



AFS60/AFM60 EtherNet/IP Absolute Encoders

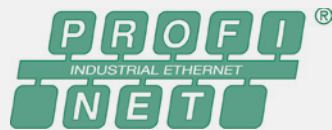
Intelligent, powerful, precise

LEDs talk Industrial Ethernet ... Intelligent, powerful, precise

EtherCAT

The trend in the market is increasingly moving towards Industrial Ethernet-based fieldbus systems – the rapid technical developments such as Fast Ethernet, dual-port switches and full-duplex transmission have turned the original Ethernet into a powerful communication system. The benefits of using Industrial Ethernet-based fieldbuses make these networks a future standard in factory, logistics and process automation.



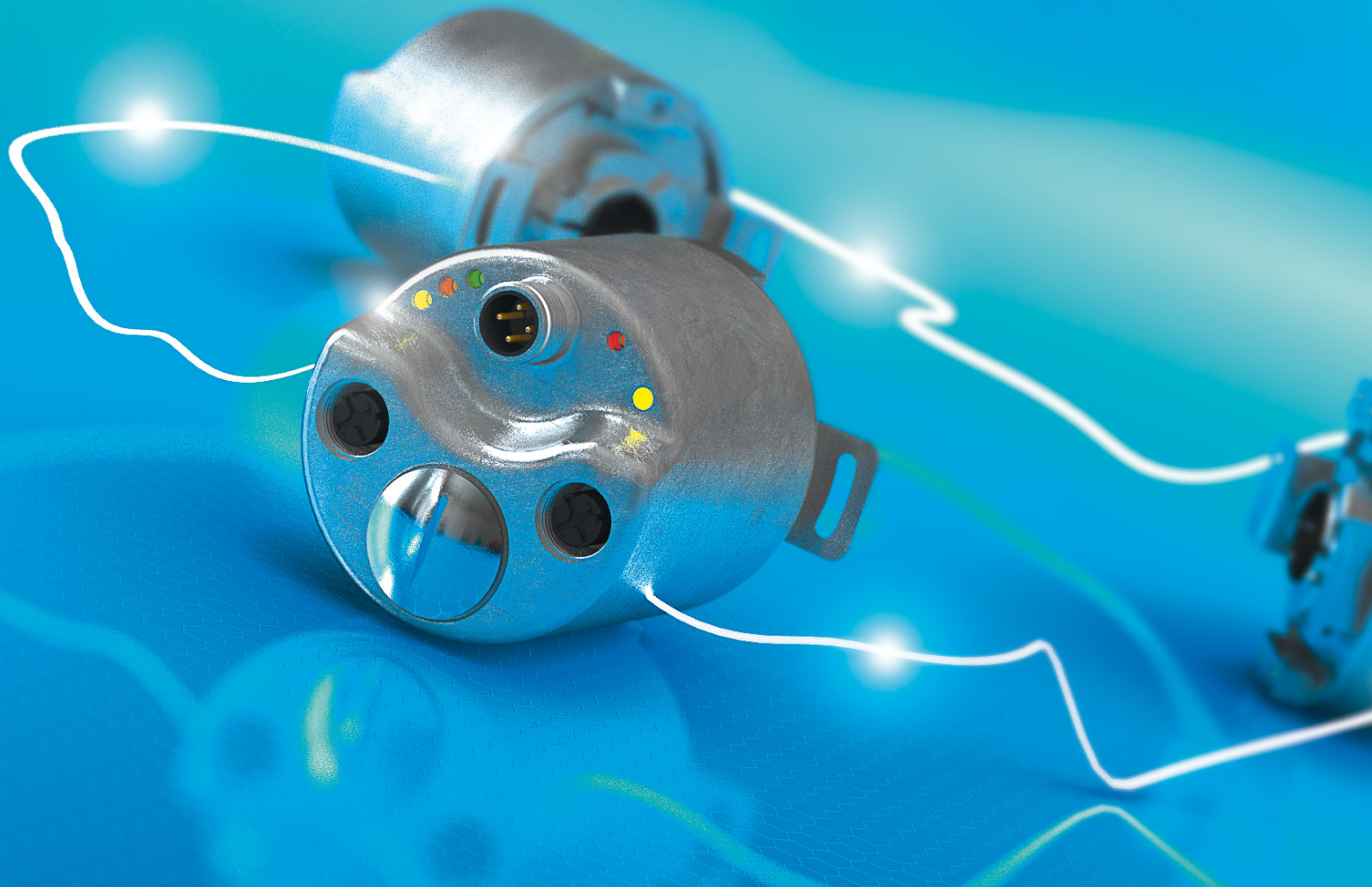


As a trendsetter, SICK has therefore added the three most popular Ethernet variants PROFINET, EtherCAT and EtherNet/IP to its proven absolute single and multiturn encoders AFS60/AFM60. Extensive diagnostic functions offer here real added value:

- Maximum system availability via minimum/maximum values for position, velocity, temperature and operating hours counters
- Optimum work results thanks to precise positioning with optical 18-bit single turn resolution (multiturn total resolution: 30 bit)
- Visible security via status displaying using five Duo LEDs
- Cost savings during installation thanks to rotary axis function (resolution also for nonbinary and decimal values)

A face mount flange, servo flange and blind hollow shaft are available as mechanical interfaces for all three variants. Thanks to extensive accessories such as universal torque supports, couplings, mounting bells, diverse connector technology and much more, the encoders can be appropriately adapted to almost any application.

**“Device-Level-Ring”
AFS60/AFM60 EtherNet/IP**



The outstanding feature of the absolute encoder AFS60/AFM60 EtherNet/IP is the Device-Level-Ring functionality (DLR). DLR is a revolutionary ring topology that requires no additional switches. The cabling is done directly from encoder to encoder. This reduces effort and costs compared to the cabling of a star-topology. In this way, AFS60/AFM60 EtherNet/IP leads to a failure-tolerant, fast and above all operationally safe network.



DLR means for you:

- Very high system availability through redundancy, even in extreme ambient conditions.
- Cable break detection.
- Adaptable to existing star and line topologies.
- Reduced installation and maintenance costs.

LED's Talk!

Status display via five duo LEDs, sign of life (even at a standstill).

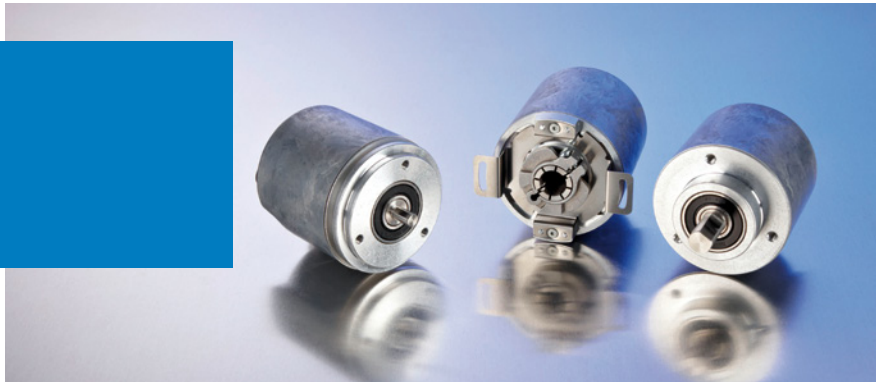
LED's Communicate!

Increased productivity thanks to fast communication in the device level ring (DLR).

LED's Analyze!

Intelligent diagnostic functions deliver results quickly and accurately.

Intelligent, powerful, precise





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Product description

With its extensive self-monitoring and diagnostics possibilities the AFS60/AFM60 EtherNet/IP encoder clearly offers more when it comes to availability. With a 30-bit resolution and a highly robust, the new AFM60 absolute multi-turn encoder sets new standards and the same is true for the 18-bit absolute single-turn encoder. This makes them particularly suitable for harsh application conditions in which maximum accuracy and availability are of the essence. A shaft bearing distance of 30 mm means the

AFS60/AFM60 family is significantly more robust than encoders with blocked ball bearings. The AFS60/AFM60 with EtherNet/IP interface is equipped with a configuration assembly, which makes configuration of controls significantly easier. Maximum machine availability is assured even in case of cable break-ages due to the Device Level Ring (DLR) function. Additionally equipped with a multitude of diagnostics functions, the AFS60/AFM60 opens up entirely new options for the user for evaluation.

At a glance

- 30 bit (AFM60), 18 bit (AFS60) multi-functional absolute encoders
- Device Level Ring
- Extensive diagnostics: Min/max values for temperature, position, speed. Operating hours counter, display of flags, alarms and warnings using e.g. a fault header (32 bit)
- Status display via 5 duo LEDs
- Rotary axis function
- IP address via DHCP / DEC switches
- Ethernet/IP interface (extended profile 0x22)

Your benefits

- DLR functionality for reliability with simple maintenance, fewer cables and lower installation costs, simple adaptation to existing network topologies
- Lower installation costs due to fewer external switches
- High level of productivity thanks to superior diagnostics with 32-bit fault header, fast communication and high level of redundancy
- Optimal machine availability thanks to early warning and fault detection system
- Simple setting for various applications thanks to rotary axis function
- Simple installation due to user-friendly on-board configuration assembly
- Industrial-application design for use in particularly cramped space conditions

Detailed technical data

Performance

Error limits	$\pm 0.03^\circ$
Max. number of revolutions, AFM60	4,096 (12 bit)
Repeatability	$\pm 0.002^\circ$
Max. number of steps per revolution, AFS60 and AFM60	262,144 (18 bit) (Maximum speed consideration, see page 8)

Interfaces

Bus interface	EtherNet/IP IEC 61784-1
Transmission rate	10/100 Mbit/s
Initialization time	Approx. 12 s
RPI (requested packet interval)	5 ... 750 ms
Transmission medium	CAT-5e cable
DLR (Device Level Ring)	✓
Endless operating functionality	✓
Encoder device profile	0 x 22

Mechanical data

Operating speed ¹⁾	
Solid shaft	9,000 min ⁻¹ (Maximum speed consideration, see page 8)
Blind hollow shaft	6,000 min ⁻¹ (Maximum speed consideration, see page 8)
Mass	0.2 kg
Max. shaft loading solid shaft	80 N (radial); 40 N (axial)
Permissible movement of the drive element, blind hollow shaft	$\pm 0.3 / \pm 0.05$ mm (radial, static/dynamic) $\pm 0.5 / \pm 0.1$ mm (axial, static/dynamic)
Moment of inertia of the rotor	
Solid shaft	≤ 6.2 gcm ²
Blind hollow shaft	≤ 40 gcm ²
Bearing lifetime	3×10^9 revolutions
Start up torque at 20 °C	
Solid shaft	0.5 Ncm
Blind hollow shaft	0.8 Ncm
Operating torque at 20 °C	
Solid shaft	0.3 Ncm
Blind hollow shaft	0.6 Ncm
Max. angular acceleration	5×10^5 rad/s ²
Shaft diameter	
Face mount flange, solid shaft	10 x 19 mm, 3/8"
Servo flange, solid shaft	6 x 10 mm
Blind hollow shaft AFM60	8, 10, 12, 14, 15 mm, 1/4", 1/2", 3/8"
Blind hollow shaft AFS60	8, 10, 12, 14, 15 mm, 1/4", 1/2", 3/8", 5/8"
Material shaft	Stainless steel
Material flange	
Solid shaft	Aluminium
Blind hollow shaft AFM60	Aluminium
Blind hollow shaft AFS60	Zinc
Material housing	Aluminium

¹⁾ Self-warming. 3.3 k/1,000 min⁻¹, when applying note working temperature.

Electrical data

Max. power consumption	3.0 W
Operating voltage range with inverse-polarity protection	10 ... 30 V

Ambient data

Protection class acc. IEC 60529	
Housing with mating connector fitted	IP 67 only with mating connector or sealing cap
Shaft	IP 65
Permissible relative humidity ¹⁾	90 %
Working temperature range	-30 ... +85 °C
Storage temperature range (without packaging)	-40 ... +100 °C
Resistance	
to shocks (EN 60068-2-27)	100 g/6 ms
to vibration (EN 60068-2-6)	30 g/10 ... 2,000 Hz
EMC	EN 61000-6-2 und EN 61000-6-3

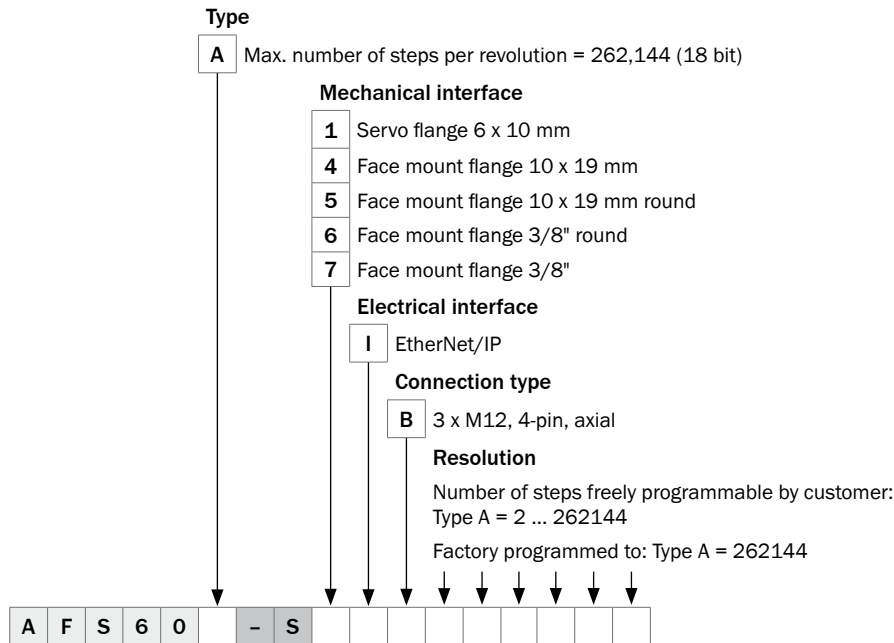
¹⁾ Condensation of the optical scanning not permitted.

Maximum speed consideration

The maximum singleturn resolution (= 18 bit) can be operated with the respective maximum operating speed (hollow shaft 6,000 min⁻¹ and solid shaft 9,000 min⁻¹).

Ordering information

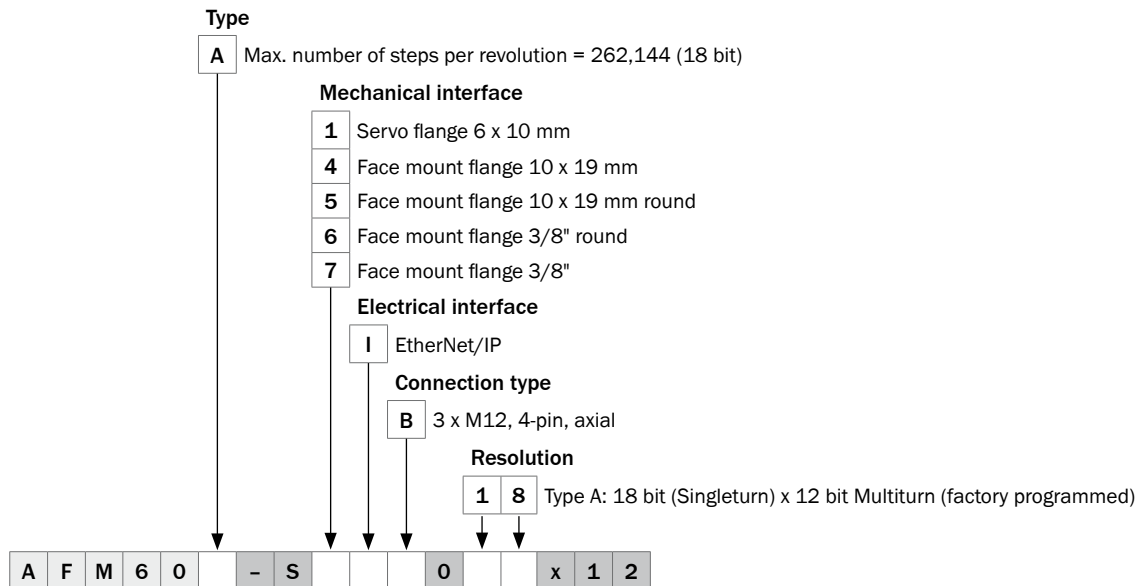
Type code AFS Absolute Encoder Singleturn, solid shaft



Ordering examples

Mechanical interface	Model name	Part no.
Servo flange 6 x 10 mm	AFS60A-S1IB262144	1055362
Face mount flange 10 x 19 mm, flat	AFS60A-S4IB262144	1055364

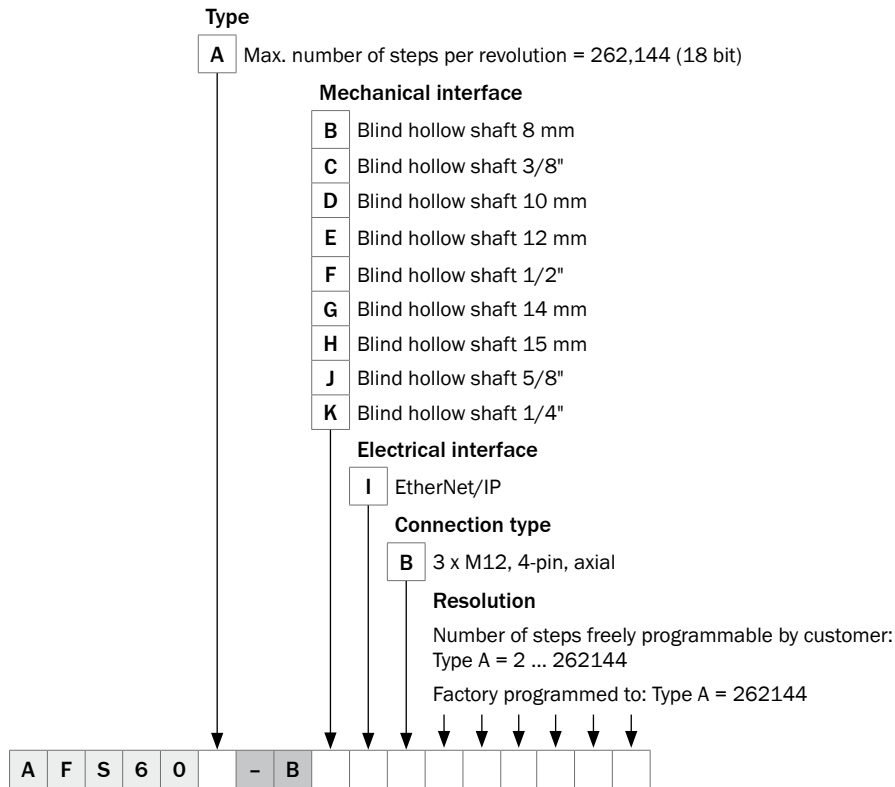
Type code AFM Absolute Encoder Multiturn, solid shaft



Ordering examples

Mechanical interface	Model name	Part no.
Servo flange 6 x 10 mm	AFM60A-S1IB018x12	1055331
Face mount flange 10 x 19 mm, flat	AFM60A-S4IB018x12	1055334

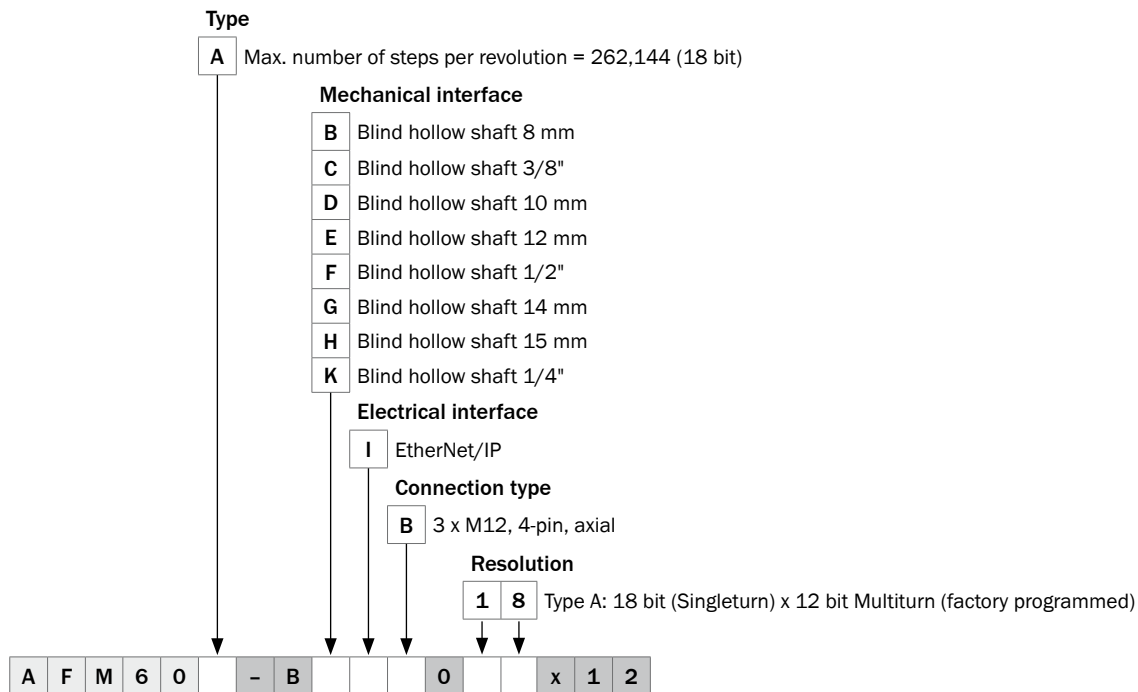
Type code AFS Absolute Encoder Singleturn, blind hollow shaft



Ordering examples

Mechanical interface	Model name	Part no.
Blind hollow shaft 10 mm	AFS60A-BDIB262144	1055356
Blind hollow shaft 12 mm	AFS60A-BEIB262144	1055358
Blind hollow shaft 15 mm	AFS60A-BHIB262144	1055360

Type code AFM Absolute Encoder Multiturn, blind hollow shaft



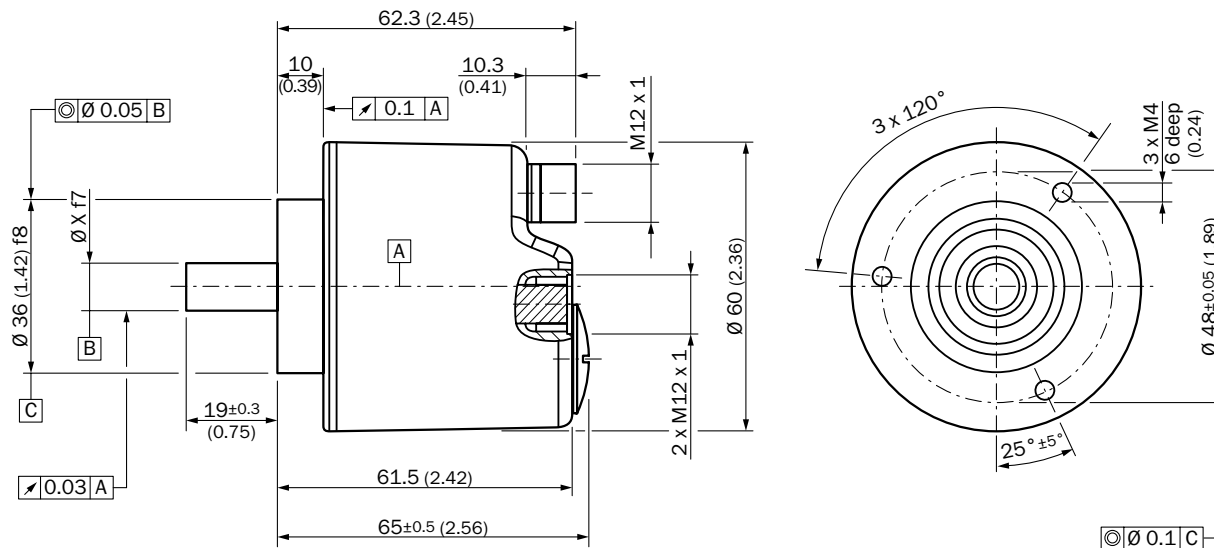
Ordering examples

Mechanical interface	Model name	Part no.
Blind hollow shaft 10 mm	AFM60A-BDIB018x12	1055325
Blind hollow shaft 12 mm	AFM60A-BEIB018x12	1055326
Blind hollow shaft 15 mm	AFM60A-BHIB018x12	1055328

Dimensional drawings

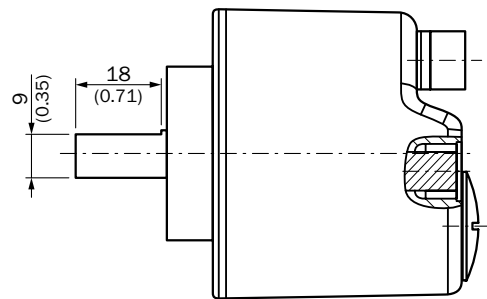
Face mount flange

Face mount flange round



All dimensions in mm (inch)

Face mount flange flat

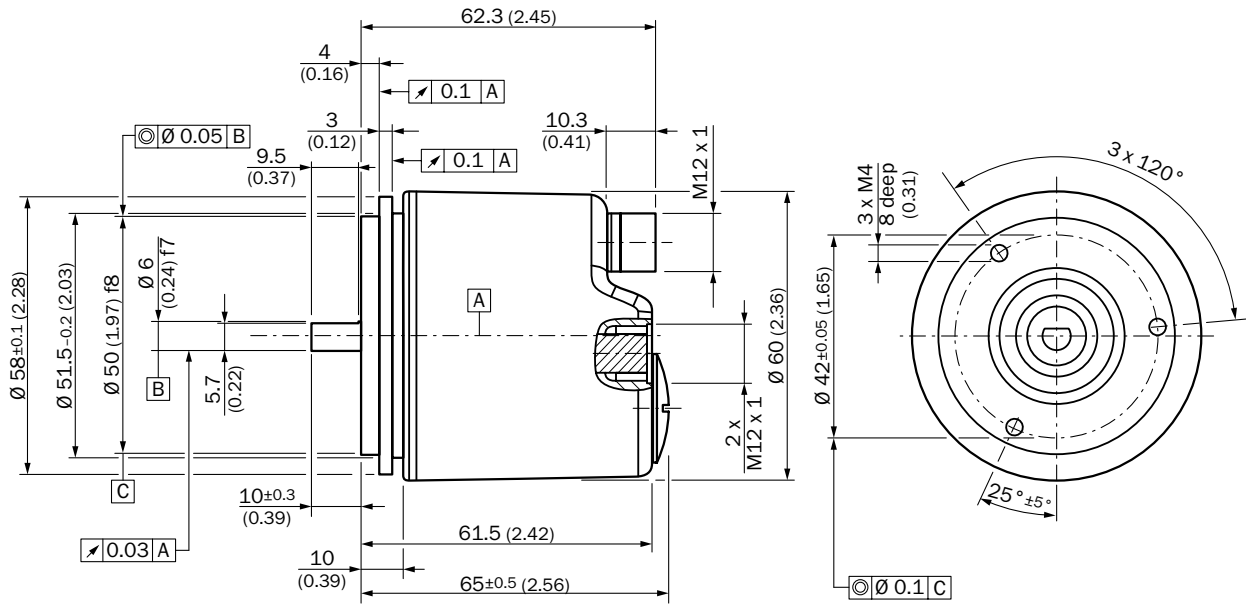


All dimensions in mm (inch)

Diameter X f7

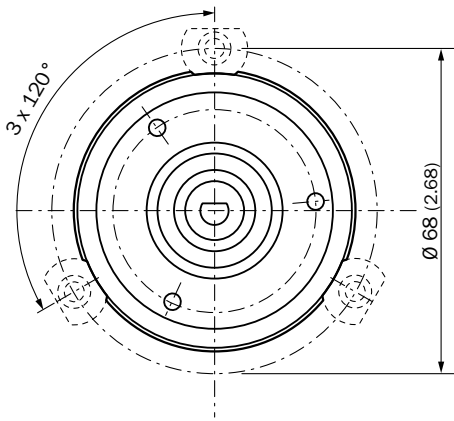
- Face mount flange 10 x 19 mm flat
- Face mount flange 10 x 19 mm round
- Face mount flange 3/8" round
- Face mount flange 3/8"

Servo flange



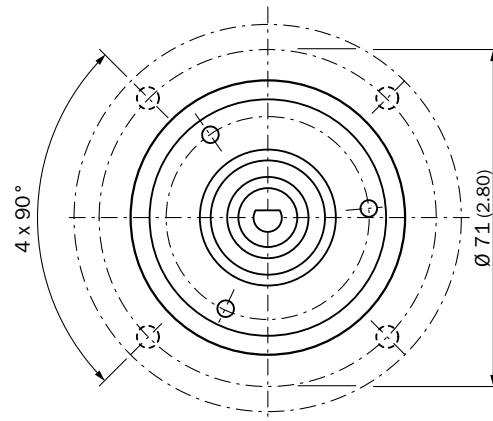
All dimensions in mm (inch)

Proposed customer fitting for servo clamp small (part no. 2029166)



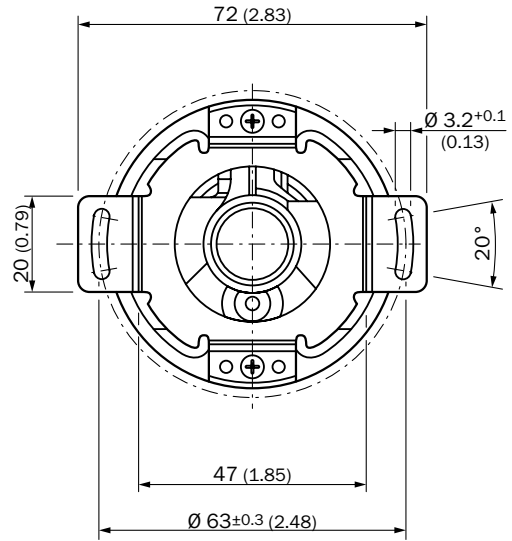
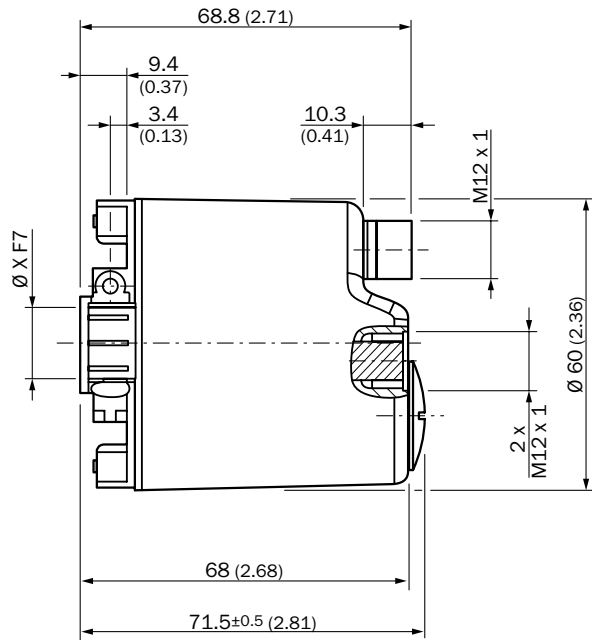
All dimensions in mm (inch)

Proposed customer fitting for servo clamp half-shell (part no. 2029165)



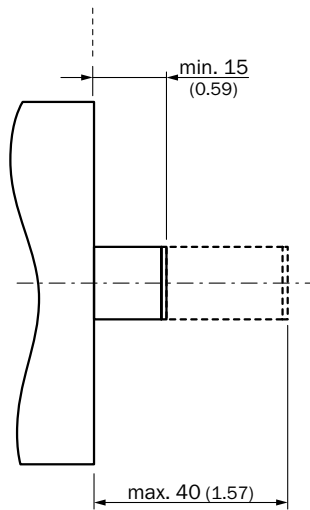
All dimensions in mm (inch)

Blind hollow shaft



All dimensions in mm (inch)

Proposed customer fitting

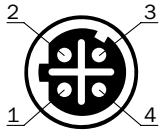


All dimensions in mm (inch)

Diameter X F7	
Absolute Encoder Singelturn AFS60	Absolute Encoder Multiturn AFM60
Blind hollow shaft 1/4"	Blind hollow shaft 1/4"
Blind hollow shaft 8 mm	Blind hollow shaft 8 mm
Blind hollow shaft 3/8"	Blind hollow shaft 3/8"
Blind hollow shaft 10 mm	Blind hollow shaft 10 mm
Blind hollow shaft 12 mm	Blind hollow shaft 12 mm
Blind hollow shaft 1/2"	Blind hollow shaft 1/2"
Blind hollow shaft 14 mm	Blind hollow shaft 14 mm
Blind hollow shaft 15 mm	Blind hollow shaft 15 mm
Blind hollow shaft 5/8"	

Pin allocation

M12 - 4 x D coding

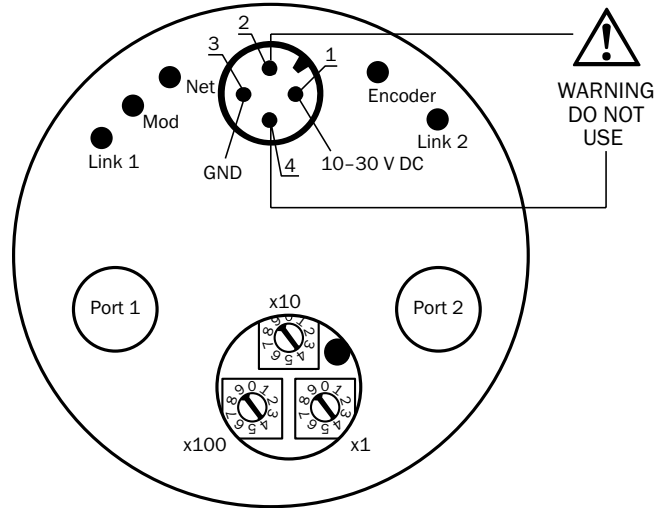


Port 1

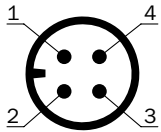
Signal	T x D+	R x D+	T x D-	R x D-
Pin	1	2	3	4

Port 2

Signal	T x D+	R x D+	T x D-	R x D-
Pin	1	2	3	4



M12 - 4 x A coding



Power supply


Signal	10 ... 30 V	Not connected	GND	Not connected
Pin	1	2	3	4


Sales kits

Sales kit 01

EtherNet/IP-Encoder

- + 1 male connector M12 4-pin angled (STE-1204-WE, part no. 6048152)
- + 1 female connector M12 4-pin angled (DOS-1204-W, part no. 6007303)


	Encoder type (singleturn)	Description	Model name	Part no.
	AFS60A-S1IB262144	Solid shaft, servo flange, 6 x 10 mm	AFS60A-S1IB Sales Kit 01	1057693
	AFS60A-S4IB262144	Solid shaft, face mount flange, 10 x 19 mm	AFS60A-S4IB Sales Kit 01	1057718
	AFS60A-BDIB262144	Blind hollow shaft, Ø 10 mm	AFS60A-BDIB Sales Kit 01	1057719
	AFS60A-BEIB262144	Blind hollow shaft, Ø 12 mm	AFS60A-BEIB Sales Kit 01	1057720
	AFS60A-BHIB262144	Blind hollow shaft, Ø 15 mm	AFS60A-BHIB Sales Kit 01	1057721


	Encoder type (multiturn)	Description	Model name	Part no.
	AFM60A-S1IB018x12	Solid shaft, servo flange, 6 x 10 mm	AFM60A-S1IB Sales Kit 01	1057722
	AFM60A-S4IB018x12	Solid shaft, face mount flange, 10 x 19 mm	AFM60A-S4IB Sales Kit 01	1057723
	AFM60A-BDIB018x12	Blind hollow shaft, Ø 10 mm	AFM60A-BDIB Sales Kit 01	1057724
	AFM60A-BEIB018x12	Blind hollow shaft, Ø 12 mm	AFM60A-BEIB Sales Kit 01	1057725
	AFM60A-BHIB018x12	Blind hollow shaft, Ø 15 mm	AFM60A-BHIB Sales Kit 01	1057726

Sales kit 02

EtherNet/IP-Encoder

- + 1 male connector M12 4-pin angled, pre-wired with cable 5 m (STL-1204-W05ME90, part no. 6047913)
- + 1 female connector M12 4-pin angled, pre-wired with cable 5 m (DOL-1204-W05MC, part no. 6025904)


	Encoder type (singleturn)	Description	Model name	Part no.
	AFS60A-S1IB262144	Solid shaft, servo flange, 6 x 10 mm	AFS60A-S1IB Sales Kit 02	1057737
	AFS60A-S4IB262144	Solid shaft, face mount flange, 10 x 19 mm	AFS60A-S4IB Sales Kit 02	1057738
	AFS60A-BDIB262144	Blind hollow shaft, Ø 10 mm	AFS60A-BDIB Sales Kit 02	1057739
	AFS60A-BEIB262144	Blind hollow shaft, Ø 12 mm	AFS60A-BEIB Sales Kit 02	1057740
	AFS60A-BHIB262144	Blind hollow shaft, Ø 15 mm	AFS60A-BHIB Sales Kit 02	1057741


	Encoder type (multiturn)	Description	Model name	Part no.
	AFM60A-S1IB018x12	Solid shaft, servo flange, 6 x 10 mm	AFM60A-S1IB Sales Kit 02	1057742
	AFM60A-S4IB018x12	Solid shaft, face mount flange, 10 x 19 mm	AFM60A-S4IB Sales Kit 02	1057743
	AFM60A-BDIB018x12	Blind hollow shaft, Ø 10 mm	AFM60A-BDIB Sales Kit 02	1057744
	AFM60A-BEIB018x12	Blind hollow shaft, Ø 12 mm	AFM60A-BEIB Sales Kit 02	1057745
	AFM60A-BHIB018x12	Blind hollow shaft, Ø 15 mm	AFM60A-BHIB Sales Kit 02	1057746

Sales kit 03

EtherNet/IP-Encoder

- + 2 male connector M12 4-pin angled (STE-1204-WE, part no. 6048152)
- + 1 female connector M12 4-pin angled (DOS-1204-W, part no. 6007303)


	Encoder type (singleturn)	Description	Model name	Part no.
	AFS60A-S1IB262144	Solid shaft, servo flange, 6 x 10 mm	AFS60A-S1IB Sales Kit03	1057727
	AFS60A-S4IB262144	Solid shaft, face mount flange, 10 x 19 mm	AFS60A-S4IB Sales Kit 03	1057728
	AFS60A-BDIB262144	Blind hollow shaft, Ø 10 mm	AFS60A-BDIB Sales Kit 03	1057729
	AFS60A-BEIB262144	Blind hollow shaft, Ø 12 mm	AFS60A-BEIB Sales Kit 03	1057730
	AFS60A-BHIB262144	Blind hollow shaft, Ø 15 mm	AFS60A-BHIB Sales Kit 03	1057731


	Encoder type (multiturn)	Description	Model name	Part no.
	AFM60A-S1IB018x12	Solid shaft, servo flange, 6 x 10 mm	AFM60A-S1IB Sales Kit 03	1057732
	AFM60A-S4IB018x12	Solid shaft, face mount flange, 10 x 19 mm	AFM60A-S4IB Sales Kit 03	1057733
	AFM60A-BDIB018x12	Blind hollow shaft, Ø 10 mm	AFM60A-BDIB Sales Kit 03	1057734
	AFM60A-BEIB018x12	Blind hollow shaft, Ø 12 mm	AFM60A-BEIB Sales Kit 03	1057735
	AFM60A-BHIB018x12	Blind hollow shaft, Ø 15 mm	AFM60A-BHIB Sales Kit 03	1057736

Sales kit 04

EtherNet/IP-Encoder

- + 2 male connector M12 4-pin angled, pre-wired with cable 5 m (STL-1204-W05ME90, part no. 6047913)
- + 1 female connector M12 4-pin angled, pre-wired with cable 5 m (DOL-1204-W05MC, part no. 6025904)

	Encoder type (singleturn)	Description	Model name	Part no.
	AFS60A-S1IB262144	Solid shaft, servo flange, 6 x 10 mm	AFS60A-S1IB Sales Kit 04	1057747
	AFS60A-S4IB262144	Solid shaft, face mount flange, 10 x 19 mm	AFS60A-S4IB Sales Kit 04	1057748
	AFS60A-BDIB262144	Blind hollow shaft, Ø 10 mm	AFS60A-BDIB Sales Kit 04	1057749
	AFS60A-BEIB262144	Blind hollow shaft, Ø 12 mm	AFS60A-BEIB Sales Kit 04	1057750
	AFS60A-BHIB262144	Blind hollow shaft, Ø 15 mm	AFS60A-BHIB Sales Kit 04	1057751

	Encoder type (multiturn)	Description	Model name	Part no.
	AFM60A-S1IB018x12	Solid shaft, servo flange, 6 x 10 mm	AFM60A-S1IB Sales Kit 04	1057752
	AFM60A-S4IB018x12	Solid shaft, face mount flange, 10 x 19 mm	AFM60A-S4IB Sales Kit 04	1057753
	AFM60A-BDIB018x12	Blind hollow shaft, Ø 10 mm	AFM60A-BDIB Sales Kit 04	1057754
	AFM60A-BEIB018x12	Blind hollow shaft, Ø 12 mm	AFM60A-BEIB Sales Kit 04	1057755
	AFM60A-BHIB018x12	Blind hollow shaft, Ø 15 mm	AFM60A-BHIB Sales Kit 04	1057756

Accessories

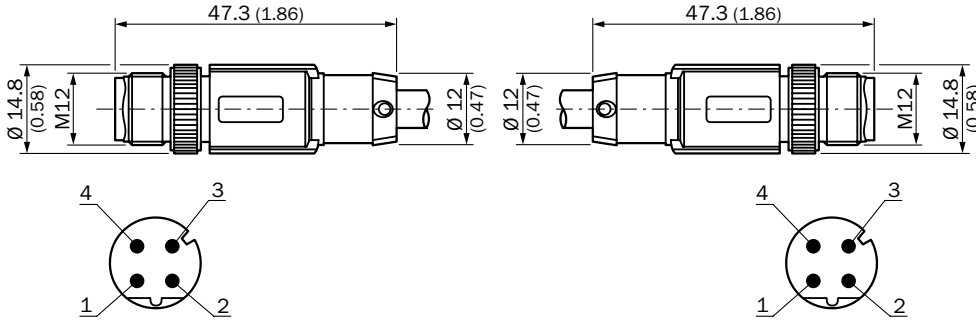
Plug connector and cables

Round screw system M12

	Data line D-coded
Mechanical characteristics	
Number of positions	4
External cable diameter	6.4 mm
Smallest bending radius, fixed installation	26 mm
Smallest bending radius, flexible installation	26 mm
Length of cable, between the participants max.	100 m
Material	
External sheath	PUR
Conductor	Bare Cu litz wires
External sheath, color	Water blue RAL 5021
Electrical characteristics	
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Characteristics of cable	
Cable structure	2 x 2 x AWG26/7 PIMF
Conductor cross section	0.14 mm ²
Wire colors	White-green, white-orange
Conductor resistance	≤ 150 Ω/km
Shielding	Tinned copper braided shield
Temperature range	
Fixed installation	-20 °C ... +80 °C
Flexible installation	-20 °C ... +80 °C
Special properties	
Flame resistance	In accordance with IEC 60332-1-2
Halogen-free	In accordance with IEC 60754-1
Resistance to oil	In accordance with DIN EN 60811-2-1
Other resistance	Microbe resistance as per VDE 0282 section 10 Hydrolysis resistance as per DIN 53504
Concentration of fumes	In accordance with IEC 61034

Description	Cable length	Model name	Part no.
Round screw system M12 connector straight to M12 straight connector, shielded	2.0 m	SSL-1204-G02ME90	6045222
	5.0 m	SSL-1204-G05ME90	6045277
	10.0 m	SSL-1204-G10ME90	6045279

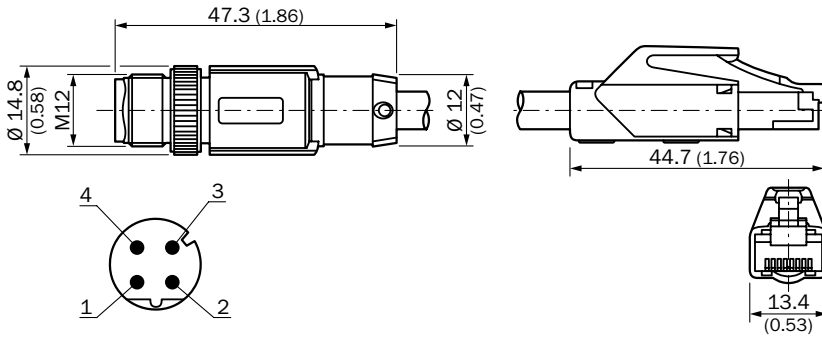
SSL-1204-G02ME90
SSL-1204-G05ME90
SSL-1204-G10ME90



All dimensions in mm (inch)

Description	Cable length	Model name	Part no.
Round screw system M12 connector straight to RJ45 straight connector, shielded	2.0 m	SSL-2J04-G02ME60	6047916
	5.0 m	SSL-2J04-G05ME60	6047917
	10.0 m	SSL-2J04-G10ME60	6047918

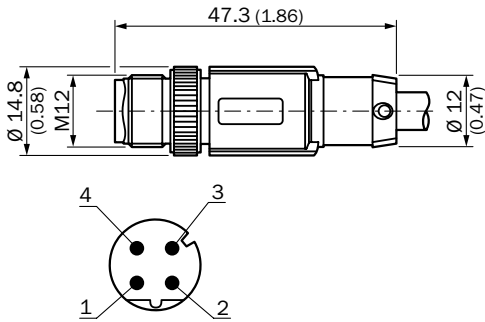
SSL-2J04-G02ME60
SSL-2J04-G05ME60
SSL-2J04-G10ME60



All dimensions in mm (inch)

Description	Cable length	Model name	Part no.
Round screw system M12 connector straight to open end, shielded	2.0 m	STL-1204-G02ME90	6045284
	5.0 m	STL-1204-G05ME90	6045285
	10.0 m	STL-1204-G10ME90	6045286

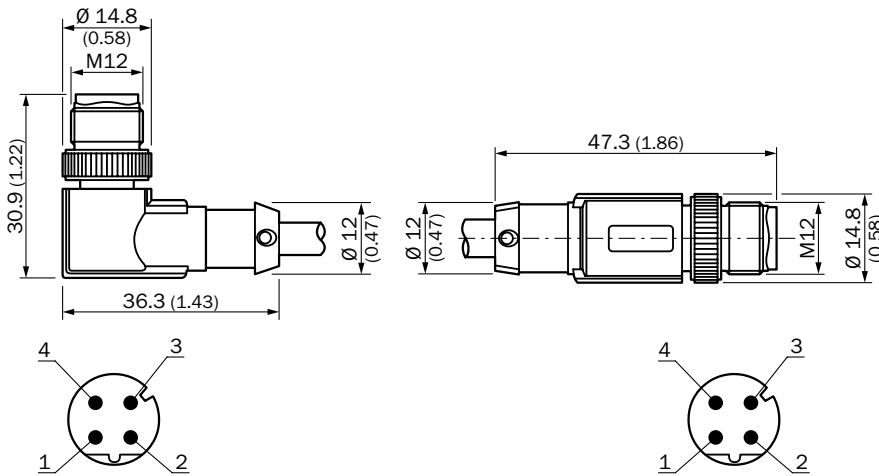
STL-1204-G02ME90
STL-1204-G05ME90
STL-1204-G10ME90



All dimensions in mm (inch)

Description	Cable length	Model name	Part no.
Round screw system M12 connector angled to M12 connector straight, shielded	2.0 m	SSL-1204-H02ME90	6047908
	5.0 m	SSL-1204-H05ME90	6047909
	10.0 m	SSL-1204-H10ME90	6047910

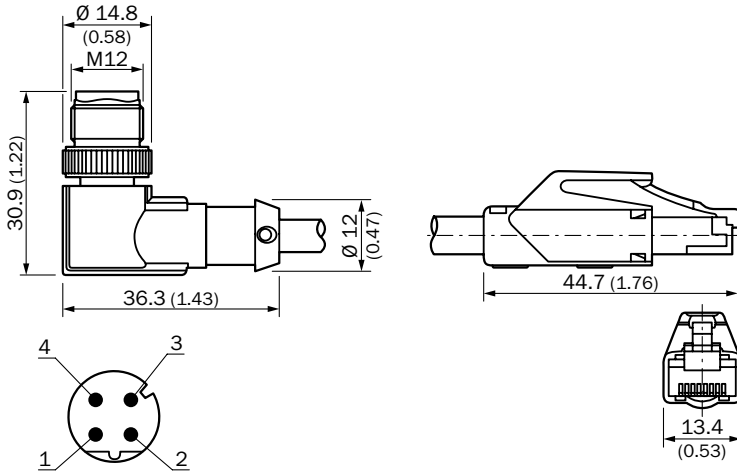
SSL-1204-H02ME90
SSL-1204-H05ME90
SSL-1204-H10ME90



All dimensions in mm (inch)

Description	Cable length	Model name	Part no.
Round screw system M12 connector angled to RJ45 straight connector, shielded	2.0 m	SSL-2J04-H02ME	6047911
	5.0 m	SSL-2J04-H05ME	6045287
	10.0 m	SSL-2J04-H10ME	6045288

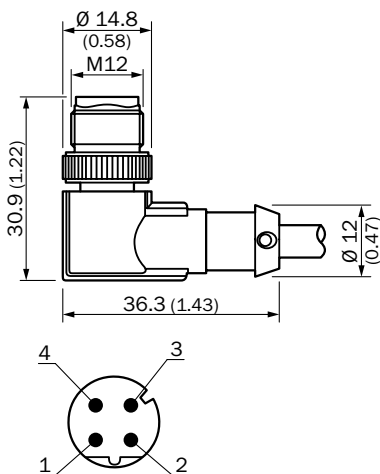
SSL-2J04-H02ME
SSL-2J04-H05ME
SSL-2J04-H10ME



All dimensions in mm (inch)

Description	Cable length	Model name	Part no.
Round screw system M12 connector angled to open end, shielded	2.0 m	STL-1204-W02ME90	6047912
	5.0 m	STL-1204-W05ME90	6047913
	10.0 m	STL-1204-W10ME90	6047914
	25.0 m	STL-1204-W25ME90	6047915

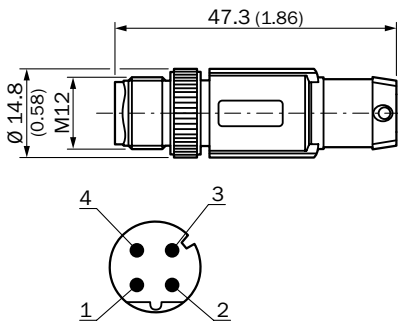
STL-1204-W02ME90
STL-1204-W05ME90
STL-1204-W10ME90
STL-1204-W25ME90



All dimensions in mm (inch)

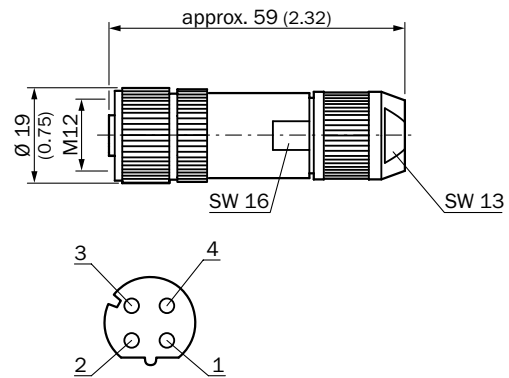
Description	Contacts	Type of connector	Model name	Part no.
Round screw system M12 straight, screened	4	Male connector	STE-1204-GE01	6048151
		Female connector	DOS-1204-GE	6048153

STE-1204-GE01



All dimensions in mm (inch)

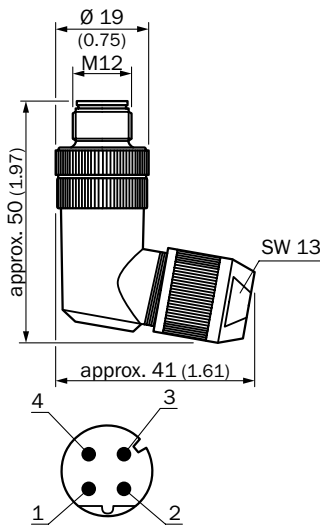
DOS-1204-GE



All dimensions in mm (inch)

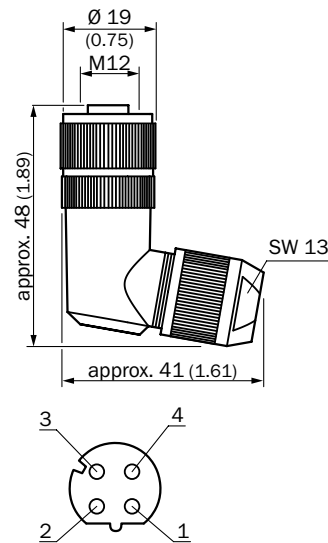
Description	Contacts	Type of connector	Model name	Part no.
Round screw system M12, angled	4	Male connector	STE-1204-WE	6048152
		Female connector	DOS-1204-WE	6048154

STE-1204-WE



All dimensions in mm (inch)

DOS-1204-WE

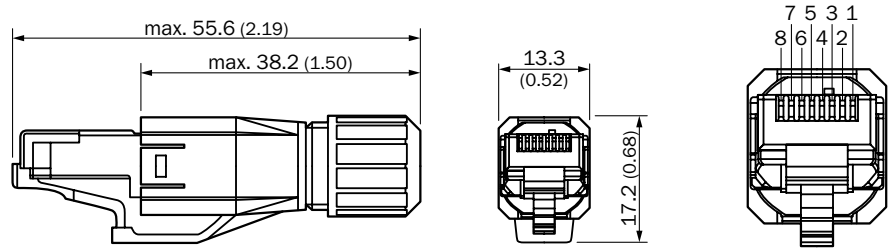


All dimensions in mm (inch)

RJ45 connector

Description	Contacts	Type of connector	Model name	Part no.
RJ45 connector	4	Male connector	STE-0J08-GE	6048150

STE-0J08-GE



All dimensions in mm (inch)

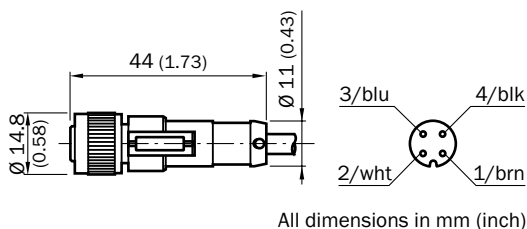
Signal	Connector	
	RJ45	M12
TD+	1	1
TD-	2	3
RD+	3	2
RD-	6	4

Power supply

	Power supply (A coding)
Mechanical characteristics	
Number of positions	4
External cable diameter	4.7 mm
Smallest bending radius, fixed installation	47 mm
Smallest bending radius, flexible installation	47 mm
Length of cable, between the participants max.	100 m
Material	
External sheath	PUR
Conductor	Bare Cu litz wires
External sheath, color	Black RAL 9005
Characteristics of cable	
AWG sense cable	22
Conductor cross section	0.34 mm ²
Wire colors	Brown, white, blue, black
Conductor resistance	≤ 58 Ω/km
Temperature range	
Fixed installation	-50 °C ... +80 °C
Flexible installation	-25 °C ... +80 °C
Special properties	
Flame resistance	UL Horizontal Flametest/CSA FT2
Halogen-free	PUR halogen-free
Microbe resistance	Excellent
Hydrolysis resistance	Excellent

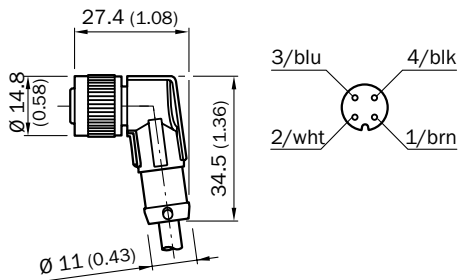
Description	Cable length	Model name	Part no.
Round screw system M12 straight connector female on open end	2.0 m	DOL-1204-G02MC	6025900
	5.0 m	DOL-1204-G05MC	6025901
	10.0 m	DOL-1204-G10MC	6025902
	25.0 m	DOL-1204-G25MC	6034751

- DOL-1204-G02MC**
- DOL-1204-G05MC**
- DOL-1204-G10MC**
- DOL-1204-G25MC**



Description	Cable length	Model name	Part no.
Round screw system M12 angled connector female on open end	2.0 m	DOL-1204-W02MC	6025903
	5.0 m	DOL-1204-W05MC	6025904
	10.0 m	DOL-1204-W10MC	6025905
	25.0 m	DOL-1204-W25MC	6034754

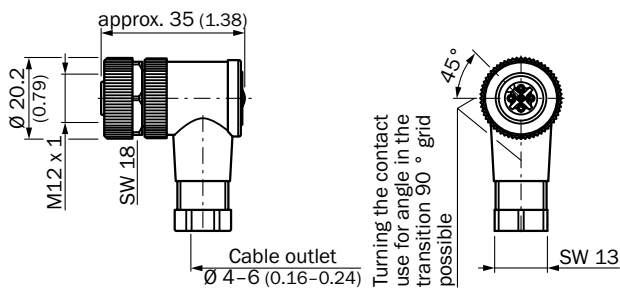
DOL-1204-W02MC
DOL-1204-W05MC
DOL-1204-W10MC
DOL-1204-W25MC



All dimensions in mm (inch)

Description	Model name	Part no.
Angled connector female M12, 4-pin, power supply	DOS-1204-W	6007303

DOS-1204-W

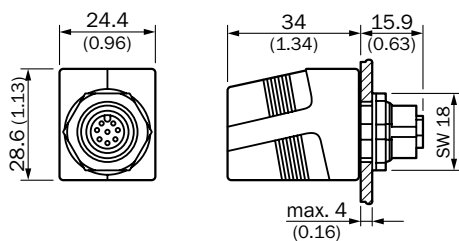


All dimensions in mm (inch)

Connector for wall mounting RJ45 on M12

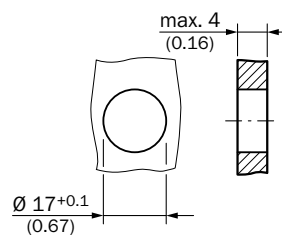
Description	Model name	Part no.
Cabinet through M12, 4-pin, D-coded on RJ45 jack, input jack 90, IP 65 / 67	Passage jack Ethernet RJ45	6048180

Passage jack Ethernet RJ45



All dimensions in mm (inch)

Mounting cutout



All dimensions in mm (inch)

Mounting technology

Couplings

- Bellows coupling, max. shaft offset radial ± 0.3 mm, axial 0.4 mm, angle ± 4 degrees, torsion spring stiffness 120 Nm/rad, bellows of stainless steel, hubs of aluminium.

Shaft diameter	Model name	Part no.
6 mm ... 6 mm	KUP-0606-B	5312981
6 mm ... 10 mm	KUP-0610-B	5312982
10 mm ... 10 mm	KUP-1010-B	5312983
10 mm ... 12 mm	KUP-1012-B	5312984

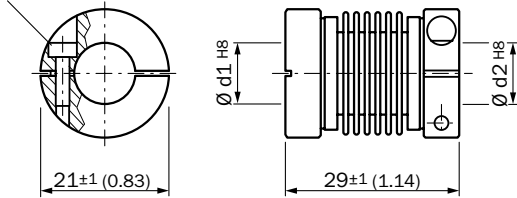
KUP-0606-B

KUP-0610-B

KUP-1010-B

KUP-1012-B

Cheese-head screw
M2.5 x 8, DIN 912 A2



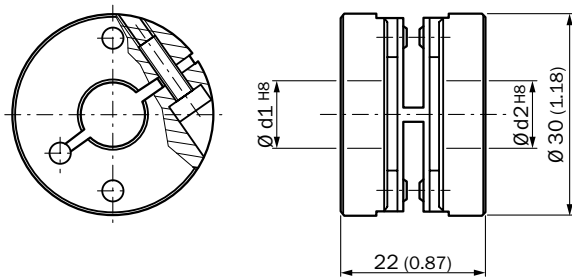
All dimensions in mm (inch)

- Spring-disc coupling, max. shaft offset radial ± 0.3 mm, axial 0.4 mm, angle ± 2.5 degrees, torsion spring stiffness 50 Nm/rad, flange of aluminium, spring-discs of glass-fibre-reinforced plastic

Shaft diameter	Model name	Part no.
6 mm ... 10 mm	KUP-0610-F	5312985
10 mm ... 10 mm	KUP-1010-F	5312986

KUP-0610-F

KUP-1010-F



All dimensions in mm (inch)

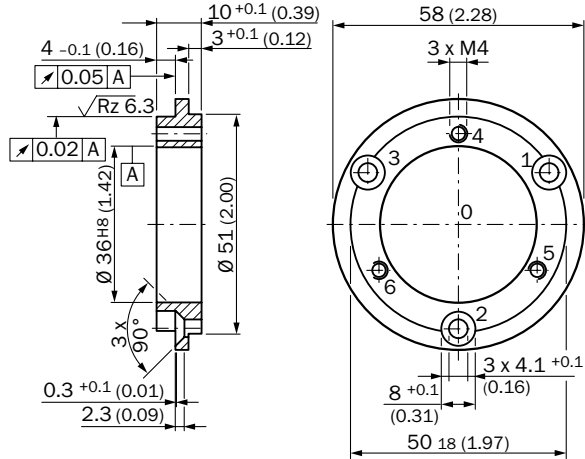
Mechanical adapters

Adapter flanges

- Adapter flange of aluminium for face mount flange, spigot 36 mm.

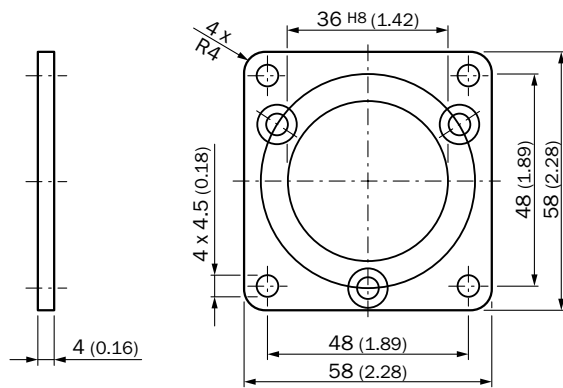
Adaption	Model name	Part no.
To 50 mm servo flange	BEF-FA-036-050	2029160
To 60 mm square mounting plate	BEF-FA-036-060REC	2029162
To 60 mm square mounting plate with shock absorbers	BEF-FA-036-060RSA	2029163
To 63 mm square mounting plate	BEF-FA-036-063REC	2034225

BEF-FA-036-050



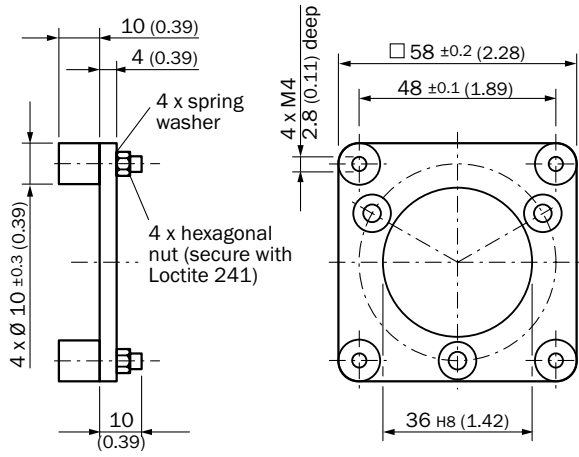
All dimensions in mm (inch)

BEF-FA-036-060REC



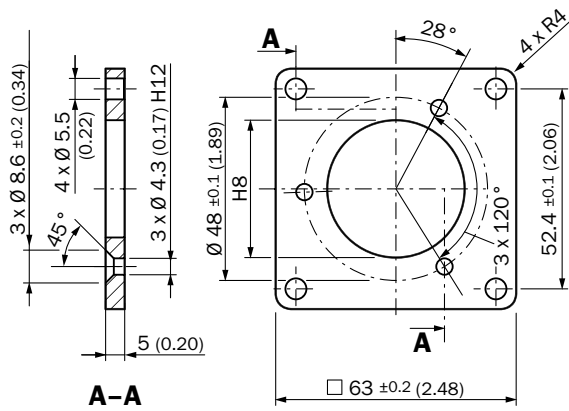
All dimensions in mm (inch)

BEF-FA-036-060RSA



All dimensions in mm (inch)

BEF-FA-036-063REC



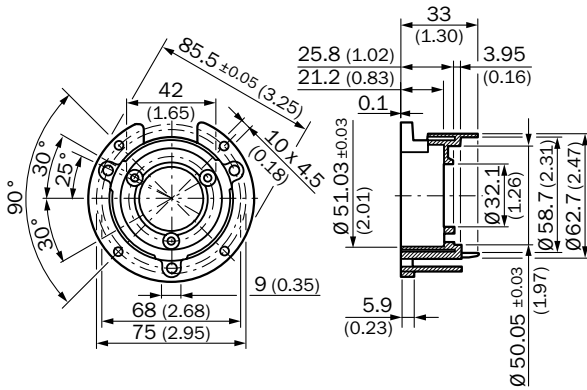
All dimensions in mm (inch)

Mounting bells

- Mounting bell incl. fixing set for encoder with servo flange.

Flange spigot	Model name	Part no.
Diameter 50 mm	BEF-MG-50	5312987

BEF-MG-50



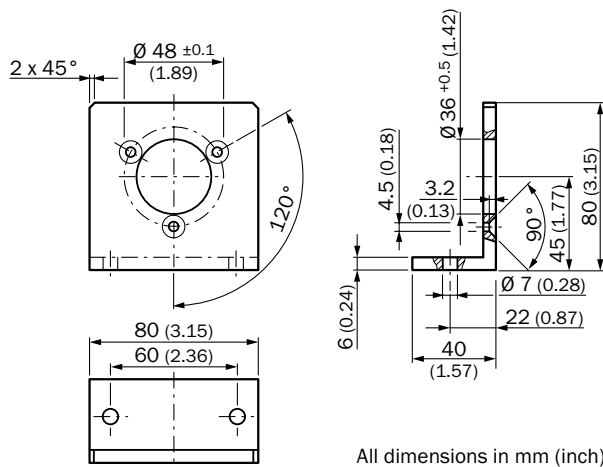
All dimensions in mm (inch)

Mounting angles

- Mounting angle incl. fixing set for encoder with face mount flange.

Flange spigot	Model name	Part no.
Diameter 36 mm	BEF-WF-36	2029164

BEF-WF-36

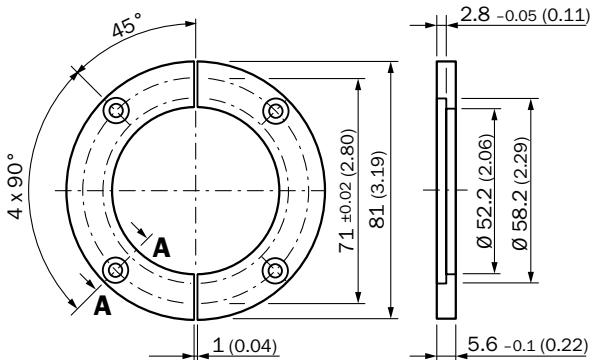


All dimensions in mm (inch)

Servo clamps

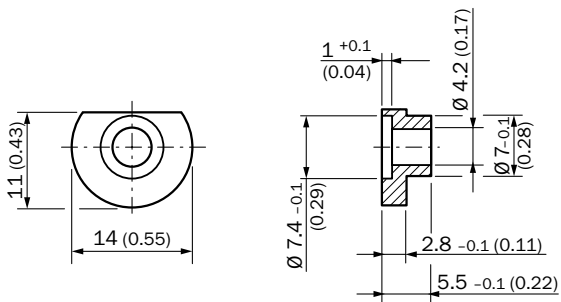
Description	Model name	Part no.
Servo clamps half ring, Set (comprises 2 pieces) for servo flanges with spigot diameter 50 mm	BEF-WG-SF050	2029165
Servo clamps small, Set (comprises 3 pieces) for servo flanges	BEF-WK-SF	2029166

BEF-WG-SF050



All dimensions in mm (inch)

BEF-WK-SF

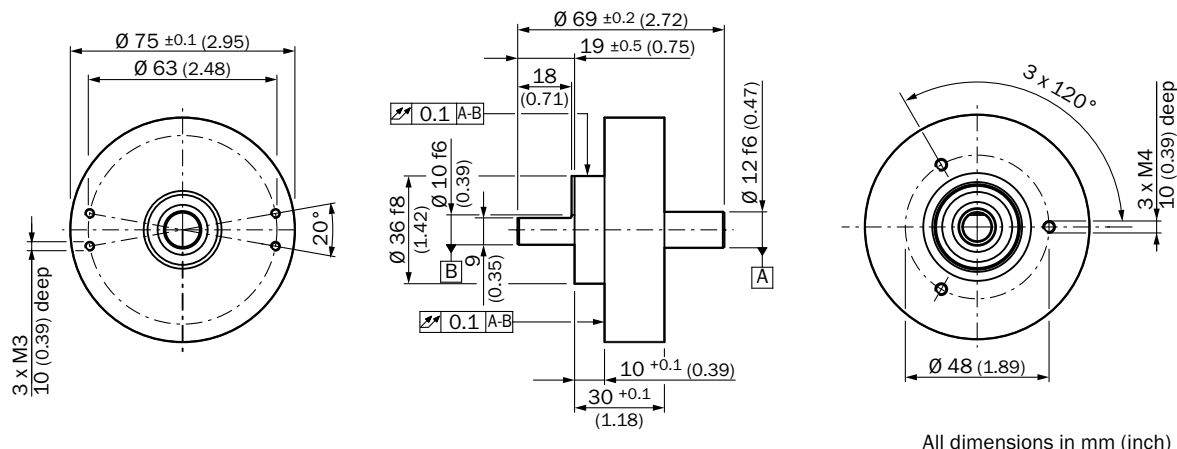


All dimensions in mm (inch)

Bearing blocks

Description	Model name	Part no.
Heavy duty bearing block for very large radial and axial shaft loads	BEF-FA-B12-010	2042728

BEF-FA-B12-010



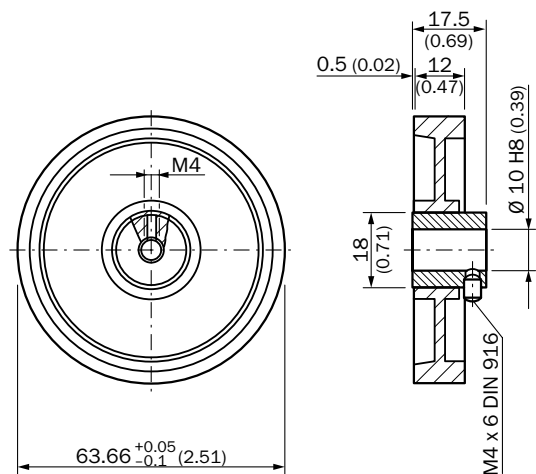
Measuring wheels

- Circumference 0.2 m

Description	Model name	Part no.
Measuring wheel for encoder shafts with diameter 10 mm, type material plastic (Hytrel), wheel material plastic with aluminium hub, smooth surface	BEF-MR-010020	5312988
Measuring wheel for encoder shafts with diameter 10 mm, type material plastic (Hytrel), wheel material plastic with aluminium hub, knurled surface	BEF-MR-010020G	5318678

BEF-MR-010020

BEF-MR-010020G

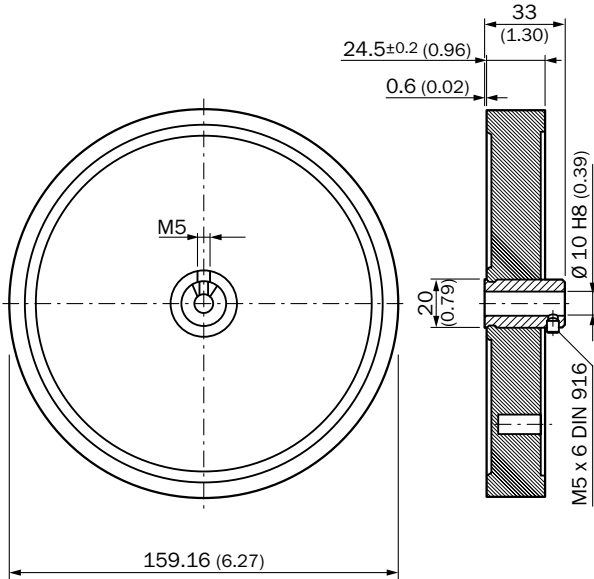


All dimensions in mm (inch)

- Circumference 0.5 m

Description	Model name	Part no.
Measuring wheel for encoder shafts with diameter 10 mm, type material plastic (Hytrel), wheel material plastic with aluminium hub, smooth surface	BEF-MR-010050	5312989

BEF-MR-010050



All dimensions in mm (inch)

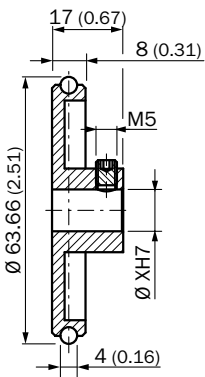
- Circumference 200 mm

Description	Model name	Part no.
Measuring wheel for encoder shafts with diameter 6 mm, surface O ring NBR70	BEF-MR006020R	2055222
Measuring wheel for encoder shafts with diameter 8 mm, surface O ring NBR70	BEF-MR008020R	2055223
Measuring wheel for encoder shafts with diameter 10 mm, surface O ring NBR70	BEF-MR010020R	2055224

BEF-MR006020R

BEF-MR008020R

BEF-MR010020R



All dimensions in mm (inch)

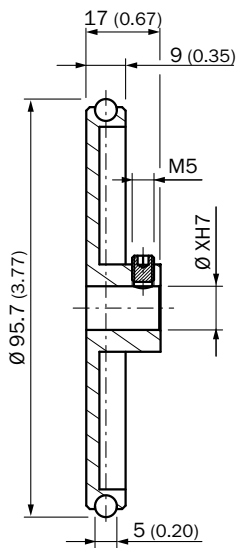
- Circumference 300 mm

Description	Model name	Part no.
Measuring wheel for encoder shafts with diameter 6 mm, surface O ring NBR70	BEF-MR006030R	2055634
Measuring wheel for encoder shafts with diameter 8 mm, surface O ring NBR70	BEF-MR008030R	2055635
Measuring wheel for encoder shafts with diameter 10 mm, surface O ring NBR70	BEF-MR010030R	2049278

BEF-MR006030R

BEF-MR008030R

BEF-MR010030R



All dimensions in mm (inch)

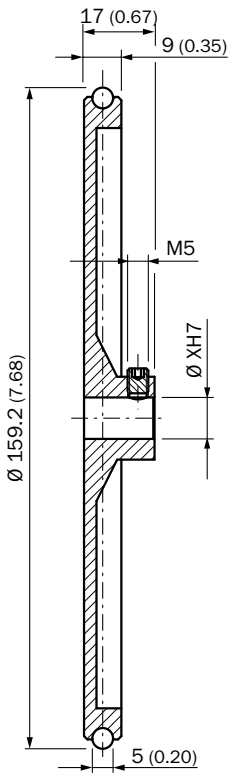
- Circumference 500 mm

Description	Model name	Part no.
Measuring wheel for encoder shafts with diameter 6 mm, surface O ring NBR70	BEF-MR006050R	2055225
Measuring wheel for encoder shafts with diameter 8 mm, surface O ring NBR70	BEF-MR008050R	2055226
Measuring wheel for encoder shafts with diameter 10 mm, surface O ring NBR70	BEF-MR010050R	2055227

BEF-MR006050R

BEF-MR008050R

BEF-MR010050R

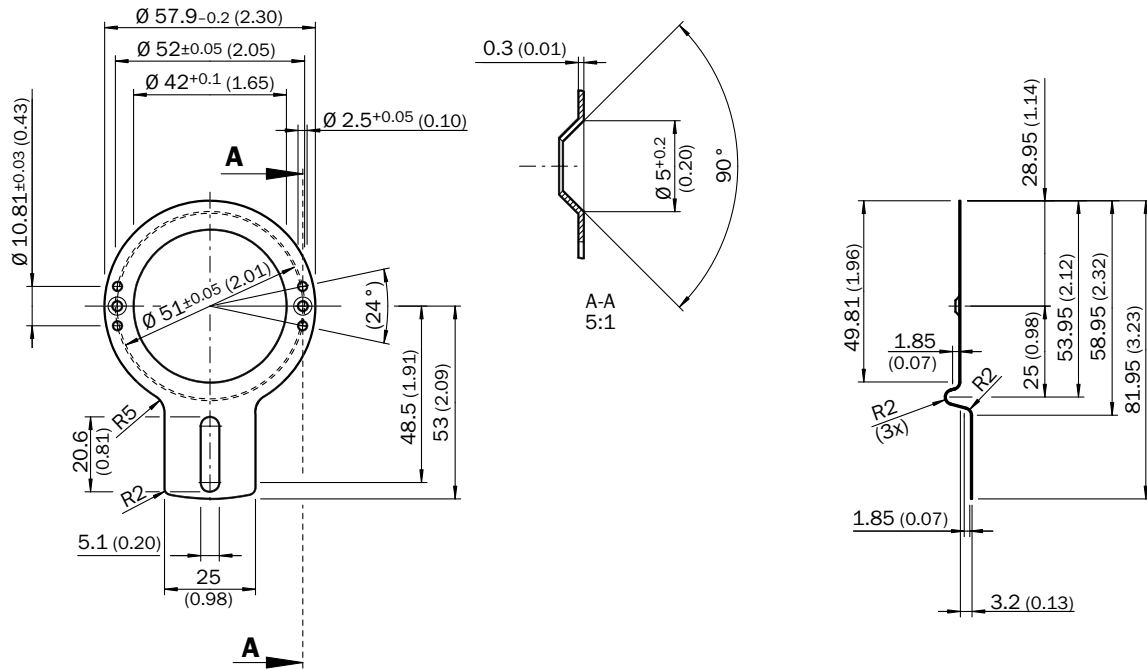


All dimensions in mm (inch)

Further mounting versions for hollow shaft encoders

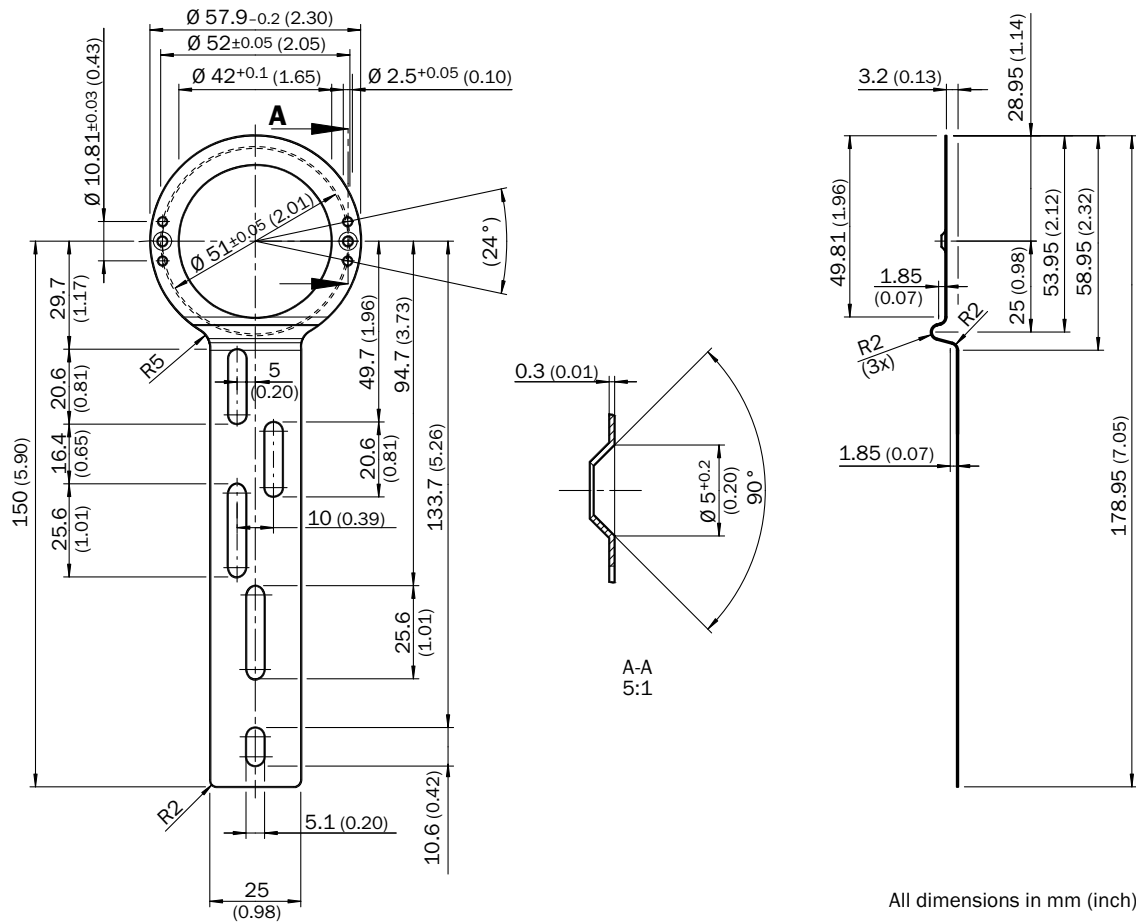
Stator couplings – versions	Model name	Part no.
Version 1	BEF-DS01DFS/VFS	2047428
Version 2	BEF-DS02DFS/VFS	2047430
Version 3	BEF-DS03DFS/VFS	2047431

BEF-DS01DFS/VFS

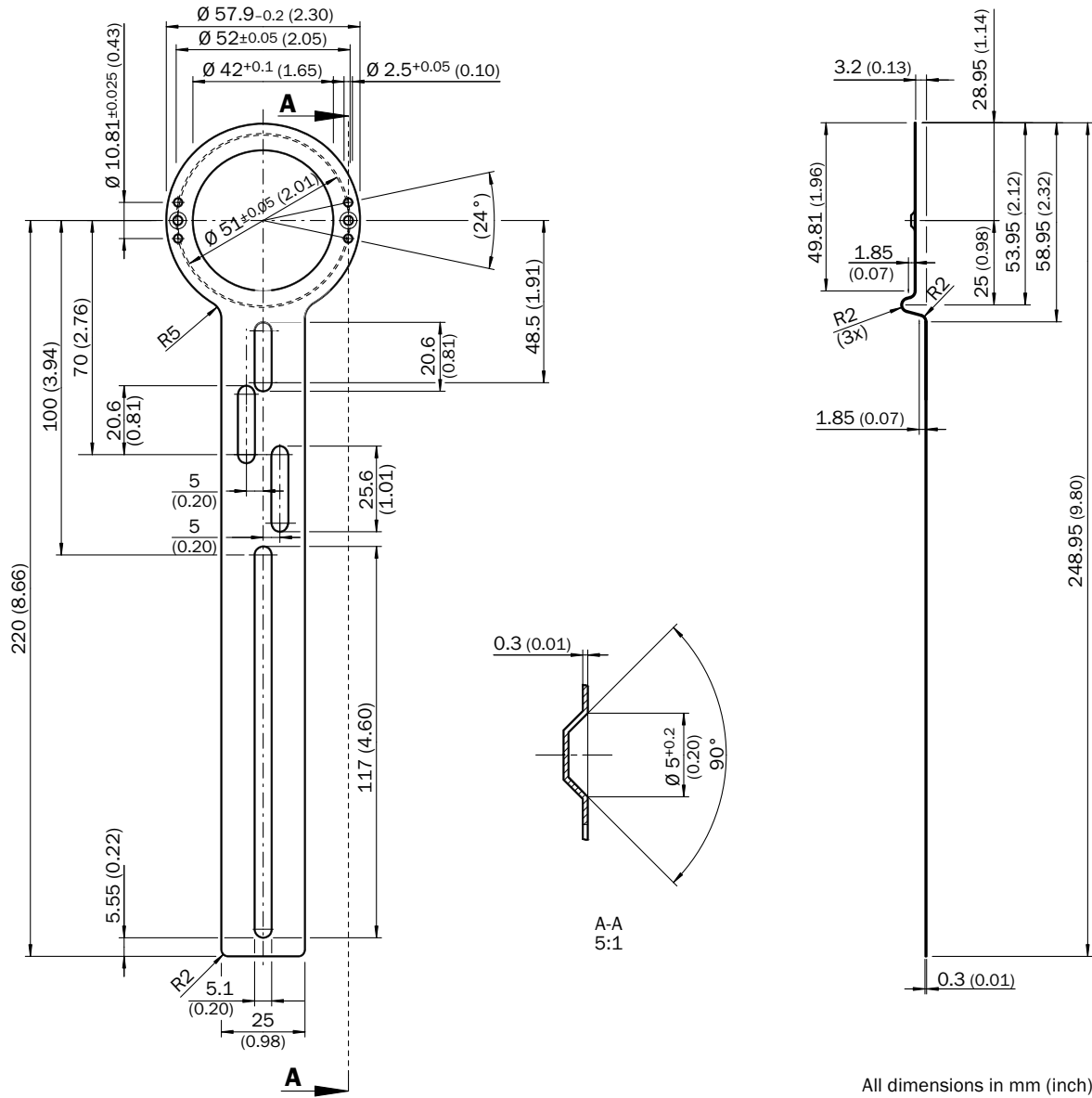


All dimensions in mm (inch)

BEF-DS02DFS/VFS

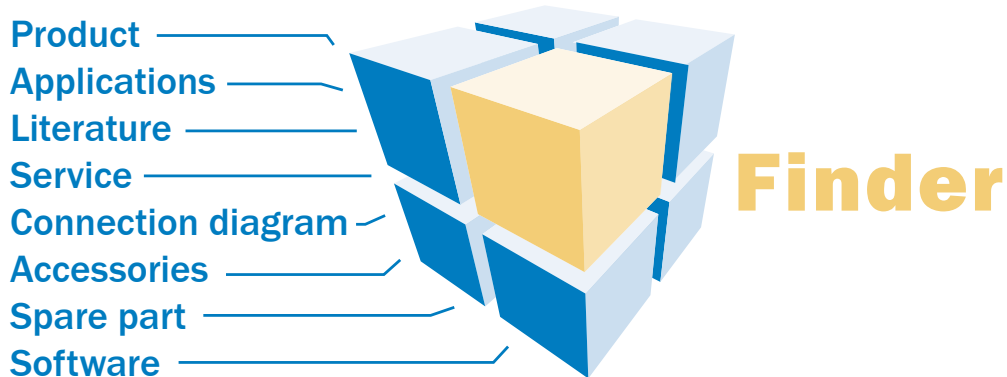


BEF-DS03DFS/VFS



All dimensions in mm (inch)

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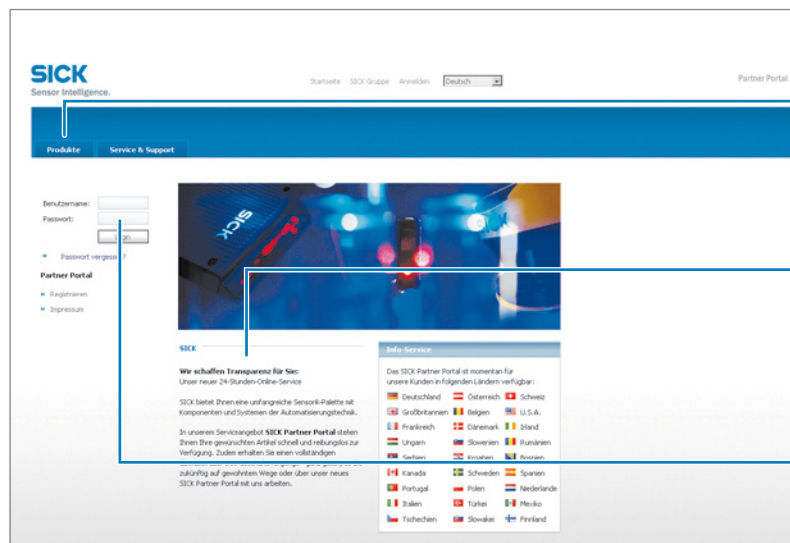
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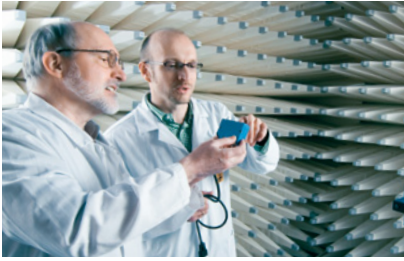
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