



KV16 ECU Data Sheet



March 2015

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1.0 General

Power Supply

- Operating Voltage: 6.0 to 22.0 Volts DC (ECU shutdowns at 24.0V)
- Operating Current: 350mA 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
- Connector system: 120 way Super Seal waterproof connectors with gold plated contacts
 - 1 x 34 pin Key 1 Super Seal
 - 1 x 34 pin Key 2 Super Seal
 - 1 x 26 pin Key 1 Super Seal
 - 1 x 26 pin Key 2 Super Seal

Internal

- Dual 100MHz Processors
- 500Mb DDR RAM (0.5Gb)
- 32MB ECU logging Memory
 - Over 700 channels available
 - 1Hz to 500Hz logging rate
- 10 channel Oscilloscope function
 - Sampling at 500k samples/second
 - Includes Crank and Cam sensors inputs
 - Includes Digital Inputs 1-8
- On-Board Barometric Pressure Sensor.
 - Range 40 - 115.0 kPa
- 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

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

16 x Auxiliary Outputs

- Variable Valve Timing, Drive by Wire, Boost control, Stepper motor and many more.
- All Outputs have PWM Control, maximum frequency = 15 kHz
- 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 15A Continuous and 40A limit. Can be used as Low Side, High side or together for DC motor control (DBW)

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

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

1x Dedicated EFI Main Relay Output

- Provides a relay ground. 100mA Limit

1x Analog Output

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

3.0 Inputs

16x 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

2x Wide Band Lambda LSU4.9 Sensors (on board)

- Using Bosch Integrated circuit technology for sensor control, Lambda Range: 0.650 to open air.

1x Dedicated Ignition Switch Input

- 6.0 - 20.0V input used for EFI Relay Control.

4.0 Voltage Supplies

1x ECU Supply Input

- 6V - 22.0V Range
- Supplies ECU power
- Supplies Aux 1-8 High Side Drivers
-

1x Auxiliary 9-12 Supply Input

- Power Supply for Auxiliary Channels 9 -12. (See KV Series Power Distribution Wiring - A10.pdf for more information on how this should be wired)

1x Auxiliary 13-16 Supply Input

- Power Supply for Auxiliary Channels 13 -16. (See KV Series Power Distribution Wiring - A10.pdf for more information on how this should be wired)

2x 5.0V Supply Outputs

- 5V Engine 250mA
- 5V Auxiliary 250mA

1x 8.0V CAS Output

- Output Current 400mA

5.0 Communications

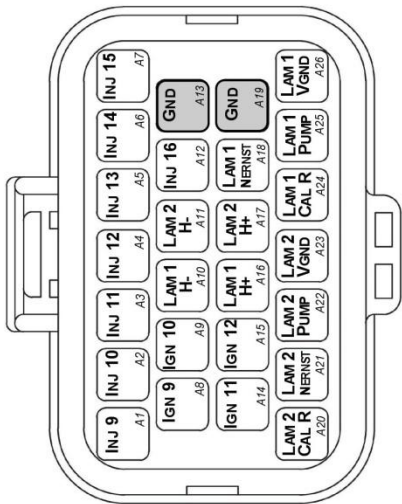
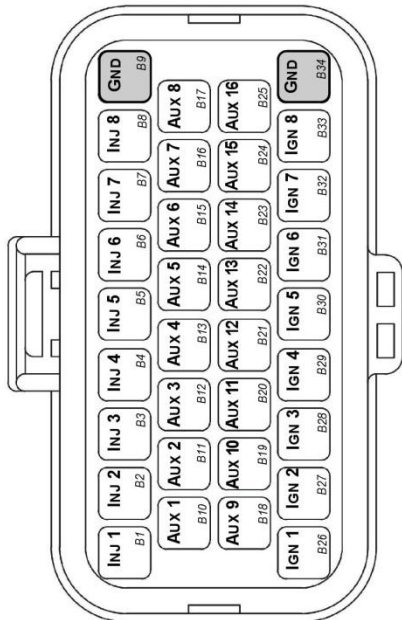
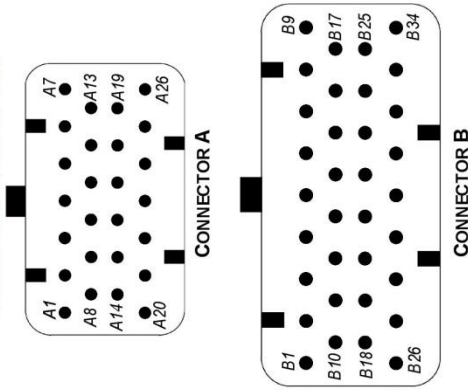
- 1 x Ethernet 100Mbps
- 2 x CAN 2.0B 1Mbps/ 6 Channels per node

6.0 Ordering Information

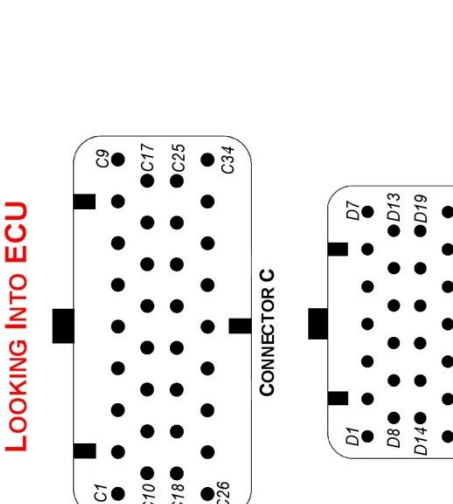
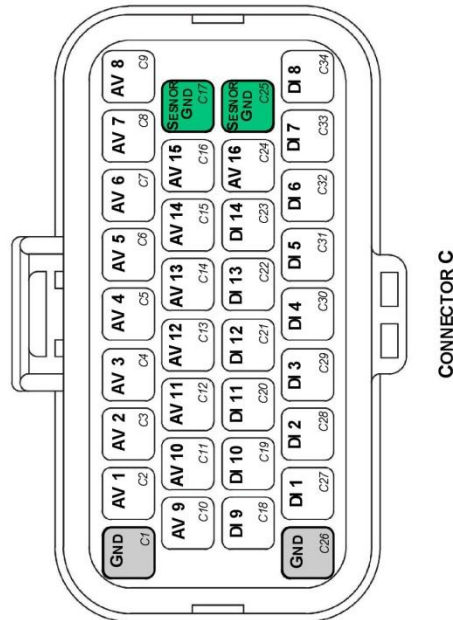
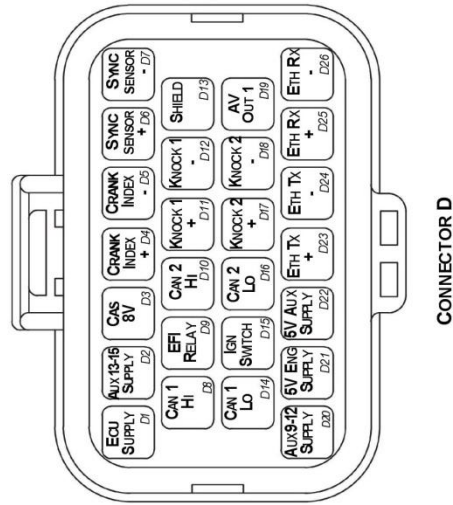
Product	Part Number
Emtron KV16 ECU	1122-162
Emtron Comms Cable, Superseal to Emtron Connector 200mm	533-02
Emtron Ethernet Cable, Emtron Connector to Ethernet 1.5m	553-15

7.0 ECU Pinout Drawing

LOOKING INTO ECU



LOOKING INTO ECU



Title: KV-16 Rev 2 ECU Pinout

Date: 2/2/2015 Revision: 1.0

Drawing Number: A22