

Data Sheet

Wire position sensor
Type **DST X800**

For mobile hydraulic applications



The Danfoss DST X800 wire position sensor is developed to ensure a robust and high-performance solution mobile hydraulic applications. The stability control of e.g. a crane, telehandler or aerial platform is kept under control with draw wire sensors that determine the withdrawal of lateral stabilizers at different positions. On same applications the draw wire on the boom could prevent overturn of the machine.

Danfoss DST X800 series uses contactless Hall technology with measurement ranges up to 8.3 meter.

The sensor is designed for off-highway applications and resistant to shock and vibrations and with high electromagnetic compatibility and comes with both analog or CANopen output.

Single and redundant sensor types are available, making the complete portfolio suitable for safety-critical applications.

Features:

- Hall effect technology for almost infinite sensor life time
- Single or redundant range: 1.8 – 8.3 m
- Output: Analog or CANopen
- Electrical connector: M12 or cable
- Linearity: $< \pm 0.5\%$ FS
- IP protection level IP67

Product specification

Technical data

Table 1: Performance

Features	Specifications
Measuring range	Strokes 1800mm - 2300mm - 3300mm - 4300mm - 4800mm - 5300mm - 6300mm - 7300mm - 8000mm - 8300mm
Linearity factory verification@ 25 °C	< ± 0.5% FS
Long term repeatability	< ±3% FS (for 1.80m, 2.30m, 3.30m) < ±2% FS (for 4.30m, 4.80m, 5.30 m, 6.30m, 7.30 m, 8.00m, 8.30m)
Resolution	0.1mm CANopen output; 12 bit analog output
Speed	Max. 2 m/sec, typ. 1 m/sec
Typical acceleration	1 g
Durability	500,000 speed max. 1 m/sec acc. max. 0.5 g; 150,000 speed max. 2 m/sec acc. max. 1 g

Table 2: Electrical specifications

Features	Specifications
Electrical connections	M12 (4, 5 or 8 pin) connector or Cable
Output signal	0.5 – 4.5 V DC, 0 – 10 V DC, 4 – 20 mA, CANopen
Supply voltage	10 – 36 V DC
Current consumption	< 10 mA/per channel (no load)
MTTFd [Years]	CANopen: 220 Analogue: 173 (Single channel)

Table 3: Environmental conditions

Features	Specifications		
Operating temperature range	-40 – 65 °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 with female connector mounted

Table 4: Mechanical characteristics

Features	Specifications	
Materials	Enclosure	PBT (Polybutylene terephthalate)
	Wire	AISI 316; Ø0.85 mm nylon coating
Net weight		1,800 – 3,300 mm, 0.53 kg
		4,300 – 5,300 mm, 0.63 kg
		6,300 – 8,300 mm, 0.73 kg

Dimensions

M12 version

Figure 1: M12 version

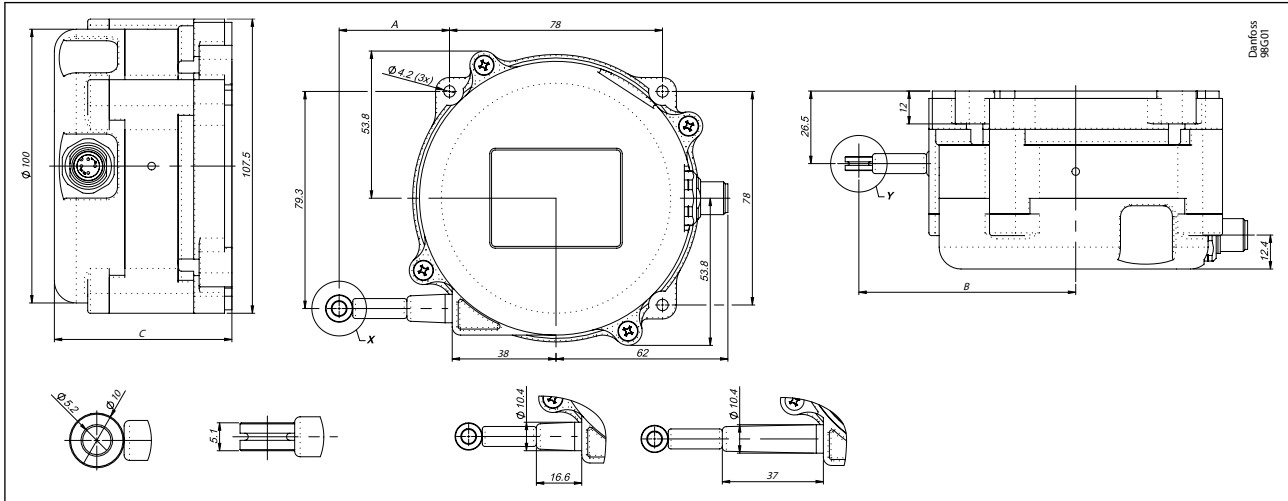


Table 5: Strokes - M12 version

Strokes	A	B	C
1,800 – 5,300	40.4	79.4	-
6,300 – 8,300	60.8	99.8	-
1,800 – 6,300	-	-	65
7,300 – 8,300	-	-	68

Cable version

Figure 2: Cable version

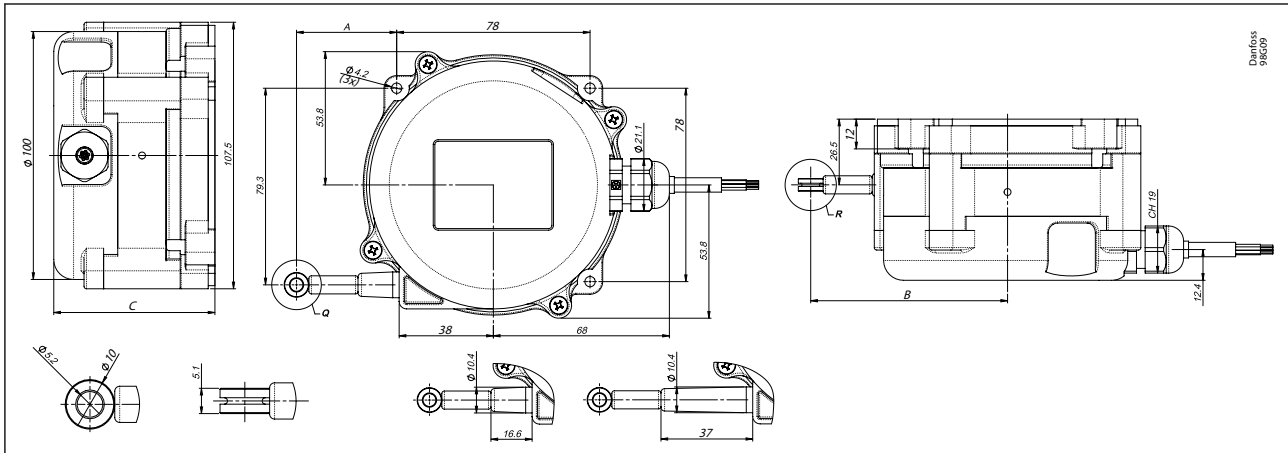
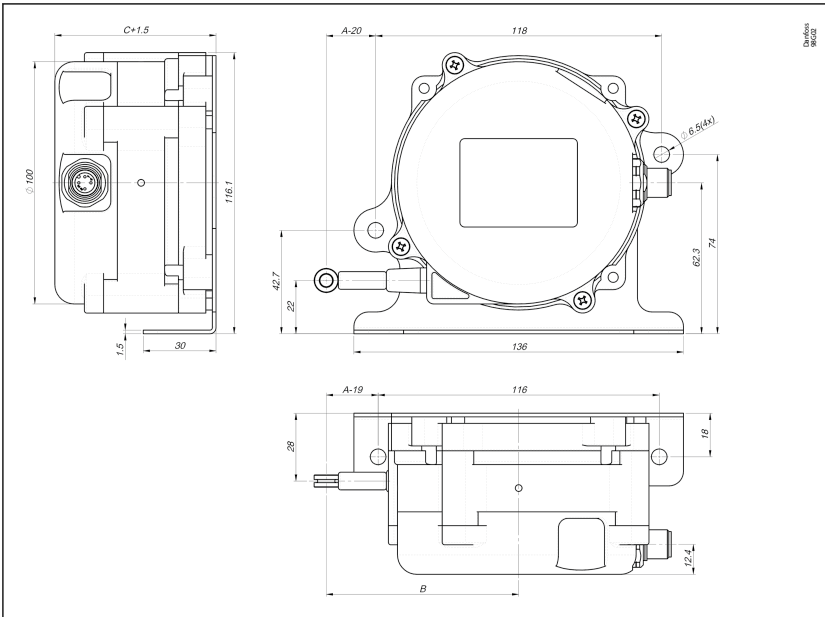


Table 6: Strokes - cable version

Strokes	A	B	C
1,800 – 5,300	40.4	79.4	-
6,300 – 8,300	60.8	99.8	-
1,800 – 6,300	-	-	65
7,300 – 8,300	-	-	68

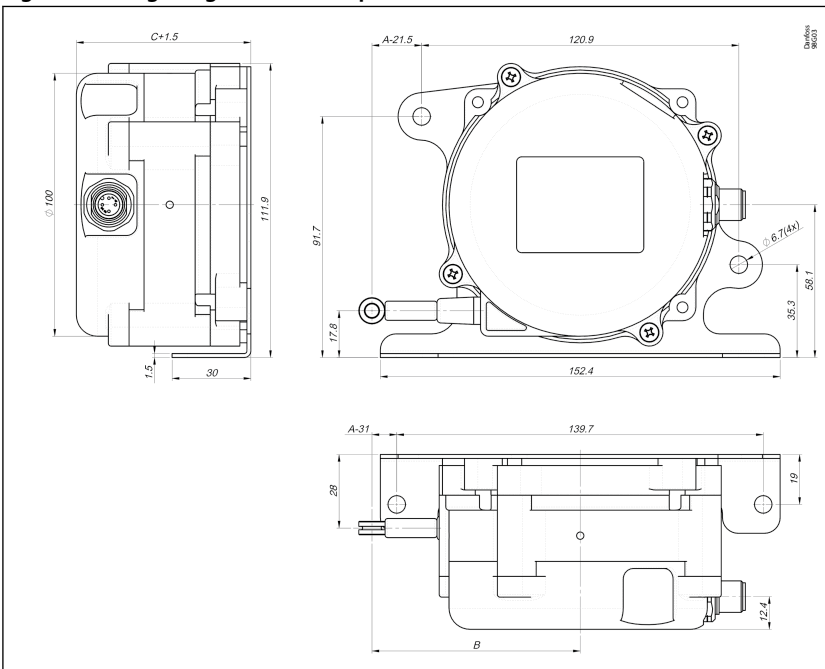
Fixing flange - Model A (optional)

Figure 3: Fixing flange - Model A (optional)



Fixing flange - Model B (optional)

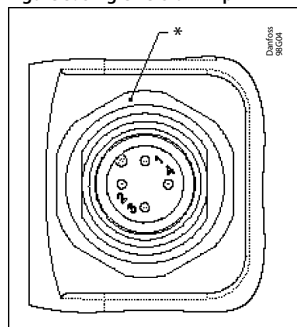
Figure 4: Fixing flange - Model B (optional)



Electrical connections

M12 version

Figure 5: Single version - 4 pin



Analog output connections:

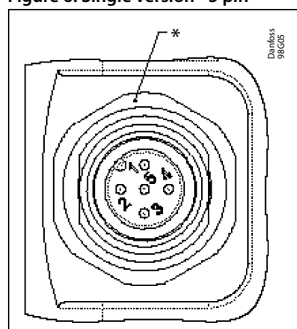
1.	+ Supply
2.	Ground
3.	Output
4.	N.C.

CANopen output connections:

1.	+ Supply
2.	Ground
3.	CAN H
4.	CAN L

* M12x1 4-pin male connector

Figure 6: Single version - 5 pin



Analog output connections:

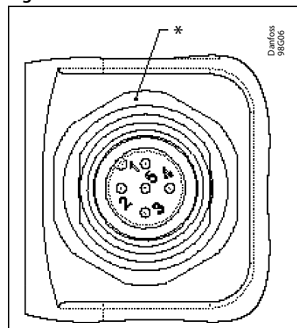
1.	+ Supply
2.	N.C.
3.	Ground
4.	Output
5.	N.C.

CANopen output connections:

1.	N.C.
2.	+ Supply
3.	Ground
4.	CAN H
5.	CAN L

* M12x1 5-pin male connector

Figure 7: Half-redundant version

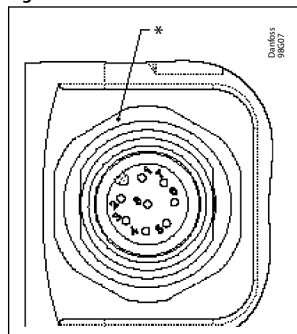


CANopen output connections:

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

* M12x1 5-pin male connector

Figure 8: Redundant version



Analog output connections:

1.	+ Supply 1
2.	Ground 1
3.	Output 1
4.	N.C.
5.	+ Supply 2
6.	Ground 2
7.	Output 2
8.	N.C.

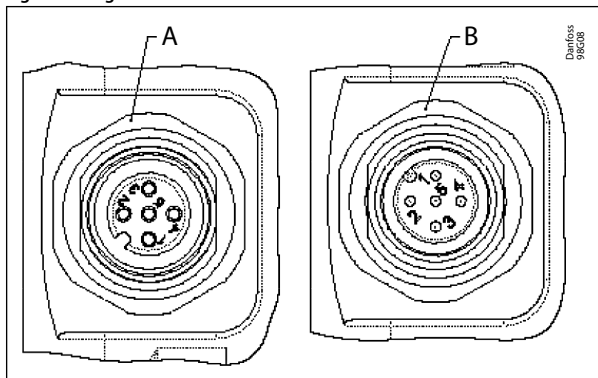
CANopen output connections:

1.	+ Supply 1
2.	Ground 1
3.	CAN H 1
4.	CAN L 1
5.	+ Supply 2
6.	Ground 2
7.	CAN H 2
8.	CAN L 2

* M12x1 8-pin male connector

Wire position sensor, Type DST X800

Figure 9: Single / Redundant / Half-redundant version



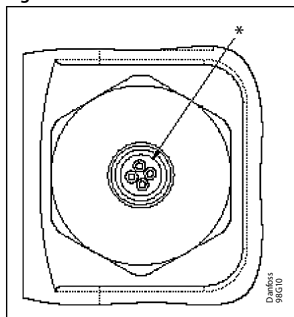
CANopen output IN-OUT connections:

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

A	M12x1 5-pin female connector
B	M12x1 5-pin male connector

Cable version

Figure 10: IEC 60228 Cable



Connections:

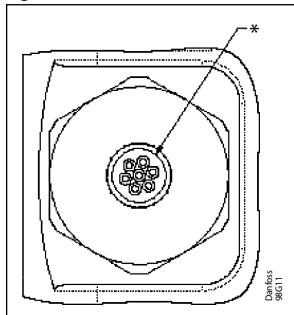
Red	+ Supply
Black	Ground
Blue	Out
White	N.C.

Connections:

Red	+ Supply
Black	Ground
Blue	CAN H
White	CAN L

* IEC 60228 Cable
4 pole 0.34 mm²
PUR OD 4.4 mm

Figure 11: IEC 60228 Cable



Connections:

White	+ Supply CH1
Brown	Ground CH1
Green	Out CH1
Yellow	N.C.
Grey	+ Supply CH2
Pink	Ground CH2
Blue	Out CH2
Red	N.C.

Connections:

White	+ Supply CH1
Brown	Ground CH1
Green	CAN H CH1
Yellow	CAN L CH1
Grey	Supply CH2
Pink	Ground CH2
Blue	CAN H CH2
Red	CAN L CH2

* IEC 60228 Cable
4 pole 0.34 mm²
PUR OD 5.8 mm

Ordering

Table 7: Ordering for DST X800

Output signal	Configurations	Code no.
36 V; 0.5 – 4.5 V;	1 x M12 5p; Single; 1,800 mm	098G2000
36 V 0.5 – 4.5 V;	1x M12 8p; Redundant; 1,800 mm	098G2001
36 V; CANopen	1 x M12 5p; Single; 1,800 mm	098G2002
36 V; CANopen	1x M12 8p; Redundant; 1,800 mm	098G2003
36 V; 0.5 – 4.5 V;	1 x M12 5p; Single; 4,800 mm	098G2004
36 V; 0.5 – 4.5 V;	1x M12 8p; Redundant; 4,800 mm	098G2005
36 V; CANopen	1 x M12 5p; Single; 4,800 mm	098G2006
36 V; CANopen	1x M12 8p; Redundant; 4,800 mm	098G2007
36 V; 0.5 – 4.5 V;	1 x M12 5p; Single; 8,300 mm	098G2008
36 V; 0.5 – 4.5 V;	1x M12 8p; Redundant; 8,300 mm	098G2009
36 V; CANopen	1 x M12 5p; Single; 8,300 mm	098G2010
36 V; CANopen	1x M12 8p; Redundant; 8,300 mm	098G2011

Other on request.

Ordering code - on request

Sensor type	
Wire transducer	S
Electrical connections	
M12 - 4-p connector	M
M12 - 5-p connector	N
M12 - 8-p connector (only for redundant versions)	O
Cable	F
Numbers of connectors	
Cable connection	O
1 male M12-4-p connector (single version) or 1 male M12-5-p connector (single or half-redundant version) or 1 male M12 8-p connector (only redundant version)	1
2 male M12-4-p connectors (redundant version) or 2 male M12-5-p connectors (refudant version)	2
1 male M12-5-p connector and 1 M12- 5-p female connector (only for IN-OUT CANopen version)	3
Circuit type	
Single	S
Redundant	R
Half-redundant	H
Measuring range	
Measuring range (specify)	xxxx
Available strokes: 1,800 mm; 2,300 mm; 3,300 mm; 4,300 mm; 4,800 mm; 5,300 mm; 6,300 mm; 7,300 mm; 8,000 mm; 8,300 mm	
Supply voltage	
10...36 V DC	H
Output type	
0.5...4.5 V DC (powered at 10 – 36 V DC)	A1
0...10 V DC output (powered at 11...36 V DC)	A2
4...20 mA output (powered at 10...36 V DC)	A3
CANopen output (powered at 10...36 V DC)	C1
Certificate	
No certificate attached	0
Linearity curve to be attached	L

Wire position sensor, Type DST X800

Version	
Standard	033

Accessories	
No accessories	X
FLA033: fixing flange, A version	A
FLA034: fixing flange, B version	B
CON293: 4-pin female mating connector M12x1; IP67	C
CON469: 8-pin female mating connector M12x1; IP67	D
CON031: 5-pin female mating connector M12x1; IP67	E

Cable length	
No cable	00
2000 mm	20
Other on request	

Table 8: Example of ordering: DST X800-SN2R4300HC1 0033X00

S	Wire sensor
N	M12 connector 5-pin
2	2 male 5-pin connector
R	Redundant
4300	4300 mm stroke
H	10 – 36 V DC
C1	CANopen
0	No certificate
033	Standard
X	No accessories
00	Cable length (on request)

Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Table 9: Certificates, declarations, and approvals

File name	Document type	Document topic	Approval authority
098R0010	EU Declaration	EMCD/RoHS	Danfoss

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