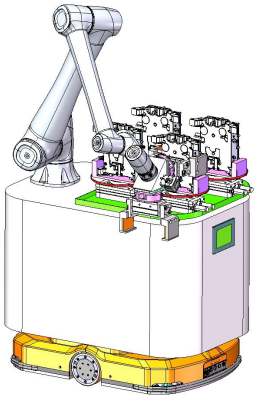
Mobile Manipulator for CNC Machine Tending

EVST-Alpha · EVST-Beta · EVST-Gamma Series — specification sheet



The EVST mobile manipulator is a six-axis collaborative arm on an autonomous mobile base, supplied by EVS TECH CO., LTD of Chengdu, China. It drives between CNC machines, docks, and loads and unloads parts from a fixture it carries. It suits lines where machining cycles leave one robot time to serve several machines, on a flat floor with Wi-Fi.

A mobile manipulator is also called a mobile cobot, an AMR with a robot arm, or a compound robot. Unlike a cobot on a cart that an operator pushes from machine to machine, it navigates by laser SLAM and re-locates its arm with vision at every stop.

Three series on one platform

Series	Typical job and configuration
EVST-Alpha Series · Standard	Flexible CNC tending. A 20 kg / 1700 mm collaborative arm with a four-position storage fixture (contoured nests plus a drip tray) on the base.
EVST-Beta Series · Precision	Handling of chips and other precision components. End-effector force control for compliant pick-and-place; quick changeovers for high-mix, low-volume work.
EVST-Gamma Series · Heavy-duty	Full-bin transfer and large-part tending, with chassis payload up to 1000 kg. An onboard powered roller conveyor holds two bins and transfers them to and from buffer stations.

Arm, chassis payload, base dimensions and battery capacity can be configured per project. Separate figures for the EVST-Beta Series are provided per project.

Specifications (standard configuration)

Mobile base		Arm, power and environment	
Base dimensions (L × W × H)	1150 × 800 × 760 mm (standard)	**Arm**	6-axis collaborative arm (standard configuration)
Lift-type base	1400 × 800 × 830 mm	**Arm payload / reach**	20 kg / 1700 mm
Chassis payload	400 kg; up to 1000 kg (EVST-Gamma)	**Arm repeatability**	±0.1 mm
Drive	Two-wheel differential	**Vision positioning**	±0.25 mm (wide-angle) → down to ±0.1 mm (precision)
Navigation	Laser SLAM; optional QR code / reflector	**Battery**	48 V / 80 Ah LiFePO4 (some models 48 V / 60 Ah)
Navigation accuracy	±10 mm, ±1°	**Runtime / charging**	6 h rated; ≤ 2 h (5–100%), automatic dock or manual
Speed	≤ 1.5 m/s	**Operating temperature**	0–40 °C, indoor
Turning diameter	1220 mm	**Humidity**	10–90%, non-condensing
Minimum aisle width	950 mm	**Safety**	Front and rear laser scanners (360°), contact bumpers, emergency stops on four sides
Gradeability	≤ 3°	**Interfaces**	Wi-Fi; RS485 / CAN / I/O; MES / WMS; open API / SDK
Traversable gap / step	≤ 30 mm / ≤ 5 mm	**Machines per robot**	3–5 (subject to cycle-time calculation)
Base structure	Integrated frame, reinforced supports, modified suspension	**Tending cycle**	Cycles from seconds to minutes (calculated for the actual part)
Tires and grounding	Anti-slip tires; underbody antistatic chain	**Changeover**	Pneumatic tool changer / quick-change grippers
Obstacle detection	Real-time obstacle detection; robot collision detection	**Vision functions**	Calibration, positioning, presence detection, measurement (diameter, width, grayscale area); OCR, barcode and QR code recognition
User interface	Touchscreen, audible and visual alerts, marker lights	**Machine signals**	I/O: material request / clamp / cycle complete

Accuracy chain: ±10 mm → ±0.25 mm → ±0.1 mm

Navigation brings the base to within **±10 mm and ±1°** of its docking point. A machine fixture needs far less error, so the robot locates itself again at every stop:

Stage	What it does	Positioning
0 · Navigation (laser SLAM)	Parks the base at the docking point	±10 mm, ±1°
1 · Wide-angle camera	Finds the target and sets a global reference for this stop	±0.25 mm
2 · Precision vision	Measures in a small field of view and corrects the arm path	down to ±0.1 mm
3 · Mechanical compliance	A floating coupling (XYZ translation plus angular compensation) and contoured gripper fingers absorb the remaining error as the part seats on locating pins	absorbs remaining error

Three accuracy figures are often confused in supplier comparisons: the navigation accuracy of the base (here ±10 mm and ±1°), the positioning of the arm after vision correction (down to ±0.1 mm), and the repeatability of the arm itself (±0.1 mm). When a supplier quotes a single accuracy number, ask which of the three it is and how it was measured at the machine fixture.

Site and network requirements

- **Floor:** unevenness under 3 mm per m²; gradient under 0.05 (under 0.01 at precision docking points); steps under 5 mm; gaps under 8 mm; static-dissipative surface; kept free of water, oil and debris.
- **Air:** indoor, 0–40 °C, no flammable, explosive or corrosive gases and no heavy dust.
- **Wi-Fi:** IEEE 802.11 a/b/g/n, 2.4 / 5 GHz, ≥ 100 Mbit/s, at least −60 dBm along travel routes.
- **Power:** a supply point and space for the automatic charging dock.
- **Machines:** automatic doors and air connections, or a retrofit; an I/O list for machine request, clamp confirmation and cycle complete.
- **Safety:** planned pedestrian and vehicle routes, fencing and safety zones agreed with your team.
- **Wi-Fi signal:** at least −60 dBm along travel routes and −65 dBm at the AP, signal-to-noise ratio of at least 20 dB, average ping below 100 ms.

Scope of supply

Module	Standard items
Mobile platform	Differential-drive mobile base; laser SLAM / QR code / reflector navigation; automatic charging station; onboard roller conveyor or buffer station; marker lights, emergency stops, bumpers
Manipulation	6-axis collaborative arm (20 kg / 1700 mm); pneumatic tool changer and gripper rack; contoured pneumatic grippers or vacuum cups; floating coupling; robot mount, cable ducts, air lines
Sensing	Wide-angle and precision vision positioning; position and presence sensors
Control and electrical	Industrial PC, air pump, valve island; I/O modules (RS485 / CAN / I/O); Wi-Fi router / AP; 48 V LiFePO4 battery with BMS; audible and visual alarms
Software	Deployment software (mapping, station setup); fleet dispatching (work orders, route planning, traffic control); monitoring, statistics and alarms; machine call / MES / WMS interfaces; open API / SDK
Auxiliary stations (project-specific)	Storage fixtures, smart material storage, 3-axis gantry, loading conveyors, bin transfer module, chip blow-off and code scanning, air knife, target protection

What to provide for a feasibility review

- Part drawings, mass, center of gravity and sample parts, plus how the fixture locates the part
- Machine models, door type (automatic or manual) and the available I/O signals
- Machining cycle per part and the number of machines in the area
- A floor plan with routes, aisle widths, slopes, steps and the planned charging position
- Wi-Fi coverage or AP plan for the area

Quotations are prepared per project after the feasibility review.

Contact

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Specifications and performance figures in this sheet are typical or nominal values for the standard configuration. Actual cycle time, accuracy and battery runtime depend on site conditions, including the floor, lighting, parts, fixtures, machining cycle and the machine interface, and are confirmed for each project after a site assessment.