

# MTC-6000 USER

Intel® Core™ i7/i5/i3 Fanless Multi-Touch Computer,  
6 Gigabit LAN with 4 PoE+ /2 PD LAN, 2 SIM Socket, 5 USB 3.0

# Manual

# Record of Revision

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| Version | Date       | Page | Description      | Remark |
|---------|------------|------|------------------|--------|
| 1.0     | 2021/05/10 | All  | Official Release |        |

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# Order Information

## MTC-6021 Series

| Part Number       | Description  |
|-------------------|--|
| MTC-6021-PDR600U  | MTC-6021 21.5" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6021-PDR300U  | MTC-6021 21.5" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6021-PDR955U  | MTC-6021 21.5" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6021-PoER600U | MTC-6021 21.5" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6021-PoER300U | MTC-6021 21.5" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6021-PoER955U | MTC-6021 21.5" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6021-2R600U   | MTC-6021 21.5" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |
| MTC-6021-2R300U   | MTC-6021 21.5" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |
| MTC-6021-2R955U   | MTC-6021 21.5" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |

## MTC-6019 Series

| Part Number       | Description  |
|-------------------|--|
| MTC-6019-PDR600U  | MTC-6019 19" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6019-PDR300U  | MTC-6019 19" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6019-PDR955U  | MTC-6019 19" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6019-PoER600U | MTC-6019 19" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6019-PoER300U | MTC-6019 19" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6019-PoER955U | MTC-6019 19" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6019-2R600U   | MTC-6019 19" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |
| MTC-6019-2R300U   | MTC-6019 19" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |
| MTC-6019-2R955U   | MTC-6019 19" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |

## MTC-6017 Series

| Part Number       | Description  |
|-------------------|--|
| MTC-6017-PDR600U  | MTC-6017 17" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6017-PDR300U  | MTC-6017 17" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6017-PDR955U  | MTC-6017 17" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6017-PoER600U | MTC-6017 17" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6017-PoER300U | MTC-6017 17" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6017-PoER955U | MTC-6017 17" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6017-2R600U   | MTC-6017 17" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |
| MTC-6017-2R300U   | MTC-6017 17" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |
| MTC-6017-2R955U   | MTC-6017 17" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |

## MTC-6015 Series

| Part Number       | Description  |
|-------------------|--|
| MTC-6015-PDR600U  | MTC-6015 15" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6015-PDR300U  | MTC-6015 15" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6015-PDR955U  | MTC-6015 15" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 2 PD LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                                 |
| MTC-6015-PoER600U | MTC-6015 15" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6015-PoER300U | MTC-6015 15" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6015-PoER955U | MTC-6015 15" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 6 GigE LAN with 4 PoE <sup>+</sup> , 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, Isolated DIO |
| MTC-6015-2R600U   | MTC-6015 15" Fanless Multi-Touch Computer, Intel® Core™ i7-6600U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |
| MTC-6015-2R300U   | MTC-6015 15" Fanless Multi-Touch Computer, Intel® Core™ i5-6300U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |
| MTC-6015-2R955U   | MTC-6015 15" Fanless Multi-Touch Computer, Intel® Celeron® 3955U Processor (Skylake-U), 2 GigE LAN, 2 Front-access SSD Tray, 5 USB 3.0, 3 USB 2.0, 32 GPIO                               |

## Order Accessories

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| Part Number             | Description   |
|-------------------------|---|
| DDR4 16G                | Certified DDR4 16GB 2133MHz RAM   |
| DDR4 8G                 | Certified DDR4 8GB 2133MHz RAM  |
| DDR4 4G                 | Certified DDR4 4GB 2133MHz RAM  |
| PWA-120W                | 120W, 24V, 90VAC to 264VAC Power Adapter with 3-pin Terminal Block                                  |
| PWA-120WM4P             | 120W, 24V, 90VAC to 264VAC Power Adapter with 4-pin Mini-DIN Connector                              |
| PWA-160W-WT             | 160W, 24V, 85VAC to 264VAC Power Adapter with 3-pin Terminal Block, Wide Temperature -30°C to +70°C |
| Panel-Mount             | Panel Mount Kit for MTC-6000  |
| VESA Stand              | VESA Table Stand  |
| 3G Module               | Mini PCIe 3G/GPS Module with Antenna  |
| 4G Module               | Mini PCIe 4G/GPS Module with Antenna  |
| WiFi Module             | Mini PCIe WiFi Module with Antenna  |
| WiFi & Bluetooth Module | Mini PCIe WiFi & Bluetooth Module with Antenna  |



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# 1

## GENERAL INTRODUCTION

### 1.1 Overview

Vecow MTC-6000 Series Fanless Multi-Touch Computer is an all-in-one fanless Multi-Touch Computer for Industrial IoT and Industry 4.0 applications with excellent performance and Industrial-grade reliability. Powered by 6th generation Intel® Core™ i7/i5/Celeron U-Series SoC (Skylake-U) engine, dual DDR4 2133MHz SO-DIMMs, up to 32GB memory. Advanced Intel® HD Graphics 520 supports DirectX 12, OpenGL 4.4 and OpenCL 2.0 API, multiple DVI-D and DisplayPort interfaces support up to ultra HD 4K resolution, Vecow MTC-6000 delivers up to 34% enhanced graphics performance than former generation.

Full HD LCD panel with LED backlight, Projected Capacitive 10-point Multi-Touch Screen with 7H Anti-Scratch Surface, Touchscreen works with gloves, 6 Gigabit LAN ports with 4 IEEE 802.3at PoE+ ports or 2 Gigabit Powered Device LAN, 2 Mini PCIe sockets for PCIe/USB/External SIM Card/mSATA, 2 External SIM Card sockets support WiFi/4G/3G/LTE/GPRS/UMTS, 2 external 2.5" SSD/HDD trays, 1 External CFast socket, 16 Isolated DIO, 5 USB 3.0, 4 COM RS-232/422/485, Ignition Control, 6V to 36V wide range power input with up to 80V smart surge protection, all-in-one fanless design, wide operating temperature, optional supports sunlight readable features and IP65 front panel protection, Vecow MTC-6000 is ready to fit your requirements.

Vecow MTC-6000 Series Fanless Multi-Touch Computer integrates outstanding system performance, considerate manageability, smart protection functions and trusted reliability for Smart Manufacturing, Mobile DVR/NVR, Industrial Automation, HMI, Infotainment, Intelligent Control, Point-Of-Service, Smart Transportation, Healthcare, and any Industrial IoT or Industry 4.0 applications.

## 1.2 Features

- 15" 17" 19" 21.5" LCD Panel with LED Backlight
- Projected Capacitive Multi-Touch Screen with 7H Anti-Scratch Surface, up to 10-point Multi-touch
- Fanless, 6th generation Intel® Core™ i7/5/Celeron U-Series Processor (Skylake-U)
- 6V to 36V DC-in, 80V Surge Protection
- 6 Gigabit LAN with 4 IEEE 802.3at PoE+
- 2 External SIM Socket support WiFi/4G/3G/LTE/GPRS/UMTS
- External CFast Socket, 2 SSD Tray, 4 COM, 2 USB 3.0, 3 USB 2.0
- 16 Isolated DIO, Ignition Control
- Touchscreen works with gloves
- IP65 Front Panel Protection

## 1.3 Product Specification

### 1.3.1 Specifications of MTC-6021-PoER

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 21.5" (16 : 9)  |
| Max Resolution                  | 1920 x 1080   |
| Display Color                   | 16.7M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 250   |
| Viewing Angle                   | 89/89/89/89 (Typ.) (CR≥10)  |
| Contrast Ratio                  | 3000 (Typ.)   |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| Isolated DIO                    | 16 Isolated DIO (8 DI, 8 DO), support NPN/PNP   |
| GPIO                            | 16 GPIO (Internal)  |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet</b>        |  |
| LAN 1                  | Intel® I219LM GigE LAN supports iAMT 11.0  |
| LAN 2                  | Intel® I210 GigE LAN   |
| <b>PoE</b>             |  |
| LAN 3                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 4                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 5                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 6                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 537.6mm x 329.1mm x 115.2mm (21.2" x 12.9" x 4.6")   |
| Weight                 | 6.0 kg (13.3 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | 0°C to 50°C (-4°F to 158°F)  |
| Storage Temperature    | -10°C to 60°C (-22°F to 176°F)   |
| Humidity               | 10% to 90% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |

### 1.3.2 Specifications of MTC-6021-PDR

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 21.5" (16 : 9)  |
| Max Resolution                  | 1920 x 1080   |
| Display Color                   | 16.7M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 250   |
| Viewing Angle                   | 89/89/89/89 (Typ.) (CR≥10)  |
| Contrast Ratio                  | 3000 (Typ.)   |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| GPIO                            | 32 GPIO   |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet (PD)</b>   |  |
| LAN 1                  | Intel® I219LM GigE LAN supports IEEE 802.3at (25.5W/48V) Powered Device (PD) and iAMT 11.0   |
| LAN 2                  | Intel® I210 GigE LAN supports IEEE 802.3at (25.5W/48V) Powered Device (PD)   |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 361.2mm x 275.7mm x 96.6mm (14.2" x 10.9" x 3.8")  |
| Weight                 | 6.0 kg (13.3 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | 0°C to 50°C (-4°F to 158°F)  |
| Storage Temperature    | -10°C to 60°C (-22°F to 176°F)   |
| Humidity               | 10% to 90% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |



### 1.3.3 Specifications of MTC-6021-2R

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 21.5" (16 : 9)  |
| Max Resolution                  | 1920 x 1080   |
| Display Color                   | 16.7M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 250   |
| Viewing Angle                   | 89/89/89/89 (Typ.) (CR≥10)  |
| Contrast Ratio                  | 3000 (Typ.)   |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| GPIO                            | 32 GPIO   |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet</b>        |  |
| LAN 1                  | Intel® I219LM GigE LAN supports iAMT 11.0  |
| LAN 2                  | Intel® I210 GigE LAN   |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 537.6mm x 329.1mm x 115.2mm (21.2" x 12.9" x 4.6")   |
| Weight                 | 6.0 kg (13.3 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | 0°C to 50°C (32°F to 122°F)  |
| Storage Temperature    | -20°C to 60°C (-4°F to 140°F)  |
| Humidity               | 10% to 90% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |

### 1.3.4 Specifications of MTC-6019-PoER

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 19" (4 : 3)   |
| Max Resolution                  | 1280 x 1024   |
| Display Color                   | 16.7M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 350   |
| Viewing Angle                   | 85/85/80/80 (Typ.)  |
| Contrast Ratio                  | 1000 : 1  |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 8.1, Windows 7, Linux   |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| Isolated DIO                    | 16 Isolated DIO (8 DI, 8 DO), support NPN/PNP   |
| GPIO                            | 16 GPIO (Internal)  |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet</b>        |  |
| LAN 1                  | Intel® I219LM GigE LAN supports iAMT 11.0  |
| LAN 2                  | Intel® I210 GigE LAN   |
| <b>PoE</b>             |  |
| LAN 3                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 4                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 5                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 6                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 424mm x 352mm x 115.2mm (16.7" x 13.9" x 4.6")   |
| Weight                 | 6.0 kg (13.3 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | 0°C to 50°C (32°F to 122°F)  |
| Storage Temperature    | -20°C to 60°C (-4°F to 140°F)  |
| Humidity               | 10% to 90% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |

### 1.3.5 Specifications of MTC-6019-PDR

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 19" (4 : 3)   |
| Max Resolution                  | 1280 x 1024   |
| Display Color                   | 16.7M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 350   |
| Viewing Angle                   | 85/85/80/80 (Typ.)  |
| Contrast Ratio                  | 1000 : 1  |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| GPIO                            | 32 GPIO   |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet (PD)</b>   |  |
| LAN 1                  | Intel® I219LM GigE LAN supports IEEE 802.3at (25.5W/48V) Powered Device (PD) and iAMT 11.0   |
| LAN 2                  | Intel® I210 GigE LAN supports IEEE 802.3at (25.5W/48V) Powered Device (PD)   |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 424mm x 352mm x 115.2mm (16.7" x 13.9" x 4.6")   |
| Weight                 | 6.0 kg (13.3 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | 0°C to 50°C (32°F to 122°F)  |
| Storage Temperature    | -20°C to 60°C (-4°F to 140°F)  |
| Humidity               | 10% to 90% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |

### 1.3.6 Specifications of MTC-6019-2R

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 19" (4 : 3)   |
| Max Resolution                  | 1280 x 1024   |
| Display Color                   | 16.7M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 350   |
| Viewing Angle                   | 85/85/80/80 (Typ.) (CR≥10)  |
| Contrast Ratio                  | 1000 : 1  |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| GPIO                            | 32 GPIO   |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet</b>        |  |
| LAN 1                  | Intel® I219LM GigE LAN supports iAMT 11.0  |
| LAN 2                  | Intel® I210 GigE LAN   |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 424mm x 352mm x 115.2mm (16.7" x 13.9" x 4.6")   |
| Weight                 | 6.0 kg (13.3 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | 0°C to 50°C (32°F to 122°F)  |
| Storage Temperature    | -20°C to 60°C (-4°F to 140°F)  |
| Humidity               | 10% to 90% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |



### 1.3.7 Specifications of MTC-6017-PoER

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 17.0" (4 : 3)   |
| Max Resolution                  | 1280 x 1024   |
| Display Color                   | 16.7M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 250   |
| Viewing Angle                   | 85/85/80/80 (Typ.)  |
| Contrast Ratio                  | 1000 : 1  |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| Isolated DIO                    | 16 Isolated DIO (8 DI, 8 DO), support NPN/PNP   |
| GPIO                            | 16 GPIO (Internal)  |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |
| <b>Storage</b>                  |   |

|                        |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet</b>        |  |
| LAN 1                  | Intel® I219LM GigE LAN supports iAMT 11.0  |
| LAN 2                  | Intel® I210 GigE LAN   |
| <b>PoE</b>             |  |
| LAN 3                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 4                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 5                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 6                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 392.5mm x 325mm x 115.2mm (15.5" x 12.8" x 4.6")   |
| Weight                 | 5.6 kg (12.3 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | 0°C to 50°C (32°F to 122°F)  |
| Storage Temperature    | -20°C to 60°C (-22°F to 140°F)   |
| Humidity               | 10% to 90% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |

### 1.3.8 Specifications of MTC-6017-PDR

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 17.0" (4 : 3)   |
| Max Resolution                  | 1280 x 1024   |
| Display Color                   | 16.7M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 250   |
| Viewing Angle                   | 85/85/80/80 (Typ.)  |
| Contrast Ratio                  | 1000 : 1  |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| GPIO                            | 32 GPIO   |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet (PD)</b>   |  |
| LAN 1                  | Intel® I219LM GigE LAN supports IEEE 802.3at (25.5W/48V) Powered Device (PD) and iAMT 11.0   |
| LAN 2                  | Intel® I210 GigE LAN supports IEEE 802.3at (25.5W/48V) Powered Device (PD)   |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 392.5mm x 325mm x 115.2mm (15.5" x 12.8" x 4.6")   |
| Weight                 | 5.6 kg (12.3 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | 0°C to 50°C (32°F to 122°F)  |
| Storage Temperature    | -20°C to 60°C (-4°F to 140°F)  |
| Humidity               | 10% to 90% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |

### 1.3.9 Specifications of MTC-6017-2R

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 17.0" (4 : 3)   |
| Max Resolution                  | 1280 x 1024   |
| Display Color                   | 16.7M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 250   |
| Viewing Angle                   | 85/85/80/80 (Typ.)  |
| Contrast Ratio                  | 1000 : 1  |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| GPIO                            | 32 GPIO   |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet</b>        |  |
| LAN 1                  | Intel® I219LM GigE LAN supports iAMT 11.0  |
| LAN 2                  | Intel® I210 GigE LAN   |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 392.5mm x 325mm x 115.2mm (15.5" x 12.8" x 4.6")   |
| Weight                 | 5.6 kg (12.3 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | 0°C to 50°C (32°F to 122°F)  |
| Storage Temperature    | -20°C to 60°C (-4°F to 140°F)  |
| Humidity               | 10% to 90% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |

### 1.3.10 Specifications of MTC-6015-PoER

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 15" (4 : 3)   |
| Max Resolution                  | 1280 x 768  |
| Display Color                   | 16.2M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 250   |
| Viewing Angle                   | 80/80/70/70(Typ.) (CR≥10)   |
| Contrast Ratio                  | 700 : 1   |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| Isolated DIO                    | 16 Isolated DIO (8 DI, 8 DO), support NPN/PNP   |
| GPIO                            | 16 GPIO (Internal)  |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |
| <b>Storage</b>                  |   |

|                        |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet</b>        |  |
| LAN 1                  | Intel® I219LM GigE LAN supports iAMT 11.0  |
| LAN 2                  | Intel® I210 GigE LAN   |
| <b>PoE</b>             |  |
| LAN 3                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 4                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 5                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| LAN 6                  | GigE IEEE 802.3at (25.5W/48V) PoE <sup>+</sup> by Intel® I210  |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 350.0mm x 274.0mm x 115.2mm (13.8" x 10.8" x 4.53")  |
| Weight                 | 5.3 kg (11.7 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | -20°C to 70°C (-4°F to 158°F)  |
| Storage Temperature    | -30°C to 80°C (-22°F to 176°F)   |
| Humidity               | 10% to 85% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |



### 1.3.11 Specifications of MTC-6015-PDR

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 15" (4 : 3)   |
| Max Resolution                  | 1280 x 768  |
| Display Color                   | 16.2M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 250   |
| Viewing Angle                   | 80/80/70/70 (Typ.)  |
| Contrast Ratio                  | 700 : 1   |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| GPIO                            | 32 GPIO   |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet (PD)</b>   |  |
| LAN 1                  | Intel® I219LM GigE LAN supports IEEE 802.3at (25.5W/48V) Powered Device (PD) and iAMT 11.0   |
| LAN 2                  | Intel® I210 GigE LAN supports IEEE 802.3at (25.5W/48V) Powered Device (PD)   |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 350.0mm x 274.0mm x 115.2mm (13.8" x 10.8" x 4.53")  |
| Weight                 | 5.3 kg (11.7 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | -20°C to 70°C (-4°F to 158°F)  |
| Storage Temperature    | -30°C to 80°C (-22°F to 176°F)   |
| Humidity               | 10% to 85% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |

### 1.3.12 Specifications of MTC-6015-2R

| <b>Panel</b>                    |   |
|---------------------------------|---|
| Panel Type                      | TFT LCD   |
| Active Area                     | 15" (4 : 3)   |
| Max Resolution                  | 1280 x 768  |
| Display Color                   | 16.2M   |
| Backlight                       | LED Backlight   |
| Brightness (cd/m <sup>2</sup> ) | 250   |
| Viewing Angle                   | 80/80/70/70 (Typ.)  |
| Contrast Ratio                  | 700 : 1   |
| <b>Touch Screen</b>             |   |
| Touch Screen Type               | 10-point Projected Capacitive   |
| Transparency                    | ≥ 91%   |
| Surface Hardness                | 7H Surface Hardness   |
| Control Interface               | USB Interface   |
| <b>System</b>                   |   |
| Processor                       | Intel® Core™ i7-6600U/i5-6300U/Celeron® 3955U Processor (Skylake-U)   |
| Chipset                         | Intel® SoC  |
| Memory                          | <ul style="list-style-type: none"> <li>• DDR4 2133MHz</li> <li>• Up to 32GB</li> <li>• 2 260-pin SO-DIMM Socket</li> </ul>  |
| Graphics Processor              | Intel® HD Graphics 520  |
| Audio Codec                     | Realtek ALC892, 5.1 Channel HD Audio  |
| OS                              | Windows 10, Windows 7, Linux  |
| <b>I/O Interface</b>            |   |
| Serial                          | 4 COM RS-232/422/485 w/auto flow control (ESD 8kV)  |
| USB                             | <ul style="list-style-type: none"> <li>• 5 USB 3.0 (External)</li> <li>• 3 USB 2.0 (Internal)</li> </ul>  |
| GPIO                            | 32 GPIO   |
| Video Interface                 | <ul style="list-style-type: none"> <li>• DVI-D : Up to 1920 x 1200 @ 60Hz</li> <li>• DisplayPort : Up to 4096 x 2304 @ 60Hz</li> </ul>  |
| Audio Interface                 | 1 Mic-in, 1 Line-out  |
| LED                             | Power, HDD, Wireless, PoE   |
| SIM Card                        | 2 External SIM Card Socket  |
| <b>Expansion</b>                |   |
| Mini PCIe                       | 2 Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card</li> <li>• 1 Mini PCIe for PCIe/USB/External SIM Card/mSATA</li> </ul> |

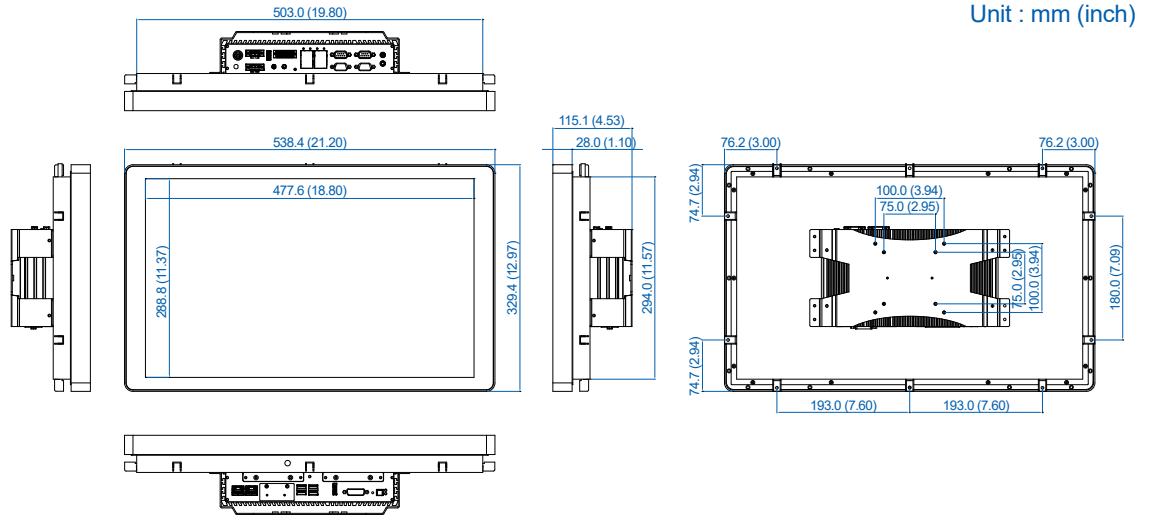
| <b>Storage</b>         |  |
|------------------------|--|
| SATA                   | 2 SATA III (6Gbps) support S/W RAID 0, 1   |
| mSATA                  | 1 SATA III (Mini PCIe Type, 6Gbps)   |
| Storage Device         | <ul style="list-style-type: none"> <li>• 1 CFast Socket, Push-in/Push-out Ejector</li> <li>• 2 Front-access 2.5" SSD/HDD Tray</li> </ul>         |
| <b>Ethernet</b>        |  |
| LAN 1                  | Intel® I219LM GigE LAN supports iAMT 11.0  |
| LAN 2                  | Intel® I210 GigE LAN   |
| <b>Power</b>           |  |
| Input Voltage          | 6V to 36V, DC-in   |
| Power Interface        | <ul style="list-style-type: none"> <li>• 3-pin Terminal Block : V+, V-, Frame Ground</li> <li>• Mini-DIN 4-pin</li> </ul>                        |
| Ignition Control       | 16 Mode (Internal)   |
| Remote Switch          | 3-pin Terminal Block : On, Off, IGN  |
| Surge Protection       | Up to 80V/1ms Transient Power  |
| <b>Others</b>          |  |
| TPM                    | Optional Infineon SLB9665 supports TPM 2.0, LPC interface  |
| Watchdog Timer         | Reset : 1 to 255 sec./min. per step  |
| Smart Management       | Wake on LAN, PXE supported   |
| HW Monitor             | Monitoring temperature, voltages. Auto throttling control when CPU overheats.  |
| <b>Mechanical</b>      |  |
| Dimension (W x H x L)  | 350.0mm x 274.0mm x 115.2mm (13.8" x 10.8" x 4.53")  |
| Weight                 | 5.3 kg (11.7 lb)   |
| Front Panel Protection | IP65 Compliant   |
| Mounting               | <ul style="list-style-type: none"> <li>• VESA Mount (75 x 75mm, 100 x 100mm)</li> <li>• Panel Mount</li> </ul>                                   |
| <b>Environment</b>     |  |
| Operating Temperature  | -20°C to 70°C (-4°F to 158°F)  |
| Storage Temperature    | -30°C to 80°C (-22°F to 176°F)   |
| Humidity               | 10% to 85% Humidity, non-condensing  |
| Shock                  | <ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>   |
| Vibration              | <ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1.5Grms, X, Y, Z, 30 mins each Axis</li> </ul> |
| EMC                    | CE, FCC  |

## 1.4 Supported CPU List

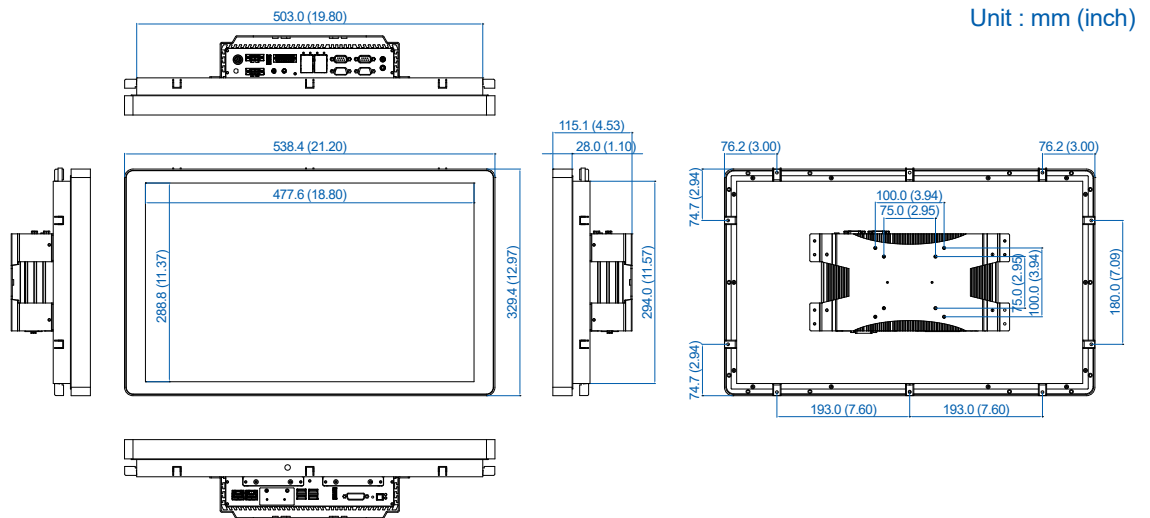
| Processor No.  | TDP | Cache | Max. Frequency | Embedded |
|----------------|-----|-------|----------------|----------|
| i7-6600U       | 15W | 4M    | Up to 3.4 GHz  | Yes      |
| i5-6300U       | 15W | 4M    | Up to 3.0 GHz  | Yes      |
| i3-6100U       | 15W | 4M    | Up to 2.30 GHz | Yes      |
| Celeron® 3955U | 15W | 2M    | Up to 2.00 GHz | Yes      |

# 1.5 Mechanical Dimension

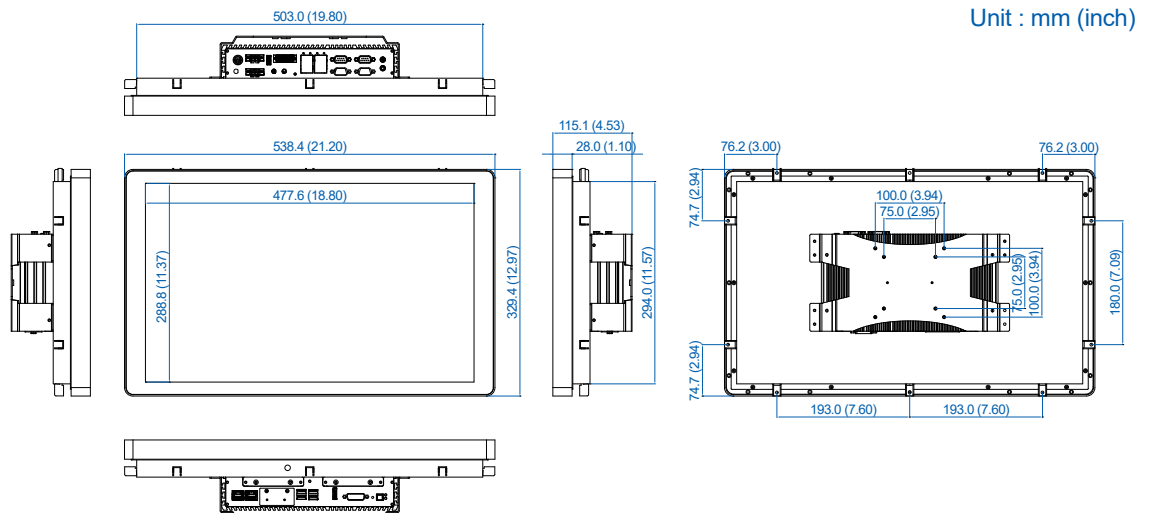
## 1.5.1 Dimensions of MTC-6021-PoER



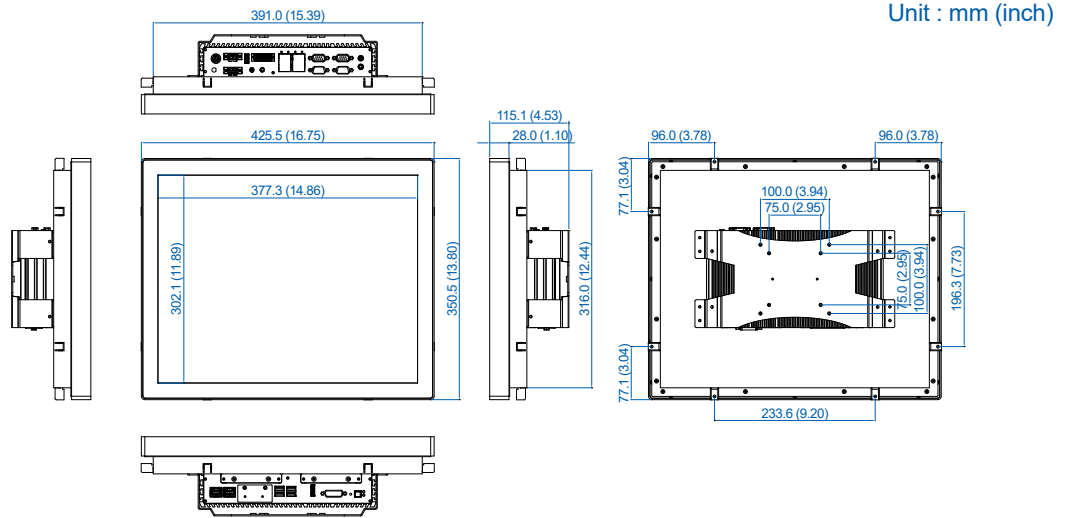
## 1.5.2 Dimensions of MTC-6021-PDR



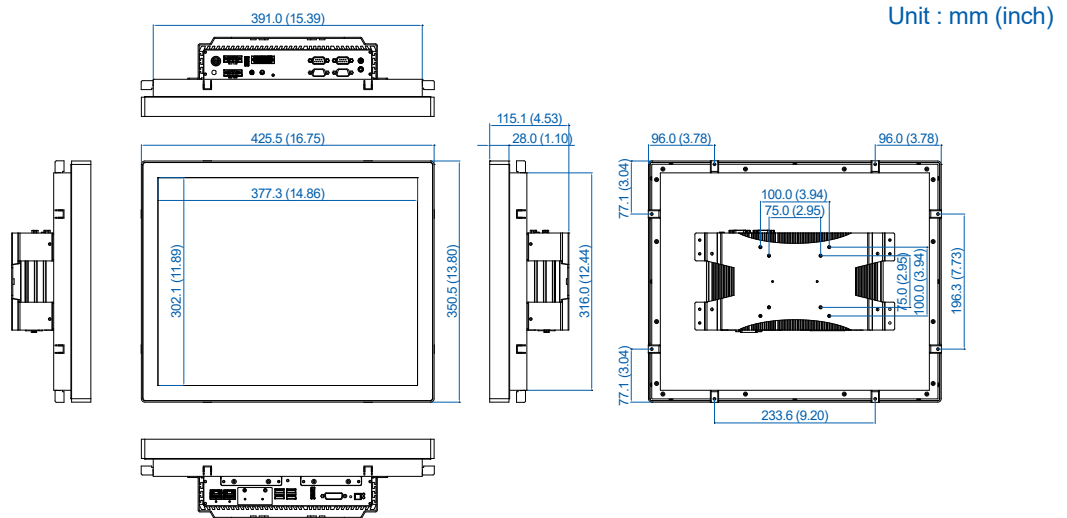
## 1.5.3 Dimensions of MTC-6021-2R



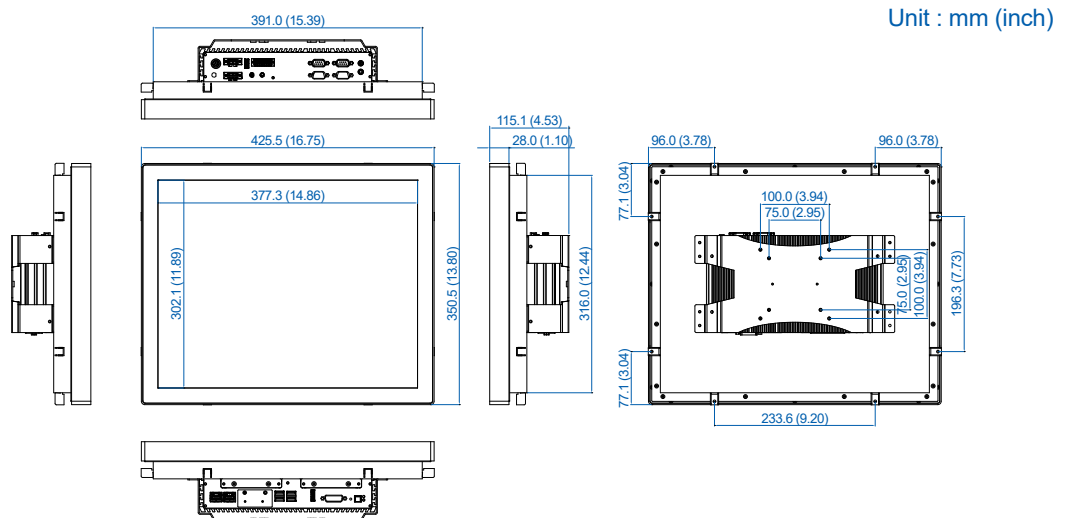
### 1.5.4 Dimensions of MTC-6019-PoER



### 1.5.5 Dimensions of MTC-6019-PDR

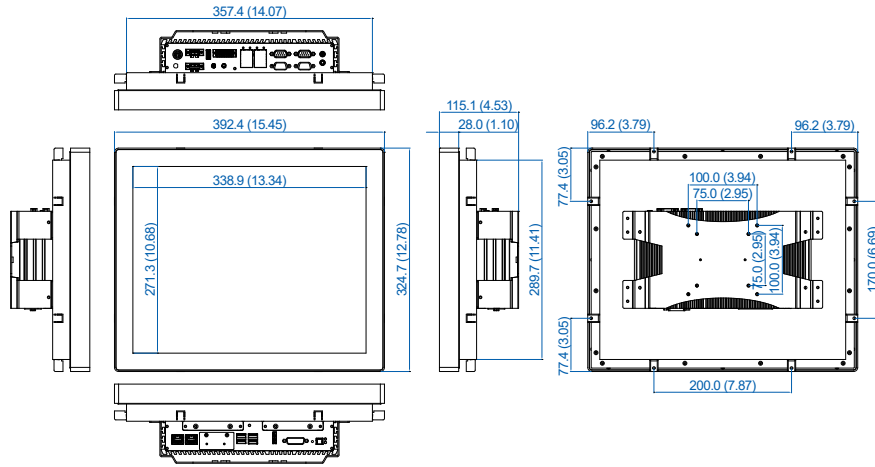


### 1.5.6 Dimensions of MTC-6019-2R



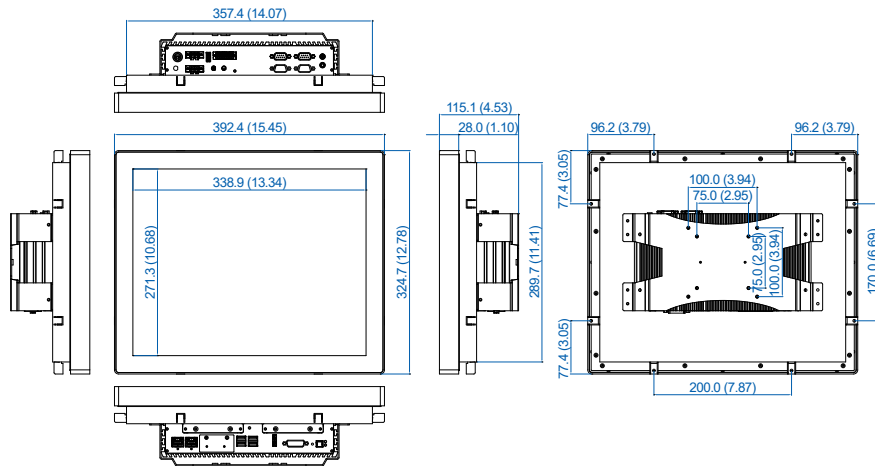
### 1.5.7 Dimensions of MTC-6017-PoER

Unit : mm (inch)



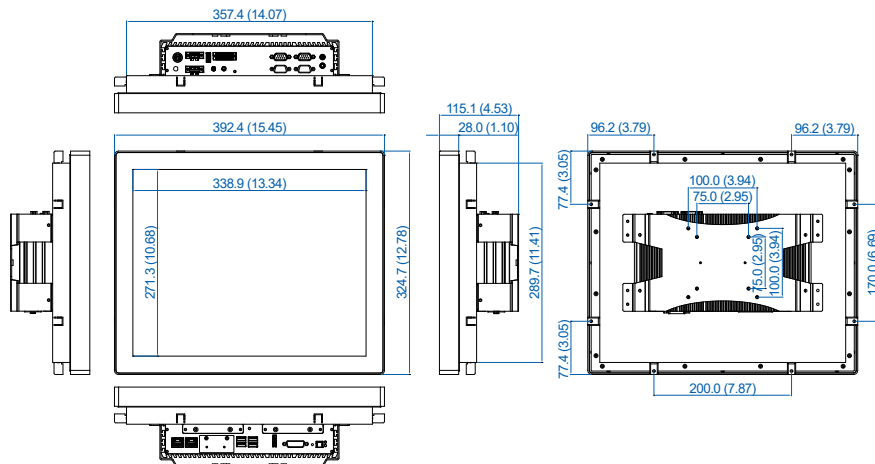
### 1.5.8 Dimensions of MTC-6017-PDR

Unit : mm (inch)



### 1.5.9 Dimensions of MTC-6017-2R

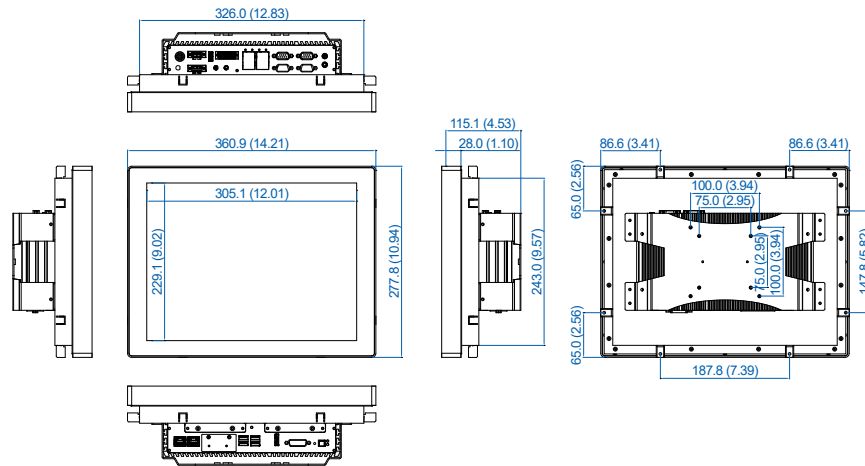
Unit : mm (inch)





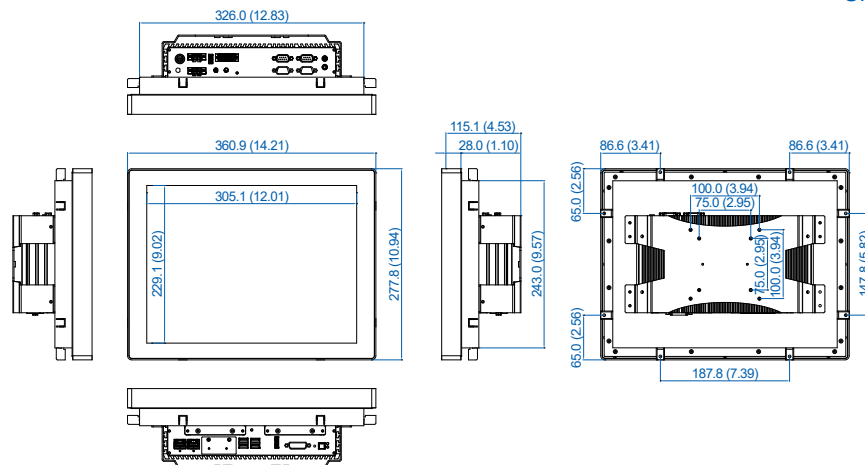
### 1.5.10 Dimensions of MTC-6015-PoER

Unit : mm (inch)



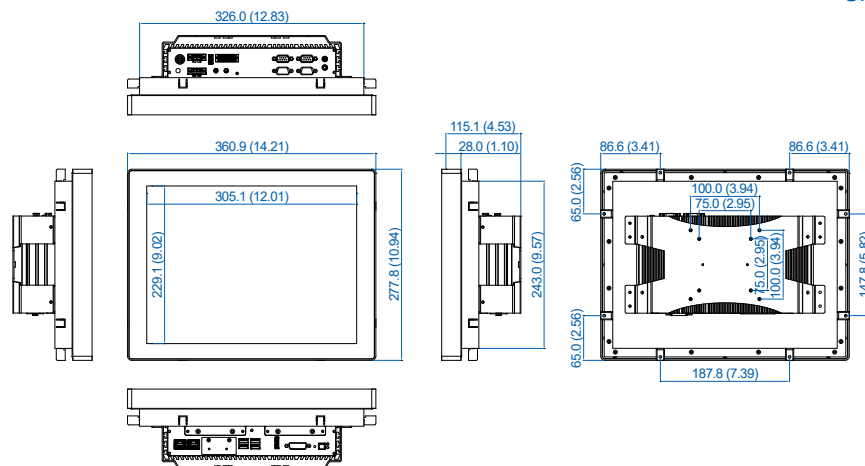
### 1.5.11 Dimensions of MTC-6015-PDR

Unit : mm (inch)



### 1.5.12 Dimensions of MTC-6015-2R

Unit : mm (inch)



# 2

## GETTING TO KNOW YOUR MTC-6000

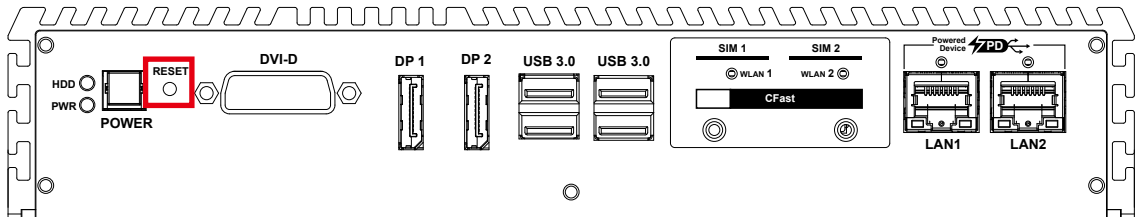
### 2.1 Packing List

| Item | Description   | Qty                             |
|------|---|---------------------------------|
| 1    | MTC-6000, Fanless Multi-Touch Computer (According to the configuration you order, the MTC-6017 series may contain SSD/HDD and DDR3L SO-DIMM. Please do verify these items if possible.)   | 1                               |
| 2    | Accessory box, it contains <ul style="list-style-type: none"><li>• Vecow Drivers &amp; Utilities DVD</li><li>• M2.5x6 screw for Mini PCIe Socket</li><li>• 3-pin pluggable terminal block (90°)</li><li>• 3-pin pluggable terminal block (180°)</li><li>• 2x10 pin pluggable terminal block</li><li>• PHILLIPS M3x4 screw for SSD/HDD</li><li>• Panel mount kit</li></ul> | 1<br>2<br>1<br>1<br>1<br>4<br>8 |

## 2.2 Front Panel I/O Functions

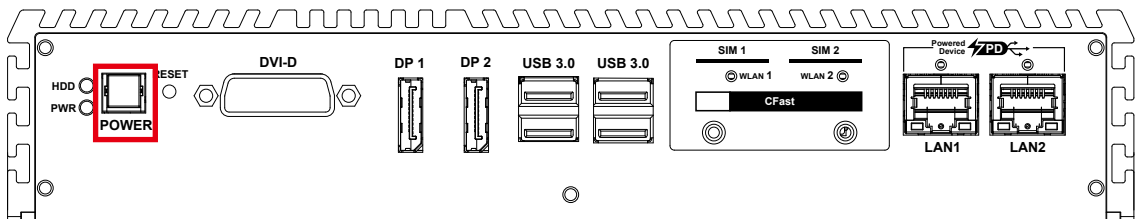
In Vecow MTC-6000 series family, all I/O connectors are located on front panel and rear panel. Most of the general connections to computer device, such as USB, DVI-D, DisplayPort, LAN Jack and any additional storage, are placed on the front panel.

### 2.2.1 Reset Tact Switch



It is a hardware reset switch. Please use this switch to reset MTC-6000 without power off. Press the Reset Switch for a few seconds, and then reset will be enabled.

### 2.2.2 Power Button



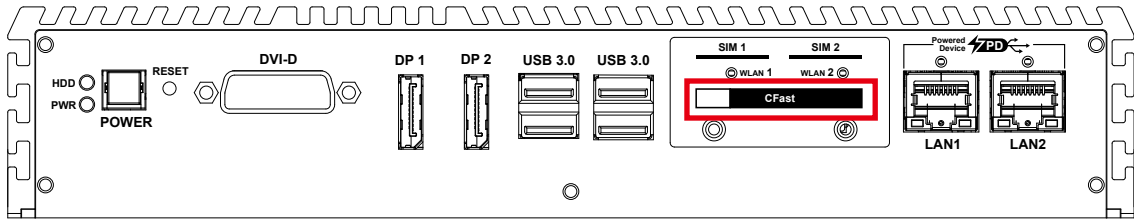
The Power Button is a non-latched switch with dual color LED indications. It indicates power status : S0, S3 and S5. More detail LED indications are listed as follows :

| LED Color    | Power Status | System Status                                 |
|--------------|--------------|---|
| Solid Blue   | S0           | System working                                |
| Solid Orange | S3, S5       | Suspend to RAM, System off with standby power |

To power on MTC-6000, please press the power button and then the blue LED is lightened. To power off the system, you can either command shutdown by OS operation, or just simply press the power button.

If system error, you can just press the power button for 4-seconds to shut down the machine directly. Please do note that a 4-second interval between each 2 power-on/power-off operation is necessary in normal working status. (For example, once turning off the system, you have to wait for 4 seconds to initiate another power-on operation.)

## 2.2.3 CFast Card

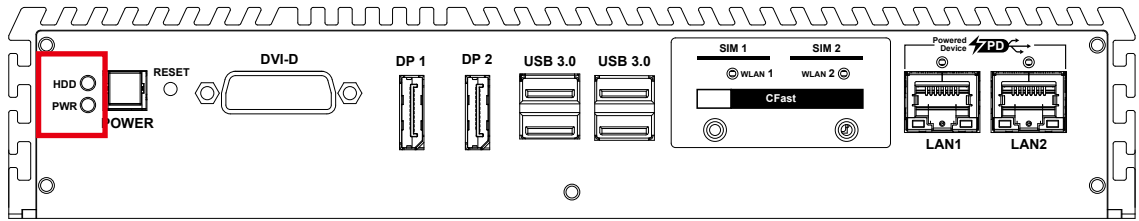


There is a CFast socket on the front panel supporting Type-I/II Compact Flash card. It is implemented by a SATA III Port from Kaby Lake-U/Skylake-U PCH. Be sure to disconnect the power source and unscrew the CFast socket cover before installing a CFast card. The MTC-6000 does not support the CFast hot swap and PnP (Plug and Play) functions. It is necessary to remove power source first before inserting or removing the CFast card.

The pinouts of CFast port are listed as follows :

| Pin No. | Description    | Pin No. | Description |
|---------|----------------|---------|-------------|
| S1      | GND            | PC6     | NC          |
| S2      | SATA_CFAST_TXP | PC7     | GND         |
| S3      | SATA_CFAST_TXN | PC8     | CFAST_LED   |
| S4      | GND            | PC9     | NC          |
| S5      | SATA_CFAST_RXN | PC10    | NC          |
| S6      | SATA_CFAST_RXP | PC11    | NC          |
| S7      | GND            | PC12    | NC          |
| PC1     | GND            | PC13    | +V3P3       |
| PC2     | GND            | PC14    | +V3P3       |
| PC3     | NC             | PC15    | GND         |
| PC4     | NC             | PC16    | GND         |
| PC5     | NC             | PC17    | NC          |

## 2.2.4 PWR and HDD LED Indicator

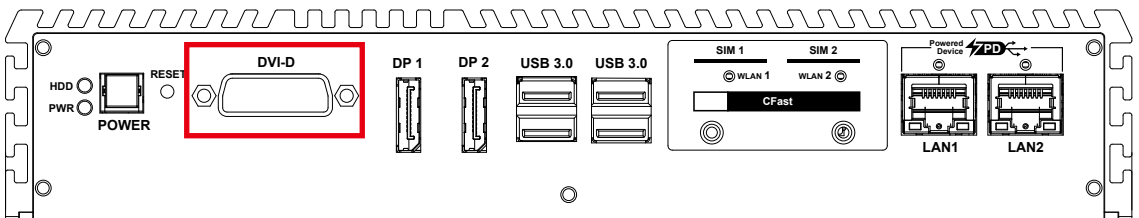


**HDD LED/Yellow** : A hard disk/CFast LED. If the LED is on, it indicates that MTC-6000 storage is functional. If it is off, it indicates that the system's storage is not functional. If it is flashing, it indicates data access activities.

**Power LED/Green** : If the LED is solid green, it indicates that the system is powered on.

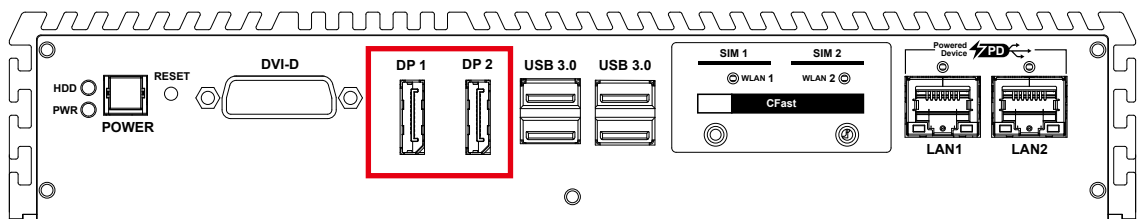
| LED Color | Power Status | System Status   |
|-----------|--------------|---|
| Yellow    | HDD/CFast    | <ul style="list-style-type: none"> <li>On/Off : Storage status, function or not.</li> <li>Twinkling : Data transferring.</li> </ul> |
| Green     | Power        | System power status (on/off)  |

## 2.2.5 DVI-D Connector



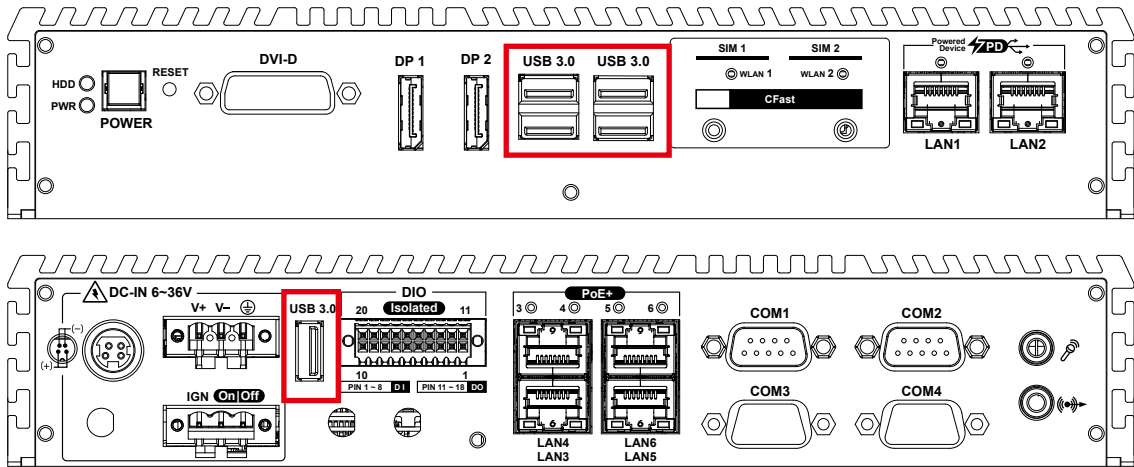
The DVI-D connector on the front panel supports DVI display modes. The DVI output mode supports up to 1920 x 1200 resolution.

## 2.2.6 DisplayPort



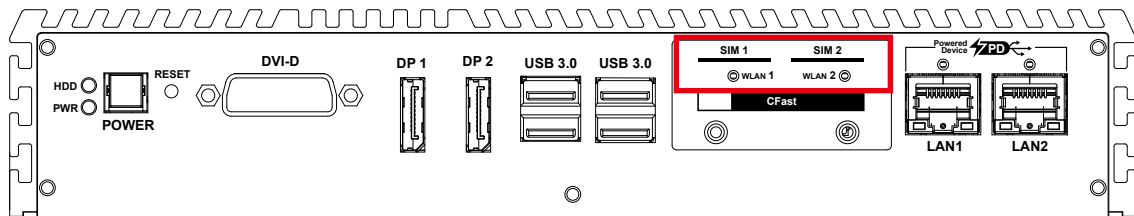
Onboard DisplayPort connection supports up to 4096 x 2304 resolutions at 60Hz. DP2 will not be enabled when MTC-6000 supports dual-channel 24-bit LVDS display.

## 2.2.7 USB 3.0



There are 5 USB 3.0 (4 in the front, 1 in the rear panel) connections available supporting up to 5GB per second data rate of MTC-6000. It is also compliant with the requirements of SuperSpeed (SS), High Speed (HS), Full Speed (FS) and Low Speed (LS).

## 2.2.8 WLAN LED, Mini PCIe, SIM Card Comparison



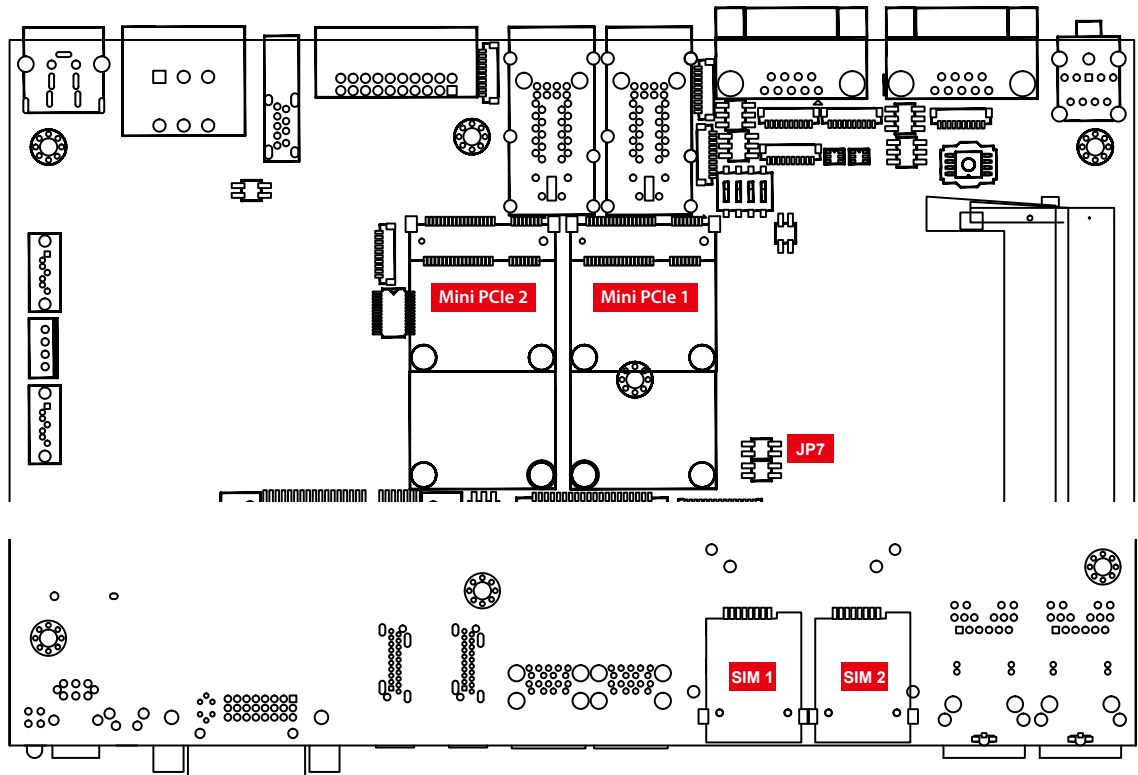
Mini PCIe Slot/SIM Slot/WLAN LED Mapping Table :

| Mini PCIe                | SIM          | LED |
|--------------------------|--------------|-----|
| Mini PCIe 1/mSATA (CN13) | SIM 1 (CN26) | 1   |
| Mini PCIe 2 (CN12)       | SIM 2 (CN27) | 2   |

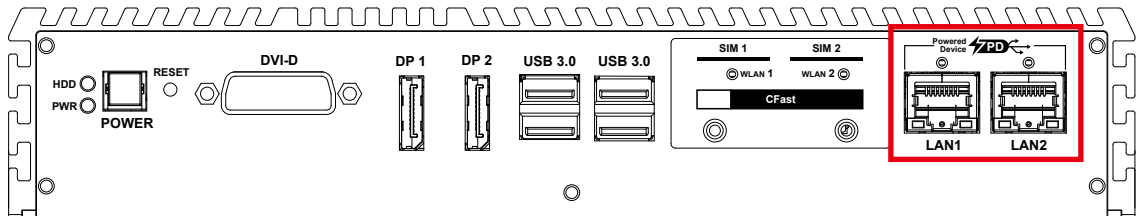
Mini PCIe 1/mSATA Select SW :

| Jumper (JP7) | Interface      |
|--------------|----------------|
| 1-2          | Auto Detection |
| 3-4          | Mini PCIe      |
| 1-3          | mSATA          |

**Note :**  
The SIM card sockets do not support hot-plug. Please make sure to unplug the system power before inserting the SIM card(s).



## 2.2.9 PD (Powered Device) Ethernet Port



There are 2 PD (Powered Device) 8-pin RJ-45 jacks supporting 10/100/1000 Mbps Ethernet connections with PD in the front side of MTC-6000. LAN 1 is powered by Intel® 219LM Ethernet engine and LAN 2 is powered by Intel® I210. When both LAN 1 and LAN 2 work in normal status, basic iAMT function is enabled. Each PD port can be supported at 25.5W for MTC-6000 used by other external PoE<sup>+</sup>/PoE<sup>+</sup> Hub.

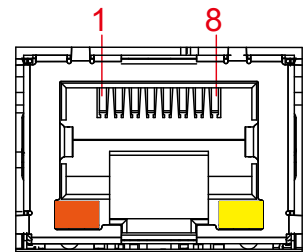
Using suitable RJ-45 cable, you can connect MTC-6000 system to a computer or to any other devices with Ethernet connection; for example, a hub or a switch. Moreover, both of LAN 1 and LAN 2 support Wake on LAN and Pre-boot functions. The pinouts of LAN 1 and LAN 2 are listed as follows :

| Pin No. | 10/100 Mbps | 1000Mbps |
|---------|-------------|----------|
| 1       | E_TX+       | MDIO_P   |
| 2       | E_TX-       | MDIO_N   |

|   |       |        |
|---|-------|--------|
| 3 | E_RX+ | MDI1_P |
| 4 | ----  | MDI2_P |
| 5 | ----  | MDI2_N |
| 6 | E_RX- | MDI1_N |
| 7 | ----  | MDI3_P |
| 8 | ----  | MDI3_N |

Each LAN port is supported by standard RJ-45 connector with LED indicators to present Active/Link/Speed status of the connection. The LED indicator on the left bottom corner lightens in solid green when the cable is properly connected to a 100Mbps Ethernet network, and it lightens in solid orange when the cable is properly connected to a 1000Mbps Ethernet network. The right LED will keep twinkling/off when Ethernet data packets are being transmitted or received.

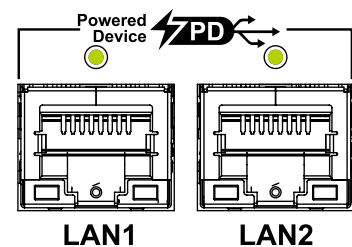
| Bottom Led | 10Mbps       | 100Mbps      | 1000Mbps     |
|------------|--------------|--------------|--------------|
| Left       | Off          | Solid Green  | Solid Orange |
| Right      | Flash Yellow | Flash Yellow | Flash Yellow |



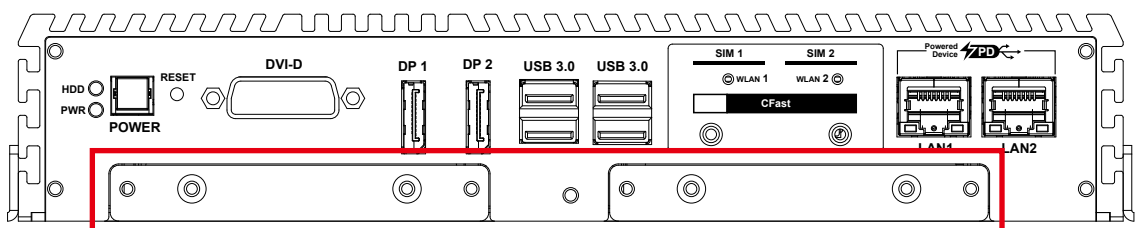
PD LED indicators as below :

Please note to keep enough power when MTC-6000 is working in high performance.

| Location | LED Color | Status  |
|----------|-----------|---|
| LAN 1    | Green     | Green : POE installed & power in<br>Off : Non-PoE |
| LAN 2    | Green     | Green : PD installed & power in<br>Off : Non-PoE  |



## 2.2.10 SSD/HDD Tray

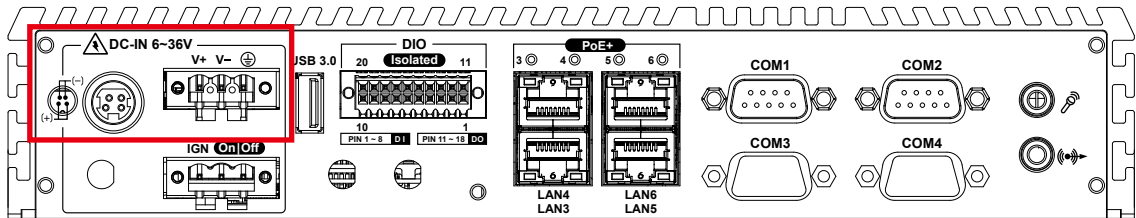


There are 2 front-access 2.5"SSD/HDD trays in the front side of MTC-6000. Just trigger to open the SSD/HDD tray, up to 4TB is available.



## 2.3 Rear Panel I/O and Functions

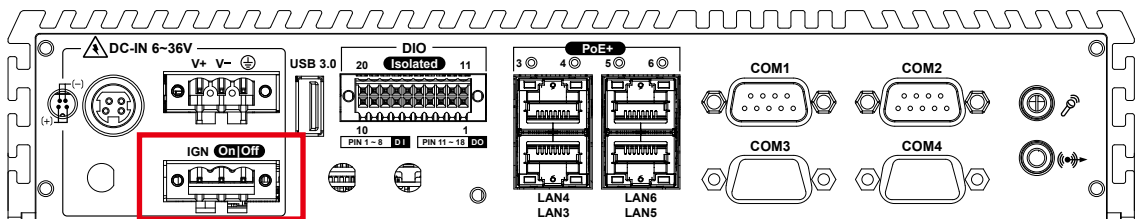
### 2.3.1 Power Terminal Block



MTC-6000 supports 6V to 36V DC power input by terminal block in the rear side. In normal power operation, power LED lightens in solid green. Onboard LTC4356 supports up to 80V surge protection.

| Pin No. | Definition     | Pin No. | Definition |
|---------|----------------|---------|------------|
| 1       | V+             | 2       | V-         |
| 3       | Chassis Ground |         |            |

### 2.3.2 Remote Power On/Off Switch & Ignition

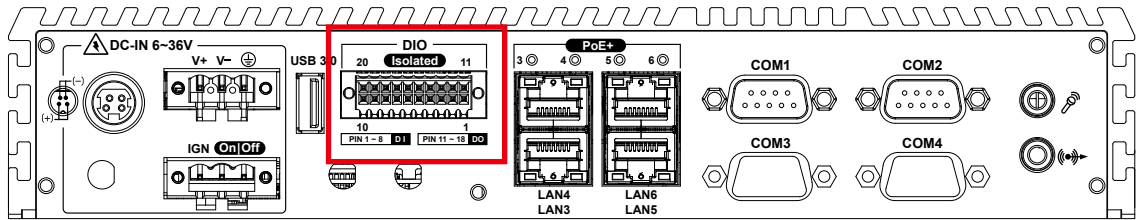


It is a 2-pin power-on or power-off switch through Phoenix Contact terminal block. You could turn on or off the system power by using this contact. This terminal block supports dual function of soft power-on/power-off (instant off or delay 4 second), and suspending mode.

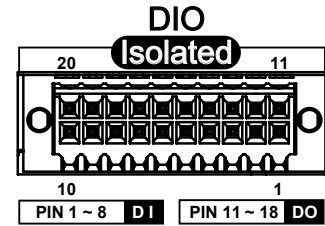


| Pin No. | Definition           |
|---------|----------------------|
| 1       | Ignition (IGN)       |
| 2       | External Power S/W + |
| 3       | External Power S/W - |

### 2.3.3 Isolated DIO



There is a 16-bit DIO (8-bit DI, 8-bit DO) connector in the rear side. Each DIO channel is equipped with a photocoupler for isolated protection. A power buffer device TPD2007F integrated in 8-DO circuit for motors, solenoids, and lamp driver applications. Please refer to Appendix A for more details.

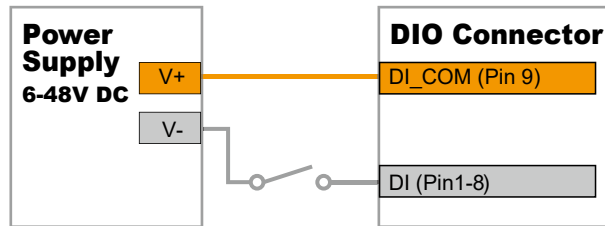


DIO Connectors pin out :

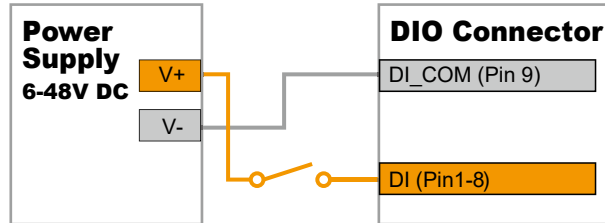
| DIO | Pin No. | Definition             | Function  |
|-----|---------|------------------------|-----------|
| DIO | 1       | INPUT 0                | SIO_GPI80 |
|     | 2       | INPUT 1                | SIO_GPI81 |
|     | 3       | INPUT 2                | SIO_GPI82 |
|     | 4       | INPUT 3                | SIO_GPI83 |
|     | 5       | INPUT 4                | SIO_GPI84 |
|     | 6       | INPUT 5                | SIO_GPI85 |
|     | 7       | INPUT 6                | SIO_GPI86 |
|     | 8       | INPUT 7                | SIO_GPI87 |
|     | 9       | DI1_COM                | -         |
|     | 10      | DIO1_GND               | -         |
|     | 11      | OUTPUT 0               | SIO_GPO70 |
|     | 12      | OUTPUT 1               | SIO_GPO71 |
|     | 13      | OUTPUT 2               | SIO_GPO72 |
|     | 14      | OUTPUT 3               | SIO_GPO73 |
|     | 15      | OUTPUT 4               | SIO_GPO74 |
|     | 16      | OUTPUT 5               | SIO_GPO75 |
|     | 17      | OUTPUT 6               | SIO_GPO76 |
|     | 18      | OUTPUT 7               | SIO_GPO77 |
|     | 19      | DIO1_GND               | -         |
|     | 20      | DIO1_VDC (6~48V Input) | -         |

DI reference circuit :

Sink Mode (NPN)

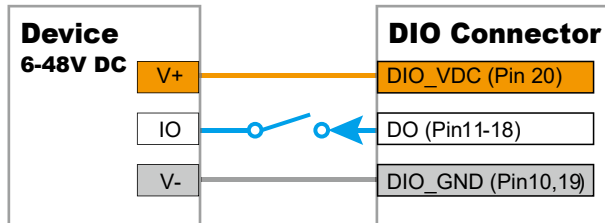


Source Mode (PNP)

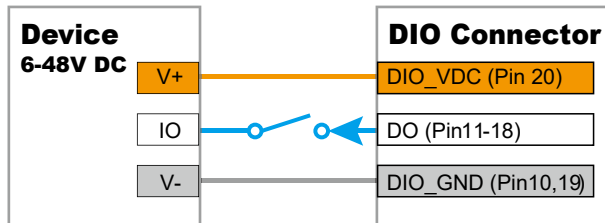


DO reference circuit :

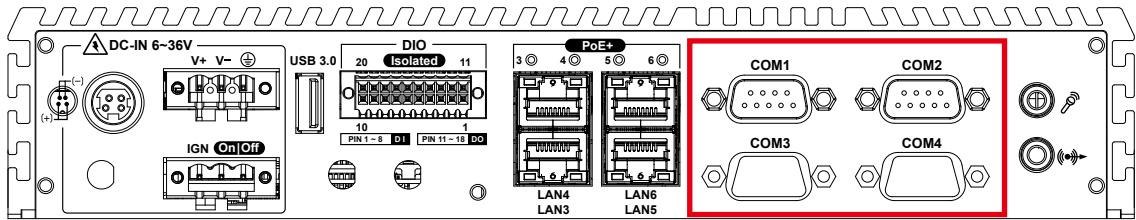
Sink Mode  
(NPN, Default)



Source Mode (PNP)



## 2.3.4 Serial Port



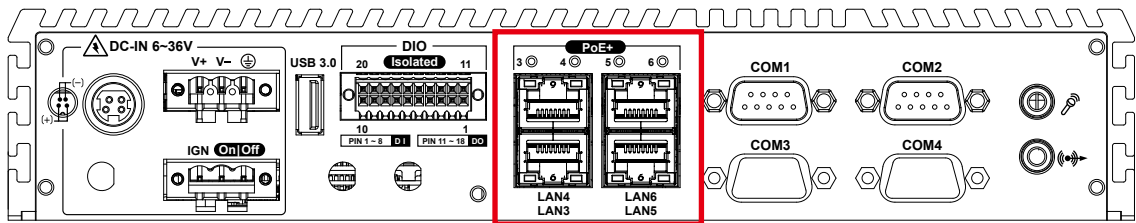
Serial port 1 to 4 (COM 1 to 4) can be configured for RS-232, RS-422, or RS-485 with auto flow control communication. The default definition is RS-232. If you want to change to RS-422 or RS-485, you can find the setting in BIOS.

| BIOS Setting   | Function                     |
|--|------------------------------|
| COM 1 (CN1)<br>COM 2 (CN2)<br>COM3 (JCOM3)<br>COM4 (JCOM4) | RS-232                       |
|  | RS-422 (5-wire)              |
|  | RS-422 (9-wire)              |
|  | RS-485                       |
|  | RS-485 w/z auto-flow control |

The pin assignments are listed in the table as follow :

| Serial Port | Pin No. | RS-232 | RS-422 (5-wire) | RS-422 (9-wire) | RS-485 (3-wire) |
|-------------|---------|--------|-----------------|-----------------|-----------------|
| 1 to 4      | 1       | DCD    | TXD-            | TXD-            | DATA-           |
|             | 2       | RXD    | TXD+            | TXD+            | DATA+           |
|             | 3       | TXD    | RXD+            | RXD+            | -----           |
|             | 4       | DTR    | RXD-            | RXD-            | -----           |
|             | 5       | GND    | GND             | GND             | GND             |
|             | 6       | DSR    | -----           | RTS-            | -----           |
|             | 7       | RTS    | -----           | RTS+            | -----           |
|             | 8       | CTS    | -----           | CTS+            | -----           |
|             | 9       | RI     | -----           | CTS-            | -----           |

### 2.3.5 PoE (Power over Ethernet) Ports



There are 4-port 8-pin PoE<sup>+</sup> (Power over Ethernet) RJ-45 jacks supporting 10/100/1000 Mbps Ethernet connections in the rear side and powered by Intel<sup>®</sup> I210 Ethernet engine. When both LAN 1 and LAN 2 work in normal status, iAMT 11.0 function is enabled. (Each PoE support 30.4W/54V)

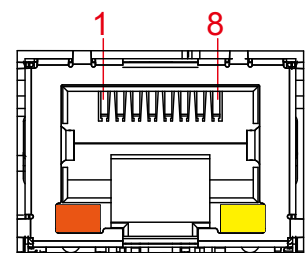
When using suitable RJ-45 cable, you can connect the system to a computer, or to any other devices with Ethernet connection; for example, a hub or a switch. Moreover, all of LAN 3, LAN 4, LAN 5 and LAN 6 support Wake on LAN and Pre-boot functions. The pin-outs of LAN 3, LAN 4, LAN 5 and LAN 6 are listed as follows :

| Pin No. | 10/100 Mbps | 1000Mbps | PoE  |
|---------|-------------|----------|------|
| 1       | E_TX+       | MDI0_P   | PoE+ |
| 2       | E_TX-       | MDI0_N   | PoE+ |
| 3       | E_RX+       | MDI1_P   | PoE- |
| 4       | ----        | MDI2_P   | ---- |
| 5       | -----       | MDI2_N   | ---- |
| 6       | E_RX-       | MDI1_N   | PoE- |
| 7       | ----        | MDI3_P   | ---- |
| 8       | -----       | MDI3_N   | ---- |

Each LAN port is supported by standard RJ-45 connector with LED indicators to present Active/Link/Speed status of the connection & POE status LED.

The LED indicator on the right bottom corner lightens in solid green when the cable is properly connected to a 100Mbps Ethernet network, and it lightens in solid orange when the cable is properly connected to a 1000Mbps Ethernet network. The left LED will keep twinkling/off when Ethernet data packets are being transmitted/received.

| LED Status       | 10Mbps       | 100Mbps      | 1000Mbps     |
|------------------|--------------|--------------|--------------|
| Right Bottom Led | Off          | Solid Green  | Solid Orange |
| Left Bottom Led  | Flash Yellow | Flash Yellow | Flash Yellow |



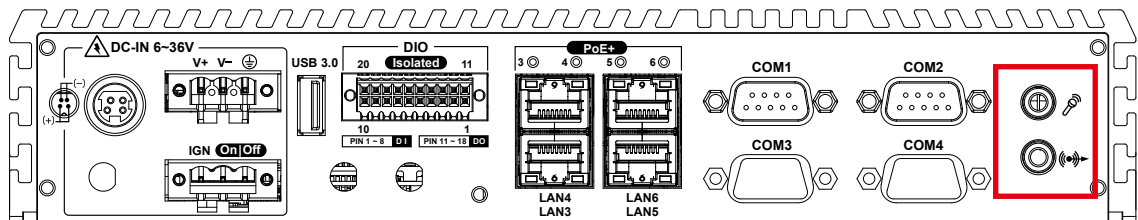
PoE LED indicator :

Strongly suggest to use PoE function when power input is over 11V.



| LED Location | LED Color | Status   |
|--------------|-----------|--|
| LAN 3        | Green     | Green Light : PD installed & powered green<br>Off : Non PD |
| LAN 4        | Green     | Green Light : PD installed & powered green<br>Off : Non PD |
| LAN 5        | Green     | Green Light : PD installed & powered green<br>Off : Non PD |
| LAN 6        | Green     | Green Light : PD installed & powered green<br>Off : Non PD |

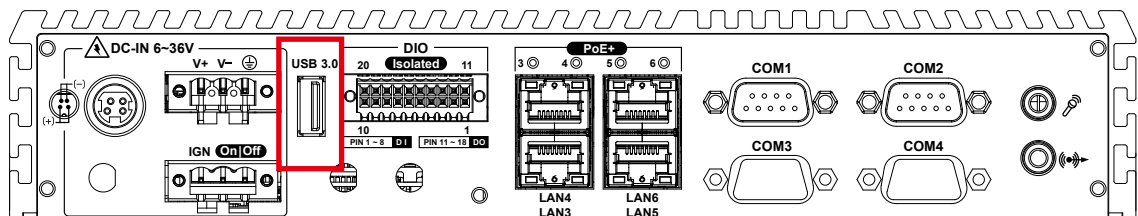
### 2.3.6 Audio Jack



There are 2 audio connectors, Mic-in and Line-out, in the rear side of MTC-6000. Onboard Realtek ALC888S-VD audio codec supports 7.1 channel HD audio and fully complies with Intel® High Definition Audio (Azalia) specifications.

To utilize the audio function in Windows platform, you need to install corresponding drivers for both Intel® CM236 chipset and Realtek ALC888S-VD codec.

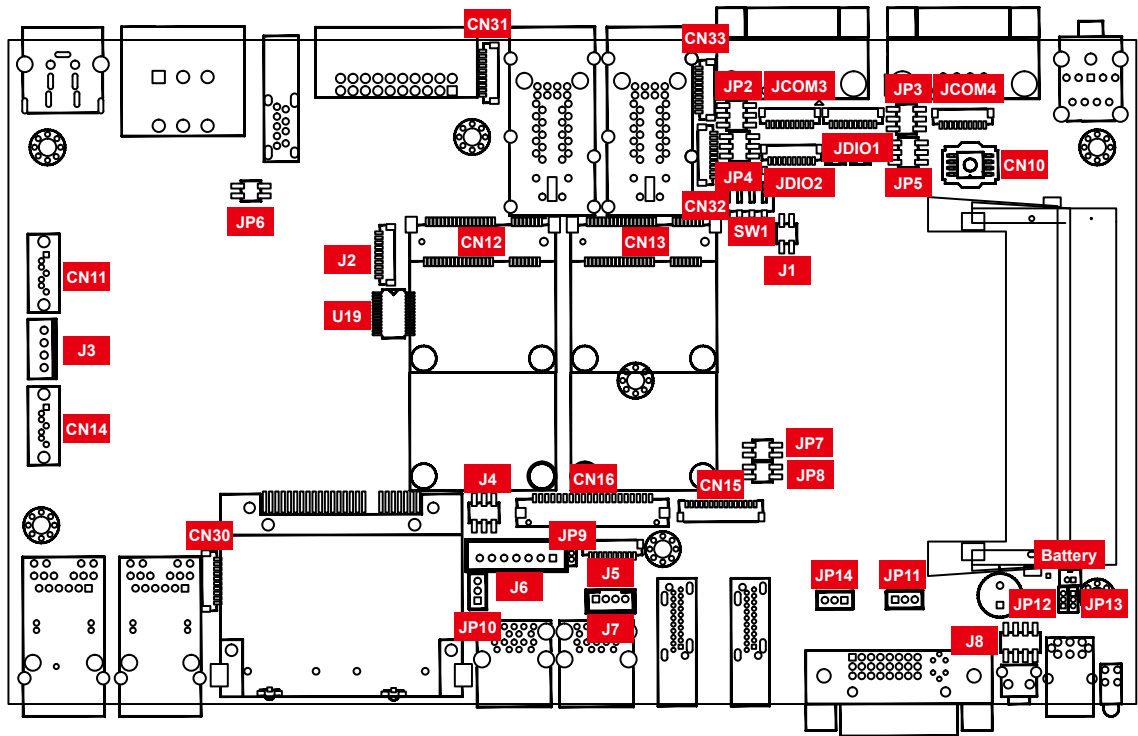
### 2.3.7 USB 3.0



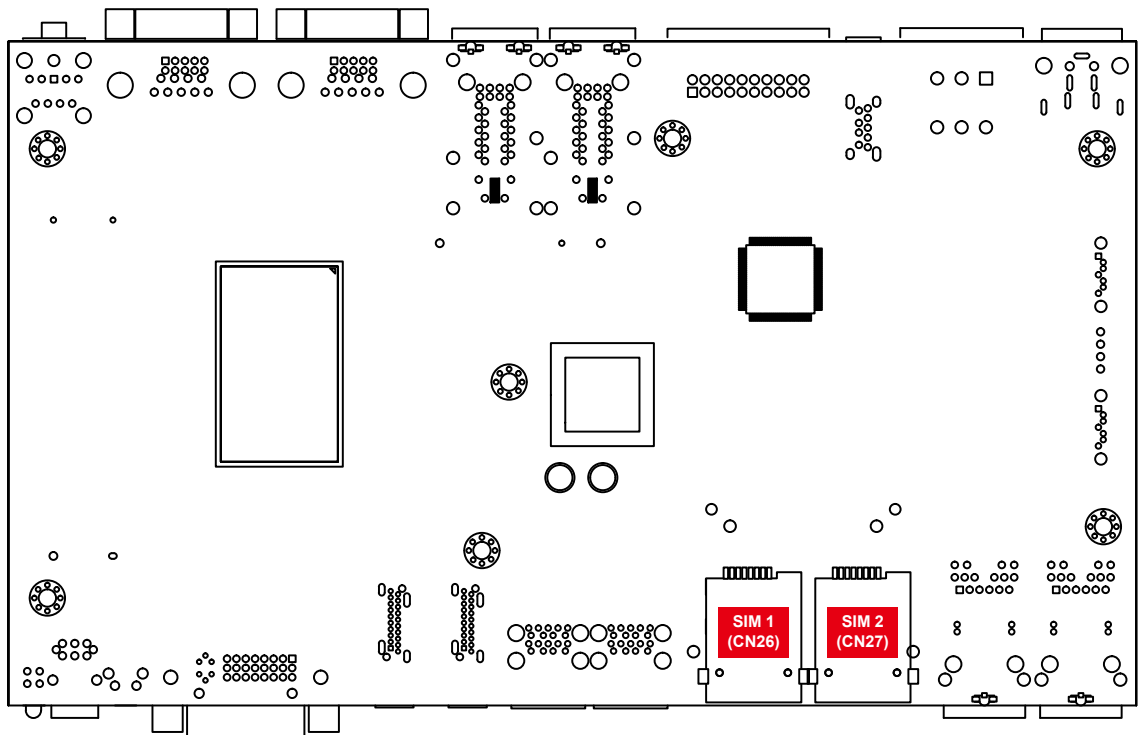
There are 5 USB 3.0 (4 on the front, 1 on the rear panel) connections available supporting up to 5GB per second data rate in the front/rear side of MTC-6000. It is also compliant with the requirements of Super Speed (SS), High Speed (HS), Full Speed (FS) and Low Speed (LS).

## 2.4 Main Board Expansion Connectors

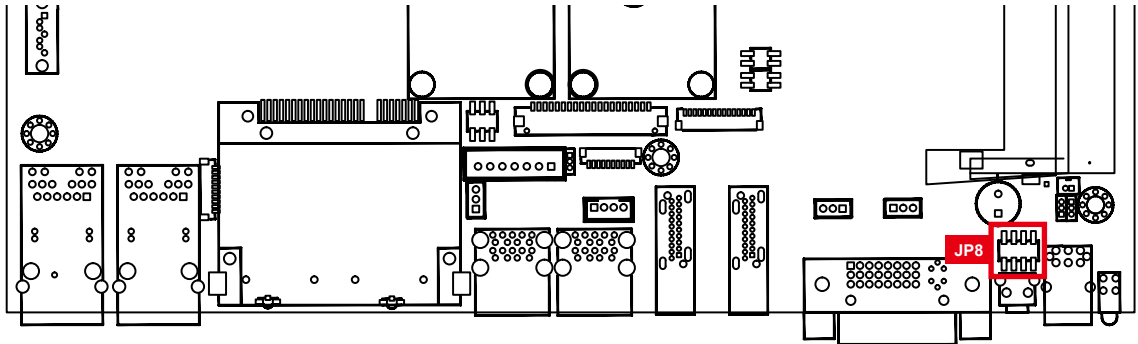
### 2.4.1 Top View of MTC-6000 Main Board With Connector Location



### 2.4.2 Bottom View of MTC-6000 Main Board with Connector Location



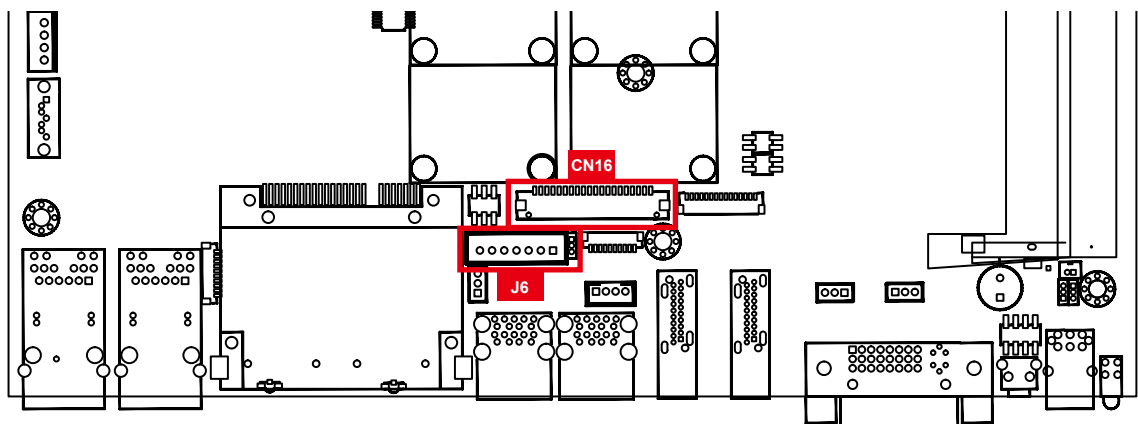
### 2.4.3 Miscellaneous Pin Header



This pin header can be used as a backup for following functions, such as hard drive LED indicator, reset button, power LED indicator, and power-on/off button, which already can be accessed by front panel and top panel. The pin-outs of Miscellaneous port are listed in following table :

| Group        | Pin No. | Description  |
|--------------|---------|--------------|
| HDD LED      | 1       | HDD_LED_P    |
|              | 3       | HDD_LED_N    |
| RESET BUTTON | 5       | FP_RST_BTN_N |
|              | 7       | Ground       |
| POWER LED    | 2       | PWR_LED_P    |
|              | 4       | PWR_LED_N    |
| POWER BUTTON | 6       | FP_PWR_BTN_P |
|              | 8       | Ground       |

### 2.4.4 LVDS





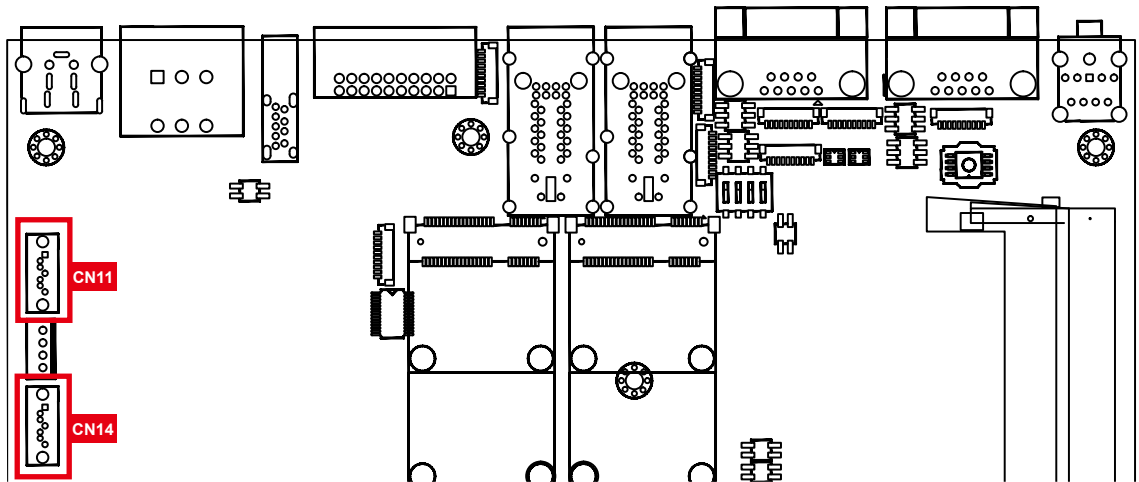
MTC-6000 supports dual-channel 24-bit LVDS display, up to 1920 x 1200 pixels resolution. The pin assignments of CN16 are listed in the following table :

| Pin No. | Definition | Pin No. | Definition |
|---------|------------|---------|------------|
| 1       | PANEL_VDD  | 21      | GND        |
| 2       | TXO0-      | 22      | TXE0-      |
| 3       | PANEL_VDD  | 23      | GND        |
| 4       | TXO0+      | 24      | TXE0+      |
| 5       | PANEL_VDD  | 25      | GND        |
| 6       | TXO1-      | 26      | TXE1-      |
| 7       | GND        | 27      | GND        |
| 8       | TXO1+      | 28      | TXE1+      |
| 9       | GND        | 29      | GND        |
| 10      | TXO2-      | 30      | TXE2-      |
| 11      | GND        | 31      | GND        |
| 12      | TXO2+      | 32      | TXE2+      |
| 13      | GND        | 33      | GND        |
| 14      | TXOC-      | 34      | TXEC-      |
| 15      | GND        | 35      | GND        |
| 16      | TXOC+      | 36      | TXEC+      |
| 17      | GND        | 37      | GND        |
| 18      | TXO3-      | 38      | TXE3-      |
| 19      | GND        | 39      | LVDS_DET#  |
| 20      | TXO3+      | 40      | TXE3+      |

The LCD inverter is connected to J6 via a JST 7-pin, 2.5mm connector providing +5V/+12V power to LCD display. The pin assignments are listed in the following table :

| Pin No. | Definition | Pin No. | Definition |
|---------|------------|---------|------------|
| 1       | +5V        | 5       | GND        |
| 2       | +12V       | 6       | GND        |
| 3       | +12V       | 7       | LBKLT_EN   |
| 4       | LBKLT_CTL  |         |            |

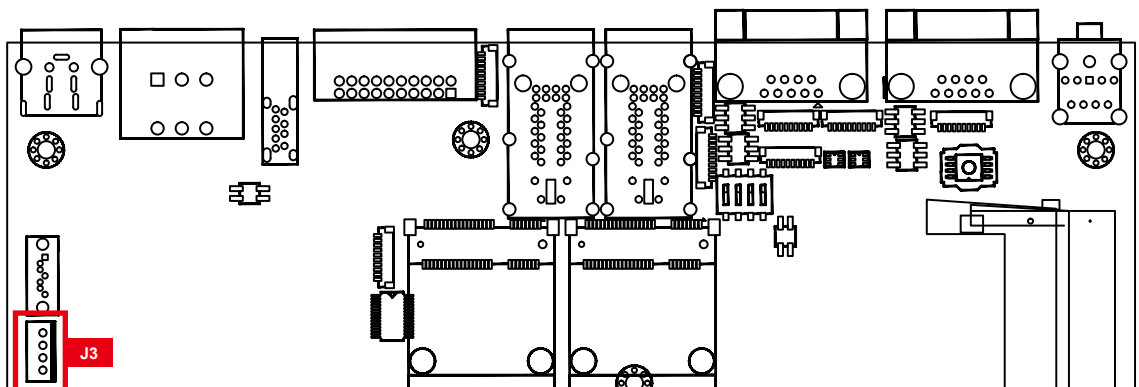
## 2.4.5 SATA III Connector



There are 2 onboard high performance Serial ATA III (SATA III) on MTC-6000. It supports higher storage capacity with less cabling effort and smaller required space. The pin assignments of CN11 and CN14 are listed in the following table :

| Pin No. | Definition | Pin No. | Definition |
|---------|------------|---------|------------|
| 1       | GND        | 5       | RXN        |
| 2       | TXP        | 6       | RXP        |
| 3       | TXN        | 7       | GND        |
| 4       | GND        |         |            |

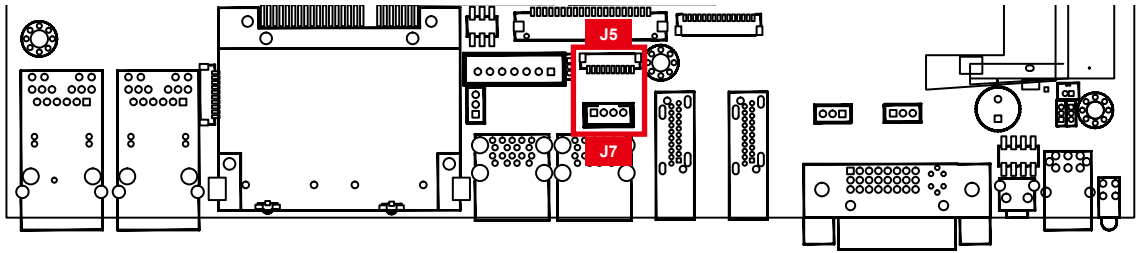
## 2.4.6 SATA Power Header



The MTC-6000 is also equipped with 1 SATA power connector. It supports 5V (Up to 2A) and 12V (Up to 1A) current to the hard drive or SSD. The pin assignments of J3 is listed in the following table :

| Pin No. | Definition | Pin No. | Definition |
|---------|------------|---------|------------|
| 1       | +12V       | 3       | GND        |
| 2       | GND        | 4       | +5V        |

## 2.4.7 Internal USB 2.0



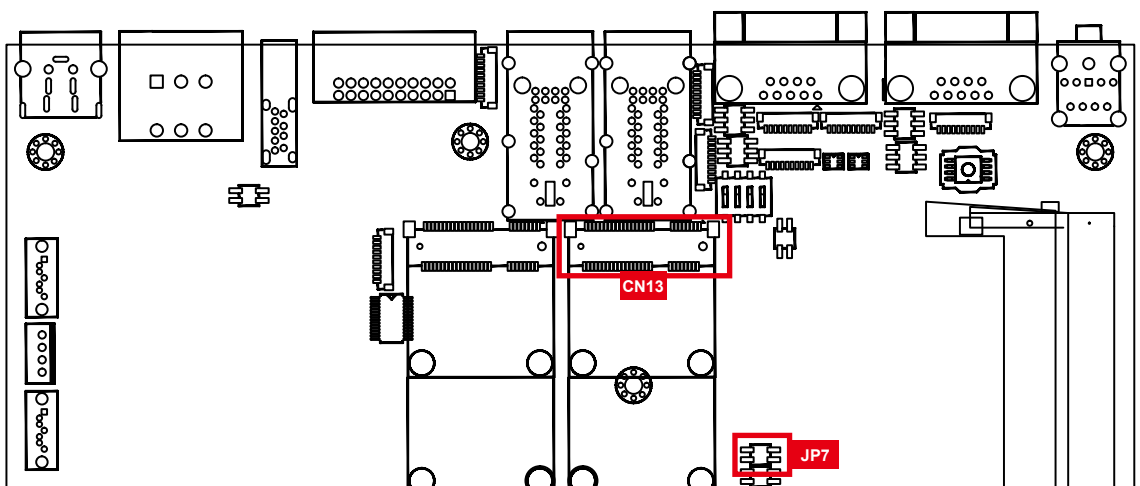
The MTC-6000 main board provides 3 expansion USB ports using plug-and-play for Dongle Key or LCD touch Panel. The USB interface supports 480Mbps transfer rate complied with high speed USB specification Rev. 2.0.

The USB interface is accessed through one 4-pin JST 2.0mm connector and one 10-pin JST 1.0mm connector. You will need an adapter cable if you use a standard USB connector. The pin assignments of J5, J7 are listed in the following table :

| Connector | Pin No. | Description | Pin No. | Description |
|-----------|---------|-------------|---------|-------------|
| J7        | 1       | USB_VCC     | 3       | USB D+      |
|           | 2       | USB D-      | 4       | GND         |

| Connector | Pin No. | Description | Pin No. | Description |
|-----------|---------|-------------|---------|-------------|
| J5        | 1       | USB_VCC     | 6       | USB2 D-     |
|           | 2       | USB_VCC     | 7       | USB2 D+     |
|           | 3       | USB_VCC     | 8       | GND         |
|           | 4       | USB1 D-     | 9       | GND         |
|           | 5       | USB1 D+     | 10      | GND         |

## 2.4.8 Mini PCIe/mSATA Slot



Both mSATA and Mini PCIe share the same form factor and similar electrical pinout assignments on their connectors. There was no clear mechanism to distinguish if a mSATA drive or a Mini PCIe device is plugged into the socket until recently that SATA I/O issued an ECN change (ECN #045) to redefine pin-43 on mSATA connector as "no connect" instead of "return current path" (or GND).

When an mSATA drive is inserted, its pin-43 is "no connect", and the respective pin on the socket is being pulled-up to logic 1. When a Mini PCIe device is inserted, its pin-43 forces the respective pin on the socket to ground, or logic 0.

MTC-6000 using JP7 Pin-43 status designed for switching between mSATA drive and Mini PCIe device.

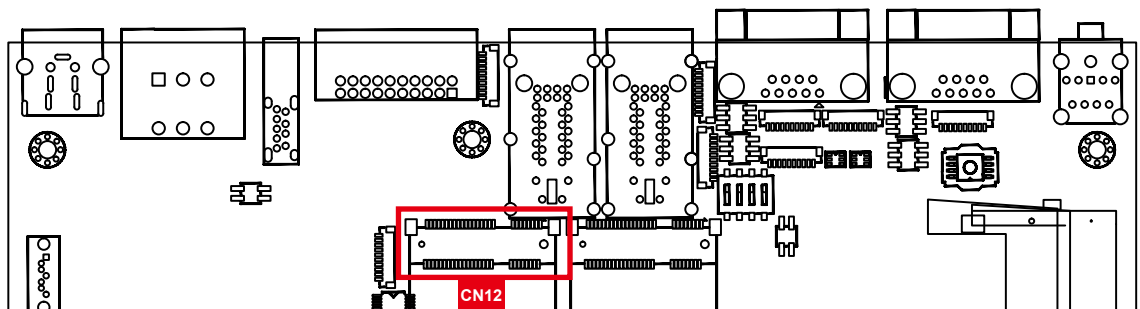
| Header | Interface      | Header | Interface |
|--------|----------------|--------|-----------|
| 1-2    | Auto Detection | 1-3    | mSATA     |
| 2-4    | Mini PCIe      |        |           |

The pin assignments of CN13 are listed in the following table :

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 51      | Reserved | 52      | +V3P3aux |
| 49      | Reserved | 50      | GND      |
| 47      | Reserved | 48      | +1.5V    |
| 45      | Reserved | 46      | Reserved |
| 43      | Status   | 44      | Reserved |
| 41      | +V3P3aux | 42      | Reserved |
| 39      | +V3P3aux | 40      | GND      |
| 37      | GND      | 38      | USB_D+   |
| 35      | GND      | 36      | USB_D-   |
| 33      | PETp0    | 34      | GND      |
| 31      | PETn0    | 32      | SMB_DATA |
| 29      | GND      | 30      | SMB_CLK  |
| 27      | GND      | 28      | +1.5V    |
| 25      | PERp0    | 26      | GND      |
| 23      | PERn0    | 24      | +V3P3aux |
| 21      | GND      | 22      | PERST#   |

|                |          |    |           |
|----------------|----------|----|-----------|
| 19             | Reserved | 20 | reserved  |
| 17             | Reserved | 18 | GND       |
| Mechanical Key |          |    |           |
| 15             | GND      | 16 | UIM_VPP   |
| 13             | REFCLK+  | 14 | UIM_RESET |
| 11             | REFCLK-  | 12 | UIM_CLK   |
| 9              | GND      | 10 | UIM_DATA  |
| 7              | CLKREQ#  | 8  | UIM_PWR   |
| 5              | Reserved | 6  | 1.5V      |
| 3              | Reserved | 4  | GND       |
| 1              | WAKE#    | 2  | 3.3Vaux   |

## 2.4.9 Mini PCIe

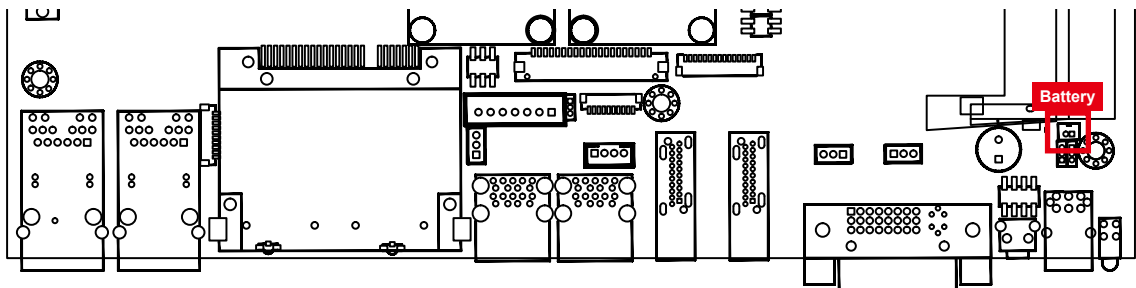


The pin assignments of CN12 are listed in the following table :

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 51      | Reserved | 52      | +V3P3aux |
| 49      | Reserved | 50      | GND      |
| 47      | Reserved | 48      | +1.5V    |
| 45      | Reserved | 46      | Reserved |
| 43      | GND      | 44      | Reserved |
| 41      | +V3P3aux | 42      | Reserved |
| 39      | +V3P3aux | 40      | GND      |
| 37      | GND      | 38      | USB_D+   |
| 35      | GND      | 36      | USB_D-   |

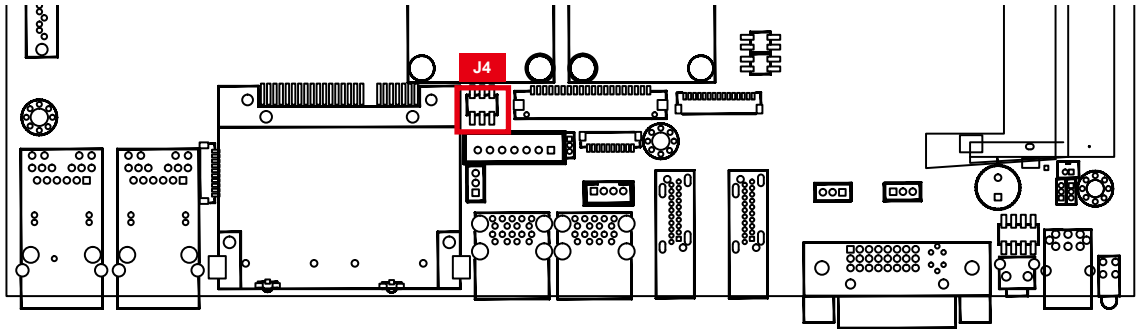
|                |          |    |           |
|----------------|----------|----|-----------|
| 33             | PETp0    | 34 | GND       |
| 31             | PETn0    | 32 | SMB_DATA  |
| 29             | GND      | 30 | SMB_CLK   |
| 27             | GND      | 28 | +1.5V     |
| 25             | PERp0    | 26 | GND       |
| 23             | PERn0    | 24 | +V3P3aux  |
| 21             | GND      | 22 | PERST#    |
| 19             | Reserved | 20 | reserved  |
| 17             | Reserved | 18 | GND       |
| Mechanical Key |          |    |           |
| 15             | GND      | 16 | UIM_VPP   |
| 13             | REFCLK+  | 14 | UIM_RESET |
| 11             | REFCLK-  | 12 | UIM_CLK   |
| 9              | GND      | 10 | UIM_DATA  |
| 7              | CLKREQ#  | 8  | UIM_PWR   |
| 5              | Reserved | 6  | 1.5V      |
| 3              | Reserved | 4  | GND       |
| 1              | WAKE#    | 2  | 3.3Vaux   |

## 2.4.10 Battery



The MTC-6000 real-time clock is powered by a lithium battery. It is equipped with Panasonic BR2032 190mAh lithium battery. It is recommended that you not replace the lithium battery on your own. If the battery need to be changed, please contact the Vecow RMA service team.

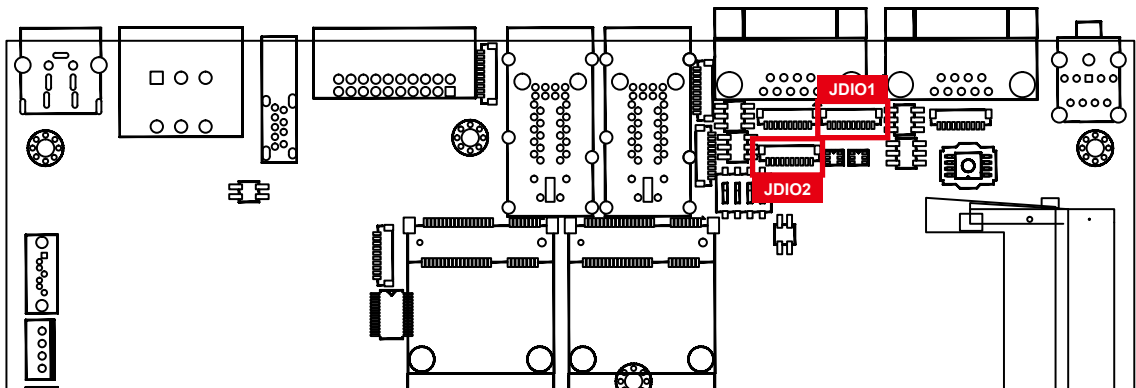
### 2.4.11 LAN 2 I210 SDP



The pin assignments of J4 are listed in the following table :

| Pin No. | Definition | Pin No. | Definition |
|---------|------------|---------|------------|
| 1       | LAN2_SDP0  | 4       | LAN2_SDP3  |
| 2       | LAN2_SDP1  | 5       | GND        |
| 3       | LAN2_SDP2  | 6       | GND        |

### 2.4.12 Internal GPIO



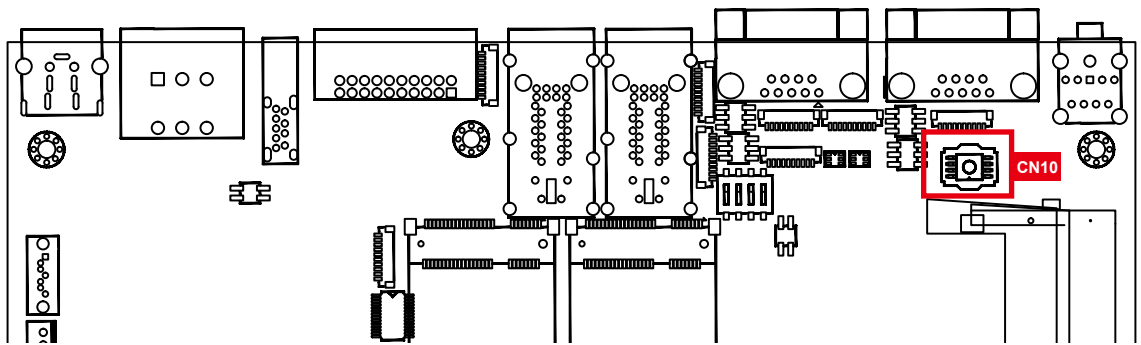
There is a 16-bit GPIO connector in the top side. Each GPIO channel can be configured by either GPI or GPO. JDIO1 and JDIO2 pins are defined in the following table :

| Pin No. | JDIO1 Definition | JDIO2 Definition |
|---------|------------------|------------------|
| 1       | SIO_GP11         | SIO_GP37         |
| 2       | SIO_GP12         | SIO_GP50         |
| 3       | SIO_GP15         | SIO_GP51         |
| 4       | SIO_GP16         | SIO_GP52         |
| 5       | SIO_GP32         | SIO_GP56         |
| 6       | SIO_GP33         | SIO_GP57         |

|    |          |          |
|----|----------|----------|
| 7  | SIO_GP35 | SIO_GP64 |
| 8  | SIO_GP36 | SIO_GP65 |
| 9  | +V5      | +V5      |
| 10 | GND      | GND      |

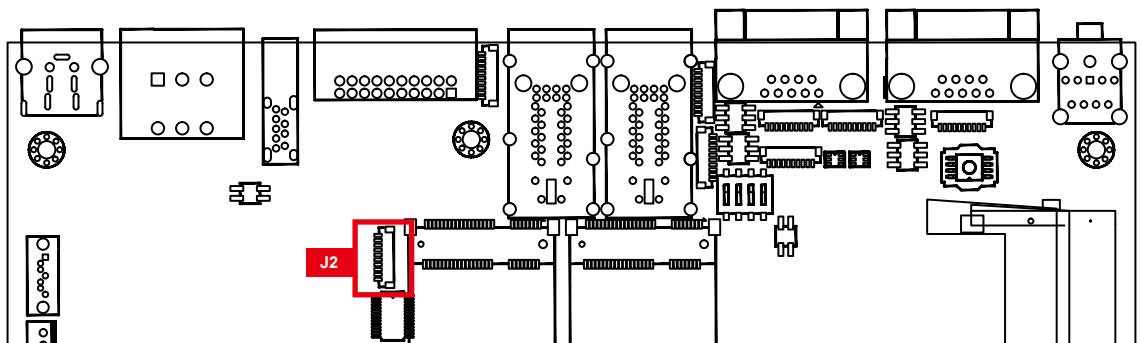
| Symbol   | Parameter          | Condition          | Min. | Typ. | Max. | Unit    |
|----------|--------------------|--------------------|------|------|------|---------|
| $V_{OL}$ | Low Output Voltage | $I_{OL}$           |      |      | 0.4  | V       |
| $V_{IL}$ | Low Input Voltage  |                    |      |      | 0.8  | V       |
| $V_{IH}$ | High Input Voltage |                    | 2.2  |      |      | V       |
| $I_{IL}$ | Low Input Leakage  | $V_{IN} = 0$       |      |      | 10   | $\mu A$ |
| $I_{IH}$ | High Input Leakage | $V_{IN} = V_{CC3}$ |      |      | -10  | $\mu A$ |
| $I_{O2}$ | 3-state Leakage    |                    |      |      | 20   | $\mu A$ |

### 2.4.13 BIOS Socket



If the BIOS need to be changed, please contact the Vecow RMA service team.

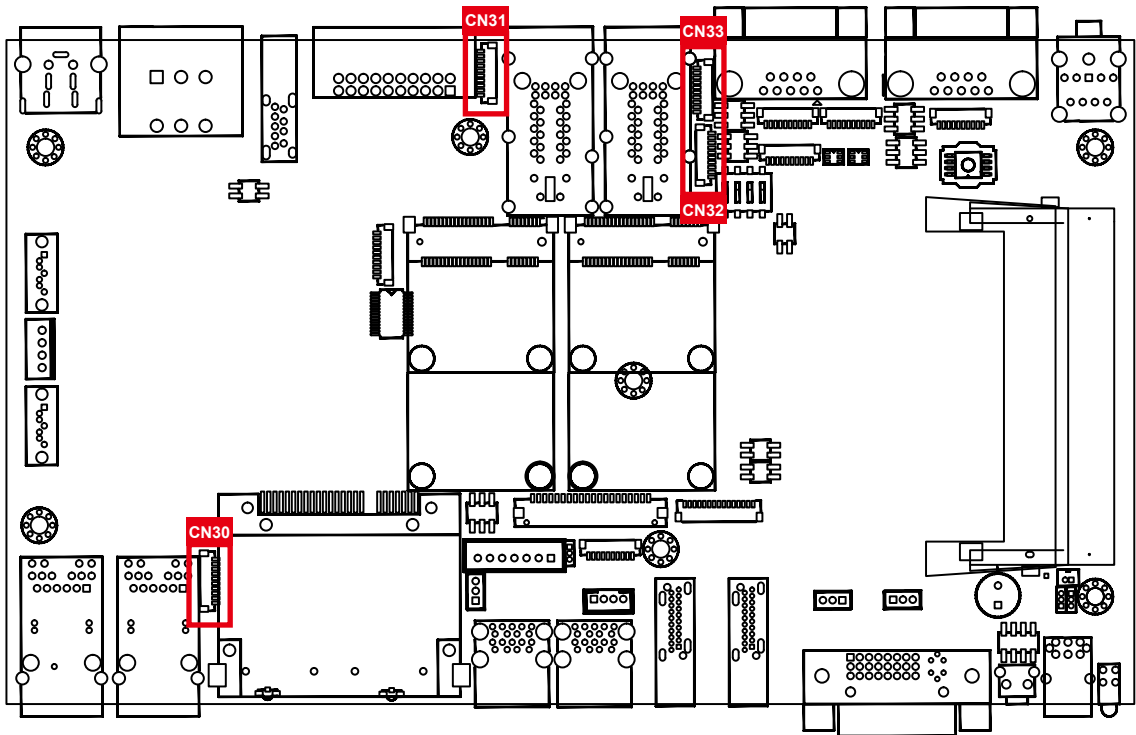
### 2.4.14 LPC Port 80 Header



MTC-6000 provides a LPC Port 80 Header for Debug Card.



## 2.4.15 External LAN LED Header



MTC-6000 provides LAN LED to indicate LAN status, PoE power on/off and PD power on/off for external chassis use.

| Header | Pin No. | Function       | Pin No. | Function       |
|--------|---------|----------------|---------|----------------|
| CN30   | 1       | LAN1_LINK100#  | 6       | LAN2_LINK100#  |
|        | 2       | LAN1_LINK1000# | 7       | LAN2_LINK1000# |
|        | 3       | +V12_PD_LED1   | 8       | +V3P3_         |
|        | 4       | LAN1_ACT#      | 9       | LAN2_ACT#      |
|        | 5       | +V12_PD_LED2   | 10      | GND            |

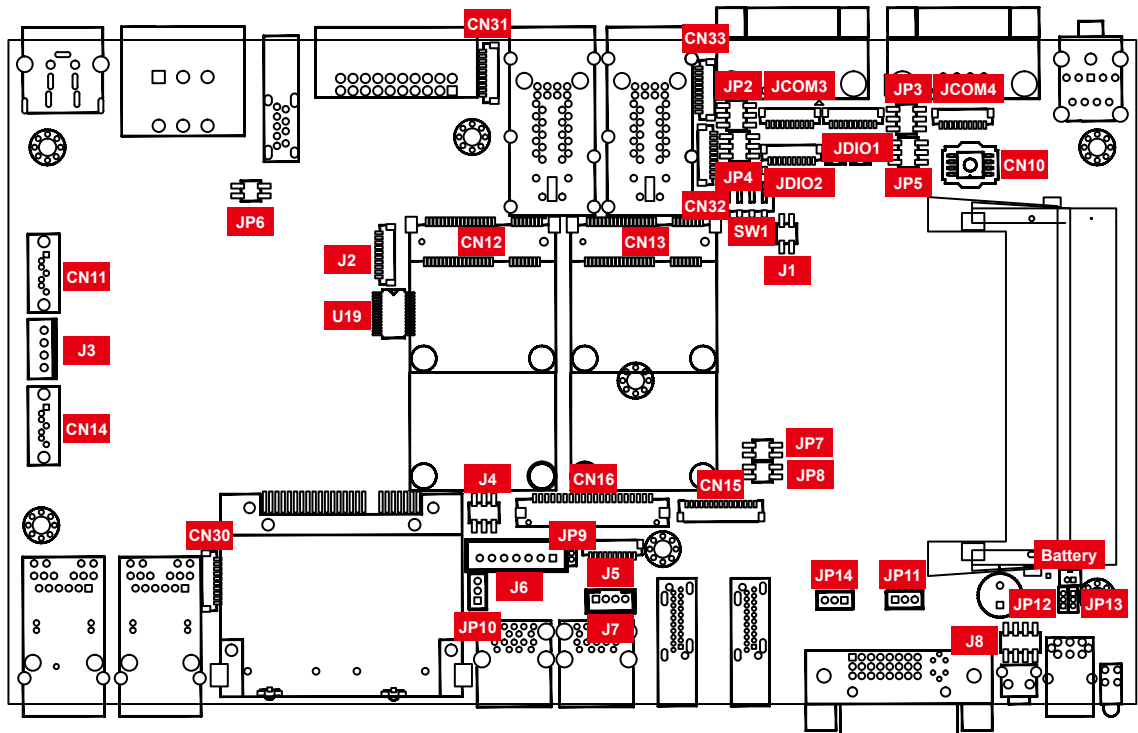
| Header | Pin No. | Function       | Pin No. | Function       |
|--------|---------|----------------|---------|----------------|
| CN31   | 1       | LAN3_LINK100#  | 6       | LAN4_LINK100#  |
|        | 2       | LAN3_LINK1000# | 7       | LAN4_LINK1000# |
|        | 3       | +V3P3_A        | 8       | +V3P3_A        |
|        | 4       | LAN3_ACT#      | 9       | LAN4_ACT#      |
|        | 5       | NC             | 10      | GND            |

| Header | Pin No. | Function       | Pin No. | Function       |
|--------|---------|----------------|---------|----------------|
| CN32   | 1       | LAN5_LINK100#  | 6       | LAN6_LINK100#  |
|        | 2       | LAN5_LINK1000# | 7       | LAN6_LINK1000# |
|        | 3       | +V3P3_A        | 8       | +V3P3_A        |
|        | 4       | LAN5_ACT#      | 9       | LAN6_ACT#      |
|        | 5       | NC             | 10      | GND            |

| Header | Pin No. | Function     | Pin No. | Function     |
|--------|---------|--------------|---------|--------------|
| CN33   | 1       | POE_LED0     | 6       | PWR_POE_LED2 |
|        | 2       | PWR_POE_LED0 | 7       | POE_LED3     |
|        | 3       | POE_LED1     | 8       | PWR_POE_LED3 |
|        | 4       | PWR_POE_LED1 | 9       | NC           |
|        | 5       | POE_LED2     | 10      | GND          |

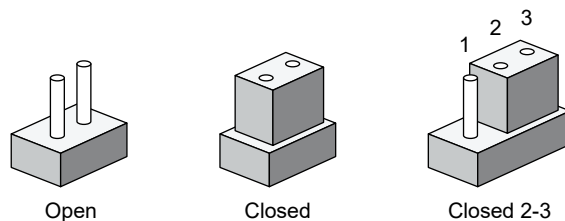
## 2.5 Main Board Jumper & Deep Switch Settings

### 2.5.1 Top View of MTC-6000 With Jumper and Deep Switch

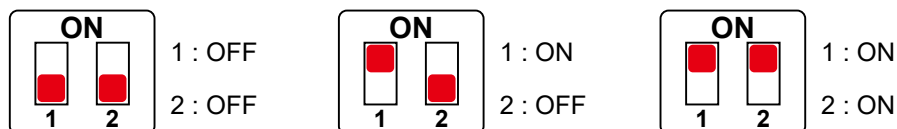


The figure below is the top view of MTC-6000 board, and it shows the location of the jumpers and the switches.

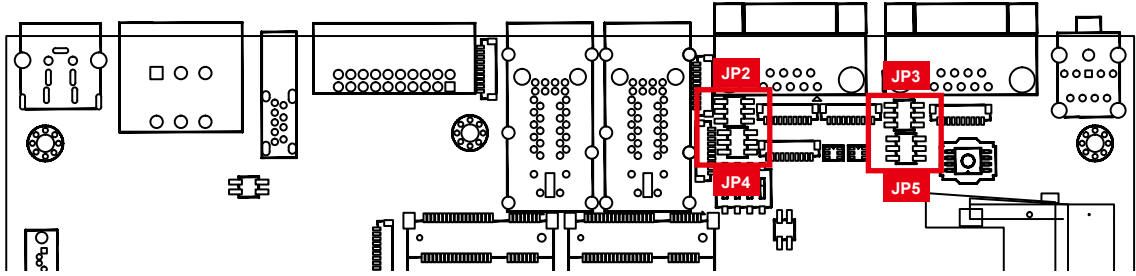
You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, please connect the pins with the clip. To "open" a jumper, please remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



You may configure your card to match the needs of your application by DIP switch as shown below (the deep switch on and off)

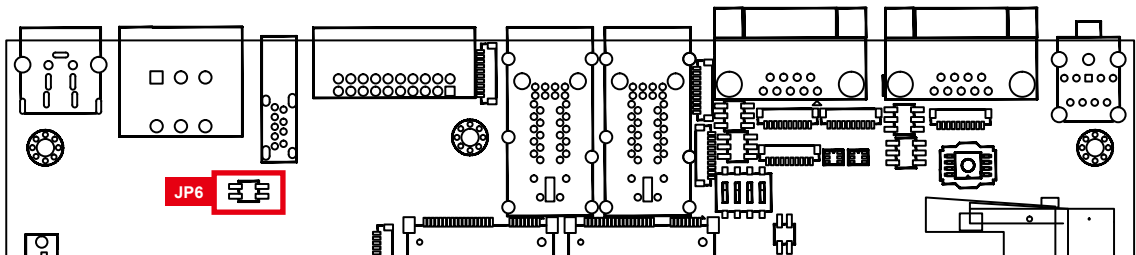


## 2.5.2 USB Power Jumper



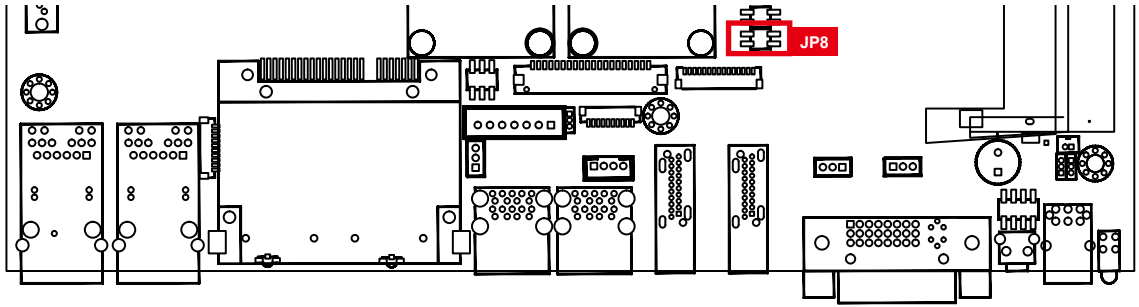
| Header      | Pin No. | Description      |
|-------------|---------|------------------|
| COM1<br>JP2 | 1-2     | +5V (1A max.)    |
|             | 3-4     | +12V (0.5A max.) |
|             | 5-6     | RI (Default)     |
| COM2<br>JP3 | 1-2     | +5V (1A max.)    |
|             | 3-4     | +12V (0.5A max.) |
|             | 5-6     | RI (Default)     |
| COM3<br>JP4 | 1-2     | +5V (1A max.)    |
|             | 3-4     | +12V (0.5A max.) |
|             | 5-6     | RI (Default)     |
| COM4<br>JP5 | 1-2     | +5V (1A max.)    |
|             | 3-4     | +12V (0.5A max.) |
|             | 5-6     | RI (Default)     |

## 2.5.3 PoE Power ON Select



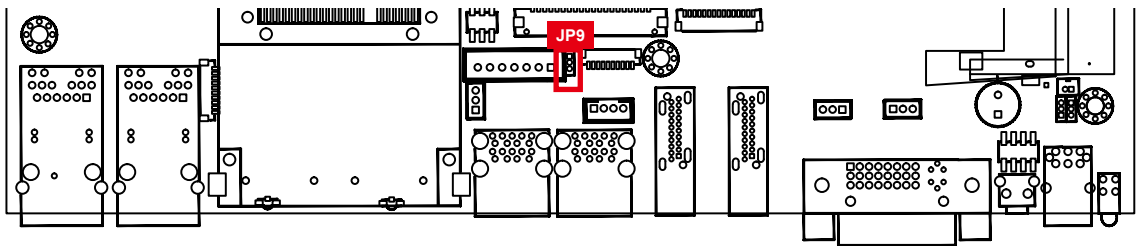
| Header | Pin No. | Function                                     |
|--------|---------|--|
| JP6    | 1-2     | PoE power on at standby power ready          |
|        | 3-4     | PoE power on after system power on (Default) |

## 2.5.4 CFast & mSATA Select



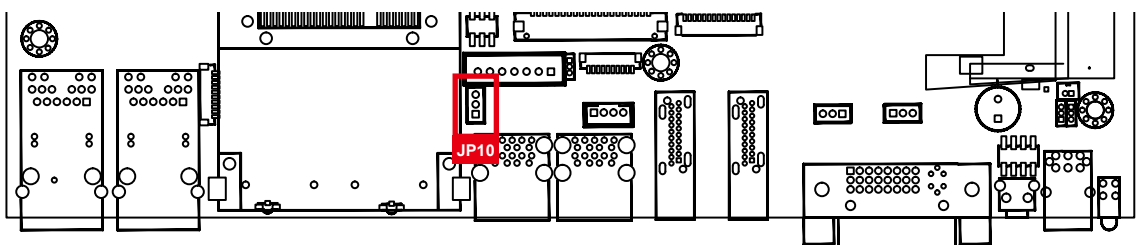
| Header | Pin No. | Function                                       |
|--------|---------|--|
| JP8    | 1-2     | Support CFast device                           |
|        | 3-4     | Support mSATA interface for Mini PCIe 1 (CN13) |

## 2.5.5 Backlight Control Level Select



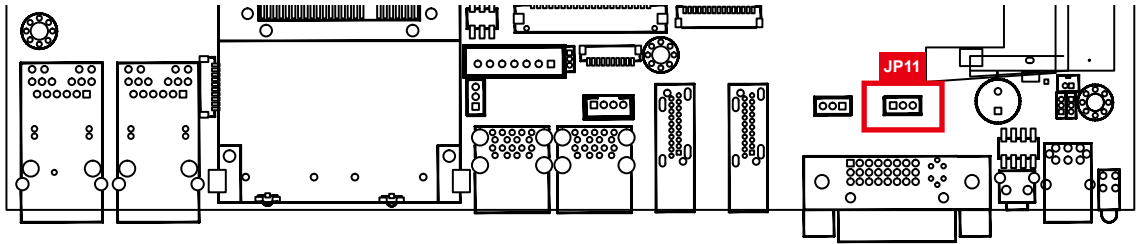
| Header | Pin No. | Function        |
|--------|---------|-----------------|
| JP9    | 1-2     | +V3P3 (Default) |
|        | 2-3     | +5V             |

## 2.5.6 USB Power Jumper



| Header | Pin No. | Function                   |
|--------|---------|----------------------------|
| JP10   | 1-2     | Non Wake Up support        |
|        | 2-3     | Supported Wake Up(Default) |

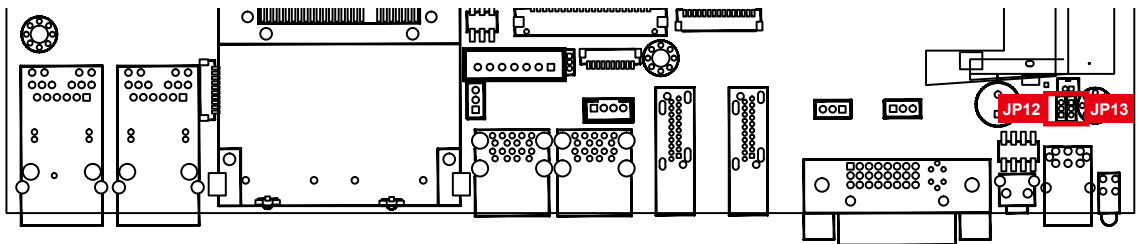
### 2.5.7 LVDS Backlight Power Select



JP11 provides LVDS voltage selection function; such as closing Pin 1, 2 is for 3.3V LVDS power input and closing Pin 2, 3 is for 5V LVDS power input.

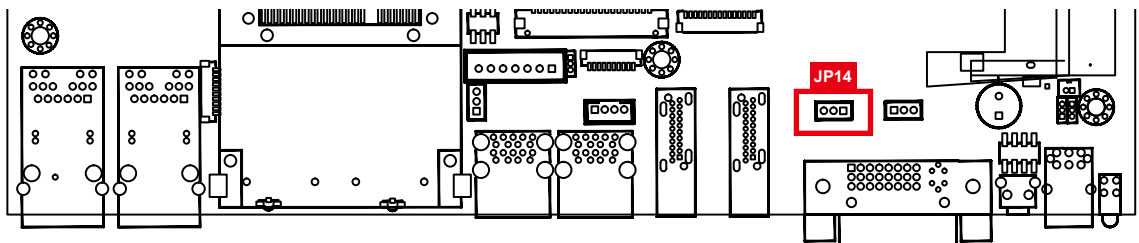
| Header | Pin No. | Function        |
|--------|---------|-----------------|
| JP11   | 1-2     | +V3P3 (Default) |
|        | 2-3     | +5V             |

### 2.5.8 Clear ME/CMOS



| Header                    | Pin No. | Function        |
|---------------------------|---------|-----------------|
| JP12 (ME)/<br>JP13 (CMOS) | 1-2     | +V3P3 (Default) |
|                           | 2-3     | GND             |

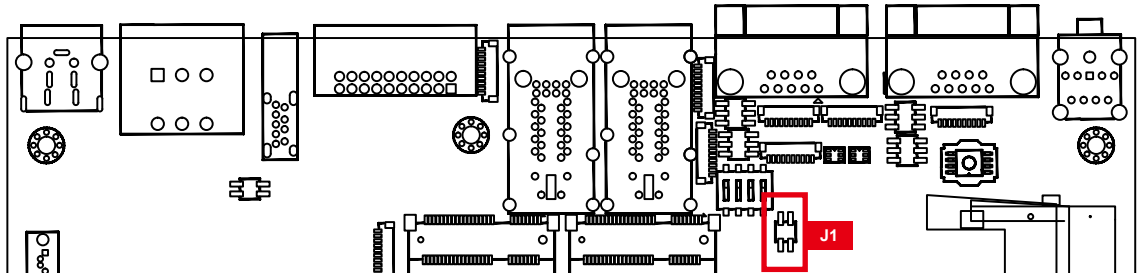
### 2.5.9 DP (DP2) & LVDS Select



Please do note that DP2 will not be enabled when MTC-6000 supports dual-channel 24-bit LVDS display.

| Header | Pin No. | Interface |
|--------|---------|-----------|
| JP14   | 1-2     | DP (DP2)  |
|        | 2-3     | LVDS      |

### 2.5.10 MCU Spy-bi Wire Interface for Download FW



The pin assignments of J1 are listed in the following table :

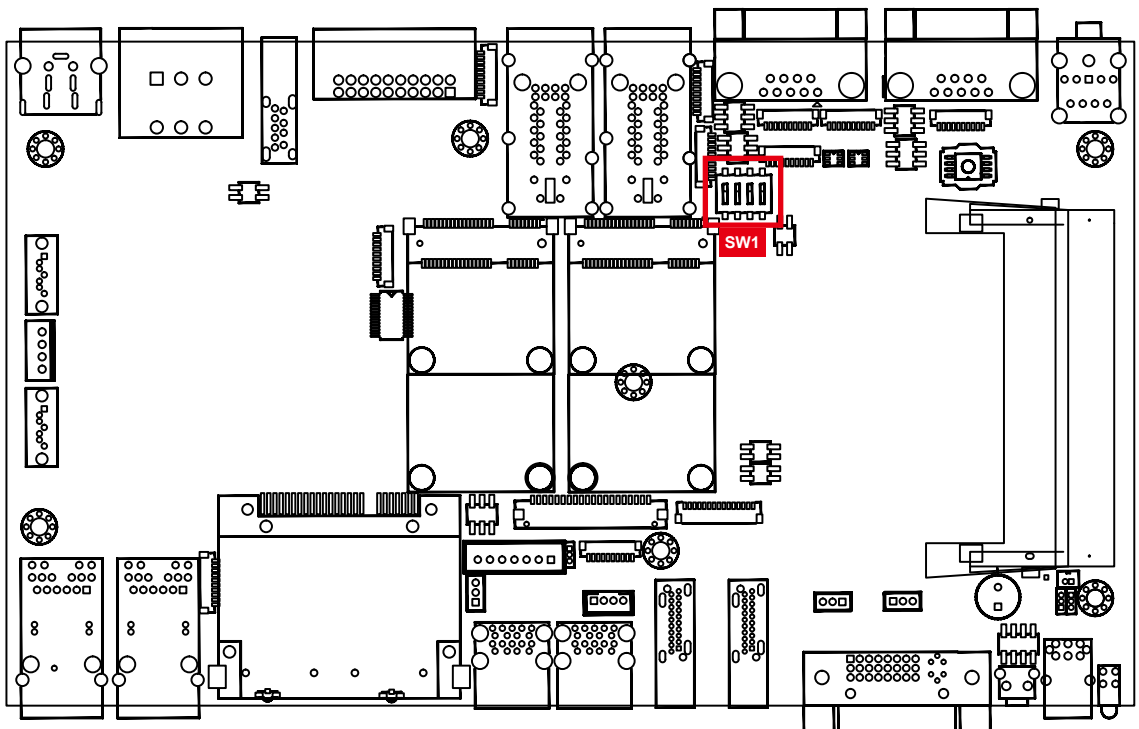
| Header | Pin No. | Interface |
|--------|---------|-----------|
| J1     | 1-2     | DP (DP2)  |
|        | 2-3     | LVDS      |

## 2.6 Ignition Control

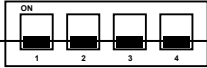
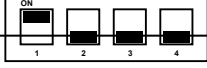
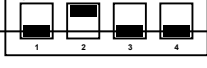









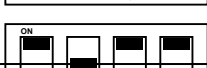

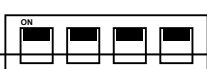

MTC-6000 series provides ignition power control feature for vehicle applications. The built-in MCU monitors the ignition signal and turns on/off the system according to pre-defined on/off delay periods.

### 2.6.1 Adjust Ignition Control Modes

MTC-6000 series provides 16 modes of different power on/off delay periods adjustable via rotary switch. The default rotary switch is set to 0 in ATX/AT power mode.



The modes are listed in the following table :

| Item | Power on delay | Power off delay | Switch Position   |
|------|----------------|-----------------|---|
| 0    | ATX mode       |                 |    |
| 1    | No delay       | No delay        |    |
| 2    | No delay       | 5 seconds       |    |
| 3    | No delay       | 10 seconds      |    |
| 4    | No delay       | 20 seconds      |    |
| 5    | 5 seconds      | 30 seconds      |    |
| 6    | 5 seconds      | 60 seconds      |    |
| 7    | 5 seconds      | 90 seconds      |  |
| 8    | 5 seconds      | 30 minutes      |  |
| 9    | 5 seconds      | 1 hour          |  |
| A    | 10 seconds     | 2 hours         |  |
| B    | 10 seconds     | 4 hours         |  |
| C    | 10 seconds     | 6 hours         |  |
| D    | 10 seconds     | 8 hours         |  |
| E    | 10 seconds     | 12 hours        |  |
| F    | 10 seconds     | 24 hours        |  |



## 2.6.2 Ignition Control Wiring

To activate ignition control, you need to provide IGN signal via the 3-pin pluggable terminal block located in the back panel. Please find below the general wiring configuration.



| Pin No. | Definition           |
|---------|----------------------|
| 1       | Ignition (IGN)       |
| 2       | External Power S/W + |
| 3       | External Power S/W + |

**V+** : Positive polarity of DC power input (Car battery+ for 12/24/36V)

**V-** : Ground of DC power input (Car battery -/GND line to GND)

**IGN** : Ignition signal input (ACC power of vehicle)

For testing purpose, you can refer to the picture below to simulate ignition signal input controlled by a latching switch.

Note :

1. DC power source and IGN share the same ground.
2. MTC-6000 supports 6V~36V wide range DC power input in ATX/AT mode. In Ignition mode, the input voltage is fixed to 12V/24V for car battery scenario.
3. For proper ignition control, the power button setting should be "Power down" mode.



In Windows, for example, you need to set "When I press the power button" to "Shut down."

### 2.6.3 Smart Battery Protection

The system with "Ignition Control" can perform Smart Battery Protection, namely Low Battery Detection.

When the system is running on a battery and its voltage drops below the threshold, the system will automatically shut down. The Low Battery Detection is implemented in the ignition control MCU FW and as a default function.

Note :

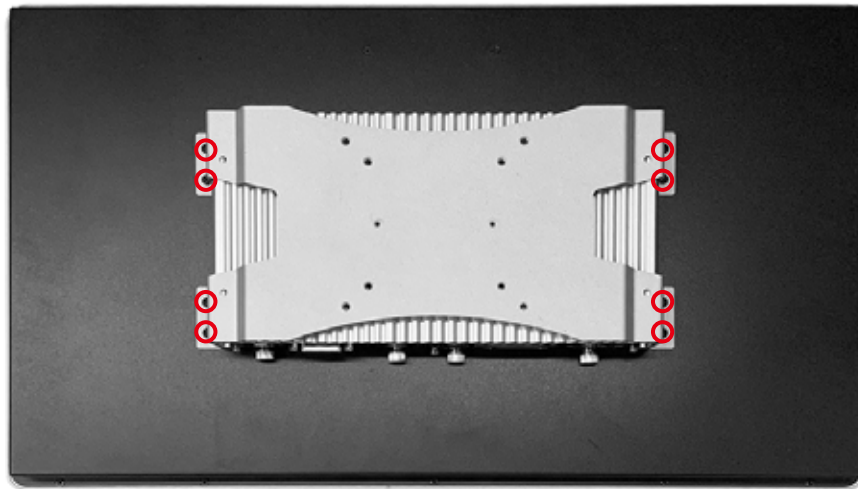
| Battery Voltage | Thresholds |
|-----------------|------------|
| 12V             | 10.5~15V   |
| 24V             | 21.5~30V   |

# 3

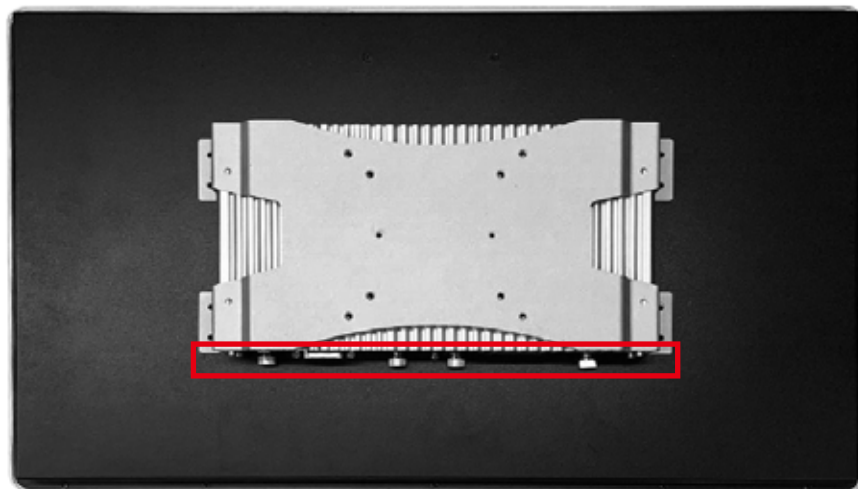
## SYSTEM SETUP

### 3.1 How to Open Your MTC-6000 Series

**Step 1** Remove eight PHILLIPS M3 screws from back cover.



**Step 2** Look at front panel.



**Step 3** Remove one HEX#6-32 screw and two tray panel.



**Step 4** Turn upside down MTC-6000.



**Step 5** Remove one HEX#6-32 and four PHILLIPS #6-32 screws on the bottom case.



**Step 6** Take out bottom case be carefully.





**Step 7** Remove two 7P-SATA and one 4P-SATA power cable on motherboard.



**Step 8** Finished.

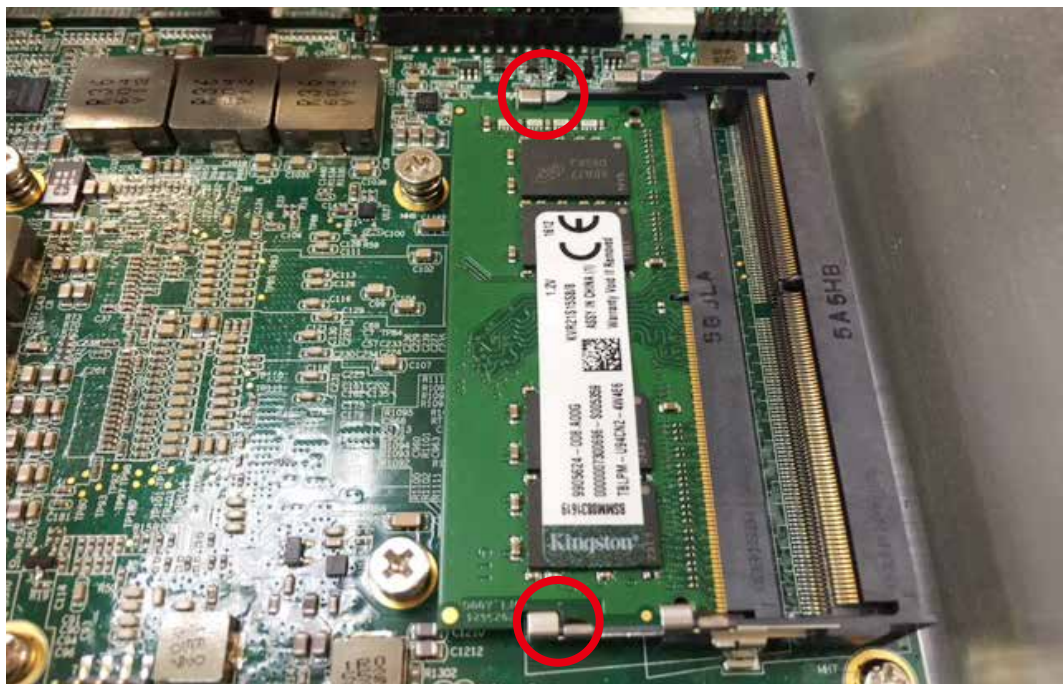


## 3.2 Installing DDR4 SO-DIMM Modules

**Step 1** Install DDR4 RAM module into SO-DIMM slot.



**Step 2** Make sure the RAM module is locked by the memory slot.





### 3.3 Installing Mini PCIe Card

**Step 1** Install Mini PCIe card into the Mini PCIe socket.



**Step 2** Fasten one M2.5 screw.



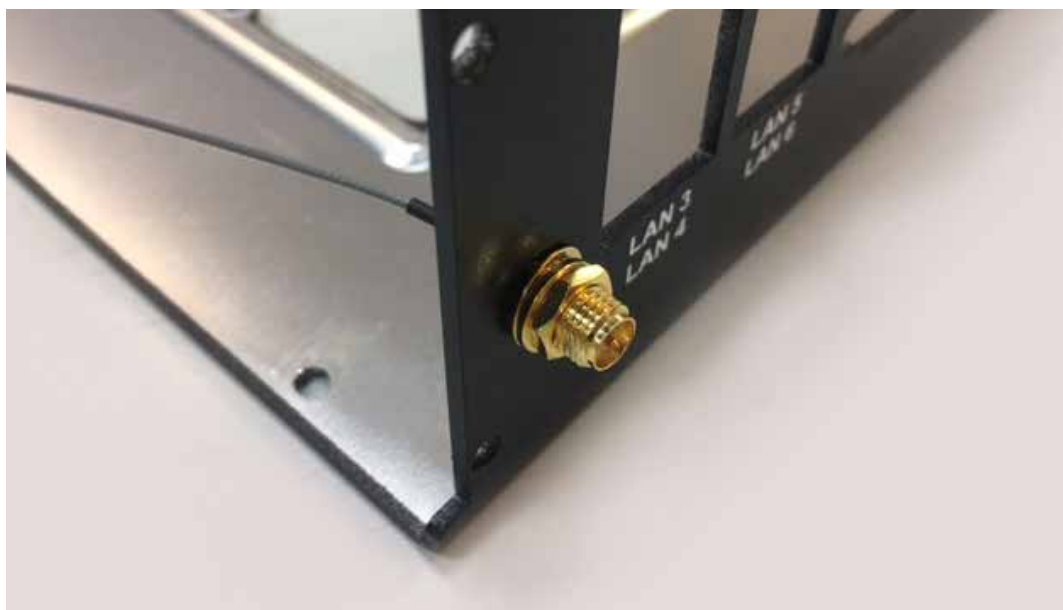


### 3.4 Installing Antenna Cable

**Step 1** Check antenna cable and washers.



**Step 2** Put Antenna cable connector into the hole on rear panel and fasten the washer 1, washer 2 and washer 3 on Antenna cable connector.



### 3.5 Installing CFast Card

**Step 1** Remove two F-M3 screws on CFast & SIM Card cover.

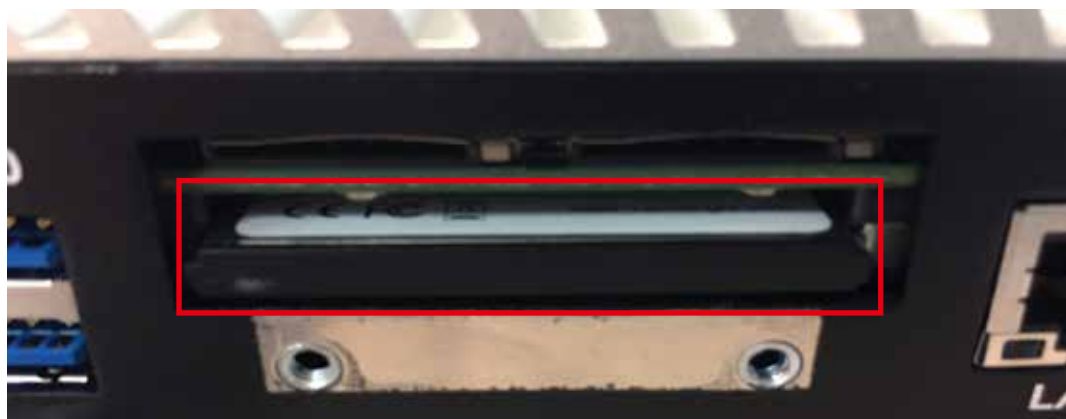


**Step 2** Remove CFast & SIM Card cover.



**Step 3** Before inserting CFast & SIM Card, make sure the system power is not plugged.

**Step 4** Insert CFast card and push to lock.



### 3.6 Installing SIM Card

**Step 1** Remove two F-M3 screws on CFast & SIM Card cover.

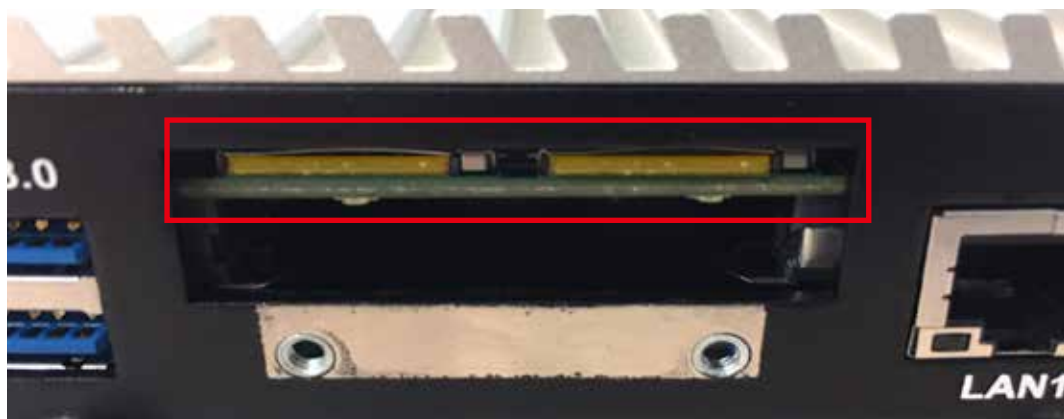


**Step 2** Remove CFast & SIM Card cover.



**Step 3** Before inserting CFast & SIM Card, make sure the system power is not plugged.

**Step 4** Insert SIM card and push to lock.



### 3.7 Installing SSD/HDD

**Step 1** Counterclockwise loosen the locks on each SSD/HDD Tray. Then remove the SSD/HDD Tray.



**Step 2** Fix the SSD/HDD on the tray with two F-M3x4 screws.



**Step 3** Fix with the tray.



**Step 4** Put the SSD/HDD tray and then clockwise fasten the locks.





# 4

## BIOS SETUP

### 4.1 Entering BIOS SETUP

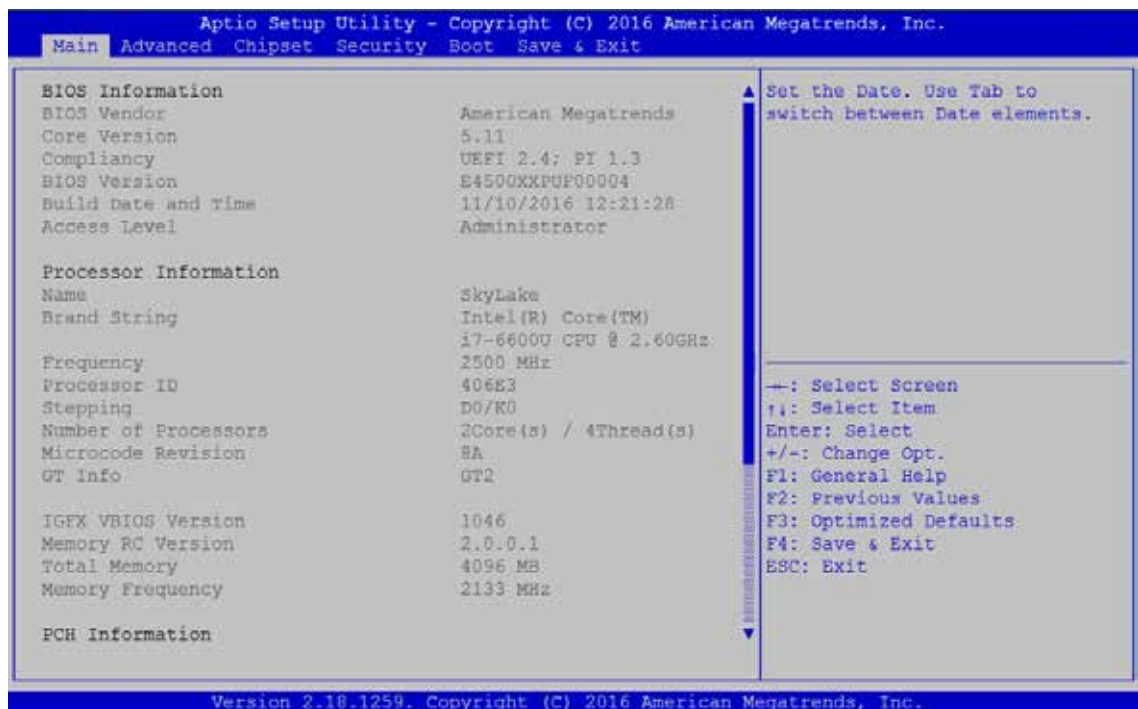


Figure 4-1 : Entering Setup Screen

BIOS provides an interface for users to check and change system configuration. The BIOS setup program is accessed by pressing the <Del> key when POST display output is shown.

## 4.2 Main

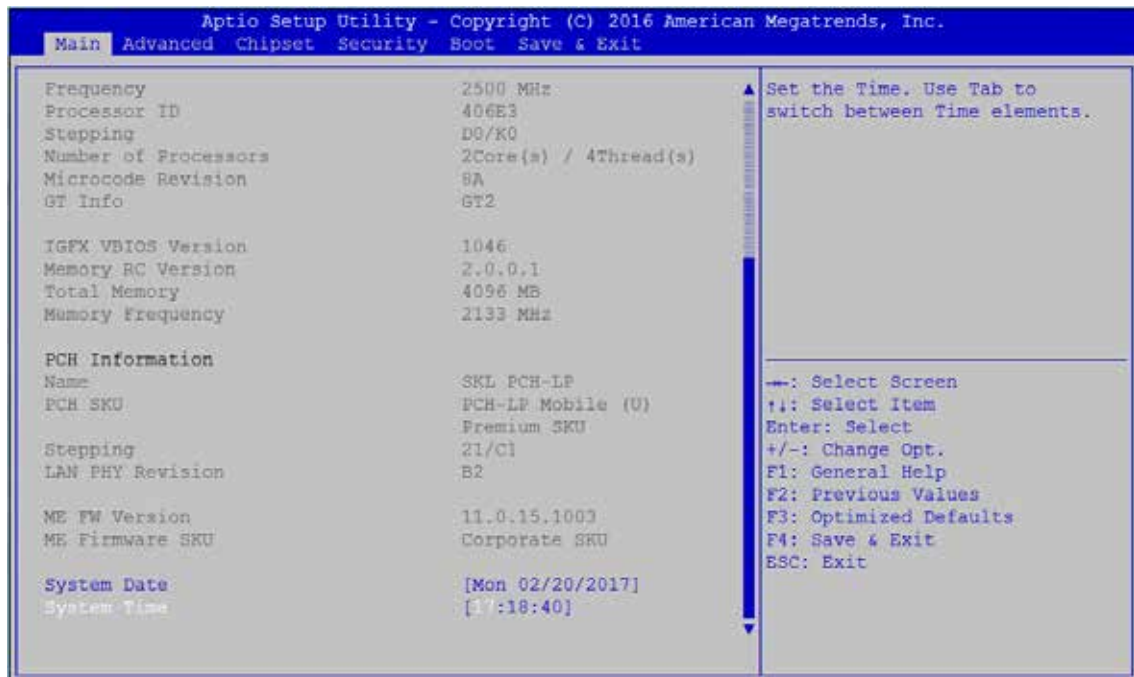


Figure 4-2 : BIOS Main Menu

The main menu displays BIOS version and system information. There are two options on the main menu, system date and system time.

### System Date

Set the date. Use tab to switch between date elements.

### System Time

Set the time. Use tab to switch between time elements.

## 4.3 Advanced

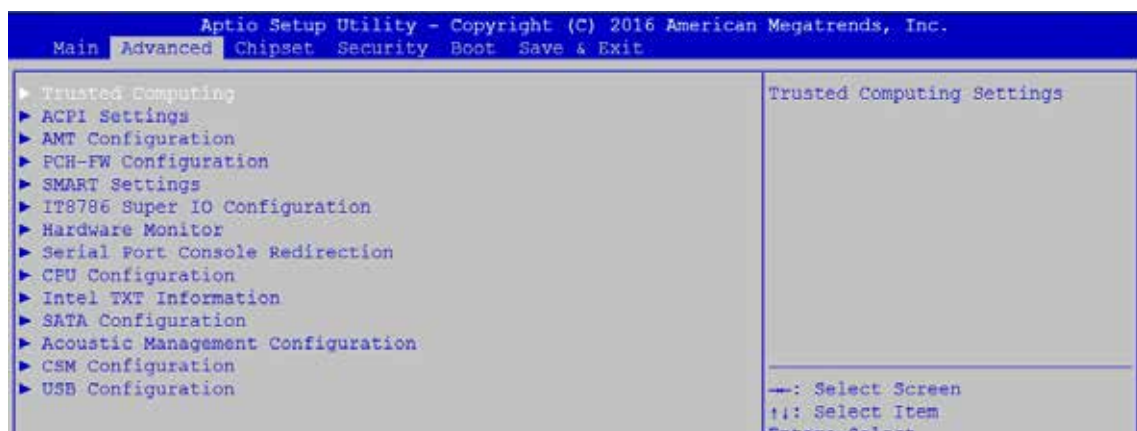


Figure 4 3 : BIOS Advanced Menu

Select advanced tab to enter advanced BIOS setup options such as CPU configuration, SATA configuration, and USB configuration.

### 4.3.1 Trusted Computing

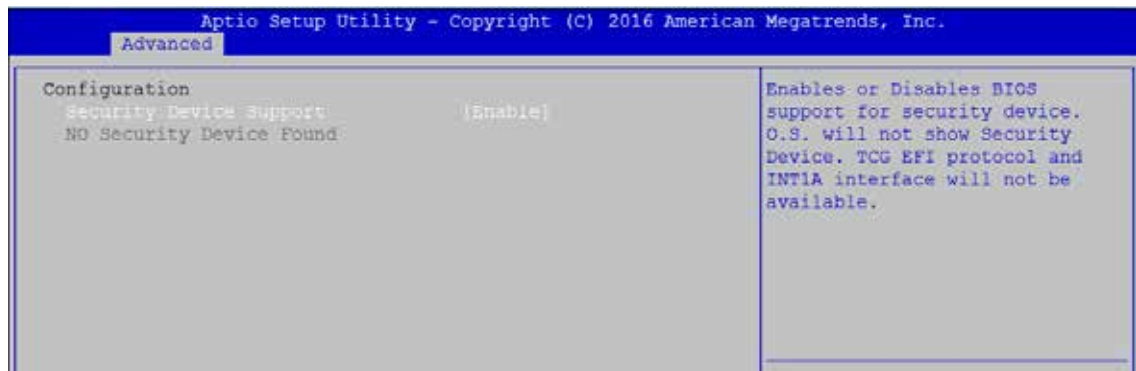


Figure 4 3-1 : Trusted Computing

Control the TPM device status and display related information if TPM chip is present.

### 4.3.2 ACPI Settings

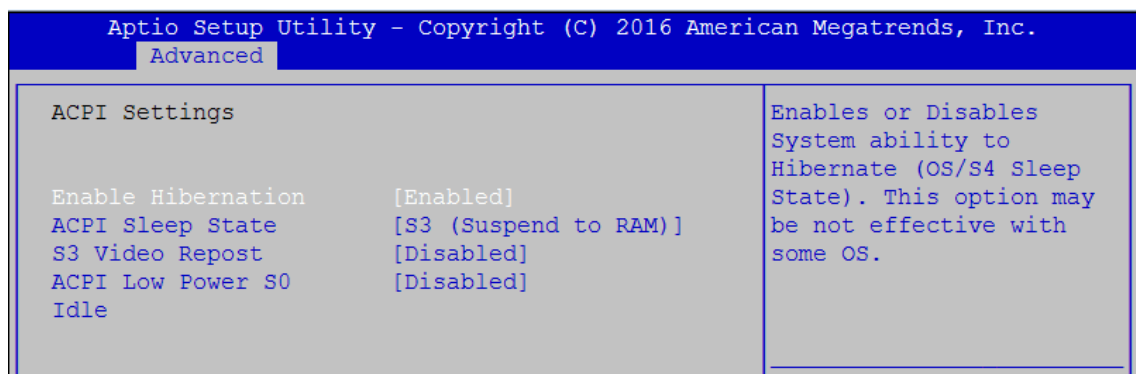


Figure 4 3-2 : ACPI Settings

#### Enable Hibernation

Enables or disables system ability to hibernate (OS/S4 sleep state). This option may be not effective with some OS.

#### ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

#### S3 Video Repost

Enable or disable S3 Video Repost.

#### ACPI Low Power S0 Idle

Enable or disable ACPI low power S0 Idle Support.



### 4.3.3 AMT Configuration

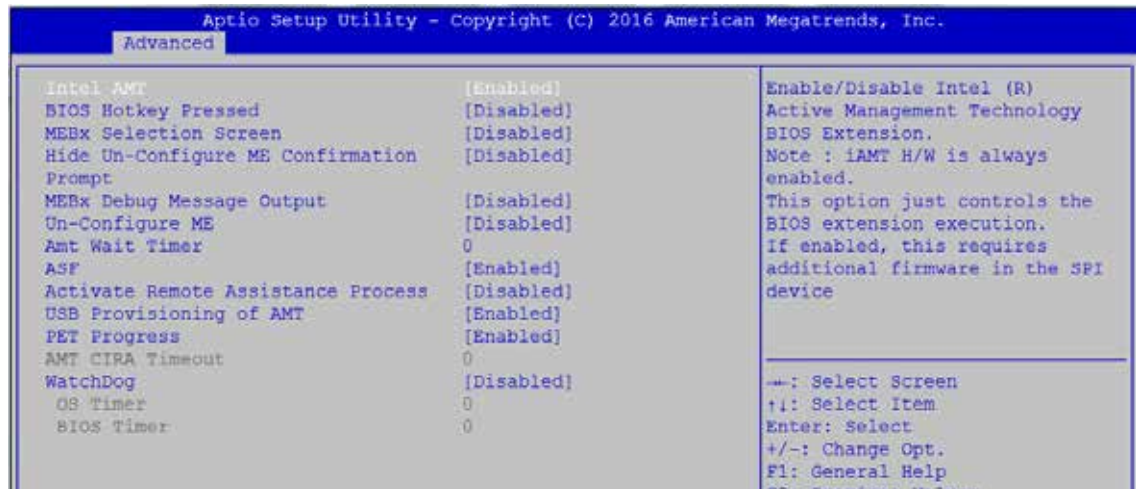


Figure 4 3-3 : Intel AMT Settings

#### Intel AMT

Enable/disable Intel (R) Active Management Technology BIOS extension.  
 Note : iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.

### 4.3.4 PCH-FW Configuration



Figure 4 3-4 : PCH-FW Settings

#### ME Unconfig on RTC Clear State

Disabling this option will cause ME not to un-configure on RTC clear.

#### ME State

Set ME to soft temporarily disabled.

### 4.3.5 SMART Settings

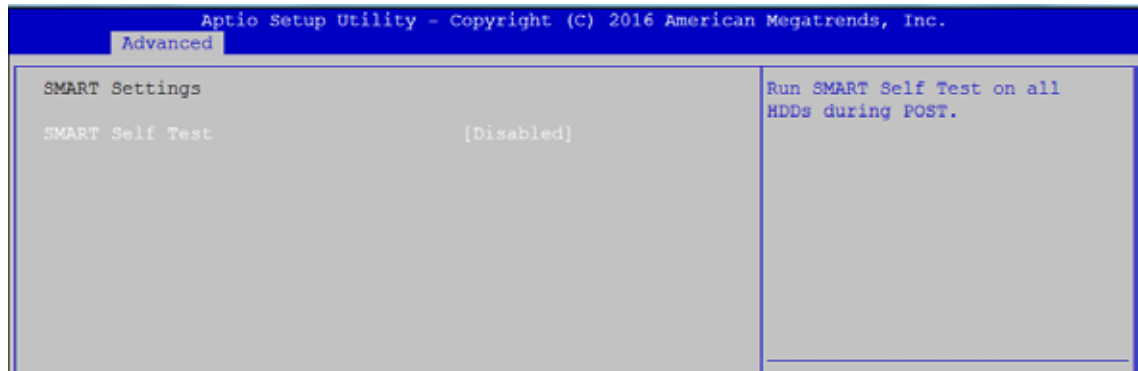


Figure 4 3-5 : SMART Settings

#### SMART Self Test

Run SMART self-test on all HDD's during POST.

### 4.3.6 IT8786 Super IO Configuration



Figure 4-3-6 : Super IO Settings

#### Serial Port 1 Configuration

Set parameters of serial port 1 (COM1).

#### Serial Port 2 Configuration

Set parameters of serial port 2 (COM2).

#### Serial Port 3 Configuration

Set parameters of serial port 3 (COM3).

#### Serial Port 4 Configuration

Set parameters of serial port 4 (COM4).

### 4.3.7 Hardware Monitor

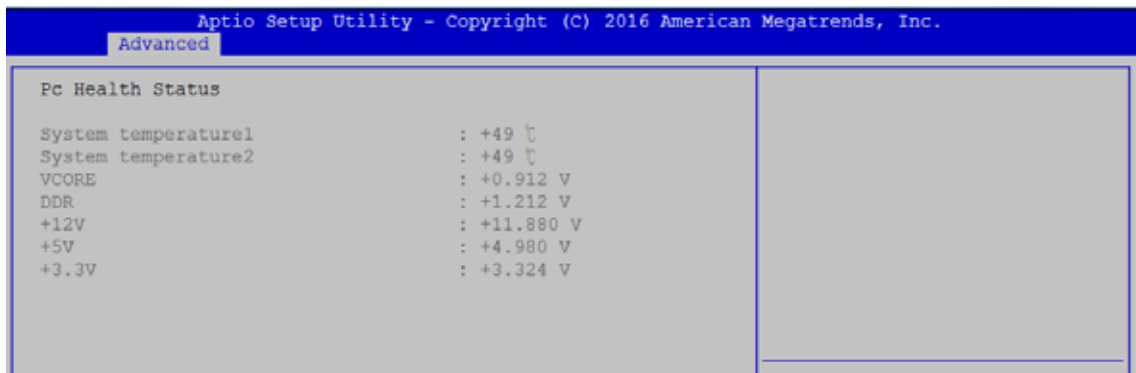


Figure 4 3-7 : Hardware Monitor Settings

The IT8786 SIO features an enhanced hardware monitor providing thermal, fan speed, and system voltages' status monitoring.

### 4.3.8 Serial Port Console Redirection



Figure 4 3-8 : Serial Port Console Redirection Settings

#### Console Redirection

Console redirection enable or disable.

#### Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

### 4.3.9 CPU Configuration

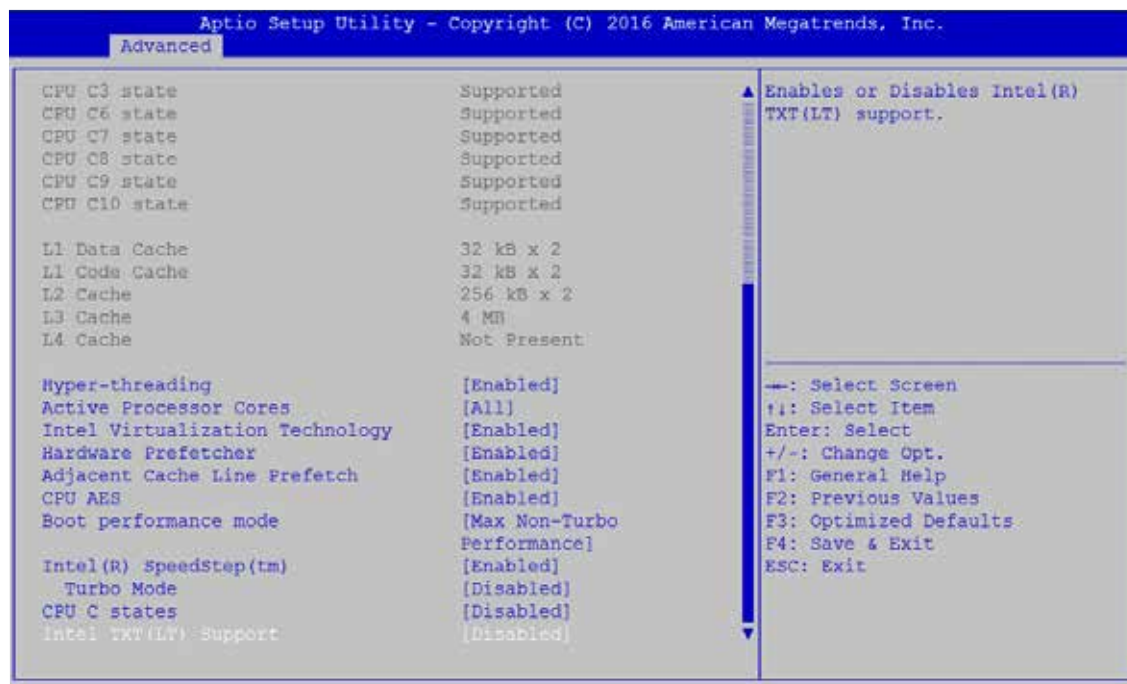


Figure 4 3-9 : CPU Function Settings

#### Hyper-threading

Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and disabled for other OS (OS not optimized for Hyper-Threading Technology). When disabled, only one thread per core is enabled.

#### Active Processor Cores

Number of cores to enable in each processor package.

#### Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

#### Hardware Prefetcher

To turn on/off the MLC streamer pre-fetcher.

#### Adjacent Cache Line Prefetch

To turn on/off pre-fetching of adjacent cache lines.

#### CPU AES

Enable/disable CPU advanced encryption standard instructions.

#### Boot performance mode

Select the performance state that the BIOS will set before OS handoff.

#### Intel(R) SpeedStep(tm)

Allows more than two frequency ranges to be supported.

#### Turbo Mode

Turbo mode.

### CPU C state

Enable or disable CPU C states.

### Enhanced C-states

Enable/disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.

### Package C State limit

Package C state limit.

### Intel TXT(LT) Support

Enables or disables Intel(R) TXT(LT) support.

## 4.3.10 Intel TXT Information

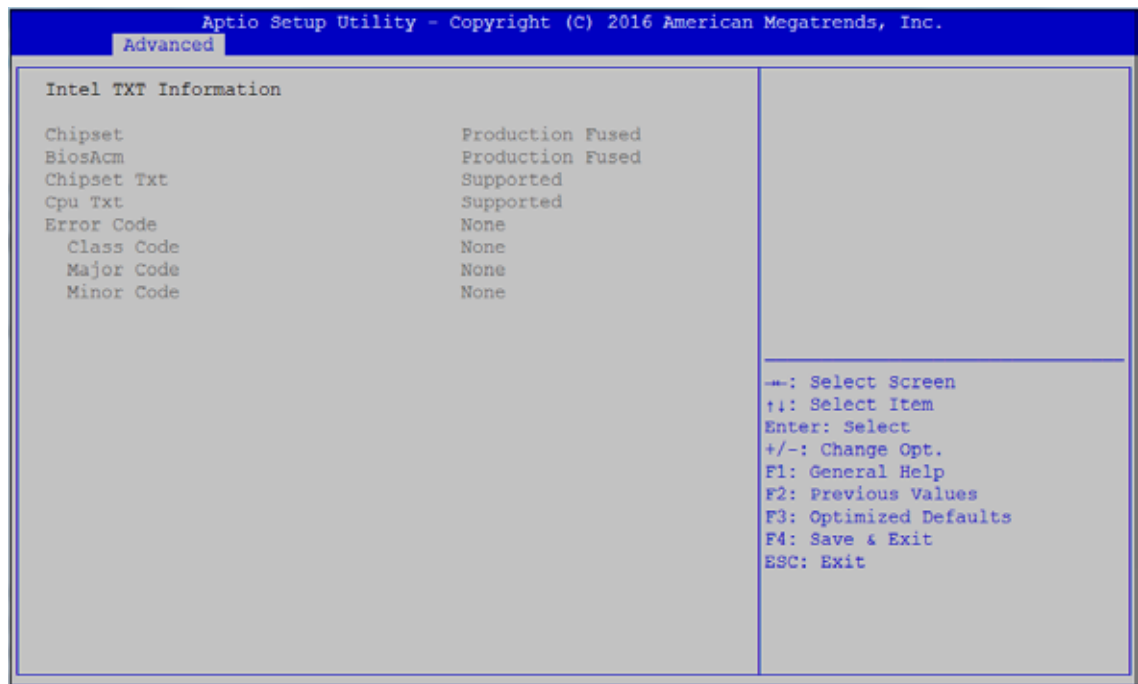


Figure 4 3-10 : Intel TXT Information

Display Intel TXT information.

### 4.3.11 SATA Configuration



Figure 4 3-11 : SATA Devices Settings

#### SATA Controller(s)

Enable or disable SATA Device.

#### SATA Mode Selection

Determines how SATA controllers operate.

#### Software Feature Mask Configuration

RAID OROM/RST driver will refer to the SWFM configuration to enable or disable the storage features.

#### Aggressive LPM Support

Enable PCH to aggressively enter link power state.

#### Options for each SATA port

##### Port 0

Enable or disable SATA port.

##### SATA Device Type

Identifies if the SATA port is connected to solid state drive or hard disk drive.

### 4.3.12 Acoustic Management Configuration

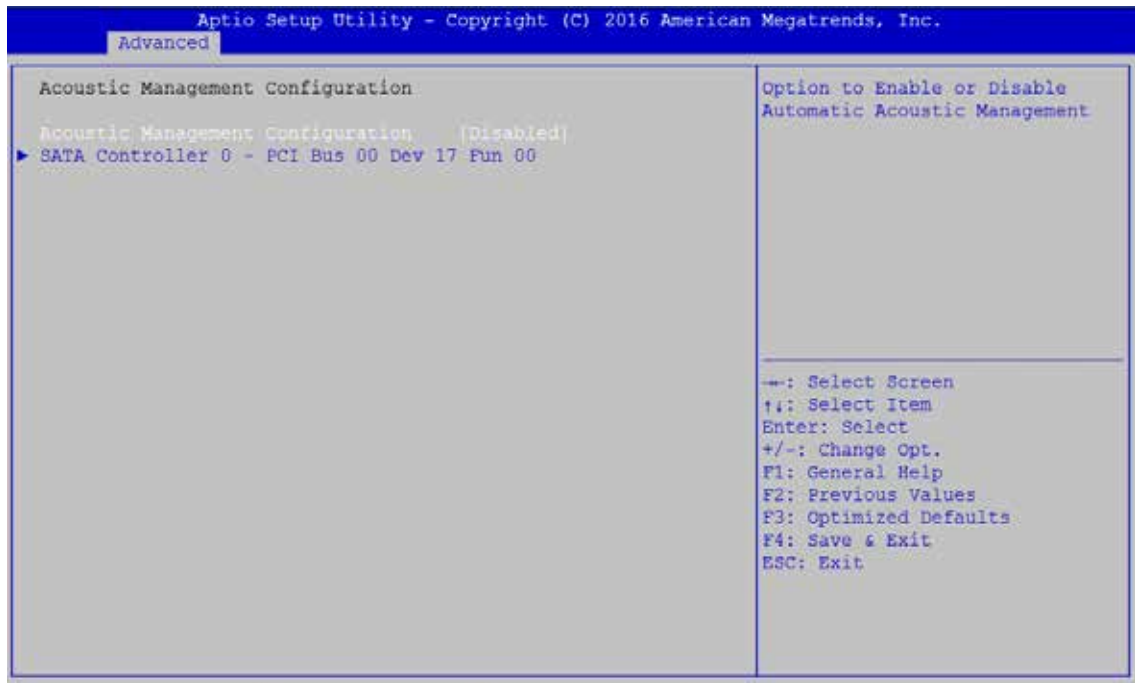


Figure 4 3-12 : Acoustic Management Settings

### Acoustic Management Configuration

Option to enable or disable automatic acoustic management.

### 4.3.13 CSM Configuration

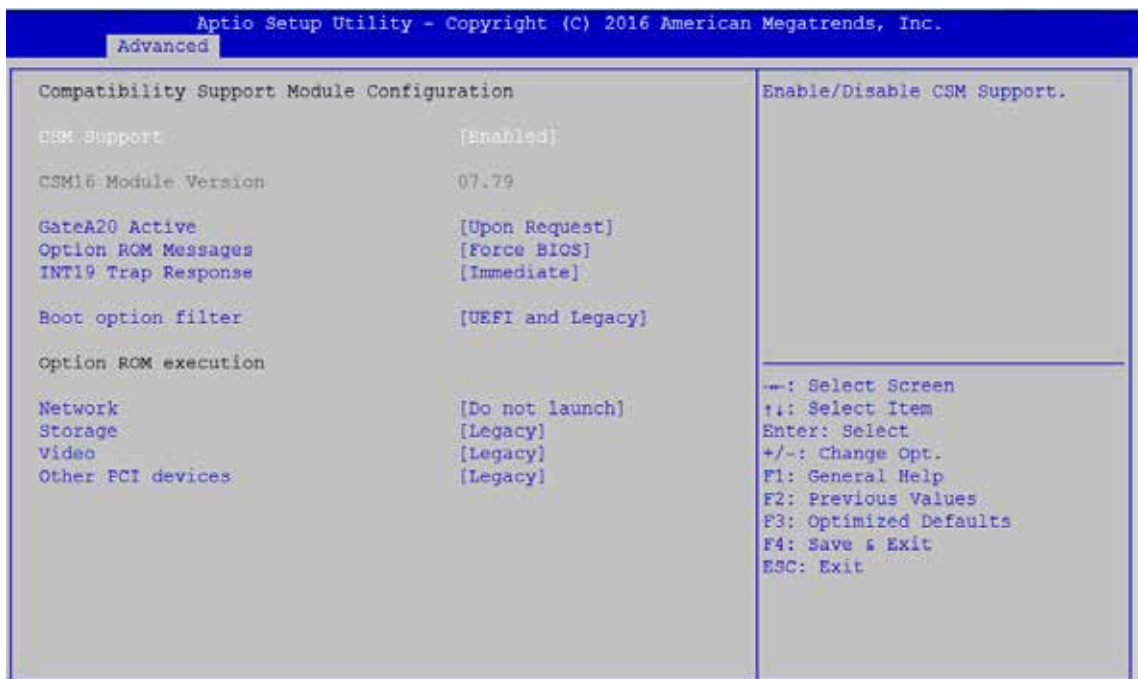


Figure 4 3-13 : CSM Settings

### **CSM Support**

Enable/disable CSM support.

### **GateA20 Active**

UPON REQUEST-GA20 can be disabled using BIOS services.

ALWAYS-do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

### **Option ROM Messages**

Set display mode for option ROM.

### **INT19 Trap Response**

BIOS reaction on INT19 trapping by option ROM :

IMMEDIATE - execute the trap right away;

POSTPONED - execute the trap during legacy boot.

### **Boot option filter**

This option controls Legacy/UEFI ROM's priority.

### **Network**

Controls the execution of UEFI and Legacy PXE OpROM.

### **Storage**

Controls the execution of UEFI and Legacy storage OpROM.

### **Video**

Controls the execution of UEFI and Legacy video OpROM.

### **Other PCI devices**

Determines OpROM execution policy for devices other than network, storage, or video.



### 4.3.14 USB Configuration

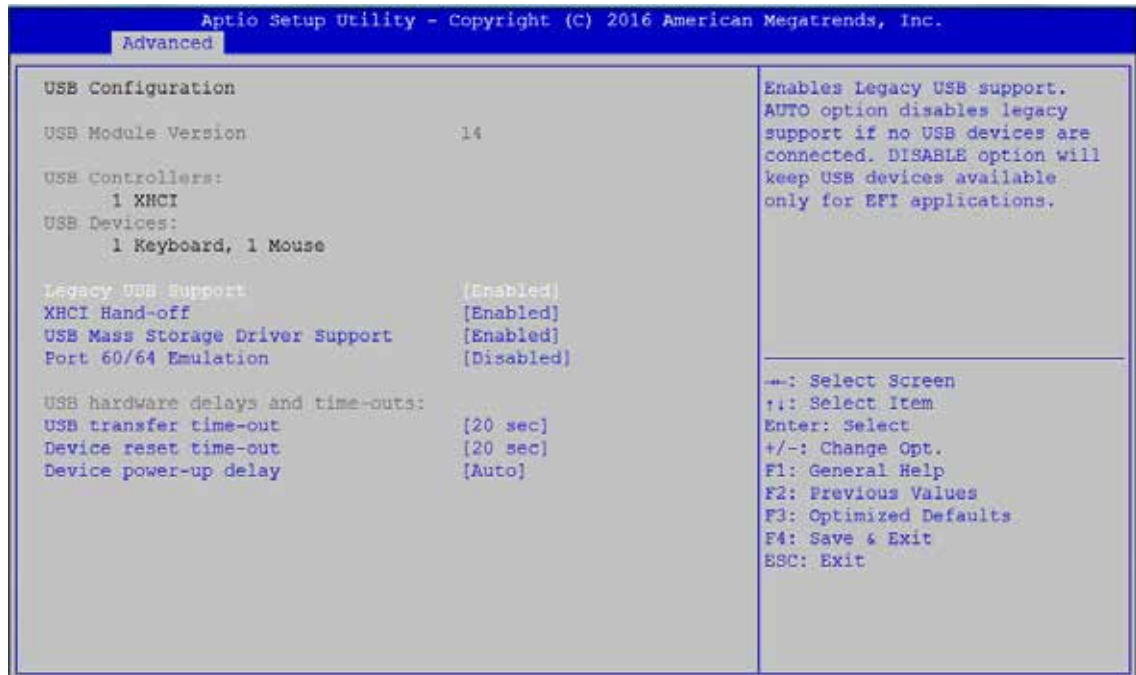


Figure 4 3-14 : USB Settings

#### Legacy USB Support

Enables Legacy USB support.

AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

#### XHCI Hand-off

This is a workaround for OSEs without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

#### USB Mass Storage Driver Support

Enable/disable USB Mass storage driver support.

#### Port 60/64 Emulation

Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OS's.

#### USB transfer time-out

The time-out value for control, bulk, and Interrupt transfers.

#### Device reset time-out

USB mass storage device start unit command time-out.

#### Device power-up delay

Maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value : for a root port it is 100ms, for a hub port the delay is taken from hub descriptor.

## 4.4 Chipset

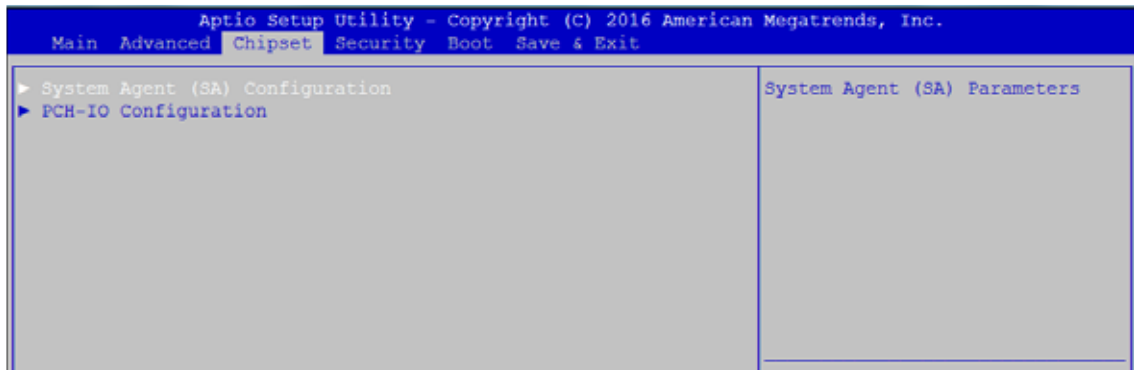


Figure 4-4 : BIOS Chipset Menu

### System Agent (SA) Configuration

System agent (SA) parameters.

### PCH-IO Configuration

PCH parameters.

### 4.4.1 System Agent (SA) Configuration

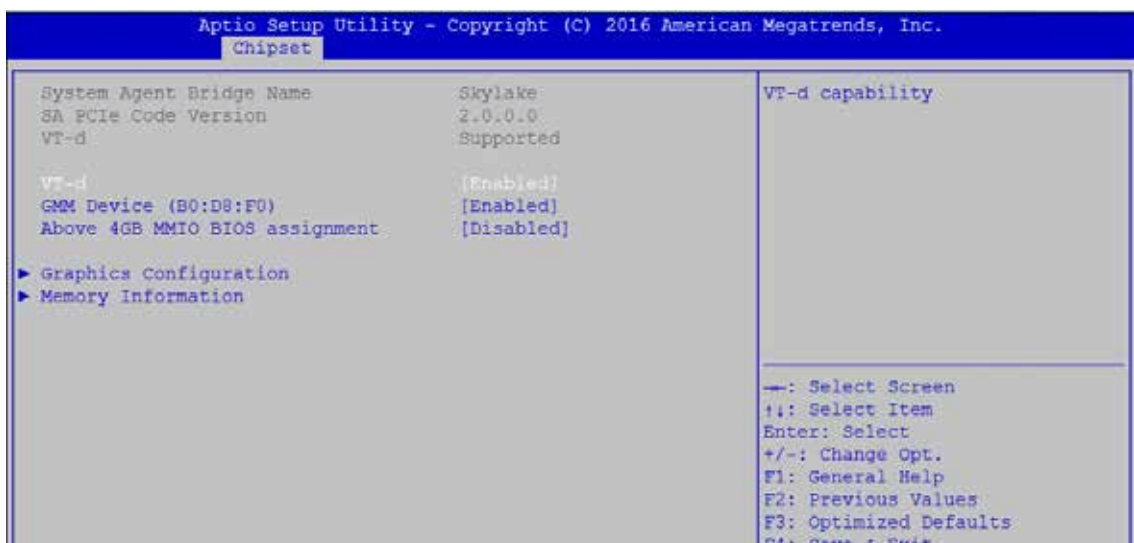


Figure 4-4-1 : System Agent Settings

#### VT-d

VT-d capability.

#### GMM Device (B0:D8:F0)

Enable/disable SA GMM Device.

#### Above 4GB MMIO BIOS assignment

Enable/disable above 4GB Memory Mapped IO BIOS assignment. This is disabled automatically when aperture size is set to 2048MB.

## 4.4.2 Graphics Configuration

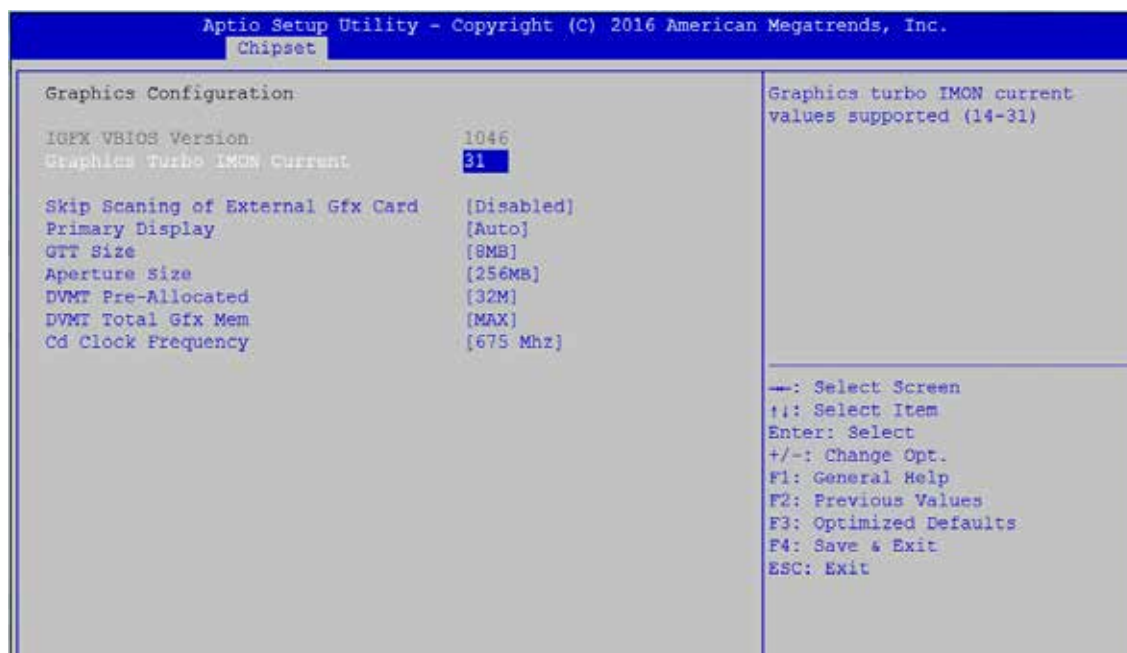


Figure 4-4-2 : Graphics Settings

### Skip Scanning of External Gfx Card

If Enable, it will not scan for External Gfx Card on PEG and PCH PCIE Ports.

### GTT Size

Select the GTT size.

### Aperture Size

Select the aperture size.

Note : Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM support.

### DVMT Pre-Allocated

Select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

### DVMT Total Gfx Mem

Select DVMT5.0 total graphic memory size used by the internal graphics device.

### Cd Clock Frequency

Select the highest Cd clock frequency supported by the platform.

### 4.4.3 Memory Information

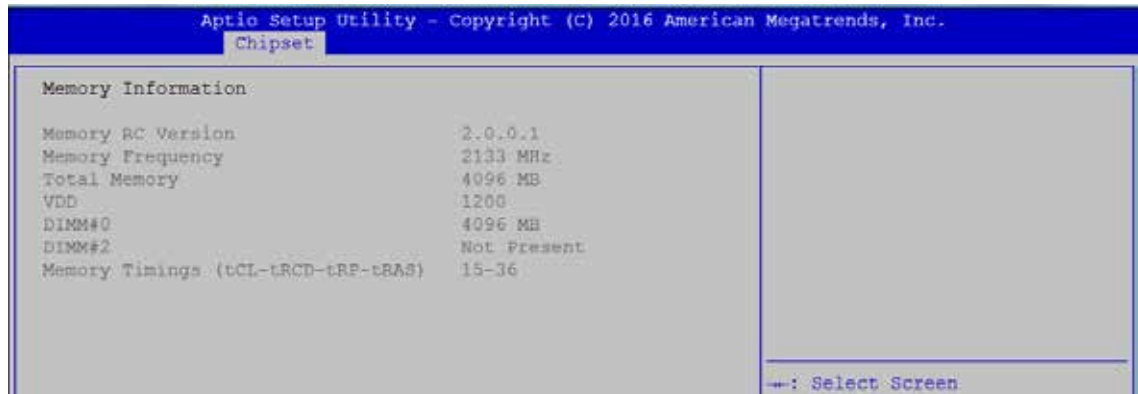


Figure 4-4-3 : Memory Information

### 4.4.4 PCH-IO Configuration

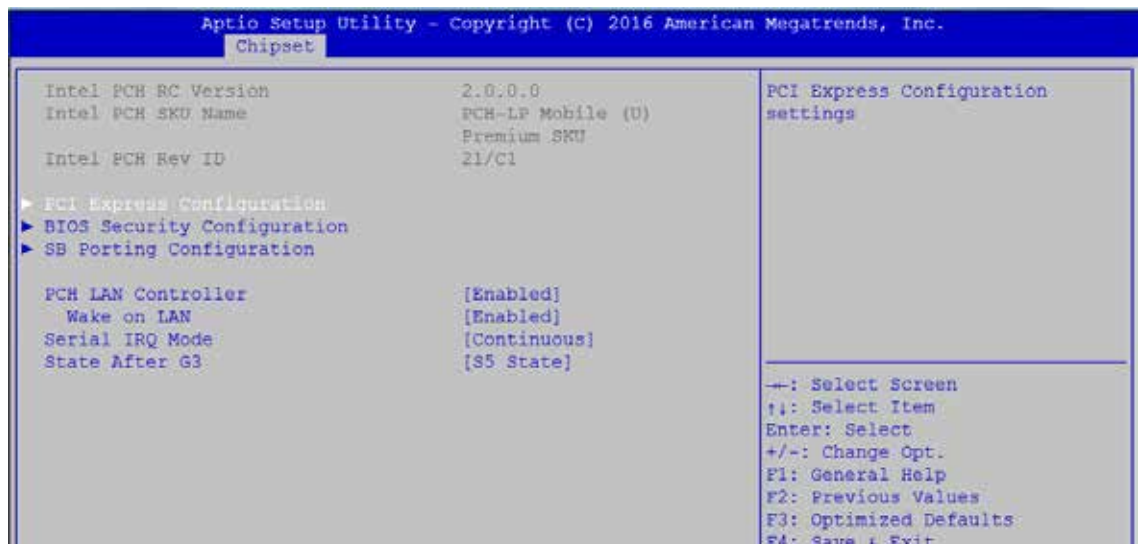


Figure 4-4-4 : PCH-IO Settings

#### PCH LAN Controller

Enable or disable onboard NIC.

#### Wake on LAN

Enable or disable integrated LAN to wake the system. (The wake On LAN cannot be disabled if ME is on at Sx state).

#### Serial IRQ Mode

Configure serial IRQ mode.

#### State After G3

Specify what state to go to when power is re-applied after a power failure (G3 state).

S0 State : Always turn-on the system when power source plugged-in.

S5 State : Always turn-off the system when power source plugged-in.

## 4.4.5 PCI Express Configuration

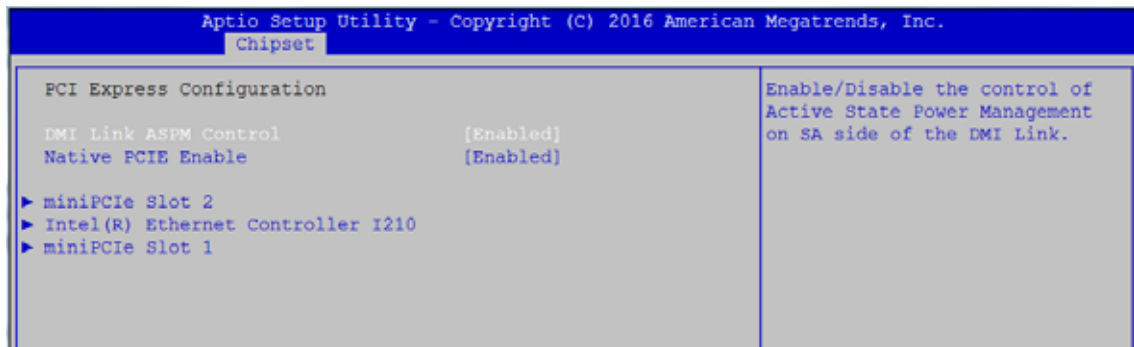


Figure 4-4-5 : PCH-IO Settings

### DMI Link ASPM Control

Enable/disable the control of active state power management on SA side of the DMI link.

### Native PCIE Enable

PCI Express Native Support Enable/Disable. This feature is available in vista and beyond Windows OS.

## 4.4.6 BIOS Security Configuration



Figure 4-4-6 : BIOS Security Settings

### BIOS Lock

Enable/disable the PCH BIOS lock enable (BLE bit) feature.

## 4.4.7 SB Porting Configuration



Figure 4-4-7 : RAID ROM Settings

### SATA RAID ROM

Legacy ROM : Legacy option ROM

UEFI driver : UEFI raid driver

Both : Run the Legacy option ROM and UEFI driver.

## 4.5 Security

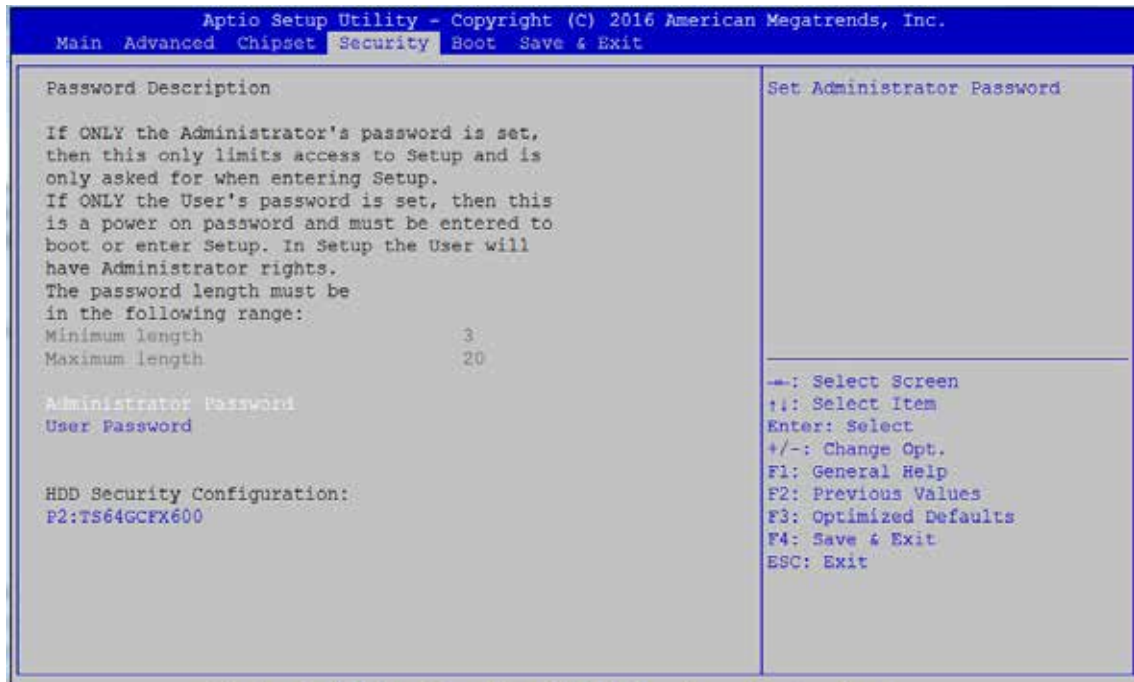


Figure 4-5 : BIOS Security Menu

### Administrator Password

Set administrator password.

### User Password

Set user password.

### 4.5.1 HDD Security Configuration

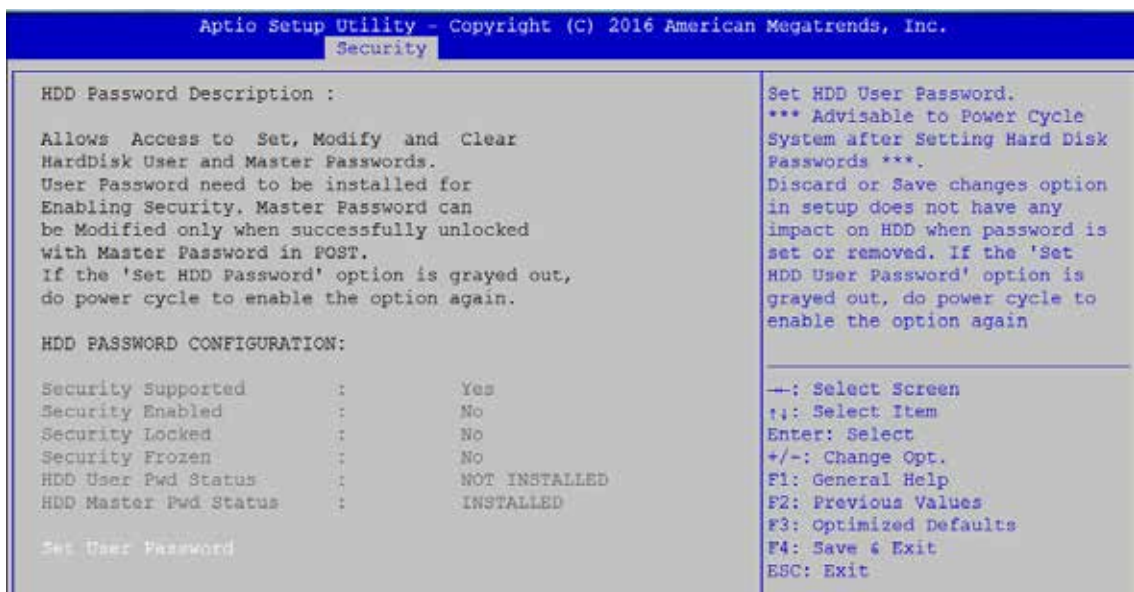


Figure 4-5-1 : HDD Security Settings



## Set User Password

Set HDD user password.

\*\*\* Advisable to power cycle system after setting hard disk passwords \*\*\*.

Discard or save changes option in setup does not have any impact on HDD when password is set or removed. If the 'Set HDD User Password' option is gray, do power cycle to enable the option again.

## 4.6 Boot

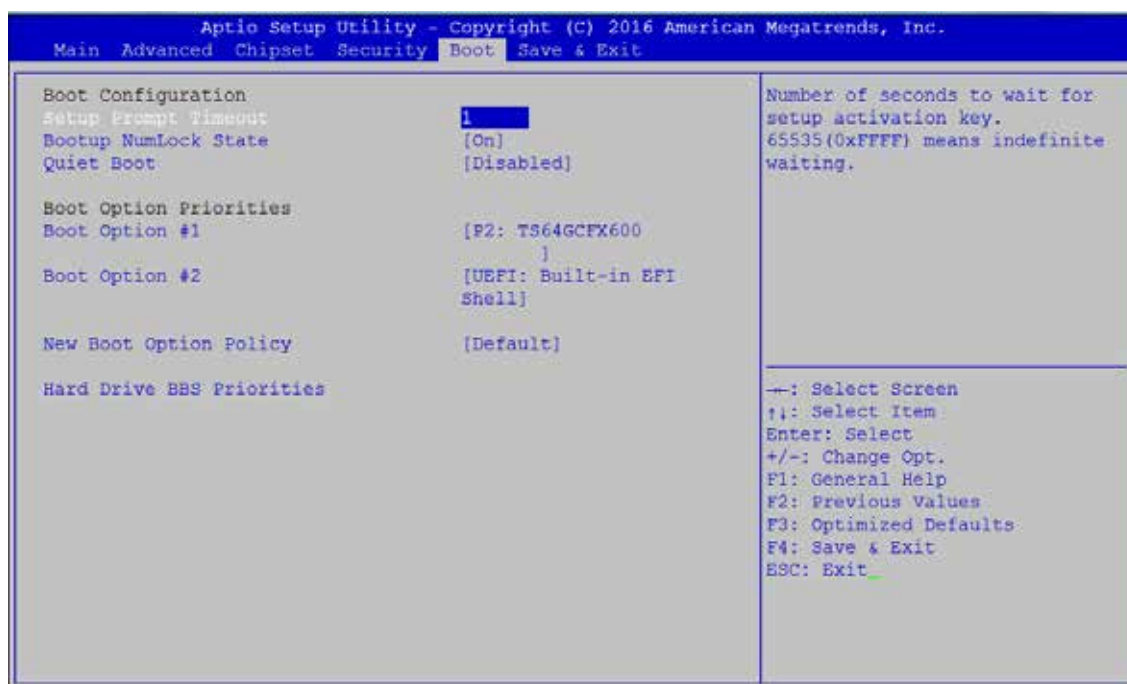


Figure 4-6 : BIOS Boot Menu

### Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

### Bootup NumLock State

Select the keyboard NumLock state.

### Quiet Boot

Enables or disables Quiet Boot option.

### Boot Option #x

Sets the system boot order.

### New Boot Option Policy

Controls the placement of newly detected UEFI boot options.

### Hard Drive BBS Priorities

Set the order of the Legacy devices in this group.

## 4.7 Save & Exit

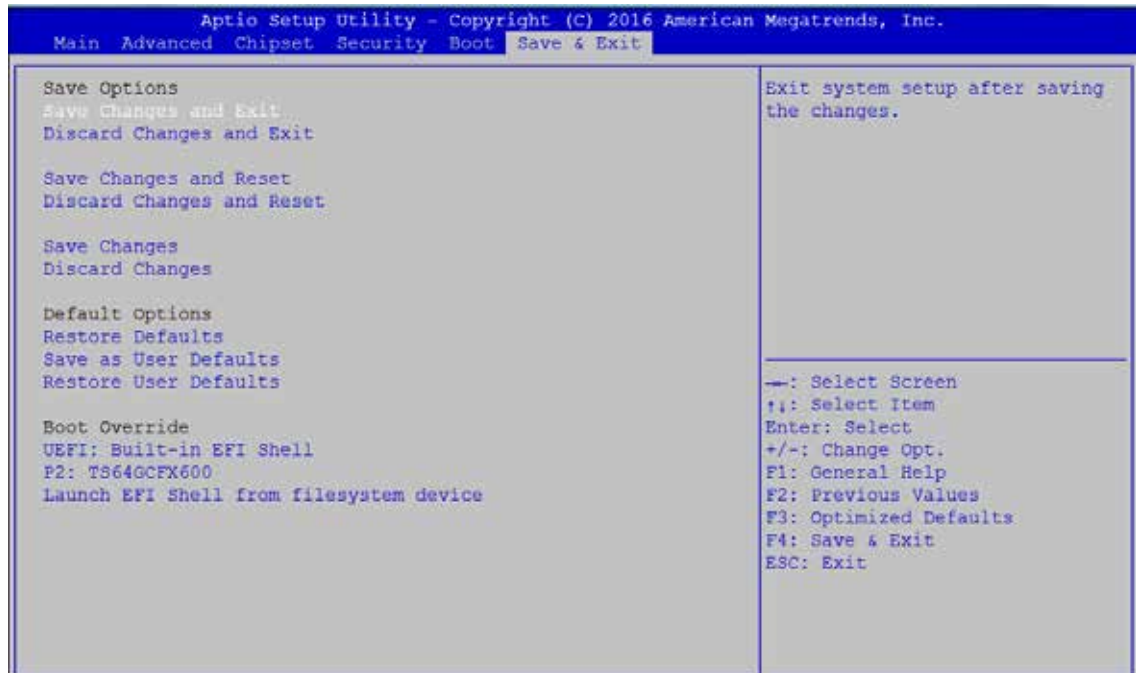


Figure 4-7 : Bios Save and Exit Menu

### Save Changes and Exit

Exit system setup after saving the changes.

### Discard Changes and Exit

Exit system setup without saving any changes.

### Save Changes and Reset

Reset the system after saving the changes.

### Discard Changes and Reset

Reset system setup without saving any changes.

### Save Changes

Save changes done so far to any of the setup options.

### Discard Changes

Discard changes done so far to any of the setup options.

### Default Options :

#### Restore Defaults

Restore/load default values for all the setup options.

#### Save as User Defaults

Save the changes done so far as user defaults.

#### Restore User Defaults

Restore the user defaults to all the setup options.

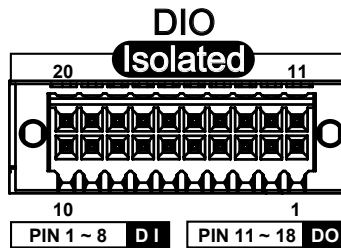


# A

## APPENDIX A : Isolated DIO Guide

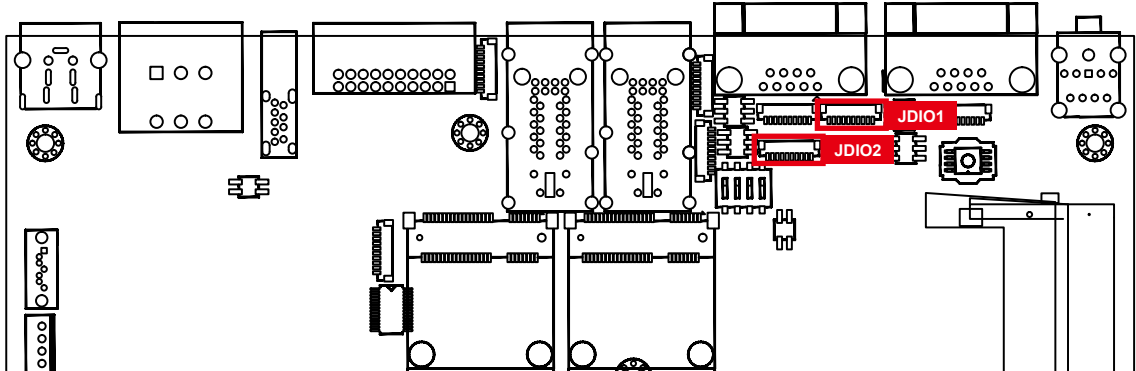
### A.1 Function Description

The MTC-6000 offers two 16-bit (Isolated/Non-Isolated) 20-pin terminal block connector, a watchdog timer, and a 4-port POE. Isolated DIO pins are fixed by hardware design that cannot change in/out direction in runtime process. DIO definition is shown below :



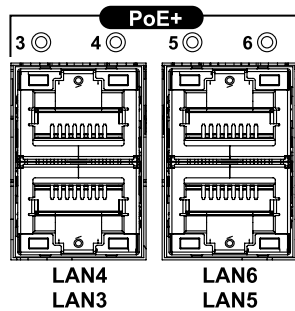
| Pin No. | Isolated DIO Definition | Non-Isolated DIO Definition | Pin No. | Isolated DIO Definition | Non-Isolated DIO Definition |
|---------|-------------------------|-----------------------------|---------|-------------------------|-----------------------------|
| 1       | DI 0                    | DIO 0                       | 11      | DO 0                    | DIO 8                       |
| 2       | DI 1                    | DIO 1                       | 12      | DO 1                    | DIO 9                       |
| 3       | DI 2                    | DIO 2                       | 13      | DO 2                    | DIO 10                      |
| 4       | DI 3                    | DIO 3                       | 14      | DO 3                    | DIO 11                      |
| 5       | DI 4                    | DIO 4                       | 15      | DO 4                    | DIO 12                      |
| 6       | DI 5                    | DIO 5                       | 16      | DO 5                    | DIO 13                      |
| 7       | DI 6                    | DIO 6                       | 17      | DO 6                    | DIO 14                      |
| 8       | DI 7                    | DIO 7                       | 18      | DO 7                    | DIO 15                      |
| 9       | DI_COM                  | NC                          | 19      | DIO_GND                 | DIO_GND                     |
| 10      | DIO_GND                 | DIO_GND                     | 20      | External VDC            | NC                          |

GPIO definition is shown below :



| JDIO1   |            | JDIO2   |            |
|---------|------------|---------|------------|
| Pin No. | Definition | Pin No. | Definition |
| 1       | GPIO 0     | 1       | GPIO 8     |
| 2       | GPIO 1     | 2       | GPIO 9     |
| 3       | GPIO 2     | 3       | GPIO 10    |
| 4       | GPIO 3     | 4       | GPIO 11    |
| 5       | GPIO 4     | 5       | GPIO 12    |
| 6       | GPIO 5     | 6       | GPIO 13    |
| 7       | GPIO 6     | 7       | GPIO 14    |
| 8       | GPIO 7     | 8       | GPIO 15    |
| 9       | 5V         | 9       | 5V         |
| 10      | GND        | 10      | GND        |

PoE definition is shown below :



| Pin No. | Definition |
|---------|------------|
| 1       | POE 0      |
| 2       | POE 1      |
| 3       | POE 2      |
| 4       | POE 3      |

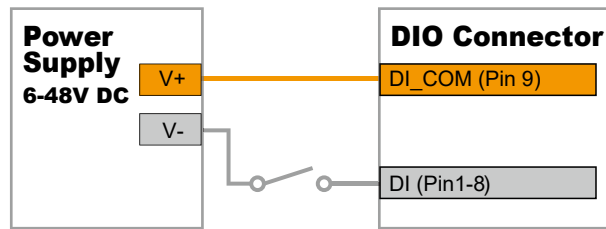
Do NOT use these functions in below :

1. PE-2000 : DIO1 (ID = 0), POE
2. PE-3000 : POE (ID = 0)
3. UE-1000 : USB (ID = 0)

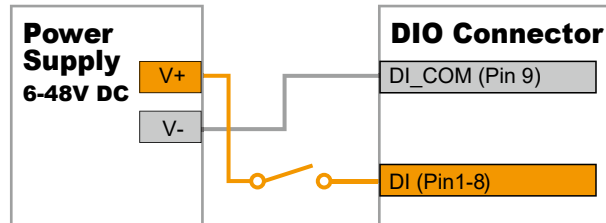
## A.2 Isolated DIO Signal Circuit

DI reference circuit :

Sink Mode (NPN)

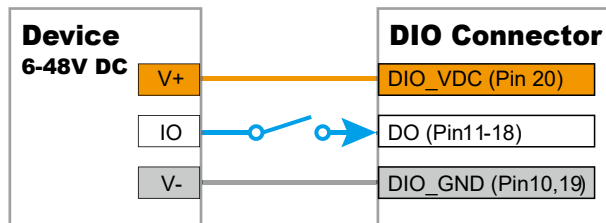


Source Mode (PNP)

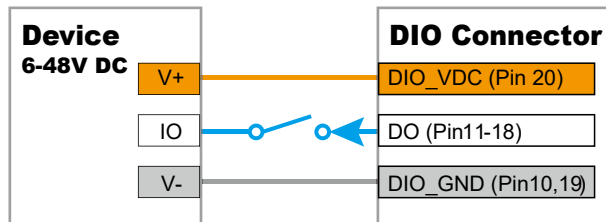


DO reference circuit :

Sink Mode  
(NPN, Default)



Source Mode  
(PNP)



## A.3 Driver API Guide

Distribution folder include x32 and x64 versions, use batch file for installation.

There are included as followed :

Win7\_32.bat :

Installation for 32-bit driver

Win7\_64.bat :

Windows update package which driver required (need to restart), and  
Installation for 64-bit driver

Win8\_32.bat, Win8\_64.bat :

Installation for driver, and guideline to Framework 3.5 distribution for sample

Win10\_32.bat, and Win10\_64.bat

Installation for driver, and installation to Framework 3.5 distribution for sample

Uninstall\_32.bat, and Uninstall\_64.bat :

Uninstallation for driver

Run batch file as Administrator.

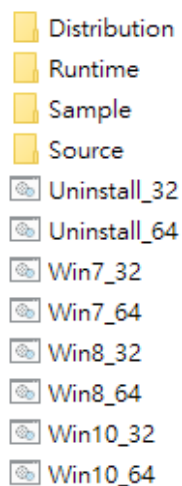
Support Windows 7 above.

Make sure Windows version before installation.

Runtime folder include head file for software developer or System Integration.

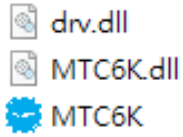
Sample folder include sample program, driver library, and API library.

Source folder include sample program source code that compile on Visual Studio 2008.

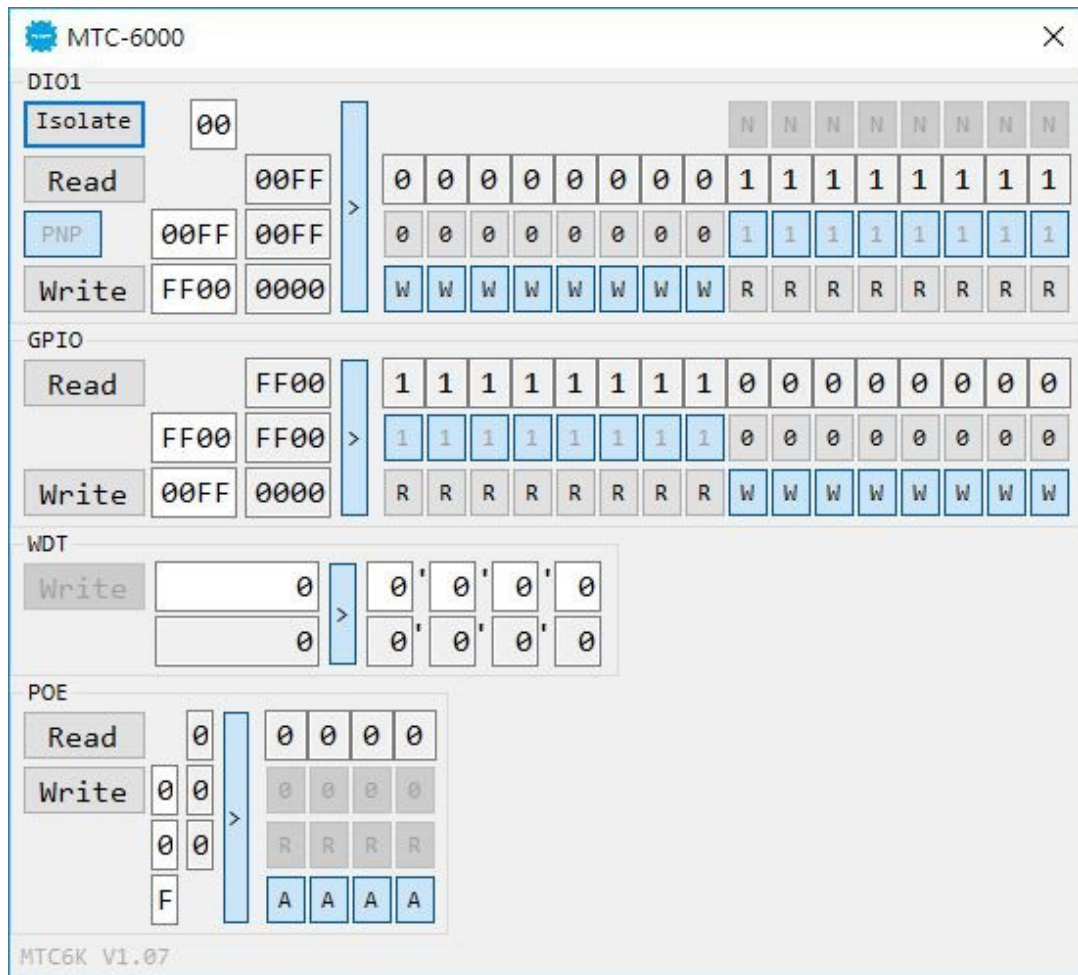


## A.4 Function Description

Demo tool (MTC-6000.exe).



Sample MTC6K.exe, as shown below :



## **DIO1 group :**

Isolate check button :

DIO type of DIO configuration, isolated/non-isolated.

Read button :

Set DIO configuration to get DI/DIO input state.

DO type check button :

User setting, DO type of DIO configuration to setup 8 pins - Source/Sink.

Use for Write (DO) button activate.

Write button :

Set DIO configuration to set DO/DIO output state.

DI preference text :

User setting, DI type of DIO configuration

by hexadecimal bitmask - Source/Sink.

Use for Read (DI) button activate.

DO/DIO output text :

User setting, DO/DIO output state by hexadecimal bitmask - on/off.

Use for Write button activate.

DO/DIO writable text :

User setting, DO/DIO writable of DIO configuration

by hexadecimal bitmask - yes/no.

Use for Read (DIO)/Write button activate.

DI/DIO input text (read only) :

DI/DIO input state by hexadecimal bitmask – on/off.

Use for Read button activate.

DO/DIO text (read only) :

DO/DIO output state with input state (DIO) and configuration.

Use for Write button activate.

DO/DIO output text (read only) :

DO/DIO output state with configuration.

Use for Write button activate.

DI type pin texts (pin 8 ~ pin 1) :

User setting, DI pin type of DIO configuration - Source/Sink.

DI/DIO input pin texts (read only, pin 8 ~ pin 1/pin 18 ~ pin 11, pin 8 ~ pin 1) :

DI/DIO input pin state

Use for Read button activate.

DO/DIO output pin texts (pin 18 ~ pin 11/pin 18 ~ pin 11, pin 8 ~ pin 1) :

User setting, DO/DIO output pin state

Use for Write button activate.

DO/DIO pin writable texts (pin 18 ~ pin 11/pin 18 ~ pin 11, pin 8 ~ pin 1) :

User setting, DO/DIO pin writable of DIO configuration.

Use for Read (DIO)/Write button activate.

### **GPIO group :**

Read button :

Set GPIO configuration to get GPIO state.

Write button :

Set GPIO configuration to set GPIO state.

GPIO output text :

User setting, GPIO output state by hexadecimal bitmask - High/Low.

Use for Write button activate.

GPIO writable text :

User setting, GPIO writable of GPIO configuration by hexadecimal bitmask - yes/no.

Use for Read/Write button activate.

GPIO input text (read only) :

GPIO input state by hexadecimal bitmask - High/Low.

Use for Read button activate.

GPIO text (read only) :

GPIO output state with input state and configuration.

Use for Write button activate.

GPIO output text (read only) :

GPIO output state with configuration.

Use for Write button activate.

GPIO input pin texts (read only, pin 18 ~ pin 11, pin 8 ~ pin 1) :

GPIO input pin state

Use for Read button activate.

GPIO output pin texts (pin 18 ~ pin 11, pin 8 ~ pin 1) :

User setting, GPIO output pin state

Use for Write button activate.

GPIO pin writable texts (pin 18 ~ pin 11, pin 8 ~ pin 1) :

User setting, GPIO pin writable of GPIO configuration.

Use for Read/Write button activate.

### **WDT group :**

Write button :

Set WDT when WDT setup text is valid.

Stop button :

Cancel WDT and counting.

Use after Write button action.

WDT setup text :

User setting, WDT value, unit : second.

Use for Write button activate.

WDT counting text (read only) :

WDT counting by program timer after set WDT.

Shown after Write button action.

WDT setup day format texts (user setting) :

User setting, WDT value, format : day'hour'minute'second.

WDT counting day format text (read only) :

WDT counting, format : day'hour'minute'second.

**POE group :**

Read button :

Set POE configuration to get POE state.

Write button :

Set POE configuration to set POE state.

POE output text :

User setting, POE output state by hexadecimal bitmask - on/off.

Use for Write button activate.

POE writable text :

User setting, POE writable of POE configuration  
by hexadecimal bitmask - yes/no.

Use for Write button activate.

POE mode text :

User setting, POE mode of POE configuration  
by hexadecimal bitmask - Auto/Manual.

Use for Write button activate.

POE input text (read only) :

POE input state by hexadecimal bitmask - on/off.

Use for Read button activate.

POE text (read only) :

POE output state with input state and configuration.

Use for Write button activate.

POE output text (read only) :

POE output state with configuration.

Use for Write button activate.

POE input port texts (read only, port 4 ~ port 1) :

POE input port state

Use for Read button activate.

POE output port texts (port 4 ~ port 1) :

User setting, POE output port state

Use for Write button activate.

POE port writable texts (port 4 ~ port 1) :

User setting, POE port writable of POE configuration.

Use for Write button activate.

POE port mode texts (port 4 ~ port 1) :

User setting, POE port mode of POE configuration.

Use for Write button activate.



# B

## APPENDIX B : Software Functions

### B.1 Driver API Guide

In Runtime folder, on MTC6K2.h :

`_DLL_IMPORT_` definition is used on LoadLibrary API for MTC6K.dll.

`MTC6K_EXPORTS` definition is used on MTC6K.dll building.

Otherwise, that is used to compile with MTC6K.lib

#### **BOOL Initial(BYTE Isolate\_Type, BYTE DIO\_NPN)**

Initial machine for DIO, GPIO, watchdog timer, and POE

Isolate\_Type : DIO type

1 : Isolated DIO;

0 : Non-Isolated DIO

DIO\_NPN : DI/DO type

1 : PNP (Source) mode for European rule;

0 : NPN (Sink) mode for Japanese rule

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Driver not exists, or initial error (version is too old, or machine not match))

#### **BOOL GetDIO1Config(BYTE \*Isolate\_Type, BYTE \*DI\_NPN, BYTE \*DO\_NPN, WORD \*Mask)**

Get DIO configuration (by variable)

Isolate\_Type : DIO type

1 : Isolated DIO;

0 : Non-Isolated DIO

DI\_NPN ([7:0]) : DI type, pin setting by hexadecimal bitmask

1 : PNP (Source) mode for European rule;

0 : NPN (Sink) mode for Japanese rule

DO\_NPN : DO type

1 : PNP (Source) mode for European rule;

0 : NPN (Sink) mode for Japanese rule

Mask ([15:0]) : In/Out, pin setting by hexadecimal bitmask

1 : Output;

0 : Input

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

**BOOL SetDIO1Config(BYTE \*Isolate\_Type, BYTE \*DI\_NPN, BYTE \*DO\_NPN, WORD \*Mask)**

Set DIO configuration

Isolate\_Type : DIO type

1 : Isolated DIO;

0 : Non-Isolated DIO

DI\_NPN ([7:0]) : DI type, pin setting by hexadecimal bitmask

1 : PNP (Source) mode for European rule;

0 : NPN (Sink) mode for Japanese rule

DO\_NPN : DO type

1 : PNP (Source) mode for European rule;

0 : NPN (Sink) mode for Japanese rule

Mask ([15:0]) : In/Out, pin setting by hexadecimal bitmask

1 : Output;

0 : Input

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or hardware problem)

**BOOL GetDI1(BYTE \*DI)**

Get isolated DIO input (DI)

DI ([7:0]) : Input state, pin setting by hexadecimal bitmask

1 : High;

0 : Low

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

**BOOL GetDO1(BYTE \*DO)**

Get isolated DIO output (DO)

DO ([7:0]) : Output state, pin setting by hexadecimal bitmask

1 : High;

0 : Low

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

**BOOL SetDO1(BYTE DO)**

Set isolated DIO output (DO)

DO ([7:0]) : Output state, pin setting by hexadecimal bitmask

1 : High;

0 : Low

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or hardware problem)

**BOOL GetDIO1(WORD \*DI)**

Get non-isolated DIO input (DIO input)

DI ([15:0]) : Input state, pin setting by hexadecimal bitmask

1 : High;

0 : Low

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

**BOOL SetDIO1(WORD DO)**

Set non-isolated DIO output (DIO output)

DO ([15:0]) : output state, pin setting by hexadecimal bitmask

1 : High;

0 : Low

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or hardware problem)

**BOOL GetGPIOConfig(WORD \*Mask)**

Get GPIO configuration (by variable)

Mask ([15:0]) : In/Out, pin setting by hexadecimal bitmask

1 : Output;

0 : Input

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

**BOOL SetGPIOConfig(WORD Mask)**

Set GPIO configuration

Mask ([15:0]) : In/Out, pin setting by hexadecimal bitmask

1 : Output;

0 : Input

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or hardware problem)

**BOOL GetGPIO(WORD \*DI)**

Get GPIO input

DI ([15:0]) : Input state, pin setting by hexadecimal bitmask

1 : High;

0 : Low

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

### **BOOL SetGPIO(WORD DO)**

Set GPIO output

DO ([15:0]) : output state, pin setting by hexadecimal bitmask

1 : High;

0 : Low

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or hardware problem)

### **BOOL GetWDT(DWORD \*WDT)**

Get watchdog timer setup

WDT : watchdog timer setup

Unit : second. (Range : 0 ~ 65535 sec, 1093 ~ 65535 min (=65580 ~ 3932100 sec))

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

### **BOOL SetWDT(DWORD WDT)**

Set watchdog timer setup

WDT : watchdog timer setup

Unit : second. (Range : 1 ~ 65535 sec, 1093 ~ 65535 min (=65580 ~ 3932100 sec))

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or setup 0 error, or hardware problem)

### **BOOL CancelWDT()**

Cancel watchdog timer

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or hardware problem)

### **BOOL GetPOEConfig(BYTE \*Auto, BYTE \*Mask)**

Get POE configuration (by variable)

Auto ([3:0]) : Auto mode, pin setting by hexadecimal bitmask

1 : Auto;

0 : Manual

Mask ([3:0]) : DC Enable/Disable, pin setting by hexadecimal bitmask

1 : Enable;

0 : Disable

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

### **BOOL SetPOEConfig(BYTE Auto, BYTE Mask)**

Set POE configuration

Auto ([3:0]) : Auto mode, pin setting by hexadecimal bitmask

1 : Auto;

0 : Manual

Mask ([3:0]) : DC Enable/Disable, pin setting by hexadecimal bitmask

1 : Enable;

0 : Disable

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or out of range error, or hardware problem)

### **BOOL GetPOE(BYTE \*POE)**

Get POE input

POE ([3:0]) : POE state, pin setting by hexadecimal bitmask

1 : On;

0 : Off

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

### **BOOL SetPOE(BYTE POE)**

Set POE output

POE ([3:0]) : POE state, pin setting by hexadecimal bitmask

1 : On;

0 : Off

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or out of range error, or hardware problem)



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