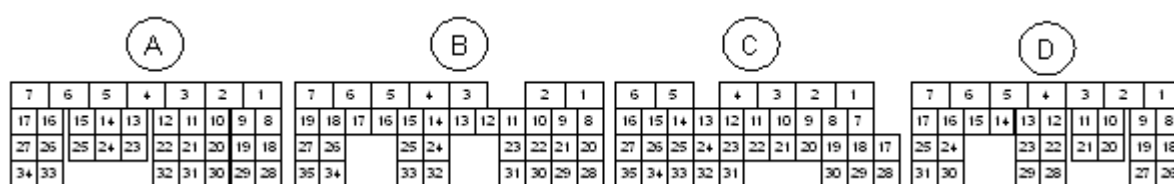
### Traditional Fuel Equation Mode Master Fuel Setting

If using Traditional Fuel Equation mode the Master Fuel setting should be set so that the numbers in the middle of the fuel table end up around a value of 50. This is to allow sufficient span of the numbers in the main fuel table.

## 1.9 Pinouts

Pin information is provided to assist when troubleshooting. All pinouts are looking into the ECU (wire side).

### 1.9.1 WRXLink (11)



WRX11 Pinout					
Pin	ECU Pin	Function	Pin	ECU Pin	Function
A1	nc		C7	nc	
A2	nc		C8	nc	
A3	nc		C9	Ignition 6 (Aux)	AC Relay
A4	An Temp 3	IAT	C10	nc	Alternator Control
A5	Ground		C11	Aux 11	CE Light
A6	An Volt 1	MAP	C12	Aux 6	Fuel Pump Speed
A7	+14V	ECU Power	C13	nc	
A8	nc		C14	Ground	
A9	nc		C15	Ground	
A10	nc		C16	nc	
A11	DI 1	R/H Intake Cam Sensor	C17	nc	
A12	DI 3	R/H Exhaust Cam Sensor	C18	Ignition 7 (Aux)	Sub Fan Relay
A13	Trig 1	Crank Sensor	C19	nc	Secondary Air Valve
A14	Ground (Crank Sensor)		C20	Aux 12	Starter Relay
A15	Knock 1	Knock Sensor	C21	Aux 13	E-Throttle Relay
A16	An Volt 4	Left TGV Pos (Jumper dependent)	C22	Ignition 8 (Aux)	Tacho
A17	nc		C23	Main Relay Control	Triggered by B19
A18	An Volt 2	TPS (Main)	C24	DI 7	AC Request (2007-2011)
A19	+5V Out		C25	DI 4	Clutch Sw
A20	nc		C26	nc	
A21	Trig 2	L/H Intake Cam Sensor	C27	CAN2 H	
A22	Ground (Cam Sensor)		C28	nc	
A23	nc		C29	Ignition 5 (Aux)	Main Fan Relay

WRX11 Pinout					
Pin	ECU Pin	Function	Pin	ECU Pin	Function
A24	Ground (Crank Shield)		C30	nc	
A25	Ground (Knock Shield)		C31	DI 9	Neutral Sw
A26	An Volt 5	Right TGV Pos (Jumper dependent)	C32	DI 8	2nd Start Signal
A27	nc		C33	nc	
A28	An Volt 3	TPS (Sub)	C34	nc	
A29	Ground		C35	CAN2 L	
A30	nc				
A31	DI 2	L/H Exhaust Cam Sensor	D1	Ground	
A32	nc		D2	Ground	
A33	An Volt 6	Power Steer Sw	D3	Ground	
A34	An Temp 1	ECT	D4	Aux 9	E-Throttle Motor +
			D5	Aux 10	E-Throttle Motor -
B1	Ground (O2 Shield)		D6	Ground (Ignition)	
B2	+14V	ECU Power	D7	Ground	
B3	nc		D8	Injector 1	Injection
B4	An Volt 7	Rear O2 Signal (Jumper dependent)	D9	Injector 2	Injection
B5	nc	Constant +12V	D10	Injector 3	Injection
B6	nc		D11	Injector 4	Injection
B7	nc		D12	Linked to Pin D23	L/H TGV Motor +
B8	nc	Front O2 Signal -	D13	Aux 8	L/H TGV Motor -
B9	nc	Front O2 Signal +	D14	Aux 1	L/H Intake AVCS Solenoid
B10	nc		D15	+14V Out	L/H Intake AVCS Solenoid
B11	nc		D16	Aux 2	R/H Intake AVCS Solenoid
B12	DI 10	Cruise Main Sw	D17	+14V Out	R/H Intake AVCS Solenoid
B13	DI 6	Start Signal	D18	Ignition 1	Ignition
B14	nc		D19	Ignition 2	Ignition
B15	nc		D20	Ignition 3	Ignition
B16	nc		D21	Ignition 4	Ignition
B17	nc		D22	Aux 7	R/H TGV Motor +
B18	An Temp 2	MAF Temp	D23	Linked to Pin D12	R/H TGV Motor -
B19	Ignition Sw	Used to Control Main Relay	D24	Aux 4	R/H Exhaust AVCS Solenoid
B20	DI 5	Brake Sw NC	D25	+14V Out	R/H Exhaust AVCS Solenoid
B21	+5V Out (APS Main)		D26	Ground	
B22	+5V Out (APS Sub)		D27	Aux 5	Wastegate Solenoid
B23	An Volt 10	APS (Main)	D28	nc	
B24	An Volt 11	Cruise Switches	D29	Aux 14	Purge Solenoid

WRX11 Pinout					
Pin	ECU Pin	Function	Pin	ECU Pin	Function
B25	nc		D30	Aux 3	L/H Exhaust AVCS Solenoid
B26	An Volt 8	MAF (Jumper dependent)	D31	+14V Out	L/H Exhaust AVCS Solenoid
B27	nc		Expansion 1	Aux 16	
B28	nc	Brake Sw NO	Expansion 2	DI 11	
B29	Ground (APS Main)		Expansion 3	An Temp 4	
B30	Ground		Expansion 4	Knock 2	
B31	An Volt 9	APS (Sub)	Expansion 5	Injector 6	
B32	nc		Expansion 6	Injector 5	
B33	nc		Expansion 7	+5V Out	
B34	Ground (MAF)		Expansion 8	Ground	
B35	Ground (MAF Shield)		Expansion 9	+14V Out	
			Expansion 10	nc	
C1	+14V E-Throttle		Expansion 11	+5V	
C2	nc	Front O2 Sensor Heater	Expansion 12	Ground	
C3	nc	Front O2 Sensor Heater	Expansion 13	An Volt 8 (MAF)	These inputs each have a jumper to either connect them to the Expansion plug or to their normal functions on the main header.
C4	Injector 7 (Aux)	Rear O2 Heater	Expansion 14	An Volt 7 (Rear O2)	
C5	nc		Expansion 15	An Volt 5 (RH TGV)	
C6	Ground		Expansion 16	An Volt 4 (LH TGV)	

**Note:** An Volt 6 & 11 (A33 & B24) have Pullup resistors on them and so can't be used for typical An Volt purposes.

**Note:** Ignition 8 (C19) has a pullup resistor and so can't be used for typical Ignition purposes.

**Note:** Injector 8 isn't exposed and so staged injection is only possible with Group Secondaries.

**Note:** AC Request comes in on CAN DI 5 (instead of DI 7) in 2015+ models.



WRX11 USDM Pinout					
Pin	ECU Pin	Function	Pin	ECU Pin	Function
A1	Aux 9	E-Throttle Motor +	C7	DI 6	AC Pressure Sw
A2	Aux 10	E-Throttle Motor -	C8	nc	
A3	Ground		C9	Ground (O2 Shield)	
A4	Ground		C10	Ground (MAF Shield)	
A5	+14V Out	AVCS Solenoid	C11	Ground (MAF)	
A6	Ground		C12	An Volt 11	Cruise Switches
A7	+14V Out	AVCS Solenoid	C13	DI 10	Cruise Main Sw
A8	nc		C14	nc	
A9	nc		C15	DI 5	Brake Sw NC
A10	Injector 1	Injection	C16	DI 8	Start Signal
A11	Injector 2	Injection	C17	CAN2 H	
A12	Injector 3	Injection	C18	nc	Front O2 Signal -
A13	Injector 4	Injection	C19	nc	Front O2 Signal +
A14	Aux 3	L/H Exhaust AVCS Solenoid	C20	An Volt 7	Rear O2 Signal (Jumper dependent)
A15	Aux 4	R/H Exhaust AVCS Solenoid	C21	nc	ELCM Pressure Signal
A16	Aux 1	L/H Intake AVCS Solenoid	C22	An Volt 8	MAF (Jumper dependent)
A17	+14V Out	AVCS Solenoid	C23	nc	Fuel Temperature
A18	An Volt 2	TPS (Main)	C24	nc	
A19	+5V Out		C25	nc	
A20	nc		C26	nc	
A21	Ignition 1	Ignition	C27	nc	Starter Active
A22	Ignition 2	Ignition	C28	CAN2 L	
A23	Linked to Pin A26	L/H TGV Motor +	C29	DI 7	AC Request (2007-2011)
A24	Aux 8	L/H TGV Motor -	C30	An Volt 12	Ignition Sw, Used to Control Main Relay
A25	Aux 7	R/H TGV Motor +	C31	An Temp 2	IAT
A26	Linked to Pin A23	R/H TGV Motor -	C32	nc	
A27	Aux 2	R/H Intake AVCS Solenoid	C33	Aux 6	Fuel Pump Speed
A28	An Volt 3	TPS (Sub)	C34	nc	Delivery Mode Fuse
A29	Ground (Sensor)		C35	DI 9	Neutral Sw
A30	nc				
A31	Ignition 3	Ignition	D1	Ground	
A32	Ignition 4	Ignition	D2	Knock 1	Knock Sensor
A33	Aux 5	Wastegate Solenoid	D3	Ground	
A34	+14V Out	AVCS Solenoid	D4	nc	
			D5	nc	
B1	nc		D6	Aux 14	Purge Solenoid
B2	nc		D7	+14V	ECU Power
B3	nc		D8	Ground (Knock Shield)	
B4	nc	ELCM/Evap Valve	D9	nc	Sec Air Pipe Pressure

WRX11 USDM Pinout					
Pin	ECU Pin	Function	Pin	ECU Pin	Function
B5	nc		D10	An Volt 4	Left TGV Pos (Jumper dependent)
B6	Aux 16	Rear O2 Heater	D11	An Volt 5	Right TGV Pos (Jumper dependent)
B7	+14V E-Throttle		D12	nc	Blow-by/leak diag
B8	nc	Sec Air Valve Relay 1	D13	nc	
B9	DI 4	Clutch Sw	D14	nc	
B10	nc	FP Diag	D15	nc	Purge Valve 1
B11	Ignition 7 (Aux)	Sub Fan Relay	D16	Trig 2	L/H Intake Cam Sensor
B12	Ignition 5 (Aux)	Main Fan Relay	D17	Trig 1	Crank Sensor
B13	Main Relay Control	Triggered by C30	D18	nc	
B14	nc	OBD2/SSM	D19	nc	
B15	Ignition 8 (Aux)	Tacho	D20	An Volt 1	MAP
B16	nc		D21	nc	
B17	Aux 13	E-Throttle Relay	D22	An Temp 1	ECT
B18	nc		D23	DI 3	R/H Exhaust Cam Sensor
B19	nc		D24	DI 1	R/H Intake Cam Sensor
B20	nc	Sec Air Valve Relay 2	D25	Ground (Crank Sensor)	
B21	+5V Out (APS Main)		D26	nc	
B22	+5V Out (APS Sub)		D27	nc	ELCM Pump
B23	An Volt 10	APS (Main)	D28	An Volt 6	Power Steer Sw
B24	nc	Immobiliser Signal	D29	DI 2	L/H Exhaust Cam Sensor
B25	nc	Immobiliser Signal	D30	Ground (Cam Sensor)	
B26	Aux 12 (also on B32)	Starter Relay	D31	Ground (Crank Shield)	
B27	nc	Sec Air Pump Relay	Expansion 1	Ground (Signal)	
B28	nc		Expansion 2	+5V	
B29	Ground (APS Main)		Expansion 3	An Temp 4	
B30	Ground (Sensor)		Expansion 4	An Temp 3	
B31	An Volt 9	APS (Sub)	Expansion 5	An Volt 4 (LH TGV)	These inputs each have a jumper to either connect them to the Expansion plug or to their normal functions on the main header.
B32	Aux 12 (also on B26)	Accessory Cut Request	Expansion 6	An Volt 5 (RH TGV)	
B33	Aux 11	CE Light	Expansion 7	An Volt 7 (Rear O2)	
B34	nc	Starter Cut Relay	Expansion 8	An Volt 8 (MAF)	
B35	Ignition 6 (Aux)	AC Relay	Expansion 9	Ground (Signal)	

WRX11 USDM Pinout					
Pin	ECU Pin	Function	Pin	ECU Pin	Function
			Expansion 10	+5V	
C1	+14V	ECU Power	Expansion 11	Knock 2	
C2	nc	Constant +12V	Expansion 12	DI 11	
C3	nc	Brake NO	Expansion 13	Injector 5	
C4	Ground		Expansion 14	Injector 6	
C5	nc		Expansion 15	Injector 7	
C6	nc		Expansion 16	Injector 8	

**Note:** An Volt 6 & 11 (A33 & B24) have Pullup resistors on them and so can't be used for typical An Volt purposes.

**Note:** Ignition 8 (C19) has a pullup resistor and so can't be used for typical Ignition purposes.

**Note:** Injector outputs 5-8 are on one of the expansion headers and so can be used for Sequential Staged Injection.

**Note:** AC Request comes in on CAN DI 5 (instead of DI 7) in 2012+ models.

**Note:** Aux 16 (Rear O2 Heater) is Low to disable heater and floating to enable heater.

## 1.10 CAN Information

The following CAN (Controller Area Network) information is provided:

### 1.10.1 WRXLink (II)

CAN bus 1 is available on a 4 pin connector with the pinout as shown below. CAN bus 2 is connected directly to the main header and is used to interface with the vehicle's factory CAN system.

CAN Connector		
Pin	Function	Colour
1	GND	Brown
2	CAN L	Green
3	CAN H	White
4	+14V	Yellow

#### Factory CAN Bus Information for 2007-2011 models (Subaru WRX 07-11 Button and Key Start CAN Modes):

Estimated Torque value (from Torque Control function), Clutch Switch, Gear and Inst Fuel Consumption are used by this CAN Mode.

The AC Clutch, CE Light and Cruise lights are controlled over CAN in some models and hard wired in others.

CAN Channel	Function
CAN DI 1 Frequency	LF wheel speed
CAN DI 2 Frequency	RF wheel speed
CAN DI 3 Frequency	LR wheel speed
CAN DI 4 Frequency	RR wheel speed
CAN DI 1	Traction Control Switch
CAN DI 2	Rear Demister
CAN DI 3	Handbrake
CAN DI 4	DCCD Auto/Manual Status (0 = Manual, 1 = Auto)
CAN An 1	SI Drive Mode (1 = Sports Sharp (S#), 2 = Intelligent (I), 3 = Sports (S))
CAN An 2	Ambient temp (°C)
CAN An 3	Brake Pressure (Bar)
CAN An 4	DCCD Auto Level (Auto = 1, Auto- = 2, Auto+ = 3)
CAN An 5	Fuel Level (Ohms)
CAN An 6	DCCD bargraph
Controls Runtime directly	Steering wheel position (But not ROC)

#### Factory CAN Bus Information for 2015+ models (Subaru WRX 2015+ CAN Mode):

**Note:** These CAN Modes have not yet been widely tested in all geographic regions and on all model variants, if you have issues with these modes please contact tech support.

This information applies to the '2015-2017 WRX JDM', '2015-2017 WRX AUDM' and '2018+ WRX AUDM' modes.

Estimated Torque value (from Torque Control function), Clutch Switch, Gear and Inst Fuel Consumption are used by this CAN Mode. The CE Light is controlled by CAN Aux 1.

CAN Channel	Function
CAN DI 1 Frequency	LF wheel speed
CAN DI 2 Frequency	RF wheel speed
CAN DI 3 Frequency	LR wheel speed
CAN DI 4 Frequency	RR wheel speed
CAN DI 5 Frequency	Average Wheel Speed
CAN DI 1	Traction Control and DSC Disabled
CAN DI 2	Rear Demister
CAN DI 3	Handbrake
CAN DI 4	DCCD Auto/Manual Status (0 = Manual, 1 = Auto)
CAN DI 5	AC Request
CAN DI 6	Trac Mode (Traction Control off and DSC less aggressive)
CAN DI 7	Brake Pedal Pressed
CAN An 1	SI Drive Mode (1 = Sports Sharp (S#), 2 = Intelligent (I), 3 = Sports (S))
CAN An 2	Brake Pressure (Bar)
CAN An 3	DCCD bargraph (when in DCCD Manual) or DCCD Auto Level (when in DCCD Auto - Auto = 1, Auto- = 2, Auto+ = 3)
Controls Runtime directly	Steering wheel position (But not ROC)
CAN Aux 1	CE Light

## 1.11 Known Issues

All plug-in ECUs are fully tested on a range of relevant vehicles, although there are often variations that have not been tested. For this reason issues can arise.



WARNING: Always download the latest Installation Manual from [linkecu.com](http://linkecu.com) and check the latest status of known issues before installing the ECU.

Please contact your nearest Link dealer when suspecting a compatibility issue.

### 1.11.1 WRXLink (II)

Some key start models may have the security/immobilizer lamp remaining on on the dash after fitting an aftermarket ecu.

AC Request and CE lamp (CAN bus controlled) has been reported as not working on some 2013-2014 models. This should be a simple firmware update to fix but we haven't yet been able to find a car with this specific problem to test. Please contact tech support if you suffer this problem and are technically capable of helping investigate.