Features

- Stand-alone data recorder for mobile applications
- 512 MBytes of memory, with data retention in case of power loss
- 12 external inputs: analog, frequency, counters or state
- 5 internal sensors:
  - 3 internal accelerometers: ±2G or ±6G.
  - Internal Temperature.
  - Supply Voltage
- 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
- 3 RS-232 serial ports (COM)
- Compatibility with:
  - COMGPS - GPS receiver with antenna
  - COMEVD - CDMA cellular network transceiver
  - COMETH - Ethernet communication module
  - COMBLU - Bluetooth radio transceiver
  - COMMH1 - 900 MHz long range radio transceiver.
  - COMGSM - GPRS (GSM) cellular network transceiver.
  - COMWFI - Wi-Fi communication module
  - VDPMOD-OBD - Connect to all OBD compatible vehicle data bus (J1850PWM, J1850VPW, ISO9141-2, ISO 14230 KWP, ISO15765 - CAN)
- Recording triggered by input - automatic start/stop
- Sampling rate up to 4 kHz for all external channels.
- 1 USB 2.0 full-speed port.
- Low power consumption and auto shutdown
- Small size, light weight, rugged anodized aluminum enclosure resistant to petroleum products.
- Built-in overvoltage protection circuit
- Vibration Lock™ connector, no tools required
- MIL-STD-810F, CE and IP65 certified

Options

OPTVD2	**Vehicle Data bus option 2** – CAN1: CAN 2.0a/b (HS-CAN) – CAN2: CAN 2.0a/b (FT-CAN) – SAE-J1708/SAE-J1587
OPTVD3	**Vehicle Data bus option 3** – CAN1: CAN 2.0a/b (HS-CAN) – CAN2: CAN 2.0a/b (SW-CAN) – SAE-J1708/SAE-J1587

Installation

Hardware setup:

- 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 lateral, longitudinal and vertical orientation of the vehicle
- Use the main recorder harness (HRNMN2-318) to connect the Recorder to the power supply and peripherals

Software Configuration:

Use Analyzer V9 software to configure or retrieve data from the Recorder.

Calibration

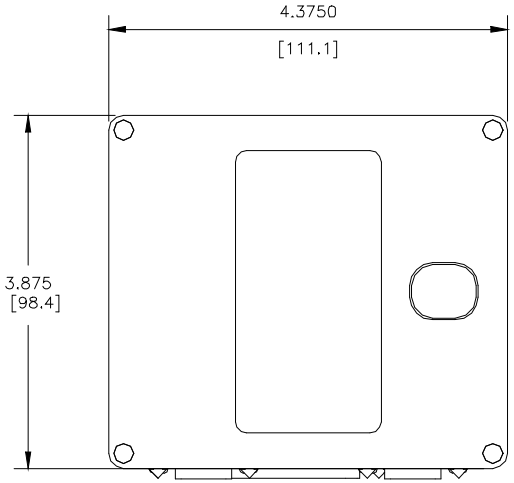
The calibration data for the three internal accelerometers is supplied with the Recorder

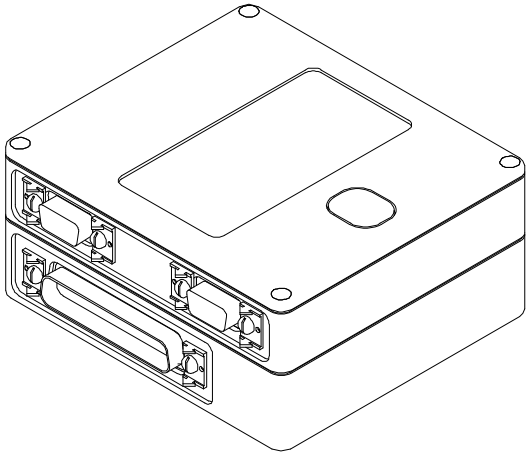
Specifications

Description	Symbol	Min	Typ	Max	Unit
Power supply					
Input voltage	V_{in}	11.0		30.0	V
Supply current @ 12.0V[1]	I_{in-11}		158		mA
@ 24.0V[1]	I_{in-24}		102		mA
Internal accelerometer					
±2G resolution X, Y and Z	$ACCRES_{XYZ2G}$		0.00195		g/bit
±6G resolution X, Y and Z	$ACCRES_{XYZ26}$		0.00586		g/bit
0G level	$ACCZGL_{XYZ}$		1.25		V
non-linearity X, Y, Z	$ACCNL_{XYZ}$		±2		%FS
bandwidth X, Y and Z	$ACCBW_{XYZ}$		10		Hz
Internal temperature sensor					
Accuracy over measuring range	ACC_{TMP}		±2		C
Resolution	RES_{TMP}		0.12207		C/bit
A group (A1-A8)					
Supply voltage[2]	V_{ExtIn}	V_{in}-0.6		V_{in}	V
Total supply current – group A1-A4[3]	I_{ExtIn}			170	mA
Total supply current – group A5-A8[3]	I_{ExtIn}			170	mA
Sampling rate per input	$SAMP_{ExtIn}$	1/600		4000	Samp/sec
Frequency, state, counter mode:					
Digital input low voltage[4]	DTC_{Lo}	-35		2.4	V
Digital high voltage[5]	DTC_{Hi}	2.6		35	V
Internal pull-up resistor	R_{pup}		3		MΩ
Input capacitance	C_{DTC}		1.7		pF
Input frequency	F_{DTC}	0.7		1000	Hz
Counter resolution	RES_{DTC}		5.3333		us
Analog mode:					
Analog input voltage[6]	SIG_{SENA}	0		5.0	V
Analog input voltage tolerance[7]	$VTOL_{SENA}$	-35		35	V
Analog input accuracy	ACU_{SENA}		±0.025		%FS
Input capacitance	C_{SENA}		1.7		pF
A/D converter resolution	ADR_{SENA}		1.221		mV/bit
A/D conversion time per chan.	ADT_{SENA}	7		14	us
A/D conv. time all SENA chan.	$ADTA_{SENA}$	14		28	us
A/D conv. frequency	$ADTF_{SENA}$	8.928		17.85	kHZ
B & C group (B1-B4, C1-C4)					
Supply voltage[2]	V_{ExtIn}	V_{in}-0.6		V_{in}	V
Total supply current – group B1-B4[3]	I_{ExtIn}			170	mA
Total supply current – group C1-C4[3]	I_{ExtIn}			170	mA
Sampling rate per input	$SAMP_{ExtIn}$	1/600		4000	Samp/sec
Frequency, state, counter mode:					
Digital input low voltage[4]	DTC_{Lo}	-35		2.4	V
Digital high voltage[5]	DTC_{Hi}	2.6		35	V
Internal pull-up resistor	R_{pup}		3		MΩ
Input capacitance	C_{DTC}		1.7		pF
Input frequency	F_{DTC}	0.7		1000	Hz
Counter resolution	RES_{DTC}		5.3333		us
Analog mode:					
Analog input voltage[6]	SIG_{SENBC}	0		5.0	V
Analog input voltage tolerance[7]	$VTOL_{SENBC}$	-35		35	V
Analog input accuracy	ACU_{SENBC}		±0.040		%FS
Input capacitance	C_{SENBC}		1.7		pF
A/D converter resolution	ADR_{SENBC}		0.3		mV/bit
A/D conversion time per chan.	ADT_{SENBC}		1.6		us
A/D conv. time all SENB & SENC chan.	$ADTA_{SENBC}$		3.7		us
A/D conv. Frequency	$ADTF_{SENBC}$	270		625	kHZ
A/D sampling type	$SAMPT_{SENBC}$		Simultaneous		

[1] Recorder with no sensor attached
[2] Voltage supplied by the Recorder to the given sensor or detector group.
[3] Maximum current before the auto-reset fuse interrupts supply to the given external sensor or external detector group.
[4] Single-ended voltage for each detector input.
[5] Single-ended voltage for each detector input.
[6] Single-ended voltage for each sensor input
[7] Single-ended voltage tolerance without damaging the unit

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
IDN (ISAAC Device Network)					
Supply voltage	V_{IDN}	V_{in}-0.6		V_{in}	V
Total supply current	I_{IDN}			500	mA
Communication type	$COMTYP_{IDN}$		HSCAN		
CAN HSCAN Interface (TI SN65HVD1050D)					
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	Vt_{HSCANH}/Vt_{HSCANL}	-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	Vt_{FTCANH}/Vt_{FTCANL}	-40		40	V
CAN SWCAN Interface (Philips AU5790)					
Bit Rate	BR_{SWCAN}	10	33	100	Kbit/sec
DC voltage at pin CANH	V_{SWCANH}	-10		18	V
Transient voltage at pin CANH	Vt_{SWCANH}	-100		100	V
SAE J1708 Interface (National DS36277)					
Bit rate	BR_{J1708}		9.6		kbit/sec
DC voltage at pin A	V_{J1708A}	-10		15	V
DC voltage at pin B	V_{J1708B}	-10		15	V
Effective download throughput					
USB			530		KBytes/sec
COM1, COM2, COM3 (RS-232)			10		kBytes/sec
Environment					
Operating temperature	T_O	-40 (-40)		85 (185)	C (F)
Storage temperature	T_S	-40 (-40)		85 (185)	C (F)
Certifications					
Electromagnetic Compatibility	CE	CE Mark			
IP (Ingress protection) (IEC 60529)	IP 65	IP 65 (dust & water resistant)			
Environmental (military spec.)	MIL-STD 810F	501.4 (low temperature)			
	MIL-STD 810F	502.4 (high temperature)			
	MIL-STD 810F	507.4 (humidity)			
	MIL-STD 810F	514.5 (vibration)			
	MIL-STD 810F	516.5 (mechanical shock)			
	IEC 68-2-52	Resistance to Cyclic Salt Spray			
Mechanical Specifications					
Height		51.3 (2.02)			mm (in)
Depth		98.4 (3.875)			mm (in)
Width		111.1 (4.375)			mm (in)
Weight		508 (17.92)			g (oz)





All dimensions are in inches [millimeters].