

**Features**

- Low power, small size, light weight Data Recorder.
- Rugged anodized aluminum enclosure; environmentally sealed<sup>1</sup>.
- 16 MBytes of memory, with data retention in case of power loss.
- 4 digital inputs: frequency, counters or state.
- 4 external analog inputs.
- 5 internal sensors:
  - 3 internal accelerometers:  $\pm 2G$  or  $\pm 6G$ .
  - Internal Temperature.
  - Supply Voltage
- 1 PWM control/alarm output.
- 1 USB 2.0 full-speed port.
- 3 RS-232 serial ports (COM)
- 3 Vehicle data bus ports
  - CAN1: CAN 2.0a/b (HS-CAN)
  - CAN2: CAN 2.0a/b (HS-CAN – see other options below)
  - SAE-J1708/SAE-J1587
- Compatibility with:
  - COMGPS – GPS receiver with antenna.
  - COMBLU – Bluetooth radio transceiver.
  - COMMH1 – 900 MHz long range radio transceiver.
  - COMGPR – GPRS (GSM) cellular network radio transceiver.
  - CANOBD – Connect to all OBD compatible vehicle data bus (J1850PWM, J1850VPW, ISO9141-2, ISO 14230 KWP, ISO15765 - CAN)
- Input activated recording – automatic start/stop.
- Sampling rate up to 4kHz per channel.

**Options**

OPTMEM-512	Memory upgrade from 16 to 512 MB
OPTVD2	Vehicle Data bus option 2 <ul style="list-style-type: none"> <li>– CAN1: CAN 2.0a/b (HS-CAN)</li> <li>– CAN2: CAN 2.0a/b (FT-CAN)</li> <li>– SAE-J1708/SAE-J1587</li> </ul>
OPTVD3	Vehicle Data bus option 3 <ul style="list-style-type: none"> <li>– CAN1: CAN 2.0a/b (HS-CAN)</li> <li>– CAN2: CAN 2.0a/b (SW-CAN)</li> <li>– SAE-J1708/SAE-J1587</li> </ul>


**Installation**

- Attach the Recorder to the vehicle chassis using Dual-Lock™ Velcro.
- Position the Recorder such that the three LEDs indicating the system status are visible.
- Align the Recorder's X,Y and Z axis along the sensing direction.
- Use the environmentally sealed cable assembly (CBLSL1) to connect the Recorder to the power supply and peripherals.
- Protect the Recorder from extreme vibrations.
- Make sure that air flows over the Recorder to avoid high temperatures.
- The Recorder supply ground should connect straight to the power supply. Use 16-18-AWG for power connection.
- Keep the Recorder and its wires at least 20cm (8") away from high interference electrical devices, such as: ignition coils, plug leads, high-current leads, high emission electronic modules or antennas.

**Calibration**

This unit is supplied with calibration data for its three internal accelerometers.

<sup>1</sup> When used with the CBLSL1 environmentally sealed cable connector

**Specifications**

Description	Symbol	Min	Typ	Max	Unit
Power Supply 11-18V input Input Voltage <sup>2</sup>	$V_{in}$	11.0		18.0	V
Supply Current @ 11.0V <sup>3</sup>	$I_{in-11}$		48		mA
@ 18.0V	$I_{in-18}$		30		mA
Operating Temperature	$T_O$	-40		85	C
Storage Temperature	$T_S$	-40		85	C
Internal Accelerometer					
±2G resolution X, Y and Z	ACCRES <sub>XYZ2G</sub>		0.00488		G/bit
±6G resolution X, Y and Z	ACCRES <sub>XYZ26</sub>		0.01465		G/bit
0G level	ACCZGL <sub>XYZ</sub>		2.5		V
non-linearity X, Y	ACCNL <sub>XY</sub>		±1		%FS
non-linearity Z	ACCNL <sub>Z</sub>		±3		%FS
bandwidth X, Y and Z	ACCBW <sub>XYZ</sub>		10		Hz
Internal Temperature Sensor					
Measurement range	SIG <sub>TMP</sub>	-40		150	C
Accuracy over measuring range	ACC <sub>TMP</sub>		±2		C
Resolution	RES <sub>TMP</sub>		0.48828		C/bit
DTC detector group					
Supply voltage <sup>4</sup>	$V_{DTC}$	$V_{in}-0.6$		$V_{in}$	V
Total supply current <sup>5</sup>	$I_{DTC}$			170	mA
Input low voltage <sup>6</sup>	DTC <sub>Lo</sub>	-50		2.4	V
Input high voltage <sup>7</sup>	DTC <sub>Hi</sub>	2.6		50	V
Internal pull-up resistor	$R_{pup}$		4.7		kΩ
Input Capacitance	$C_{DTC}$		100		pF
Input Frequency	$F_{DTC}$	0.7		1000	Hz
Sampling rate per input	SAMP <sub>DTC</sub>	1/600		4000	Samp.sec
Counter Resolution	RES <sub>DTC</sub>		5.3333		us
A sensor group					
Supply voltage	$V_{SENA}$	$V_{in}-0.6$		$V_{in}$	V
Total supply current	$I_{SENA}$			170	mA
Input Voltage <sup>8</sup>	SIG <sub>SENA</sub>	0		5.0	V
Input Accuracy	ACU <sub>SENA</sub>		<0.1		%FS
Input Capacitance	$C_{SENA}$		100		pF
A/D converter resolution	ADR <sub>SENA</sub>		0.0048828		V/bit
A/D conversion time per chan.	ADT <sub>SENA</sub>	7		14	us
A/D conv. time all SENA chan.	ADTA <sub>SENA</sub>	14		28	us
A/D conv. frequency	ADTF <sub>SENA</sub>	8.928		17.85	kHZ
Sampling speed per input	SAMP <sub>SENA</sub>	1/600		4000	Samp./sec
COM group					
Supply voltage	$V_{COM}$	$V_{in}-0.6$		$V_{in}$	V
Total supply Current	$I_{COM}$			500	mA
Regulated Supply Voltage	$V_{COM-REG}$	4.75		5.25	V
Regulated Supply Current	$I_{COM-REG}$			500	mA
Control output Voltage	$V_{CTL}$	0		5	V

<sup>2</sup> Use PWSISO-240 for extended input range 18-36V.

<sup>3</sup> Recorder with no sensor attached

<sup>4</sup> Voltage supplied by the Recorder to the given sensor or detector group.

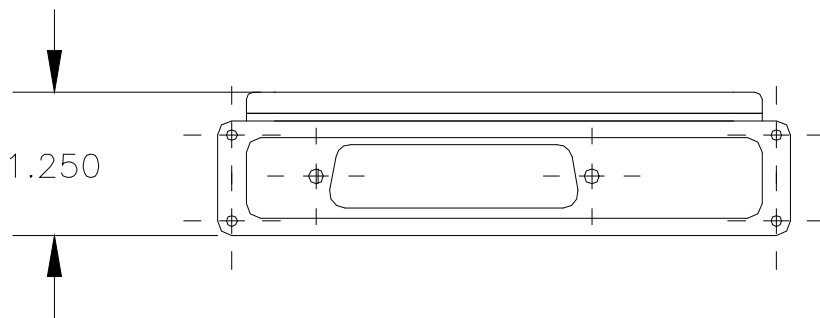
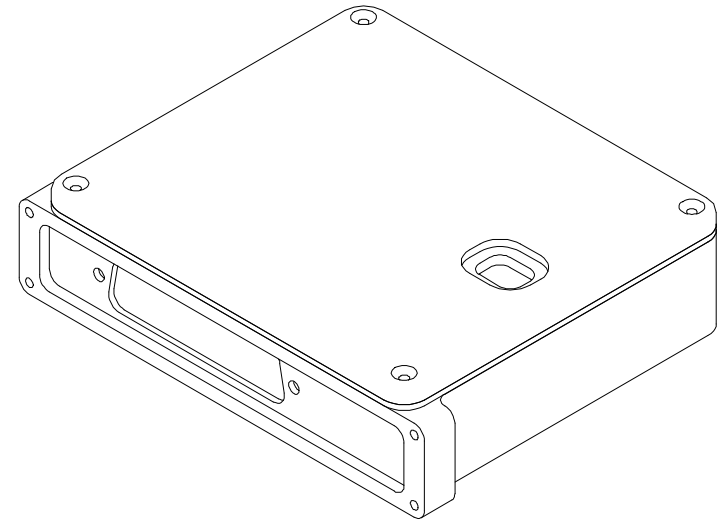
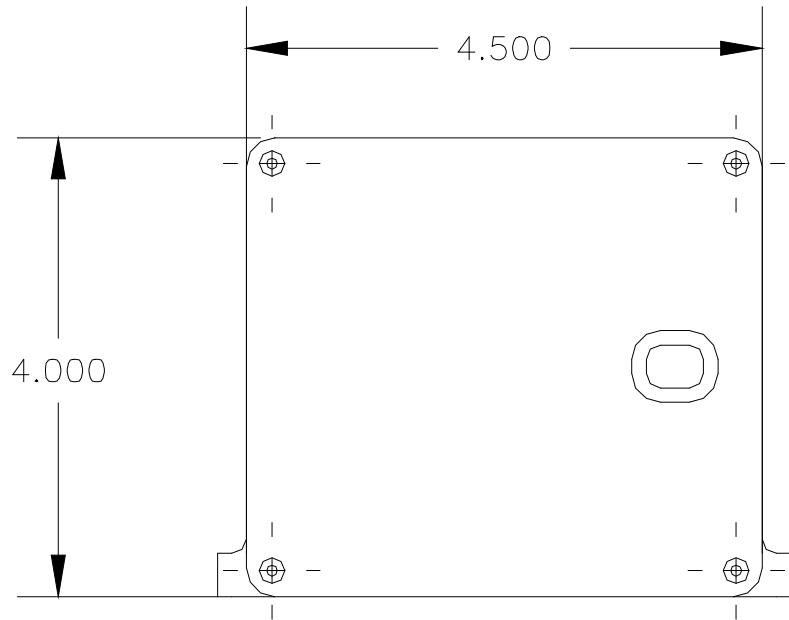
<sup>5</sup> Maximum current before the auto-reset fuse interrupts supply to the given sensor or detector group.

<sup>6</sup> Single-ended voltage for each detector input.

<sup>7</sup> Single-ended voltage for each detector input.

<sup>8</sup> Single-ended voltage for each sensor input

CAN HSCAN Interface (Philips TJA-1050)					
Bit Rate	$BR_{HSCAN}$	10		1000	KBbit/sec
DC voltage at pin CANH/CANL	$V_{HSCANH}/V_{HSCANL}$	-27		40	V
Transient voltage at pin CANH/CANL	$V_{tHSCANH}/V_{tHSCANL}$	-200		200	V
CAN FTCAN Interface (Motorola MC33388)					
Bit Rate	$BR_{FTCAN}$	10		125	KBit/sec
DC voltage at pin CANH/CANL	$V_{FTCANH}/V_{FTCANL}$	-20		27	V
Transient voltage at pin CANH/CANL	$V_{tFTCANH}/V_{tFTCANL}$	-40		40	V
CAN SWCAN Interface (Philips AU5790)			33		
Bit Rate	$BR_{SWCAN}$	10		100	Kbit/sec
DC voltage at pin CANH	$V_{SWCANH}$	-10		18	V
Transient voltage at pin CANH	$V_{tSWCANH}$	-100		100	V
SAE J1708 Interface (National DS36277)			33		
Bit Rate	$BR_{HSCAN}$			1	Mbit/sec
DC voltage at pin CANH	$V_{HSCANH}$	-27		40	V
DC voltage at pin CANL	$V_{HSCANL}$	-27		40	V
Transient voltage at pin CANH	$V_{tHSCANH}$	-200		200	V
Transient voltage at pin CANL	$V_{tHSCANL}$	-200		200	V
Effective download throughput					
USB				530	KBytes/sec
COM1, COM2, COM3 (RS-232)				10	kBytes/sec
Mechanical Specifications					
Height				31.75 (1.25)	mm(in.)
Depth				101 (4.00)	mm(in.)
Width				114.3 (4.5)	mm(in.)
Weight				260 (9.17)	g(oz.)



All dimensions are in inches [millimeters].