ENGINEERING
TOMORROW

Data sheet

Mid level inclination sensor
DST X720

The Danfoss DST X720 mid level Inclination sensors are developed to ensure a robust and high-performance solution for applications such as agricultural- and construction machines, as well as material handling equipments. These sensors are typically used in safety applications in order to keep the inclination of a machine, or just a part of it, a safety zone for working people, under control.

Danfoss DST X720 series uses MEMS technology for single and dual axis with measurement ranges up to 360° in both single and redundant versions.

All sensors are designed for off-highway applications and resistant to shock and vibrations and with high electromagnetic compatibility, and comes with either analogue or CANopen output.

The sensors are produced according to PL d (EN ISO 13849-1:2015), making the complete portfolio suitable for safety-critical applications.

Features

- MEMS technology for almost infinite sensor life time
- Single or Redundant ranges up to 360° (±180°)
- Output: Analogue or CANopen
- Electrical connector: M12, 5 pin or cable
- Accuracy < ± 0.5% FS
- Resolution 0.01°
- IP protection IP67, IPX9K

Conformity

- CE
- RoHS

Technical data

Performance

Measuring range	±10° ±15° ±20° ±30° ±45° ±60° ±85° (single axis Z / dual axis XY) 360° (±180°) single axis Z
Accuracy (Factory verification @25 °C)	≤ ± 0.5% FS
Temperature coefficient @ 0°	Typical < ±0.006°/°K
Long term repeatability	Single axis: Typical <±0.5° in the range ±180° Dual axis: Typical <±0.5° in the range ≤ ± 60°, ± 2° otherwise
Resolution	0.01° CANopen output; 12 bit analog output

Electrical specifications

Electrical connections	M12 connector or cable
Output signal	CANopen, Ratiometric 10-90% of Vs, 0.5 - 4.5 Vdc, 0-10 Vdc or 4-20mA
Supply voltage	+10 – +36 Vdc or 5 Vdc Ratiometric output

Environmental conditions

Operating temperature range			-40 – 85 °C
EMC		Emission	EN 55011
		Immunity	EN 61236-3-2
Vibration stability	Sinusoidal	20 g, 10 Hz – 2,000 kHz	IEC 60068-2-6
Shock resistance	Impulsive on 3 axes	50 g, 11 ms	IEC 60068-2-27
IP rating			IP67, IPX9K

Mechanical characteristics

Materials	Enclosure	PBT
Net weight		0.26 kg (without cable)

Ordering

Type	Output signal	Cofigurations	Code no.
DST X720	36 V CANopen	1 x M12 5p; Single axis; ±180°; 36V	098G3000
	36 V CANopen	2 x M12 5p; Single axis; Redundant; ±180; 36V	098G3001
	36 V CANopen	1 x M12 5p; Dual axis; ±85°; 36V	098G3002
	36 V CANopen	2 x M12 5p; Dual axis; Redundant; ±85°; 36V	098G3003

Ordering code - on request

Electrical connections	
M12 connector output	M
Cable output (specify cabel length)	F

Axis type	
Dual axis (XY axis)	O
Single axis (Z axe)	V

Circuit type	
Single	S
Redundant	R

Output 1 Measuring range (Output for single circuit)	
Measuring range (indicate) ±10° ±15° ±20° ±30° ±45° ±60° ±85° (single axis Z for analogue output-dual axis XY); 360° (±180°) for single Z axis only	xxx

Output 2 Measuring range (Only for redundant version)	
Measuring range (indicate) ±10° ±15° ±20° ±30° ±45° ±60° ±85° (single axis Z for analogue output-dual axis XY); 360° (±180°) for single Z axis only	xxx

Supply voltage	
+5Vdc (only for A1 output)	L
+10…+36Vdc (see output signal for right supply voltage)	H

Output type	
+0.5…+4.5Vdc output (available with supply L = ratiometric output and with supply H = 0.5...4.5V output)	A1
0...+10Vdc output (powered at +11..36Vdc	A2
4...20mA output (powered at +10...36Vdc)	A3
CANopen output (powered at +10...36Vdc)	C1

Cable	
Cable without connector (always "0" in case of DST X720 M12 version)	0

Certificate	
No certificate attached	0
Linearity curve to be attached	L

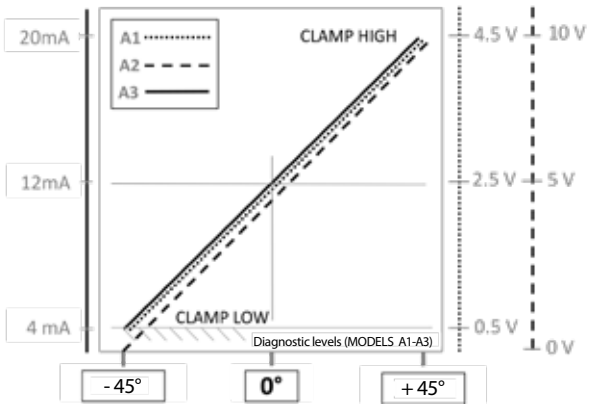
Accessories	
No accessories	X
Magnetic pen (PKIT 312)	Y

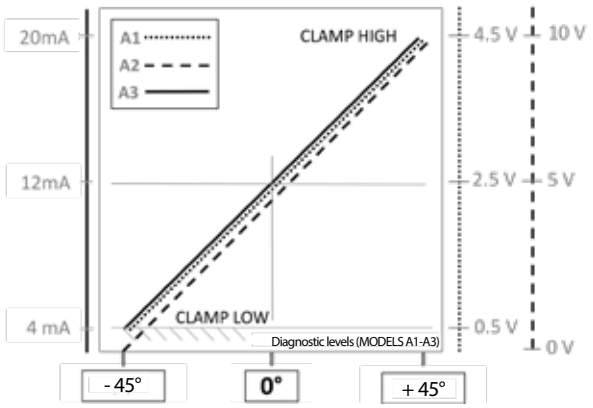
Cable length	
100 mm	01
200 mm	02
500 mm	05
1 m	10
2 m	20
Other length on request	.....

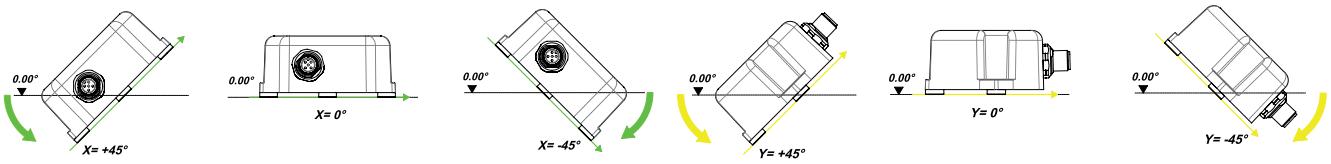
Example of ordering:
DST X720-MOR045045LA10 0033X00

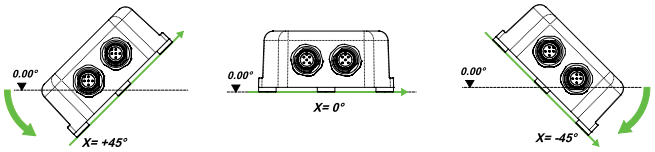
M	M12 connector
0	Dual Axis (XY axis)
R	Redundant
045	±045°
045	±045°
L	+5 Vdc
A1	+05 - +4.5 Vdc
0	M12 version
0	No certificate
033	Standard
X	No accessories
00	Not defined (only cable version)

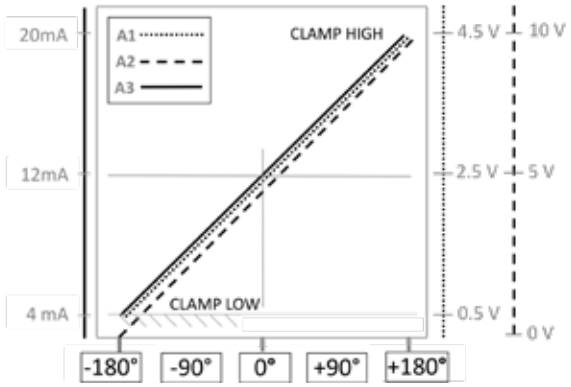
Output signals graphs

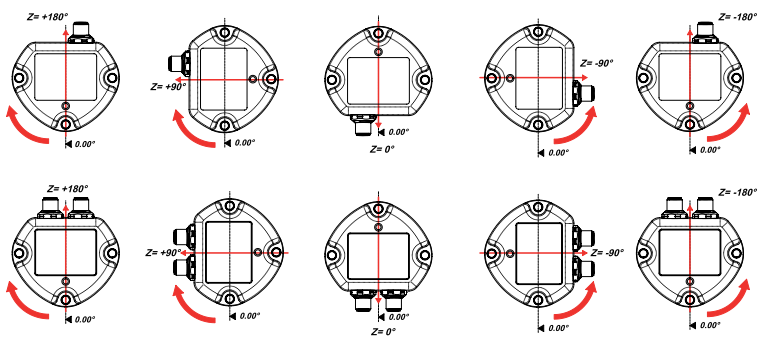








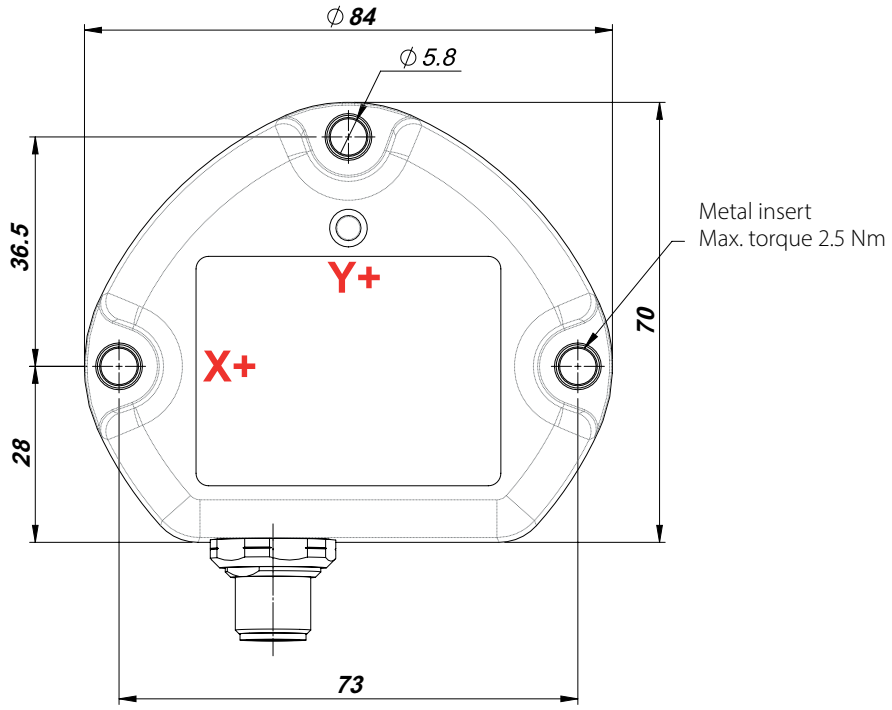




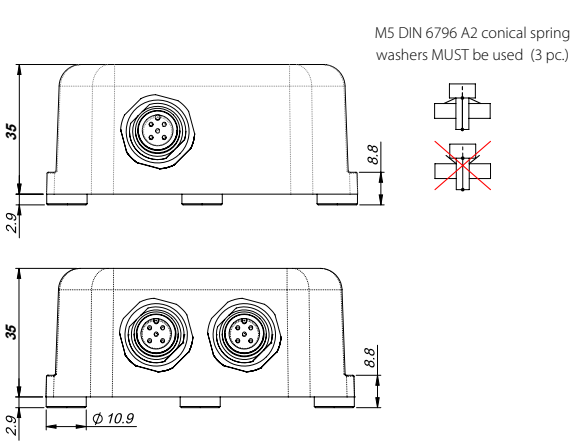
Load conditions

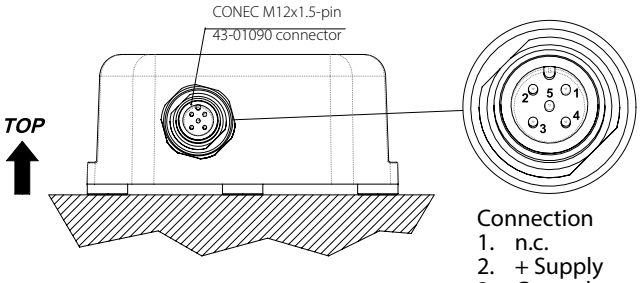
+0.5VDC...+4.5 VDC output with power +10...36VDC and +0..10VDC output with power +11..36VDC: apply a load resistance > 100Kohm

Dimensions



Electrical connections





Connection
1. n.c.
2. + Supply
3. Ground
4. CAN H
5. CAN L

Single axis

Dual axis

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