

AR4000 Laser Rangefinder

Principles of Operation

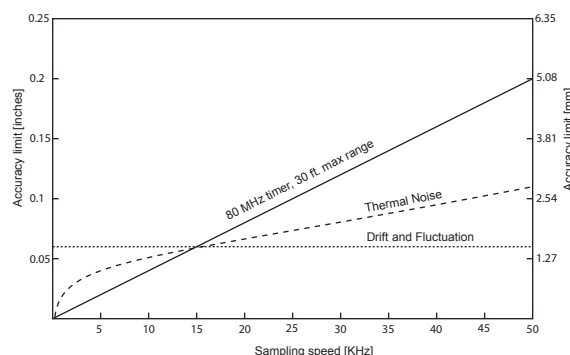
The AR4000 laser rangefinders employ a modulated beam "time-of-flight" principle which measures the time light takes to travel to the target and back. The time delay is directly measured by comparing the signal from the laser with the delayed signal returning from the target. Acuity's modulated beam rangefinders work on a patented range-to-frequency conversion principle, which offers several advantages over conventional phase shift measurement. Our sensors are used in medium-range applications that demand very fast sampling rates and high accuracy. Calibrated distance measurements from the AR4000 sensor are corrected for return signal strength, ambient light levels and temperature.



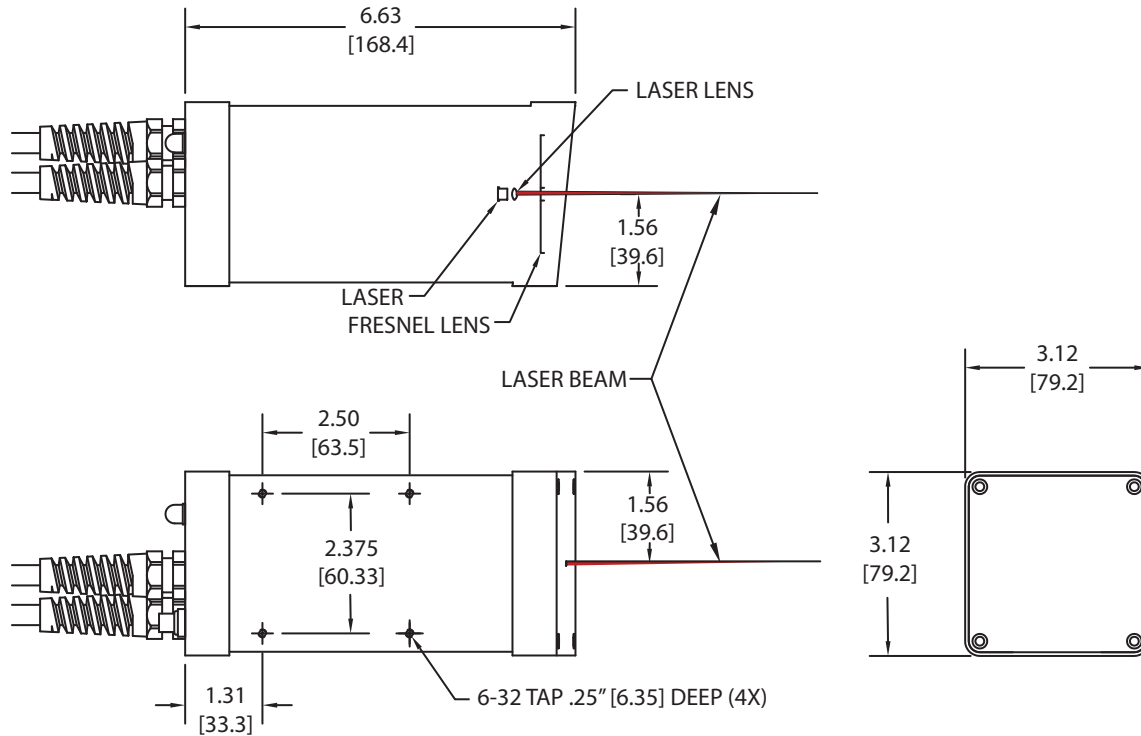
AR4000 Model Specifications units in inches [metric]

AR4000 model	AR4000-LIR	AR4000-RET	AR4000-LV
Span	0 - 650 in. [0 - 16.5m]	18 - 650 in. [0.45 - 16.5m]	0 - 480 in. [0 - 12.2m]
Linearity (standard deviation between 22 calibration points)	0.1 in. [2.5 mm]		0.3 in. [7.5 mm]
Resolution [mm]	0.0125 [0.32]		
Laser power	8 mW infrared, 780 nm Class 3B	0.13 mW infrared, 780 nm Class 1, Eye Safe *Reflective tape required	5 mW visible, 670 nm Class 3A (3R Europe)
Laser spot size [mm]	0.1 [2.5] ; 0.5 mrad divergence		
Sampling rates			
RS232 (standard)	0.2 - 770 Hz or software trigger command, 38.4 Kbaud max		
RS422 (optional)	0.2 - 770 Hz or software trigger command		
4-20 mA (optional)	0.2 - 1000 Hz		
PC104 or PCI interface (optional)	0.2 - 50,000 Hz ; PC interface card uses sensor's 0.5 V peak-to-peak square wave signal		
PCI-200 (optional)	0. - 200,000 Hz ; interface card resides in a PC bus		
Power	sensor requires 5 - 6 volts DC (400 mA at 5 V) heater requires 4.5 - 7 volts DC (4 Amp max)		
Op. Temperature	-17 - 50°C when using installed heater for temperature stability		
Weight, ounces [grams]	22 oz. [625] with cables		
Environmental	NEMA – 4X, IP67. Keep optical windows clean for best performance. Aluminum case. Polycarbonate lens. Compliant with the RoHS directive regarding the reduction of the use of lead and other hazardous substances.		
Cable ft. [m]	6 ft. [1.8] for serial cable (DB9 termination) and power / signal cable; PVC jacket		
	Red – power 5 - 6 VDC (400 mA)	Orange – heater power 4.5 - 7 VDC (4 A)	Yellow – Temperature signal 0-5 V
	Black – Ground	Brown – heater return	Green – Ambient light signal 0-5 V
	Clear – Shield	Violet – Amplitude signal 0-5 V	Blue – Current loop or Pulse width

Rangefinder Accuracy versus Sample Rate



Mechanical Dimensions units in inches [mm]



AR4000 Sensor Options

High power lasers: 20 mW upgrade for LIR model for high sample rates on dark targets and with bandpass filter

Additional outputs: 4-20 mA signal or RS422 differential serial communications

Bandpass filters: for applications near high ambient light or to glowing targets.

Power supply: Universal AC power supply for sensor and heater power.

Specialized optics: Close Focus Optics improve sensitivity up to 16 feet [4.8 m]

High Speed Interface Cards: Increase sampling speed to 200 KHz using interface cards for PCI and PC104 format buses

Display: Encased display with bright alphanumeric characters, serial input.

Cables: Optional cable lengths. Contact us for custom cabling needs.

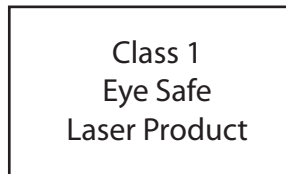
Laser Safety Labels



Label for AR4000-LIR



Label for AR4000-LV



Label for AR4000-RET

Contact Acuity

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