

1.0 General

Power Supply

- Operating Voltage: 6.0 to 22.0 Volts DC (ECU shutdowns at 24.0V)
- Operating Current: 440mA at 14.0V (excluding sensor and load currents)
- Reverse Battery Protection via External Fuse
- "Smart" Battery Transient Protection

Operating Temperature

- ECU Internal Temperature
- Max Operating Range: -30 to 110°C (-22 to 230°F)
- Recommended Operating Range: -30 to 85°C (-22 to 185°F)

Physical

- 6061 grade aluminum CNC billet enclosure
- Enclosure size 134 mm x 162 mm x 27 mm
- Weight: 750g
- Waterproof
- Connector system: 136 way waterproof connectors with gold plated contacts
- 1 x 55 Way Deutsch Autosport (Red)
- 1 x 26 Way Deutsch Autosport (Red)
- 1 x 55 Way Deutsch Autosport (Yellow)

Internal

- Dual 100MHz Processors
- 500Mb DDR RAM (0.5Gb)
- 32MB ECU logging Memory
- Over 1200 channels available
- 1Hz to 500Hz logging rate
- 6 channel Oscilloscope function
- Sampling at 100k samples/second
- Includes Crank and Cam sensors inputs
- Includes Digital Inputs 1-8
- 3-Axis Accelerometer
- 16 Bit Resolution
- $\pm 2g/\pm 4g/\pm 8g$ dynamically selectable full-scale
- Output Data Rate 500Hz

2.0 Outputs

16x Injector Outputs—high or low ohm.

- 70V Clamping
- 8A Peak, 4A hold, 10A Limit Injector Control
- Outputs can be used for ground switching , 6A Continuous , 10A Limit.
- All Outputs are short circuit and over current protected
- Independent Saturated or Peak & Hold control per channel
- No Flywheel diodes (external required for VVT control)

12x Ignition Outputs.

- Adjustable TTL Ignition drive current (35mA or 70mA)
- Outputs can be used for ground switching, 1A Continuous, 3A Limit
- All Outputs are short circuit and over current protected
- No Flywheel diodes (external required for VVT control)

16x Auxiliary Outputs

- Variable Valve Timing (VVTi) and Variable Valve Timing Electric (VTiE), Drive by Wire up to 4 Throttle Bodies, Dual Boost control, Gearshift Solenoids, Stepper motor and many more.
- All Outputs have PWM Control, maximum frequency = 15 kHz
- Flywheel diodes integrated into all outputs
- All Outputs are short circuit and over current protected

Low Side Drivers

- Auxiliary 1-4: Low Side 4A continuous, 6A peak modulated, 8A Limit
- Auxiliary 5-8: Low Side 2.5A Continuous, 4A peak modulated, 5A Limit

High Side Drivers

- Auxiliary 1-8: High Side 4A Continuous, 9A Limit

Half Bridge Drivers

- Auxiliary 9-12: Half Bridge 5A Continuous and 8A limit. Can be used as Low Side, High side or together for DC motor control (DBW)
- Auxiliary 13-16: Half Bridge 7.5A Continuous(pin limited). Can be used as Low Side, High side or together for DC motor control (DBW)
(NOTE: Auxiliary 9 -16 are used to control up to 4x DBW Throttle bodies)

2x Wide Band Lambda LSU4.9 Heater control (onboard)

- Using Bosch Integrated circuit technology for sensor control, Nernst Cell temperature measurement and PID algorithm for precise heater control.

1x Analog Output

- Voltage range 0 – 5.0V, Output current 100mA

3.0 Inputs

24x Analog voltage/temperature Inputs

- Fully configurable including custom calibrations
- Switchable pull-up resistors on ANV 7-12
- Resolution is 1.22mV (12 Bit)

8x Digital/speed Inputs

- Frequency range from 0.0Hz up the 30kHz.
- Wheel speed, VVT position and other frequency based signals.
- On/Off switched inputs; air-con request, table control switching
- Accepts a 0.0 – 20.0V analog input.
- Switchable pull-up resistors on all 8 channels.

6x Digital/Switched Inputs

- On/Off switched inputs; air-con request, table control switching
- Accepts a 0.0 -20.0 V analog input.
- Switchable pull-up resistors on all 6 channels.

2x Knock Inputs with configurable Frequency and Gain

- Using Bosch, Digital Knock Integrated Circuit Technology
- Selectable Frequency from 500Hz – 25kHz
- Selectable Bandwidth from 100Hz – 5kHz
- Selectable Digital Filter Window; Hamming or Blackman

2x Wide Band Lambda LSU4.9 Sensors (onboard)

- Using Bosch Integrated circuit technology for sensor control.
- Lambda Range: 580 to open air.

1x Dedicated Ignition Switch Input

- 0 – 20.0V input used for EFI Relay Control.

4.0 Voltage Supplies

4x ECU Supply Inputs

- 6V – 22.0V Range
- Supplies ECU power
- Supplies Auxiliary 1-8 High Side Drivers
- Supplies Auxiliary 9 -16 Half bridge Drivers

3x 5.0V Sensor Supply

- 5V Vref1 Output Current 250mA
- 5V Vref2 Output Current 250mA
- 5V Vref3 Output Current 250mA

1x 8.0V Sensor Supply

- Output Current 400mA

1x ECU Constant Supply

- Internal ECU Hold Power Control

5.0 Communications

- 1 x High Speed Ethernet 100Mbps
- 2 x CAN 2.0B 1Mbps/ 6 Channels per node