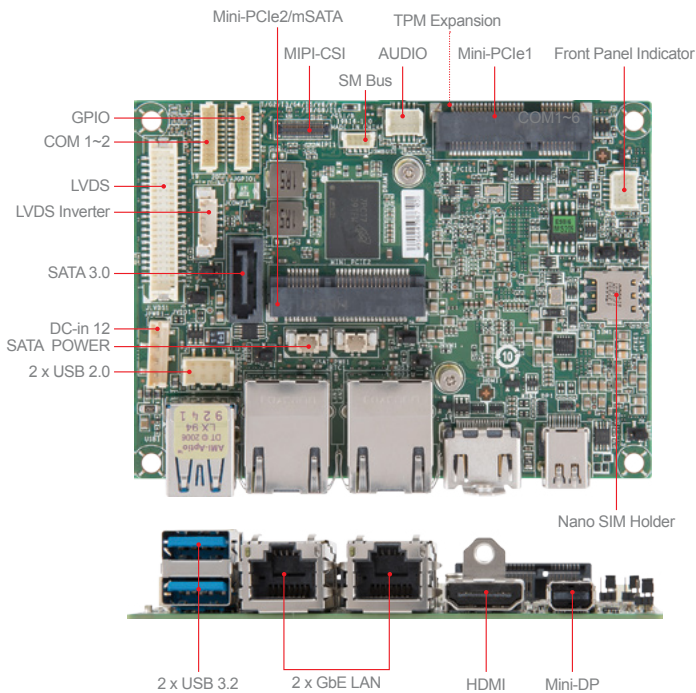


# MS-9816

Pico-ITX SBC with Intel® Apollo Lake/Apollo Lake-I for Fanless, Low-Power, High-Performance, Wide Temperature & Harsh environment Solution

NEW



## Features

- Intel® Apollo Lake/Apollo Lake-I Series SoC
- LPDDR4 2400/2133 MHz onboard memory up to 4GB
- Triple independent displays: Mini-DP, HDMI, LVDS
- 2 GbE LAN with RJ-45
- 2 USB 3.2 Gen 1, 2 USB 2.0, 2 COM (RS-485), GPIO, Audio
- 1 Mini-PCIe (Full size with NANO SIM-Holder), 1 Mini-PCIe (Half size with mSATA) Slots
- SATA 3.0 for storage
- Wide operating temperature : -40~85°C
- DC-IN 12V
- MIPI-CSI 2.0 interface for Camera

## Ordering Information

| Part Number  | Description  |
|--------------|--|
| 919-9816-001 | MS-9816 10, Apollo Lake N4200, Onboard LPDDR4 4GB, 1*HDMI, 1*LVDS, 1*Mini-DP, 1*MIPI, 2*Mini-Pcie, 2*USB3.0, 2*USB2.0, 1*SATA3.0, 2*COM, 2*LAN, DC 12V, SINGLE   |
| 919-9816-002 | MS-9816 10, Apollo Lake N3350, Onboard LPDDR4 4GB, 1*HDMI, 1*LVDS, 1*Mini-DP, 1*MIPI, 2*Mini-Pcie, 2*USB3.0, 2*USB2.0, 1*SATA3.0, 2*COM, 2*LAN, DC 12V, SINGLE   |
| 919-9816-003 | MS-9816 10, Apollo Lake-I E3940, Onboard LPDDR4 4GB, 1*HDMI, 1*LVDS, 1*Mini-DP, 1*MIPI, 2*Mini-Pcie, 2*USB3.0, 2*USB2.0, 1*SATA3.0, 2*COM, 2*LAN, DC 12V, SINGLE |
| 919-9816-004 | MS-9816 10, Apollo Lake-I E3930, Onboard LPDDR4 4GB, 1*HDMI, 1*LVDS, 1*Mini-DP, 1*MIPI, 2*Mini-Pcie, 2*USB3.0, 2*USB2.0, 1*SATA3.0, 2*COM, 2*LAN, DC 12V, SINGLE |

## Packing List

| Part Number     | Description                  | Quantity |
|-----------------|------------------------------|----------|
| K14-3018001-V03 | COM PORT Cable, 150mm        | 1        |
| K1B-3008034-V03 | USB Cable, 150mm             | 1        |
| K1D-3010008-V03 | SATA Cable with Power, 150mm | 1        |
| K1G-3004057-V03 | DC Power Cable, 150mm        | 1        |
| G71-SEDC177-X03 | Driver DVD                   | 1        |

## Specifications

|  |   | Apollo Lake SKUs   | Apollo Lake-I SKUs   |
|--|---|--|--|
|  |   | <b>CPU</b><br><br><b>Processor</b><br><br><b>Frequency</b><br><br><b>L2 Cache</b><br><b>CPU Type</b><br><b>Chipset</b><br><b>BIOS</b>  | Intel® Pentium® Processor N4200, QC, 6W<br>Intel® Celeron® Processor N3350, DC, 6W<br>Intel® Celeron® Processor J3455, QC, 10W<br><br>N4200, 1.1 GHz, up to 2.5 GHz<br>N3350, 1.1 GHz, up to 2.4 GHz<br>J3455, 1.5 GHz, up to 2.3 GHz<br><br>2M<br>BGA<br>Integrated in SoC<br>AMI |
| <b>Memory</b><br><br><b>Display</b><br><br><b>Ethernet</b><br><b>Audio</b><br><b>Super I/O</b><br><b>H/W Monitor</b><br><b>TPM</b><br><br><b>I/O Interface</b><br><br><b>Expansion Slot</b><br><br><b>Storage</b><br><br><b>Power Supply</b><br><br><b>Environment</b><br><br><b>Form Factor</b><br><br><b>Certification</b><br><br><b>Software Platform</b> | Technology<br>Max. Capacity<br>Socket<br><br>Controller<br>Graphic Memory<br>LVDS<br>eDP<br>VGA<br>DVI<br>HDMI<br>DisplayPort<br>Multiple Display<br><br>Controller<br>Controller<br><br>Watchdog Timer<br>Smart Fan<br><br>Controller<br><br>USB<br>Serial<br>GPIO<br><br>Mini-PCIe<br><br>SATA<br>mSATA<br><br>DC<br>ATX<br><br>Operating Temperature<br>Operating Humidity<br>Storage Temperature<br>Storage Humidity<br><br>Dimensions<br>Weight<br><br>EMC<br><br>OS Support | Single-channel LPDDR4 2400MHz<br>Single-channel LPDDR4 2133MHz<br><br>Up to 4GB<br>Onboard<br><br>Intel® HD Graphics<br>Depends on CPU<br>Dual Channel 18/24-bit<br>N/A<br>N/A<br>N/A<br>1<br>1 (Mini-Displayport)<br>3 independent displays<br><br>2 x Intel® I211-AT GbE LAN<br>2 x Intel® I210-IT GbE LAN<br><br>Realtek® ALC887-VD2-CG HD Audio Codec<br>Fintek F81866AD-I<br><br>256-level Watchdog Timer<br>N/A<br><br>Pin header<br><br>2 x USB 2.0 (internal)<br>2 x USB 3.2 Gen 1 (rear)<br><br>2 x COM ports (internal)<br>COM1: RS-232/422/485, 0V/5V/12V<br>COM2: RS-232/422/485, 0V/5V/12V<br><br>16-bits (8 x GPI; 8 x GPO), 5V<br><br>1 x Full-size<br>1 x Half-size<br>(Mini-PCIe Full-size Slot w/ NANO SIM-Holder)<br>(Mini-PCIe Half-size Slot w/ mSATA)<br><br>1 x SATA 3.0<br>1 (Shared with Mini-PCIe Half-size)<br><br>DC-in 12V<br>N/A<br><br>-10 ~ 60°C<br>10 ~ 90%, non-condensing<br>-20 ~ 80°C<br>10 ~ 90%, non-condensing<br><br>101 x 73mm (Pico-ITX)<br>0.27 kg<br><br>FCC, CE, RCM, VCCI, BSMI<br><br>Windows 10 IoT Enterprise LTSC/SAC 1809 (64-bit, RS5)<br>Linux Fedora 25 (by request)<br>Linux Ubuntu 16.04 (by request) |  |

## Optional Item

| Part Number     | Description                     | Quantity |
|-----------------|---------------------------------|----------|
| E31-0805810-K08 | Heartspreader for Apollo Lake-I | 1        |
| E31-0805820-K08 | Heartspreader for Apollo Lak    | 1        |

Industrial Computer  
COM Express Board  
Qseven Board  
Pico-ITX Board  
3.5" Board  
EPIC Board  
PICMG Board  
Mini-ITX Board  
Micro-ATX Board  
ATX Board  
Compact-Size Board  
Compact-Size Board  
Compact-Size Board  
Full-Size Board  
Intel® SDM