DFS60 Inox

High-resolution incremental encoder – durable and programmable

INCREMENTAL ENCODERS

SICK

Sensor Intelligence.

DFS60 Inox
INCREMENTAL ENCODERS

Technical data overview

Pulses per revolution	0 ... 65,536
Sine/cosine periods per revolution	1,024
Mechanical design	Solid shaft, Servo flange Solid shaft, face mount flange Solid shaft, Square flange Blind hollow shaft
Shaft diameter	6 mm 10 mm 8 mm 3/8" 12 mm 15 mm 1/2" 14 mm 5/8"
Connection type	Male connector, M12, 8-pin, radial Cable, 8-wire, radial Male connector, M12, 12-pin, radial Cable, 12-wire, radial
Communication interface	Incremental
Communication Interface detail	TTL / RS-422 HTL / Push pull Sin/Cos TTL / HTL
Supply voltage	4.5 ... 5.5 V 10 ... 32 V 4.5 ... 32 V
Enclosure rating	IP67
Programmable/configurable	– / ✔ (depending on type)
Output frequency	≤ 820 kHz ≤ 200 kHz (depending on type)
Operating temperature range	–40 °C ... +100 °C [1] –30 °C ... +100 °C [2]

[1] Stationary position of the cable.

[2] Flexible position of the cable.

Product description

The DFS60 Inox is a high-resolution incremental encoder with a diameter of 60 mm in a stainless-steel design. It offers a large range of mechanical and electrical interfaces and can also be programmed by the customer if desired. The rugged mechanical design, the wide temperature range, and the IP67 enclosure rating make the DFS60 Inox the ideal encoder for applications in harsh ambient conditions. The wide range of programming options for the electrical parameters is unique on the market. This includes the output signal level, the number of pulses per revolution, and the zero pulse width.

At a glance

• Housing, flange, and shaft made from stainless steel
• Face mount flange, servo flange, or square flange with solid shaft and blind hollow shaft
• IP67 enclosure rating
• Resolution up to 65,536 pulses
• Radial cable connection or M12 male connector
• Electrical interfaces: TTL/RS-422, HTL/Push Pull, SinCos 1 V$_{pp}$
• Can be programmed with the PGT-08-S and PGT-10-Pro as an option

Your benefits

- High resistance to environmental influences due to stainless-steel housing
-
- IP67 enclosure rating and shaft sealing ring for optimum tightness
-
- Simple mounting thanks to compact dimensions, even with limited installation space
-
- The wide range of mechanical interfaces allows an optimal match between the encoder and the application-specific installation situation
-
- High resolution up to 16 bits enables applications with demanding requirements for measurement accuracy
-
- Reduces storage costs and downtimes since customers can program the encoder themselves with programming devices PGT-08-S and PGT-10-Pro
-
- Programmable zero pulse position simplifies installation
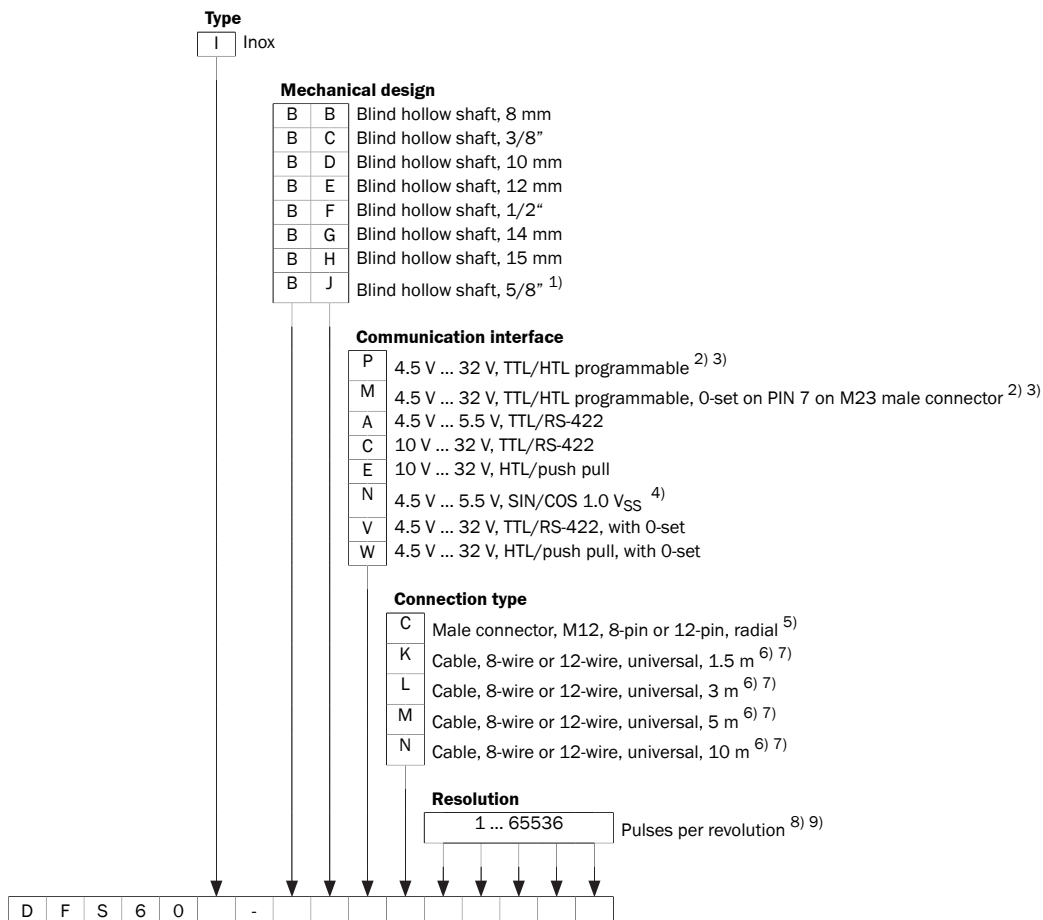
Fields of application

- Applications with high resistance requirements against aggressive substances such as cleaning agents or salt
- Particularly suitable for use in the food and drink industry, for packaging machines, in medical technology, and in outdoor applications in ports or offshore plants

Type code

Other models and accessories ➜ www.sick.com/DFS60_Inox

Hollow shaft

Type

I	Inox

Mechanical design

B	B	Blind hollow shaft, 8 mm
B	C	Blind hollow shaft, 3/8"
B	D	Blind hollow shaft, 10 mm
B	E	Blind hollow shaft, 12 mm
B	F	Blind hollow shaft, 1/2"
B	G	Blind hollow shaft, 14 mm
B	H	Blind hollow shaft, 15 mm
B	J	Blind hollow shaft, 5/8" [1]

Communication interface

P	4.5 V ... 32 V, TTL/HTL programmable [2] [3]
M	4.5 V ... 32 V, TTL/HTL programmable, 0-set on PIN 7 on M23 male connector [2] [3]
A	4.5 V ... 5.5 V, TTL/RS-422
C	10 V ... 32 V, TTL/RS-422
E	10 V ... 32 V, HTL/push pull
N	4.5 V ... 5.5 V, SIN/COS 1.0 V_{SS} [4]
V	4.5 V ... 32 V, TTL/RS-422, with 0-set
W	4.5 V ... 32 V, HTL/push pull, with 0-set

Connection type

C	Male connector, M12, 8-pin or 12-pin, radial [5]
K	Cable, 8-wire or 12-wire, universal, 1.5 m [6] [7]
L	Cable, 8-wire or 12-wire, universal, 3 m [6] [7]
M	Cable, 8-wire or 12-wire, universal, 5 m [6] [7]
N	Cable, 8-wire or 12-wire, universal, 10 m [6] [7]

Resolution

1 ... 65536	Pulses per revolution [8] [9]

D	F	S	6	0		-									

1) Suitable for supporting collets, see "accessories".

2) Factory setting: TTL output level.

3) See below for programmable features.

4) Only for 1024 periods per revolution.

5) 12-pin for M, V and W communication interface.

6) 12-wire for M, V and W communication interface.

7) The universal cable outlet is positioned so that it is possible to lay it without bends in a radial and axial direction.

8) See "Pulses per revolution" table. Programmable (P and M communication interface): 1 ... 65536, set to 65536 pulses per revolution at the factory.

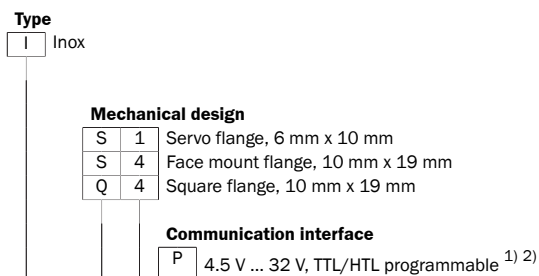9) Other pulses upon request.

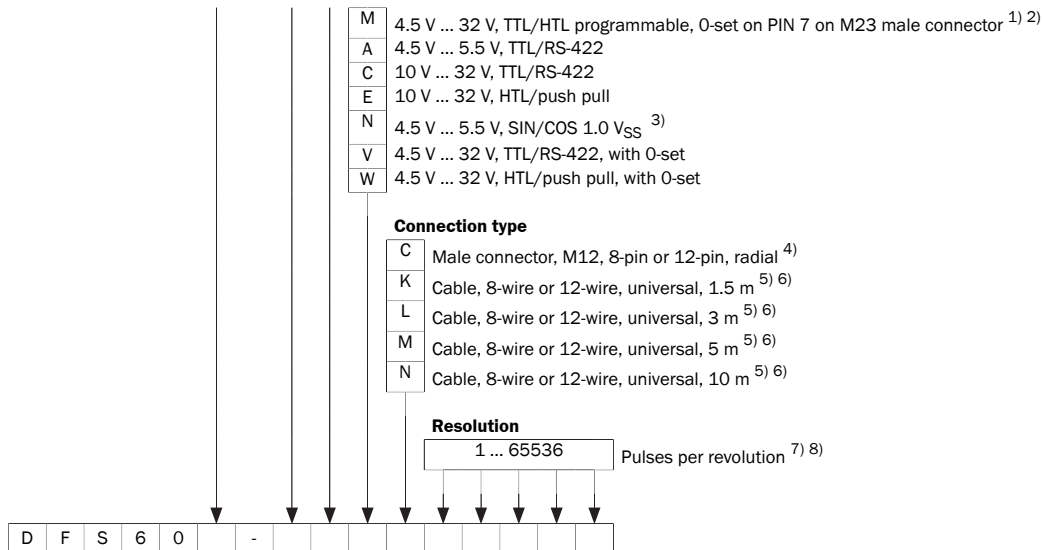## The following features can be programmed (only for programmable encoders):

Pulses per revolution of 1 ... 65536 using PGT-08-S or PGT-10-Pro programming tools
Electrical zero pulse width 90°, 180°, 270° using PGT-08-S or PGT-10-Pro programming tools
Mechanical zero pulse width 1° ... 359° using PGT-10-Pro programming tool
Level of output voltage TTL or HTL using PGT-08-S or PGT-10-Pro programming tools
CW/CCW counting direction using PGT –08-S or PGT –10-Pro programming tools
0-SET function using PGT-08-S or PGT-10-Pro programming tools
0-SET function via PIN 7 of the M23 male connector by applying US for at least 250 ms

Pulses per revolution (other pulses upon request)

	DFS60I
Non-programmable	00100
	00200
	00250
	00300
	00314
	00360
	00500
	00512
	00720
	01000
	01024
	01250
	02000
	02048
	02500
	03600
	04000
	04096
	05000
	07200
	08192
	10000
	16384
	32768
	65536
Programmable	1 ... 65536

Solid shaft

Type
I Inox

Mechanical design
S	1	Servo flange, 6 mm x 10 mm
S	4	Face mount flange, 10 mm x 19 mm
Q	4	Square flange, 10 mm x 19 mm

Communication interface
P 4.5 V ... 32 V, TTL/HTL programmable [1) 2)]

M	4.5 V ... 32 V, TTL/HTL programmable, 0-set on PIN 7 on M23 male connector [1] [2]
A	4.5 V ... 5.5 V, TTL/RS-422
C	10 V ... 32 V, TTL/RS-422
E	10 V ... 32 V, HTL/push pull
N	4.5 V ... 5.5 V, SIN/COS 1.0 V_{SS} [3]
V	4.5 V ... 32 V, TTL/RS-422, with 0-set
W	4.5 V ... 32 V, HTL/push pull, with 0-set

Connection type

C	Male connector, M12, 8-pin or 12-pin, radial [4]
K	Cable, 8-wire or 12-wire, universal, 1.5 m [5] [6]
L	Cable, 8-wire or 12-wire, universal, 3 m [5] [6]
M	Cable, 8-wire or 12-wire, universal, 5 m [5] [6]
N	Cable, 8-wire or 12-wire, universal, 10 m [5] [6]

Resolution

1 ... 65536	Pulses per revolution [7] [8]

D	F	S	6	0		-								

[1] Factory setting: TTL output level.

[2] See below for programmable features.

[3] Only for 1024 periods per revolution.

[4] 12-pin for M, V and W communication interface.

[5] 12-wire for M, V and W communication interface.

[6] The universal cable outlet is positioned so that it is possible to lay it without bends in a radial and axial direction.

[7] See "Pulses per revolution" table. Programmable (P and M communication interface): 1 ... 65536, set to 65536 pulses per revolution at the factory.

[8] Other pulses upon request.
The following features can be programmed (only for programmable encoders):
Pulses per revolution of 1 ... 65536 using PGT-08-S or PGT-10-Pro programming tools
Electrical zero pulse width 90°, 180°, 270° using PGT-08-S or PGT-10-Pro programming tools
Mechanical zero pulse width 1° ... 359° using PGT-10-Pro programming tool
Level of output voltage TTL or HTL using PGT-08-S or PGT-10-Pro programming tools
CW/CCW counting direction using PGT –08-S or PGT –10-Pro programming tools
0-SET function using PGT-08-S or PGT-10-Pro programming tools
0-SET function via PIN 7 of the M23 male connector by applying US for at least 250 ms

Pulses per revolution (other pulses upon request)

	DFS60I
Non-programmable	00100
	00200
	00250
	00300
	00314
	00360
	00500
	00512
	00720
	01000
	01024
	01250
	02000
	02048
	02500
	03600
	04000
	04096
	05000
	07200

	DFS60I
	08192
	10000
	16384
	32768
	65536
Programmable	1 ... 65536

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

WORLDWIDE PRESENCE:

Contacts and other locations –**www.sick.com**

SICK AG | Waldkirch | Germany | www.sick.com

SICK
Sensor Intelligence.