

# M1000-A

## Assembly Line

### 4,500 kg Carrying Capacity

The Model M1000-A is a robust AGV for assembly line applications offering flexibility, reliability, scalability and a maximum carrying capacity of 4,500kg (10,000 lbs).

#### FEATURES

**Low Profile:** The M1000-A has a low profile, only 400 mm (16") high with the lift retracted.

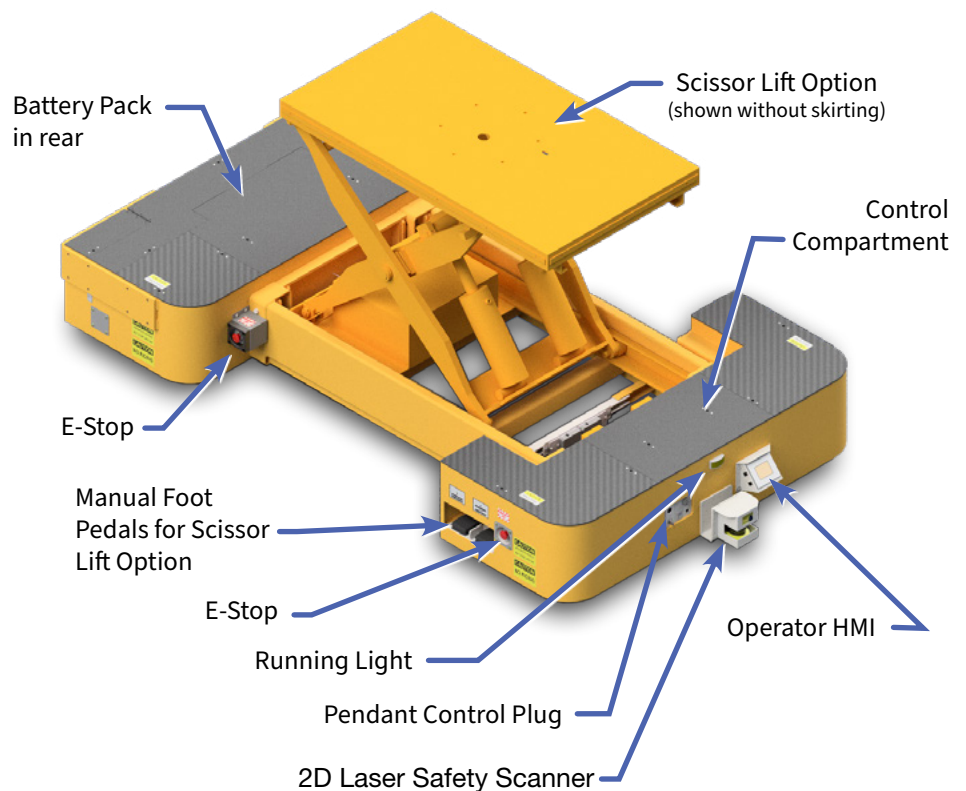
**Safe:** The M1000-A offers a 16-pattern laser to detect obstructions and personnel.

**Affordable:** Many applications can demonstrate Return on Investment in three months or less.

**Simple:** CartTools™ and AGV Tools software provide a user-friendly interface to implement/make changes.

**Industrial:** Steel construction with powder coat and industrial enamel paint.

**Integration:** Can integrate with Plant Control Systems via Wi-Fi communications and our System Automation Manager™ (SAM) software providing traffic control.



#### GUIDANCE

##### Magnetic Tape/Bar Guidance:

AGVs follow a magnetic path using sensors. Magnetic tape is installed on top of the floor – no cutting or drilling into the floor is needed. This cost-effective and flexible guideway installation method allows guideway changes to be made in hours or minutes. In high-traffic areas where magnetic tape could be damaged, a bar magnet strip

can be embedded into the floor in place of the magnetic tape. SmartSteer™ technology allows the AGV to be programmed to intentionally leave the navigation path and perform functions such as crossing an aisle, completing a three-point turn, full reversing and returning to the guideway.

#### FEATURES AND OPTIONS

- Communications Wi-Fi 5
- Automatic Shut Off
- Auto Sleep/Auto-wake
- Automatic Charging
- Wheel Brushes
- Side Swipe Optics
- Safety Skirting on Lift
- Warning Light/Horn
- Fixed Platform
- Turntable Bearing, Manual or Powered
- Dogbone or Rectangular Puck configuration

## Smart Handling AGV Solutions

### General Specifications

Weight / with batteries	1409 kg (3100 lbs), 1818 kg (4000 lbs) with lift option
Dimensions	W: 1715 mm (67.5"), L: 3067 mm (120.75") H: 407 mm (16")
Traction Power	90 kg (200 lbs) constant, 180 kg (400 lbs) starting
Safety – Front/rear	ANSI B56.5 compliant bumper
Speed – Laser Bumper	4.5 MPM (15 FPM) to 49 MPM (160 FPM), and 73 MPM (240 FPM) w/Inertial
	Guidance 6 speeds, 304 MPM (1 FPM) increments
Maximum Load	4500 kg (10,000 lbs) without lift, 3600 kg (8000 lbs) with lift option
	With 2% friction factor trailer wheels
	Capacity reduced by 10% when reversing (SmartSteer only)
Battery Option	AGM/TPPL 186 AH 48 VDC battery pack
Fast Automatic Charge	140 amp (TPPL) charge rate (if equipped)
Manual Charge	Up to 25 amp charge rate

### Environment

Environment – Atmosphere	0 to 40° C, 25% to 95% non-condensing humidity
Dust/Water-proof	No
Floor Specs – Edges/Debris	6 mm (.25") abrupt elevation change maximum, smoothed
Expansion Joints	6 mm (.25") maximum
Grade Rating	0%
Flatness	1% and 6 mm (.25") variation in 1524 mm (5') or less
Friction	0.6 coefficient of friction between wheels and floor, minimum
Floor Conductivity	Static dissipative, less than $3.5 \times 10^7 \Omega$
Radio Communication	Wi-Fi 5, plus security encryption (if equipped)

### Detailed Specifications

Drive Direction – Automatic	Forward only
Duty Cycle	S2-30
Drive Unit – Wheel	350 mm (13.78") dia. x 148 mm (5.8") wide 92 Shore Polyurethane
Drive Type	Fixed drive wheel
Motor	1.4 kW 34 VDC permanent magnet
Steering	Differential steering
Brake	12 Nm, spring actuated (fail-safe)
Caster Wheels	203 mm (8") diameter x 76 mm (3") wide
Guidance – Magnetic Tape/Bar	SmartCart AGV
Steer Angle Sensor	Analog 10 turn potentiometer
Steering Accuracy	+/- 25 mm (1") from physical path
Guide Loss Error	Error generated within 152 mm (6") of path loss
Hunt for Path	Not offered, violates ANSI B56.5
Sensor	16 millisecond data rate, 50 updates per second
SmartSteer Accuracy	+/- 76 mm (3") @ 3000 mm (10')
Stopping Accuracy	13 mm (.5") proximity sensor, 38 mm (1.5") transponder reader @ 9 MPM (30 FPM)
Location Method	Transponder tags, 5 data bytes including checksum
	Virtual Locations via distance initiated functions
Program Capacity	5000 program steps
HMI Display	89 mm (3.5") color touch screen – errors & destinations
Manual Movement	Pendant – via pendant plug receptacle, Rescue dolly
Minimum Path Radius	609 mm (24") – 90° turn, 762 mm (30") – 180° turn
Drive Stalled Detection	Yes
Distance Initiated Functions	Yes – in 25 mm (1") increments
Program Method	PC and Wireless (if equipped)
Obstacle Detection	180°, programmable up to 2.8 meters (3')
Emergency Stops	4, two per side
Wiring	Per NEC ampacity guidelines

\* For any applications greater than these specifications, please contact Engineering.

### CARTTOOLS SOFTWARE

Simple, standardized toolbox of commands that make configuration a snap.



The M1000-A is also available in the "puck" platform style configuration.

