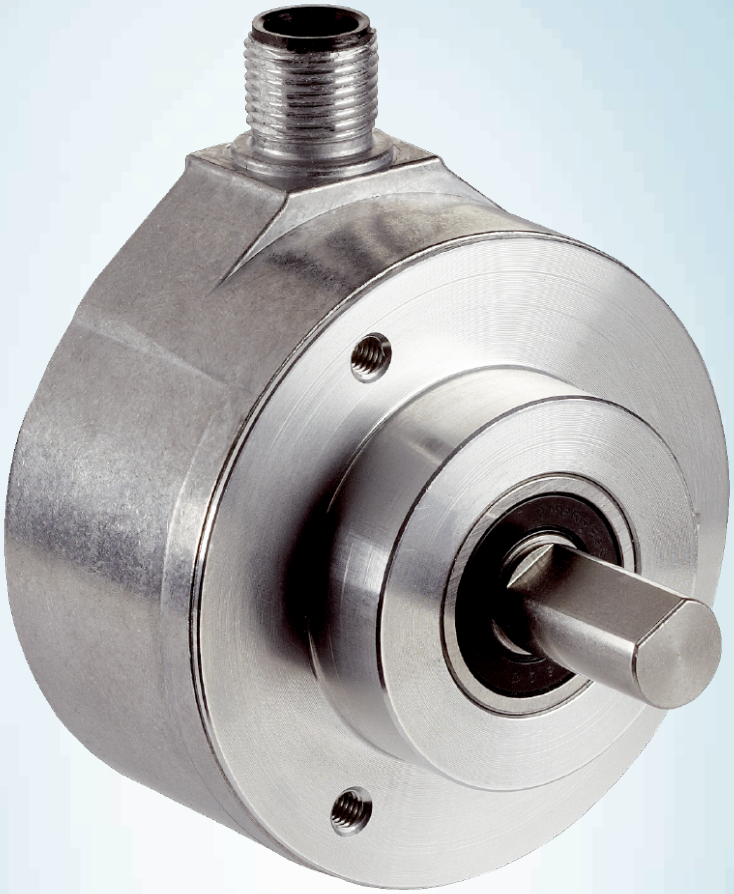
Product family overview



DFS60

High resolution, programmable encoders for demanding applications

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

Advantages

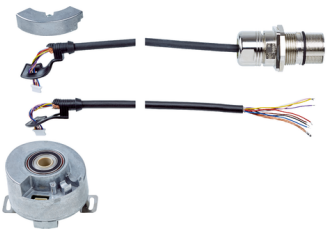
An array of program options

Resolution, counting direction and zero pulse are only a few examples of settings that the user can program individually with the DFS60. Both the compact PGT-10-Pro hand-held programming device and the PGT-08-S PC-based tool are available for this purpose.

Flexibility is key

The DFS60 offers various electrical and mechanical connection types, providing a high degree of flexibility. Thanks to the plug-in cable connection and broad portfolio of matching adapter cables, the DFS60 incremental encoder can be adapted to fit a wide variety of electrical connection types. The hollow shaft version of the DFS60 can be adapted to different shaft diameters using collets.

Mechanical and electrical flexibility
Various electrical and mechanical connection types make the DFS60 incremental encoder flexible and able to be used in many applications.



Connects anywhere
Plug-in cable connection with cables of various lengths and with different plug connectors offer the user a wide range of connection options.

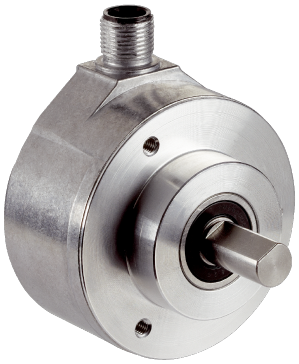
Flexible adaptation
Different collets allow the shaft diameter to be adapted. In addition to metal collets, plastic inserts can also be used to achieve an insulated shaft connection.

Encoders for rough environments

The DFS60 is suitable for rough environments, and applications with particularly harsh ambient conditions can be handled with DFS60 Inox encoders. The housing, flange, shaft and stator coupling are made entirely of stainless steel (1.4305). DFS60 Inox

The DFS60 incremental encoder with enclosure rating IP65 is resistant to dust and humidity and operates reliably even at temperatures ranging from –40 °C to +100 °C.

The rugged mechanical design, wide temperature range as well as IP 67 enclosure rating make the DFS60 Inox the ideal encoder for applications in harsh ambient conditions.



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 TTL / HTL Sin/Cos
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 is a high-resolution incremental encoder with a diameter of 60 mm. It offers lots of mechanical and electrical interfaces and a housing made from aluminum or stainless steel. You can program the encoder yourself, if you want. A key feature is the range of options for programming the electrical parameters, e.g., the output signal level, the number of pulses per revolution, or the zero pulse width. This makes the DFS60 highly suitable for demanding applications as well. The high enclosure rating, wide temperature range, and wide-set ball bearings ensure a high level of ruggedness and make the DFS60 the ideal encoder for industrial applications with harsh ambient conditions.

At a glance

- Pulses per revolution: Up to 65,536 (16 bit)
- Housing diameter: 60 mm
- Solid shaft, blind hollow shaft, through hollow shaft
- Enclosure rating: IP65/IP67
- Communication interfaces: TTL RS 422, HTL Push Pull, Sin/Cos
- Connection type: M12 or M23 male connector, or universal cable
- Programmable, compact installation depth, remote zero set possible

Your benefits

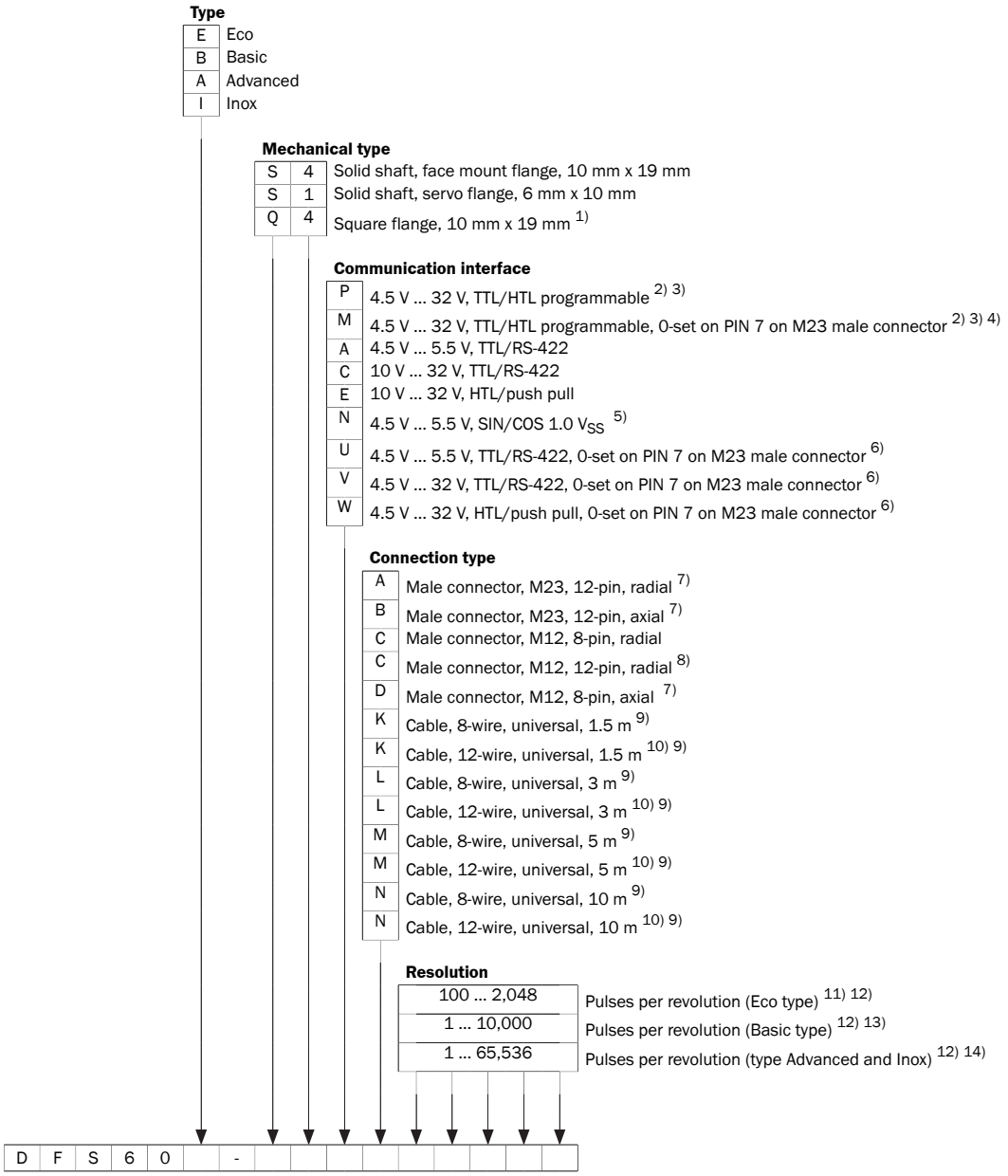
- The programmability of the encoder results in reduced storage, high machine availability, and easy and fast installation
- Flexible adaptation to the application-specific installation situation
- High resolution up to 16 bits allows applications with demanding requirements on measurement accuracy
- The stainless-steel housing offers high resistance to environmental influences
- Long-term and reliable operation thanks to a high enclosure rating, temperature resistance and bearing lifetime
- Excellent concentricity even at high speeds
- Simple mounting thanks to compact dimensions, when the installation space is limited

Fields of application

Measurement of position, speed and displacement in factory and logistics automation, e.g., in the food and beverages industry, medical technology, wood processing, in outdoor applications at ports or offshore plants, printing machines, textile machines and packaging machines

Type code

Other models and accessories ➜ www.sick.com/DFS60



1) Only in combination with type Inox.
2) See below for programmable features.
3) Factory setting: TTL output level.
4) Only in combination with connection type male connector, M23, axial and radial.
5) Only in combination with type Basic and Inox and 1,024 periods per revolution.
6) Only in combination with type Basic, Advanced and Inox and connection type male connector, M23, axial and radial.
7) Only in combination with type Eco, Basic and Advanced.
8) 12-pin for type Inox and M, V and W communication interface.
9) The universal cable connection is positioned so that it is possible to lay it without bends in a radial and axial direction.
10) 12-wire for type Inox and M, V and W communication interface.
11) See “Pulses per revolution” table.
12) Other pulses upon request.
13) See “Pulses per revolution” table. Programmable (P and M communication interface): 1 ... 10,000, set to 10,000 pulses per revolution at the factory.

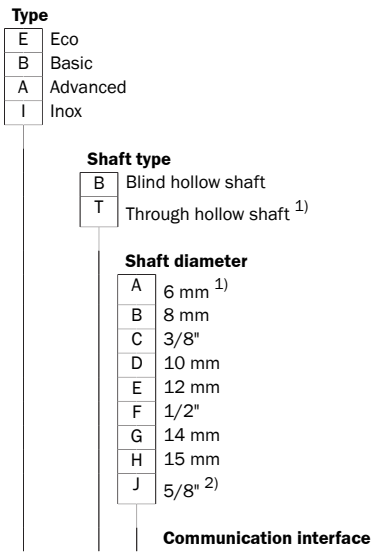
[14] See “Pulses per revolution” table. Programmable (P and M communication interface): 1 ... 65,536, set to 65,536 pulses per revolution at the factory.

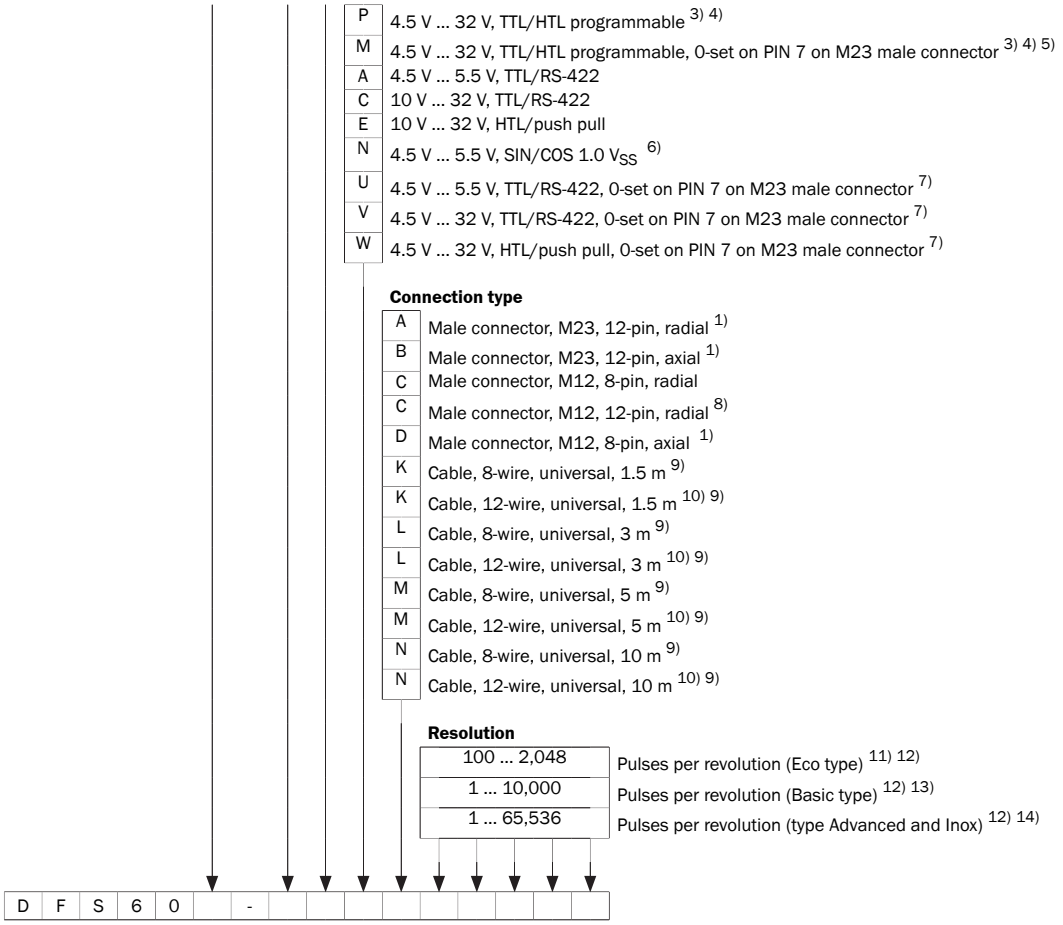
The following features can be programmed (only for programmable encoders):

Pulses per revolution of 1 ... 65,536 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)

	DFS60E	DFS60B	DFS60A / DFS60I
Non-programmable	00100	00100	00100
	00200	00200	00200
	00250	00250	00250
	00256	00300	00300
	00314	00314	00314
	00360	00360	00360
	00500	00500	00500
	00512	00512	00512
	00720	00720	00720
	01000	01000	01000
	01024	01024	01024
	01250	01250	01250
	02000	02000	02000
	02048	02048	02048
	-	02500	02500
	-	03600	03600
	-	04000	04000
	-	04096	04096
	-	05000	05000
	-	07200	07200
	-	08192	08192
	-	10000	10000
	-	-	16384
	-	-	32768
	-	-	65536
Programmable	-	1 ... 10,000	1 ... 65,536





1) Only in combination with type Eco, Basic and Advanced.
2) Suitable for supporting collets, see “accessories”.
3) See below for programmable features.
4) Factory setting: TTL output level.
5) Only for A and B connection type.
6) Only in combination with type Basic and Inox and 1,024 periods per revolution.
7) Only in combination with type Basic, Advanced and Inox and connection type male connector, M23, radial and axial.
8) 12-pin for type Inox and M, V and W communication interface.
9) The universal cable connection is positioned so that it is possible to lay it without bends in a radial and axial direction.
10) 12-wire for type Inox and M, V and W communication interface.
11) See “Pulses per revolution” table.
12) Other pulses upon request.
13) See “Pulses per revolution” table. Programmable (P and M communication interface): 1 ... 10,000, set to 10,000 pulses per revolution at the factory.
14) See “Pulses per revolution” table. Programmable (P and M communication interface): 1 ... 65,536, set to 65,536 pulses per revolution at the factory.

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

Pulses per revolution of 1 ... 65,536 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)

	DFS60E	DFS60B	DFS60A / DFS60I
Non-programmable	00100	00100	00100
	00200	00200	00200

	DFS60E	DFS60B	DFS60A / DFS60I
	00250	00250	00250
	00256	00300	00300
	00314	00314	00314
	00360	00360	00360
	00500	00500	00500
	00512	00512	00512
	00720	00720	00720
	01000	01000	01000
	01024	01024	01024
	01250	01250	01250
	02000	02000	02000
	02048	02048	02048
	-	02500	02500
	-	03600	03600
	-	04000	04000
	-	04096	04096
	-	05000	05000
	-	07200	07200
	-	08192	08192
	-	10000	10000
	-	-	16384
	-	-	32768
	-	-	65536
Programmable	-	1 ... 10,000	1 ... 65,536

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

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