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AIVIBE SOFTWARE SERVICES PRIVATE LIMITED

Risk register, mitigation and contingency blueprint — AiAmbA device plant and edge data centre

Document	AIVIBE/SIDBI/RSK/2026-10/007
Revision	Rev 2.0 — 16 October 2026
Company	AiVibe Software Services Private Limited (identity and registrations: DPR §2.1)
Companion documents	Detailed Project Report (AIVIBE/SIDBI/DPR/2026-10/001): project, finance, security · Market Intelligence and Feasibility Report (AIVIBE/SIDBI/MIR/2026-10/006): market, competition, launch

1. How risks are scored

Each risk is scored before and after mitigation with a Risk Priority Number (RPN), the failure-mode method used across automotive and electronics manufacturing:

RPN = Severity (S) × Occurrence (O) × Detection (D), each on a 1–10 scale (10 = worst; for detection, 10 = hardest to detect).

2. Master register

ID	Category	Risk	S×O×D before	RPN before	S×O×D after	RPN after	Cut	Treatment
RSK-01	Supply chain	Microcontroller shortage or export shock	8×7×8	448	7×3×4	84	81%	Board takes Renesas RA4M1 or STM32G4 footprints; buffer stock
RSK-02	Machine safety	Wrong parameter written to a CNC	9×8×8	576	6×2×4	48	92%	Deny-by-default approval gate; one-time, time-limited approvals; audit log; writes off by default
RSK-03	Cyber security	Shop-floor data intercepted or leaked	9×6×10	540	5×3×3	45	92%	Per-customer isolation, mutual TLS, row-level security

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ID	Category	Risk	S×O×D before	RPN before	S×O×D after	RPN after	Cut	Treatment
RSK-04	Intellectual property	Cloning and firmware read-out	8×7×9	504	6×2×3	36	93%	Debug ports fused, secure boot, daily attestation
RSK-05	Manufacturing	Moulding defects break IP67 sealing	8×5×8	320	5×2×4	40	88%	H13 moulds, SPC (Cpk ≥ 1.67), 100% leak test
RSK-06	Site	Power failure or grid disturbance	7×6×9	378	6×2×3	**36**	90%	HT connection, online UPS for lines and servers, auto-start genset
RSK-07	Commercial	A large customer defers its roll-out	8×5×10	400	5×3×4	60	85%	Direct online sales to MSMEs from day 61; recurring software revenue
RSK-08	Trade	Tariffs or embargo on imported compute modules	8×6×10	480	6×3×4	72	85%	Indian SMT line for carrier boards; dual sourcing through Indian distributors
RSK-09	Life safety	Fire or thermal runaway	10×8×9	720	8×2×4	64	91%	$LiFePO_4$ cells, clean-agent suppression, fire-rated test bays
RSK-10	Regulatory	Export or EMC non-compliance	8×5×9	360	5×2×4	40	89%	Pre-compliance testing, batch traceability (DataMatrix)
RSK-11	Execution	The 60-day build slips (land, shed, machines, power)	9×6×7	378	6×3×3	54	86%	Ready-built shed for day 30; ex-stock machines; parallel approvals; weekly LIE review
RSK-12	Financing	Releases held because certified progress or equity lags	8×5×6	240	6×2×3	36	85%	Equity in first; progress certificates prepared ahead of each release; direct payment to suppliers

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ID	Category	Risk	S×O×D before	RPN before	S×O×D after	RPN after	Cut	Treatment
RSK-13	Status	Plant, machinery and equipment pass ₹25 crore; MSE status and CGTMSE cover lost	8×4×5	160	7×1×2	14	91%	Asset schedule frozen at ≤ ₹15.75 crore; CA sign-off before each capital purchase
RSK-14	Compliance	Field filming, geo-tags and pre-bookings breach data or consumer rules	7×5×6	210	5×2×3	30	86%	Written consent before filming; DPDP-compliant notices; pre-booking terms with full refund
RSK-15	Governance	Related-party sales and purchases questioned at appraisal	6×6×5	180	4×2×2	16	91%	Full disclosure in the application; arm's-length pricing; audit committee review
RSK-16	People	Walk-in hiring cannot staff the lines in 30 days	7×5×5	175	5×2×3	30	83%	Partner colleges and ITIs; two-week line training; supplier engineers for commissioning
RSK-17	Compliance	Product certifications (BIS CRS, WPC ETA, TEC check) not in hand by day 61	8×6×4	192	8×2×2	32	83%	Filed in week 1 with pre-tested samples; EMC pre-compliance on our QC bench; CRS-registered power adapters; pre-bookings continue if one certificate lags
RSK-18	Technology	Device firmware not production-ready by day 61 (FANUC driver, device write path)	8×6×5	240	6×2×3	36	85%	Launch on the controllers working today (Siemens, Mitsubishi, Modbus); FANUC library licence in days 1–30; writes stay off until each driver passes the approval tests; 40 field devices shake out the firmware

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ID	Category	Risk	S×O×D before	RPN before	S×O×D after	RPN after	Cut	Treatment
RSK-19	Market	Later-year volumes outrun the evidenced machine base	7×5×5	175	5×3×2	30	83%	Field data from days 30–60 re-bases year-2 volumes; DPR stress test at 70% of plan; N and J for whole floors and PLC lines; capacity added only from internal accruals

Every risk is cut by 81–93% after the safeguards.

3. Mitigation worksheets

In place today marks a control already in the product or the company (checked in the device software on 14 Oct 2026). Every other control is part of the plant and product build and is in place before sales open on day 61.

RSK-01 · Microcontroller shortage or export shock

- **Threat.** A shortage or embargo on the AJ Series microcontroller stops board assembly.
- **Options weighed.** Single-source with forward stock; redesign around a domestic chip; dual-footprint board.
- **Chosen. Before day 61:** a dual-footprint production board accepting Renesas RA4M1 (QFP64) and STM32G431 (LQFP64); a C++ hardware-abstraction layer recompiles firmware for either chip without touching the protocol stack. Board buffer stock is bought in the first 30 days (DPR §4 schedule).
- **Score.** 448 → 84.

RSK-02 · Wrong parameter written to a CNC

- **Threat.** A bad offset, corrupted packet or misheard command moves an axis or breaks a tool.
- **Chosen. In place today (edge software and app):** reads are always allowed; every write, control or configuration change is denied by default and held as a pending request. It is released only by a one-time approval that lasts 60 seconds and is bound to one customer, operator, device and value, given by slide-to-confirm in the AiCippY app; every decision is written to the audit log. Each device's write profile is empty (deny-all) until commissioning sets the allowed parameters and their

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limits, and a global switch keeps all writes off unless the owner turns them on, so a new site starts in monitor-only mode (code: core/approval_gate.py; SafeConfirmModal in the app).

- **Score.** 576 → 48.

RSK-03 · Shop-floor data intercepted or leaked

- **Threat.** Part geometries, cycle times and scrap data leak in transit or from shared storage.
- **Chosen. In place today:** each customer's data isolated with PostgreSQL row-level security. **Before day 61:** mutual TLS from device to server, with certificates burned into one-time-programmable memory at flashing; dedicated racks for customers who require on-premise storage. Development runs inside an ISO/IEC 27001 management system (certificate UBML-ISMS-0912024005, valid to 08 Dec 2027).
- **Score.** 540 → 45.

RSK-04 · Cloning and firmware read-out

- **Threat.** A competitor dumps the firmware and clones the device.
- **Chosen. Before day 61:** debug access permanently fused at flashing; protocol libraries run encrypted; the device attests to the server daily and locks if tampered; enclosures are sealed.
- **Score.** 504 → 36.

RSK-05 · Moulding defects break IP67 sealing

- **Threat.** Sink marks, voids or weak weld lines let coolant into the enclosure.
- **Chosen.** Hardened H13 moulds rated for a million cycles; statistical process control on cavity pressure and melt temperature (Cpk ≥ 1.67); every enclosure passes a dry-air pressure-decay leak test.
- **Score.** 320 → 40.

RSK-06 · Power failure or grid disturbance

- **Threat.** Grid dips stop the lines, damage placement feeders or interrupt flashing.
- **Chosen.** HT supply with a dedicated transformer; online UPS for the clean areas, flashing rigs and servers; diesel generator with automatic transfer.
- **Score.** 378 → **36** (6 × 2 × 3).

RSK-07 · A large customer defers its roll-out

- **Threat.** Corporate roll-outs slip 60–120 days, delaying cash.
- **Chosen.** The plan no longer depends on corporate orders: online sales to MSMEs open on day 61 with tested launch stock (DPR §4), and AiCippY software earns monthly from every connected device.

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- **Score.** 400 → 60.

RSK-08 · Tariffs or embargo on imported compute modules

- **Threat.** Duty rises or restrictions hit the compute modules inside N and J Series.
- **Chosen.** Carrier boards assembled on the in-house SMT line; modules bought through authorised Indian distributors with two sources each.
- **Score.** 480 → 72.

RSK-09 · Fire or thermal runaway

- **Threat.** A reflow-oven fault or a cell failure starts a fire.
- **Chosen.** $LiFePO_4$ cells only; clean-agent suppression in the server room and test bays; fire-rated partitions and flame detectors.
- **Score.** 720 → 64.

RSK-10 · Export or EMC non-compliance

- **Threat.** EMC or traceability rules stop exports.
- **Chosen.** EMC pre-compliance on the QC bench before certification; DataMatrix on every unit linking its batch, placement log and calibration record.
- **Score.** 360 → 40.

RSK-11 · The 60-day build slips

- **Threat.** Land allotment, the shed, machine deliveries or the HT connection run late, so day-61 sales slip.
- **Chosen.**
- Day 30 production starts in a **ready-built factory shed** while the owned building rises (Detailed Project Report §4).
- Machines are chosen from stock in India (at least 70% Indian makers; imports only if ready for delivery and paid on delivery).
- Approvals run in parallel under Tamil Nadu's single-window system.
- The Lender's Independent Engineer reviews progress weekly.
- Fallback: launch stock is assembled on the first line while the second line is commissioned.
- **Score.** 378 → 54.

RSK-12 · Releases held because certified progress or equity lags

- **Threat.** Under the RBI (Project Finance) Directions, 2025, SIDBI may release money only in step with certified progress and equity brought in, and only after financial closure and land availability.

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- **Chosen.** Promoters' equity comes in first; progress certificates are prepared ahead of each release; SIDBI is asked to pay SIPCOT for the plot, the builder and the machine makers directly.
- **Score.** 240 → 36.

RSK-13 · MSE status lost

- **Threat.** If plant, machinery and equipment pass ₹25 crore, or turnover passes ₹100 crore, AiVibe becomes a medium enterprise. CGTMSE cover then freezes, and prepayment from subsidies would carry a charge.
- **Chosen.** The asset schedule is frozen at ₹15.75 crore of plant, machinery and equipment. A CA signs off each capital purchase. Udyam lags by two years, and non-tax benefits stay for three years after an upgrade.
- **Score.** 160 → 14.

RSK-14 · Field campaign and pre-booking compliance

- **Threat.** Filming owners, geo-tagging videos and collecting ₹10 tokens or ₹499 pre-bookings breach the Digital Personal Data Protection Act, 2023 or consumer e-commerce rules.
- **Chosen.**
- Written consent before any filming, with a plain notice of purpose.
- Geo-tags kept internal, and only the city published.
- Pre-booking terms stating delivery timelines and a full refund on request, with GST treated per law.
- **Score.** 210 → 30.

RSK-15 · Related-party transactions questioned

- **Threat.** Part of AiVibe's early sales and purchases are with promoter-family concerns (Emmarkay, Alfa Precision). Undisclosed, they would weaken the appraisal.
- **Chosen.** Full disclosure in the application, arm's-length pricing and separate accounts. Associate concerns give no guarantees, so CGTMSE stays valid.
- **Score.** 180 → 16.

RSK-16 · Walk-in hiring cannot staff the lines in 30 days

- **Threat.** Operators and technicians are not ready by day 30.
- **Chosen.** Walk-in drives with partner colleges and ITIs, two-week line training, and supplier engineers who commission each machine and train the crew.
- **Score.** 175 → 30.

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RSK-17 · Product certifications not in hand by day 61

- **Threat.** The company's own regulatory declaration commits to commercial sale only after certification; BIS CRS (power adapter and IT equipment), WPC ETA (Wi-Fi and Bluetooth radios) and, if TEC confirms it applies, MTCTE take time.
- **Chosen. Before day 61:** applications filed in week 1 with samples already pre-tested for EMC on our QC bench; a BIS-recognised laboratory booked on day 1; ETA by self-declaration per model on Saral Sanchar; CRS-registered power adapters bought, not made; if any certificate lags, ₹499 pre-bookings continue and dispatch waits for it.
- **Score.** 192 → 32.

RSK-18 · Device firmware not production-ready by day 61

- **Threat.** Wireless provisioning, the authenticated board-to-cloud link and the industrial write, FANUC FOCAS and OPC UA drivers are the device-side firmware work of days 1–60; FANUC's FOCAS library must be licensed.
- **Chosen. In place today:** the firmware reads Siemens, Mitsubishi and Modbus controllers; writes are denied by default. **Before day 61:** FANUC FOCAS licence bought in days 1–30; each write driver enabled only after it passes the approval-gate tests; the 40 field devices in days 30–60 shake out the firmware before launch stock is flashed.
- **Score.** 240 → 36.

RSK-19 · Later-year volumes outrun the evidenced machine base

- **Threat.** By year 7 the plan's cumulative AJ units exceed any published count of machines in Indian shop floors (Market Intelligence Report §6).
- **Chosen.** The field programme's data re-bases year-2 volumes; the DPR's stress test shows repayment at 70% of plan; N and J Series serve whole floors and PLC lines beyond CNCs; capacity beyond 80,000 devices a year is added only from internal accruals.
- **Score.** 175 → 30.

4. Business continuity

System	Recovery point	Recovery time
Customer telemetry database	≤ 1 second	≤ 60 seconds (fail-over)
Flashing line	No data loss (local logs)	≤ 2 hours (spare rig)
Edge servers	≤ 100 milliseconds	≤ 5 minutes (standby node)

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System	Recovery point	Recovery time
Injection moulding	Current batch of material	≤ 24 hours (tool change)

5. Sign-off

For and on behalf of AiVibe Software Services Private Limited

Aravind Jayamohan	Founder and Director · DIN 07977617
Jayagiri Manoharan	Co-founder and Director · DIN 07587178

Chennai, 16 October 2026

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