



Quartz Installation Budgetary Quotation

Rev F Mobile system and selectable options

Prepared for ASM
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AETEC proposes a MiR250 with a permanently mounted UR30 and an interchangeable compact tooling trolley. Trolley A provides quartz installation. A manual floor-supported box holder and floor locators are included. Trolley C is an additional powered transport option. The base sequence aligns the three datum holes to three machine pins without guiding blades. Two removable Teflon guides and an AI inspection trolley are separately selectable.

Package	Budget SGD excluding tax
Mobile installation system with trolley A	625,845
Option 1 Two guides and T3 tool	22,110
Option 2 AI inspection trolley B	140,085
Option 3 Powered container carrier C	78,210
Base with all three options	866,250

These amounts are engineering budgets, supported by indicative public equipment prices and explicit integration allowances. Supplier configuration, written offers, acceptance scope and delivery remain to be confirmed before a firm offer. Applicable taxes are excluded. The fixed-arm POC is a separate phase and quotation.



1 Mobile system price breakdown

Ref	Scope	Qty	Budget SGD
B01	MiR250 base acquisition	1	97,500
B02	MiR charge station and charging dock installation hardware	1	7,500
B03	MiR cleanroom configuration/documentation increment	1	7,500
B04	UR30 arm, controller, teach pendant and standard cables	1	120,000
B05	Custom pedestal, structural subframe and manual deployable stabilizers	1	13,500
B06	Stabilizer foot load cells, displacement/level sensing and acquisition	1	5,250
B07	Approved mobile power supply, conversion, distribution and cable management	1	12,000
B08	Paired rigid trolley capture, retained locks, datum seats, redundant state sensing and floating services	1	27,000
B09	Trolley A compact three-level cleanable tool rack on casters	1	11,250
B10	Trolley A parking/docking station, local references and restraints	1	4,500
B11	Automatic tool-change master, two tool plates, services and lock/ID detection	1	12,000
B12	T1 camera, optics/lighting, low-force touch probe, interface and mount	1	14,250
B13	T2 fin-slot carrier, compliant contact pads, actuation and retention detection	1	9,750
B14	External six-axis force/torque sensor kit for T2	1	14,250



1 Mobile system price breakdown continued

Ref	Scope	Qty	Budget SGD
B15	Independent pad-load sensing and acquisition on T2	1	3,750
B16	Fixed upward camera, optics/lighting, fixed low-force probe and interface	1	14,250
B17	Source/machine datum targets, calibration artifacts and interface adapters	1	4,500
B18	Industrial PC, HMI, network, stacklight, local event store and trace buffer	1	12,750
B19	Safety I/O, interlocks, emergency stops and agreed physical protection	1	12,750
B20	Cleanroom materials review, cleaning and agreed particle-test allowance	1	10,500
B21	Low foam box adaptation plus manually set floor-supported holder and floor datum restraints	1	9,600
B22	Mechanical engineering and drawings	290 h	34,800
B23	Robot/AMR/PLC software and sequence integration	335 h	40,200
B24	Metrology, frame registration and uncertainty study	160 h	19,200
B25	Assembly integration, path review, FAT and handling tests	195 h	23,400
B26	On-site SAT, operator training and local travel	1	10,500
B27	Project management, documentation and handover	60 h	7,200
B28	Freight, packing and procurement logistics	1	6,000
B29	Trolley A AprilTag/RFID, isolated blind-mate power/data and docking calibration	1	3,300
	Engineering risk allowance	1 lot	56,895
	Package total excluding tax		625,845

Includes one new MiR250 and one new UR30 with controller and pendant. The upward camera and probe are fixed on trolley A. No XYZ metrology stage is included. The custom lift/latch and robot mounting combination remains subject to manufacturer acceptance and load/stability verification.



2 Selectable options

Option 1 Removable guiding fixtures

Ref	Scope	Qty	Budget SGD
G01	Two removable PTFE/Teflon guiding fixtures and machine adapters	1	3,000
G02	T3 small guiding-fixture gripper and grasp/retention detection	1	3,750
G03	Additional automatic changer tool plate, services and keyed nest	1	2,250
G04	Guide cassette on trolley A and reference targets	1	1,500
G05	Optional install/retrieve path, controls and calibration	60 h	7,200
G06	Guide insertion/retrieval FAT trials	20 h	2,400
	Engineering risk allowance	1 lot	2,010
	Package total excluding tax		22,110

Two Teflon guiding fixtures, a separate small guide gripper, changer plate, nest and integration allowance. The guides are removable. Use this option only if trials show a benefit. It is excluded from the base price and base guide-free trajectory.

Option 2 AI inspection trolley B

Ref	Scope	Qty	Budget SGD
I01	Trolley B rack, common rigid receiver, RFID/AprilTag and cleanable casters	1	13,500
I02	Trolley B parking/docking bay and registration	1	4,500
I03	Inspection-tool changer plate, services and keyed nest	1	3,750
I04	Inspection camera, lenses and controlled lighting	1	9,000
I05	Low-force touch probe, interface and calibration artifact	1	6,750
I06	Laser triangulation profile sensor, cables and acquisition interface	1	27,000
I07	GPU/industrial compute increment	1	6,750
I08	Initial inspection software/tool license allowance	1	4,500
I09	AI dataset preparation, object/defect model and recipe implementation	200 h	24,000
I10	Trolley exchange mission, ID checks and sequence integration	80 h	9,600
I11	Dimensional scan, probe calibration and uncertainty checks	100 h	12,000
I12	Inspection FAT/SAT and reporting	50 h	6,000
	Engineering risk allowance	1 lot	12,735
	Package total excluding tax		140,085

A second trolley carries a camera/probe/laser-triangulation tool. The AMR returns trolley A to its bay, captures trolley B, returns to the machine and performs dimensional and defect inspection. Dataset collection, defect classes and acceptance limits must be agreed. A generic triangulation sensor is not assumed to measure transparent quartz reliably; optical trials determine the selected sensor.



3 Option C: powered container carrier

Ref	Scope	Qty	Budget SGD
C01	Under-box fork lift, low carrier chassis and transport wheels: incremental upgrade	1	12,750
C02	Four synchronized jacks, brakes/mechanical retention and support feet	1	9,750
C03	Foot load, height, level, wheel-clear and box-support detection	1	5,250
C04	Common AMR receiver, isolated 24 V blind-mate supply, RFID/AprilTag and harness	1	6,000
C05	Carrier parking bay and under-box approach references	1	3,750
C06	Carrier structure, reactions, fork and locator engineering	100 h	12,000
C07	Pickup/docking missions, jack controls, power-loss interlocks and logging	100 h	12,000
C08	Loaded transport, support transfer, power-loss FAT/SAT and documentation	80 h	9,600
	Engineering risk allowance	1 lot	7,110
	Package total excluding tax		78,210

Upgrade the base box holder with under-box forks, powered lift and floor stands. The AMR identifies and captures trolley C, inserts the forks under the structural container base, lifts, transports and docks at the floor locator. Jacks transfer the load to stands; wheel clearance, support loads and mechanical retention must agree before release. Isolated 24 V power is supplied while connected. Holding brakes or mechanical supports retain the load after disconnection. This is a custom carrier, not a qualified off-the-shelf ISO 7 pallet jack. The base holder cost is reused, not charged twice.



4 Commercial scope and release conditions

Item	Basis
Price status	Budgetary and nonbinding pending supplier quotations and design freeze. No purchase has been placed.
POC phase	SGD 119,295 excluding tax, quoted separately. Temporary robot access only. POC fees are additional; no automatic production credit is assumed.
Payment discussion	Proposed 30% order, 30% design approval, 20% FAT, 20% SAT. Subject to final agreement. No payment request is issued.
Delivery	Schedule to be agreed after approved inputs, supplier lead times and site readiness.
Warranty discussion	Proposed 12 months from SAT under the final written terms. Wear parts, styli and consumables require an agreed policy.

ASM provides

Complete machine and quartz CAD, three-hole and three-pin fit tolerances, actual mass and centre of gravity, approved grip/probe regions, force and handling limits, representative parts, defect examples, production volumes, baseline time and damage history, safe machine interfaces, utilities, floor point-load approval and ISO 7 acceptance conditions.

Exclusions and dependencies

Process operation, wafer production qualification, gas/seal connections, final fasteners, undisclosed machine modifications, unsurveyed variants, cleanroom building works and unagreed IT/MES integrations are excluded. Robot/component cleanroom ratings do not qualify the complete assembly. Guaranteed insertion accuracy, cycle time and damage rate follow testing and written acceptance criteria.

Selection

Selection	Amount SGD
Base only	625,845
Base plus guides	647,955
Base plus trolley B	765,930
Base plus trolley C	704,055
Base plus all options	866,250