

# MicroSense® EasyVSM™

## EZ VSM Series Specifications

### Magnetic Field - Maximum Fields [T] (± 1%)

Sample Space	EZ7	EZ7 HF	EZ8	EZ9	EZ9 HF	EZ16
3.5 mm	2.6	2.76	2.8	3.0	3.2	3.5 (3.65*)
10 mm	2.32	2.45	2.53	2.75	2.85	3.3
16 mm	2.06	2.12	2.29	2.45	2.58	3.0
With Single Stage (77K-1000K) temperature option	2.03	2.1	2.25	2.4	2.54	2.9
With Cryostat or Oven option	1.6	1.7	1.9	2.15	2.3	2.7
With Vector Option	2.03	2.1	2.25	2.4	2.54	2.9
With Torque (VSM coils in place)	2.32	2.45	2.5	2.7	2.88	3.3
With Torque (VSM Coils removed)	2.4	2.55	2.6	2.8	3.0	3.6

Magnet at ≤18 °C. HF is optional. \*With special pole tips

### Magnetic Field

Range		Resolution		Noise [RMS]	
Gauss	Tesla	Gauss	Tesla	Gauss	Tesla
100 - 200 Gs	10 - 20 mT	0.4 mGs	≤ 40 nT	1 mGs	100 nT
400 Gs	40 mT	1 mGs	100 nT	2 mGs	200 nT
1 kGs	0.1 T	2 mGs	200 nT	3 mGs	300 nT
2 kGs	0.2 T	4 mGs	400 nT	3 mGs	300 nT
4 kGs	0.4 T	10 mGs	1 μT	4 mGs	400 nT
10 kGs	1 T	20 mGs	2 μT	10 mGs	1 μT
20 kGs	2 T	40 mGs	4 μT	10 mGs	1 μT
40 kGs	4 T	0.1 Gs	10 μT	20 mGs	2 μT
Field Accuracy: 1% of reading or ± 0.05% of full scale					
Field control stability: < 0.05% RMS full scale/h					

### Magnetic Moment Noise (Standard configuration, step field mode)

### RMS Noise in nemu or pAm<sup>2</sup>

Conditions	0.1s/pt	10s/pt
Room Temperature		
3.5 mm sample space	125	20
10 mm sample space	250	65
With Single Stage Temperature Option (77K-1000K)	500	120
With Vector Option	1000	300
With Oven or Cryostat Temperature Option	2500	500

### Moment Measurement

Accuracy	± 1% + noise if sample and calibration standard are equal in shape and size.
Repeatability	Stdev 0.5% + noise at constant room temperature Typical: < 0.1% when sample is undisturbed
Stability/Drift	0.05% RMS of full scale
Dynamic Range	25 x10 <sup>-9</sup> to 10 <sup>3</sup> emu / 25 x10 <sup>-12</sup> to 1 Am <sup>2</sup> (with high moment option)
Sample Mass	0 - 10 g (depending on density and magnetization)

### Automatic Rotation - Standard Included

Range	+/- 540° or -100° to 900°
Resolution	0.002°
Accuracy	±0.2°

### Vector Option - For max field specs: See table above

Noise in nemu or pAm <sup>2</sup>	1000 (0.1s/pt), 300 (10s/pt)
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### Automatic Sample Loading option (vertical and horizontal)

Number of cassettes/samples	6 Cassettes, 96 samples total
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### Temperature Control Options

	Single Stage	Cryostat	Oven
Range	77K fixed 100K-1000K Control	4.2K Fixed 8K-420K Control	300K- 1300K
Resolution	0.001K	0.001 K	0.001K
Stability	± 0.5K	± 0.5K	± 0.5K
Inside Diameter	10 mm	9 mm	8 mm
Max Ramp Rate	100K/min	30K/min	100K/min (Up)
Noise 0.1 s/pt	600 nemu, pAm <sup>2</sup>	2.5 μemu, nAm <sup>2</sup>	2.5 μemu, nAm <sup>2</sup>
Noise 10 s/pt	120 nemu /pAm <sup>2</sup>	500 nemu, pAm <sup>2</sup>	500 nemu, pAm <sup>2</sup>
Gas/Liquid requirements	LN2 < 300K N2 Gas 77K-573K Ar 300K-1000K	Liquid Helium and He Gas	Ar Gas
Note	Open flow design, gas cannot be recycled.		

### Torque Option

Range	1-400 dyn-cm
Noise	0.005 dyn cm (5s/pt averaging)

Specifications apply to new systems built after July 1, 2023.  
Specifications subject to change without notice.

### Magneto Resistance Option

	DC MR	AC MR	AC&DC MR nV
Current Ranges	2, 20 mA	2 nA ..100 mA	2 nA .. 100 mA
Current Resolution	0.1 μA	100 fA	100 fA
Voltage Range	60 μV - 9 V	2nV – 1V	AC: 2nV – 1V DC: 100 nV- 100 V
Frequency Range	DC	1 Hz-100 kHz	DC, 1 Hz-100 kHz, DC w 12 Hz polarity reversal
Points per second	Up to 10,000 points/second		
Measurement Time	> 10s, 1 min. typical		
Sample Size (in plane)	< 3.5mm Wide, 8.1 - 9mm Long		
Sample Size (perp.)	8x8 mm - 10.5 x 10.5 mm		
Pin Spacing (in plane)	Current Pins: 7.77 mm, Voltage Pins: 4.978 mm		
Pin Spacing (perp.)	6x6 mm in square configuration		
Temperature Range	77K + 100K - 673K (with EZ1-LNA, in plane option only)		

### Magneto Electric Option

Voltage Range	-50V to + 50V, higher with optional amplifier.
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### Magneto Optic Kerr Effect (MOKE) Option NEW

Available Directions	Polar (perpendicular) and Longitudinal (in Plane)
Measurement Time	10s - 1 minute typical
Switch time VSM MOKE	1 minute
Sample exchange time	~1 minute
Spot Size	~1 x 1.5 mm

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