SHAFTED ROTARY POSITION SENSORS

J130/J140 J1 Line *shafted rotary position sensor*

- Multiple shaft and connector options available
- Shaft and captive bearing package resistant to shaft push out forces, withstands extreme mechanical vibration
- Extremely compact, J1939 capable
- LED indicators for power and output feedback
- 100% moisture resistant electronic package (IP67)
- Outputs: Quadrature, Step and Direction, SSI, PWM, Analog, Modicon MODBUS, & J1939 Can Bus

Above: 40mm Shafted (J140)
Below: 30mm Shafted (J130)

STANDARD OPERATING CHARACTERISTICS

ELECTRICAL	**Outputs**	**A - *[PPR]* - SEPP**	Incremental 13 bit Quadrature w/ Single Ended Output | A B Z
		A - *[PPR]* - DIPP	Incremental 13 bit Quadrature w/ Differential Output | A B Z & A' B' Z'
		A - 1939	J1939 13 bit @1000 positions (8192 positions max)
		B - PWM	PWM absolute position
		A - SSI1	SSI absolute position @8192 positions
		V1	Voltage Out / 5 VDC IN, 0-5 VDC OUT
		V2	Voltage Out / 6-36 VDC IN, 0-5 VDC OUT
		I1	Current Out / 0-24 VDC IN, 4-20 mA OUT
	Input Power		6 to 30 VDC at approx 60 mA max, *not including output loads*
	Electrical Protection		Over-voltage, reserve-voltage, output short-circuit protected
	LED Indicators		Power and output channels
	Connections		Terminal Plug, M8, M12, M12 Pigtail, Flying Lead Cable, Shielded Flying Lead, or Deutsch - 4 or 6 pin
	Resolution		0.3°
	Repeatability		0.30%
	Nonlinearity		<1%
MECHANICAL	**Housing Diameter**		30mm (J130) or 40mm (J140)
	Housing Material		Aluminum
	Housing Height		J130 - 1.49" body; 2.15" w/ M12 (and) J140 - 1.7" body; 2.13" w/ M12
	Mounting		Mounting holes or servo groove
	Weight		J130 & J140 - 4 oz
	Shaft Form Factor		6mm w/ flat, Extended 6mm w/ flat, 1/4" (0.250") w/ flat, 10mm round, 3/8" slotted, Extended 3/8" slotted
	Shaft Material		Non-magnetic stainless steel
	Bearing Material		Dual chrome ball-bearings
	Shaft Speed		3000 RPM max
ENVIRONMENTAL	**Operating Temperature**		-30° to +80° C
	Storage Temperature		-40° to +90° C
	Humidity		100%
	Shock		400g/6ms *(MIL STD 202)*
	Vibration		5 to 3000 Hz, 20g *(MIL STD 202)*
	Protection Class		IP67 *(connection dependent)*

General ordering guide found on next page (S1 ; I2 / 2)

Joral, LLC • 640 Perkins Drive • Mukwonago, WI 53149 • (262)378-5500 • www.JORALLLC.com

SHAFTED ROTARY POSITION SENSORS

J130/J140 GENERAL ORDERING GUIDE

Build part number first by selecting **Housing Style** (code 1), **MagElec** (code 2), and **Connection** (code 3). Add **Special Codes** (code 4) to the end of the Joral part number. Refer to **'Special Part Number Information'** for explanation of modifiers.

Examples:
- **J130-A-0512-SEPP-M12-42** - 30mm Red aluminum (J130), 3/8" slotted shaft (modifier 42), 13 bit incremental quadrature @ 512 PPR
- **J140-A-1939-SC72-90** - 40mm Red aluminum (J140), 72" Shielded cable (SC72), 13 bit J1939 @ 8192 counts per rotation (modifier 90)
- **J130-V1-0-270-0-5-CW-C72** - Red aluminum (J130), 72" Cable (C72), 5v input (V1) @0-270°, 0v to 5v out, clockwise direction (CW)

Code 1: Housing Style	Code 2: MagElec (Sensor Output)		Code 3: Connection		Code 4: Special Codes	
J130 J130 = 30mm shafted made out of red aluminum, Connector orientation BACK EXIT only.	**A - _____ - SEPP**	13 bit single ended quadrature - A B Z	**TRM**	Pluggable Terminal block	**40**	1/4" (0.250") w/ flat
	A - _____ - DIPP	13 bit differential quadrature - A B Z, A' B' Z'	**INS**	Wire insertion terminal	**41**	10mm round
			M8	M8 male	**42**	3/8" slotted
			M12	M12 male	**43**	Extended 3/8" slotted
J140 J140 = 40mm shafted made out of red aluminum, Connector orientation BACK EXIT only.	**A - 1939**	13 bit J1939 @1000 positions	**M12P**	M12 male on 18' pigtail	**44**	Extended 6mm w/ flat
			CXX	Flying lead cable (enter XX as inches)	**45**	6mm w/ flat
	B - PWM	Absolute position PWM			**51**	Red aluminum
	A - SSI1	Absolute position SSI @8192 positions	**SCXX**	Shielded cable (enter XX as inches)	**53**	Black aluminum
** More outputs and connection options available, contact Joral if desired configuration is not listed*	**V1**	5 VDC IN, 0-5 VDC OUT	**CSP**	Cable with custom end	**90**	13 bit @8192 counts per rotation (Typical J1939 option)
	V2	6-36 VDC IN, 0-5 VDC OUT	**DE4**	DT04 - 4 pin male Deutsch		
	I1	0-24 VDC IN, 4-20 mA OUT	**DE6**	DT04 - 6 pin male Deutsch		

Special Part Number Information *Review below code sections for important P/N build information*

Code 1: Housing Style

- **J130** - 30mm, Red aluminum / Back exit connections only
- **J140** - 40mm, Red aluminum / Back exit connections only

Code 2: MagElec

(A - _____ - SEPP) or **(A - _____ - DIPP)**

- Enter Quadrature PPR in place of _____
- A = 13 bit PPR
- **Available 13 bit PPR:** 0008, 0010, 0016, 0020, 0025, 0032, 0040, 0050, 0064, 0080, 0100, 0125, 0128, 0200, 0250, 0256, 0400, 0500, 1024, 2048

A - 1939

- Standard J1939 output is 1000 positions
- A = 13 bit
- **MODIFIER 90 -** for 8192 positions (max resolution) add code 90 to end of J130/J140 P/N

V1, V2, and **I1** (Analog MagElec P/N Guide)

- First select MagElec code **(V1, V2 or I1)** then Angle Range **(A1-A2),** Voltage Range **(VR1-VR2)** and Signal Direction **(Clockwise [CW] or Counter [CCW])**
- **PART NUMBER FORMULA** (MagElec)-(A1-A2)-(VR1-VR2)-(CW or CCW)
- **EXACT V1, V2, and I1 EXAMPLES**
  J130 - **V1 - 0-360 - 0.5-4.5 - CW** - C72
  J140 - **V2 - 0-180 - 0-5 - CCW** - DE4
  J130 - **I1 - 180-270 - 4-20 - CW** - M12

Code 3: Connections

- **All Outputs, All Connections** - Connector exit back exit only (sensor epoxy side) for housing style J130 and J140
- **J1939 Output** - Addressing via varying value resistor in connection requires at least five conductors *(M12, DE6 and Cables addressing compatible)*
- **All Outputs w/ Deutsch** - DE4 and DE6 connection Deutsch connectors add $20 to J130/J140 list

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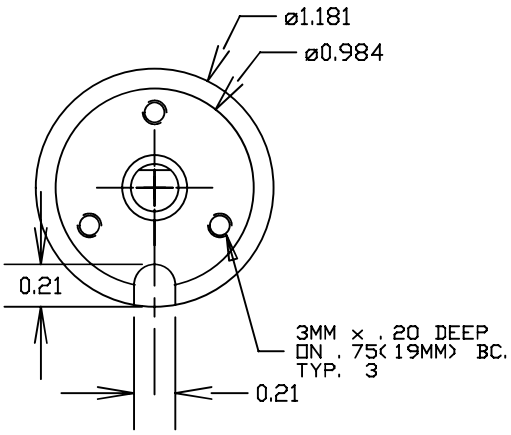
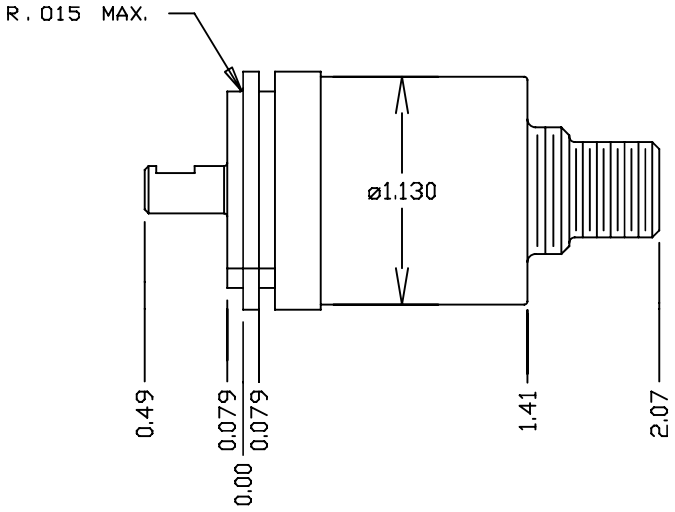
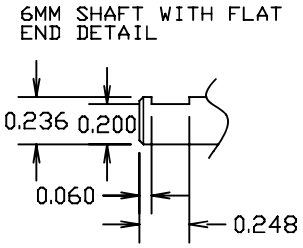
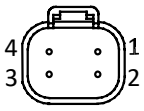
J130 DIMENSIONS & GENERAL PIN OUTS







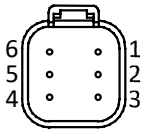
DT04-4P MALE FACE VIEW



DT04-4P J1939 OUTPUT

1 = YEL = CAN HIGH
2 = GRN = CAN LOW
3 = RED = +VDC (VIN)
4 = BLK = COMMON/GROUND

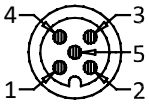
DT04-6P MALE FACE VIEW



DT04-6P J1939 OUTPUT

1 = YEL = CAN HIGH
2 = GRN = CAN LOW
3 = RED = +VDC (VIN)
4 = BLK = ADDRESS GROUND
5 = WHT = ADDRESS PROG. RESISTOR
6 = BLK = COMMON/GROUND

M12-5P MALE FACE VIEW



M12-5P/CABLE/FLYING LEAD QUADRATURE OUTPUT

1 = BRN = +VDC (VIN)
2 = WHT = CHANNEL B
3 = BLUE = COMMON/GROUND
4 = BLK = CHANNEL A
5 = GRY = CHANNEL Z

M12-5P AND 5 CONDUCTOR CABLE J1939 OUTPUT

1 = BRN = +VDC (VIN)
2 = WHT = CAN HIGH
3 = BLUE = COMMON/GROUND
4 = BLK = CAN LOW
5 = GRY = OPTIONAL ADDRESS PROGRAMMING RESISTOR

M12-5P/CABLE/FLYING LEAD PROPORTIONAL (ANALOG) OUTPUT

1 = BRN = +VDC (VIN)
2 = WHT = DIG. LIMIT OUT*
3 = BLUE = COMMON/GROUND
4 = BLK = PROP. VDC OUTPUT
5 = GRY = NOT USED
**OPTION CONSULT FACTORY*

Dimensions informative only
For most recent dimensions please consult factory