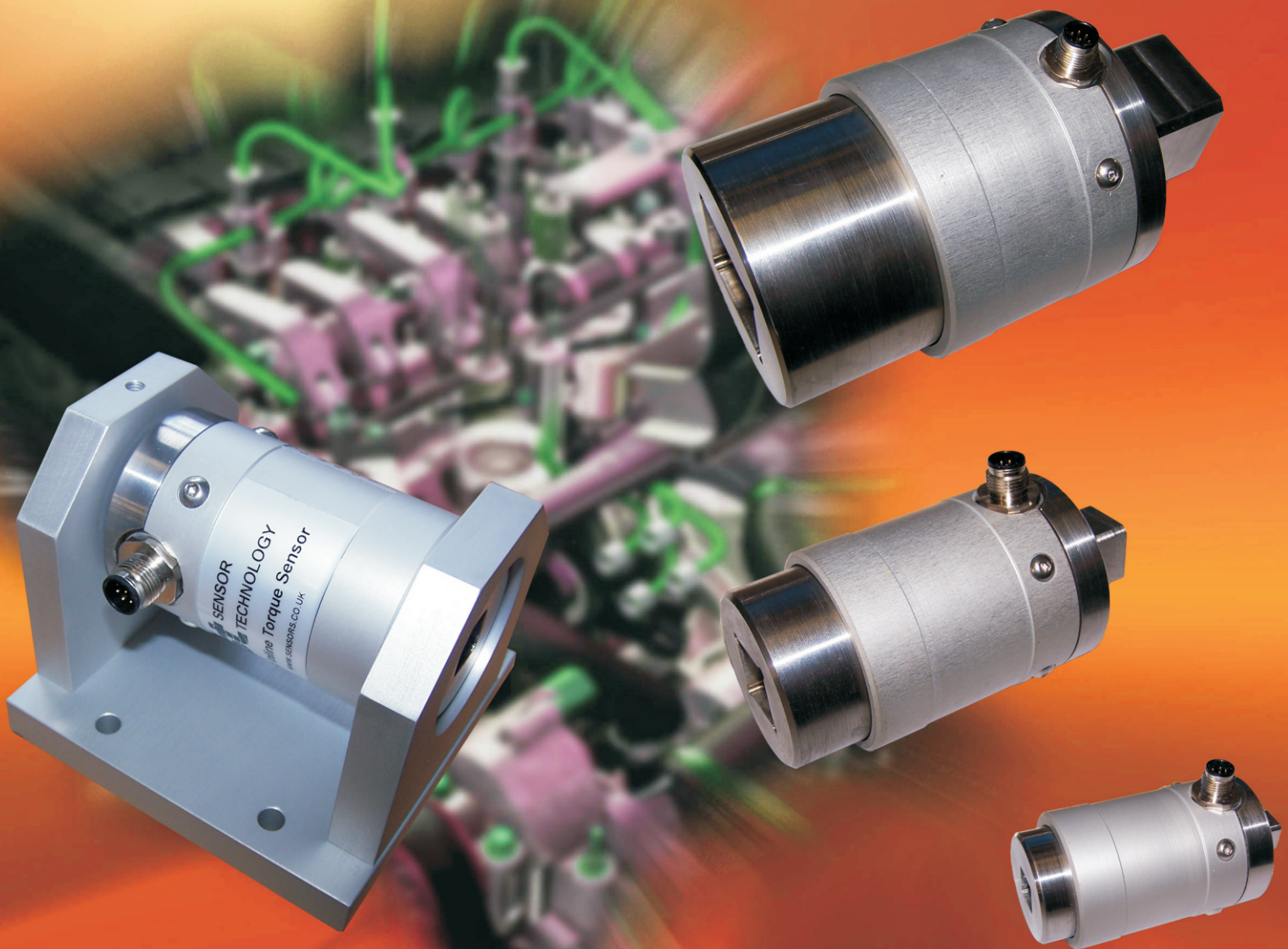


# SIT 105/110/120 Series Torque Transducer 50Nm to 5000Nm



## SIT 105/110/120 Strain Gauge In-Line Torque Transducer

The SIT 105/110/120 strain gauge reaction transducers are designed for operation in any industrial environment.

Models are available in sizes ranging from 50Nm to 5000Nm, offering outputs from mV/V outputs, to ratiometric voltage outputs, to digital data connection via RS232 or USB

An option of a bench mount housing is available for torque wrench test and calibration.



### Technology

The SIT 105/110/120 torque transducers use modern wire foil strain gauge technology with the latest high performance stainless steel shafts

### Software

TorqView is an easy to use advanced torque monitoring software, available to assist data recording and instrumentation displays that interface with Windows based PCs.

Features include: 3 types of display, text files compatible with Matlab and Excel and Real time chart plotting. See TorqView datasheet for more details.

LabView VIs are available for users to design their own process control applications. DLLs are also available for users to write their own custom software.



### SIT 105 transducers offers:

- Calibrated 1mV/V output

### SIT 110 transducers offers:

- Scaled ratiometric voltage output, 2.5V zero, 4.5V CW FSD 0.5V ACW FSD

### SIT 120 Transducers offers:

- Ratiometric voltage output as above
- RS232 output for connection to PC

### SIT 120 Extension Module also offers:

- USB digital output
- User scalable voltage or current outputs,  $\pm 1V$  to  $\pm 10V$ , 4-20mA bipolar and unipolar

## SIT 105/110/120 Series Strain Gauge Torque Transducers - Data Specification

Parameter	Condition	Data			Units	
<b>SIT105/110/120 Static torque measurement system</b>						
Measurement method	DC Strain Gauge bridge with calibration and temperature compensation					
Torque range	<b>Note 1</b>	50, 100, 200, 500, 1000, 2000, 5000, 10000 50, 100, 200, 500, 1000, 2000, 5000, 10000			Nm lbf.ft	
Drive size		1/2 (up to 200Nm)	3/4 (up to 500Nm)	1 (up to 2000Nm)	1 1/2 (Above 2000Nm)	Inch
<b>Temperature</b>						
Measurement method	Static torque measurement system based on Strain Gauge technology					
Temperature accuracy		±0.5			°C	
Ref. Temp., T <sub>RT</sub>		20			°C	
Operating range, ΔT <sub>o</sub>		-10 to 50			°C	
Storage range, ΔT <sub>s</sub>		-20 to 60			°C	
Temperature drift (FS)	Uncompensated	Consult Factory			%FS/°C	
	Compensated	Consult Factory			%FS/°C	
<b>SIT105/110/120</b>						
Linearity		0.05			%FS	
Hysteresis		0.05			%FS	
Resolution		0.005			%FS	
Frequency response		Up to 5KHz (digital output), Up to 8KHz (Analog output)			Hz	
Accuracy	20°C, SM (See Note 2)	±0.6 @ 5KHz ±0.1 @ 310Hz ±0.06 @ 155Hz ±0.025 @ 40Hz			%FS	
Averaging	(See Note 3)	From 1 to 128			N	
<b>Analog output</b>						
Output voltage		SIT105 = mV/V SIT110 = 0.5v (ACW FS) – 2.5v (zero) – 4.5v (CWFS) SIT120 = As Above, (±1v to ±10v & 4-20mA Output available via SIT120 Extension module (OPTN-X))			Vdc	
Load impedance		5k			KΩ	
<b>Digital output (SIT120 Series Transducers ONLY)</b>						
Output type		RS-232 (standard), USB (via SIT120 Extension Module (OPTN-X))				
Sampling rate	See User Guide for details	4.5Ksps (min) – 5.5Ksps (max)			ksps	
<b>Power supply</b>						
Nominal voltage, V <sub>s</sub>		10 to 18			V	
Current consumption, I <sub>s</sub>		80 (max)			mA	
Power consumption, W <sub>s</sub>		1.2 (max)			W	
Allowed residual ripple of excitation voltage, V <sub>rip</sub>		20			mVp-p	
<b>Electromagnetic compatibility</b>						
EMC compatibility		EN 55011 & EN 61326-1 (JG)				

*Note 1. Other sizes are possible. Consult factory for details.*

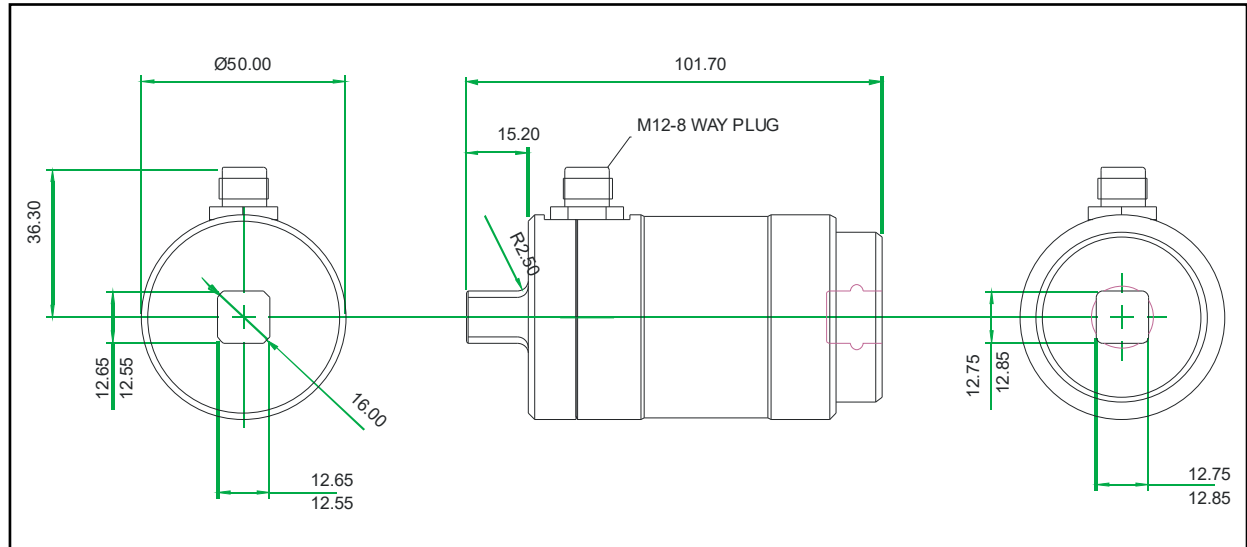
*Note 2. SM – Static Mode. Dynamic values will depend upon user application and has to be adjusted accordingly.*

*Note 3. Digital averaging can be configured by user to optimise accuracy/frequency response for specific user applications. Digital averaging default setting is N=32. For details see User Manual.*

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# SIT 105/110/120 Series Strain Gauge Torque Transducers

## Dimensions (50 – 200Nm)

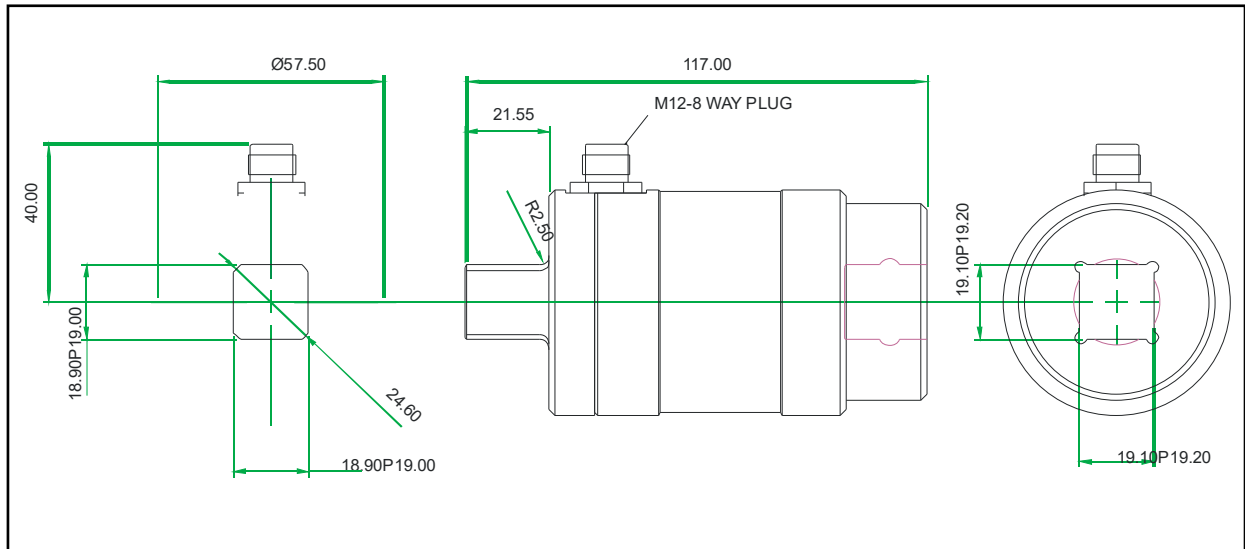


Parameter	Data			Units
<b>Mechanical Properties</b>				
Torque (Max)	50	100	200	Nm
Shaft Code	CA	CB	CC	
Drive Size	1/2			Inch
Max measurable load limit	120 (of rated torque)			%
Static safe load breaking	200 (of rated torque)			%
Transducer weight, approx	TBC			Kg

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# SIT 105/110/120 Series Strain Gauge Torque Transducers

## Dimensions (201 – 500Nm)

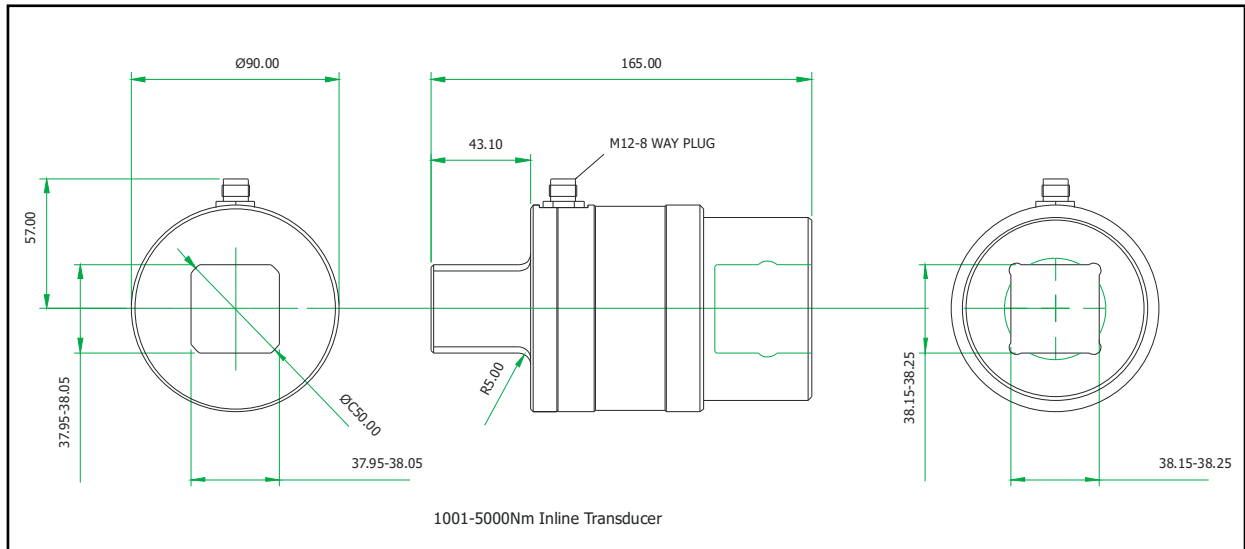


Parameter	Data	Units
<b>Mechanical Properties</b>		
Torque (Max)	500	Nm
Shaft Code	DA	
Drive Size	3/4	Inch
Max measurable load limit	120 (of rated torque)	%
Static safe load breaking	200 (of rated torque)	%
Transducer weight, approx	1.3	Kg

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# SIT 105/110/120 Series Strain Gauge Torque Transducers

## Dimensions (1001 – 5000Nm)



Parameter	Data		Units
<b>Mechanical Properties</b>			
Torque (Max)	2000	5000	Nm
Shaft Code	FA	FB	
Drive Size	1 1/2		Inch
Max measurable load limit	120 (of rated torque)		%
Static safe load breaking	200 (of rated torque)		%
Transducer weight, approx	4.5		Kg

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## SIT 105/110/120 Series Strain Gauge Torque Transducers - Standard Range

● – Standard feature    ◇ – Optional feature

	SIT 105	SIT 110	SIT 120	Option Code	Remarks
<b>Standard features</b>					
M / F Square ends	●	●	●		
mV / V Output	●	●	●		
Ratiometric voltage output 2.5V ± 2.5V FSD		●	●		
Internal temperature reading / correction		●	●		
RS232			●		
<b>Optional Features</b>					
Round Shaft ends (with keyways)	◇	◇	◇	K	
Plain shaft ends (no keyways)	◇	◇	◇	P	
Bench mount housing	◇	◇	◇	Y	
SIT120 extension module			◇	X	USB output ±1V to ±10V output. 0-20 mA or 4-20mA output. User adjustable (includes lead to transducer)

## SIT 105/110/120 Series Strain Gauge Torque Transducers - Connector and Lead Options

	SIT 105	SIT 110	SIT 120	Remarks
<b>Leads</b>				
ACC – 11	◇	◇	◇	Open ended for user to self wire
ACC – 12	◇	◇	◇	With 15 way 'D' connector for easier system integration

## SIT 105/110/120 Series Strain Gauge Torque Transducers – Additional related products

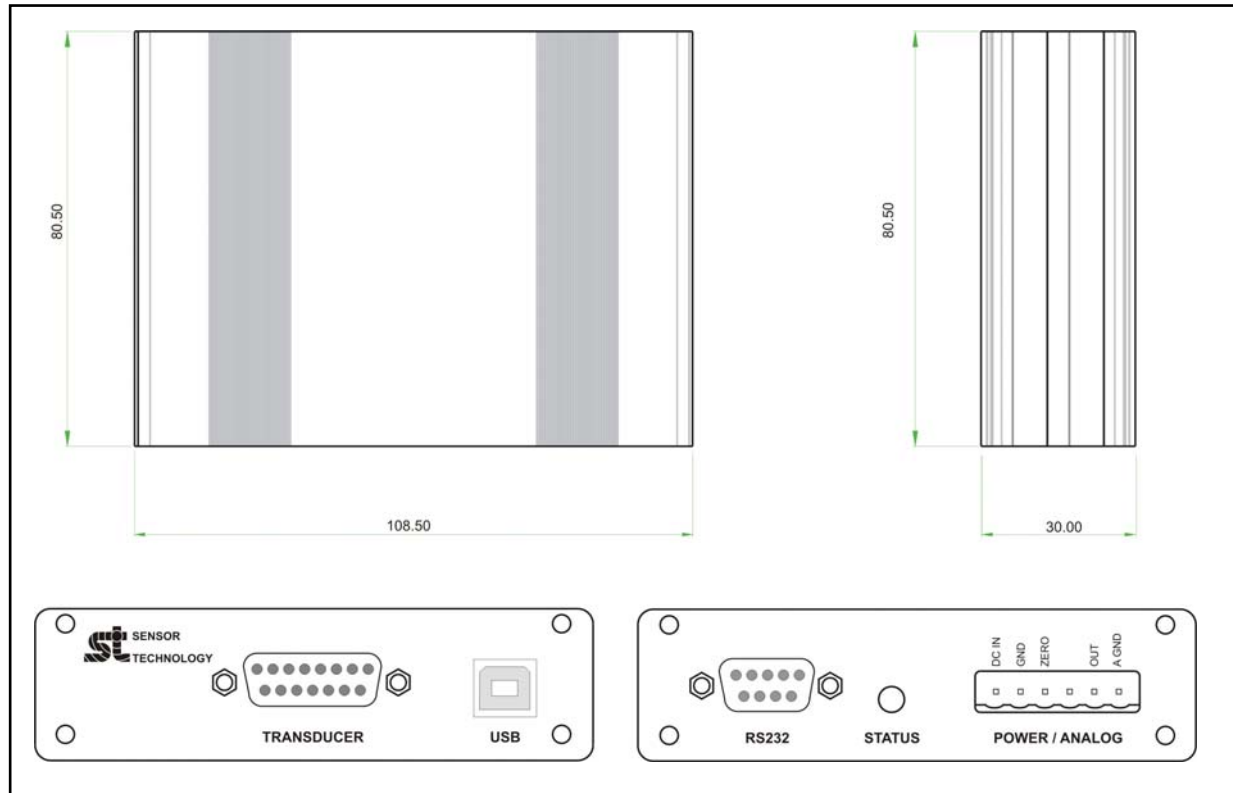
	Code	Remarks/Purpose
Transducer Display ETD	ETD	Display readout
WSG Wireless Strain Gauge Transmitter with optional outputs and displays including: - Wireless Strain Gauge Cabin Display - Wireless Strain Gauge Handheld Receiver Display - Wireless Strain Gauge Computer Receiver Interface	WSG-STM WSG-STD WSG-CD WSG-HR WSG-RI	See WSG Datasheet
AC Mains Adapter Power Supply	PSU 1	For providing 12Vdc
Transducer Signal Breakout Unit (Not compatible when using WSG)	SBU 1	
TorqView	TORQVIEW	Torque Monitoring Software

### Glossary of terms and definitions used in this datasheet

- **Accuracy** - The degree of conformity of a measured or calculated quantity, which will show the same or similar results. Accuracy of the overall TorqSense system is limited by the combined error of several factors such as linearity, hysteresis, temperature drifts and other parameters affecting measurements. If errors in the system are known or can be estimated, an overall error or uncertainty of measurement can be calculated.
- **Digital averaging** – The application of algorithms to reduce white noise. In any electronic system, electronic white noise is mixed with the signal and this noise usually limits the accuracy. To reduce the influence of white noise and increase the accuracy of the system different averaging algorithms can be applied. In the TorqSense system a flying digital averaging technique is applied to reduce the white noise commensurate with the level of accuracy required. However, as any averaging algorithm works as a low pass filter, the more averaging that is applied the lower the frequency response. Therefore, each Torqsense system should be optimised to the customer's requirements by choosing the right combination of accuracy/frequency response. Please see relevant part of the Datasheet and User Manual.

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## SIT 120 Mult Function Interface box



### Features

The SIT Multi Function Interface Box is used as an optional accessory to the SIT 120 and takes the 2.5V zero  $\pm$  1.5V analog Voltage from the transducer head and provides additional user configurable analog outputs via Transducer Control software (provided).

Power supply	Data	Unit
Voltage	9 – 18	VDC
Ripple	< 50	mV
Current	TBC	mA

Physical		
Enclosure	Height 30 x Width 108.5 x Length 80.5	mm
Temperature Range	-10 to +50	°C
Temperature Stability	TBC	%/°C

Digital		
RS232	115	kbps
RS232 Sampling Rate	4200	Samples / Sec
USB	USB 2.0 full speed (12Mbps)	Mbps
USB Sampling Rate	Up to 6000	Samples / Sec

Analog Output		
FSD Voltage Output	User configurable $\pm$ 10 $\pm$ 5 $\pm$ 1	VDC
Min Load Impedance	1	K $\Omega$
Current Output	User configurable 0-20 4-20	mA
Max Loop resistance	500	$\Omega$

Electromagnetic Compatibility		
EMC Compatibility	EN 61326:2006	

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