



Type 2RMHF-SSI

- Absolute Encoder - Ø 24 mm
- Blind Hollow Shaft - ø 3 mm to ø 1/4 inch
- Singleturn or Multiturn
- SSI Interface
- Binary or Gray Code
- Preset of Zero Position
- Choice of Counting Direction
- Enclosure Rating IP 64 or IP 67

Electrical Specifications

Encoder Type:	Absolute Multiturn
Singleturn Resolution:	13 bits (8192) steps pr. revolution
Number of Revolutions:	12 bits (4096) revolutions 16 bits (65536) revolutions 20 bits (1048576) revolutions 24 bits (16777216) revolutions
Supply Voltage:	5 VDC ±5%
Typical Current Consumption:	30 mA (no load)
Accuracy:	± 0,35°
Interface:	SSI (Synchronous Serial Interface)
Output Code:	Binary or Gray
Electrical Interface:	Differential (RS422) or single ended (TTL)
Clock Frequency:	100 kHz to 2 MHz
Counting Direction:	Increasing clockwise or increasing counter clockwise seen from shaft end of encoder
Electrical Protection:	Reverse polarity and output short circuit protected
Noise Immunity:	Tested to EN61000-6-2 : 2005 (industrial environments) Electromagnetic compatibility (EMC) and EN 61000-6-3 : 2007 (residential, commercial, and light-industrial environments) for Electromagnetic compatibility (EMC)

Mechanical Specifications

Material:	Housing: Brass Cap: Electroplated Steel or Aluminum Shaft: Brass
Weight:	Encoder: ~ 55 gr (1,94 oz) Cable: 50 gr / meter (1,76 oz / meter)
Bearing Life:	> 1,9 x 10 ¹⁰ revolutions at rated load
Shaft Speed:	12.000 rpm (max.)
Starting Torque:	< 0,005 Nm (0,708 oz-in) at 25° C
Mass Moment of Inertia:	1,05 gcm ² (1,49 x 10 ⁻⁵ oz-in-sec ²)
Shaft Loads:	Axial: 20 N (4,5 lbs) max. Radial: 20 N (4,5 lbs) max.

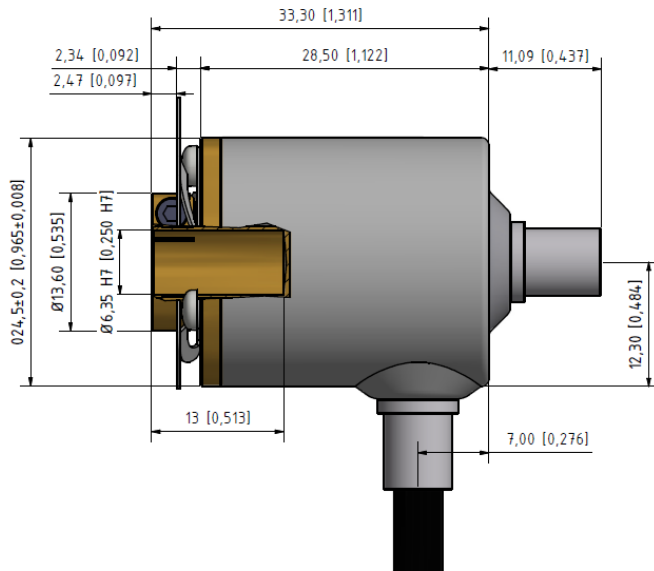
Environmental Specifications

Operating Temp.:	-40° to +85° C
Storage Temp.:	-40° to +85° C
Shock:	100 G @ 11 ms
Vibration:	10 G @ 10-2000 Hz
Bump:	10 G @ 16 ms (1000 x 3 axis)
Humidity:	98 % RH without condensation
Enclosure Rating:	IP 64 / Nema 4 (approx.) IP 67 / Nema 6 (approx.)

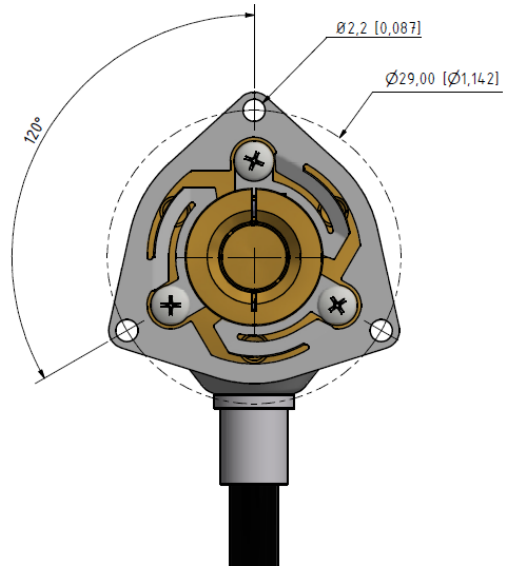
Connection Options

Cable:	8 leads (0,05 mm ² , 30 AWG) - Twisted pairs shielded
Connector:	M9 8-pin M12 8-pin

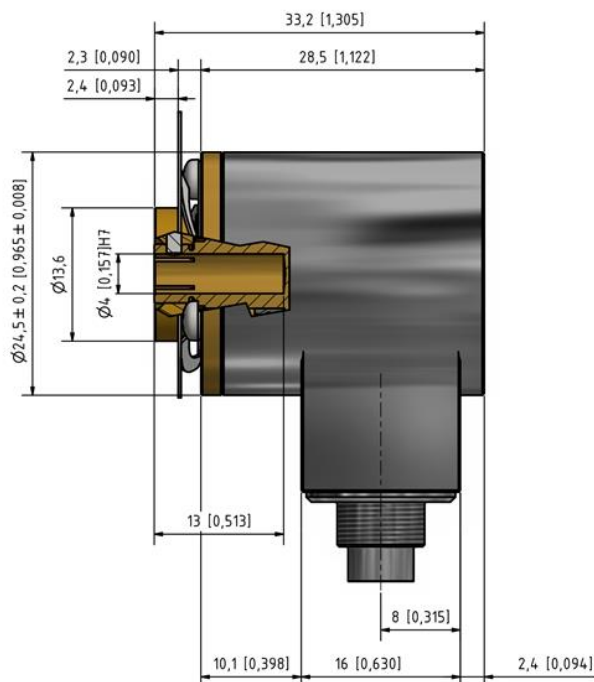
Mechanical Dimensions



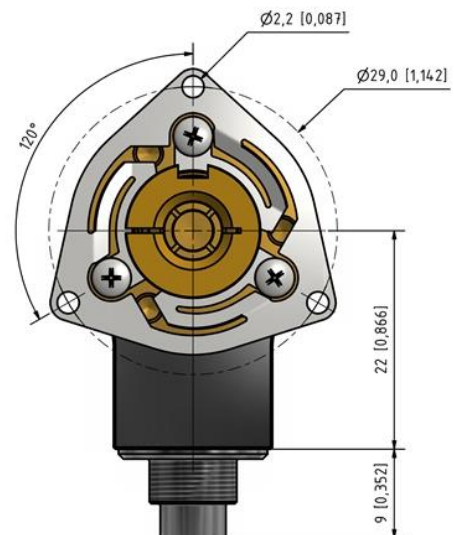
Standard Cable Gland



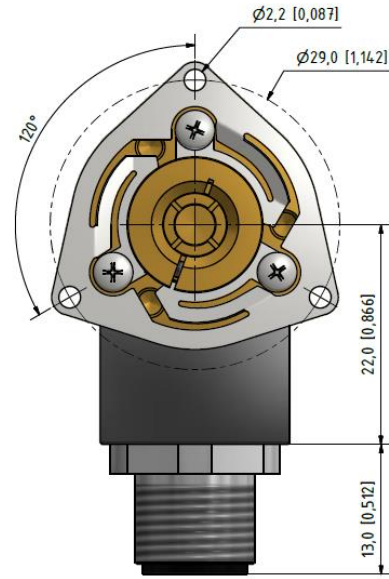
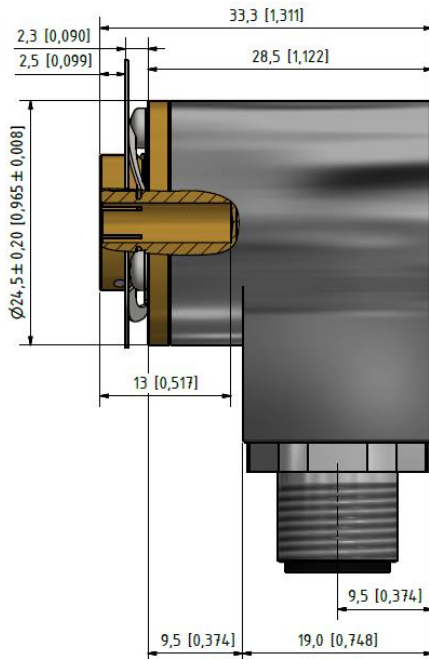
mm [inches]



M9 Connector



mm [inches]



M12 Connector

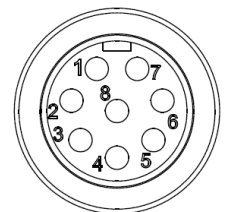
mm [inches]

Output Terminations

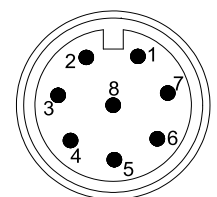
Signal	Cable
	Differential Input/output
	Wire Color
CLK+	Green
CLK-	Yellow
DO+	Gray
DO-	Pink
Direction	Red
Preset	Blue
Vsup	Brown
GND	White

M9/12 Connector	
Differential Input/output	Single Ended Input/output
Pin Number	
3	3
4	Not Connected
5	5
6	Not Connected
8	8
7	7
2	2
1	1

M9 Connector



M12 Connector

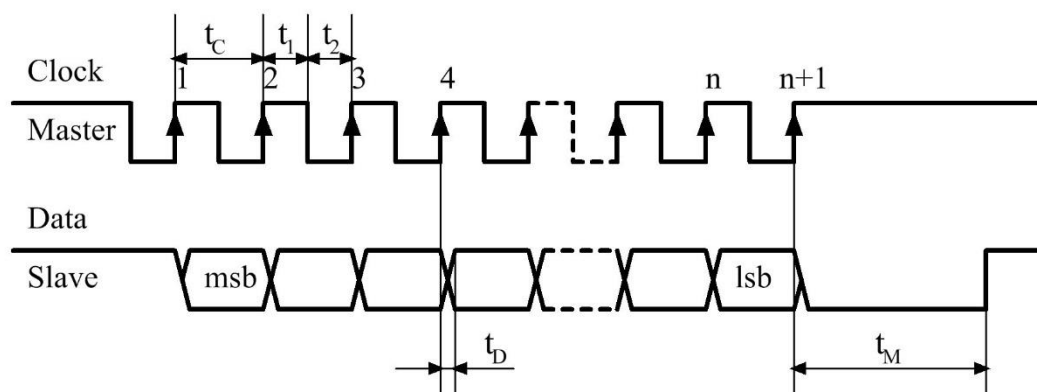


Please note: Cable color and connection change since datasheet rev 1.5

Shield connected to case ground

Shield must be connected to connector housing

SSI Interface Timing



- msb = Most Significant Bit
- lsb = Least Significant Bit
- n = Total Number of bits
- t_C = Clock Period = 0.5 to 10 μ Sec (100kHz to 2 MHz)
- t_1 = Clock High = 50% \pm 15% of Clock Period
- t_2 = Clock Low = 50% \pm 15% of Clock Period
- t_D = Clock to Data Valid = Max. 100 nSec
- t_M = Monoflop Time = 20 \pm 3 μ Sec

Implementation

During the initial set-up and installation of the encoder, it is possible to set the direction of rotation and preset the encoder to zero.

Setting of Direction.

The connection designated “Direction” is used to set the direction of rotation. Notice, that the encoder must not be powered when the direction of rotation is set/changed. Notice also, that the encoder will change its position value when the direction of rotation is changed. Direction of rotation is viewed on the shaft end of the encoder.

Voltage Level on Input	Function
High: Input not connected or $3V \leq V_{in} \leq V_{sup}$	Encoder Increasing on Clockwise Rotation
Low: GND or $0V \leq V_{in} \leq 2V$	Encoder Increasing on Counter Clockwise Rotation

Preset to Zero

The connection designated “Preset” is used to preset the encoder to zero. Notice, that the encoder must be powered when it is preset to zero.

Voltage Level on Input	Function
High: Input not connected or $3V \leq V_{in} \leq V_{sup}$	Inactive
Low: GND or $0V \leq V_{in} \leq 2V$	Encoder Value is set to Zero

The encoder will be held at zero as long as the line is low, even though the shaft is turned. The line must be low for at least 100 mSec. for the preset to take effect. The new zero point will be stored permanently in the encoder.

Ordering Code

Example: 2RMHF-SSI – 1213 – B – D – 04 – 13 – 64 – 01 – S – 00 – S1

