



## Features

- Intel® Pentium®/Celeron®/Atom™ Processor
- One 204-pin SODIMM Socket Up to 8GB DDR3L 1866MHz SDRAM
- Rich I/O, 1-DP, 1-LVDS, 1-DC-Out, 1-8-bit GPIO, 2-Line-out, 2-Mic-in, 2-LAN, 2-COM, 4-USB
- Onboard u-box M8N concurrent GNS module (GPS/QZSS, GLONASS, BeiDou)
- Rugged Fanless Design Compliant with MIL-STD-810G
- Power Management and Low Voltage Protection Design
- Wake on RTC/SMS Via WWAN Module
- Optional CAN modules supports OBD II, SAE J1939 or J1708
- Wide Range DC Power Input from 9 ~ 36V
- Supports TPM 1.2/2.0 (Factory Option), SD card (SD 3.0)



E13 Mark



ISO 7637-2



MIL-STD  
810G/H



Wide Temp.  
-40~70°C



Wide Voltage  
Input  
9~36Vdc

## Specifications

### System Information

|                    |                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processor          | Intel® Pentium® Processor N4200 (2M Cache, up to 2.5 GHz)<br>Intel® Celeron® Processor N3350 (2M Cache, up to 2.4 GHz)<br>Intel® Celeron® Processor J3455 (2M Cache, up to 2.3 GHz)<br>Intel Atom® x7-E3950 Processor (2M Cache, up to 2.00 GHz)<br>Intel Atom® x5-E3940 Processor (2M Cache, up to 1.80 GHz)<br>Intel Atom® x5-E3930 Processor (2M Cache, up to 1.80 GHz) |
| System Memory      | 1 x 204-Pin DDR3L 1866MHz SO-DIMM up to 8 GB                                                                                                                                                                                                                                                                                                                               |
| Watchdog Timer     | H/W Reset, 1sec. ~ 65535sec.                                                                                                                                                                                                                                                                                                                                               |
| H/W Status Monitor | Monitoring CPU & System Temperature and Voltage                                                                                                                                                                                                                                                                                                                            |
| SBC                | EBM-APLV                                                                                                                                                                                                                                                                                                                                                                   |

### Expansion

|           |                                                                                                         |
|-----------|---------------------------------------------------------------------------------------------------------|
| mPCIe     | 2 x Mini-PCIe socket (PCIe + USB) for WLAN / WWAN option (w/ SIM Slot)                                  |
| IET       | 1 x Avalue 80-Pin IET Interface (1 x DP, 4 x PCIe1, 3 x USB2.0, 1 x LPC, 1 x Line-Out (R/L), 1 x SMBus) |
| Expansion | 1 x CANBus module Interface (UART), supports OBDII, SAE J1939/J1708 (Factory Option)                    |

### Storage

|               |                                      |
|---------------|--------------------------------------|
| M.2           | 1 x M.2 Key-B 2242, support SATA III |
| 2.5 Drive Bay | 1 x 2.5" Drive Bay (SATA III)        |
| MicroSD Card  | 1 x SD (3.0)                         |

### Front I/O

|               |                                                                                                                                                                                                                                                |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USB           | 2 x USB 3.0                                                                                                                                                                                                                                    |
| Power Button  | 1 x Push Button for Power on/off                                                                                                                                                                                                               |
| Reset Button  | 1 x Push Button for Reset                                                                                                                                                                                                                      |
| LED Indicator | 1 x Power LED (Blue), 1 x Storage LED (Yellow)<br>1 x WLAN LED (Green), 1 x WWAN LED (Green)                                                                                                                                                   |
| Audio         | 1 x Mic-In, 1 x Line-Out                                                                                                                                                                                                                       |
| SIM Slot      | 2 x SIM Card Slots (External Accessible)                                                                                                                                                                                                       |
| Digital I/O   | 1 x 8-Bit GPIO<br>Input Voltage (Internal Type): 5VDC TTL (default)<br>Input Voltage (Source Type): 0~30 VDC<br>Digital Output (Sink Type): 5VDC TTL (default), max current: 20mA<br>Digital Output (Source Type): 0~30VDC, max current: 250mA |

### Rear I/O

|          |                                                                 |
|----------|-----------------------------------------------------------------|
| USB      | 2 x USB 3.0                                                     |
| COM Port | 2 x RS-232/422/485 (Jumper)                                     |
| LAN Port | 2 x RJ-45                                                       |
| CAN Bus  | CANbus modules supports OBDII, SAE J1939/J1708 (Factory Option) |
| Audio    | 1 x Mic-In, 1 x Line-Out                                        |
| DP       | 1 x DP                                                          |
| LVDS     | 1 x LVDS                                                        |
| Antenna  | 5 x Antenna Mounting with Dust Cover                            |

|             |                      |
|-------------|----------------------|
| AC/DC Input | 3-Pin Terminal Block |
| DC Output   | 2-Pin Terminal Block |

### GPS

|             |                                                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chipset     | Onboard u-blox NEO-M8N module supports GPS/ Glonass/ QZSS/ Galileo/ Beidou                                                                                         |
| Sensitivity | Industry leading -167 dBm navigation sensitivity Product variants to meet performance and cost requirements<br>Combines low power consumption and high sensitivity |

### Display

|                 |                                                                                       |
|-----------------|---------------------------------------------------------------------------------------|
| Graphic Chipset | Intel® HD Graphics 505 (N4200, E3950)<br>Intel® HD Graphics 500 (E3950, E3940, E3930) |
| Resolution      | DP: Max. Resolution 4096x2160 @ 60Hz<br>LVDS: Max. Resolution 1920x1200 @ 60Hz        |

### Audio

|             |                                 |
|-------------|---------------------------------|
| Audio Codec | Realtek ALC888S supports 2.1-CH |
|-------------|---------------------------------|

### Ethernet

|               |                                    |
|---------------|------------------------------------|
| LAN Chipset   | 2 x Intel® I211AT                  |
| Specification | 10/100/1000 Base-Tx GbE compatible |

### Power Requirement

|                         |                                                                                  |
|-------------------------|----------------------------------------------------------------------------------|
| Voltage Input Spec.     | Typical 12/24 Vdc ( +9~ 36V )                                                    |
| Voltage Input Connector | 3-Pin Terminal Block                                                             |
| DC Output Spec.         | 12Vdc/6A                                                                         |
| DC Output Connector     | 2-Pin Terminal Block                                                             |
| ACPI                    | Single Power ATX Support S0, S3, S4, S5; ACPI 5.0 Compliant                      |
| Power Mode              | Vehicle Power Mode (Default Setting)<br>Industrial PC Power Mode supports AT/ATX |

### Software Support

|    |                                     |
|----|-------------------------------------|
| OS | Win 10, Linux, Android (by request) |
|----|-------------------------------------|

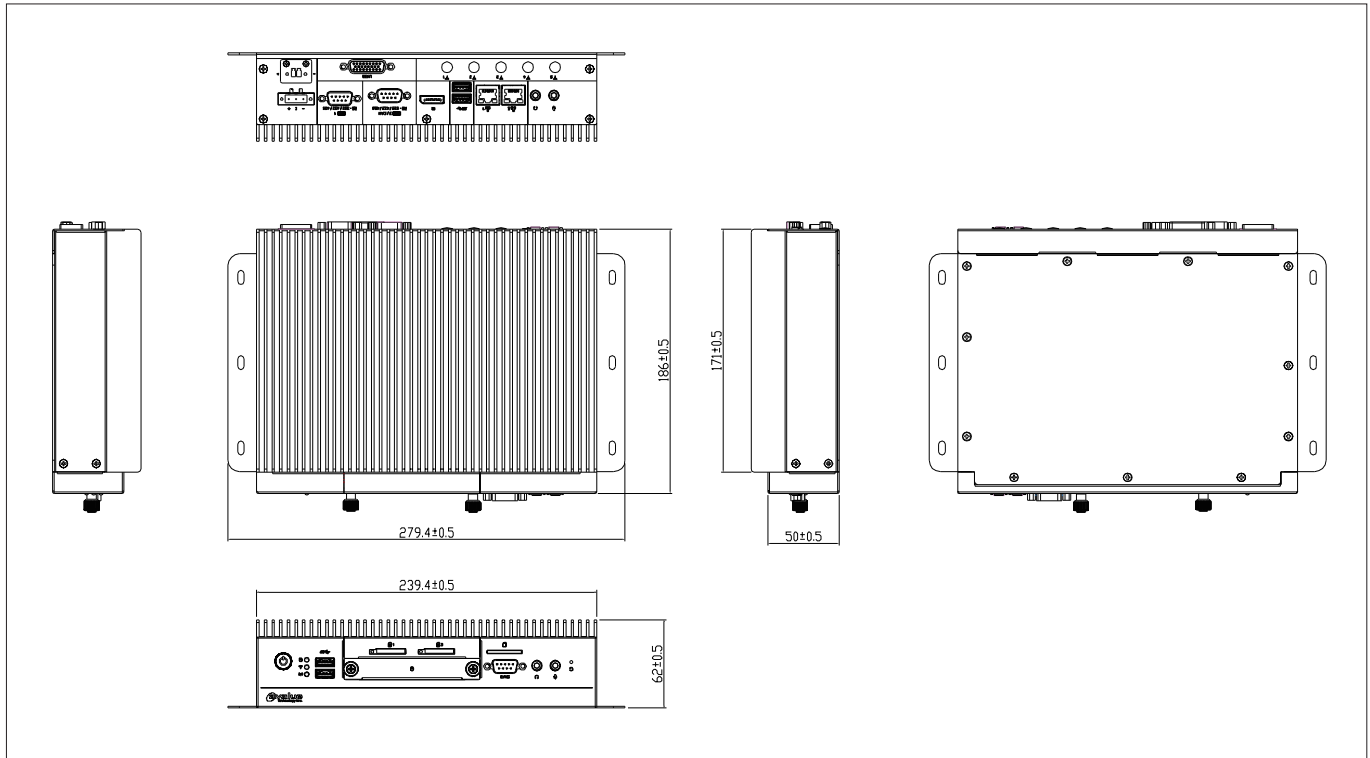
### Certification

|                           |                                                   |
|---------------------------|---------------------------------------------------|
| Certification Information | CE, FCC Class B, e13 Mark, ISO7637-2, IP50 Rating |
|---------------------------|---------------------------------------------------|

### Mechanical & Environmental

|                       |                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temp.       | With extended temperature peripherals: -20°C ~ 70°C<br>(-4°F ~ 158°F) with air flow (N4200/ N3350/J3455)<br>With extended temperature peripherals: -40°C ~ 70°C<br>(-40°F ~ 158°F) with air flow (E3950/ E3940/ E3930) |
| Storage Temp.         | -30°C ~ 70°C (-22°F ~ 158°F)                                                                                                                                                                                           |
| Operating Humidity    | 40°C @ 95% Relative Humidity, Non-condensing                                                                                                                                                                           |
| Dimension (W x L x H) | 239mm x 186mm x 62mm                                                                                                                                                                                                   |
| Weight                | 2.6kg (system), 3.2kg (w/package)                                                                                                                                                                                      |
| Vibration Test        | MIL-STD-810G, Method 514.6, Category 4, common carrier<br>US highway truck vibration exposure                                                                                                                          |
| Shock Test            | MIL-STD-810G, Method 516.6, Procedure I, functional shock=20G                                                                                                                                                          |
| Mounting Kit          | Wall Mount kit (Standard)                                                                                                                                                                                              |

## Mechanical Drawing



## Ordering Information

| P/N               | Processor                       | Chipset | Memory                        | Storage    | Adapter/ PSU           | Mounting Kit | Temp.        |
|-------------------|---------------------------------|---------|-------------------------------|------------|------------------------|--------------|--------------|
| VMS-APL-N42-B1-1R | Intel® Pentium® N4200 Processor | N/A     | 4GB DDR3L (Up to 8G Optional) | (Optional) | 60W Adapter (Optional) | Wall Mount   | -20°C ~ 70°C |
| VMS-APL-N33-B1-1R | Intel® Celeron® N3350 Processor | N/A     | 4GB DDR3L (Up to 8G Optional) | (Optional) | 60W Adapter (Optional) | Wall Mount   | -20°C ~ 70°C |
| VMS-APL-J34-B1-1R | Intel® Celeron® J3455 Processor | N/A     | 4GB DDR3L (Up to 8G Optional) | (Optional) | 60W Adapter (Optional) | Wall Mount   | -20°C ~ 70°C |
| VMS-APL-E50-B1-1R | Intel Atom® x7-E3950 Processor  | N/A     | 4GB DDR3L (Up to 8G Optional) | (Optional) | 60W Adapter (Optional) | Wall Mount   | -40°C ~ 70°C |
| VMS-APL-E40-B1-1R | Intel Atom® x5-E3940 Processor  | N/A     | 4GB DDR3L (Up to 8G Optional) | (Optional) | 60W Adapter (Optional) | Wall Mount   | -40°C ~ 70°C |
| VMS-APL-E30-B1-1R | Intel Atom® x5-E3930 Processor  | N/A     | 4GB DDR3L (Up to 8G Optional) | (Optional) | 60W Adapter (Optional) | Wall Mount   | -40°C ~ 70°C |

## Packing List

| Item                                                                               | Quantity |
|------------------------------------------------------------------------------------|----------|
| VMS-APL Intel® Pentium®/Celeron®/Atom™ Processor Fanless Vehicle Telematics System | 1        |
| DP to VGA Converter                                                                | 1        |
| Screw Kits for Peripheral                                                          | 1        |
| Dust Cover Kits                                                                    | 1        |

## Optional Items

| Item                                             | P/N                                  |
|--------------------------------------------------|--------------------------------------|
| AC/DC adapter 12V/5A 90 Screw Type               | ACC-ADP-060N-14R<br>ACC-ADP-060N-08R |
| Terminal block to lockable DC Jack cable         | E170P040031R                         |
| Power Cord 3P (F)-3P (M) 183cm, USA type         | E1702031833R                         |
| Power Cord SL-6+SL-3 183cm, EU type              | E1702031000R                         |
| Power Cord 3P (F)-3P (M) 183cm, Japan w/PSE type | E1702031834R                         |
| Power Cord 0P-026+SL-3 183cm, UK type            | E170P060380R                         |
| Power Cord 3P (F)-3P (M) 183cm, Australia type   | E1702031831R                         |

## I/O Overview

