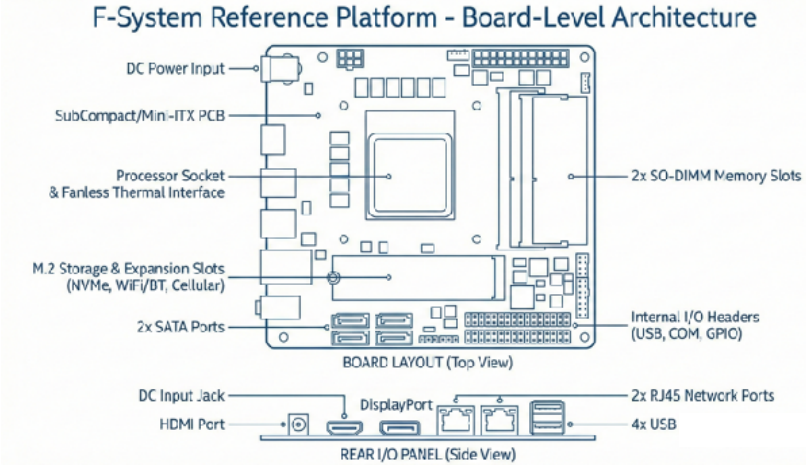
F-System Reference Platform

Embedded Integration Kit & Board-Level Computing
(Reference Model)

Key Features

- Open Integration Platform: Engineered for direct integration into custom enclosures, cabinets, and industrial machinery.
- High-Performance Embedded Core: Powered by Intel® Core™ 10th / 11th Gen processors (Comet Lake / Rocket Lake).
- Flexible I/O Architecture: Extensive internal headers for COM, USB, and GPIO to support system-level integration.
- Fanless-Ready Thermal Design: Reference thermal layout enabling passive cooling implementation at system level.
- Industrial PCB Design Standard: 10-layer PCB with gold-plated finish to ensure signal integrity and long-term durability.
- Embedded Lifecycle Alignment: Component selection aligned with Intel® Embedded Roadmap for long-term availability.



Technical Specifications

Reference Configuration — Embedded Integration Scenario

Category	Specification
Form Factor	3.5” SubCompact or Mini–ITX(configurable per project)
Processor	Intel® Core™ i9 / i7 / i5 / i3Pentium® / Celeron® (LGA1200 socket)
Chipset	Intel® Q470E / H420E (industrial–grade)
Memory	2 × DDR4–3200 SO–DIMMDual channel, up to 64 GB
Graphics	Intel® UHD GraphicsSupports triple display (HDMI + DP + LVDS / eDP)
Networking	2 × Gigabit EthernetIntel® i219LM + i210ATTSN support
Storage	1 × M.2 M–Key (NVMe PCIe x4)2 × SATA III (6 Gb/s)
Expansion	1 × M.2 E–Key (WiFi / Bluetooth)1 × M.2 B–Key (4G / 5G cellular)
Internal I/O	4 × USB 2.0 headers4 × COM (RS232 / 422 / 485)8–bit GPIO, SMBus
External I/O (Rear)	4 × USB 3.2 Gen22 × RJ45 LAN1 × HDMI, 1 × DisplayPort
Power Input	DC 12—24 V wide–range inputOptional ATX power support
Operating Environment	–20 ˚C to 60 ˚C(depending on applied thermal solution)

System Characteristics

- Modular Integration Concept: Functions as a reusable engineering building block for OEM and ODM system design.
- Customization Capability: Supports BIOS customization, firmware configuration, and project-specific I/O bracket design.
- Electrical Robustness: Optimized PCB layout and power design for high-interference industrial environments.

Reference Model Scope

- Embedded computing in medical carts and diagnostic equipment
- Control units for kiosks, ATMs, and self-service terminals
- Backend computing platforms for custom HMI and automation systems

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*Disclaimer: This document describes a board-level reference architecture and integration kit. It does not represent a finished, off-the-shelf commercial product. Final enclosure design, thermal validation, and regulatory compliance are the responsibility of the system integrator and are defined on a per-project basis.