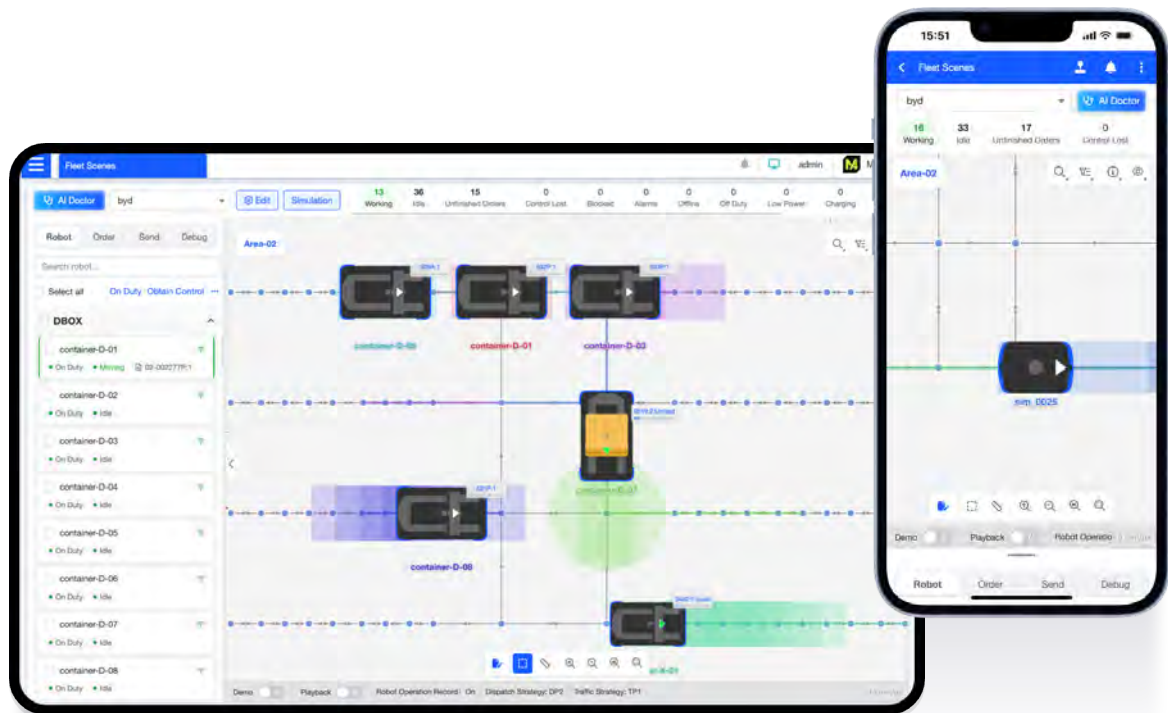


QuickFleet

M4 Robot Fleet Management System



What is a High-quality Dispatch System?

✓ **Business Insight**

✓ **Advanced Architecture**

✓ **Full Feature**

✓ **High Extensibility**

✓ **Advanced Algorithms**

✓ **Ease of Use**

✓ **Intelligent Simulation**

01

Business Insight

For a product-level dispatch system, the priority is not to emphasize a single performance metric, but to reliably deliver strong results across varied scenarios. Since business requirements vary widely, no single algorithm or strategy can address all challenges. In real projects, beyond simple point-to-point pickup and delivery, numerous complex demands arise. The core advantage of M4 QuickFleet lies in the M4 architecture, which adapts to a wide range of long-tail requirements and supports both warehousing and distribution scenarios. Beyond its core functions, it has been optimized for many specific scenarios and remains adaptive, requiring minimal user configuration. For needs beyond standard product functions, scripting extensions are available.

M4 QuickFleet is SEER's third-generation dispatch system, built on over 8 years of project experience and more than 1,000 successful implementations. It supports comprehensive applications across warehousing and distribution, covering nearly all industrial sectors. It is compatible with various robot models based on SEER controllers as well as some third-party models, and supports special application scenarios such as environments without Wi-Fi. It can handle different types of goods (containers), including pallets, racks, and bins.

Our team brings an average of over four years of industry experience. Backed by significant R&D investment, a new version is released every week. Each release undergoes rigorous testing, including more than 4,000 automated test cases and 24/7 endurance testing across multiple scenarios. The system is certified at CMMI Level 3 and has successfully passed penetration testing.

02

Advanced Architecture

Supports multi-zone and multi-type robots; a single system can handle diverse scenarios with different configurations, scaling to over 1 million bins and 100,000 work points with 60% lower memory usage.

Supports dynamic dispatch, takeover (e.g., nearest order), reallocation, and more flexible dynamic order batching, and order details (e.g., priority, destination) can be updated during execution. The system has high availability that can handle over 1,000 orders/min and more than 10,000 orders/day.

Auto-recovery after failures without resending orders; supports real-time map updates during operation.

Deep integration with M4 scripting and Falcon Task ensures smooth handling of complex workflows without multi-system switching.

Compatible with Windows and Linux. Supports deployment on both public and private clouds, and works with major databases like MySQL, SQL Server, Oracle, and TiDB.

03

Full Feature

An intuitive interface with full-featured modules for robot status, maps, tasks, and device monitoring. It supports online scene configuration and map editing, and is accessible via B/S, C/S, and mobile app. It also provides a multi-language interface (e.g., Chinese, English) with editable text.

Supports industrial protocols such as PLC, Modbus, OPC, and S7. It integrates with common devices such as doors (open-on-approach), elevators, lifts, weighers, and visual servo systems, and supports various loading/unloading methods, including roller lines and other devices.

It features operation recording and playback, real-time heatmaps, system-wide one-click emergency stop, as well as robot and order statistics. The system is equipped with a unified fault-handling mechanism, including notifications, retries, and manual resolution. It provides a full HTTP API for querying and modifying the system, and support for callback. It also enables human-robot collaborative transport.

It offers user management, access control, third-party login, and data export/backup capabilities.



Advanced Algorithms

The system features multiple built-in algorithms, such as dispatching, route planning, and traffic control, which can be flexibly switched. Proprietary MAPF algorithms significantly improve planning intelligence and reduce deadlocks. On a non-uniform, partially connected grid map, a single zone can dispatch over 100 robots of different types or more than 300 robots of the same type, with an average movement distance 30% shorter than the previous generation.

The system comprehensively supports the planning and prediction of different models in terms of turning speed, forward/reverse movement, and dynamic obstacle-avoidance planning. It can accurately control cargo orientation and support dispatching in dense storage environments.

Proprietary collision-detection and Safe Swap traffic-control algorithms handle complex scenarios such as full/empty loads, oversized cargo, narrow paths, rotational collisions, multi-robot collisions, close queuing, and head-on encounters. The system provides a resource-request mechanism between robots and the system, as well as between the system and third-party platforms, enabling optimized fork recognition and seamless integration with an external dispatch system.

High Extensibility

Powered by the robust M4 scripting engine, the system supports Python and JavaScript for custom feature development—no core code changes required, and most updates take effect without reboot.

Supports the customization of dispatch strategies (e.g., dispatch sequence), parking strategies, charging strategies, storage management, and alarm notifications to adapt to special business scenarios, such as different charging strategies for day and night shifts.

Easily extendable to integrate third-party devices (e.g., special doors, elevators) via scripting.

Supports customizable HTTP and WebSocket interfaces for seamless integration with ERP systems, dashboards, and other external platforms.

Ease of Use

Reduces configuration by 80% compared to the previous generation; most settings have smart defaults for out-of-the-box use.

Maps or dispatch elements (e.g., mutex area) require no extra configuration. The system can automatically detect dead-end streets, main paths, and intersections, enabling faster deployment.

Supports batch editing of robots and maps, quick route disabling, and other quick operations, greatly improving efficiency. It supports group-based customization (e.g., point coordinates) for multi-robot consistency.

Features a modern interface with an intuitive layout, adapted to cell phones and tablets; supports mouse/touch operation and in-field maps/configurations editing directly on phones or tablets.

One-click import/export makes debugging and analysis more efficient.

Intelligent Simulation

No extra hardware required—standard computers can easily simulate hundreds of robots.

One-click simulation: once a scenario is set up, the simulation can be completed in just one minute, with initial positions randomly assigned by the system.

Powerful random ordering capability, supporting orders by group, business line, and other modes. The system supports exporting and replaying orders and can simulate real loads.

Highly realistic simulation: the system communicates with simulated robots using the same actual APIs. The robot kinematics (e.g., max/turning speed) can be configured; it supports simulation of the time consumption of different actions, power consumption, emergency stops, alarms, motion faults, collision detection, and collision detection of loaded cargo.

Supports device simulation, such as doors and elevators.

Truth no Dare

A dispatch system is inherently complex. Its complexity is shaped not only by the vendor's development capabilities, but also by the diversity of customer requirements, the degree of demand, and—being a high-tech product—the maturity of the underlying technologies.

In discussions with users, the most common expectation is “intelligence”. However, the meaning of “intelligence” is broad, and sometimes even contradictory. For some users, “intelligence” means powerful functionality: their projects are complex, with multiple robot types and diverse workflows, and they expect the system to handle all kinds of transport tasks.

For others, “intelligence” means ease of use: minimal setup, minimal daily maintenance, ideally a system that can run robots 24/7 with little to no human intervention. “Powerful functionality” and “ease of use” are often conflicting priorities. Similarly, achieving the “optimal” result usually requires higher computational effort, latency, and expensive hardware—contradicting low-cost expectations. And above all, these demands often conflict with “stability.” No product is ever 100% stable; the more features and complexity a system carries, the harder it is to maintain stability. This isn't merely a matter of capability, but about the current stage of technological development—it is not a matter of “the bolder the ambition, the greater the output.”

For non-expert users, it is difficult to clearly define their needs for a dispatch system at the start of a project. During product selection and related decisions (such as business process planning and on-site traffic flow), misunderstandings can easily arise, leading to losses later. A common mistake is to oversimplify the problem or to overestimate the intelligence of robots and dispatch systems. Just as one must spend time learning to use a computer or office software, implementing robots and dispatch systems also requires a thorough understanding of the product. Otherwise, whether expectations are overly optimistic or overly pessimistic, users ultimately need to bear the consequences.

The reality is: today's robots and dispatch systems are neither as “intelligent” as some imagine, nor as unreliable as others fear. By balancing requirements with product capabilities, in most scenarios, robots and dispatch systems can meet customer needs and deliver a superior ROI compared with other approaches.

