



G5 PLUG-IN ECU

General Specifications

G5 Plug-in ECUs are capable of the following features. Please note that the limitations of the original ECU headers in some vehicles may make some I/O unavailable. Please review your specific Plug-in's User Manual for more information on which I/O your Link Plug-in ECU will be capable of.

Inputs/Outputs

- Up to 8 x High Current Injector Drives dependent on the ECU configuration (suits high impedance injectors)
- Up to 8 x Ignition Channels dependent on the ECU configuration
- Up to 16 x Auxiliary Outputs (10 of which are PWM capable).
- Up to 11 x Digital Inputs (all capable of reading frequencies up to 10kHz)
- +5V Out
- Up to 4 Temperature Inputs (configurable pull-ups on ANT1&2)
- Up to 12 x 0-5V Analog Inputs
- 2 x Trigger Inputs (Reluctor, Optical or Hall Sensors)
- On Board Barometric Pressure Sensor
- 3 Axis Accelerometer

Fuelling Adjustments

- Traditional, Modelled and Modelled Multi-Fuel Equations
- The following injection modes: Single-Point Group, Multi-Point Group, Sequential, Semi-Sequential, Group Staged, Sequential Staged (2 or 3 stages), Sequential/Multi Point Group Staged injection modes, Semi-Sequential, Direct Injection, Direct-Port Staged Injection
- Asynchronous Injection (can add more fuel after initial injection if conditions change)
- Quick Tune (automated fuel tuning)
- Up to 440 Zone Fuel Table with configurable load and RPM centres. Configurable X and Y Axis Parameters
- Multiple Fuel Tables

- Up to 6D Fuel Mapping (3D Fuel Table + 3x3D Overlay trim tables)
- Injection Rate Control for Group Injection Modes
- Master Enrichment for Traditional Fuel tuning
- Pre-Crank Prime
- First Crank Prime
- Crank Enrichment
- Post Start Enrichment
- Warm Up Enrichment
- Acceleration Enrichment
- IAT Fuel Correction
- Injector Deadttime Compensation
- Injector Short Pulse Width Compensation
- Injector Timing Control with Beginning, Middle or End Injection Definable
- AFR Table Correction
- Multi Bank Closed Loop Lambda
- Individual Cylinder Fuel Trims
- Overrun Fuel Cut
- Idle Load Trims
- Fuel Temperature Correction
- Barometric Pressure Compensation
- Injector Test Function
- DI Fuel Pump Control

Ignition Adjustments

- Distributor, Twin Distributor, Wasted Spark, Direct Spark, Rotary leading Wasted and Rotary
- Leading Direct Ignition Modes
- Up to 440 Zone Ignition Table with configurable load and RPM centres. Configurable X and Y Axis Parameters
- Configurable Maximum Advance

- Configurable Spark Duration
- Configurable Spark Edge
- Dwell Time Table with configurable X and Y Axis Parameters
- Multiple Ignition Tables
- Up to 6D Ignition Mapping (3D Ignition Table + 3x3D Overlay Trim Tables)
- Individual Cylinder Ignition Trim
- IAT Trim
- Voltage Correction
- ECT Trim
- OEM Compatibility
- CDI Compatibility
- Transient Ignition Retard
- Adjustable Ignition Delay Compensation
- Ignition Test Function
- Idle Ignition Control

Limits

- Engine Temperature Dependent Progressive Limiting
- Dual Vehicle Speed Limits
- System Voltage Limit
- User Configurable RPM Limits based on external input
- MAP Limit with dual tables
- Optional Hard Cut
- Progressive Cut Control
- Selectable Fuel or Ignition Limiting
- Ignition Trim and Configurable Trim Decay
- Adjustable Control Range
- Selectable Cut Effect (adaptive or constant)

Auxiliary Output Options

- Each output independently configurable
- Unused ignition and fuel outputs available as auxiliary outputs
- General Purpose Outputs
- General Purpose PWM Outputs
- Fuel Pump Control
- Fuel Pump Speed Control
- Engine Fan Control
- Air Con Clutch Control
- Air Con Fan Control

- Intercooler Spray Control
- Tacho Control
- Speedo Control
- Check Engine Light
- Purge Solenoid
- Oxygen Sensor Heater
- Switched Cam Solenoid Control
- ECU Hold Power Control
- Shift Light Control
- Starter Control
- VVT Cam Solenoid
- Boost Control Solenoid
- Test functions for each output
- Closed loop Stepper Control & Rotary Oil Pump Control
- Idle Speed Solenoid
- Idle Speed Stepper
- Internal e-throttle Controller
- External e-throttle

Digital Inputs

- Each channel independently configurable with pull-up resistors and active state control
- All digital inputs capable of reading frequencies of up to 10kHz
- Duty Cycle measuring on all digital inputs
- Turbo Speed
- Ethanol Sensor Control
- Wheel Speed Detection on all digital inputs with additional general-purpose speed inputs
- Anti-Theft Control through digital inputs, over CAN or both
- General purpose switches, speeds, rpms and frequencies
- Large variety of input types

Analog Inputs

- Each input independently configurable with preset or custom calibrations and configurable fault conditions
- Built in 3 Axis Accelerometers
- Built in Barometric Pressure Sensor
- Large variety of analog input functions
- General Purpose Temperatures, Pressures, Rotary Switches and more

- Analog Inputs can also be used as Digital Inputs
- Large number of built-in calibrations
- Ten Calibration Tables and 3 Linear Calibrations for when a custom calibration is required

Triggering

- Digital Trigger Decoding
- Reluctor, Optical Proximity or Hall Sensors
- Programmable Filtering and Arming Thresholds
- Configurable trigger patterns or preset triggering options
- Supports nearly all OEM trigger patterns and custom trigger arrangements

Programmable Math Processing

- Eight individually controllable math channels with up to four parameters in each
- Math channels can be used as table axis's and as digital or analog inputs

Motorsport Features

- AntiLag
- Launch Control
- Gear Shift Control (Digital Inputs, Gear Lever Force or Gear Barrel Position)
- Traction Control
- Nitrous Control
- Power Management
- Race Timer

AntiLag System

- Dual 3D Fuel Enrichment, Fuel Cut, Ignition Cut and Ignition Retard tables
- Optional Cyclic Idle (normal and cool-down)
- Optional 3D Idle Controller Override tables (one for antilag and one for Cyclic Idle)
- Lockout Conditions based on engine speed and throttle position with hysteresis

Launch Control

- Single RPM, 3D RPM Table or Latched (RPM when button pressed) Launch modes
- Progressive Cut Control
- Selectable Fuel or Ignition Limiting

- Selectable Cut Effect (adaptive or constant)
- Adjustable Control Range
- Vehicle Speed Controlled
- Ignition Trim with optional 3D table and relative or absolute ignition angle options
- Optional 3D Fuel Trim table

Gear Shift Control

- Digital input (clutch switch), gear lever force (sequential gearbox), gear lever force (H pattern gearbox), paddle shift, and gear barrel position sensor input options
- Timed or controlled modes
- Adjustable progressive cut levels
- Power re-introduction control
- Ignition retard control
- Fuel enrichment control
- Cut duration based on gear

Traction Control

- Disable switch
- Various Lockout conditions
- Multiple 3D slip Threshold tables
- Traction Control - controlled tyre slip to improve vehicle safety and driveability
- Uses an advanced Torque Management system to reduce engine torque

Nitrous Control

- 3 stages of nitrous injection + spool
- Dry, Wet and Progressive systems
- Fuel trims
- Ignition trims
- Bottle pressure monitoring and control

Power Management

- Wheel speed or RPM based power control
- Open and Closed loop control
- 3D configurable target speed/rpm

Idle Control

- Solenoid, Stepper or E-throttle Control
- Open or Closed loop actuator control and Closed loop Ignition control available

- Large variety of position offsets for open loop and additional target offsets for closed loop actuator control
- Specific start-up offsets and hold times
- Dashpot functionality to smooth re-entry into idle and prevent undershoot

Electronic Throttle Control

- Has an internal E-throttle Controller and supports external controllers
- Multiple 3D target tables

Boost Control

- Open or Closed Loop Boost Control
- Multiple Target and Base Position Tables
- Multiple Trim tables
- Boost by Gear control

Knock Control

- 2 Built in Knock inputs
- Fuel Enrichment and Ignition Retard functionality
- Adjustable frequency filter
- New Normalized Modes for Ignition Cut, and Ignition Retard tables.
- Traditional per cylinder adjustable gain
- Individual cylinder detection
- Individual cylinder ignition retard and fuel enrich
- Adjustable detection angle (start/end)
- Noise threshold table (3D)
- Adjustable ignition retard and fuel enrich sensitivity
- Configurable ignition reintroduction and fuel enrich decay

Variable Valve Timing Control

- Up to 4 cams independent control
- Supports many OEM applications
- Closed loop control
- Multiple 3D Cam angle target tables
- Optional advanced PID control settings for advanced tuners
- Automatic function for calibrating cam angles

Chassis and Body

- AC Control - Basic and Advanced modes available
- Anti-Theft - Via Digital Input, CAN or both
- Speed based cruise control (E-throttle only)
- Gear Detection - CAN, RPM/Speed or Analog Position Sensor
- Individual wheel speed sources with the ability to specify Driving and Non-Driving wheel speed sources
- Starter control - Multiple options available from very basic to Touch to start.
- Torque Management

Logging

- 512 Megabytes of Datalogging
- Up to 250 ECU Logging channels
- Up to 1kHz per channel with a maximum total sample rate of 100kSamples/s when using ECU Logging
- Unlimited channels when using PCLink logging

Communications

- Tuning Port USB on board
- Two CAN buses
- Custom CAN configuration allowing tuners and end users to add support for new CAN devices

Processing

- 150 MHz Specialised Engine Management Microprocessor
- Ignition control to 0.1 degree, fuel to 0.01 ms
- 32-Bit Floating-Point Calculation
- 12 Bit ADC Resolution
- 20000+ RPM
- 4Gb Non-Volatile Flash

Environment

- Internal Temperature Range -10 – 85°C
- Ambient Temperature Range -30 – 90°C
- Voltage 8 - 22V
- Operating Current 200mA
- Electrical protection on all inputs and outputs
- Onboard Barometric Pressure Sensor