

Incremental encoders

Optical and Magnetic Programming Options



Programmable Resolution 1...65.536 pulses

FNC 50S Series Programmable



Features

- Industry 50 mm standart size,
- Clamping- servo- end hollow shaft flange versions
- Robust mechanical and electrical construction
- Protection up to IP67
- Up to 65.536 PPR max.
- ≤2 MHz frequency
- Programming via FNC PT - PC Programming tool
- FNC PT - PS easy programming software

PPR Options :

1 to 65.536 programmable PPR

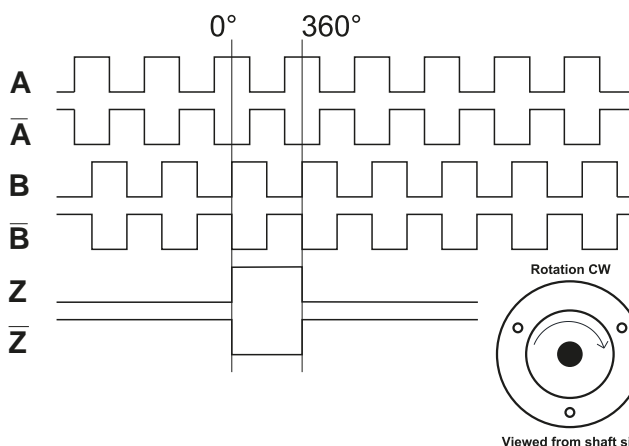
Technical data - electrical ratings

Voltage supply	4.75VDC to 30VDC 4.75VDC to 5.5VDC
Protection	Output short circuit protection. Reverse polarity protection Over voltage protection (except 5V version)
Consumption w/o load	≤60 mA (5 VDC) ≤35 mA (12 VDC) ≤26 mA (24 VDC) ≤27 mA (30 VDC)
Resolution (steps/turn)	1...65.536
Reference signal	Programmable length, 90° 180°, 270°, 360°
Output frequency	≤2 MHz
Output signals	90° shifted A and B, Z + all channels can be set indepently inverted
Output circuit	Linedriver/RS422 Push-pull short-circuit proof
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Approval	CE

Technical data - mechanical design

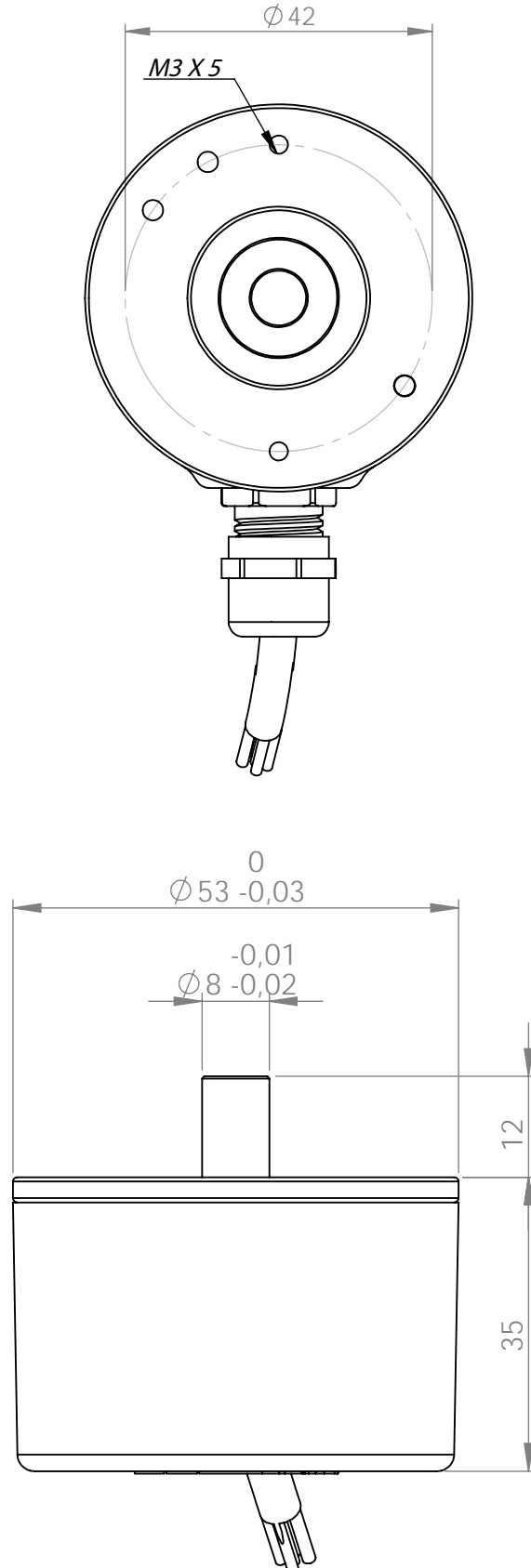
Dimensions (flange)	ø50 mm
Shaft loading	≤140 N axial ≤240 N radial
Protection DIN EN 60529	IP54, IP65
Operating speed	≤12000 rpm
Starting torque	≤0.025 Nm (IP 67)
Materials	Housing: Aluminium Flange: Aluminium Shaft : Stainless steel
Shaft diameter	6, 8, 10, 12 mm (other diameters on request)
Bearings lifetime	2x10 ⁹ rev. at 100% of full rated shaft load (minimum)
Operating temperature	-20...+85 °C
Storage temperature	-30 °C up to +90 °C
Weight approx	250 g

Pulse Diagram



FNC 50S Series Programmable

Mechanical Dimensions



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Cable Wiring

Function	Color	Renk	Farbe	Цвет	颜色	M2312 Connector
+VB	Brown	Kahve	Braun	Коричневый	棕色的	pin 2
GND	White	Beyaz	Weiß	Белый	白色的	pin 10
A	Green	Yeşil	Grün	Зеленый	绿	pin 5
A'	Green-Black	Yeşil-Siyah	Grün-Schwarz	Зелено-черный	绿-蓝色的	pin 6
B	Yellow	Sarı	Gelb	Желтый	黄色的	pin 8
B'	Yellow-Black	Sarı-Siyah	Gelb-Schwarz	Желто-черный	黄色的-蓝色的	pin 1
Z	Gray	Gri	Grau	Серый	灰色的	pin 3
Z'	Gray-Black	Gri-Siyah	Grau-Schwarz	Серо-черный	灰色的-蓝色的	pin 4
NSS	Blue-Black	Mavi-Siyah	Blau-Schwarz	Сине-черный	蓝色的-蓝色的	pin 7
SCK	Blue	Mavi	Blau	Синий	蓝色的	pin 9
MISO	Orange	Turuncu	Orange	Оранжевый	橙	pin 11
MOSI	Orange-Black	Turuncu-Siyah	Orange	Оранжево-черный	橙-蓝色的	pin 12
CLK	Blue	Mavi	Blau	Синий	蓝色的	pin 7
DAT	Orange	Turuncu	Orange	Оранжевый	橙	pin 9

Programming Wires
Optical
Magnetic

FNC PT-PC Programming Device



FNCP 50SO 10630VX-R2

Programming Device - PC Cable

Encoder Part Number

FNCP **50** **S** **O** **10** **6** **30V** **X** - **R2**

Housing: 50 : 50mm	Electrical Connections: Cable R2 : radial 2m, shield not connected (standart) A2 : axial 2m, shield not connected (standart)
Flange Type: S : Servo flange B : Clamping flange H : Through hollow shaft	Connector: R1204 R1607 R1208 R2312R R1205 R1614 R1212 R2312L
O : Optical programmable M : Magnetic programmable	PPR Options : 1 to 65.536 Programmable
Shaft diameter : 4, 6, 8, 10, 12, 14 Other dimensions on request	Supply Voltage and output circuit : 5V : 5V in / out 245V : 5-30V in 5V out 30V : 5-30V in / out
Output Channels 3 : ABZ 4 : AB+A' B' 6 : ABZ+A' B' Z'	

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Optical Programming Options



FNC PT-PC Programming Device

Optical Programming PC view

The screenshot shows the 'ENCODER PROGRAMMER UTILITY V1.6.14.06.2020' window. It is divided into three main columns: 'INCREMENTAL PARAMETERS', 'OPTICAL PROGRAMMABLE ENCODER', and 'ANGLE'.
- **INCREMENTAL PARAMETERS:** Resolution is set to 1000000, Z Gate to 360°(A), and Direction of Rotation to CW. Below this is a 'PULSE DIAGRAM' showing waveforms for channels A, B, and Z over a 360-degree cycle.
- **OPTICAL PROGRAMMABLE ENCODER:** A 3D diagram of an optical encoder with a 'Disc', 'Light Source', and 'Light Detector'.
- **ANGLE:** A circular scale showing the current angle as 359.9 degrees.
- **OPERATION:** Buttons for 'READ', 'WRITE', and 'STOP TEST'.
- **CONFIG FILE:** Buttons for 'OPEN' and 'SAVE'.
- **STATUS:** 'PROGRAMMER' and 'ENCODER' indicators are both green, and the status is 'TESTING'.
- **ENCODER:** 'ENCODER PULSE: 999986' and 'ENCODER ANGLE: 359,99'. The FENAC logo is at the bottom right.

Magnetic Programming PC view

The screenshot shows the 'ENCODER PROGRAMMER UTILITY V1.6.14.06.2020' window for a magnetic encoder.
- **INCREMENTAL PARAMETERS:** Resolution is set to 2048, Index Pulse Length to 360°, and Direction of Rotation to CW. Below this is a 'PULSE DIAGRAM' showing waveforms for channels A, B, and Z.
- **MAGNETIC PROGRAMMABLE ENCODER:** A diagram of a magnetic encoder with a disc and two 'Hall sensor' units.
- **ANGLE:** A circular scale showing the current angle as 184.3 degrees.
- **OPERATION:** Buttons for 'READ', 'WRITE', and 'STOP TEST'.
- **CONFIG FILE:** Buttons for 'OPEN' and 'SAVE'.
- **STATUS:** 'PROGRAMMER' and 'ENCODER' indicators are both green, and the status is 'TESTING'.
- **ENCODER:** 'ENCODER PULSE: 1049' and 'ENCODER ANGLE: 184,39'. The FENAC logo is at the bottom right.