Acuity®

AR3000 distance measurement sensor is Acuity's longest-range model for cranes, process mointoring and fill levels in containers and silos. Its eye-safe laser and robust enclosure design make it a versatile choice for industrial measuring applications. A special version of the AR3000 can be used as a laser altimeter.

AR3000 Distance Measurement Sensor

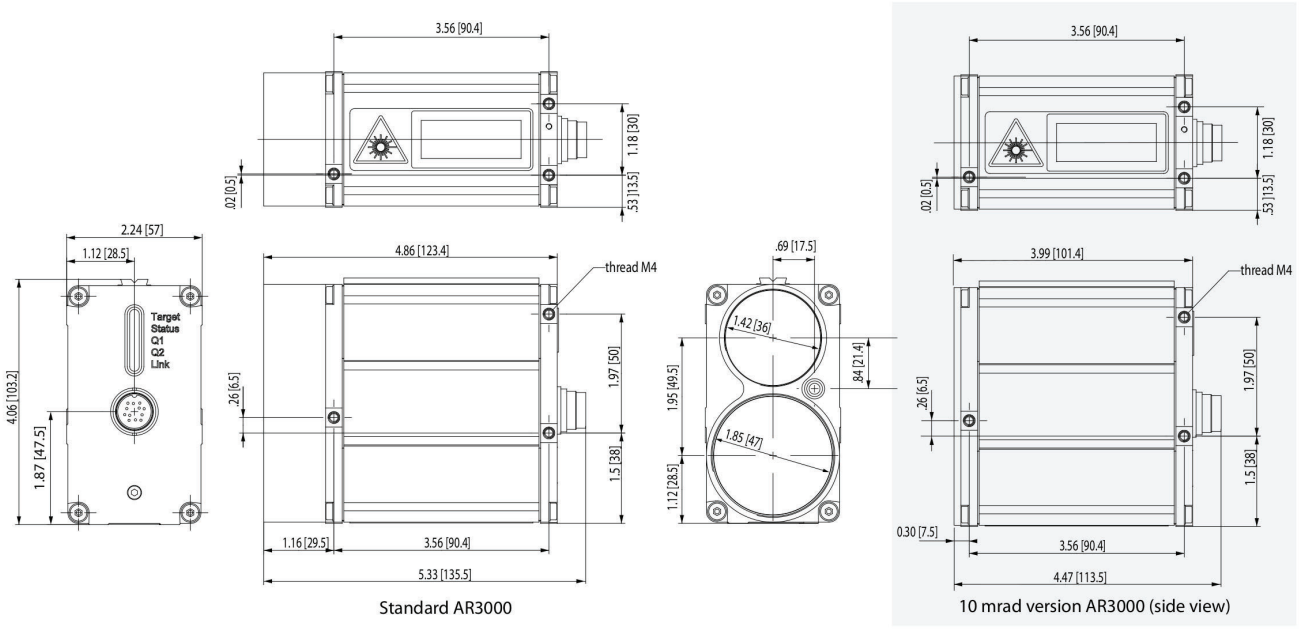
Principles of Operation

The AR3000 sensor is a time-of-flight sensor that measures distance by a rapidly-modulated and collimated laser beam that creates a spot on a target surface. Components of the reflected light signal are collected by a lens and focused onto a photodiode within the sensor unit. The reflected light returns with a shift in phase compared with the reference signal. From the amount of phase shift, a required distance is calculated with good accuracy. The distance is transmitted through serial communications or analog outputs. The device monitors the distance to (and speed of) objects in motion. The standard model has a range of 300 m to natural surfaces with 90% reflectance and to 3 km to special reflectors. A visible sighting laser beam is used to aim the sensor. An AR3000 version with a wider laser divergence measures to 0-50m for closer-range measurements to targets of lower reflectivity.

AR3000 Standard Model Specifications

	Standard AR3000 (2mrad divergence)	**AR3000 (10 mrad divergence)**
		
Range		
to 90% reflectance targets (white)	0.5 - 300 m [20 in.- 980 ft.]	0.5 - 50 m [20 in.- 165 ft.]
to 10% reflectance targets (dark)	8 - 200 m [26 - 650 ft.]	0.5 - 50 m [20 in.- 165 ft.]
to high-gain reflectors *	3 km [1.9 mi.] max	NA
Accuracy	+/- 20 mm [0.79 in.] at 100 Hz +/- 60 mm [2.36 in.] at 2000 Hz	
Resolution	1 mm [0.04 in.]	
Sample rates	2000 Hz maximum, or sample trigger (serial command and analog)	
Weight (less cable)	850 grams [1.9 lbs.]	650 grams [1.4 lbs.]
Laser (measuring)	905 nm, Infrared, Class 1, IEC/EN60825-1:2001	
Laser (aiming)	635 nm, Visible Red, Class 2, Complies with 21 CFR 1040.10 with Laser Notice 50, IEC/EN60825-1:2001 Aiming laser can be disabled	
Laser divergence	1.7 mrad	10 mrad
Power	10 - 30 Volts DC, 170 - 500 mA draw Heater operation: 24 Volts DC, 11.5 W	
Operating temp	-40 to 60 °C [-40 to 140 °F]	
Environmental	NEMA – 4, IP67. Keep lenses clean for best performance. Aluminum case.	
Shock & Vibration	Shock (single): 500g / 1ms, DIN ISO-9022-30-08-1 Shock (continuous): 10g / 6ms / 1000x in all 6 directions, DIN ISO-9022-31-01-1 Vibration: 10 Hz ... 2000 Hz ... 10 Hz / 0.075 mm / 1g / 2 cycles in 3 axes, DIN ISO-9022-36-02-1	
Outputs serial	RS232 full duplex, RS422 (optional output) unterminated and terminated	
analog	4-20 mA, limit switch	
Cable	2 m (6.6 ft.) length, 12 conductor, Binder series 723 flange-mount connector, soldertail wire termination	
	Red – no connection	Pink - unassigned (RS232), Tx+ (RS422)	Yellow – 4-20 mA Out
	Black – Ground	Grey – unassigned (RS232), Tx- (RS422)	Green – trigger input
	White – TxD (RS232), RX+ (RS422)	Red/Blue – supply voltage	Blue – 10-30 Volt DC IN
	Grey/Pink – Ground	Brown – RxD(RS232), RX- (RSS422)	Violet – switching output Q2
* Contact Acuity for these target			

Mechanical Dimensions units in inches [mm]



Standard AR3000

10 mrad version AR3000 (side view)

AR3000 Sensor Options

RS422 Output: Differential serial output in both terminated and unterminated formats. RS422 replaces RS232.

Touch Panel Display: Smart controller that displays distance readings and performs differential measurements using two sensors.

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

Laser Safety Labels

AR3000 label 2 mrad

AR3000 label 10 mrad

Contact Acuity

Schmitt Industries, Inc.
2765 NW Nicolai Street, Portland, Oregon, 97210, USA
Tel: 503-227-5178 Fax: 503-227-5040
www.acuitylaser.com