

# Williams Controls Rotary Position Sensor WM-H10

- **Non-contacting Hall-effect technology**
- **Measurement angle 15-360°**
- **Dual output – electrically isolated Hall-sensing elements**
- **Independent 5V supply**
- **6mm D-profile shaft**
- **Fail-safe outputs**
- **Environmentally robust**
- **Packard Electric ‘Metri-Pack’ 150 series connector**



The WM-H10 shaft-operated Rotary Position Sensor is a solid-state, Hall-effect sensor offering two independent and electrically isolated outputs in a compact housing with integrated connector.

The full range electrical output can be set to correspond to maximum rotations from 15° to 360°, providing a dual linear output voltage proportional to the absolute position of the 6mm, D-profiled shaft, in either direction from a reference angle. The integral magnet arrangement ensures a consistent sensor-magnet separation, avoiding errors associated with air-gap fluctuations.

The two independent measuring circuits, each with its own +5Vdc power supply connection, enable the use of algorithms that compare the signals for error checking. By utilising the first output signal as the

source of rotational motion detection and the second signal for diagnostic purposes, comparing the positional data from both outputs, signal veracity can be determined, meaning high-performing, safety-critical applications can easily be addressed. Further integrity is provided as the outputs enter pre-defined states in the event of connection errors to the sensor

The robust mechanical design offers exceptional levels of performance with respect to water and dust, shock, vibration and temperature, meaning the sensor is ideal for use in hostile, on- and off-highway vehicle environments.

Connection to the WM-H10 is via the industry-standard, Packard Electric ‘Metri-Pack’ 150 series of connectors, which offer high-reliability performance across all operating conditions.



## CONTENTS

<b>Installation</b> .....	<b>3</b>
Mechanical .....	3
Electrical Connections.....	4
“Metri-Pack” Series 150 .....	4
<b>Specifications</b> .....	<b>5</b>
Electrical .....	5
Voltage Outputs .....	5
Mechanical .....	6
Environmental .....	6

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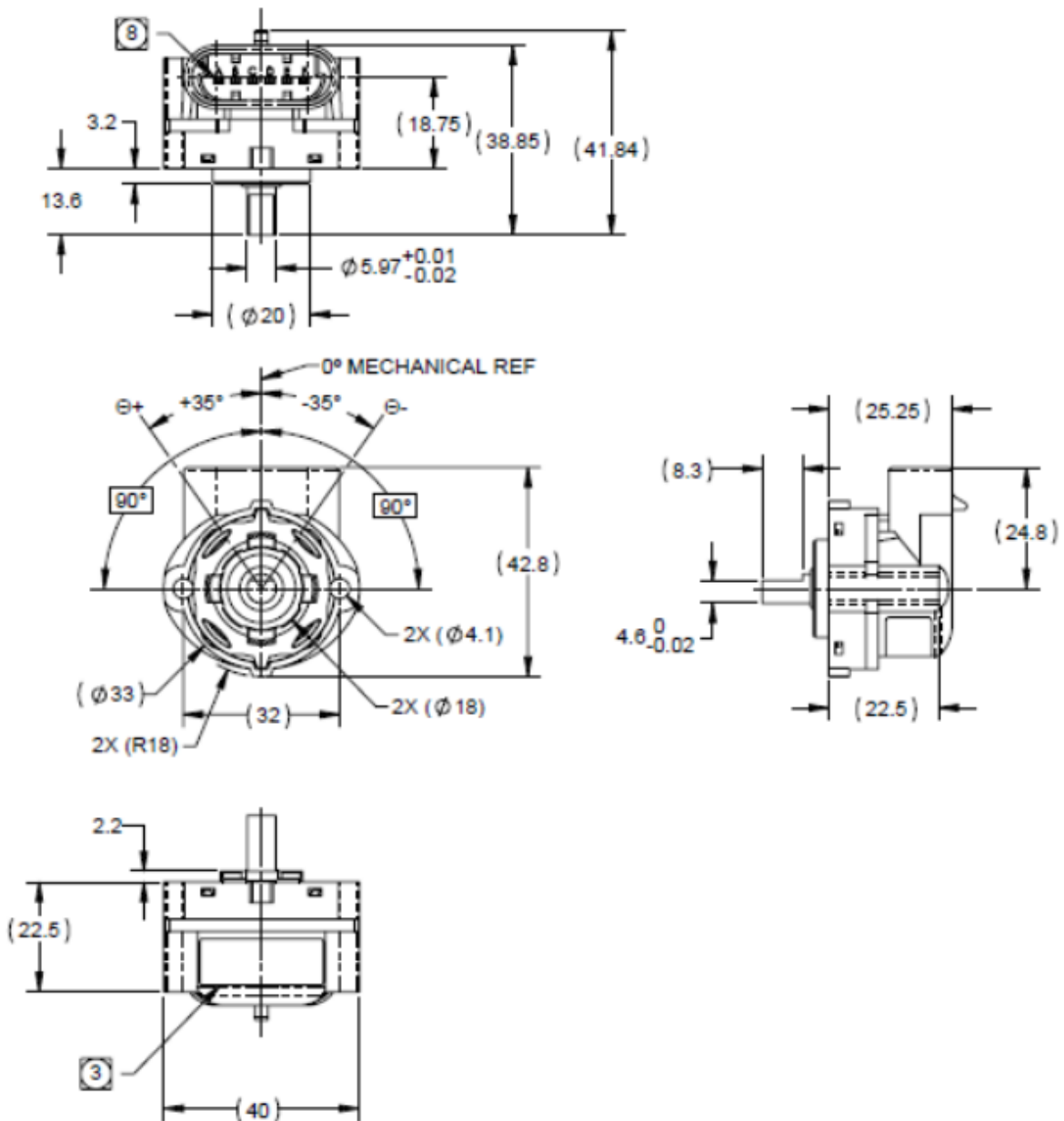
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## INSTALLATION

### MECHANICAL



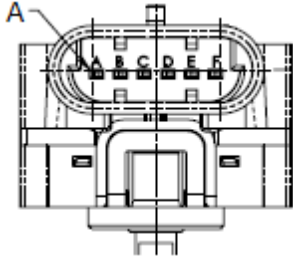
Dimensions in mm unless stated otherwise

*\*Drawing shows rotor shaft rotation in an example application (WM-H10, 70°). There is no spring in the assembly, rotor shaft can freely rotate and does not have mechanical stops.*



## ELECTRICAL CONNECTIONS

### “Metri-Pack” Series 150



Mating Parts:

Delphi Metri-Pack 150.2 Pull-to-Seat Series

- Connector: 12162210
- Terminal: 12124075
- Seal: 12052929

Delphi GT Series (Shrouded for more extreme environments)

- Connector: 15336013
- Terminal: 15305350
- Seals: 15305351 (Qty. 6)

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Pin	Function
A	Output 1
B	GND 1
C	Vsupply 1 (+5Vdc)
D	Vsupply 2 (+5Vdc)
E	GND 2
F	Output 2

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## SPECIFICATIONS

### ELECTRICAL

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MEASUREMENT RANGE	15-360° in 1° increments
SUPPLY VOLTAGE	5Vdc ±0.5Vdc
SUPPLY CURRENT	10mA per channel
SHORT-CIRCUIT PROTECTION	
OUTPUT TO GND	Indefinite
OUTPUT TO SUPPLY	Indefinite
SUPPLY REVERSE POLARITY PROTECTION	Up to -12Vdc
OVER-VOLTAGE PROTECTION	Up to 24Vdc

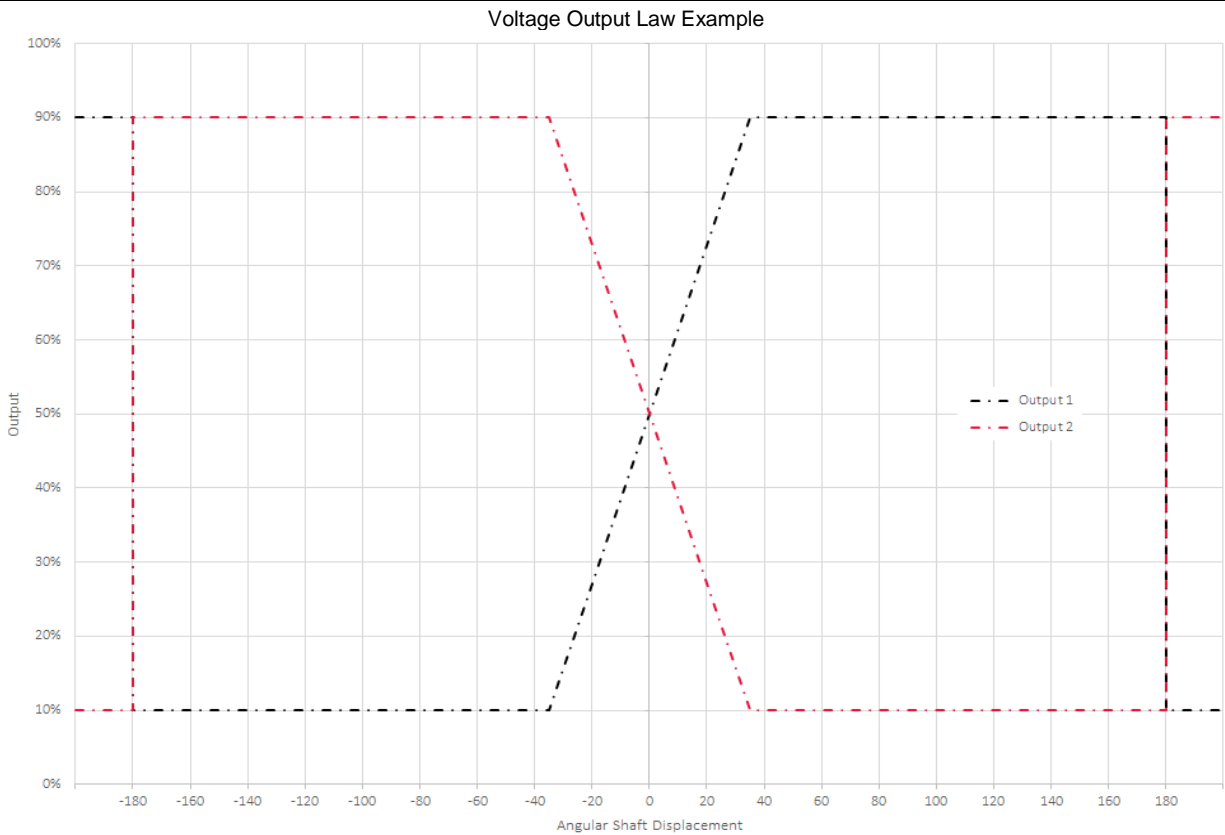
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### VOLTAGE OUTPUTS

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OUTPUT RANGE	10-90% ±2% of Vsupply over measurement range
MONOTONIC RANGE	5%/0.25V to 95%/4.75V nominal
LINEARITY (ABSOLUTE)	±2%
OUTPUT CORRELATION	±2%
LOAD RESISTANCE	10kΩ min. (resistive to GND)

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Example shown is for a WM-H10 configured to provide full range output over 70°  
Output law is configured as a crossed output as standard. For alternative output laws, please contact your local sales office.

**MECHANICAL**

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MECHANICAL ANGLE	360° continuous
WEIGHT	<70g

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**ENVIRONMENTAL**

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OPERATING TEMPERATURE RANGE	-40°C to +85°C (SAE J1455)
STORAGE TEMPERATURE RANGE	-40°C to +105°C
FLAMMABILITY	Per FMVSS-302 regulations
HUMIDITY	120 hours at 95% humidity (+27°C to +75°C)
SALT FOG	ASTM B-117 96 hour exposure
SEALING	IP68 and IP69K (Electronics with GT Series connector) IP6x (Rotor)
VIBRATION	Random broadband 5-500Hz, 4.0g
SHOCK	1m drop onto concrete (SAE J1455)
LIFE	10 million cycles at 1Hz
MTTF	>1000 years
ELECTROMAGNETIC INTERFERENCE	SAE J1113

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**IMPORTANT INFORMATION**

Whilst Curtiss-Wright Industrial Group – Williams Controls has designed this sensor to meet a range of applications it is the responsibility of the customer to ensure it meets their specific requirement.

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