



Williams Controls

WCS-134798

Williams Customer Specification

Revision A: 09/04/07
Uses 134143 Sensor

FEATURES

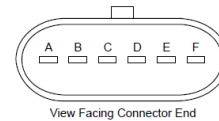
- -40°C to + 85°C Operation
- FMVSS 124 and 302 compliant
- +5V Operation
- Dual Ratiometric APS output
- Independent, Isolated APS circuits
- IP66 Sealed
- Highly EMI resistant (SAE J1113)
- Kick-Down Force in pedal actuation
- Kick-Down Switch



APPLICATIONS

- Cummins '07 Engine ECU Applications with Kick Down

Sensor Connector Pin Configuration



Pin	Function	Pin	Function
A	APS1 SIG	D	APS2 VCC2
B	APS1 GND1	E	APS2 GND2
C	APS1 VCC1	F	APS2 SIG

Sensor Mating Connector:

P Packard Electric "Metri-Pack"
Housing p/n: 12066317
Terminal p/n: 12103881
Kick-Down Switch Connector Pins

DESCRIPTION

The ESPA 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 voltage proportional to the angular displacement of the treadle.

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QEMS Representative	Mary Knight	Process Owner	Michael Cooper		Department Manager	Scott Thiel	

**MECHANICAL REQUIREMENTS**

Treadle Angle = 20° ± 2°

ABSOLUTE MAXIMUM RATINGS

APS Circuits	
Supply Voltage(VCC1, VCC2)	-15V to +15V
Output Current (APS1, APS2 output)	+/-10mA
APS1,2 short circuit duration to ground	20 Minutes Max
APS1,2 short circuit duration to VCC	20 Minutes Max
Whole Sensor	
Operating Temperature	-40°C to +85°C
Storage Temperature	40°C to +85°C

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

PEDAL VALIDATION

FMVSS-124 RTI Certification	Per Federal regulations
FMVSS-302 Flammability	Per Federal regulations
Ultimate Strength	With Force vs displacement plots
Side Load Deflection	
Full Stroke Endurance/Durability	With continuously monitored electrical output
Thermal Cycle	SAE J1455 -40°C to +85°C
Thermal Shock	-40°C to +85°C
Humidity	95% Humidity and 27°C to 75°C 120 hour exposure
Mechanical Vibration	Swept sine resonant frequency search
Mechanical Vibration	Random Broadband 5-500 Hz, 4.0G's
Salt Spray Exposure	ASTM B-117 96hr exposure
Dust Exposure	24Hr exposure, pedals cycled
Chemical Exposure	Diesel, Brake Fluid, antifreeze, and plastic protectant exposure
Pressure Wash	250 psig detergent, 1000 psig water at 140F – 40 minutes exposure, 005.rpm
Mechanical Shock	SAE J1455 One meter drop to concrete with additional harness drop

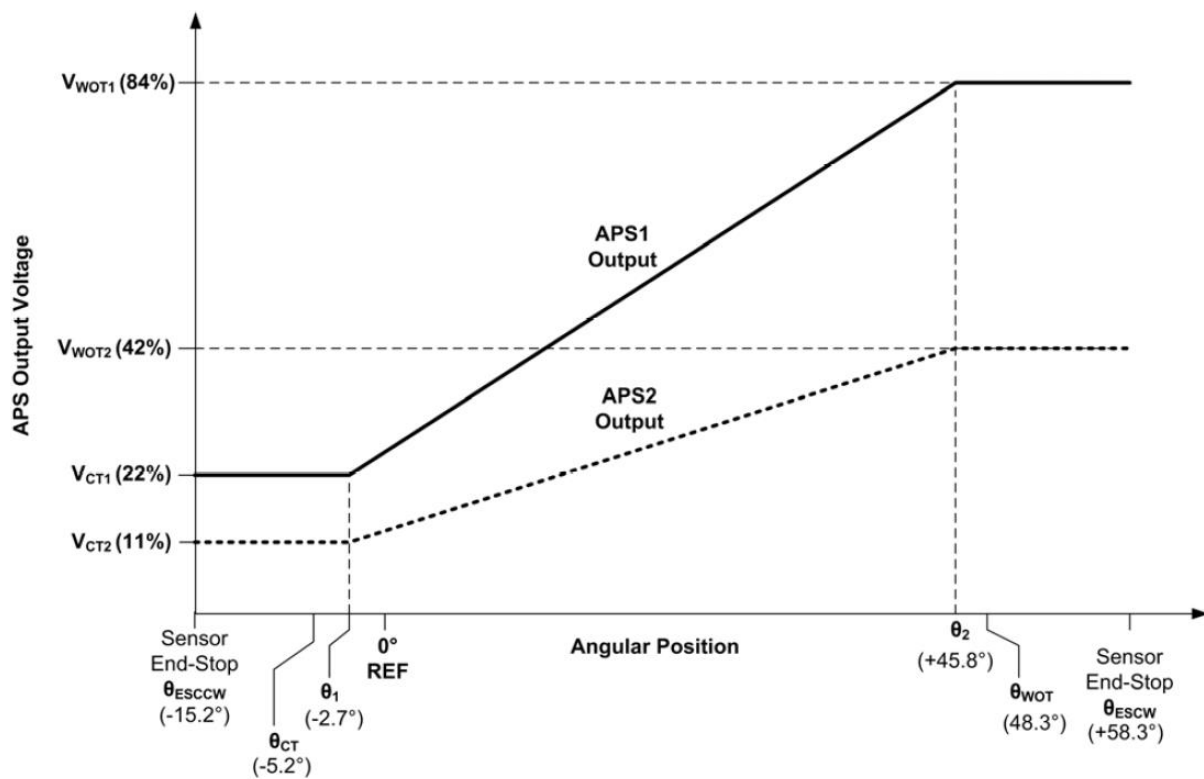
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SENSOR VALIDATION

Endurance Cycling to 10 Million Cycles	Sensor cycled over temperature, -40C to 85C, with continuously monitored electrical output.
Dither Testing	Sensors cycled to 80 million cycles at 28 Hz with periodic monitoring
Electrical Performance	Williams warrants its products to perform within +/-2.4% of listed values electrically over the life of the product.
EMC Testing	Sensors tested per SAE J1113 Class C for EMI

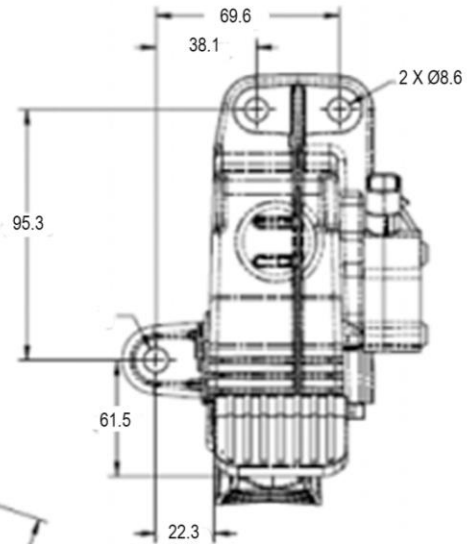
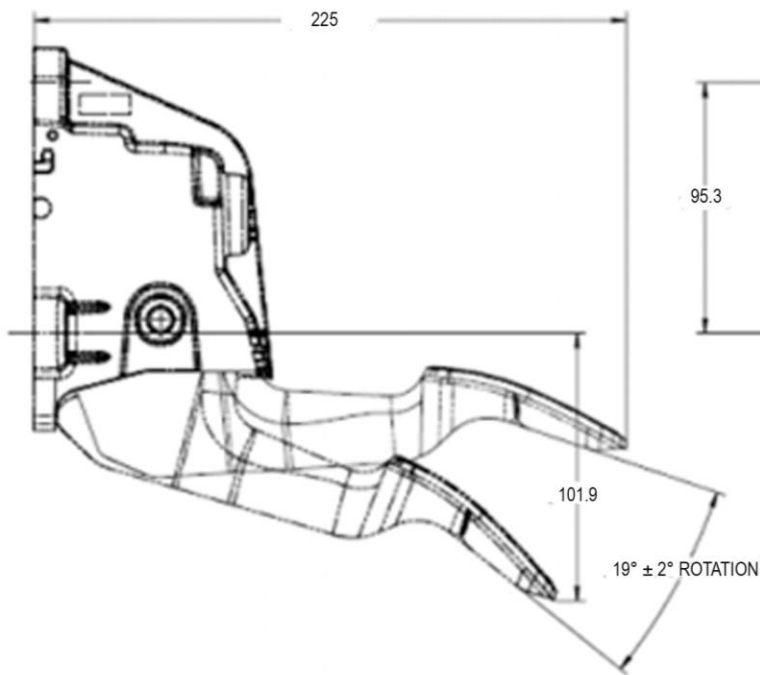
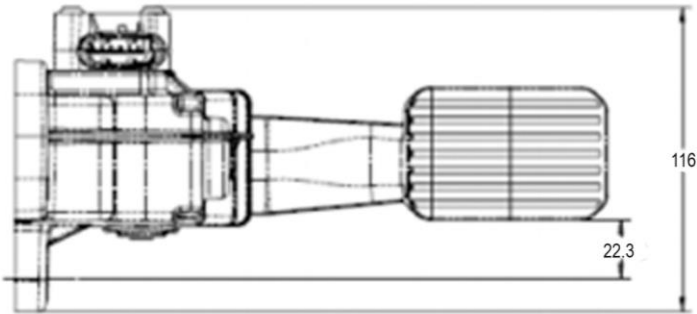
TYPICAL OUTPUT CHARACTERISTICS



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MECHANICAL DIMENSIONS AND CHARACTERISTICS (FOR REFENCE ONLY)

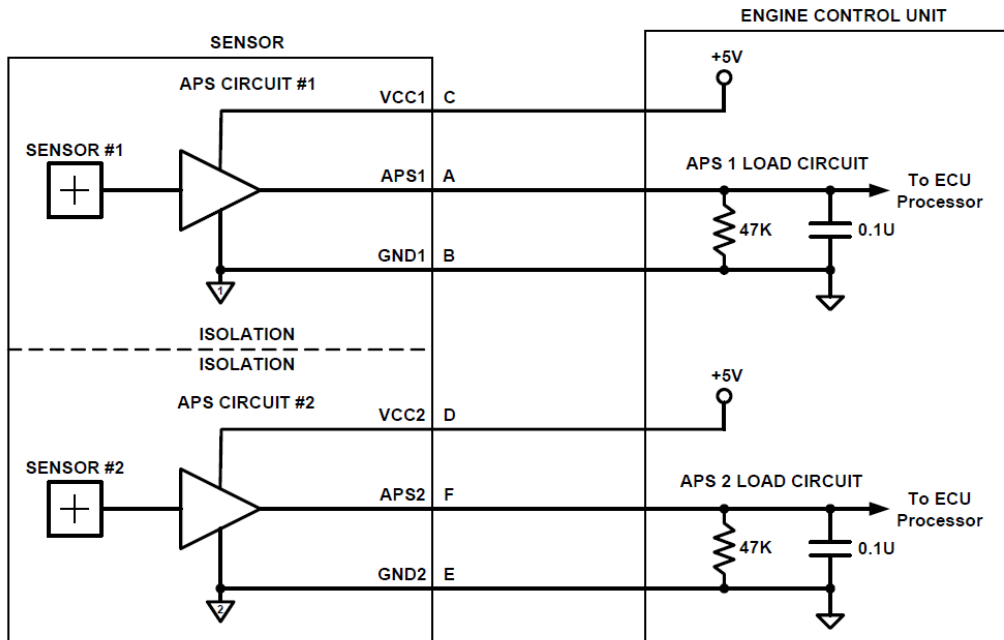


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LOAD CIRCUIT:

The following figure shows suggested interconnection and typical compatible ECU internal load circuits. Note that to maintain maximally redundant operation, separate power and ground signals need to be provided to each sensor



REFERENCED DOCUMENTS

- Williams Controls DWG #134798
- WCS- 134143 (Sensor specification)
- Williams Controls Specification
- FMVSS-124
- FMVSS-302
- SAE J1843
- IP66

REVISION HISTORY

Rev	Date	ECN#	Checked	Approved	Changes/Comments
A	09/04/07				Initial Release

USA	Portland Oregon T: +1.503.684.8600 cwig.us@curtisswright.com www.cw-industrialgroup.com	Europe	Garching Germany T: +44.89.5404.100.0 cwig.de@curtisswright.com www.cw-industrialgroup.com	Asia	Shanghai China T: +86.213.3310670 cwig.cn@curtisswright.com www.cw-industrialgroup.com
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