SCANCON Industrial Encoders

Absolute Encoder

Type SCH36NA-SSI

- **Absolute Encoder - Ø 36 mm**
- **Hollow Shaft - ø 5 mm to ø 8 mm**
- **Singleturn or Multiturn**
- **SSI Interface**
- **Binary or Gray Code**
- **Preset of Zero Position**
- **Choice of Counting Direction**
- **Enclosure Rating IP 65 or IP 67**
- **Supply voltage 5V or 9-30 V**

Electrical Specifications

Encoder Type:	Absolute Multiturn
Singleturn Resolution:	13 bits (8092)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% or 9-30 VDC
Typical Current Consumption:	30 mA @ Vsup = 5V 25 mA @ Vsup = 10V 15 mA @ Vsup = 24V
Accuracy:	± 0,35^{o}
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: Aluminum Cap: Electroplated Steel or Aluminum Shaft: Brass
Weight:	Encoder: ~ 95 gr (3,35 oz) Cable: 50 gr / meter (1,76 oz / meter)
Bearing Life:	> 1,9 x 10^{10} revolutions at rated load
Shaft Speed:	6.000 rpm (max.)
Starting Torque:	< 0,005 Nm (0,708 oz-in) at 25° C
Mass Moment of Inertia:	1,05 gcm² (1,49 x 10^{-5} oz-in-sec²)
Shaft Loads:	Axial: 20 N (4,5 lbs) max. Radial: 20 N (4,5 lbs) max.

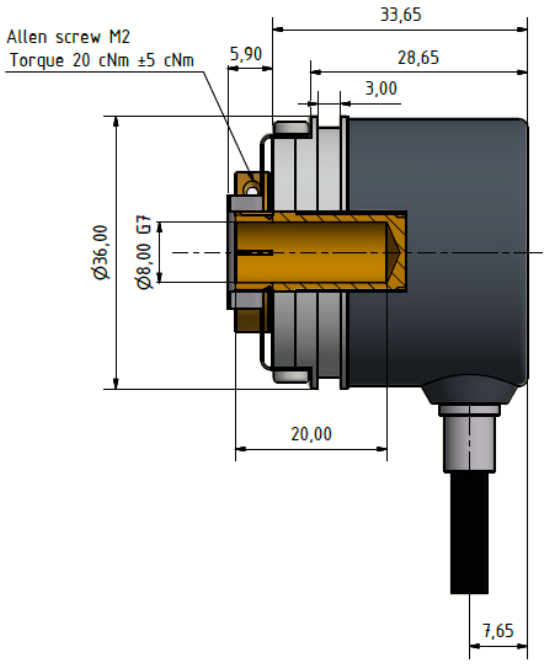
Environmental Specifications

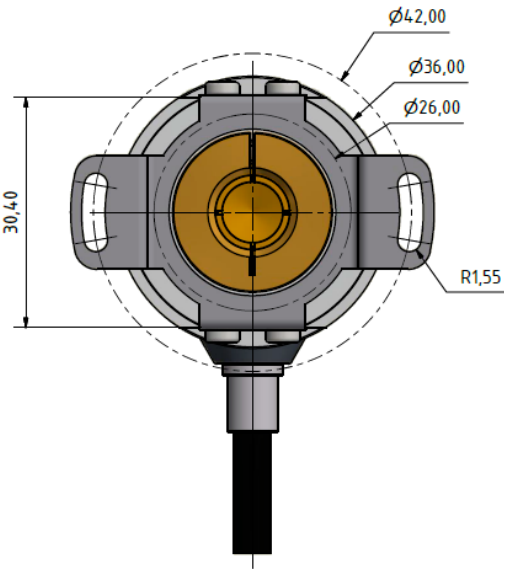
Operating Temp.:	-40° to +85° C
Storage Temp.:	-40° to +85° C
Shock:	100 G @ 11 ms
Vibration:	10 G @ 10-2000 Hz
Bump:	10 G @16 ms (1000 x 3 axis)
Humidity:	98 % RH without condensation
Enclosure Rating:	IP 65 / Nema 4 (approx.) IP 67 / Nema 6 (approx.)

Connection Options

Cable:	8 leads (0,05 mm², 30 AWG) - Twisted pairs shielded
Connector:	M12 8-pin

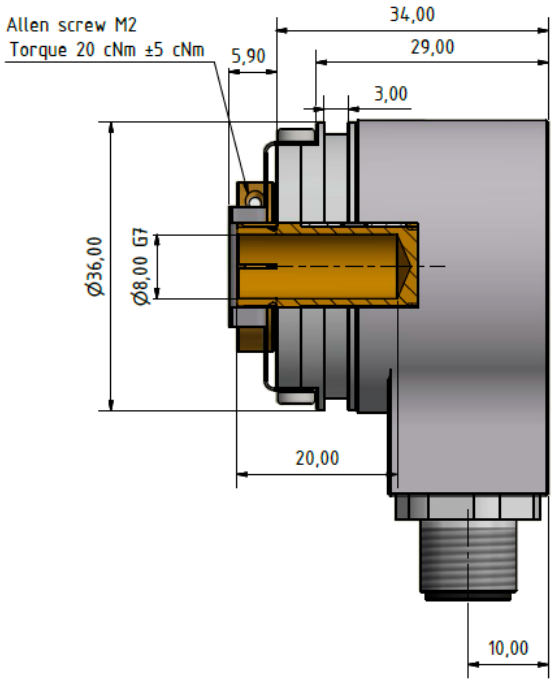
Mechanical Dimensions

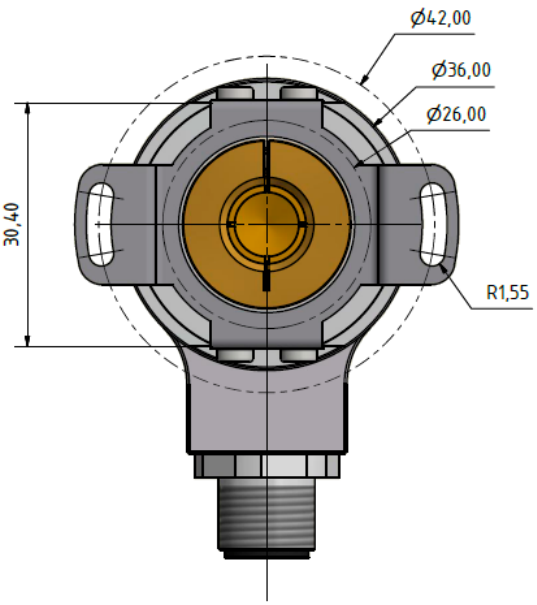




Standard Cable Gland

mm [inches]





M12 Connector

mm [inches]

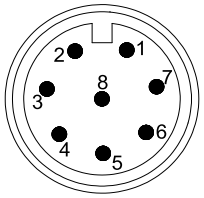
Output Terminations

	Cable	M12 Connector	
	Differential Input/output	Differential Input/output	Single Ended Input/output
Signal	Wire Color	Pin Number	
CLK+	Green	3	3
CLK-	Yellow	4	Not Connected
DO+	Gray	5	5
DO-	Pink	6	Not Connected
Direction	Red	8	8
Preset	Blue	7	7
Vsup	Brown	2	2
GND	White	1	1

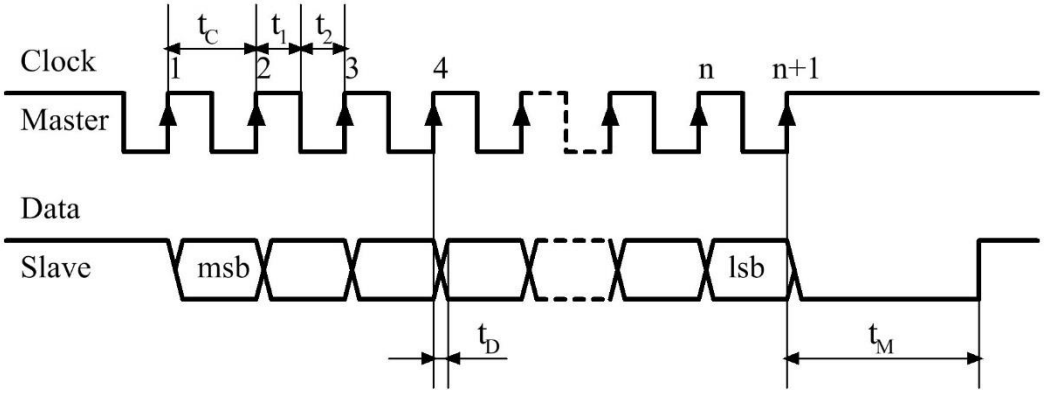
Shield connected to case ground

Shield must be connected to connector housing

M12 Connector



SSI Interface Timing



msb = Most Significant Bit

lsb = Least Significant Bit

n = Total Nunber of Bits

t_C	=	Clock Period	=	0,5 to 10 µSec (100kHz to 2 MHz)
t_1	=	Clock High	=	50% ±15% of Clock Period
t_2	=	Clock Low	=	50% ±15% of Clock Period
t_D	=	Clock to Data Valid	=	Max. 100 nSec
t_M	=	Monoflop Time	=	20 ±3 µSec

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: Vsup or Vsup/2 ≤ Vin ≤ Vsup	Encoder Increasing on Counter Clockwise Rotation
Low: Input not connected or 0V ≤ Vin ≤ Vsup/2	Encoder Increasing on 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: Vsup or Vsup/2 ≤ Vin ≤ Vsup	Encoder Value is set to Zero
Low: Input not connected or 0V ≤ Vin ≤ Vsup/2	Inactive

The encoder will be held at zero as long as the line is high, even though the shaft is turned. The line must be high 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: SCH36NA-SSI – 1213 – 9 – B – D – 06 – 20 – 65 – 01 – S – 00 – S1

SCH36NA-SSI	-		-		-		-		-		-	20	-		-		-	S	-		–	
		Resolution		Supply Voltage		Code		Output		Hollow Shaft Dia.		Hollow Shaft Length		IP Rating		Cable Length		Cable Takeout		Connector		Spring

Singleturn	
Resolution 13 bits	**0013**
Multiturn	
Revolutions 12 bits	**1213**
Revolutions 16 bits	**1613**
Revolutions 20 bits	**2013**
Revolutions 24 bits	**2413**

Code	
Binary	**B**
Gray	**G**

Supply Voltage	
5 VDC	**5**
9-30 VDC	**9**

Electrical Interface	
Differential (RS422)	**D**
Single Ended (TTL)	**S***

*with connector only

5 x 20 mm	**05**	**-**	**20**
6 x 20 mm	**06**	**-**	**20**
8 x 20 mm	**08**	**-**	**20**
3/8 x 20 mm	**3/8**	**-**	**20**

*Not on stock

IP 65	**65**
IP 67	**67**

Standard Cable	
Standard is 1 meter	**01**
Specify length	**XX**
No Cable	**00**

Cable	
Side (radial)	**S**

M12 8-pin *	**M12**
No Connector	**00**

*Only without cable

2 holes 80133025	**S1**
No Sprng coupling	**00**