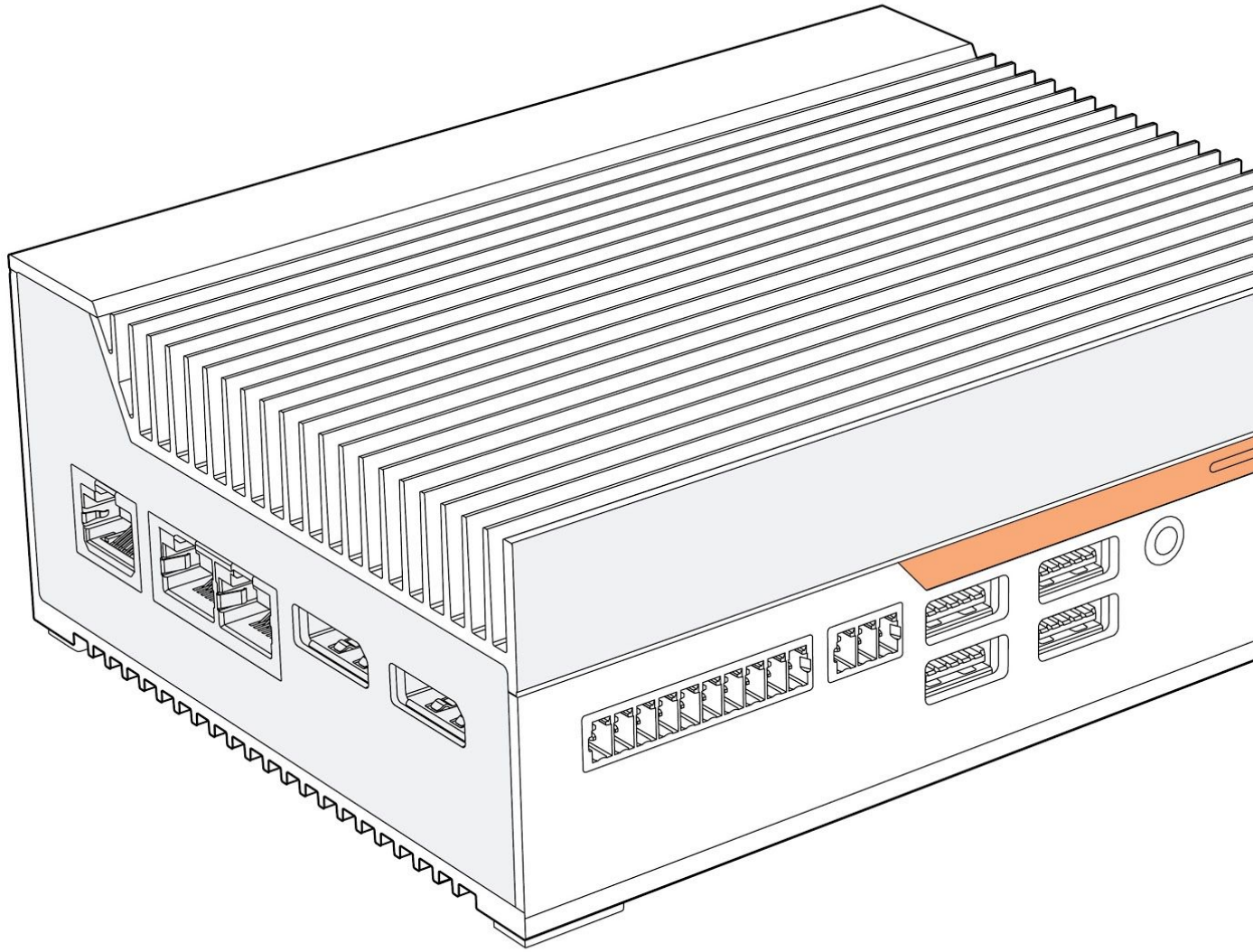
ONLOGIC

IGN200 Product Manual



Revision History

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First release of IGN200 manual	10/29/2019

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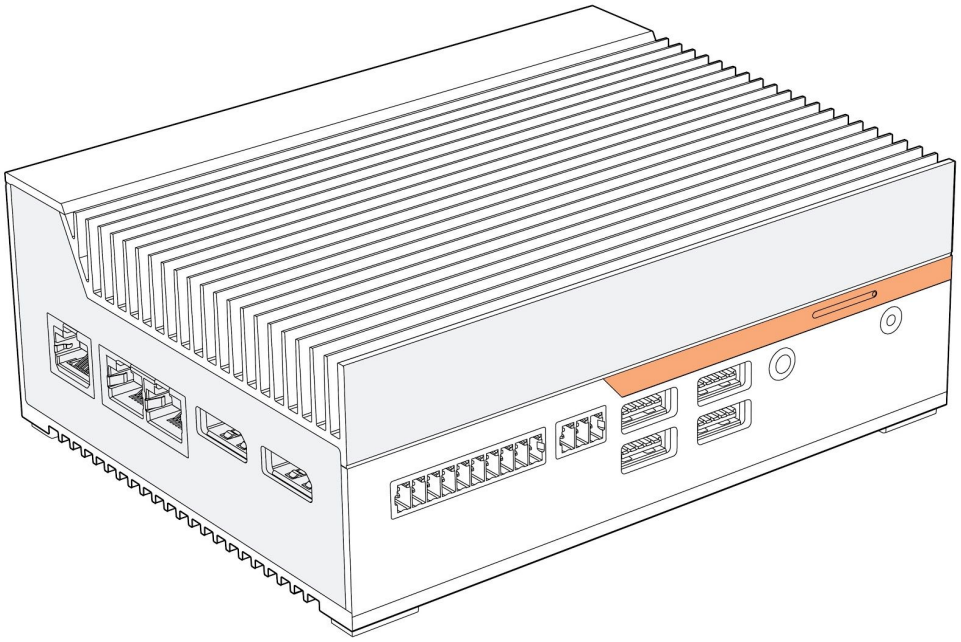
1 - System Overview



1.1 - Accessories

- 3-pin Power Terminal Block Connector (Dinkle PN: 2ESDVM-03P)
- 3-pin CAN bus Terminal Block Connector (Dinkle PN: EC350V-03P)
- 10-pin DIO Terminal Block Connector (Dinkle PN: EC350V-10P)
- M.2 and mPCIe expansion card screws

If you purchased additional items such as mounting brackets, power supplies or antennas, they will be located in the system box or within the outer shipping carton.

All drivers and product guides can be found on the corresponding product page. For more information on accessories and additional features, visit the IGN200 pages at:

US: https://www.onlogic.com/ign200/

EU: https://www.onlogic.com/eu-en/ign200/

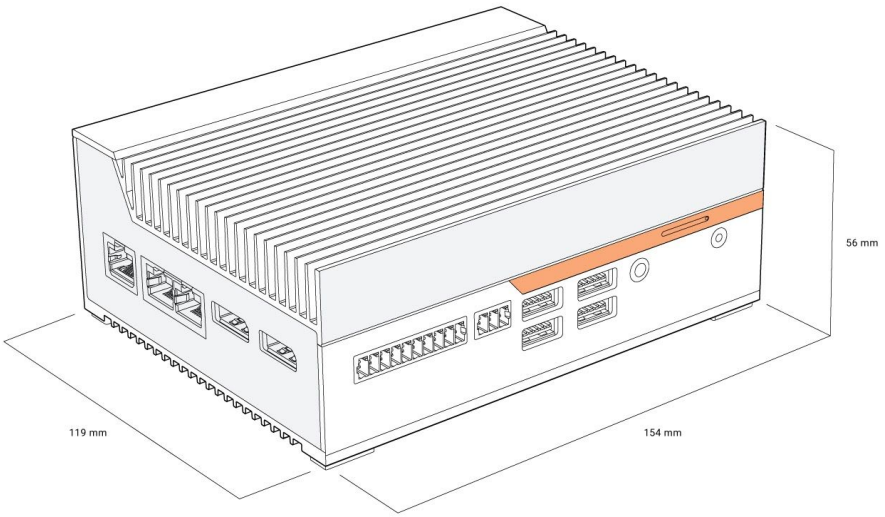
1.2 - Product Specifications

	IGN200 Series
	K300-E3950-8-P
Processor	Intel Atom x7-E3950 Quad-core
Memory	8GB Onboard LPDDR4
Integrated Graphics	Intel HD Graphics 505
Bottom I/O	3x GbE LAN
	2x Full-size DisplayPort
Top I/O	2x Serial RS-232/422/485
	3-pin Power input
	4x Antenna holes
Front I/O	Power button
	1x 3.5 mm Audio jack (mic-in, line-out)
	8-bit Isolated DIO
	4x USB 3.0 Type A
	8x Status LEDs
	3-pin CAN bus 2.0B
	Nano-SIM slot (4FF)
Storage	M.2 2280 M-key (PCIe x2, SATA)
Expansion	Full-length mPCIe slot (PCIe, SATA)
	M.2 2230 E-key (PCIe, USB)
Special Features	OnLogic Microcontroller (MCU)
	Onboard TPM 2.0 (Nuvoton NPCT750)
	Automotive Ignition Power Sensing
	SuperCap backup for RTC battery
Operating Systems	Windows 10, Ubuntu 18.04
LAN Controllers	Intel Ethernet Controller 1210-IT
Voltage Input	9~36 VDC

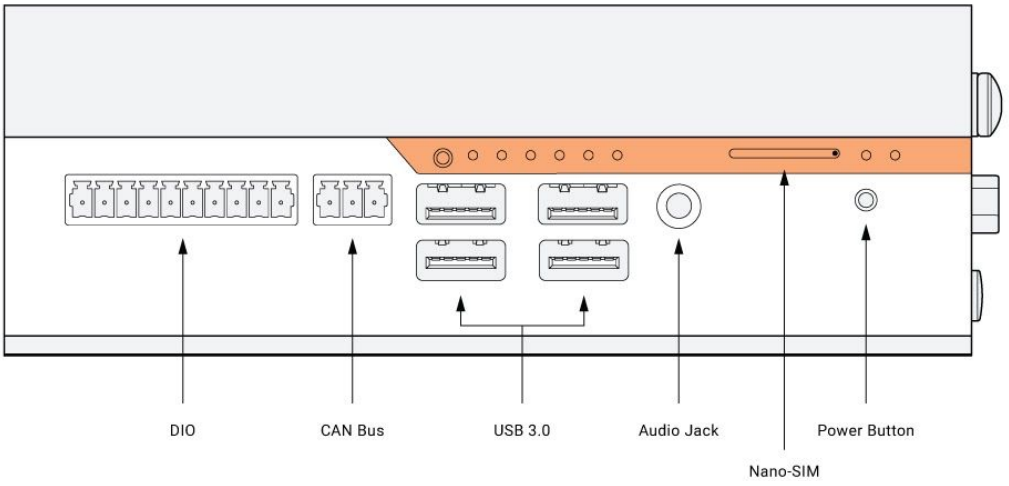
Dimensions	56 x 154 x 119 mm
Mounting	Wall mount (edge and bottom) DIN Rail mount (edge and bottom) VESA mount (bottom)
Environment	Operating Temperature: -25°C ~ 70°C
	Operating Humidity: 0 ~ 90%
	Storage Temperature: -40°C ~ 85°C
	Storage Humidity: 0 ~ 90%
Certifications	FCC 47 CFR Part 15 EN 55024 EN 55032 EN 62368-1 2011/65/EU (RoHS 2 Directive) WEEE Directive (2012/19/EU) IEC 60068-2-27 IEC 60068-2-64

1.3 - Exterior Features and Dimensions

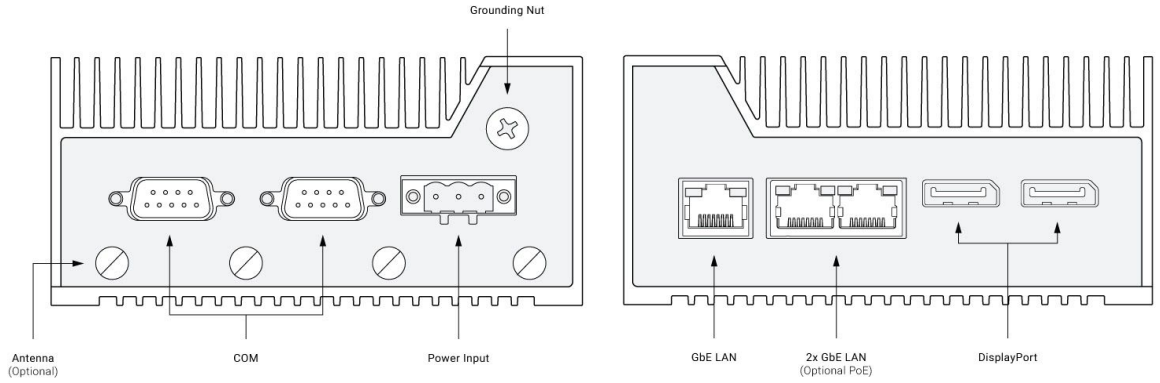
1.3.1 - IGN200 Dimensions



1.3.2 - Front I/O



1.3.3 - Side I/O

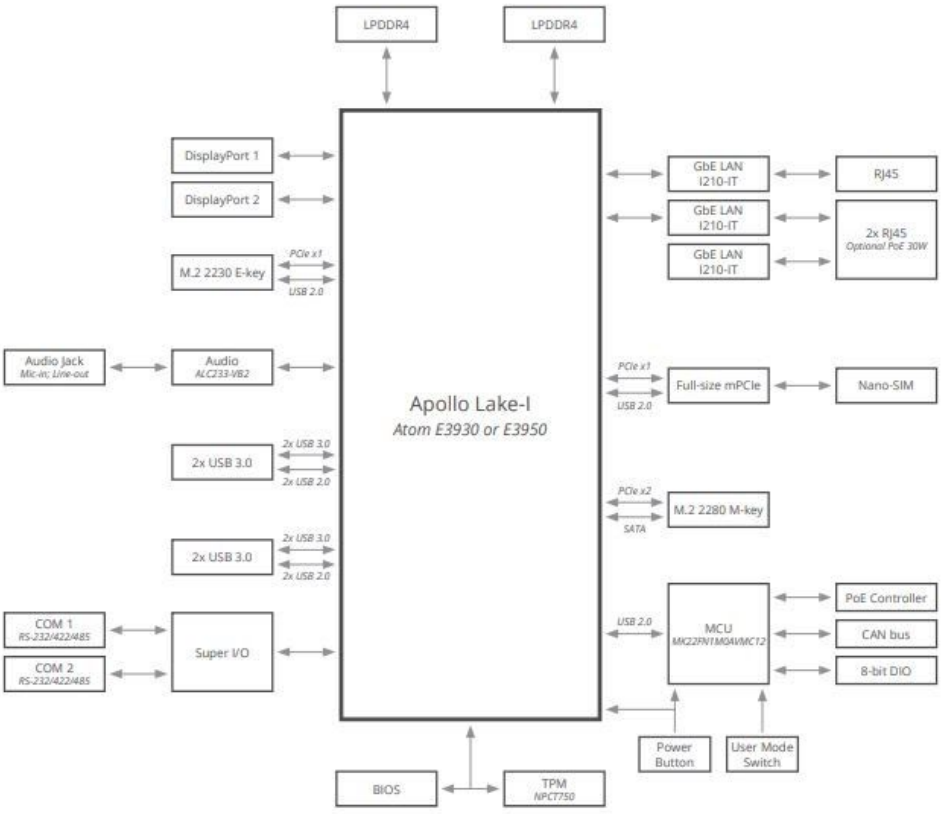


Right

Left

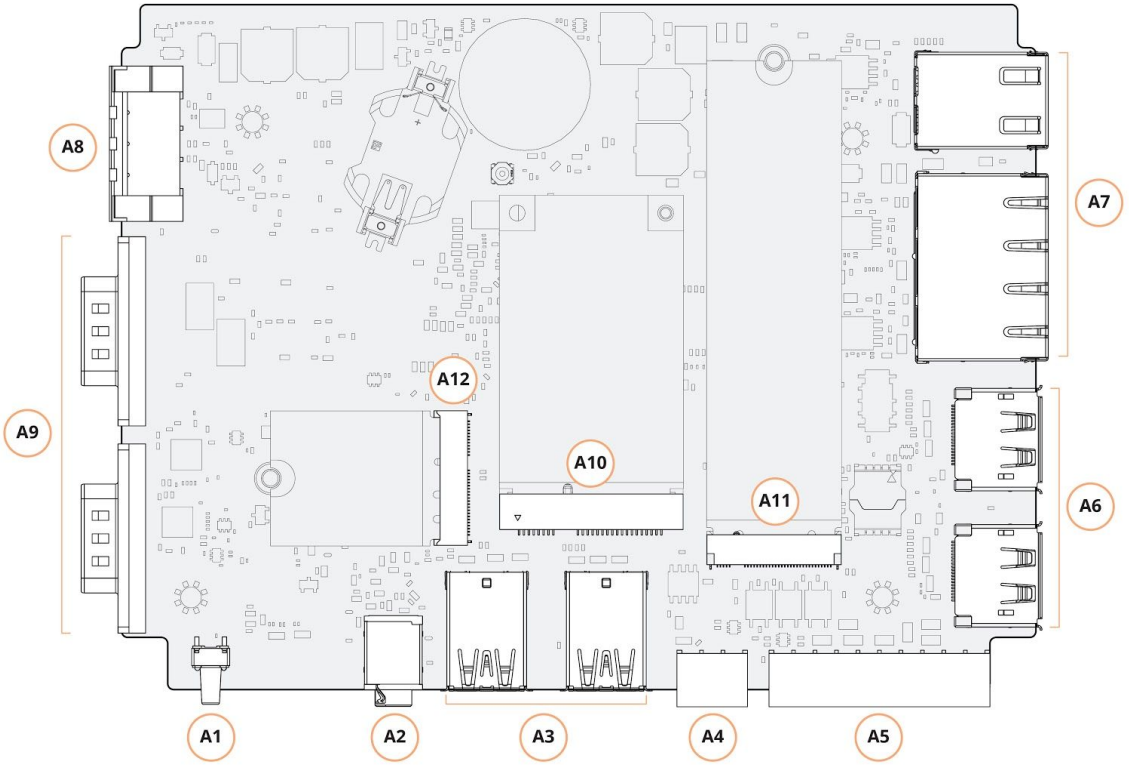
1.4 - Motherboard Overview

1.4.1 - System Block Diagram



System	Memory	Manufacturer	Part Number	Quantity	Total Capacity
K300-E3950-8-P	LPDDR4	Samsung	K4FBE3D4HMMGCJ	2	8 GB

1.4.2 - Motherboard Features

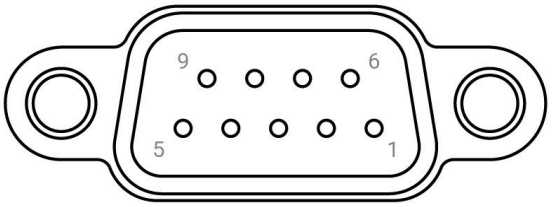


Item	Function Description
A1	Power button
A2	3.5 mm Audio jack
A3	4 x USB 3.0 Type A ports
A4	3-pin CAN bus
A5	8-bit isolated DIO (10-pin)
A6	2 x Full-size DisplayPort
A7	1 x RJ45 GbE LAN port
	2 x RJ45 GbE LAN ports with optional PoE (30W total)
A8	3-pin power input (9 ~ 36 VDC)
A9	2 x Serial RS-232/422/485 ports
A10	Full-size mPCIe
A11	M.2 2280 M-key for NVMe or SATA storage
A12	M.2 2230 E-key for Wi-Fi or WAN card

2 - I/O Definitions

2.1 - Serial Ports

The serial port mode and voltage between Off/5V/12V on Pin 9 on IGN200 can be selected in the BIOS configuration. The serial ports support RS-232, RS-422, and RS-485 configurations. Refer to the BIOS manual for configuration instructions.

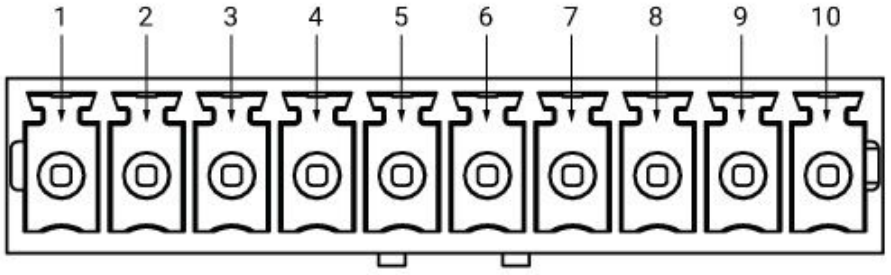


Pin	RS-232	RS-422	RS-485
1	DCD	TX-	TX-/RX-
2	RX	TX+	TX+/RX+
3	TX	RX+	NC
4	DTR	RX-	NC
5	GND	NC	NC
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI/PWR	NC/PWR	NC/PWR

NC = Not Connected

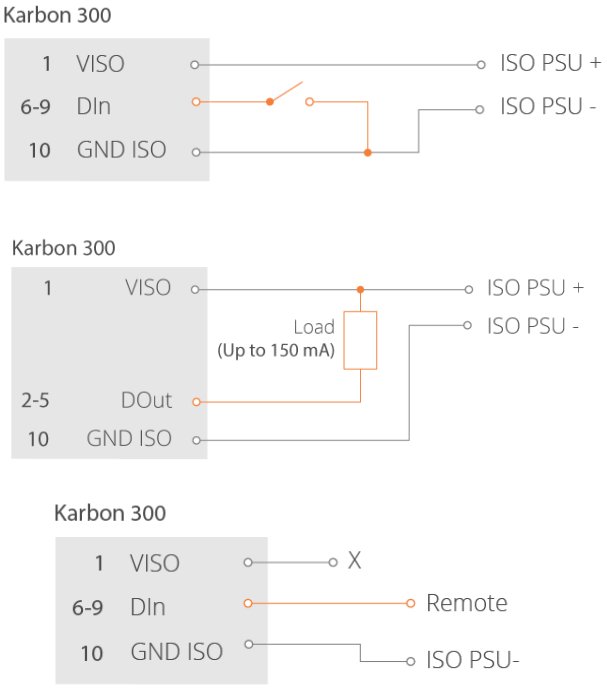
2.2 - DIO

The IGN200 DIO terminals are optically isolated. This means that the terminal is separated from other motherboard features for protection. In addition, the DIO requires external power from a 9-36VDC source through Pin 10 to function.

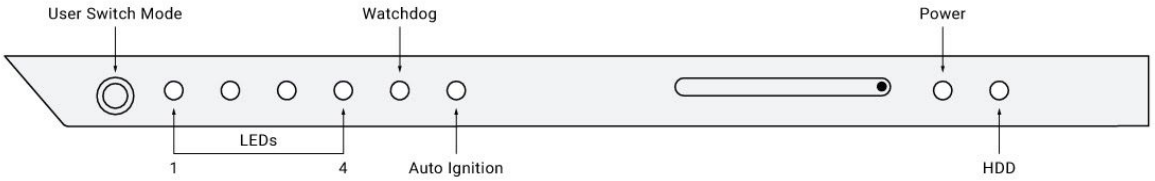


Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	Pin 10
GND	In 4	In 3	In 2	In 1	Out 4	Out 3	Out 2	Out 1	Power

2.2.1 - DIO Connection Diagram



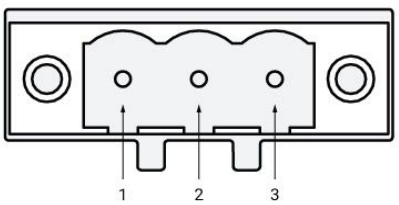
2.3 - LEDs



LED	On	Off	Blink	Pulse
HDD	-	-	Internal storage drive activity	-
Power	Device is on	Device is off	Device is asleep	-
Automotive Ignition	Ignition input to device is on	Ignition input to device is off	-	-
Watchdog	Internal MCU is not functioning normally	Internal MCU is not functioning normally	Firmware bootloader is active	Internal MCU is functioning normally
LEDs 1-4	Currently selected user mode	Currently selected user mode	-	-

2.4 - Automotive Ignition Power Sensing (IGN)

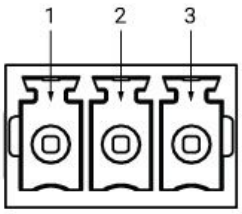
The IGN200 3-pin power input terminal offers automotive ignition sensing. The ignition sensing timing for power on and off delays can be modified through OnLogic's microcontroller (MCU) using serial commands. These commands allow setting the delay on startup after ignition is detected, the delay until soft and hard shutdown when ignition is lost, and enabling/disabling ignition sensing. For more information on ignition power sensing, and instructions on using these serial commands from Windows or Linux, visit our Karbon series technical support site.



Pin	Definition
1	GND
2	Ignition
3	9~36 VDC Input

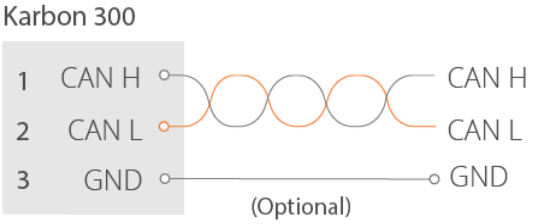
2.5 - CAN Bus

See Section 4 for information on how to drive the CAN bus.



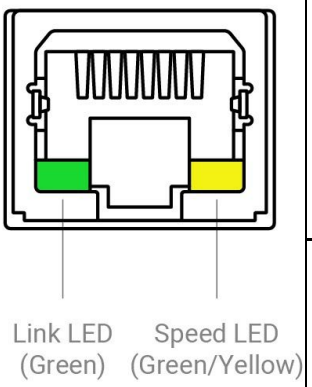
Pin	Definition
1	CAN H
2	CAN L
3	GND

2.5.1 - CAN Bus Connection Diagram



2.6 - LAN

The single LAN ports on all IGN200 models are standard GbE ports.

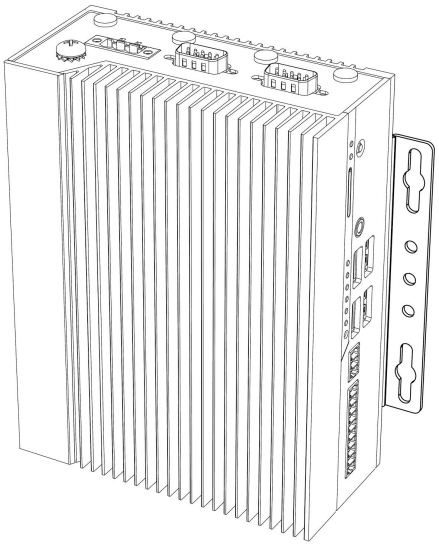


LED	Color	State	Condition
Link	-	Off	LAN link is not established
	Green	On	LAN link is established
		Blinking	LAN activity occurring
Speed	-	Off	10 Mb/s data rate
	Green	On	100 Mb/s data rate
	Yellow	On	1000 Mb/s data rate

3 - Mounting Instructions

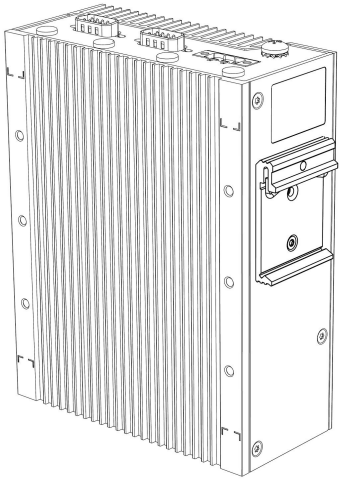
3.1 - Wall Mount

Step 1: Mark and prep holes in surface for mounting
Step 2: Attach wall mount brackets to chassis
Step 3: Fasten system to surface

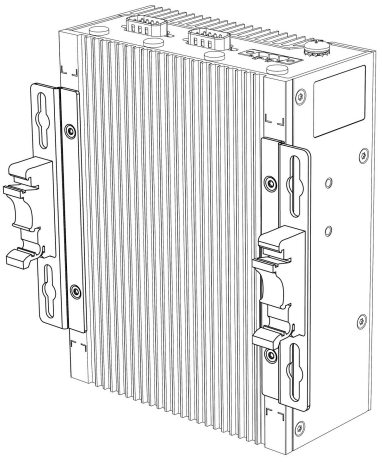


3.2 - DIN Rail Mounting

Step 1: Attach wall mounting brackets to the chassis
Step 2: Attach DIN Rail mounting brackets to the chassis
Step 3: Clip system to the DIN Rail



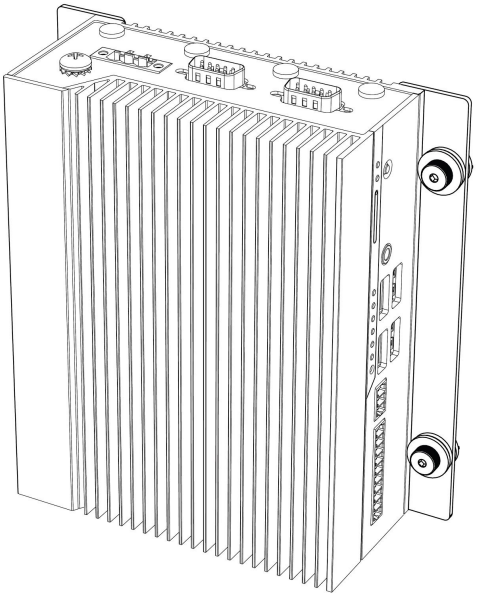
DIN Rail Edge Mounting



DIN Rail Back Mounting

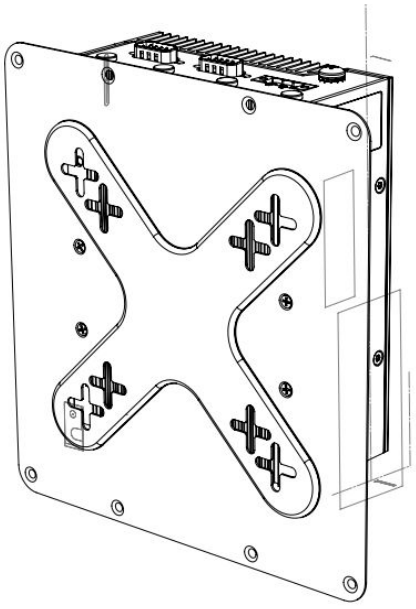
3.3 - Wall (Shock and Vibration) Mounting

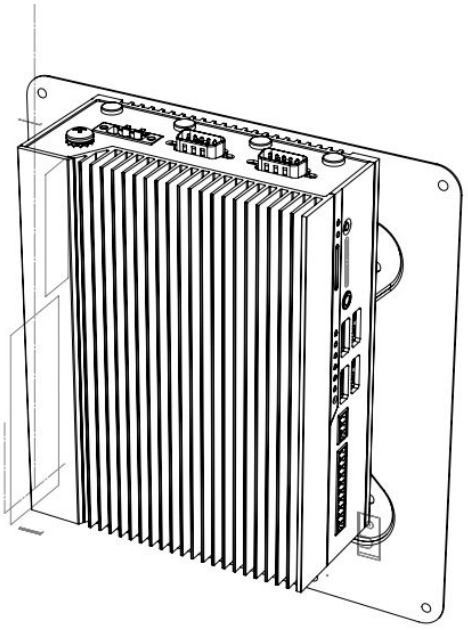
Step 1: Attach wall mounting brackets to the chassis
Step 2: Mark and prep holes in surface for mounting
Step 3: Fasten system to surface



3.4 - VESA Mounting

Step 1: Install four VESA screws into the display/surface
Step 2: Attach VESA bracket to the chassis
Step 3: Hang combined system and bracket to the display/surface





4 - Microcontroller

4.1 - Overview

The microcontroller on IGN200 controls several systems, including:

- Automotive ignition power sensing
- CAN bus
- DIO
- Status LEDs
- Power management and wake-up
- DisplayPort CEC and persistent EDID

A segment is exposed for user control via two serial ports. By reading and writing to these serial ports, the user can send and receive CAN messages, read/set the DIO state, and select from a number of configuration options. One port is dedicated to IGN200's CAN bus, while another doubles as a serial terminal and the DIO interface. Any configuration settings may be saved to non-volatile memory. This means that upon a long power-off, the MCU settings will be retained.

To learn more about how to use the IGN200 series MCU and Pykarbon interface tools, visit our Karbon Series technical support site.

5 - Power Management

5.1 - Wake-Up Events

IGN200 supports multiple power states. The wake-up events can be configured in the MCU and BIOS. This section describes the power management functions you can perform and gives information on protection circuitry for power adapters.

Wake-Up Event	From ACPI State	Comments
Power Button	VR-Disabled, S5, S4, S3	
Ignition	VR-Disabled, S5, S4, S3	Must be enabled in MCU.
Digital Input	S5, S4, S3	Must be enabled in MCU. Requires external reference power source.
LAN	S5, S4, S3	Must be enabled per port and generally in BIOS.
USB	S3	
RTC Alarm	S5	Wake from S5 must be enabled in BIOS.

5.2 - Protection Circuitry

Parameter	Value
Nominal operating voltage (Rated DC value of input)	9~36VDC
Undervoltage protection trip DC level (system turns off)	8.1V
Overvoltage protection trip DC level (system turns off)	42.5V
Maximum safe DC voltage (system not damaged)	50V
Minimum safe reverse voltage (system not damaged)	-40V
Ignition pin safe working voltage range (system not damaged)	-20~50V

These DC levels specified are the absolute max values for the pins for function and safety of the system. The protection circuitry allows for brief transient voltages above these levels without the system turning off (transients up to 50V for <30 ms).

A TVS protection on the input allows protection for:

- 5000W peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycles): .01%
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- EFT protection in accordance with IEC 61000-4-4