

Agile Automation for Dynamic EMS Lines: The SFY03 Magnetic Navigation AGV

Zero-code configuration. Instant route modification. Designed for the changing factory floor.



The Reality of the Modern EMS Factory

SMT production is high-mix and low-volume. Line layouts change frequently to accommodate new products or optimize workflow.

- ⊗ Traditional AGVs often become bottlenecks during changeovers:
 - ⊗ - Require external laptops and proprietary software.
 - ⊗ - Require complex coding or IT department support.
 - ⊗ - Significant downtime to re-map the facility.

“Is it hard to change the route when I move my SMT line?”

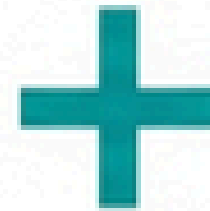
With the SFY03, the answer is No.

Flexibility by Design: The 'Tape and Touch' Workflow

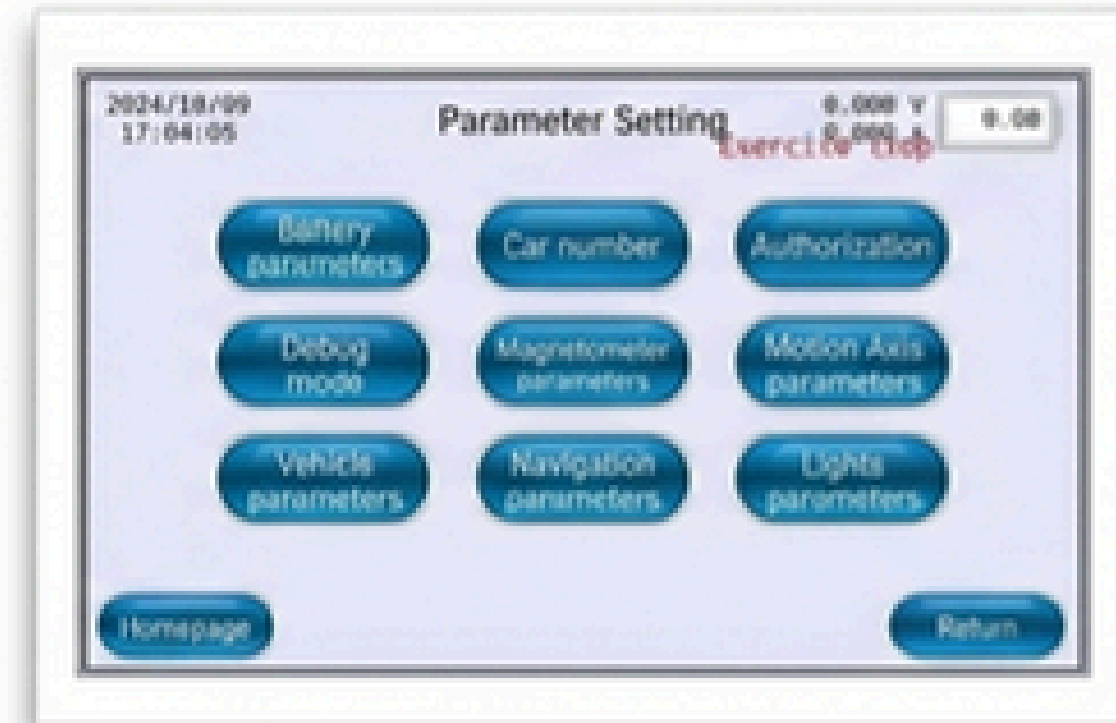
Physical Agility



Peel & Stick Navigation



Digital Autonomy

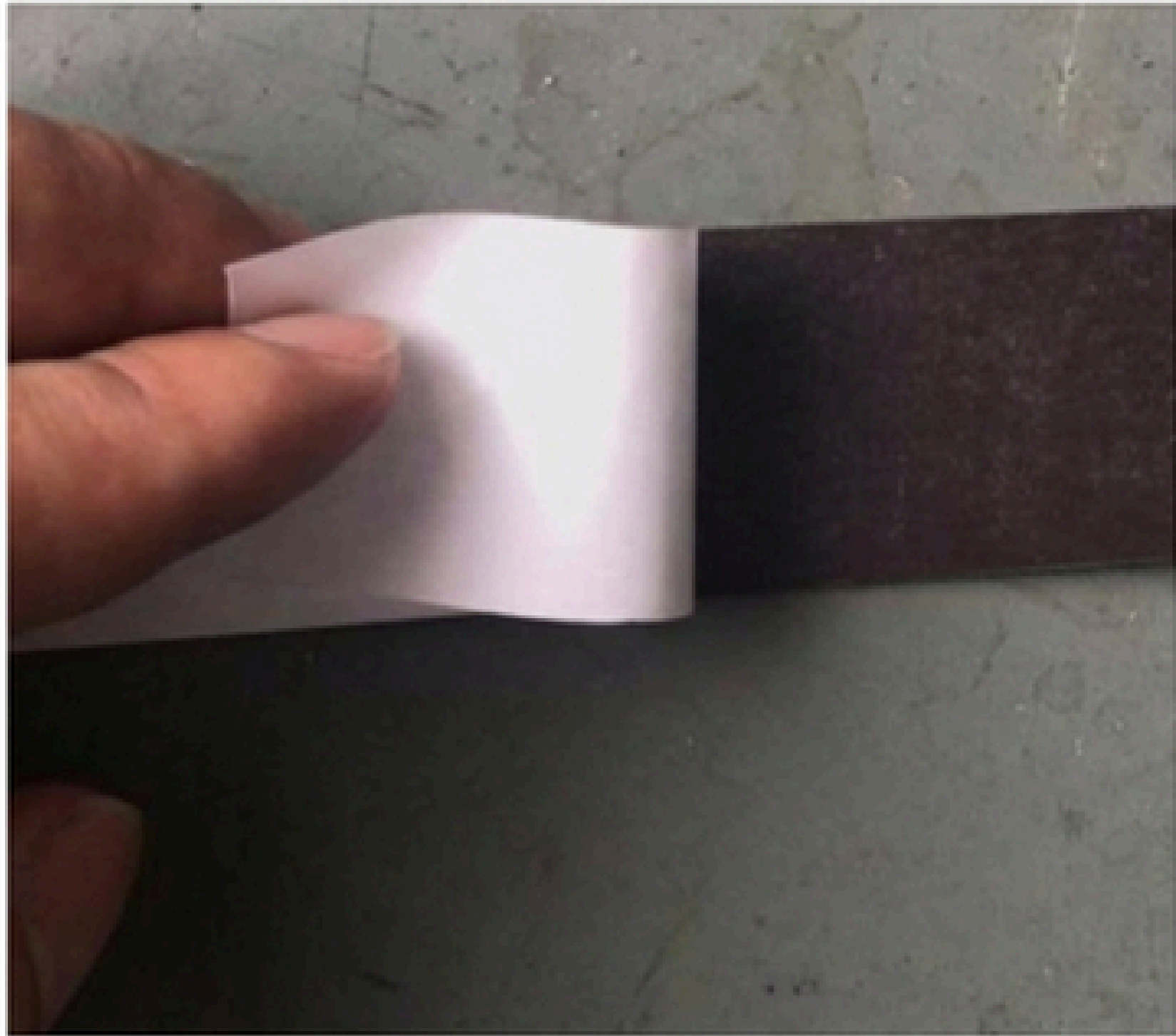


Onboard Logic Editing

The SFY03 is a **self-contained system**. It does not **require connection** to an external server or a laptop to redefine its job.

You control the path and the logic directly at the line side.

Step 1: Define the Physical Path



Magnetic Tape Navigation

- ✓ **Material:** 30mm or 50mm Magnetic Tape (Default 30mm N-pole)
- ✓ **Installation:** Simply peel the backing and stick to the factory floor
- ✓ **Precision:** Navigation accuracy of $\pm 10\text{mm}$
- ✓ **Flexibility:** Create curves (**1M navigation turn radius**) or straight paths instantly. Line moves? **Peel up and relay.**

Product Reference



Step 2: Define Your Stations



Stop Line Tag



Intermediate Station Tag

- **The Hardware:** 13.56MHz High-speed RFID card reader located under the chassis.
- **The Process:** Place an RFID tag/card on the magnetic strip where you want the AGV to perform an action (Stop, Slow Down, Turn).
- **No Infrastructure:** No wires to cut into the floor. The tag defines the unique 'Site Number' for the robot.



Step 3: Access the Logic Onboard



Zero-Code Interface

4.3-inch Industrial Touch Screen

Single-machine version: All route editing, site definition, and parameter adjustments are handled here.

Key Menu Options: Parameter Setting, Route Editor, Device Monitoring.

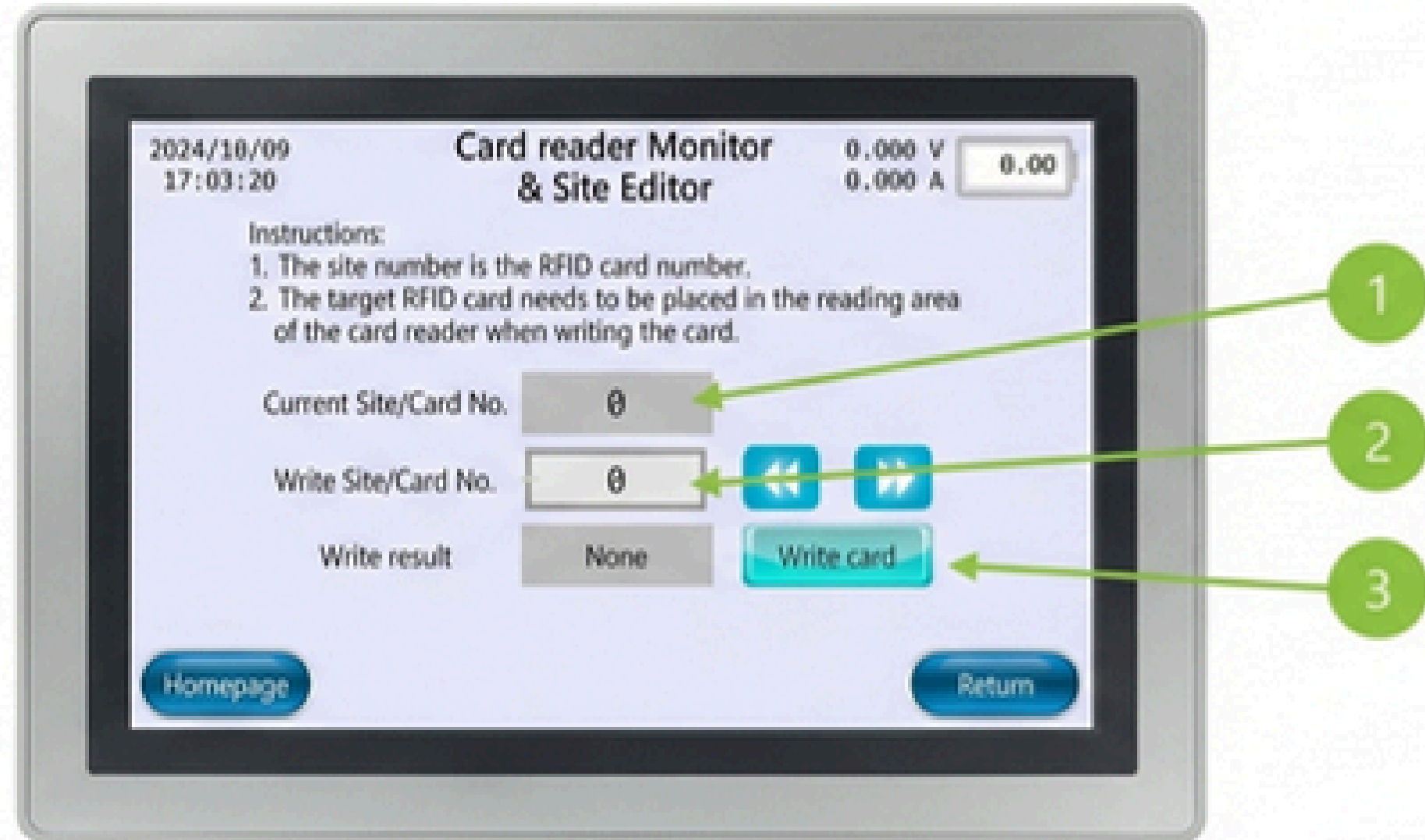
Forget the interface cable.
Everything you need is on the front panel.

Teaching the AGV a New Station

Workflow:

1. Push the AGV manually over the new RFID tag.
2. The screen displays the detected card.
3. Assign your Station ID and press Write.

Result: The floor tag is now permanently identified as Station 11.



1. Read the tag on the floor.
2. Input new Station ID (e.g., 11).
3. Press Write to save.

Building the Workflow Logic

2024/10/09 17:07:55 Route Station Operation Editor - Forward 0.000 V 0.00 0.000 A Exercise

Opcode-Forward	D0	D1	D2	D3	Opcode-Forward	D0	D1	D2	D3
0	Null operation	0	0	0	5	Null operation	0	0	0
1	Null operation	0	0	0	6	Null operation	0	0	0
2	Null operation	0	0	0	7	Null operation	0	0	0
3	Null operation	0	0	0	8	Null operation	0	0	0
4	Null operation	0	0	0	9	Null operation	0	0	0

Operation Function Edit-Forward

Operation	Value
Null operation	0
D0	0
D1	0
D2	0
D3	0

Details

Cancel Confirm

Logic Flow: For every Station (Site), assign a sequence of operations.

The 'Code' is a Menu:

- Select 'Sports parking' to stop.
- Select 'Switch direction' to reverse.
- Select 'Wait' to pause.

Capacity: Store >200 unique routes.

Example: Station 11 -> Stop -> Wait 3s -> Switch to Backward.

Granular Control Without Complexity



Precise Parameter Control:

- **Action Sequence:** The AGV executes operations **D0 through D3** in sequence when it reads a card.
- **Directional Logic:** Define unique behaviors for 'Forward' vs. 'Backward' travel at the exact same station.
- **Speed Control:** Set specific speeds for sensitive areas (e.g., 0.3 m/s near reflow ovens).

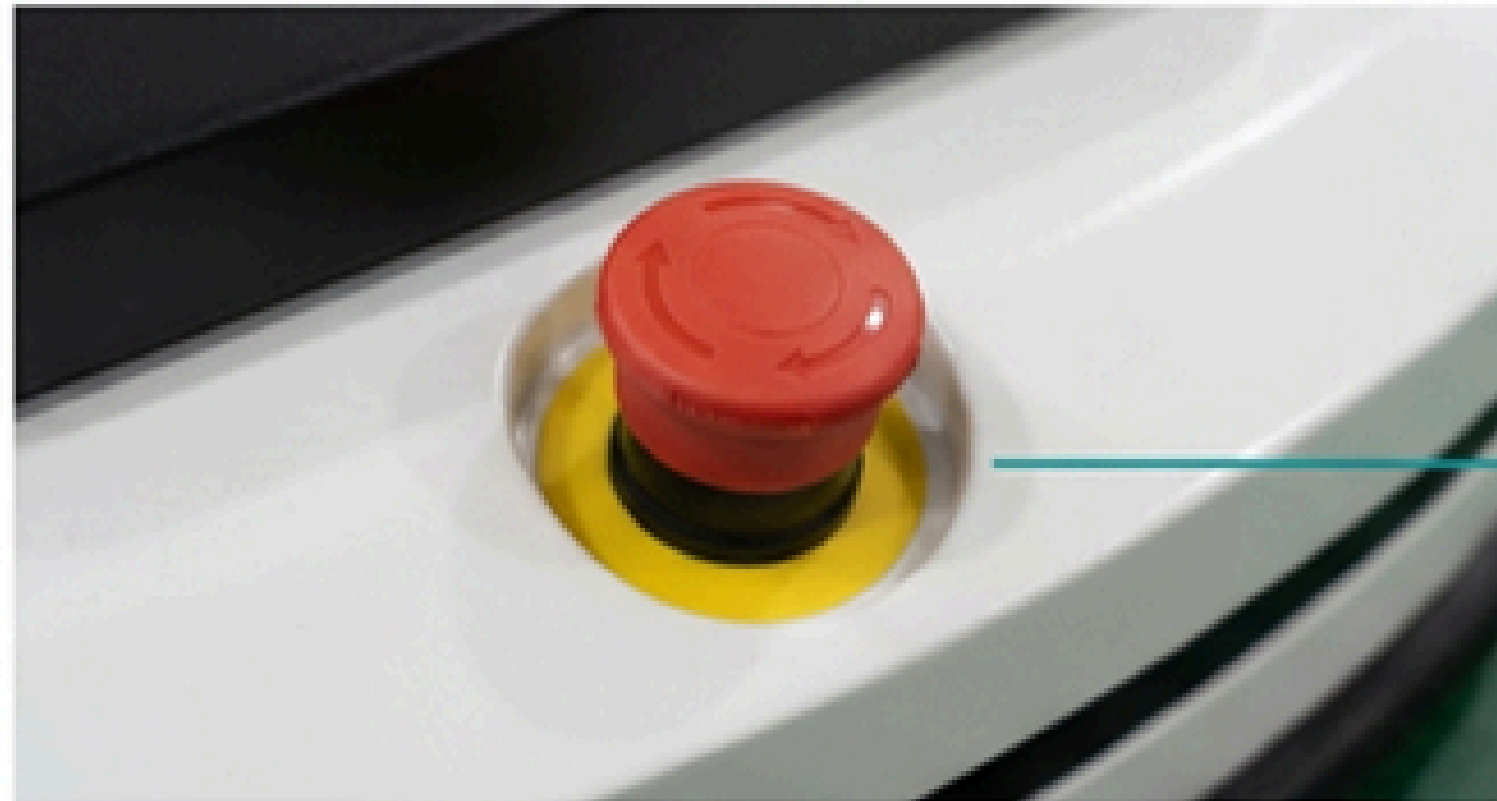
User Benefit:

Complex behaviors are built by simply stacking simple commands.

Compact Hardware for Narrow SMT Aisles



- **Turning:** **Zero-radius turning** (Rotates in situ)
- **Load Capacity:** **50KG** Rated Load (Backpack mode) — ideal for magazines, component reels, and PCBs.
- **Navigation Speed:** 0.7 m/s (Max 0.8 m/s)
- **Relevance:** Fits easily between tight placement machine rows where forklifts cannot go.



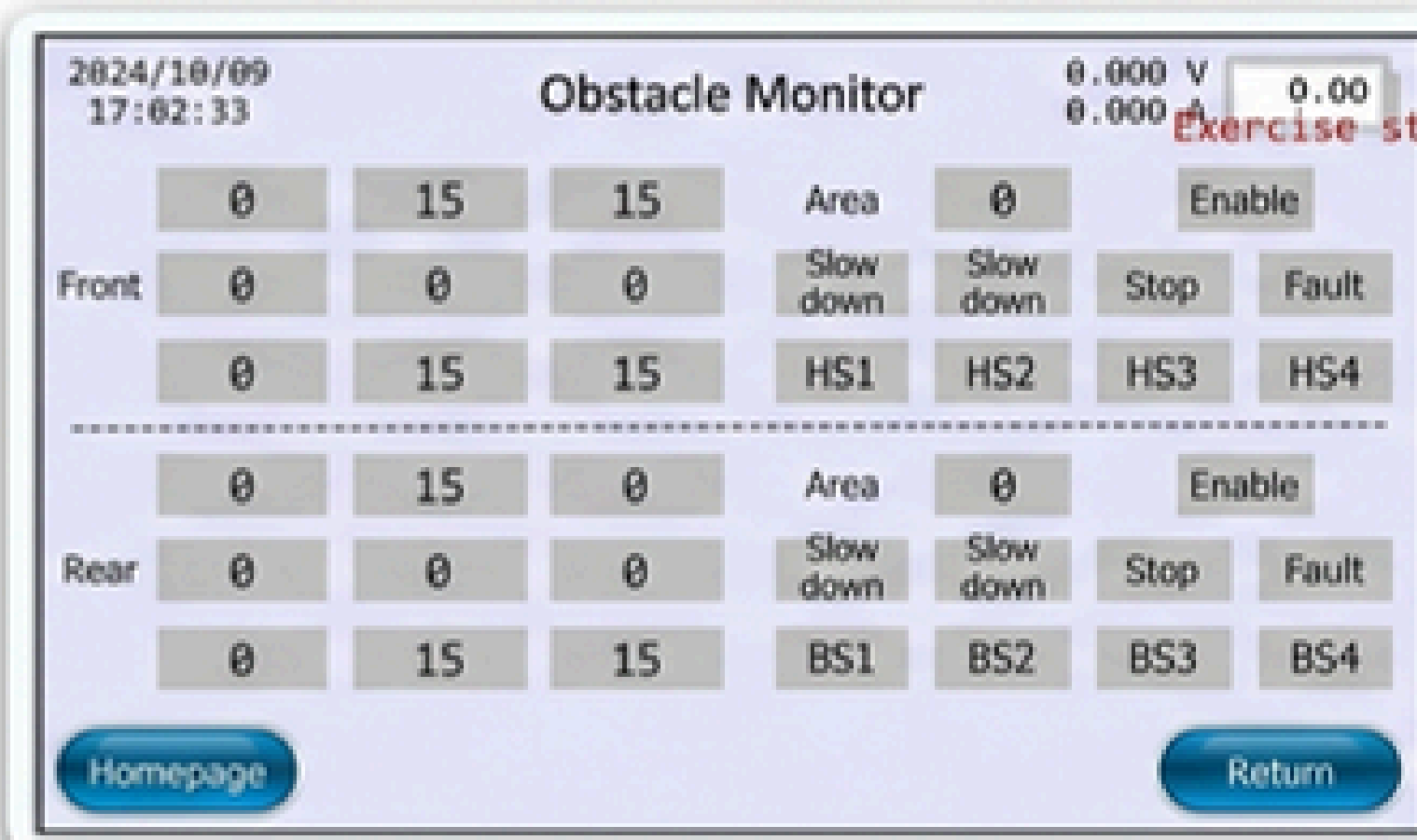
Safety in Motion

Laser Avoidance: Front & Rear obstacle sensors with configurable detection zones (0-15 area values).

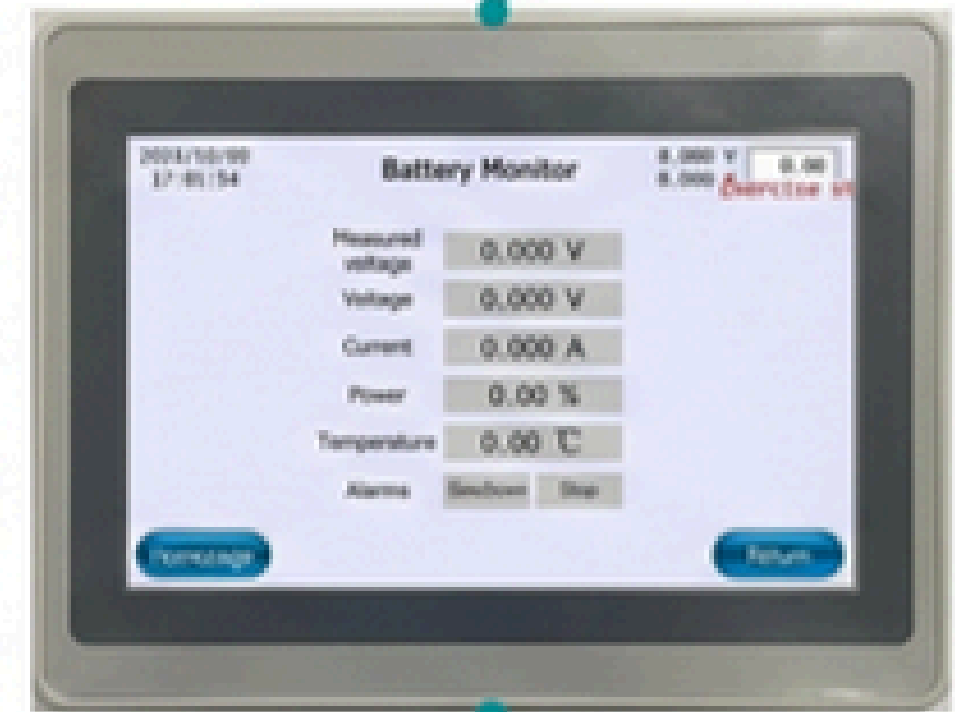
Dynamic Response: 'Slow down' and 'Stop' zones are fully adjustable via the touchscreen.

Physical Stop: Prominent Emergency Stop knob on the chassis.

Audio/Visual: Full-color LED status lights and voice prompts for 'Walking', 'Station Arrival', and 'Alarms'.



Power Management for Continuous Operation



- **Battery:** 24V / 20AH Lithium (Optional)
- **Runtime:** 8-10 hours under general working conditions
- **Swap Strategy:** "Independent battery warehouse" design allows for quick manual swapping. **Zero charging downtime on the line.**
- **Monitoring:** Real-time voltage and percentage display on HMI.

Reconfiguration: The Old Way vs. The SFY03

Traditional AGV	Southern Machinery SFY03
<ul style="list-style-type: none">✗ Requires Wi-Fi / Server	<ul style="list-style-type: none">✓ Autonomous Logic
<ul style="list-style-type: none">✗ Requires Laptop & Coding	<ul style="list-style-type: none">✓ Onboard Touchscreen Editing
<ul style="list-style-type: none">✗ Fixed Reflector Posts	<ul style="list-style-type: none">✓ Magnetic Tape (Peel & Stick)
<ul style="list-style-type: none">✗ High IT Dependency	<ul style="list-style-type: none">✓ Technician Controlled

**Change your line in the morning. Re-route your AGV by lunch.
No IT ticket required.**



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Established

Founded 2011

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Assembly Solutions

Integrators for Panasonic,
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Support

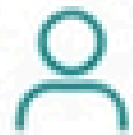
Global service capability

We understand the
specific workflow of PCB
assembly.



Ready to Optimize Your Internal Logistics?

Contact us for a technical consultation or a **demo of the Route Editor**.



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