Module 19
Miscellaneous Input Signals

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- Fuel System Monitor
- Misfire Monitor
- Oxygen Sensor Monitor
- Oxygen Sensor Heater Monitor
- "P" Codes

Miscellaneous Training Material

- Glossary of Terms

19 Miscellaneous Signals

19.1   General Overview

Most PGMFI input types fall into three main categories: thermistor, 5 volt refer-
ence, or pulsed. The oxygen (O2) sensor is in a class all by itself since it is the
only voltage producing sensor. There are a few inputs that do not fall into these
categories and we have tried to list them all in this module. Here is the list of all
those miscellaneous sensors.

19.2   A/C Controls

19.2.1   Idle Compensation

From the very first PGMFI systems, the engine control module (ECM) had some
control over the air conditioning. The earliest systems mainly utilized the A/C
"on/off" switch input to activate the idle compensating system.

19.2.2   A/C Compressor Relay Control Circuit

The A/C compressor relay control circuit has always been under the control of the
ECM. The exact strategy the ECM used to decide when to not let the compressor
engage is not known. At its simplest it probably delays the clutch from engaging
when the car is first engaged. On later models that included clutch slip sensors the
strategy obviously became more complicated.

19.2.3   A/C Evaporator De-Ice Switch

The earlier model PGMFI systems did not monitor the evaporator de-ice switch.
The switch was just wired in series in the compressor relay control circuit. On
later model Hondas the two wires to the de-ice switch go to the ECM, which in
turn cuts off the compressor when the evaporator is getting too cold.

19.2.4   Radiator Cooling Fan / Condenser Fan Control

Earlier PGMFI systems did not control the radiator fans with the ECM. The
thermo switches and A/C switches would directly control both the radiator cool-
ing fan and the A/C condenser fan. On later model Hondas the radiator thermo
switch signal goes to the ECM and the ECM controls the radiator cooling fan and
A/C condenser fans through their relays.

On some of the newest models (Legend for sure), the radiator sensor is a thermis-
tor, not just an on/off thermo switch. The ECM monitors the coolant thermistor
voltage and can run the fan different speeds as needed.

19.3 Battery Voltage

The battery voltage is monitored and slight adjustments are made by the ECM based on battery voltage. Since the fuel injector pintle opens slower at lower voltages, injector pulse width (PW) is lengthening under low voltage situations.

19.4 Electrical Load Detector

Since Hondas are running so lean at idle, virtually any load will cause the idle to drop. Even small electrical loads, such as the turn signals, will cause the idle to fluctuate. The electrical load detector (ELD) was added to later model Hondas to monitor for any significant electrical loads. It sends a warning signal to the ECM before the load has a chance to effect the idle. The ECM makes slight adjustments to the idle air control (IAC) valve, injector PW, and ignition timing to compensate for the electrical load.

19.5 Power Steering Switch

Image 19-1

Power steering was available on various models even before the PGMFI system was available in 1985. On later models the ECM was notified of a load from the power steering system by the addition of the power steering pressure (PSP) switch.

The switch was add to Preludes in 1988, to Accords in 1990, and to Civics in 1992. The switch has two terminals and has continuity under higher pressures.

As shown in Image 19-1, the PSP switch is located in a hose coming off the power steering rack.

19.6 Starter Signal

When a car is started it momentarily needs additional fuel. The starter signal is used to notify the ECM when the car is being cranked. A wire from the main relay goes to the ECM and signals when the car is being cranked. When the start signal is combined with a cold engine coolant temperature (ECT) sensor the PW can be increased to as wide as 70ms.

19.7 A/T Gear Position Switch

When a vehicle, equipped with an automatic transmission, is put into gear a significant load is placed on the engine. The ECM is signaled that this load is about

to occur by the A/T Gear Position Switch. This feature has been used by all PGMFI systems.