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Emtron KV8 Engine Control Unit

Brand: Emtron Australia
Product Code: EMKV8
Weight: 0.50kg
Dimensions: 20.00cm x 15.00cm x 19.00cm

Price: $3,135.00

Short Description
Packed with features and made in Australia, the KV8 is ideal for any engine using up to eight injector and eight coils.

Description

Overview

Emtron's KV8 is a wire in ECU with extreme flexibility. Industry leading I/O count will ensure you do not have to make any sacrifices when configuring your engine and vehicle. This ECU will support up to 8 Cylinders fully sequential. Every KV8 is housed in a durable billet Aluminum enclosure and includes up to 64Mb permanent memory for on board logging and oscilloscope function, twin DBW control, twin Lambda controllers, twin digital Knock control, Ethernet communications and 3 axis G-force sensing to name a few.

This ECU is developed for motorsport but can be implemented in almost any application.

Features

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 Operating Range: -30 to 110°C (-22 to 230°F)

Physical

Enclosure Size 145 mm x 160 mm x 35 mm

- Weight KV Series: 0.95kg

Internal

- Dual 100MHz Processors
- 500MB DDR RAM (0.5GB)
- Up to 64MB permanent memory storage for ECU logging and Oscilloscope Function
- Up to x10 channel Oscilloscope function

o Sampling at 500k samples/second

o Includes Crank and Cam sensors inputs

o Includes Digital Inputs 1-8

- On-Board Barometric Pressure Sensor.

o Range 40 - 115.0 kPa

- 3-Axis Accelerometer

- 16 Bit Resolution
- 2g/ 4g/ 8g dynamically selectable full-scale
- Output Data Rate 500Hz

Communications

- Ethernet 100Mbps. High Speed communications channels used for tuning and uploading ECU log files.
- 2x CAN nodes/ 6 Channels per node
- 1x RS232 channel

Injection

The ECU can control both modes of injection: Saturated and Peak & Hold.

Peak and Hold - Up to 16x channels

When using low impedance injectors (< 5 Ohms) the ECU uses a switch mode current limiting technique to minimise heat dissipation in the Injector. This gives better injector control and helps maximize injector life by lower its operating temperature.

- Independently configurable Peak and Hold currents up to 16 cylinders
- Max Peak current 8A
- Max Hold current 2A
- Current limited to 10A.
- Flyback Voltage Clamp: 60V.

Saturated

Required when injector resistance is greater than 5 Ohms.

- Current limited to 5A.
- Flyback Voltage Clamp: 60V.

Auxiliary Fuel Mode

Unassigned Fuel channels can be used to switch or modulate resistive and inductive loads.

- Sink continuous current 5A, current limit 8A.
- Flyback voltage clamp: 60V.
- Maximum Frequency: 5kHz

Protection

- Over current / Short to Battery protection
- Electrostatic discharge (ESD) protection
- Flyback Voltage Clamp: Dependent on Flyback pin configuration. Normally battery constant power.

Ignition

Ignition Control - Up to 12x channels

- Up to 12 Channels Sequential/Wasted Ignition or 6 Leading/6 Trailing Ignition.
- Independent switchable pull-up resistor control on channels 1 to 8.
- Adjustable source current; 35mA at 5V or 70mA at 8.2V for high current mode

Auxiliary Ignition Mode

Unassigned Ignition channels can be used to switch or modulate

resistive and inductive loads.

- Sink continuous current 1A, current limit 3.0A.
- Flyback voltage clamp: 40V.
- Maximum Frequency: 5kHz

Protection

- Over current / Short to Battery protection
- Electrostatic discharge (ESD) protection

Digital Inputs

Digital Inputs Overview - Up to 14x channels

Application: Switch to 0V, Switch to VBatt, logic signal, Magnetic or Hall effect

frequency based signals.

- Input Analog Voltage Range: 0 -20.0V
- Input Frequency Range: 0 - 30kHz (Available on DI 1- 8)
- Filter time constant = 12us
- Input Impedance.

o DI 1- 8: 39k Ohms to ground.

o DI 9 -14: 70k Ohms to ground.

- Switchable Pull-up resistor on all channels

o 4k7 to 9.0V.

- “True” Zero crossing detection on magnetic based signals
- Independent programmable arming thresholds from 0.1V to 15.0V on frequency based inputs. Resolution = 0.1V.
- Programmable trigger edge(s).
- Maximum input signal amplitude /-100V.

Analog Voltage Input Mode

When not used as frequency or switched inputs these channels can be used to measure analog signals. All Channels have over voltage protection.

DI 1- 8

- Input Analog Voltage Range: 0 - 20.0V
- 4.88mV resolution (10 bit effective resolution)
- Maximum usable Analog Input Voltage: 20.0V
- Input Impedance = 39k Ohms to ground.

DI 9- 14

- Input Analog Voltage Range: 0 - 20.0V
- 20.0mV resolution
- Maximum usable Analog Input Voltage: 20.0V
- Input Impedance = 70k Ohms to ground.

Auxiliary Outputs

The ECU contains 3 different types of auxiliary outputs. These drives are suitable for controlling relays, resistive and inductive loads, stepper motors, DC servo motors and electronic throttles. Auxiliary channels 1-8 can be selected as Low or High Side Control on most models.

Low Side Driver - Up to 16x Channels

- Auxiliary 1-4:

o Continuous current 3A

o Modulated peak current 5A

o 8A Limit

- Auxiliary 5-8:

o Continuous current 2A

o Modulated peak current 3.5A

o 5A Limit

- Auxiliary 9-12: Half bride (see below)
- Auxiliary 13-14: Sink Continuous current 6A, 12A Limit
- Auxiliary 15-16: Sink Continuous current 10A, 20A Limit
- Maximum Frequency: 15kHz

Protection

- Over current / Short to Battery/Thermal overload protection
- Electrostatic discharge (ESD) protection
- Reverse Battery Protection
- Flyback Voltage Clamp: Dependent on Flyback pin configuration. Normally battery constant power.

High Side Driver - Up to 8x Channels

- Auxiliary 1-8: Source Continuous current 4A, 9A Limit
- Maximum Frequency: 15kHz

Protection

- Over current / Short to Battery protection/Thermal overload protection
- Electrostatic discharge (ESD) protection
- Reverse Battery Protection
- Flyback Voltage Clamp: Dependent on Flyback pin configuration. Normally battery constant power.

Half Bridge Driver - 4x Channels (Aux 9 - 12)

- Sink or Source Continuous current 5A, 8A Limit.
- Maximum Frequency: 15kHz

Protection

- Over current / Short to Battery protection Thermal overload protection
- Electrostatic discharge (ESD) protection
- Reverse Battery Protection
- Flyback Voltage Clamp. Battery voltage through Aux 9-12 Supply pin.

Analog Inputs

All analog inputs are sampled using 12bit ADCs. They are suitable for sensors that have an output voltage, potentiometers and temperature sensors. All analog inputs can also be used as switched inputs with activation levels programmable from 0 - 5V.

Analog Voltage Inputs - Up to 14x Channels

- Input Analog Voltage Range: 0 -5.0V
- 100k ohms input resistance to ground
- 1st order 100Hz Low pass filter.
- 1.22 mV resolution

Analog Temperature Inputs - Available on 6 channels

- Configurable pull-up control on Analog Channels 7 -12
- Input Analog Voltage Range: 0 -5.0V
- 1.0k ohm input resistance to 5.0V and 100k Ohms to 0V
- 1st order 100Hz Low pass filter.
- 1.22 mV resolution

Crank and Cam Sensor Inputs

- Two Independent channels with Magnetic, Hall effect and Logic options
- Maximum signal amplitude /-100V
- Input Resistance = 39k Ohms to ground
- Switchable Pull-up resistor = 4k7 Ohm to 5.0 V
- “True” Zero crossing detection on magnetic based signals
- Programmable Independent arming thresholds from 0.1V to 15.0V on all signals

Knock Control

- 2 Independent channels.
- Using Bosch, Digital Knock Integrated Circuit Technology
- Selectable Frequency from 5 - 15kHz
- Selectable Bandwidth form 300Hz - 5kHz
- Programmable digital filter coefficients.
- Selectable gain control.
- Bank selectable Knock Control.

Lambda Control

- 2 independent channels supporting Bosch LSU4.9 sensors
- Using Bosch, Integrated circuit technology for sensor control.
- Closed Loop heater temperature control for precise lambda measurement.

Analog Voltage Outputs

- Resolution is 4.88mV (10 bit)
- Output voltage range 0 - 5.0V
- Output driving current 100mA
- Output impedance 22 Ohms

Voltage Supply Outputs

5V Engine Supply

- Continuous current: 0.25 Amps
- Accuracy: /- 0.5% at 20 °C
- Short circuit, Thermal overload protection.

5V Auxiliary Supply

- Continuous current: 0.25 Amps
- Accuracy: /- 0.5% at 20 °C
- Short circuit, Thermal overload protection.

8V CAS

- Continuous current: 0.4 Amps
- Accuracy: /- 0.5% at 20 °C
- Short circuit, Thermal overload protection.

Voltage Supply Inputs

ECU Supply

- Main ECU Power Supply
- Power Supply for Auxiliary Channels 1- 8 High Side Drivers
- Operating Range 6.0V - 22.0V

Aux 9-12 Supply

- Power Supply for Auxiliary 9-12 Half Bridge Drivers

o Connect to ECU Power Supply in non DBW applications

o Connect to DBW Relay output in DBW applications

Flyback Supply

- Flyback supply for Injector Channels when Peak & Hold mode is active
- Flyback supply for Auxiliary Channels.
- Connection will depend on loom layout. In most cases connect to a Battery Constant supply to prevent back-feeding issues.

Dedicated Functions

Dedicated Main Relay Control

- Provides a relay ground, 100mA Limit
- Short circuit, Thermal overload protection.

Dedicated Ignition Switch

- Used to control Main EFI Relay circuit at key-on
- Input Analog Voltage Range: 0 - 20.0V
- 100k ohms input resistance to ground
- Adjustable ON/OFF thresholds. Resolution = 0.1V.