



GENERATIONS AHEAD IN SONAR & ULTRASONIC TECHNOLOGY

MassaSonic™ M-5000/220 Smart Ultrasonic Sensor

The MassaSonic™ M-5000/220 Smart Ultrasonic Sensor incorporates state-of-the-art ultrasonic and microprocessor technology to provide precision non-contact distance measurement for factory automation or industrial process control. The M-5000/220 stands out over all other systems because of its extraordinary ease of operation, genuinely user-friendly software, versatility in user-controlled outputs, and the ability to be set up *without using a target*.

The sensor transmits narrow beam sound pulses at a user-selected rate (or it can be externally triggered), processes return echoes, and produces several outputs dependent on the position of the target.

Operating from 12 to 28 V DC, the M-5000/220 provides non-contact measurement over a nominal target range of 100 mm to 1 meter (4" to 40"). Outputs include a 0 to 20 mA or 4 to 20 mA DC analog current loop, two independent setpoint switches, and echo status by both an LED indicator and an Echo Status Output switch. The system parameters and outputs are fully user programmable via an RS-485 data link, thereby eliminating the sealing and tampering problems associated with adjustment potentiometers or pushbuttons. Some additional programmable features include: analog output slope, sampling rate, averaging of multiple target distance measurements, loss-of-echo time-out, and setpoint hysteresis.

Massa's extremely user-friendly software works with a PC running under Windows® 8, 7, Vista, and XP SP3 operating systems. The Massa M-5000/220 connects to a serial port of the PC using a USB/RS-485 or RS-232/RS-485 converter. The RS-485 data link allows up to 32 Model M-5000/220 Sensors to be on the same multi-drop communications network.

For users that prefer not to use a PC, the sensors can be programmed at the factory to the customer's exact specifications for true "plug and play" operation.

Other features of the M-5000/220 include: industry standard 30 mm diameter CPVC housing, operation from -20°C to 65°C with built-in temperature compensation, diagnostic and monitoring outputs, and protection from over-voltage, short circuits, and reverse polarity.

For more information visit our web site at www.massa.com.

MASSA PRODUCTS CORPORATION

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781-749-4800 Fax: 781-740-2045
Toll Free in USA: 800-962-7543
sales@massa.com



FEATURES

- Analog & Setpoint Outputs
- Plug & Play Setup
 - No Target Needed
- Software Set Span and Zero
 - No Pots or Pushbuttons
 - Tamperproof Settings
- Easy to Use Setup Software
 - Windows® 8, 7, Vista, and XP SP3
- Built-in Temperature/Sound Speed Compensation
- Up to 32 Sensors on RS-485 Multi-drop Loop

APPLICATIONS

- Automatic Filling Operations
- Mechanical Positioning
- Roll Diameter Measurement
- Web Loop Monitoring
- Liquid Level Control
- Automatic Packaging
- Machine Tool Fluid Level
- Paper/Plastic Film Processing

ORDERING INFORMATION

Massa Model M-5000/220 Sensor

P/N 200504-503

which includes:

Locknuts (Qty. 2)

P/N 7873-1

Mounting Bracket:

P/N 200511-1

OPTIONAL ITEMS

Serial Port Converters:

USB/RS-485: P/N 8448-1

RS-232 (DB9)/RS-485: P/N 7868-1

M-5000/220 Software & Manuals:

Go to: www.massa.com to
download the latest versions

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M-5000/220 SPECIFICATIONS

PERFORMANCE *(Typical at 24 V DC, 22° C, and 50% RH air)*

Ultrasonic Frequency:	220 kHz
System Beam Angle:	8° Conical
Target Detection	
Minimum Distance:	4 inches (100 mm)
Maximum Distance:	40 inches (1 m)
Measurement Resolution:	.01 inches (0.25 mm)
Power Required:	12 to 28 V DC (reverse polarity protected), 80 mA max.
Temperature Compensation:	Internal probe

PROGRAMMABLE OUTPUTS *(Can be Factory Preset)*

Current Loop Output:	0 to 20 mA or 4 to 20 mA DC sourcing, 12-bit resolution, invertible
Span & Zero Distance:	Programmable from 4 to 40 inches
Loss-of-Echo Options:	0, 3.5, 4.0, 20.0, or 20.5 mA
Setpoints and Echo Status:	Protected current sink, open drain N-channel MOSFETs, 28 V DC max., 100 mA max.
Setpoint Distances:	Programmable from 4 to 40 inches
Setpoint Hysteresis:	0% to 89%, in 1% increments

PROGRAMMABLE SAMPLING SETTINGS *(Can be Factory Preset)*

Sampling Rate:	0.1 Hz to 100 Hz in 0.1 Hz increments
Trigger Modes:	Internal, internal with trigger output, external, external with delay, manual
Target Distance Averaging:	Rolling Average: up to 32 samples, or Boxcar Average: up to 1,024 samples
Loss-of-Echo Time-out:	Up to 255 consecutive samples

ADDITIONAL OUTPUTS

Diagnostic LED:	Power, loss of echo, system error
Echo Monitor:	Amplified ultrasonic signal
Communications:	RS-485, transient protected, multi-drop up to 32 sensors

MECHANICAL

Housing Dimensions:	30 mm diameter M-30X1.5 threaded tube, 100 mm long
Housing Material:	CPVC
Transducer Surface:	MassaPlast™102 (custom PPA)
Cable:	10 conductor, PVC jacket, 24 AWG, 10 ft. (3 m), user-extendable to 1,500 ft.

ENVIRONMENTAL

Operating Temperature:	-20°C to 65°C
Storage Temperature:	-40°C to 85°C
Relative Humidity:	0 to 95%, non-condensing

PROGRAMMING REQUIREMENTS

Communications Converter:	USB/RS-485 or RS-232/RS-485 with automatic send data control
Operating System:	Windows® 8, 7, Vista, and XP SP3

All Specifications Subject to Change Without Notice