



M1™ Series 2D LiDAR Sensor for Mid to Long Range Industrial Applications

HIGH ACCURACY + RESOLUTION | 360° COVERAGE | RUGGED IP69K HOUSING | COMPACT FOOTPRINT

Quanergy's M1 Series is a next generation 2D industrial LiDAR sensor designed for mid- to long-range, high precision measurement applications. As part of M-Series, M1 provides up to 200 meters range, depending on the model and delivers 75% more data per second with extremely fine angular resolution down to 0.033°, offering high-density point cloud data to reliably detect and measure objects with pinpoint accuracy.

The M1 Series features a 360° field of view to maximize coverage area for a single sensor. It is compact and lightweight for installation in limited physical spaces and is rated up to IP69K to protect against dust and water ingress for deployment in indoor and outdoor industrial environments.



M1-Core
M1-Plus
M1-Ultra

Key Features



Fine Angular Resolution

Up to 7.5 finer angular resolution and 360° field of view



Environmental Protection

Rated up to IP69K against dust and water ingress



Range Accuracy

Up to 2x higher range and range accuracy to detect objects up to 70m at 10% reflectivity



Compact Design

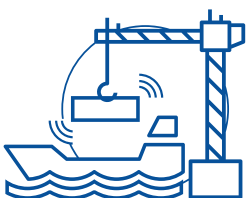
50% smaller compact footprint and 3x lighter than competing sensors



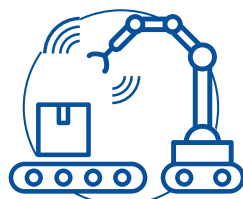
Point Density

Up to 75% more data per second providing high-density point cloud measurement data

Applications



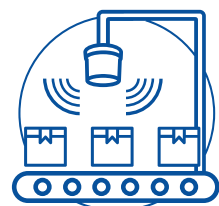
■ Port Automation



■ Measurement and Inspection



■ Equipment to equipment docking



■ Conveyor monitoring

Parameter	M1-Core	M1-Plus	M1-Ultra
Laser Class	Class I (Eye Safe, IEC 60825-1)		
Wavelength	905nm		
Measurement Technique	Time of Flight (TOF)		
Minimum Range	0.5m (80% reflectivity)		
Maximum Range	100m (80% reflectivity) 35m (10% reflectivity)	150m (80% ref.) 53m (10% ref.)	200m (80% ref.) 70m (10% ref.)
Systematic Error	±20mm (1m-10), ±22mm (10-20m), ±25mm (20-30m)		
Statistical Error	6mm (1-10m), 8mm (10-20m), 10mm (20-30m)		
Frame Rate (Update Frequency)	5–20Hz		
Angular Resolution	0.033°–0.132° dependent on frame rate		
Detection Layers	1		
Field of View (FOV)	Horizontal: 360°		
MTBF	50,000 hours		
Ambient Light Immunity	80,000 lux		
Data Outputs	Angle, Distance, Intensity, Time Stamp (synchronized to GPS when available)		
Output Connection	M12 Connector (Ethernet, Power, GPS)		
Returns/Echoes	1 or 3		
Output Rate	53,800 points per second		
Nominal Power	10.5W		
Operating Voltage	24VDC +/-1.2V		
Operating Temperature	-20°C to +60°C (-4°F to +140°F)		
Storage Temperature	-40°C to +105°C (-40°F to +220°F)		
Nominal Weight	1.1kg		
Dimensions	115mm (D) x 111mm (H)		
Shock & Vibration	ETSI EN 300 019-2-5, IEC Class 5M3		
Environmental Protection	IP69K		
Certifications and Compliance	FDA, FCC, CE, RoHS, WEEE, IEC-60079-15, ASTM G154-12A, EN-61326, IEC-61010, ISO 9001:2015, REACH SVHC, Conflict Mineral Rules		
Warranty	2 Years		

*Specifications are subject to change without notice