

Absolute encoders - Joystick

Shaft with synchro and square flange
Optical single turn 8 bit encoder

FNC APA 61S Series



Features

- Absolute encoder with parallel interface
- Optical sensing
- Resolution: 8 bit /Singleturn
- Programmable output
- Via software

Technical data - electrical ratings

Voltage supply	5V to 30V DC
Protection:	Input short circuit. Reverse & over voltage Output short circuit
Consumption w/o load	≤90 mA (outputs unloaded)
Interface	Parallel RS485
Resolution (steps/turn)	8 bit
Absolute accuracy	≤ ±0.35°
Sensing methode	Optical
Code	Default Gray, Programmable Binary
Initializing time	Typ. 15 ms after power on
Max. responese freq.	1 kHz
Output capacity	16mA (sink/source)
Output circuit	Push-Pull
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Approval	CE
Working Angle Range	Default: ± 15° to ±123° (Programmable 0-360°)

Technical data - mechanical design

Dimensions (flange)	ø61 mm
Shaft loading	≤ 20 N axial ≤ 30 N radial
Protection DIN EN 60529	IP 54 (optional IP65)
Operating speed	≤ 3000 rpm
Starting torque	≤ 0.001 Nm
Materials	Housing, Flange : Aluminium Shaft : Aluminium
Shaft	5,96 mm (Square)
Bearings lifetime:	2x10 ⁹ rev. at 100% of full rated shaft load (minimum)
Operating temperature	-20 to +85 °C
Weight approx.	258.75 g

Output

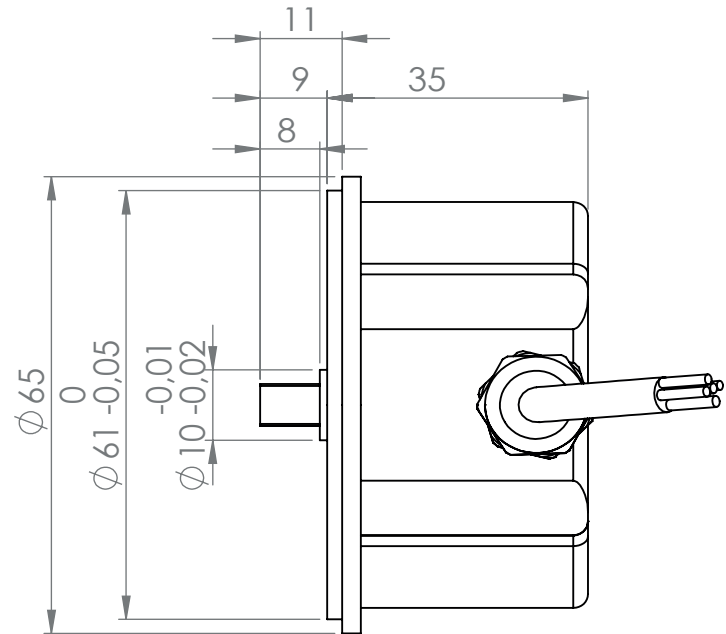
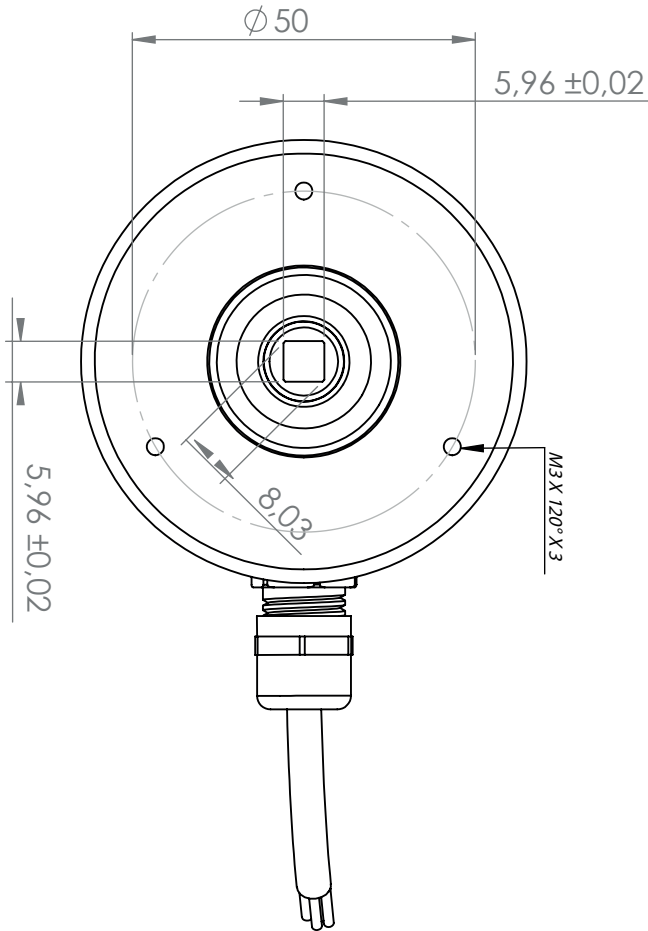
Analog Output: Default:4-20mA(Programmable 0-20mA)

Direction: Default CW(Programmable CCW)

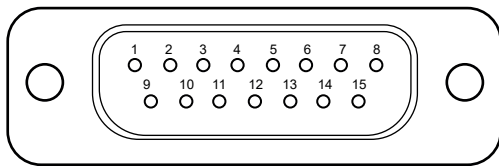
Parallel Output: 8bit + 2bit Left and Right

FNC APA 61S Series

Mechanical Dimensions



Pin connections



Function	Connector
+VB	pin 9
GND	pin 8
Bit 0	pin 7
Bit 1	pin 6
Bit 2	pin 5
Bit 3	pin 4
Bit 4	pin 3
Bit 5	pin 2
Bit 6	pin 15
Bit 7	pin 14
Right	pin 13
Left	pin 12
Iout	pin 1
RS485 Tx	pin 10
RS485 Rx	pin 11

Command Set

Comment	CMD	MASTER SIDE										ENCODER SIDE										RESPONSE	
		Digital Degree MSB	Digital Degree LSB	Active Band Start Degree MSB	Active Band Start Degree LSB	Active Band Stop Degree MSB	Active Band Stop Degree LSB	Digital Degree MSB	Digital Degree LSB	Active Band Start Degree MSB	Active Band Start Degree LSB	Active Band Stop Degree MSB	Active Band Stop Degree LSB	Gray/Binary Mode Select (1/0)	Current Mode Select (1/0)	CW/CCW Mode Select (1/0)	CRC	Digital Degree MSB	Digital Degree LSB	Encoder Position MSB	Encoder Position LSB	Status Byte	Feedback (0xAA)
Programming Digital Direction Change Degree	0x11																					Feedback (0xAA,0x55)	
Programming Active Band Start Degree	0x22																					Feedback (0xAA,0x55)	
Programming Active Band Stop Degree	0x33																					Feedback (0xAA,0x55)	
Read All Programmable Parameters	0x44	X	X																			Feedback (0xAA)	
Read Status Byte	0x55	X																				Feedback (0xAA)	
Read Encoder 16-Bit Position	0x66	X																				Feedback (0xAA)	
Programming Gray or Binary Format (1:Gray, 0:Binary)	0x77	Gray/Binary Mode Select (1/0)																				Feedback (0xAA,0x55)	
Programming Current Mode (1: 0-20 mA, 0: 4-20 mA)	0x88	Current Mode Select (1/0)																				Feedback (0xAA,0x55)	
Programming CW/CCW Mode (1: Clockwise, 0: Counter-clockwise)	0x99	CW/CCW Mode Select (1/0)																				Feedback (0xAA,0x55)	
Incorrect command	others	X																				Feedback (0x55)	

STATUS BYTE							
D7	D6	D5	D4	D3	D2	D1	D0
X	X	X	X	Encoder Position Error	Encoder Position Error	Digital RIGHT IO STATE	Digital LEFT IO STATE

FNC APA 61S Series

Encoder Part Number

