

ECS98 Eddy-Current Sensors Features

- Low noise electronics provides one part in 200,000 resolution at 100 Hz bandwidth
- High thermal stability when internal temperature sensor is used
- Standard probes operate up to 100° C
- 5mm, 10mm, 20mm and custom probes
- Multi Channel Synchronization
- Bi-color range indicator LED
- Gain and offset adjustment

10Å
Resolution

ECS98 Eddy-Current Proximity Sensors



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The ECS98 family of single channel and differential eddy-current proximity sensors by Magnetic Moments are instrument grade position sensors for precision measurement. Standard position ranges are 1, 2 and 4mm with 5, 10 and 20mm probes respectively. The full scale position is converted to $\pm 5V$ via low noise electronics. Custom probes are available for OEM and research applications.

In most cases, a linear output is achieved by restricting the measurement; but the use of external software linearization is common. Factory linearization formulas are available upon request. The sensor operates on a single 12-15V power supply. The unit has a high power supply rejection ratio, and has reduced sensitivity to probe cable flexure relative to competing designs. Resolutions of 10 Angstroms are common in temperature-stable environments.

Applications

Non-Contact Measuring Systems: *Position, displacement, alignment, vibration, and tilt.*

Non-Destructive Evaluation: *Crack detection, wear and strain.*

Contact Measuring Systems: *Coating, thickness, films.*

General Specifications

Weight of Electronics Box: 88 g

Material of Probe Tip: *Polyamide-imide*

Sleeve Material: *Stainless steel 303 or 316*

Dimensions of Box: *88.6mm x 61.0 mm x 13.4mm*

Chemical Compatibility: *Specified per customer request*

Cable Length: *to 3 meters max*

Temperature range for probe: *-10°C minimum to +100°C maximum*

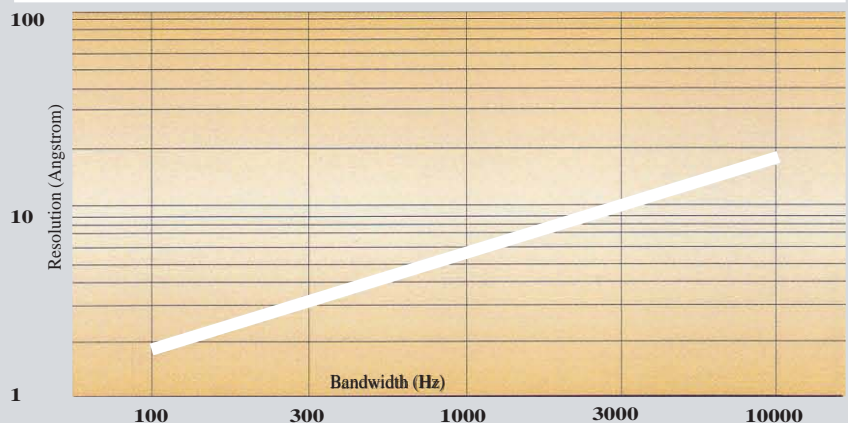
Electrical Characteristics

	Conditions	Min	Nominal	Max
Supply Voltage	$T_{\text{ambient}} = 25^{\circ}\text{C}$	12V		15 V
Frequency Response			10 KHz	
Output Impedance			100 Ohms	
Output Current				5 mA

Probe Specifications

Probe Type (P / N)	(5P)	(10P)	(20P)	Custom
Probe Diameter	5mm	10mm	20mm	Zmm
Standard Probe Length	16mm	34mm	41mm	N/A
Max Measuring Range	1mm	2mm	4mm	Z/5
Max Resolution (@ 100Hz)	5nm	10nm	20nm	Z/10 ⁶
Maximum Sensitivity	200mV/um	100mV/um	50mV/um	200mV/um
Linearity	$\leq 10\%$	$\leq 10\%$	$\leq 10\%$	$\leq 10\%$
Linearity w/ software calibration	$\leq 1\%$	$\leq 1\%$	$\leq 1\%$	$\leq 1\%$

Resolution vs. Bandwidth ECS98 with typical 5mm probe



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