Smart Handling AGV Solutions

Automatic Guided Vehicles

M100-ST
Tunnel/Tugger
885 kg Max Towing Capacity

The Model M100-ST is part of the top-selling family of AGVs, offering ultimate flexibility, reliability and scalability at an affordable price.

FEATURES

Low Profile: Designed to "tunnel" under mobile racks and trailers to tow them from underneath. This keeps the footprint of the AGV with trailer to a minimum.
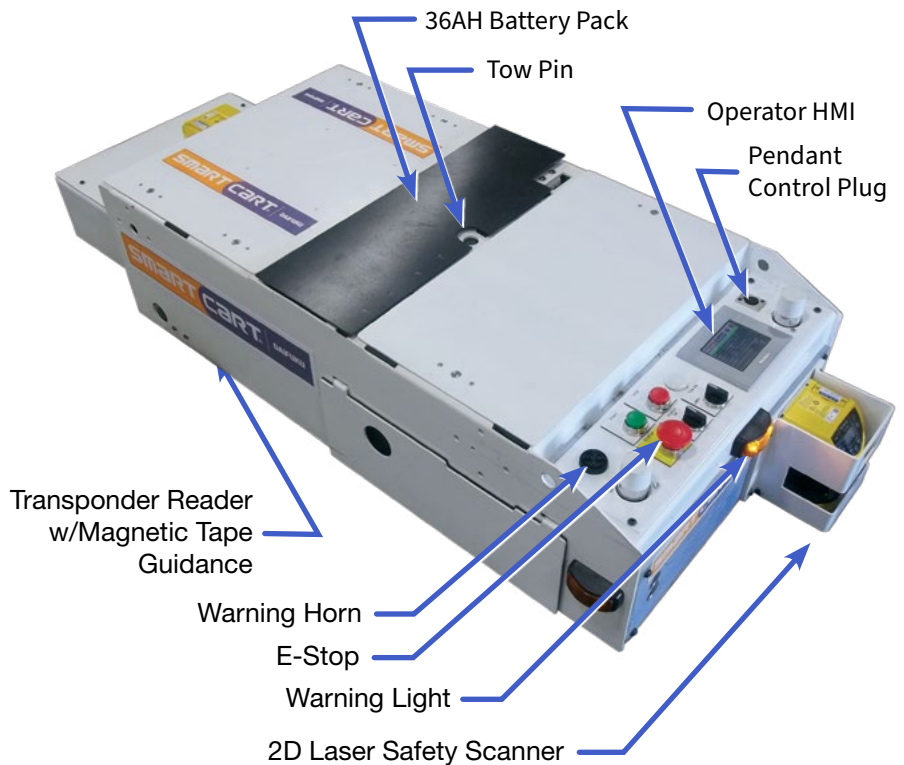
Safe: The M100-ST offers a 16-pattern laser to detect obstructions and personnel.

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.

- 36AH Battery Pack
- Tow Pin
- Operator HMI
- Pendant Control Plug
- Transponder Reader w/Magnetic Tape Guidance
- Warning Horn
- E-Stop
- Warning Light
- 2D Laser Safety Scanner

NAVIGATION AND GUIDANCE OPTIONS

Natural Feature Navigation (NFN): Environmental feature data is collected by on-vehicle sensors and used by the vehicle computer to determine location.

Inertial Navigation: Odometry data and in-floor waypoints are used by the vehicle computer to determine location.

Magnetic Tape/Bar Guidance: Magnetic path is followed using sensors.

NAVIGATION ENHANCEMENTS

Enhanced Navigation: Additional sensors can be added to augment the vehicle's navigation technology.

Co-Navigation Technology: Multiple navigation packages may be used on a vehicle in challenging environments.

FEATURES AND OPTIONS

- Wi-fi Communications 802.11 a/b/g/n/ac
- Automatic Shut Off
- Sleep/Auto-wake
- Automatic Charging
- Wheel Brushes
- Reverse Travel
- Warning Light/Horn
- Guide rollers/rails for tunneling

This product is available with Magnetic Guidance Technology

SMART CART | DAIFUKU

"The Best Magnetic Guidance on the Market."

DAIFUKU

SMART HANDLING AGV SOLUTIONS

General Specifications

Weight / with batteries	122 kg / 147 kg
Dimensions	W: 511 mm L: 991 mm H: 292 mm
Traction Power	18 kg constant, 36+ kg starting
Safety – Front/rear	CE/UKCA rated safety bumper
Speed – Laser Bumper	4.6 to 48.8 MPM - 6 speeds, 0.3 MPM increments
Rear Paddle Bumper	Maximum 9.1 MPM (if equipped)
Rated Trailer	885 kg @ 30.5 MPM
	476 kg @ 48.8 MPM
	With 2% friction factor trailer wheels
	Capacity reduced by 10% when reversing
	1% Incline/Decline 499 kg @ 30.5 MPM
Battery	AGM/TPPL 45AH 24VDC battery pack
Automatic Charge	40 amp charge rate (if equipped)
Manual Charge	Up to 25 amp charge rate, via manual plug

Environment

Environment – Atmosphere	0 to 40° C, 25% to 95% non-condensing humidity
Dust/Water-proof	No
Floor Specs – Edges/Debris	6 mm abrupt elevation change maximum, smoothed
Expansion Joints	6 mm maximum
Grade Rating	0%
Flatness	1% and 6 mm variation in 127 mm 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	IEEE 802.11a/b/g/n/ac, plus security encryption (if equipped)

Detailed Specifications

Available Wheel Loading	Front add'l – 91 kg, Rear add'l – 136 kg each
	Weight added to module is subtracted from rated trailer
Drive Direction – Automatic	Forward and Reverse (if equipped)
Duty Cycle	100% @ 9 kg drawbar (454 kg)
Drive Unit – Wheel	Vulkolan 150 mm diameter x 50 mm wide
Drive Type	Gear driven steerable turntable
Motor	130 watts 24VDC permanent magnet
Steering	24 VDC motor
Brake	3Nm, spring actuated (fail-safe)
Caster Wheels	Solid elastomer 127 mm diameter x 51 mm wide
Guidance – Magnetic	Tape/Bar SmartCart AGV
Steer Angle Sensor	Analog 10 turn potentiometer
Steering Accuracy	+/- 25 mm from physical path
Guide Loss Error	Error generated within 152 mm of path loss
Hunt for Path	Not offered
Sensor	16 millisecond data rate, 50 updates per second
SmartSteer Accuracy	+/- 76 mm @ 3m
Stopping Accuracy	13 mm proximity sensor, 38 mm transponder reader @ 9.1 mpm
Location Method	Transponder tags, 5 data bytes including checksum
	Virtual Locations via distance-initiated functions
Program Capacity	5000 program steps
Navigation	Daifuku AGV - Natural Feature Navigation and Inertial
Steering Angle Encoder	Yes
Steering/Stopping Accuracy	+/- 13 mm from physical path
HMI Display	89 mm color touch screen – errors & destinations
Manual Movement	Pendant – via pendant plug receptacle, Rescue dolly
Minimum Path Radius	610 mm – 90° turn, 1219 mm – 180° turn
Drive Stalled Detection	Yes
Distance Initiated Functions	Yes – in 25 mm increments
Program Method	PC and Wireless (if equipped)
Program Capacity	5000 program steps
Obstacle Detection	Front and rear (if equipped) programmable up to 2.8 meters
Emergency Stop	Front
Wiring	Per UKCA / CE ampacity guidelines

CARTTOOLS SOFTWARE

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

Pendant Control – When manual movement is required, it's as simple as driving the AGV where it needs to go.

Reverse Magnetic Tape Guidance – By just adding another guidance sensor and laser bumper, the M100-TT can act as a shuttle cart.

SmartSteer – CartTools directing the AGV to intentionally leave the magnetic tape path. It allows maneuvers like pivot turns and ignoring floor problems when in full automatic operation.

System Automation Manager – (SAM) is a robust, easily-configured control system option for Automatic Guided Vehicles (AGVs) and SmartCart® Automatic Guided Carts (AGCs). SAM is the result of more than 60 years of experience engineering, manufacturing and installing more than 20,000 vehicles. SAM's framework can be easily customized to meet our customers' individual needs and improve the efficiency of our AGV and AGC systems.

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Automation that Inspires

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