

CoreIPC

ITX86M

Mini-ITX Industrial Motherboard Datasheet

Intel® Haswell-M Platform

Document	Datasheet
Model	ITX86M
Issue	1.1
Product Type	Mini-ITX Industrial Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on ITX86M User Manual Issue 1.1.

1. Product Overview

The ITX86M is a CoreIPC Mini-ITX industrial motherboard supporting 4th Generation Intel® Haswell rPGA946 Pentium®, Celeron®, and Core™ i3/i5/i7 M-series processors. It integrates DDR3L memory, VGA/optional second HDMI, HDMI, LVDS, up to dual Gigabit Ethernet, SATA and mSATA storage, Mini PCIe expansion, extensive USB and serial connectivity, LPT, PS/2, GPIO, HD audio with amplified output, and 12 V DC input for commercial display, machine vision, medical, industrial control, financial equipment, cloud terminals, and other embedded applications.

2. Key Features

- Supports 4th Generation Intel® Haswell rPGA946 Pentium®, Celeron®, and Core™ i3/i5/i7 M-series processors.
- 1 x DDR3L SO-DIMM slot supporting single-channel DDR3L-1333/1600, 1.35 V memory, up to 16 GB.
- 1 x HDMI, 1 x VGA or optional second HDMI, and 1 x LVDS interface; supports synchronous/asynchronous triple-display operation.
- 1 x Realtek RTL8111H Gigabit Ethernet port standard; second LAN optional with Wake-on-LAN and PXE support.
- Storage includes 1 x SATA 3.0 interface and 1 x full-size mSATA 3.0 slot.
- 1 x Mini PCIe slot supporting half-size/full-size Wi-Fi or 4G modules.
- Supports up to 10 USB ports on single-LAN versions or 8 USB ports on dual-LAN versions, including 2 x USB 3.0.
- Provides up to 6 x COM ports. COM1/COM2 support RS232/RS485; COM1 can optionally support RS422 with hardware modification.
- Supports LPT, PS/2, 4-channel GPIO, hardware watchdog, ALC662/ALC897 HD audio with 2 x 5 W amplifier output, and CPU/system fan headers.
- Mini-ITX 170 x 170 mm; 12 V DC input; operating temperature -10°C to 60°C.

3. Technical Specifications

Category	Specification
Processor	4th Generation Intel® Haswell rPGA946 Pentium®, Celeron®, and Core™ i3/i5/i7 M-series processors.
Chipset	Intel® HM86 / HM87 high-speed chipset.
Memory	1 x 204-pin SO-DIMM; single-channel DDR3L-1333/1600, 1.35 V; up to 16 GB.
Graphics / Display	Integrated Intel® HD Graphics; 1 x HDMI, 1 x VGA or optional second HDMI, 1 x dual-channel 24-bit LVDS; triple-display support.
Ethernet	1 x Realtek RTL8111H Gigabit Ethernet controller standard; second LAN optional; Wake-on-LAN and PXE support.
Storage	1 x SATA 3.0 interface; 1 x full-size mSATA 3.0 slot.
Audio	Onboard ALC662/ALC897 6-channel HD audio; Mic-in, Line-out, and 2 x 5 W amplifier output at 2 ohms.
Expansion	1 x Mini PCIe slot supporting half-size/full-size Wi-Fi or 4G modules.
USB	2 x USB 3.0 plus USB 2.0 interfaces; up to 10 total USB on single-LAN models or 8 on dual-LAN models.
Serial Ports	Up to 6 x COM. COM1/COM2 support RS232/RS485; COM1 RS422 support requires hardware modification.
Legacy I/O	1 x LPT header; 1 x PS/2 keyboard/mouse header.
GPIO	4 GPIO inputs + 4 GPIO outputs.
BIOS	64 Mb Flash ROM.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
OS Support	Windows 7 / Windows 10 / Linux.
Power	12 V DC input; AT/ATX power-mode selection.
Dimensions	170 mm x 170 mm.
Environment	Operating: -10°C to 60°C; Storage: -20°C to 70°C; Humidity: 5%-95% RH, non-condensing.

4. I/O Interface Summary

4.1 Rear Panel I/O

Interface	Description
Display	1 x HDMI; 1 x VGA by default. VGA and optional HDMI2 are mutually exclusive.
USB	2 x USB 3.0; rear USB 2.0 availability depends on LAN configuration.
LAN	1 x RJ45 Gigabit Ethernet standard; optional LAN2 is mutually exclusive with 2 x rear USB 2.0 ports.
Audio	1 x Line-out (green); 1 x Mic-in (red).
Power	1 x 12 V DC input.

4.2 Internal I/O and Headers

Interface / Header	Description
HDMI	1 x 2 x 8-pin JHDMI header sharing the same signals as HDMI1.
VGA	1 x 1 x 12-pin JVGA header sharing the same signals as the DB15 VGA port.
LVDS	1 x 2 x 15-pin dual-channel 24-bit LVDS header.
Panel / Backlight	Selectable 3.3 V / 5 V / 12 V panel voltage; selectable 5 V / 12 V backlight power; brightness and PWM polarity controls.
USB 2.0	3 x 2 x 5-pin USB 2.0 headers supporting 6 onboard USB 2.0 ports.
Serial	2 x standard COM headers plus 1 x 2 x 20-pin header for COM3-COM6.
RS485 / RS422	COM1/COM2 support RS485; COM1 can optionally support RS422 with hardware modification.
LPT / PS2	1 x 2 x 13-pin LPT header; 1 x 1 x 6-pin PS/2 keyboard/mouse header.
Audio	1 x front-audio header; 1 x 4-pin amplified speaker output header.
Power / Panel	1 x drive power connector; 1 x 4-pin ATX power connector; 1 x front-panel switch/LED header.
Fan / GPIO	1 x CPU fan header; 1 x system fan header; 1 x GPIO header.

5. Display Support

ITX86M provides one HDMI output, one VGA output that is mutually exclusive with the optional second HDMI, and one dual-channel 24-bit LVDS interface. The source manual states synchronous/asynchronous triple-display operation via VGA, HDMI, and LVDS, with optional dual-HDMI output. LVDS panel voltage is selectable at 3.3 V / 5 V / 12 V, with 5 V / 12 V backlight power options.

Item	Description
Integrated Graphics	Intel® HD Graphics, processor-dependent.
HDMI	1 x standard HDMI output; optional HDMI2 available instead of VGA.
VGA	1 x VGA output by default; mutually exclusive with optional HDMI2.
LVDS	1 x dual-channel 24-bit LVDS interface.
Multi-display	Supports synchronous/asynchronous triple-display output via VGA/HDMI/LVDS; optional dual-HDMI configuration.

6. Serial Port Configuration

Port / Group	Default / Optional Function
COM1	RS232 default; supports RS485. Pin 9 selectable RI / 5 V / 12 V. Optional RS422 requires hardware modification.
COM2	RS232 default; supports RS485. Pin 9 selectable RI / 5 V / 12 V.
COM3-COM6	RS232 via 2 x 20-pin four-port header.
2-COM Model	ITX86M-L12: 2 COM / 1 RS485.
6-COM Models	ITX86M-L16 / L26: 6 COM / 2 RS485.

7. Power, Cooling and Reliability Functions

Item	Description
Main Power	12 V DC input.
AT / ATX Mode	AT-ATX1 jumper selects automatic power-on behavior.
Cooling	1 x 4-pin CPU fan header and 1 x 4-pin system fan header.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
Clear CMOS	JBAT1 1 x 3-pin Clear CMOS jumper.

Item	Description
LVDS Power	Panel voltage and backlight power are jumper-configurable; LVDS resolution is selectable by DIP switch.

8. Mechanical and Environmental Information

Item	Description
Form Factor	Mini-ITX industrial motherboard.
Dimensions	170 mm x 170 mm.
Operating Temperature	-10°C to 60°C.
Storage Temperature	-20°C to 70°C.
Operating Humidity	5%-95% RH, non-condensing.
Power Input	12 V DC.

9. Ordering Information

Model	Description
ITX86M-L12 VER1.1	HM86; DDR3L; HDMI + VGA + LVDS; 1 LAN; 10 USB; PS/2; LPT; 2 COM / 1 RS485; 12 V DC.
ITX86M-L16 VER1.1	HM86; DDR3L; HDMI + VGA + LVDS; 1 LAN; 10 USB; PS/2; LPT; 6 COM / 2 RS485; 12 V DC.
ITX86M-L26 VER1.1	HM86; DDR3L; HDMI + VGA + LVDS; 2 LAN; 8 USB; PS/2; LPT; 6 COM / 2 RS485; 12 V DC.
Display Option	Optional dual-HDMI configuration; HDMI2 replaces VGA.

10. Compliance and Documentation Notes

- Certification and compliance information is not specified in the source manual. Contact CoreIPC for project-specific certification or compliance documentation.
- Chipset information differs by scope: Ordering Information lists HM86 for all three standard models, while Motherboard Specifications state support for Intel® HM86 or HM87. This datasheet preserves both source statements and recommends confirming the production chipset before ordering.
- USB and LAN resources are configuration-dependent. The single-LAN L12/L16 models list 10 USB ports, while the dual-LAN L26 model lists 8 USB ports. The detailed specification states LAN2 is mutually exclusive with two rear USB 2.0 ports.

11. Contact Information

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Disclaimer: This datasheet was compiled from ITX86M User Manual Issue 1.1. Product specifications, interface counts, supported functions and optional configurations may vary by production revision. Please confirm the selected configuration before order placement. All product names, trademarks and registered trademarks are the property of their respective owners.