

**Features:**

- 35° ± 2° Pedal Angle
- 17° ± 2° Angular Rotation
- FMVSS 124 and 302 compliant
- -40°C to + 85°C Operation
- +5V Operation
- Non-Contact Sensor
- Ratiometric APS output
- IP66 Sealed



**Connector Pin Configuration**

PACKARD ELECTRIC "WEATHER PACK" CONNECTOR  
 CONNECTOR, KEY INDEX 101 P/N 12010717  
 TERMINAL PIN (MALE) P/N 12089040  
 WIRE SEAL P/N 12015323



PIN A---WHITE---APS GROUND  
 PIN B---BLACK---APS SIGNAL  
 PIN C---RED-----APS SUPPLY(5V)

**Applications:**

- Truck Throttle with Position Sensor

**Description:**

The Electronic Floor Pedal Assembly (EFPA) is designed to provide a signal to the engine fuel control system in response to the driver's request for engine power. A sensor is employed which provides a linear output voltage proportional to the angular displacement of the treadle.

 <b>WILLIAMS CONTROLS</b>	PROCEDURE NAME:	DEPT:		030		
	<b>Williams Customer Specification Form</b>					
DOCUMENT NUMBER:	<b>WQF-030-021</b>	REVISION LEVEL:	A	DATE EFFECTIVE:	11/13/07	DAF# 00396
QEMS Representative	Mary Knight	Process Owner	Michael Cooper	Department Manager	Scott Thiel	

## Absolute Maximum Electrical/Mechanical Ratings

Supply Voltage	± 5.5 VDC
Output Current	± 10 mA
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Static Load Limit	1500N normal to treadle at 200mm from pivot

*Operation of this device beyond absolute maximum ratings may result in permanent damage.*

## Vehicle System Safety Information

During FMEA analysis (Failure Modes and Effects Analysis, a.k.a. Hazard Analysis), Williams Controls (WMCO) has identified the following potential failure mode of its Non Contact Sensors that can not be mitigated within the sensor assembly:

- Sensor output APS1 or APS2 (applicable for Dual APS Sensor only) or APS or IVS output (applicable for APS/IVS Sensors only) could get “electrically stuck” at an arbitrary output signal level (for APS only – IVS could get stuck at High or Low signal level) within the operating range of the sensor

This potential failure mode can not be detected and/or resolved within the sensor assembly itself and diagnostic information about this issue can not be transmitted and/or generated by the sensor assembly, but must be detected by the vehicle powertrain control system(s). To mitigate this potential failure mode, WMCO designed and released sensors feature a “Dual Redundant Output” concept. This sensor will produce two electrically independent output signals that are in direct correlation with each other.

To mitigate the risk named above, Williams Controls strongly recommends using the sensor’s built-in redundancy feature. The first APS signal would be used as the source of accelerator position signal information, and the second APS signal (or IVS signal, depending on sensor type) would be used for diagnostic purposes only. The comparison of the second (diagnostic) signal with the first (accelerator position) signal enables the vehicle to fully detect the described “electrically stuck” output failure mode.

Software algorithms specifically designed for this purpose (e.g. “stuck throttle routine”, “stuck pedal routine”...) are commonly used in the industry and known to mitigate this risk.

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## Design Verification Testing (Regulatory, Mechanical, Environmental)

### Regulatory Validation

- **FMVSS-124 RTI Certification**  
Per Federal regulations
- **FMVSS-302 Flammability**  
Per Federal regulations

### Mechanical Validation

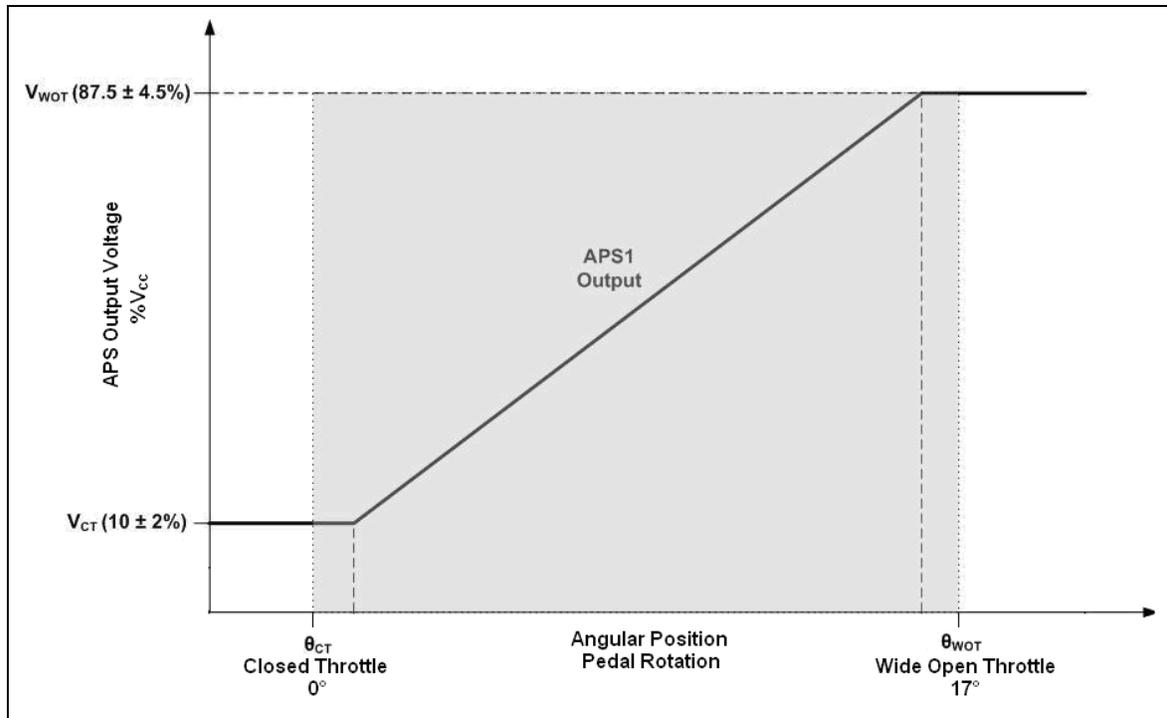
- **Full Stroke Endurance/Durability**  
With periodically monitored electrical output
- **Ultimate Strength**  
With force vs. displacement plots
- **Side Load Deflection**

Full Stroke Cycles:	3x10 <sup>6</sup> Cycles
Cycle Rate:	1 Hz

### Pedal Environmental Validation

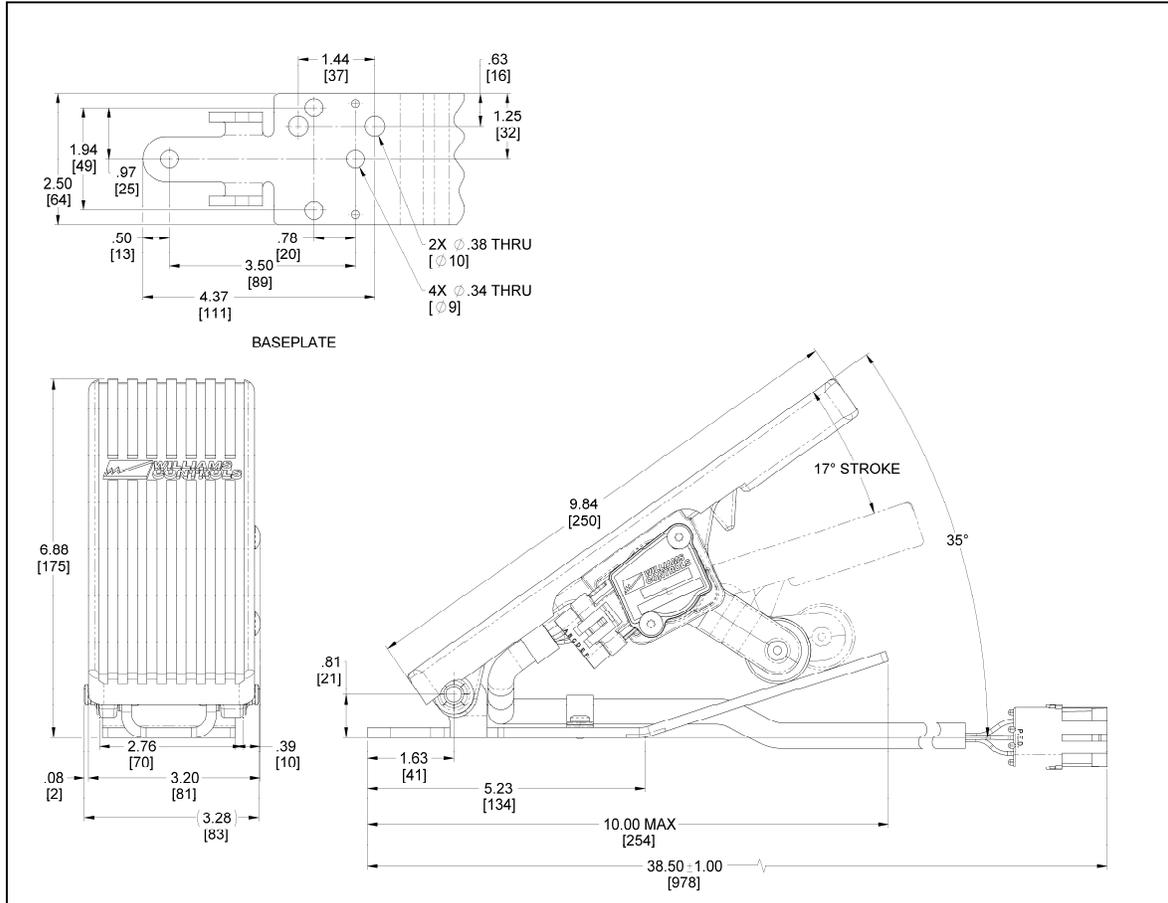
Thermal Cycle:	Refer to Williams Spec WDS-010
Thermal Stress:	
Thermal Shock:	
Humidity:	
Vibration:	
Salt Spray:	
Dust Exposure:	
Chemical Immersion:	
Pressure Wash:	

### Typical Output Characteristics



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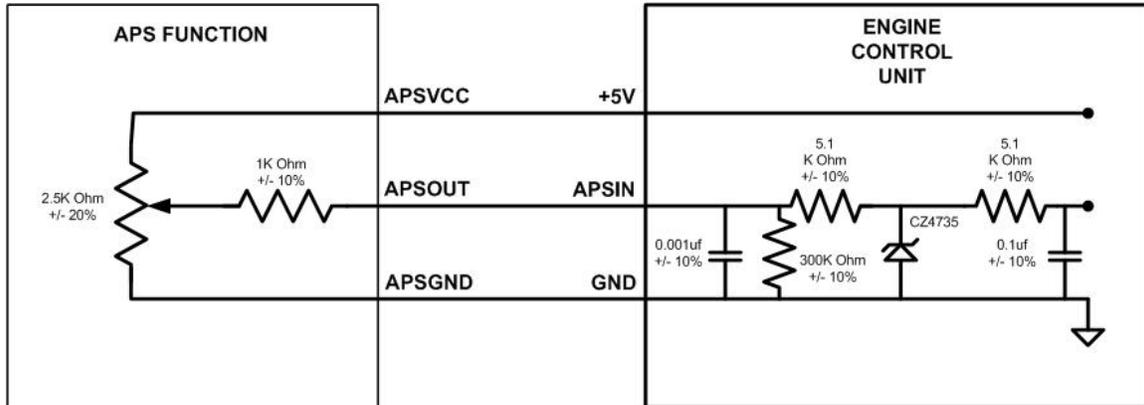
## Mechanical Dimensions and Characteristics (for reference only)



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## Applications Information:

### Load Circuit



## Referenced Documents:

- Williams Controls DWG # 345594
- Williams Controls DWG # 134812
- Williams Controls Specification # WDS-010
- FMVSS-124 & FMVSS-302
- SAE J1455
- ASTM B-117

## Revision History

Rev	Date	ECN#	Checked	Approved	Changes/Comments
A	07/21/2008	000215			Initial Release

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