Features:

- 54 degree travel
- Holding Force 5 lbs.
- Threaded Brass Inserts for Mounting
- Dual Ratiometric APS output
- Independent, Isolated APS Circuit
- Electronics IP66 sealed
- +5V Operation
- -40°C to +85°C operation
- Design Life 100K Cycles
- Metripak 150-series compatible connector
- Protected against electrical misconnection (indefinite duration)

Applications:

- Throttle with position sensor for off-highway applications
- Sensor commonly applied to:
  - Cummins 07

Connector Pinout

<table>
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<th>Pin</th>
<th>Function</th>
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<tr>
<td>A</td>
<td>APS1</td>
<td>D</td>
<td>VCC2 (+5V)</td>
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<tr>
<td>B</td>
<td>GND1</td>
<td>E</td>
<td>GND2</td>
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<tr>
<td>C</td>
<td>VCC1 (+5V)</td>
<td>F</td>
<td>APS2</td>
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Mating Connector – Delphi-Metripak P/N 12066317 or equivalent

Advance Information
Subject to Change Without Notice
Description:

The Hand Control is a single-axis hand control with electronic output designed for use in a variety of off-road applications.

The Hand Control’s versatile design allows it to be fitted with different contact or non-contact type position sensors and different lever arms, depending on specific customer requirements.

The assembly body is molded Nylon 6/6, and features a powder-coated steel lever arm with padded vinyl knob.

Absolute Maximum Electrical/Mechanical Ratings

Supply Voltage (APSVCC, IVSCOM) -5V to +5V
Output Current (APS1, APS2 output) +/-10 mA
Operating Temperature -40°C to +85°C
Storage Temperature -40°C to +85°C
APS short circuit duration to ground Indefinite
APS short circuit duration to VCC Indefinite

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

Environmental Validation

Pedal Validation

- Ultimate Strength
  With force vs. displacement plots

- Side Load Deflection
- Full Stroke Endurance/Durability
  With continuously monitored electrical output

- Thermal cycle
  SAE J1455 85C to -40C

- Thermal Shock
  -40C to 85C

- Humidity
  120 hour exposure at 95% humidity and 27°C to 75C

- Mechanical Vibration
  Swept sine resonant frequency search

- Mechanical Vibration
  Random broadband 5-500 Hz, 4.0 G’s

- Salt Spray Exposure
  ASTM B-117 96 hr exposure

- Dust Exposure
  24 Hr exposure, pedals cycled

- Chemical Exposure
  Diesel, brake fluid, antifreeze, and plastic protectant exposure.

- Pressure Wash
  250 psig detergent, 1000 psig water at 140F- 40 minute exposure, 0.05 rpm

- Mechanical Shock
  SAE J1455: One meter drop to concrete with additional harness drop test.
Sensor Validation

- **Endurance Cycling to 10 Million Cycles**
  Sensors cycled over temperature, -40°C to 85°C; continuously monitored electrical output

- **Dither Testing**
  Sensors cycled to 80 million cycles at 28 Hz with periodic monitoring

- **EMC Testing**
  Sensors tested per SAE J1113 Class C for EMI

**Typical Output Characteristics (For Sensor 134143)**

![Graph showing typical output characteristics for Sensor 134143.](#)
Mechanical Dimensions and Characteristics (for reference only)
Applications Information:

Referenced Documents:

- Williams Controls DWG # 134512
- Williams Controls Specification # WDS-010B
- SAE J1113-1 – Electromagnetic Compatibility Measurement Procedures and Limits for Components of Vehicles, Boats, and Machines

Revision History

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