

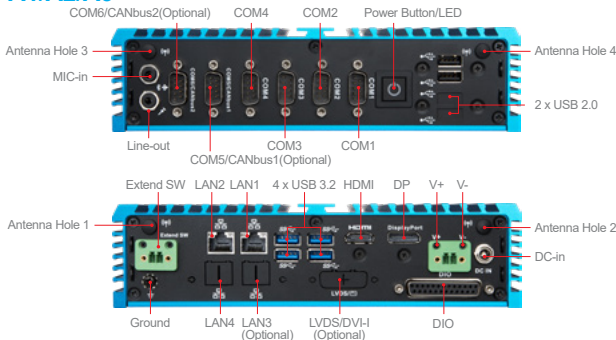
# MS-9A89

Compact-Size Box PC with Intel® Kaby Lake-U/Skylake-U or Apollo Lake-I Series Processor for Ultra Low-Power Fanless Solution

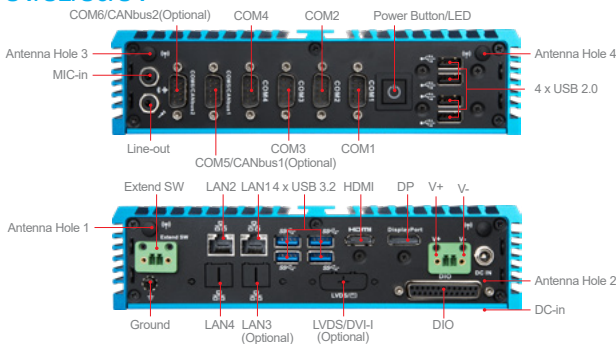
NEW



## A1/A2/A3



## U1/U2/U3/U4



## Features

- Intel® Apollo Lake/Apollo Lake-I Series SoC
  - DDR3L 1866/1600 MHz SODIMM Slot up to 8GB
  - Triple independent displays: DP++, HDMI, LVDS/DVI-I (by option)
  - 2 GbE LAN with RJ-45, 2 GbE LAN by Mini-PCIe expansion card with RJ-45 (by option)
  - Mini-PCIe (Full size, with mSATA), Mini-PCIe (Full size, with Nano SIM Holder) Slots
  - SATA 3.0 storage (2.5" SSD/HDD), micro SD for storage
  - 4 USB 3.2 Gen 1, 2 USB 2.0, 6 COM (1 RS-485), GPIO, Audio
  - 4 opening reserved for antennas
  - Anti-Vibration & Shockproof Design to Compliance IEC 61373
  - Railway design to Compliance EN50155 TX Class
  - Wide operating temperature: -20~70°C
  - Wide Voltage DC-IN 12~24V
  - Ultra-Compact with fanless design
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- Intel® 7th/6th Gen Kaby Lake-U/Skylake-U Series
  - DDR4 2133 MHz SODIMM Slot up to 16GB
  - Triple independent displays: DP++, HDMI, LVDS/DVI-I (by option)
  - 2 GbE LAN with RJ-45, 2 GbE LAN by Mini-PCIe expansion card with RJ-45 (by option)
  - Mini-PCIe (Full size, with mSATA), Mini-PCIe (Full size, with Nano SIM Holder) Slots
  - 2 SATA 3.0 storage (2.5" SSD/HDD), micro SD for storage SATA RAID 0/1
  - 4 USB 3.2 Gen 1, 4 USB 2.0, 6 COM (1 RS-485), GPIO, Audio
  - 4 opening reserved for antennas
  - Anti-Vibration & Shockproof Design to Compliance IEC 61373
  - Railway design to Compliance EN50155 TX Class
  - Wide Voltage DC-IN 12~24V
  - Ultra-Compact with fanless design
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## Specifications

	MS -9A89-A1	MS -9A89-A2	MS -9A89-A3	MS -9A89-U1	MS -9A89-U2	MS -9A89-U3	MS -9A89-U4	
<b>Processor</b>	CPU	Intel® Atom™ x7 Processor E3950, QC, 12W	Intel® Atom™ x5 Processor E3940, QC, 9.5W	Intel® Celeron® Processor J3455, QC, 10W	Intel® Kaby Lake-U Core™ Processor, DC, 15W	Intel® Skylake-U Core™ i3-6100U Processor, DC, 15W	Intel® Skylake-U Core™ i7-6600U Processor, DC, 15W	
	Frequency	1.6 GHz up to 2.0 GHz	1.6 GHz up to 1.8 GHz	1.5 GHz, up to 2.3 GHz	2.4 GHz		2.6 GHz	
	L2 Cache	2MB			3MB			
	CPU Type	BGA						
	Chipset	Integrated in SoC Process			Integrated in Process			
<b>Memory</b>	BIOS	AMI						
	Technology	Single-channel DDR4 1866/1600 MHz			Single-channel DDR4 2133 MHz			
	Max. Capacity	Up to 8GB			Up to 16GB			
<b>Display</b>	Socket	1 x 204-pin SO-DIMMs			1 x 260-pin SO-DIMMs			
	Controller	Intel® HD Graphics						
	Graphic Memory	Depends on CPU						
<b>Ethernet</b>	Multiple Display	3 independent displays						
	Display Interface	HDMI up to 3840 x 2160 @30Hz DP up to 4096 x 2160 @60Hz LVDS up to 1920 x 1200 @60Hz (optional by cable)			HDMI1.4 up to 4096 x 2160 @24Hz DP up to 3840 x 2160 @60Hz (Support DP++) LVDS up to 1920 x 1200 @60Hz (optional by cable) DVI-I up to 1920 x 1200 @60Hz (optional by MS-99C0)			
<b>Ethernet</b>	Controller	2 x Intel® I210-T GbE LAN		1 x Intel® I210-AT GbE LAN 1 x Intel® I219-LM GbE LAN PHY				
	Controller	Realtek® ALC887-VD2-CG HD Audio Codec						
<b>H/W Monitor</b>	Watchdog Timer	256-level Watchdog Timer						
<b>TPM</b>	Controller	N/A						
<b>Expansion Slot</b>	Mini-PCIe	2 x Full-size (Mini-PCIe1 Slot w/ NANO SIM-Holder) (Mini-PCIe2 Slot w/ mSATA)						
<b>Storage</b>	SATA	1 x 2.5" HDD/SSD Bay						
	mSATA	1 x Full-size						
<b>I/O Interface</b>	RJ-45	4 (LAN1/2 Standard, LAN3/4 by Option)						
	PoE	2 x 802.11af (Option by Request)						
	Audio	1 x Line-out 1 x Mic-in						
	USB	4 x USB 2.0 2 x USB 3.2 Gen 1			4 x USB 2.0 4 x USB 3.2 Gen 1			
	Serial	6 x COM ports COM1: RS-232/422/485, 0V/5V/12V COM2-6: RS-232, 0V/5V/12V						
	GPIO	16-bit (8*GPI; 8*GPO), 5V						
	CANbus	2 x CAN 2.0B (Option)						
	HDMI	1						
	LVDS	1 (optional)						
	DVI	1 (DVI-I by option)						
<b>Power Supply</b>	DisplayPort	1						
	Antenna	4 openings reserved for antennas						
<b>Environment</b>	DC Input	DC-in 12V~24V						
	Operating Temperature	-10~45°C (HDD) -20~70°C (w/WT SSD/ mSATA)		-10~45°C (HDD) -10~60°C (w/WT SSD/ mSATA)		-10~45°C (HDD) -10~60°C (w/WT SSD/mSATA)		
	Operating Humidity	10 ~ 90%, non-condensing						
	Storage Temperature	-20 ~ 80°C						
<b>Form Factor</b>	Storage Humidity	10 ~ 90%, non-condensing						
	Vibration	IEC61373 Category 1, Class B						
	Shock	IEC61373 Category 1, Class B						
	Dimensions (Wx DxH)	215 x 155 x 55 mm						
<b>Certification</b>	Weight	1.55 kg						
	Mounting	Wall mount (STD)/DIN-rail mount(STD)/VESA mount(by BOM option)						
<b>Software Platform</b>	EMC	CE, FCC, VCCI, RCM, BSMI, EN50155						
	Safety	BSMI						
<b>OS Support</b>	OS Support	Windows 10 IoT Enterprise LTSC/SAC 1809 (64-bit, RS5) Linux Fedora 25 (by request) Linux Ubuntu 16.04 (by request)						

## Packing List

Part Number Description

Please check MSI IPC website at <http://ipc.msi.com> for details.

## Optional Item

Part Number Description

Please check MSI IPC website at <http://ipc.msi.com> for details.

## Ordering Information

Part Number Description

Please check MSI IPC website at <http://ipc.msi.com> for details.

Industrial Computer Board COM Express Board Gseven Board Pico-ITX Board 3.5" Board EPIC Board PICMG Board Mini-ITX Board Micro-ATX ATX Board Compact-Size LVDS/DVI Compact-Size DC/DC Full-Size Mini-PCIe Intel® SDM