



- Peak to Peak Shaft Vibration Measurement.
- Direct 4-20mA loop powered output.
- Dynamic signal output
- Switch selectable system cable lengths 5m, 7m and 9m.
- Double screened cable for high noise immunity.
- Snap lock and shake proof cable connection.
- Compliant with standard API 670.

The DNX8031 Vibration Transmitter is designed to measure relative shaft vibration on critical rotating plant. The unit operates in conjunction with Sensonics XPR range of 8mm and 5mm tip diameter proximity probes, offering a choice of factory set vibration ranges.

Integrating the proximity probe driver functionality and signal processing to provide a peak to peak vibration measurement offers a cost effective approach to shaft vibration monitoring. The 4-20mA loop powered transmitter affords easy integration with either the machine PLC or a plant wide DCS.

The DNX8031 proximity probe system is made up of a calibrated probe, extension cable and transmitter. Utilising the eddy current principle, this combination forms a tuned circuit with the target material and variations in probe face to target distance are detected in this circuit by the transmitter providing a peak to peak relative vibration measurement output.

The transmitter unit offers selectable system lengths of 5 m, 7 m or 9 m and a voltage proportional to the gap between the probe face and target can be monitored at the terminals to assists with commissioning the probe system.

The cable system incorporates snap lock connectors which require no torquing and provide a shake proof solution important for heavy industrial applications. The double screened cable offers robustness in combination with high immunity to interference with optional stainless steel convoluted armour.



System Performance

Measurement Range:	0 to 100 μm pk - pk
Options	0 to 125 μm pk - pk 0 to 250 μm pk - pk
Hi / Lo Output:	4.0 mA to 20.0 mA Loop Powered
Linearity:	$\pm 1\%$ (% of FS) $\pm 2\%$, 0 °C to +150 °C @ -10.0V
Current Loop Sensitivity:	6.25 μm / mA $\pm 1\%$ (0 – 100 μm) 7.81 μm / mA $\pm 1\%$ (0 – 125 μm) 15.63 μm / mA $\pm 1\%$ (0 – 250 μm)
Resolution:	<0.001 mm
Interchangability:	Maximum interchangability error replacing either probe, extension cable or transmitter in calibrated system is $\pm 5\%$.
Available system lengths:	5 m, 7 m and 9 m
Cable length tolerance	
Probe (1 metre):	1.0 m to 1.5 m
Cable Extension (4 metre):	4.0 m to 4.4 m
Cable Extension (6 metre):	6.0 m to 6.6 m
Cable Extension (8 metre):	8.0 m to 8.8 m
Frequency Response:	2Hz to 5 kHz
Probe Gap Linear Range:	0.25 mm – 1.50 mm (10 mils – 60 mils)
Reference Target Material:	ANSI 4140

Probe

Probe tip diameter:	8.0 mm & 5.0 mm options
Probe tip material:	PPS 40 % Glass Filled
Probe body material:	303 stainless steel
Available probe body lengths:	20 mm to 250 mm 0.8 in to 9.6 in
Cable type:	Triaxial 75Ohm Coaxial FEP outer jacket 3.2 mm outer diameter
Armoured option:	Convuluted Stainless Steel 6.4 mm outer diameter
Probe Resistance:	3.1 Ohms $\pm$ 0.2 Ohm
Operating Temp Range:	-40 °C to +180 °C
Storage Temp Range:	-40 °C to +180 °C
Minimum target diameter:	16 mm
Effect of target curvature:	+2 % for shaft diameter 150 mm +5 % for shaft diameter 25 mm
Magnetic field effect:	<1 % at 110 mT
Connector	Female Miniature Coaxial

Transmitter

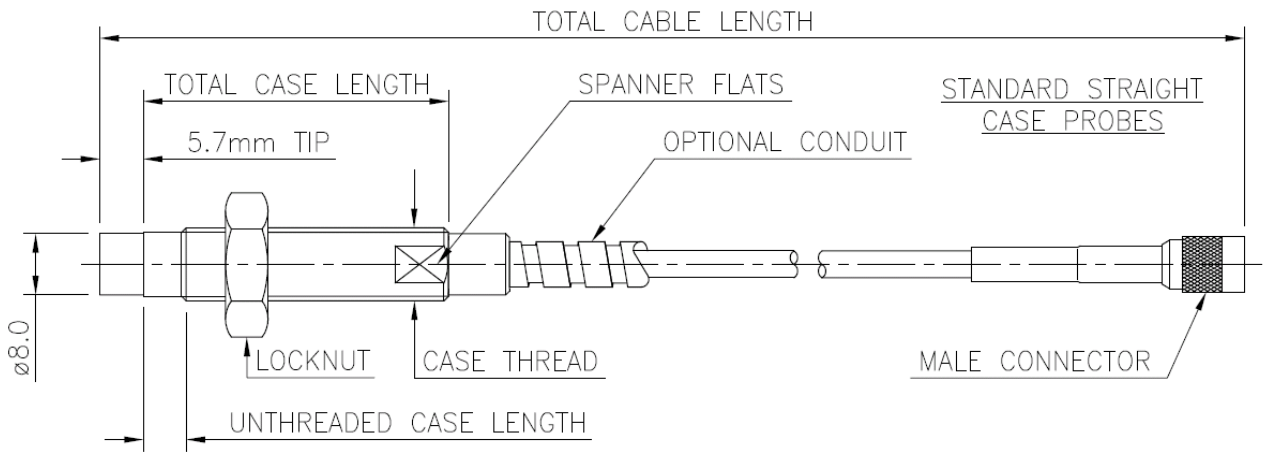
Maximum loop resistance:	1000 Ohms at +35.0V 0.0 Ohms at +15.0V 50 x (V – 15) Ohms
Input Voltage Range:	+15.0 to +35.0 Vdc
Recommended Drive:	250 Ohms, +24.0 Vdc
Signal Output Range:	2.0 V to 12.0 V 0.25mm (10 mils) to 1.50 mm (60 mils)
Signal Output Sensitivity:	8.0 V / mm $\pm 2\%$ with 10 M Ohm Load
Signal Output Impedance:	10 K Ohm
Signal Output Temperature: Sensitivity	$\pm 10\%$ over range 0 °C to +50 °C
System Length Selection:	Internal switch 5 m, 7 m or 9 m
Calibration:	CAL - adjustment potentiometer for zero setting
Sensitivity to: Power Supply	Negligible
Sensitivity to: Gap Voltage	< 1.0uA / μm
Transducer Failure:	S/C or O/C, Loop Current <3.8mA (out of range)
Sensor Connector type:	Self Locking Miniature Male Coaxial
Mounting:	Din Rail or Plate
Mass:	250 grams
Operating Temp Range:	-40 °C to +80 °C
Storage Temp Range:	-40 °C to +90 °C

Hazardous Area Approvals – ATEX / IECEx

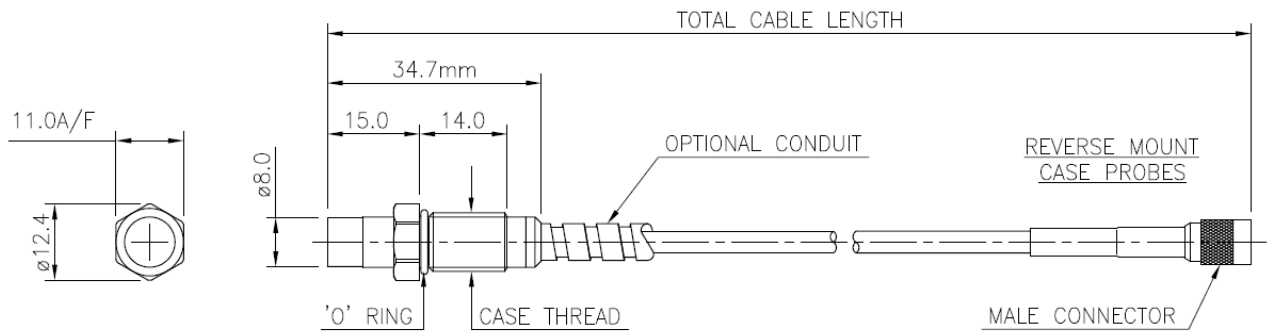
Transmitter	Probe
Ex II 1 GD	Ex II 1 GD
Ex ia IIC T4 Ga	Ex ia IIC T4/T2 Ga
Ex ia IIIC T135°C Da	Ex ia IIIC T135°C/ T300°C Da
-40°C $\leq$ Ta $\leq$ +80°C	-40°C $\leq$ Ta $\leq$ +80°C / +180°C

Probe Mechanical Configuration

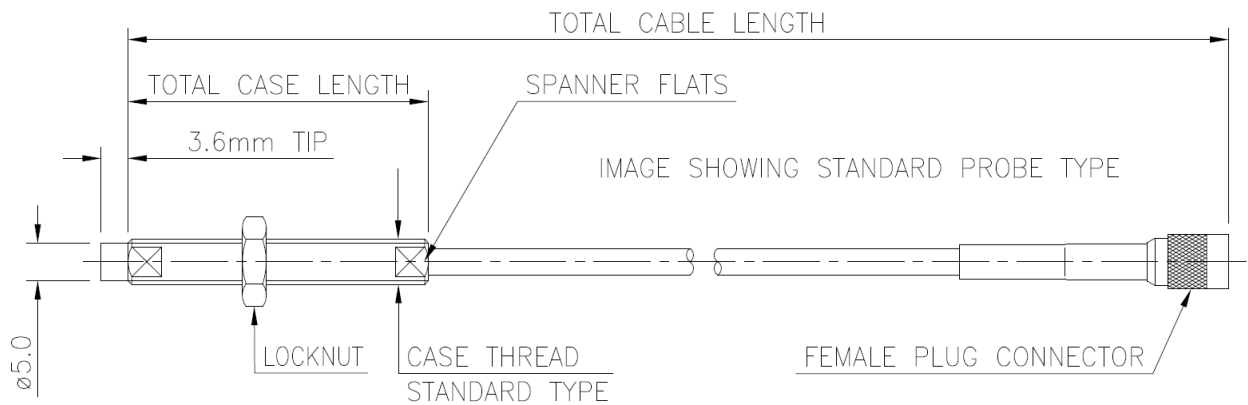
Straight Mount 8.0 mm tip



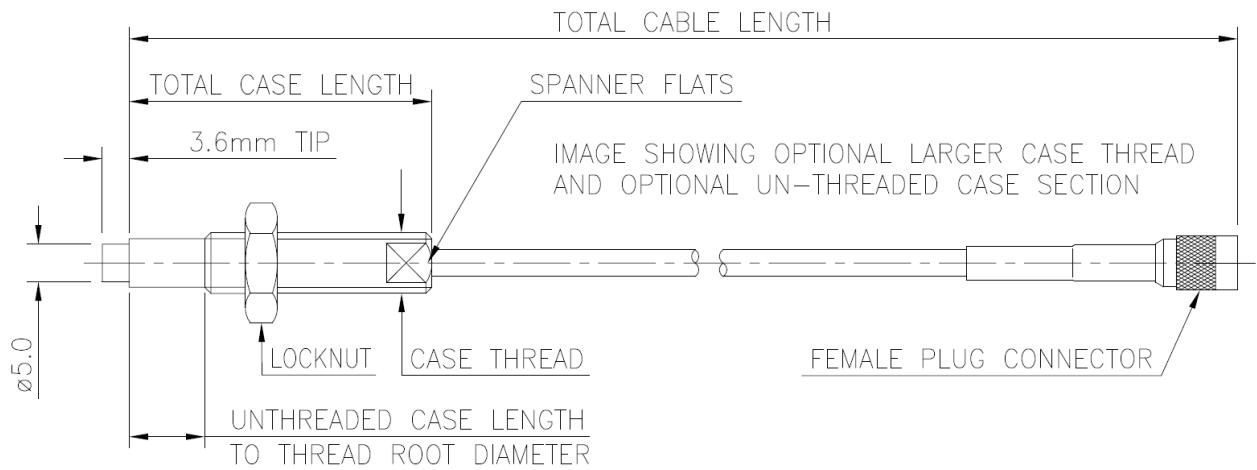
Reverse Mount 8.0 mm tip



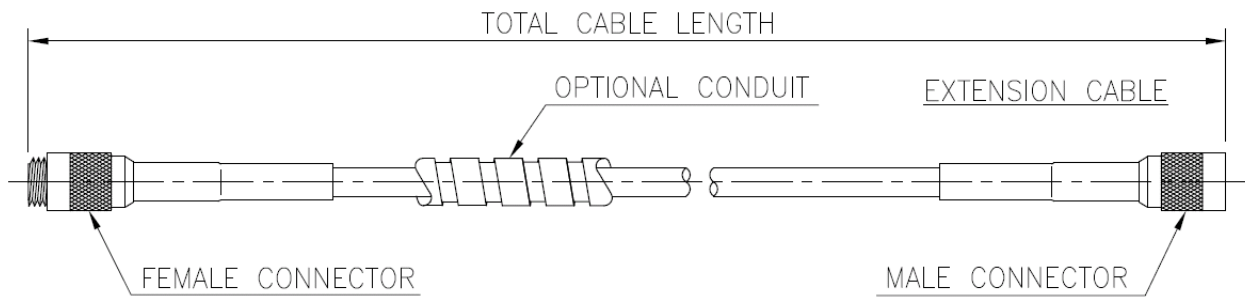
Straight Mount 5.0 mm tip 1/4"UNF Case



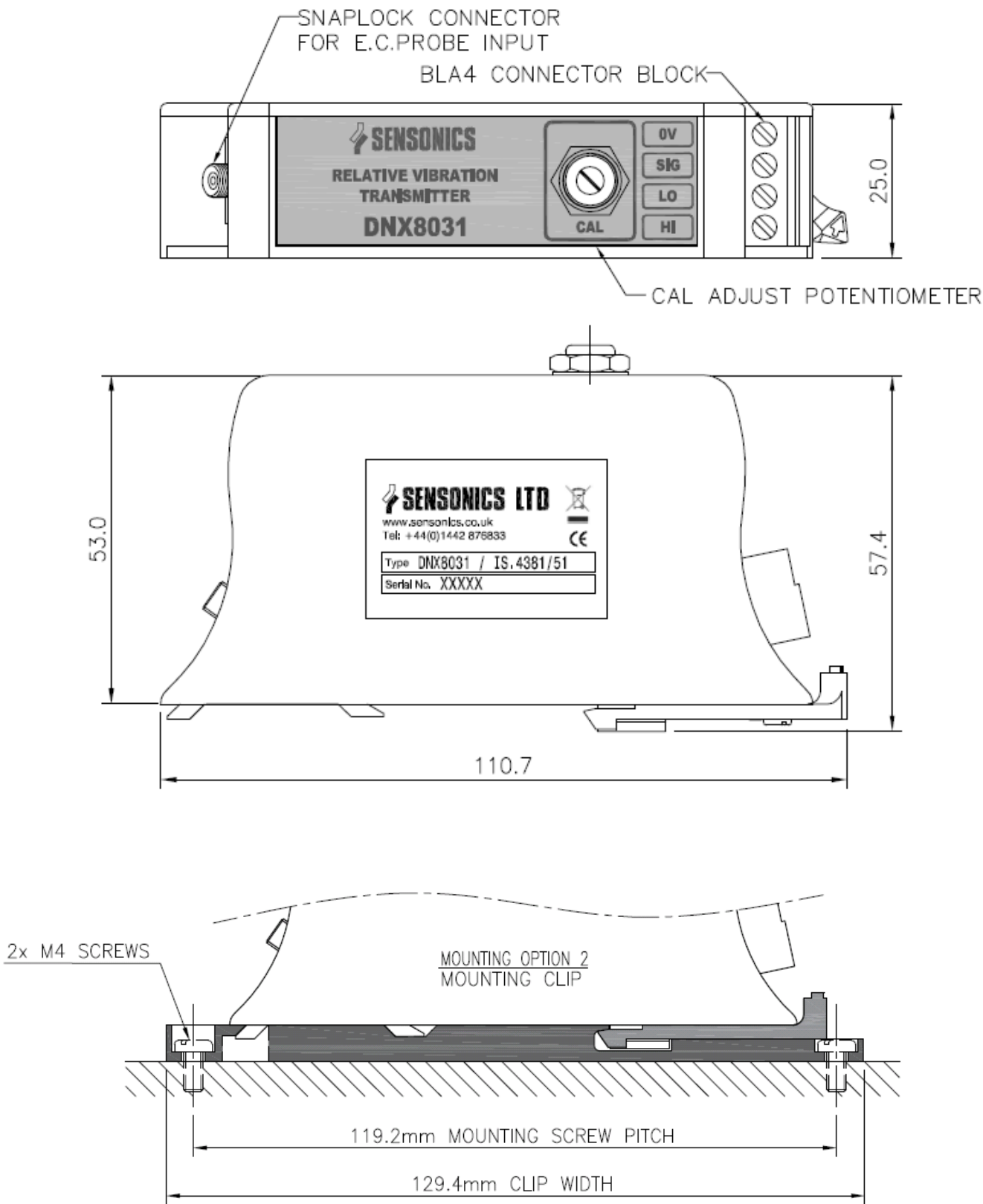
Straight Mount 5.0mm tip >¼”UNF Case



Extension Cable Mechanical Drawing



Transmitter Mechanical Configuration



8.0 mm Probe Ordering Information

XPR04 - <u>Cable length</u> 0.5 – 0.5 m 1.0 – 1 m 5.0 – 5 m 7.0 – 7 m 9.0 – 9 m <u>Cable protection</u> U – Unarmoured double screened (standard) C – Conduit (convoluted stainless steel) S – Heatshrink isolation over conduit G – M20 cable gland fitted to standard cable <u>Body Format</u> S – Straight Mount (for bracket mounting) R – Reverse (fixed nut with 'O' ring for use with probe holder) A – Right angled cable exit <u>Thread type</u> 0 – 3/8"UNF (standard imperial) 1 – M10 x 1.0 (standard metric) 2 – M16 x 1.5 3 – 3/8" - 24 UNC 4 – M18 x 1.5 5 – M14 x 1.0 6 – M14 x 1.5 7 – M12 x 1.25 8 – M10 x 1.5 <u>Range (sensitivity)</u> 0 – 2.5 mm (7.87 mV/μm) (API670) <u>Hazardous Area Approvals</u> 0 – None 1 – ATEX / IECEx <u>Unthreaded Length</u> Can be ordered in metric or inches. Not required for reverse mount (fixed nut) option (00) See Note 1. <u>Overall Case length</u> Can be ordered in metric or inches. See Note 2.	1.0 U S 1 0 0 00 06
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Note 1 - Unthreaded Length Option**Imperial Case**

Unthreaded length must be at least 0.8 inches less than the case length. Order in increments of 0.1 in.
 Maximum unthreaded length: 8.8 in.
 Minimum unthreaded length: 0.0 in.
 Example: 04 = 0.4 in.

Metric Case

Unthreaded length must be at least 20 mm less than the case length. Order in increments of 10 mm.
 Maximum unthreaded length: 230 mm.
 Minimum unthreaded length: 0 mm.
 Example: 06 = 60 mm.

Note 2 - Overall Case Length Option**Imperial Case**

Order in increments of 0.1 in.
 Maximum case length: 9.6 in
 Minimum case length: 0.8 in
 Example: 24 = 2.4 in

Metric Case

Order in increments of 10 mm.
 Maximum length: 250 mm.
 Minimum length: 20 mm.
 Example: 06 = 60 mm.

5.0 mm Probe Ordering Information

XPR02 -	1.0	U	S	0	0	0	00	06
Cable length 0.5 – 0.5 m 1.0 – 1 m 5.0 – 5 m 7.0 – 7 m 9.0 – 9 m								
Cable protection U – Unarmoured double screened (standard) G – M20 cable gland fitted to standard cable								
Body Format S – Straight Mount (for bracket mounting) A – Right angled cable exit								
Thread type 0 – 1/4"UNF (standard imperial) 1 – M6 x 0.75 (Not available / contact sales) 2 – M8 x 1.25 3 – 3/8"UNF 4 – M10 x 1.0 5 – M12 x 1.25 6 – 5/6-24UNF 7 – M8 x 1.0 8 – M14 x 1.5 9 – M20 x 1.5								
Range (sensitivity) 0 – 2.5 mm (7.87 mV/μm) (API670)								
Hazardous Area Approvals 0 – None 1 – ATEX / IECEx								
Unthreaded Length Can be ordered in metric or inches. Not required for reverse mount (fixed nut) option (00) See Note 1.								
Overall Case length Can be ordered in metric or inches. See Note 2.								

Note 1 - Unthreaded Length Option**Imperial Case**

Unthreaded length must be at least 0.8 inches less than the case length. Order in increments of 0.1 in.

Maximum unthreaded length: 8.8 in.

Minimum unthreaded length: 0.0 in.

Example: 04 = 0.4 in.

Metric Case

Unthreaded length must be at least 20 mm less than the case length. Order in increments of 10 mm.

Maximum unthreaded length: 230 mm.

Minimum unthreaded length: 0 mm.

Example: 06 = 60 mm.

Note 2 - Overall Case Length Option**Imperial Case**

Order in increments of 0.1 in.

Maximum case length: 9.6 in

Minimum case length: 0.8 in

Example: 24 = 2.4 in

Metric Case

Order in increments of 10 mm.

Maximum length: 250 mm.

Minimum length: 20 mm.

Example: 06 = 60 mm.

Transmitter Ordering Information

DNX8031 /	5	0	A
<u>System length</u> 5 - 5m 7 - 7m, 9 - 9m			
<u>Range (sensitivity)</u> 0 = 0 - 100um (0 - 3.94thou) (6.25um/mA) 1 = 0 - 125um (0 - 4.92thou) (7.81um/mA) 2 = 0 - 250um (0 - 9.84thou) (15.63um/mA)			
<u>Hazardous Area Approvals</u> ATEX / IECEx (Leave blank for None)			

Extension Cable Ordering Information

XEC -	4.0	U	0
<u>Cable length</u> 4.0 – 4m 4.5 – 4.5m 6.0 – 6m 6.5 – 6.5m 8.0 – 8m 8.5 – 8.5m			
<u>Cable protection</u> U – Unarmoured double screened (standard) C – Conduit (Convolute SS)			
<u>Hazardous Area Approvals</u> 0 – None 1 – ATEX / IECEx			



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