



Defender 500 Series

Defender 510

Volumetric Primary Flow Standard

Defender 520

Enhanced Volumetric Primary Flow Standard

Defender 530

Standardized and Volumetric Primary Flow Standard

Bios Defender 500 Series

Turn the Defender on. Connect it to your pump. Take measurements. It's that simple. Instantly calibrate your gas flow using Quick Start – there is no preparation involved, no messy soap bubble solutions. Defender's many user-selectable options makes customizing your calibrations easy, giving you exactly what you need in the format you prefer. All you have to do is choose between the 510, the 520 or the 530.

		Defender 510	Defender 520	Defender 530
Model and Flow Ranges		510L, 5-500 ccm 510M, 50-5000 ccm 510H, 300-30,000 ccm	520L, 5-500 ccm 520M, 50-5000 ccm 520H, 300-30,000 ccm	530L, 5-500 ccm 530M, 50-5000 ccm 530H, 300-30,000 ccm
Volumetric Accuracy		1%	1%	1%
Standardized Accuracy		N/A	N/A	1.2%
User selectable Measurement Units	Volumetric	mL/min, L/min, cc/min, cf/min	mL/min, L/min, cc/min, cf/min	mL/min, L/min, cc/min, cf/min
	Standardized	N/A	N/A	smL/min, sL/min, scc/min, scf/min
	Temperature	N/A	°C °F	°C °F
	Pressure	N/A	mmHg, PSI, kPa	mmHg, PSI, kPa
Temperature and Pressure Sensor		No	Yes, in flow stream	Yes, in flow stream
Pressure Accuracy		N/A	± 3.5 mmHg (typical) ± 7.0 mm (max)	± 3.5 mmHg (typical) ± 7.0 mm (max)
Temperature Accuracy		N/A	± 0.8° C (typical) ± 1.3° C (max)	± 0.8° C (typical) ± 1.3° C (max)

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Approximate Time per reading	1-15 seconds
Reading Styles (with averaging function user-selectable from 1 to 100 measurements)	Single (manual), Continuous or Burst
Gas Compatibility	non-corrosive gases, non-condensing, less than 70% humidity
Flow Modes	Pressure or Suction
Measurement Cell Style	Integrated
AC Adapter/Charger	12V DC, > 250ma, 2.5mm center positive
Battery System	6v rechargeable, sealed lead-acid, 6-8 hrs typical operation
Battery Operational Time (5 cycles/min)	3 hours backlight on, 8 hours backlight off
Pressure and Suction Fittings	1/4" ID Hose Barb
Warranty	1 yr (battery 6 mo)
Storage Temperature	0-70° C
Ambient Humidity	0-70%, non-condensing
Operating Pressure (Absolute)	Atmospheric, Maximum 15 PSIG
Display	backlit graphical LCD
Data Port (for PC interface)	Serial - RS-232
Data Cable (for PC interface)	1 meter Defender to PC included
Protective Case	Soft or Pelican case available
Dimensions (H x W x D)	5.5" x 6" x 3" / 140 x 150 x 75 mm
Weight	29 oz / 820 g
RoHS- and CE-compliant	



Mesa's Butler, N.J. manufacturing facility (pictured above) is our NVLAP accredited ISO 17025 laboratory.