

DXM5-DXK5-DXO5

58MM SOLID - BLIND - HOLLOW SHAFT STAINLESS STEEL INCREMENTAL ENCODERS

Introduction

Built from a solid and reliable mechanical and electrical platform, this product series was built from the ground up for reliability and robustness. Electrical protection is built in to reduce “first installation” errors. Mechanically, the high precision bearings coupled with performant sealing mean long life, even in harsh conditions. And the product is tested and rated to perform from -40°C to +100°C for operation in extreme environments. This is the best all around encoder in a 58mm package for heavy duty industrial use.



Features

- Robustness, excellent resistance to corrosion (stainless steel design in AISI 303 or AISI 316 selectable)
- Hygienic design option
- High Protection Level up to IP69K, IP68
- Native or programmable resolution up to 500 000 ppr
- Universal Electronic Circuits from 4.75 to 30 Vdc
- High Performance in Temperatures -40°C to 100°C
- High bandwidth: Up to 1MHz

Applications

- Food & beverage
- Chemical and pharmaceutical
- Offshore / River
- Factory automation
- Outdoor motor feedback
- Conveyors

SPECIFICATIONS

Mechanical

		DXM5S10/AA/	DXM5	DXK5	DXO5
Material		Flange / Shaft / Cover: Stainless steel AISI 316 Seal: Hybrid Teflon/Nitril (FDA approved)	Flange / Shaft: Stainless steel AISI 303 Cover: Stainless steel AISI 316L		
Bearings		6000 Series	Sealed 6000 series (2RS)	Sealed 6203 series (2RS)	
Maximum Loads	Axial	250 N	50 N	20 N	
	Radial	500 N	100 N	50 N	
Shaft inertia		2,5.10 ⁻⁶ kg.m ² (10mm)	2,5.10 ⁻⁶ kg.m ² (10mm)	2,9.10 ⁻⁶ kg.m ² (14mm)	3,2.10 ⁻⁶ kg.m ² (14mm)
Torque		≤ 90.10 ⁻³ N.m	≤ 4.10 ⁻³ N.m	≤ 16.10 ⁻³ N.m	≤ 20.10 ⁻³ N.m
Permissible Max. Speed		4 000 min ⁻¹	12 000 min ⁻¹	6 000 min ⁻¹	
Continuous Max. Speed		3 000 min ⁻¹	10 000 min ⁻¹	6 000 min ⁻¹	
Encoder Weight (Approx.)		0,800 kg	0,700 kg		
Theoretical Mechanical Lifetime 10⁹ turns (F_{axial} / F_{radial})	Load 1	30 N / 60 N: 26	30 N / 60 N: 26	20 N / 40 N: >36	
	Load 2	250 N / 500 N: 0,5	-		

Electrical

Ver.	Output Signals	Operating Voltage +V	Supply Current (no loads)	Current per Channel Pair	Short Circuit Proof	Reverse Polarity Tolerant	Frequency Capability	Resolutions category ⁽¹⁾	Operating Temperature Range ⁽²⁾⁽³⁾
RG5	HTL	4,75-30V	<75mA	<40mA	Yes	Yes	Up to 1MHz	Standard	-40°C ... +100°C
								Low	
								High	
RGX	HTL/TTL selectable	4,75-30V	<75mA	<40mA	HTL: refer RG5 TTL: refer RG2	Yes	Up to 1MHz	Full Programmable	-40°C ... +100°C
								Multiplier programmable	-40°C ... +80°C
5GT	HTL + CTP	11-30V	<75mA	<40mA	Yes	Yes	Up to 300kHz	Standard	-40°C ... +80°C
RG2	TTL	4,75-30V	<75mA	<40mA	Yes (Except to +V)	Yes	Up to 1MHz	Standard	-40°C ... +100°C
								Low	-40°C ... +80°C
								High	-40°C ... +80°C
2G2	TTL	5V ± 5%	<75mA	<40mA	Yes	Yes	Up to 1MHz	Standard	-40°C ... +100°C
								Low	-40°C ... +80°C
								High	-40°C ... +80°C
2WT	1Vpp	5V ± 5%	<75mA	<8mA	Yes	Yes	Up to 300kHz	Sine wave	-40°C ... +100°C
RWT	1Vpp	4,75-30V	<75mA	<8mA	Yes (Except to +V)	Yes	Up to 300kHz	Sine wave	-40°C ... +100°C

⁽¹⁾ See resolutions section for details.

⁽²⁾ Surface encoder temperature

⁽³⁾ UL Listed: -20°C +80°C. Device must be supplied by a Class 2, LPS or SELV limited energy source 250mA.

Environmental

	DXM5S10/AA/	DXM5-DXK5-DX05
Shocks (EN 60068-2-27)	≤ 500 m.s ⁻² (during 6 ms)	
Vibrations (EN 60068-2-6)	≤ 200 m.s ⁻² (10...2 000Hz)	
EMC	EN 61000-6-2, EN 61000-6-4	
Isolation	1 000V _{eff}	
Operating Temperature	See Electrical table above	
Storage Temperature	-40°C ... +100°C	
Protection (EN 60529)	IP 68 /IP 69K	IP 65
Humidity	98% RH non-condensing at 20 °C	



STANDARD CONNECTIONS

		-	+	A or S	B or C	Z	A/ or S/	B/ or C/	Z/	Ground
GM	M12 - 8 Pins	1	2	3	4	5	6	7	8	Connector Body
G6	M23 - 12 Pins CW	1	2	3	4	5	6	7	8	Connector Body
G8	M23 - 12 Pins CCW	10 + 11	2 + 12	8	5	3	1	6	4	Connector Body
U3	PVC Cable - 8 Wires	WH (White)	BN (Brown)	GN (Green)	YE (Yellow)	GY (Grey)	PK (Pink)	BU (Blue)	RD (Red)	General Shielding
GC	PUR Cable - 8 Wires	BK (Black)	RD (Red)	GN (Green)	BN (Brown)	VT (Violet)	YE (Yellow)	OG (Orange)	BU (Blue)	General Shielding
G3	PVC Cable - 8 Wires (not UL)	WH (White)	BN (Brown)	GN (Green)	YE (Yellow)	GY (Grey)	PK (Pink)	BU (Blue)	RD (Red)	General Shielding
GP	PUR Cable - 12 Wires (not UL)	WH (White) + WH/GN (White/Green)	BU (Blue) + BN/GN (Brown/Green)	GY (Grey)	BN (Brown)	RD (Red)	PK (Pink)	GN (Green)	BK (Black)	General Shielding
TE	Silicone Cable ⁽⁴⁾ - 8 Wires (Not UL)	WH (White)	BN (Brown)	GN (Green)	YE (Yellow)	GY (Grey)	PK (Pink)	BU (Blue)	RD (Red)	General Shielding

⁽⁴⁾ Advised cable for mobile application, in extreme temperature from -40°C to +100°C



RESOLUTIONS

Standard resolutions:

1000, 1024, 1800, 2000, 2048, 2500, 3600, 4000, 4096, 5000, 7200, 10000

Low resolutions⁽⁵⁾: (not found in the Standard resolutions range):

Any resolution within the 1-2500ppr range.

High resolutions: (not found in the Standard resolutions range)

All multipliers of 1000, 1024, 1800, 2500 from 1 to 200.

Programmable resolutions ⁽⁵⁾ (RGX electronics):

- Full programmable (EPROG):
from 1 to 10kppr with direction and standard index tracks configuration

- Full programmable (XPROG):
from 1 to 10kppr with direction and alternate index tracks configuration

- Multiplier programmable (1000, 1024, 1800, 2500 native):
Programmability of the native resolution multiplier from 1 to 200 with direction and all index tracks configurations possibilities

All those versions can be configured with one of the following programming tool P/N (ordered separately):

EAP-001 (for encoder with "GM" connection), EAP-002 (for encoder with "G6" connection), EAP-003 (for encoder with "G8" connection).

Programming procedure available in Instruction Manual.

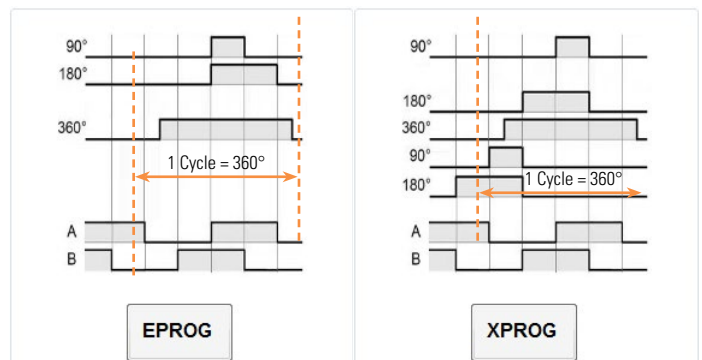
Sine wave resolutions:

360, 500, 512, 600, 1000, 1024, 1800, 2500

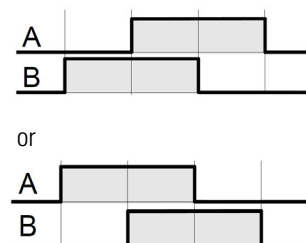
⁽⁵⁾ Signal tolerances available in Instructions Manual

⁽⁶⁾ Signals are shown for CW rotation when viewed from the face side of the encoder

Index track gating possibilities⁽⁶⁾



Directions Possibilities⁽⁶⁾

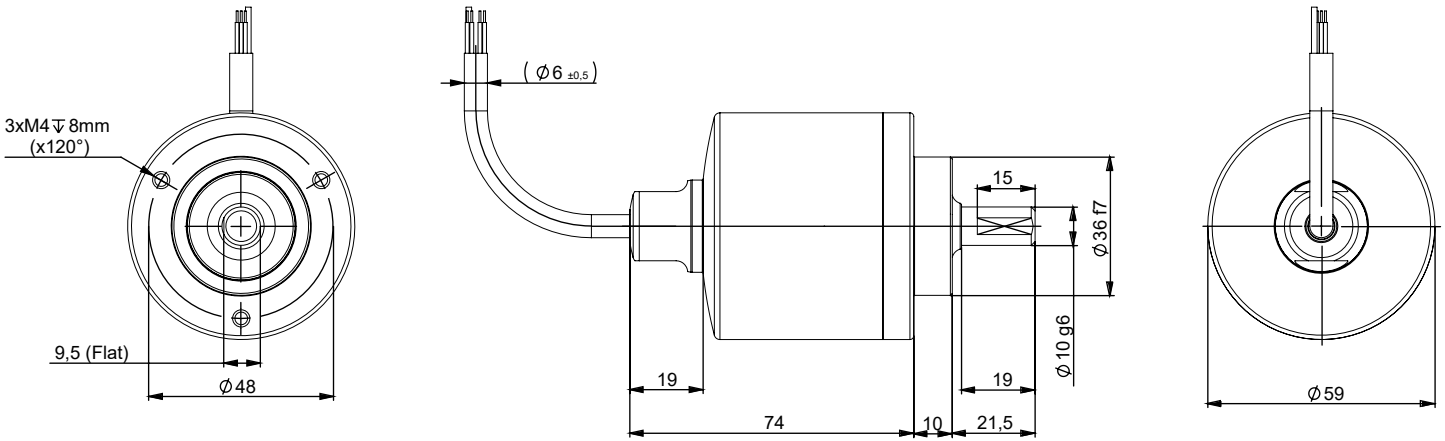




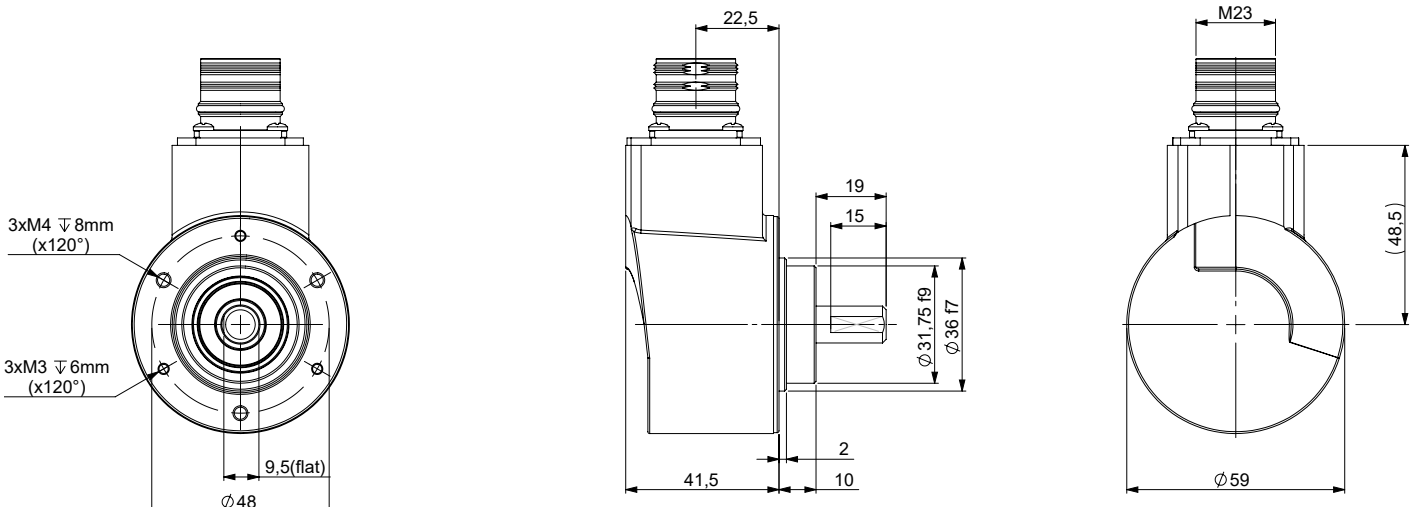
DIMENSIONS

All dimensions are in millimeters.

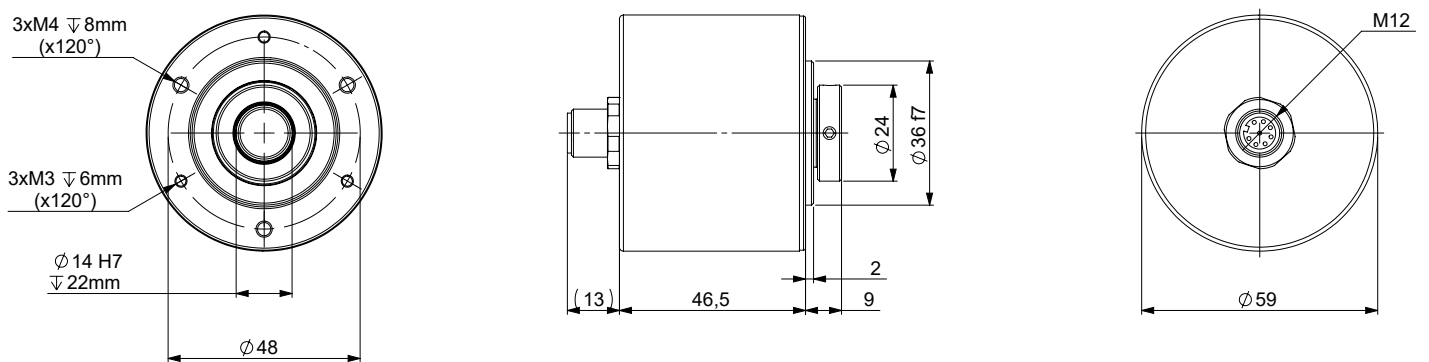
DXM5S10/AA/ Connection TEA (Axial Silicone cable)



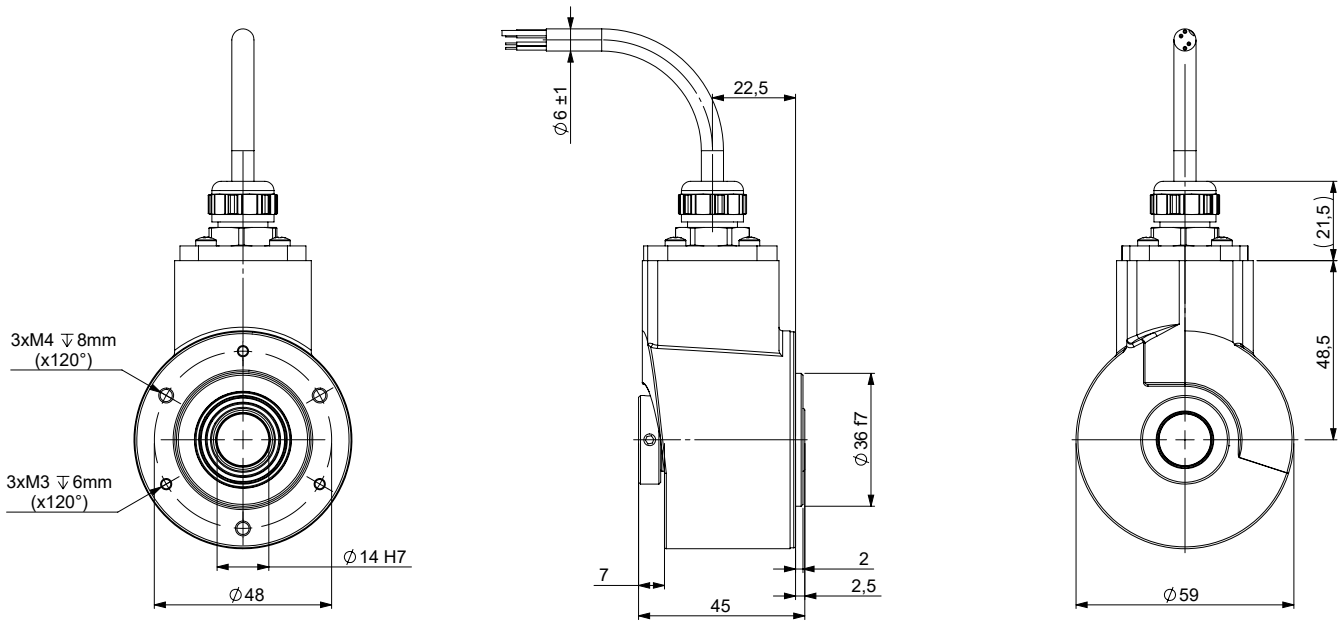
DXM5_10 Connection G6R (Radial M23)



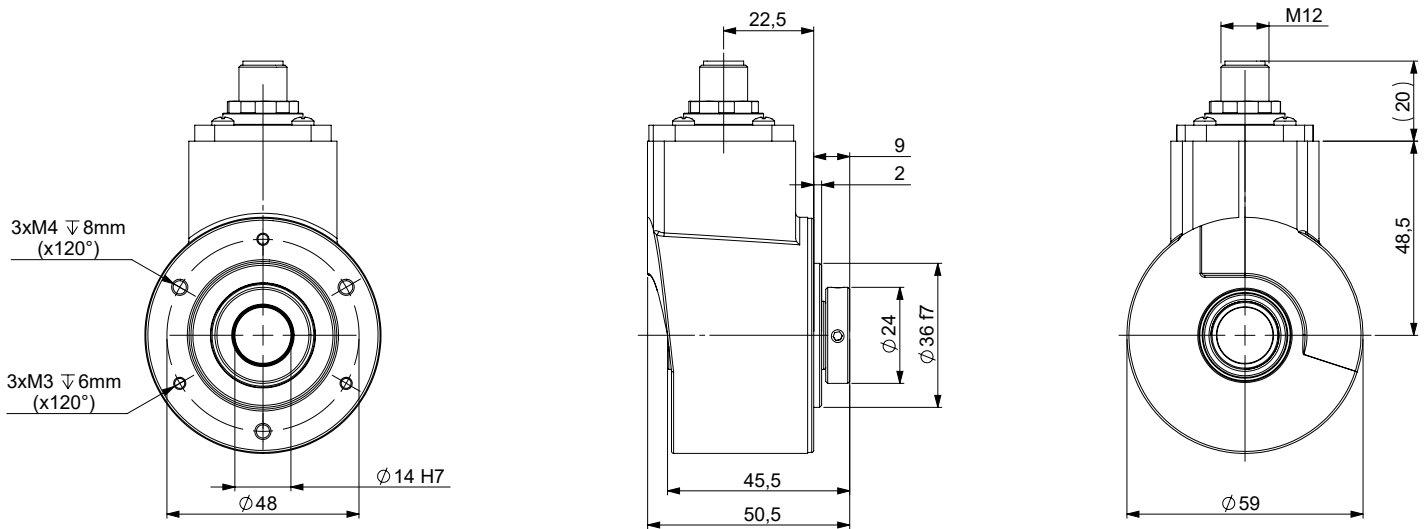
DXK5_14 Connection GMA (Axial M12)



DX05_14 Connection U3R (Radial Cable)



DX05S14/OM/ Flange clamping side, Connection GMR (Radial M12)



CONNECTION DIMENSIONS

Radial

Axial

DXM5S10/AA/

DXM5, DXK5, DX05

**M12
GMR**

**M23
G6R, G8R**

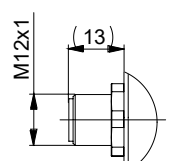
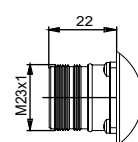
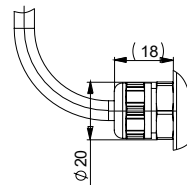
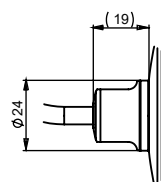
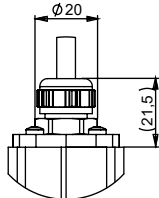
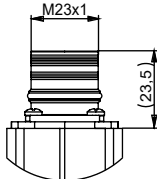
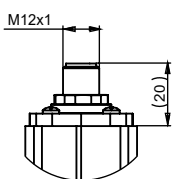
**Cable
G3R, GPR, TER
U3R, GCR**

**Cable
TEA**

**Cable
G3A, U3A, GPA, GCA, TEA**

**M23
G6A G8A**

**M12
GMA**

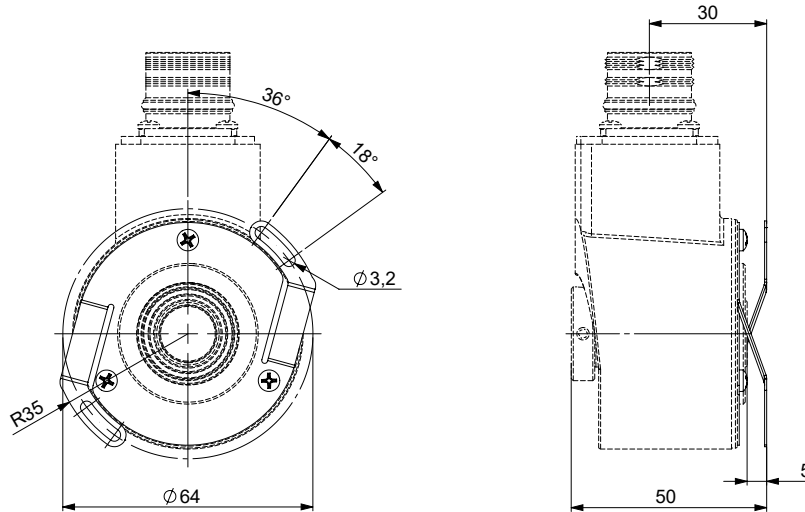




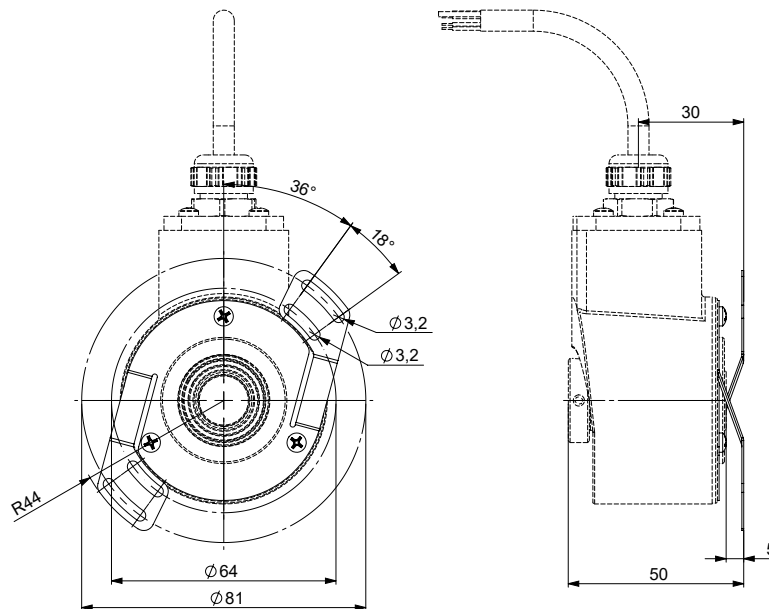
FLANGE AND COUPLING INTERFACES

The flange or coupling configurations can be defined in the ordering options for being installed on encoder in factory. All flange or coupling kits can also be ordered separately (see accessories section).

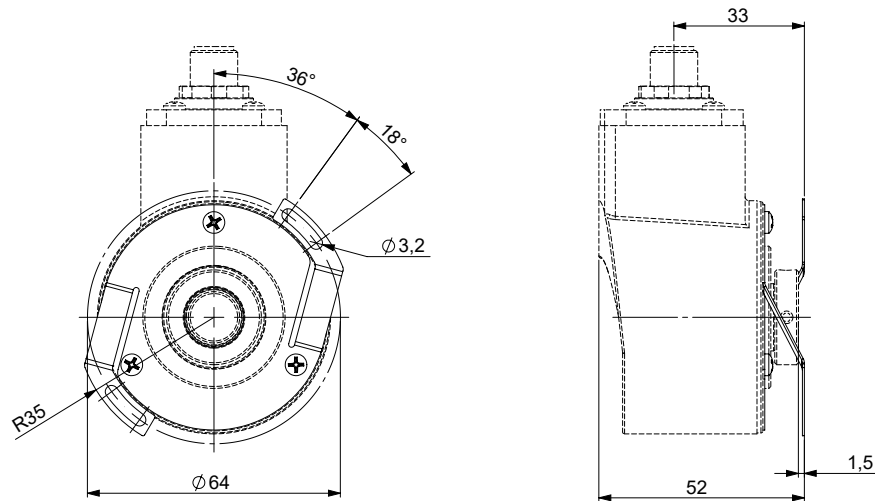
DX05_14 Standard clamping, Connection G6R (Radial M23), coupling 9445/012 mounted on the body



DX05_14 Standard clamping, Connection G3R (Radial Cable), coupling 9445/015 mounted on the body



DXK5_14 or DX05S14/OM/ Flange side clamping, Connection GMR (Radial M12), coupling 9445/016 mounted on the body



 GENERAL NOTES

***For an optimized installation meeting industrial standards, refer to the Instructions Manual.
The Instructions Manual provides the technical information (drawings, electrical data, etc...) for a proper integration.***

 AGENCY APPROVALS & CERTIFICATIONS





ORDERING OPTIONS

Example : DXM5S10/AA/RG5 9 // 01024 // TE A 020 //

DXM5 **S** **10** / **AA** / **RG5** **9** // **01024** // **TE** **A** **020** //

Family

DXM5: Solid Shaft Stainless Steel Encoder
DXK5: Blind Shaft Stainless Steel Encoder
DXO5: Hollow Shaft Stainless Steel Encoder

Shaft Size

DXM5:
10: 10 mm
DXK5 – DXO5:
14: 14 mm

Contact factory for other configurations

Mechanical Option

Blank: No option
AA: Hygienic design (For DXM5 only)
OM: Flange side clamping (For DXO5 only)

Voltage Output

RG5: 4.75-30V HTL
RGX: 4.75-30V Programmable
5GT: 11-30V HTL+CTP
RG2: 4.75-30V TTL
2G2: 5V TTL
2WT: 5V Analog 1Vpp
RWT: 4.75-30V Analog 1Vpp

Channels

9: Digital electronics
AA/ BB/ ZZ/
B before A, CW viewed from flange side
Z gated A&B
N: Analog electronics
SS/ CC/ ZZ/
C before S, CW viewed from flange side
Z ungated
X: Programmable Electronics (RGX)
Contact factory for other configurations

Cycles / Turn

Contact factory for other configurations

(Enter Cycles) Standard/Low/High resolutions and Multiplier programmable. See available resolutions in "Resolutions" section.

EPROG: Full programmable 1-10kppr (standard index tracks configurations).
XPROG: Full programmable 1-10kppr (alternate index tracks configurations).

Output Termination

G3: PVC Cable
GC: PUR Cable
GP: PUR Cable (not UL)
TE: Silicone Cable (not UL)
GM: M12
G6: M23 12 Pins CW
G8: M23 12 Pins CCW

Output Orientation

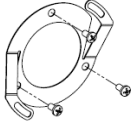
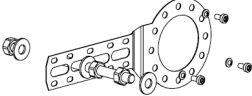
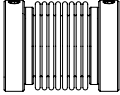
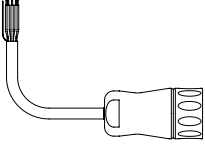
R: Radial (Except DXM5S10/AA/)
A: Axial (Except DXO5)

Cable Length

xxx: Cable Length (ex.: 020 = 2 Meters)
Blank: No Cable

Accessories

****D2**:** 9445/012 DXO5 Stator coupling
****D4**:** 9445/015 DXO5 Stator coupling
****DK**:** 9445/016 DXK5 & DXO5.../OM/ Stator coupling
Contact factory for flanges or reduction hubs options.

Description	Part Number		
Stator coupling kit Hardware included 	P/N M9445/012 M9445/015 M9445/016 M9445/068	Recommended use/Compatibility DH05 DHK5 & DH05 DHK5 & DH05 with /OM/ option DHK5 & DH05 retrofit for HS22	Fixing points 2 4 2 3
Other stator coupling configurations available on request			
Tether arm kit Hardware included 	M9445/047 (Compatible with DHK5 and DH05 models)		
Bellow coupling 	9403/xx-yy with: xx = 06 to 12 (side 1 bore diameter in mm) yy = 06 to 12 (side 2 bore diameter in mm) + Imperial sizes available: 6.35, 9.52, 12.7 (mm) Installation: Refer to Instruction Manual		
Standard Mating Connector 2m, 5m, 10m Mating Cable Assembly 	Extension cords compatible with G6 connection option: RAL-020-001 = M23, PVC cable, 2m RAL-050-001 = M23, PVC cable, 5m RAL-100-001 = M23, PVC cable, 10m	Extension cords compatible with G8 connection option: RAL-020-012 = M23, PUR cable, 2m RAL-050-020 = M23, PUR cable, 5m RAL-100-028 = M23, PUR cable, 10m	Extension cords compatible with GM connection option: RAL-020-039 = M12 overmolded, PUR cable, 2m RAL-050-052 = M12 overmolded, PUR cable, 5m RAL-100-050 = M12 overmolded, PUR cable, 10m

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