PERFORMANCE ELECTRONICS

Instruction Manual
P/N 30-2906-96 AQ1 Data Logger Harness

WARNING:

This installation is not for the electronic novice or the PC illiterate! Use this system with EXTREME caution! If you are not well versed in electronics and vehicle instrumentation or are not PC literate, please do not attempt the installation. Refer the installation to an AEM trained tuning shop.

NOTE: AEM holds no responsibility for any engine damage that results from the misuse of this product!

Note: This harness is only to be used with the 30-2500 AQ1 Data Logger.

KIT CONTENTS

1 x AQ1 Data Logger Harness with 96" Input Leads

WIRING

Power Connections

RED (PERM PWR)- Connect to a fused (5 Amp) constant 12 volt power source.

RED (SWIGN) – Connect to a fused (5 Amp) switched 12 volt power source.

BLACK (BATT GND) – Connect to a clean power ground. (Do not connect to a sensor ground)

AEMnet

AEMnet is an open architecture software and hardware interface based on the CAN 2.0 specification, which provides the ability for multiple enabled devices to easily communicate with each other through a single cable. The hardware connection is made through a Deutsch 4P DTM connector and contains 12 volt switched power and ground (2A max) as well as the CAN data lines. Devices connected to the AEMnet transmit data through this one connection and most of these devices receive power from this same connection as well.

The following AEM products are currently AEMnet enabled:

Series 2 Engine Management System

EMS-4 Universal Standalone Engine Management System

4-Channel Wideband UEGO Controller

AQ-1 Data Logger

Plug the Deutsch 4-pin DTM connector on the AQ1 Data Logger harness into the mating connector on other AEMnet compatible devices.

INPUT SIGNALS

Analog 1-4 are 0-5V analog inputs with optional pull-up resistor for RTD/Thermistor-style sensor. Examples: AEM gauges, MAP/pressure sensors, TPS/APP/shock travel/load cell sensors, analog MAF sensors, any 2 wire RTD or thermistor style temp sensor. See "Using the AQ1 Data Logger" for more information on configuring Inputs 1-4. The corresponding wires in the harness for Analog 1-4 are Yellow and are labeled INPUT 1, INPUT 2, INPUT 3 and, INPUT 4.

Analog/Frequency 5-8 are analog inputs for that can optionally measure frequency (0-5 V or 0-16 V) Examples: RPM, vehicle speed, frequency based MAF, injector duty cycle, boost control solenoid, flow sensor, hall sensor, any 3 wire pressure sensor. See "Using the AQ1 Data Logger" for more information on configuring Inputs 5-8. The corresponding wires in the harness for Analog/Frequency 5-8 are Yellow and are labeled INPUT 5, INPUT 6, INPUT 7, and INPUT 8.

Connection diagrams are shown below for some of the more common sensors/signals to be used with Inputs 1-4 and Inputs 5-8. See Figure 1.

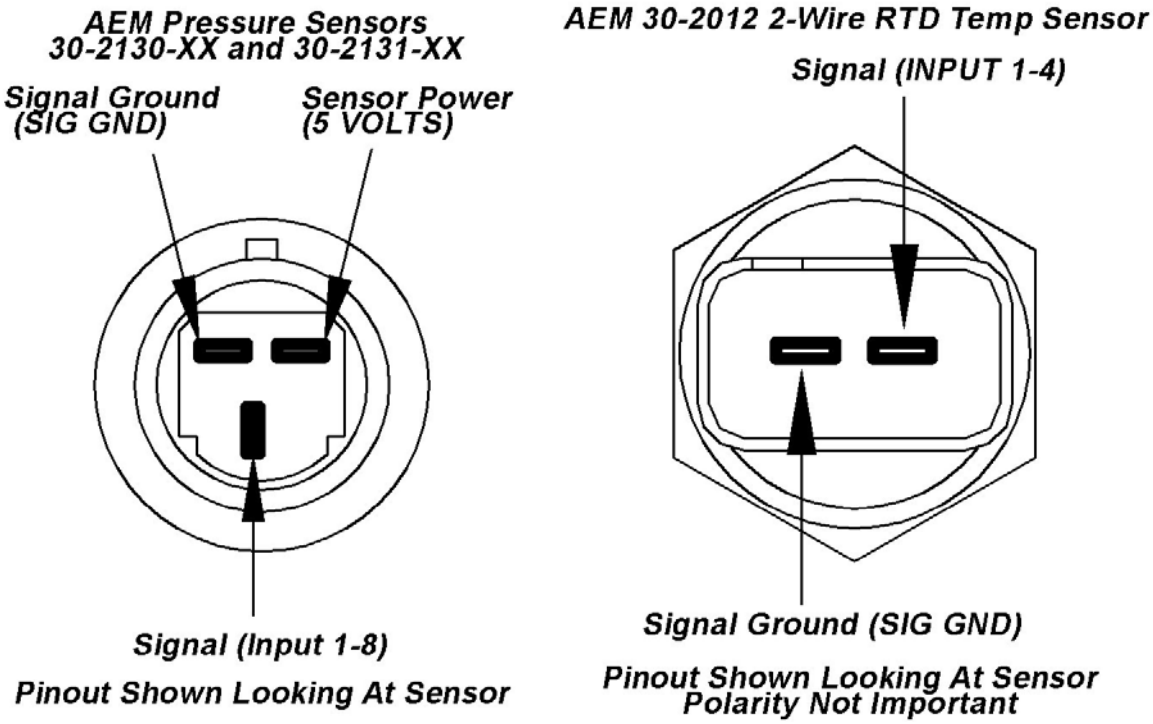

Figure 1. AEM Pressure Sensors(Left) AEM Temp Sensor (Right)

Figure 2 below shows the connection for an engine speed signal using an AEM Twin Fire CDI.

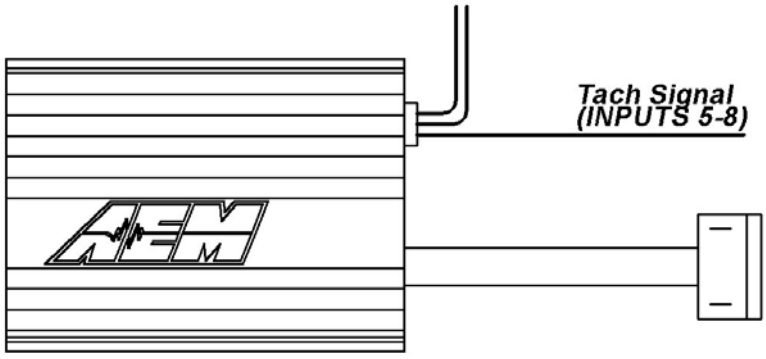

Figure 2. Engine RPM Signal From CDI

Digital 1-3 are switched to ground digital inputs, 16.5 V MAX tolerance.
Examples: Clutch/brake/cooling fan ground switch, nitrous solenoid ground or ground

switch input to start/stop Logger (Ground activated input). Figure 3 below shows wiring diagrams for an on/off activation switch and a nitrous solenoid. The corresponding wires in the harness for Digital 1-3 are Brown and are labeled SW 1, SW 2, and SW 3.

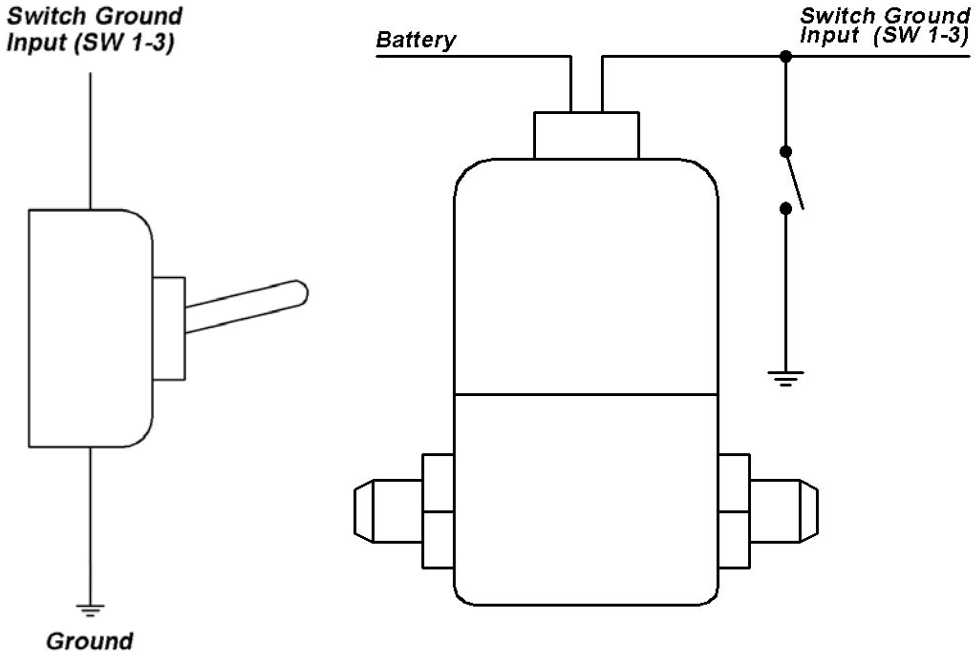

Figure 3. Activation Switch (Left) and Nitrous Solenoid (Right) Connections

SENSOR POWER

The AQ1 Data Logger has an internal low current 5 volt power supply that is used for powering sensors that require a 5 volt excitation. The corresponding wires in the harness are Red and are labeled 5 VOLTS.

SENSOR GROUND

The AQ1 Data Logger also has an internal low current sensor ground that is used for sensors that require a signal ground. The corresponding wires in the harness are Black and are labeled SIG GND.

RS 232

The RS232 serial input on the AQ1 Data Logger is configurable to read either a standard NMEA GPS data stream or the data stream from an AEM EMS. See “Using the AQ1 Data Logger” for more information on configuring the RS232 input. The AQ1 Data Logger harness comes with a male DB9 connector. When connecting to an AEM EMS, the male DB9 connector plugs directly into the mating connector on the back of the AEM EMS. The pinout for a GPS connection is shown below in Figure 4. AEM recommends using one of the Garmin GPS models listed below.

Garmin GPS 18x PC – 1 Hz model with DB9 connector and 12 volt power adapter
Garmin GPS18x 5Hz- 5 Hz OEM model, some wiring required.

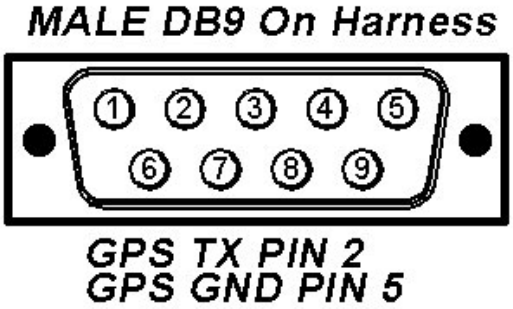

Figure 4. Typical GPS Connection

CAN BUS 2

Not used with AQ1 Data Logger PN 30-2500

USB

The AQ1 Data Logger has two USB ports for easy connection and programming. The AQ1 Data Logger receives low voltage power from the USB port, allowing users to access the SD card and make configuration changes at all times, 12 volt power is not necessary. The black remote mount USB port in the harness is designed for easy in vehicle programming and data downloads. The USB port on the back of the enclosure allows for easy bench top programming and data downloads when the module is removed from the vehicle. See Figure 5 below.

Figure 5. AQ1 On-Board (Left) and Harness (Right) USB Ports

30-2906-18 Connector Pinout

Pin	Description	Wire Stamping
1	Switched 12V	SW IGN
2	Switch to Ground Digital Input 1 (16V Max)	SW 1
3	Switch to Ground Digital Input 2 (16V Max)	SW 2
4	Switch to Ground Digital Input 3 (16V Max)	SW 3
5	Ground/Sheild	NOT APPLICABLE
6	Permanent 12V	PERM PWR
7	Sensor Ground	SIG GND
8	Analog 1 (5V Max)	INPUT 1
9	Analog 2 (5V Max)	INPUT 2
10	Analog 3 (5V Max)	INPUT 3
11	Analog 4 (5V Max)	INPUT 4
12	Analog / Frequency 5 (5V / 16V Max)	INPUT 5
13	Analog / Frequency 6 (5V / 16V Max)	INPUT 6
14	Analog / Frequency 7 (5V / 16V Max)	INPUT 7
15	Analog / Frequency 8 (5V / 16V Max)	INPUT 8
16	RS-232 Tx (Output)	NOT APPLICABLE
17	RS-232 Rx (Input)	NOT APPLICABLE
18	RS-232/USB GND	NOT APPLICABLE
19	Power Ground	BATT GND
20	Sensor 5V	5 VOLTS
21	NOT POPULATED	NOT APPLICABLE
22	NOT POPULATED	NOT APPLICABLE
23	NOT POPULATED	NOT APPLICABLE
24	NOT POPULATED	NOT APPLICABLE
25	NOT POPULATED	NOT APPLICABLE
26	NOT POPULATED	NOT APPLICABLE
27	AEMnet+	NOT APPLICABLE
28	AEMnet-	NOT APPLICABLE
29	Not Populated	NOT APPLICABLE
30	AEMnet Negative	NOT APPLICABLE
31	USB-	NOT APPLICABLE
32	USB+	NOT APPLICABLE
33	CAN H	NOT APPLICABLE
34	CAN L	NOT APPLICABLE
35	Shield	NOT APPLICABLE
36	USB 5V	NOT APPLICABLE

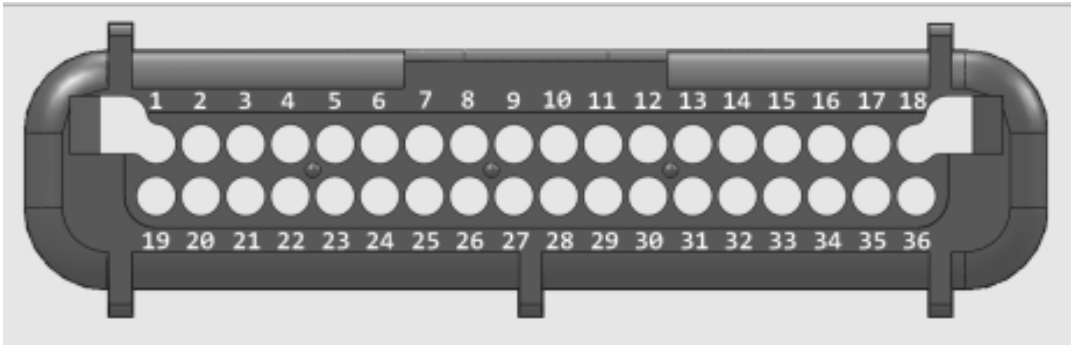

Figure 6. 36 Pin AQ1 Data Logger Connector, Wire Entry View

RECOMMENDED PARTS

30-51XX Analog Style Gauges
30-44XX Digital Style Gauges
30-2340 4 Channel UEGO Controller
30-4100 Digital Gauge Style UEGO Controller
30-5130 Analog Gauge Style UEGO Controller
30-2310 Inline UEGO Controller
30-2320 X-Wifi
30-2130-XX Stainless Steel Body Pressure Sensor
30-2131-XX Brass Body Pressure Sensor
30-2010 GM Style Inlet Air Temp Sensor
30-2011 GM Style Coolant Temp Sensor
30-2012 Fluid Temp Sensor, 1/8” NPT

If further tuning help is needed be sure to visit the video gallery or performance electronics forum for comprehensive instructional videos and information.