Jewell Instruments

MAKING SENSE OUT OF MOTION

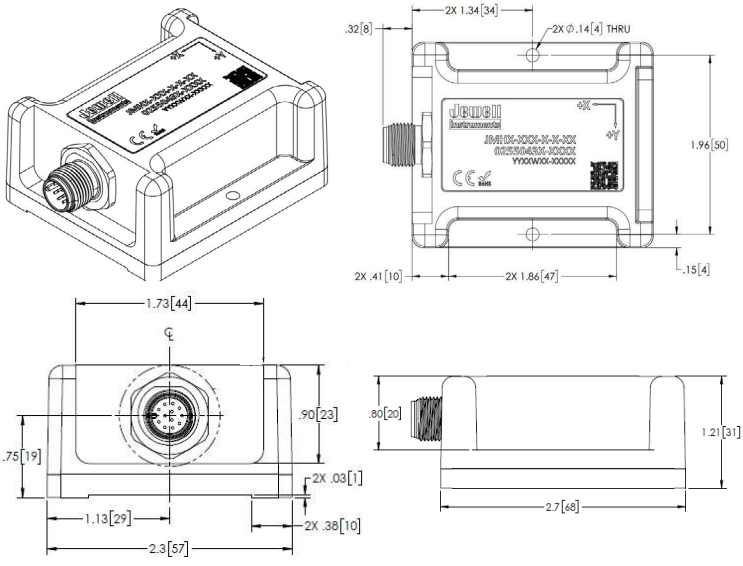
JMHI-100/200

Ruby MEMS Inclinometer

The NEW Ruby MEMS inclinometers represent the next generation of high-performance inertial sensors from Jewell Instruments. With an improved Price-Performance, the new Ruby inertial sensors offer improved resolution, faster frequency response, and wider bandwidth -- all in a IP67 package that utilizes the same mounting configuration of Jewell's current MEMS sensors.

FEATURES:

- Ranges: ±14.5° to ±90°
- Output Signal Options: ±5V, 4-20mA, or 0-5V
- Resolution: 0.002°
- Operating Temp Range: -40° to +85°C
- Seal: IP67
- M12 and DB9 termination options
- RoHS compliant



Dimensions: in [mm]

APPLICATIONS:

- Radar & Antenna Position Control
- Mining
- Bridge and Structural Monitoring
- Platform Leveling
- Tunneling Biaxial Machine Tool Levelling
- Construction
- Offshore Platform Stability
- Production/Manufacturing Process
- Geotechnical Monitoring
- Industrial Measurement & Control

JMHI-D SPECIFICATIONS: ±5VDC

STATIC/DYNAMIC

INPUT RANGE (°)	±14.5	±30	±60	±90
FULL RANGE OUTPUT (VDC)[1]	±5.00			
RESOLUTION (° max)	0.002			
NONLINEARITY (% FRO)[2] max	0.06			
NOMINAL SCALE FACTOR (V/G)	20	10	5.77	5
SCALE FACTOR TEMP COEFFICIENT (PPM/°/C max)	150			
0° OUTPUT TEMPERATURE SENSITIVITY (V/°C MAX)	±0.005	±0.0025	±0.00144	±0.00125
TRANSVERSE AXIS MISALIGNMENT (° max)	±0.15			
BANDWIDTH (Hz, 3db)	5			
NONREPEATABILITY (° max)	0.004			

NOTES:
1. Full Range is defined “from negative full input angle to positive full input angle.”
2. Nonlinearity is specified as deviation of output referenced to theoretical sine function value, independent of misalignment.

*Specifications subject to change without notice on account of continued product development

ELECTRICAL

NUMBER OF AXES	1, 2
INPUT VOLTAGE RANGE (VDC)	12 to 18
INPUT CURRENT (mA, max)	22
OUTPUT IMPEDANCE (Ohms, nominal)	<1

ENVIRONMENTAL

OPERATING TEMP. RANGE	-40° to +85°C
STORAGE TEMP. RANGE	-40° to +95°C

ENCLOSURE

WEIGHT (g)	140
PROTECTION CLASS (per IEC 529)	IP67
CONNECTOR	DB9, M12

TEMP. SENSOR

OUTPUT VOLTAGE AT 25 °C	892.2 mV
SCALE FACTOR	3.0 mV/°C

PIN OUTS

DB9 PIN#	FNCTN
1	VIN+
2	GND
3	N/C*
4	X
5	Y
6	N/C
7	GND
8	TEMP
9	GND

M12 PIN#	FNCTN
1	VIN+
2	GND
3	N/C*
4	X
5	Y
6	N/C
7	GND
8	TEMP
9	GND
10	N/C
11	N/C
12	N/C

* Pin# 3 can be used for -VIN for dual supply configurations

ORDERING INFORMATION

HOW TO ORDER

Model Numbers are comprised of the series, axes, the connector option, version, and the input range.

SERIES - AXES - CONNECTOR - VERSION - INPUT RANGE

- SERIES: JMHI
- AXES: 100, 200
- CONNECTOR: 1 (DB9), 4 (M12)
- VERSION: D, S, L
- INPUT RANGE: ±14.5, ±30, ±60, ±90

D (±5V), S (0-5V), L (4-20mA)

	MODEL #	PART #
±14.5	JMHI-100-1-D-14.5	02550433-1124
	JMHI-100-4-D-14.5	02550433-1424
	JMHI-200-1-D-14.5	02550433-2124
	JMHI-200-4-D-14.5	02550433-2424
±30	JMHI-100-1-D-30	02550433-1126
	JMHI-100-4-D-30	02550433-1426
	JMHI-200-1-D-30	02550433-2126
	JMHI-200-4-D-30	02550433-2426
±60	JMHI-100-1-D-60	02550433-1128
	JMHI-100-4-D-60	02550433-1428
	JMHI-200-1-D-60	02550433-2128
	JMHI-200-4-D-60	02550433-2428
±90	JMHI-100-1-D-90	02550433-1129
	JMHI-100-4-D-90	02550433-1429
	JMHI-200-1-D-90	02550433-2129
	JMHI-200-4-D-90	02550433-2429

ACCESSORIES

MOUNTING BRACKET

TYPE	MODEL #	MATERIAL
Vertical	F849539-02	6061 Aluminum

CABLE

CONNECTOR	MODEL #	LENGTH (m)
M12	F848873-03M	3
M12	F848873-10M	10
DB9	F848874-03M	3
DB9	F848874-10M	10

JMHI-S SPECIFICATIONS: 0-5VDC

STATIC/DYNAMIC

INPUT RANGE (°)	±14.5	±30	±60	±90
FULL RANGE OUTPUT (VDC)[1]	0-5			
RESOLUTION (° max)	0.002			
NONLINEARITY (% FRO)[2] max	0.06			
NOMINAL SCALE FACTOR (V/G)	10	5	2.8868	2.5
SCALE FACTOR TEMP COEFFICIENT (PPM/°/C max)	150			
0° OUTPUT TEMPERATURE SENSITIVITY (V/°C MAX)	±0.0025	±0.00125	±0.00072	±0.000625
TRANSVERSE AXIS MISALIGNMENT (° max)	±0.15			
BANDWIDTH (Hz, 3db)	5			
NONREPEATABILITY (° max)	0.004			

NOTES:
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ELECTRICAL

NUMBER OF AXES	1, 2
INPUT VOLTAGE RANGE (VDC)	12 to 18
INPUT CURRENT (mA, max)	22
OUTPUT IMPEDANCE (Ohms, nominal)	<1

ENVIRONMENTAL

OPERATING TEMP. RANGE	-40° to +85°C
STORAGE TEMP. RANGE	-40° to +95°C

ENCLOSURE

WEIGHT (g)	140
PROTECTION CLASS (per IEC 529)	IP67
CONNECTOR	DB9, M12

TEMP. SENSOR

OUTPUT VOLTAGE AT 25 °C	892.2 mV
SCALE FACTOR	3.0 mV/°C

PIN OUTS

DB9 PIN#	FNCTN
1	VIN+
2	GND
3	N/C
4	X
5	Y
6	N/C
7	GND
8	TEMP
9	GND

M12 PIN#	FNCTN
1	VIN+
2	GND
3	N/C
4	X
5	Y
6	N/C
7	GND
8	TEMP
9	GND
10	N/C
11	N/C
12	N/C

ORDERING INFORMATION

HOW TO ORDER

Model Numbers are comprised of the series, axes, the connector option, version, and the input range.

SERIES - AXES - CONNECTOR - VERSION - INPUT RANGE

- SERIES: JMHI
- AXES: 100, 200
- CONNECTOR: 1 (DB9), 4 (M12)
- VERSION: D, S, L
- INPUT RANGE: ±14.5, ±30, ±60, ±90

D (±5V), S (0-5V), L (4-20mA)

	MODED #	PART #
±14.5	JMHI-100-1-S-14.5	02550433-1114
	JMHI-100-4-S-14.5	02550433-1414
	JMHI-200-1-S-14.5	02550433-2114
	JMHI-200-4-S-14.5	02550433-2414
±30	JMHI-100-1-S-30	02550433-1116
	JMHI-100-4-S-30	02550433-1416
	JMHI-200-1-S-30	02550433-2116
	JMHI-200-4-S-30	02550433-2416
±60	JMHI-100-1-S-60	02550433-1118
	JMHI-100-4-S-60	02550433-1418
	JMHI-200-1-S-60	02550433-2118
	JMHI-200-4-S-60	02550433-2418
±90	JMHI-100-1-S-90	02550433-1119
	JMHI-100-4-S-90	02550433-1419
	JMHI-200-1-S-90	02550433-2119
	JMHI-200-4-S-90	02550433-2419

ACCESSORIES

MOUNTING BRACKET

TYPE	MODEL #	MATERIAL
Vertical	F849539-02	6061 Aluminum

CABLE

CONNECTOR	MODEL #	LENGTH (m)
M12	F848873-03M	3
M12	F848873-10M	10
DB9	F848874-03M	3
DB9	F848874-10M	10

JMHI-L SPECIFICATIONS: 4-20mA

STATIC/DYNAMIC

INPUT RANGE (°)	±14.5	±30	±60	±90
FULL RANGE OUTPUT (mA)[1]	4-20			
RESOLUTION (° max)	0.002			
NONLINEARITY (% FRO)[2] max	0.06			
NOMINAL SCALE FACTOR (mA/G)	32	16	9.2378	8
SCALE FACTOR TEMP COEFFICIENT (PPM/°/C max)	150			
0° OUTPUT TEMPERATURE SENSITIVITY (mA/°C MAX)	±0.016	±0.008	±0.004	±0.002
TRANSVERSE AXIS MISALIGNMENT (° max)	±0.15			
BANDWIDTH (Hz, 3db)	5			
NONREPEATABILITY (° max)	0.004			

NOTES:
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2. Nonlinearity is specified as deviation of output referenced to theoretical sine function value, independent of misalignment.

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ELECTRICAL

NUMBER OF AXES	1, 2
INPUT VOLTAGE RANGE (VDC)	12 to 18
INPUT CURRENT (mA, max)	40 (1-axis) 60 (2-axis)
OUTPUT IMPEDANCE (Ohms, nominal)	15

ENVIRONMENTAL

OPERATING TEMP. RANGE	-40° to +85°C
STORAGE TEMP. RANGE	-40° to +95°C

ENCLOSURE

WEIGHT (g)	140
PROTECTION CLASS (per IEC 529)	IP67
CONNECTOR	DB9, M12

TEMP. SENSOR

OUTPUT VOLTAGE AT 25 °C	892.2 mV
SCALE FACTOR	3.0 mV/°C

PIN OUTS

DB9 PIN#	FNCTN
1	VIN+
2	GND
3	N/C
4	X
5	Y
6	N/C
7	GND
8	TEMP
9	GND

M12 PIN#	FNCTN
1	VIN+
2	GND
3	N/C
4	X
5	Y
6	N/C
7	GND
8	TEMP
9	GND
10	N/C
11	N/C
12	N/C

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HOW TO ORDER

Model Numbers are comprised of the series, axes, the connector option, version, and the input range.

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- SERIES: JMHI
- AXES: 100, 200
- CONNECTOR: 1 (DB9), 4 (M12)
- VERSION: D, S, L
- INPUT RANGE: ±14.5, ±30, ±60, ±90

D (±5V), S (0-5V), L (4-20mA)

	MODED #	PART #
±14.5	JMHI-100-1-L-14.5	02550433-1134
	JMHI-100-4-L-14.5	02550433-1434
	JMHI-200-1-L-14.5	02550433-2134
	JMHI-200-4-L-14.5	02550433-2434
±30	JMHI-100-1-L-30	02550433-1136
	JMHI-100-4-L-30	02550433-1436
	JMHI-200-1-L-30	02550433-2136
	JMHI-200-4-L-30	02550433-2436
±60	JMHI-100-1-L-60	02550433-1138
	JMHI-100-4-L-60	02550433-1438
	JMHI-200-1-L-60	02550433-2138
	JMHI-200-4-L-60	02550433-2438
±90	JMHI-100-1-L-90	02550433-1139
	JMHI-100-4-L-90	02550433-1439
	JMHI-200-1-L-90	02550433-2139
	JMHI-200-4-L-90	02550433-2439

ACCESSORIES

MOUNTING BRACKET

TYPE	MODEL #	MATERIAL
Vertical	F849539-02	6061 Aluminum

CABLE

CONNECTOR	MODEL #	LENGTH (m)
M12	F848873-03M	3
M12	F848873-10M	10
DB9	F848874-03M	3
DB9	F848874-10M	10

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