

CoreIPC

GV-Z390

Mini-ITX Machine Vision Motherboard Datasheet

Intel® Z390 / B360 / Q370 Platform

Document	Datasheet
Model	GV-Z390
Issue	1.1
Product Type	Mini-ITX Machine Vision Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on GV-Z390 User Manual Issue 1.1.

1. Product Overview

The GV-Z390 is a CoreIPC Mini-ITX machine vision motherboard built around Intel® Z390, B360, or Q370 chipsets. It supports LGA1151 Intel® Celeron®, Pentium®, and Core™ i3/i5/i7 processors, five Gigabit Ethernet ports, DDR4 memory, VGA/HDMI/LVDS or eDP display, M.2 and SATA storage, PCIe expansion, multiple USB and serial interfaces, a 40-pin multifunction expansion header, and wide-range 9-36 V DC input for machine vision and industrial applications.

2. Key Features

- Supports LGA1151 Intel® Celeron®, Pentium®, and Core™ i3/i5/i7 processors. The source Product Description lists 6th, 8th, and 9th generation support, while the detailed specification lists 8th and 9th generation processors.
- Supports two DDR4-2666 memory slots, 1.2 V, up to 64 GB. The source Product Description says SO-DIMM, while the detailed specification and installation section identify standard DIMM slots.
- 1 x VGA, 1 x HDMI 1.4, and 1 x LVDS or eDP display interface; integrated Intel® UHD Graphics supports 4K output.
- 5 x Gigabit Ethernet: 4 x Intel® I210-AT plus 1 x Intel® I219-LM, with Wake-on-LAN and PXE support.
- Storage includes 1 x M.2 Key M slot with automatic NVMe/SATA detection and 2 x SATA 3.0 ports.
- 1 x Mini PCIe slot supporting Wi-Fi/Bluetooth and 1 x PCIe 3.0 x4 expansion slot.
- Supports 6 x USB 3.0 and 3 x USB 2.0 interfaces.
- Supports six serial ports: COM1-4 as RS232-class interfaces and COM5/COM6 via the multifunction header as TTL; COM1/COM2 can support RS485 with the documented configuration.
- Onboard ALC897 6-channel HD audio with internal Line-out and Mic-in header.
- Mini-ITX 170 x 170 mm; wide-range 9-36 V DC input; operating temperature -10°C to 60°C.

3. Technical Specifications

Category	Specification
Processor	LGA1151 Intel® Celeron®, Pentium®, and Core™ i3/i5/i7 processors. Product Description lists 6th/8th/9th Gen; detailed specification lists 8th/9th Gen.
Chipset	Intel® Z390, B360, or Q370.
Memory	2 x DDR4 DIMM slots; DDR4-2666, 1.2 V; up to 64 GB.
Graphics / Display	Integrated Intel® UHD Graphics; 1 x VGA up to 1920 x 1200 @ 60 Hz, 1 x HDMI 1.4 up to 4096 x 2304 @ 24 Hz, 1 x LVDS or eDP header.
Ethernet	4 x Intel® I210-AT Gigabit Ethernet + 1 x Intel® I219-LM Gigabit Ethernet; Wake-on-LAN and PXE support.
Storage	1 x M.2 Key M slot with automatic NVMe PCIe x4 / SATA detection; 2 x SATA 3.0 ports up to 6 Gbps.
Audio	Realtek ALC897 6-channel HD audio; internal Line-out and Mic-in header.
Expansion	1 x Mini PCIe slot supporting Wi-Fi/Bluetooth; 1 x PCIe 3.0 x4 slot; 1 x 40-pin multifunction expansion header.
USB	6 x USB 3.0 rear ports; 1 x USB 2.0 header supporting 2 ports; 1 additional USB 2.0/TTL interface through the multifunction header.
Serial Ports	6 serial ports total. COM1 is DB9; COM2/3/4 use onboard headers; COM5/COM6 are TTL through the multifunction header. COM1/COM2 can support RS485.
GPIO	4-channel GPIO input/output.
BIOS	64 Mb Flash ROM.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
OS Support	Windows 10 / Windows 11 / Linux.
Power	9-36 V DC input through 3-pin Phoenix terminal; onboard 1 x 2-pin Phoenix power output.
Operating Temperature	-10°C to 60°C.
Storage Temperature	-20°C to 70°C.
Operating Humidity	5%-95% RH, non-condensing.
Dimensions	170 mm x 170 mm.

4. I/O Interface Summary

4.1 Rear Panel I/O

Interface	Description
Display	1 x HDMI 1.4; 1 x VGA.
USB	6 x USB 3.0.
LAN	5 x RJ45 Gigabit Ethernet ports: 4 x Intel I210 + 1 x Intel I219.
Serial	1 x DB9 COM1.
Power / Controls	1 x 3-pin Phoenix 9-36 V DC input; push-button switch; HDD/Power LED; Clear CMOS / optional one-key recovery button; rear auto power-on DIP switch.

4.2 Internal I/O and Headers

Interface / Header	Description
Display	1 x LVDS/eDP header (2 x 15-pin) with selectable panel voltage and backlight supply.
USB 2.0	1 x USB 2.0 header supporting 2 ports.
Serial	3 x 1 x 9-pin headers for COM2/COM3/COM4.
Multifunction	1 x 40-pin RAER-IO header supporting COM5 TTL, COM6 TTL, LPC-to-TPM, USB 2.0/TTL, SMBus, and 3 V/5 V.
Audio	1 x front-audio header supporting Line-out and Mic-in.
Storage Power	2 x SATA power terminals supporting 5 V / 12 V.
Front Panel	1 x 2 x 5-pin front-panel switch / LED header.
Fan	1 x CPU fan header and 1 x system fan header.
GPIO	1 x 2 x 5-pin GPIO header.
Power Output	1 x 2-pin Phoenix output terminal, 9-36 V / GND.

5. Display Support

GV-Z390 provides VGA, HDMI 1.4, and LVDS or eDP display interfaces. The source manual specifies VGA up to 1920 x 1200 @ 60 Hz, HDMI up to 4096 x 2304 @ 24 Hz, and selectable LVDS/eDP through the onboard display header.

Item	Description
Integrated Graphics	Intel® UHD Graphics; DirectX 12, OpenGL 4.5, and 4K display support.
VGA	1 x VGA output, up to 1920 x 1200 @ 60 Hz.
HDMI	1 x HDMI 1.4 output, up to 4096 x 2304 @ 24 Hz.
LVDS / eDP	1 x 2 x 15-pin display header; can be configured for LVDS or eDP.
Panel Power	Selectable 3.3 V / 5 V / 12 V panel voltage and 5 V / 12 V backlight supply.

6. Serial Port Configuration

Port / Source	Default / Optional Function
COM1	DB9 RS232 by default; supports RS485 through jumper configuration.
COM2	1 x 9-pin header; RS232 by default; RS485 requires hardware modification.
COM3 / COM4	1 x 9-pin headers; RS232.
COM5 / COM6	TTL serial interfaces through the 40-pin RAER-IO multifunction header.
RS485	Up to 2 RS485 interfaces are described in the source manual.

7. Power, Cooling and Reliability Functions

Item	Description
Main Power	9-36 V DC input via 1 x 3-pin Phoenix terminal.
Power Output	1 x 2-pin Phoenix terminal providing 9-36 V and GND.
Maximum Design Power	Motherboard designed for maximum power consumption of 200 W.
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).

Item	Description
Clear CMOS	JBAT1 Clear CMOS jumper plus rear push-button Clear CMOS / optional one-key recovery function.

8. Mechanical and Environmental Information

Item	Description
Form Factor	Mini-ITX machine vision 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	9-36 V DC.
Chipset Options	Intel® Z390 / B360 / Q370.

9. Ordering Information

Model	Description
GV-Z390 VER1.1	Z390/B360/Q370; DDR4; HDMI + VGA + LVDS; 5 LAN; 9 USB; 4 COM / 2 RS485 shown in ordering table; 9-36 V DC.
LAN	4 x Intel I210 + 1 x Intel I219 Gigabit Ethernet.
Storage	M.2 Key M NVMe/SATA auto-detect + 2 x SATA 3.0.
Expansion	Mini PCIe + PCIe 3.0 x4 + 40-pin multifunction header.

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.
- Processor support differs by section: the Product Description lists 6th, 8th, and 9th generation LGA1151 processors, while the detailed specification lists 8th and 9th generation processors. Confirm the required CPU/chipset combination before ordering.
- Memory terminology differs by section: the Product Description states two SO-DIMM slots, while the detailed specification states 2 x DIMM slots and the installation section specifies 2 x 288-pin DDR4 DIMM slots. This datasheet follows the detailed/installation description.

11. Contact Information

Company	CoreIPC
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Disclaimer: This datasheet was compiled from GV-Z390 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.