

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
- Optional Preset input
- Optional Direction input

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	≤ ± 2°
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

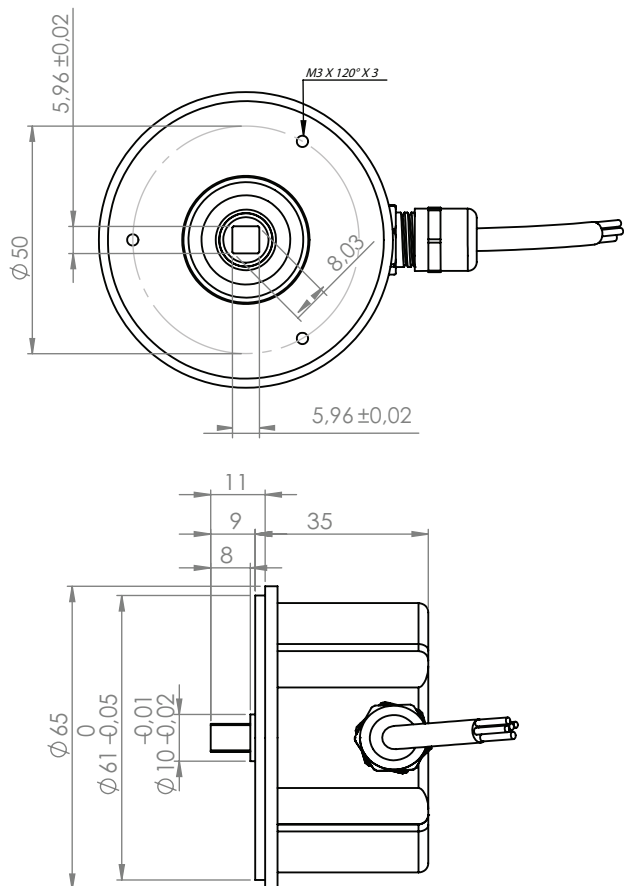
Analog Output: Default:4-20mA(Programmable 0-20mA)

Direction: Default CW(Programmable CCW)

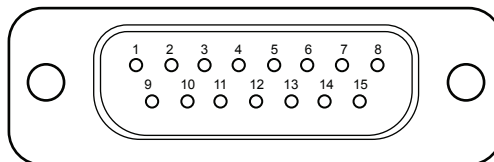
Paralel Output: 8bit + 2bit Left and Right

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Mechanical Dimensions



Output



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

Command Set

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

STATUS BYTE							
D7	D6	D5	D4	D3	D2	D1	D0
X	X	X	X	RS-485 Communication Error	Encoder Position Error	Digital RIGHT IO STATE	Digital LEFT IO STATE

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Encoder Part Number

