RCS-7000 USER Manual

Fanless Robust Computing System With 4 PCI/PCIe Slots,
3rd Gen. Intel® Core™ i7/ i5/ i3 Mobile Processor

Vecow

1.2.0 Edition 20150721

Record of Revision

Version	Date	Page	Description	Remark
1.0	2013/11/22	All	Offical Release	
1.01	2014/02/05	P22	Update Release	
1.1	2015/04/24	All	Update Release	
1.2	2015/07/21	All	Update Release	

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Declaration of Conformity

FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE

The product (s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

Copyright and Trademarks

Order Information

Part Number	Description	Expansion Slots
RCS-7422	Fan-less Robust Computing System, 4 Slots	2 PCI + 2 PCIe x4
RCS-7422A	Fan-less Robust Computing System, 4 Slots	2 PCI + 1 PCIe x4, 1 PCIe x8
RCS-7404	Fan-less Robust Computing System, 4 Slots	4 PCI
RCS-7220	Fan-less Robust Computing System, 2 Slots	1 PCIe x4 + 1 PCIe x16
RCS-7220A	Fan-less Robust Computing System, 2 Slots	2 PCIe x8
RCS-7211	Fan-less Robust Computing System, 2 Slots	1 PCI + 1 PCIe x16

Optional Accessories

Part Number	Description
i7-3610QE	Ivy Bridge 3rd Gen Intel® Mobile Quad-Core™ i7 Processor
i5-3610ME	Ivy Bridge 3rd Gen Intel® Mobile Core™ i5 Processor
i3-3120ME	Ivy Bridge 3rd Gen Intel® Mobile Core™ i3 Processor
M340S-W28M1	Vecow DDR3 4GB 1333 | 1066MHz RAM, Micron® Chip, Wide Temperature -40°C ~ +85°C
Certified DDR3 4GB RAM	Certified DDR3 4GB RAM
Certified DDR3 8GB RAM	Certified DDR3 8GB RAM
PWA-160W-WT	160W, 24V, 85VAC to 264VAC Power Adaptor with 3-pin Terminal Block, Wide Temperature -30°C to +70°C
PWA-120W	120W, 24V, 90VAC to 264VAC Power Adapter with 3-pin Terminal Block
SCSI-20P-100	20-pin SCSI Cable, 1M
TMB-SCSI-20P	Terminal Board with One 20-pin SCSI Connector and DIN-Rail Mounting

Table of Contents

1

GENERAL INTRODUCTION

1.1 Overview

Designed to operate within various applications, RCS-7000 series is an expendable fanless embedded computer with configurable PCI and PCI express sockets. High performance fanless embedded computer, RCS-7000 series comes with the expansion capabilities to provide specific applications, and is based on cutting-edge 3rd generation Intel Core i7, i5, or i3 processors. Working expended temperature from -25 to 70 Celsius degrees, fan-less and cable-less structure of RCS-7900 enables durability and reliability to robust computing systems for applications required standard PCI and PCI express cards.

Enabling speedy data access with RAID 0, 5, and 10 and hard drive failure protection with RAID 1, 5, and 10, RCS-7000 series is equipped with two extend SATA III (6 Gbp/s) SSD | HDD trays for better responsiveness and storage capability. Rapid storage technology combines with RAID and two SATA III practical interfaces enhancing performance and data computing of multi-core platforms.

RCS-7000 series is equipped with rich I/O, included 2 GbE LAN with independent LAN controllers, isolated DIO: 16DI, 16 DO, 4 COM, 4 USB 3.0, 2 USB2.0, CFast , 2 mini-PCIe (1 with SIM card socket for WiFi, 3G/GPRS), 3 RS-232 and 1 RS-232/485/422, 16 in/out GPIO for multi-camera industrial inspection, machine vision, video analytics, AOI, industrial intelligent automation, surveillance, and environment monitoring applications.

1.2 Product Specification

1.2.1 Specifications of Vecow RCS-7422

System	
Processor	3rd Generation Intel® Core™ i7/ i5/ i3 Ivy Bridge Processor (6M Cache, up to 3.30 GHz)
Chipset	Intel® QM77
BIOS	AMI
SIO	IT8783F
Memory	DDR3 1066/ 1333/ 1600 MHz, DDR3L 1066/ 1333 MHz, Max. 16GB 2 204-pin SO-DIMM sockets
I/O	
Serial	3 COM RS-232, 1 COM RS-232/ 485/ 422
USB	6 External USB (4 USB 3.0, 2 USB 2.0)+ 1 Internal USB 2.0
Isolated DIO	16 DI, 16 DO
LED	Power, SDD and WDT LEDs
GPIO	16 GPIO
Expansion	
PCI Express	2 PCIe x4
PCI	2 PCI
Mini PCIe	1 Mini PCIe Socket (PCIe + USB + SIM Card Socket) 1 Mini PCIe Socket (PCIe + USB), compatible with mSATA
Graphics	
Chipset	Intel® GMA HD 4000
Display Memory	Shared Memory, up to 1.7GB
Interface	• DB-15 VGA: 1920 x 1200 Max. • DVI-D: 1920 x 1200 Max. • DisplayPort 1: 2560 x 1600 Max. • DisplayPort 2: 1920 x 1200 Max. • LVDS: Dual Channel 24-bit, 1920 x 1200 Max.
Storage	
SATA	2 SATA III 6Gbps
mSATA	2 SATA II 3Gbps
Storage Expansion	CFast Slot, External Hot-Swap, Push-in/ Push-out Ejector
Audio	
Audio Codec	Realtek® ALC892, 5.1 Channel HD Audio
Audio Interface	Line-out, Mic-in, Front Audio Header

Ethernet	
LAN 1	Intel® 82579LM Gigabit LAN, Wake on LAN, PXE Support, iAMT 8.0
LAN 2	Intel® 82574L Gigabit LAN, Wake on LAN, PXE Support
Power	
Power Input	3-pin terminal block for DC-in: V+, V-, Frame Ground ATX: 2-pin Remote Power On/Off Switch
Power Input Voltage	DC-in 6V to 36V
Power Adapter	AC to DC +24V/ 5A, 120W Max. (Optional)
Protection	OnBoard LT4356 for Power Input High Voltage Surge Protection
Others	
Trusted Platform Module (TPM)	Infineon SLB9635, LPC Interface (Optional)
Watchdog Timer	Reset: 1 to 255 sec/ min Per Step
HW Monitor	Temperature, voltages auto throttling control when CPU overheats
Mechanical	
Chasis Construction	Aluminum Housing
Size (W x D x H)	172mm x 252mm x 210mm (6.8” x 9.9” x 8.3”)
Weight	3 kg (6.6 lb)
Mounting	Wall-mount by Mounting Bracket
Environmental	
Operating Temperature	-25°C to 70°C (-13°F to 157°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	10% to 95% Humidity, Non-condensing
Relative Humidity	95% at 70°C
Vibration	Random: 5Grms @5 to 500 Hz according to IEC68-2-64 Sinusoidal: 5Grms @5 to 500 Hz according to IEC68-2-64
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, According to IEC60068-2-27)
EMC	CE, FCC

1.2.1 Specifications of Vecow RCS-7422A

System	
Processor	3rd Generation Intel® Core™ i7/ i5/ i3 Ivy Bridge Processor (6M Cache, up to 3.30 GHz)
Chipset	Intel® QM77
BIOS	AMI
SIO	IT8783F
Memory	DDR3 1066/ 1333/ 1600 MHz, DDR3L 1066/ 1333 MHz, Max. 16GB 2 204-pin SO-DIMM sockets
I/O	
Serial	3 COM RS-232, 1 COM RS-232/ 485/ 422
USB	6 External USB (4 USB 3.0, 2 USB 2.0)+ 1 Internal USB 2.0
Isolated DIO	16 DI, 16 DO
LED	Power, SDD and WDT LEDs
GPIO	16 GPIO
Expansion	
PCI Express	1 PCIe x4, 1 PCIe x8
PCI	2 PCI
Mini PCIe	1 Mini PCIe Socket (PCIe + USB + SIM Card Socket) 1 Mini PCIe Socket (PCIe + USB), compatible with mSATA
Graphics	
Chipset	Intel® GMA HD 4000
Display Memory	Shared Memory, up to 1.7GB
Interface	• DB-15 VGA: 1920 x 1200 Max. • DVI-D: 1920 x 1200 Max. • DisplayPort 1: 2560 x 1600 Max. • DisplayPort 2: 1920 x 1200 Max. • LVDS: Dual Channel 24-bit, 1920 x 1200 Max.
Storage	
SATA	2 SATA III 6Gbps
mSATA	2 SATA II 3Gbps
Storage Expansion	CFast Slot, External Hot-Swap, Push-in/ Push-out Ejector
Audio	
Audio Codec	Realtek® ALC892, 5.1 Channel HD Audio
Audio Interface	Line-out, Mic-in, Front Audio Header

Ethernet	
LAN 1	Intel® 82579LM Gigabit LAN, Wake on LAN, PXE Support, iAMT 8.0
LAN 2	Intel® 82574L Gigabit LAN, Wake on LAN, PXE Support
Power	
Power Input	3-pin terminal block for DC-in: V+, V-, Frame Ground ATX: 2-pin Remote Power On/Off Switch
Power Input Voltage	DC-in 6V to 36V
Power Adapter	AC to DC +24V/ 5A, 120W Max. (Optional)
Protection	OnBoard LT4356 for Power Input High Voltage Surge Protection
Others	
Trusted Platform Module (TPM)	Infineon SLB9635, LPC Interface (Optional)
Watchdog Timer	Reset: 1 to 255 sec/ min Per Step
HW Monitor	Temperature, voltages auto throttling control when CPU overheats
Mechanical	
Chasis Construction	Aluminum Housing
Size (W x D x H)	172mm x 252mm x 210mm (6.8” x 9.9” x 8.3”)
Weight	3 kg (6.6 lb)
Mounting	Wall-mount by Mounting Bracket
Environmental	
Operating Temperature	-25°C to 70°C (-13°F to 157°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	10% to 95% Humidity, Non-condensing
Relative Humidity	95% at 70°C
Vibration	Random: 5Grms @5 to 500 Hz according to IEC68-2-64 Sinusoidal: 5Grms @5 to 500 Hz according to IEC68-2-64
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, According to IEC60068-2-27)
EMC	CE, FCC

1.2.1 Specifications of Vecow RCS-7404

System	
Processor	3rd Generation Intel® Core™ i7/ i5/ i3 Ivy Bridge Processor (6M Cache, up to 3.30 GHz)
Chipset	Intel® QM77
BIOS	AMI
SIO	IT8783F
Memory	DDR3 1066/ 1333/ 1600 MHz, DDR3L 1066/ 1333 MHz, Max. 16GB 2 204-pin SO-DIMM sockets
I/O	
Serial	3 COM RS-232, 1 COM RS-232/ 485/ 422
USB	6 External USB (4 USB 3.0, 2 USB 2.0)+ 1 Internal USB 2.0
Isolated DIO	16 DI, 16 DO
LED	Power, SDD and WDT LEDs
GPIO	16 GPIO
Expansion	
PCI	4 PCI
Mini PCIe	1 Mini PCIe Socket (PCIe + USB + SIM Card Socket) 1 Mini PCIe Socket (PCIe + USB), compatible with mSATA
Graphics	
Chipset	Intel® GMA HD 4000
Display Memory	Shared Memory, up to 1.7GB
Interface	• DB-15 VGA: 1920 x 1200 Max. • DVI-D: 1920 x 1200 Max. • DisplayPort 1: 2560 x 1600 Max. • DisplayPort 2: 1920 x 1200 Max. • LVDS: Dual Channel 24-bit, 1920 x 1200 Max.
Storage	
SATA	2 SATA III 6Gbps
mSATA	2 SATA II 3Gbps
Storage Expansion	CFast Slot, External Hot-Swap, Push-in/ Push-out Ejector
Audio	
Audio Codec	Realtek® ALC892, 5.1 Channel HD Audio
Audio Interface	Line-out, Mic-in, Front Audio Header

Ethernet	
LAN 1	Intel® 82579LM Gigabit LAN, Wake on LAN, PXE Support, iAMT 8.0
LAN 2	Intel® 82574L Gigabit LAN, Wake on LAN, PXE Support
Power	
Power Input	3-pin terminal block for DC-in: V+, V-, Frame Ground ATX: 2-pin Remote Power On/Off Switch
Power Input Voltage	DC-in 6V to 36V
Power Adapter	AC to DC +24V/ 5A, 120W Max. (Optional)
Protection	OnBoard LT4356 for Power Input High Voltage Surge Protection
Others	
Trusted Platform Module (TPM)	Infineon SLB9635, LPC Interface (Optional)
Watchdog Timer	Reset: 1 to 255 sec/ min Per Step
HW Monitor	Temperature, voltages auto throttling control when CPU overheats
Mechanical	
Chasis Construction	Aluminum Housing
Size (W x D x H)	172mm x 252mm x 210mm (6.8” x 9.9” x 8.3”)
Weight	3 kg (6.6 lb)
Mounting	Wall-mount by Mounting Bracket
Environmental	
Operating Temperature	-25°C to 70°C (-13°F to 157°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	10% to 95% Humidity, Non-condensing
Relative Humidity	95% at 70°C
Vibration	Random: 5Grms @5 to 500 Hz according to IEC68-2-64 Sinusoidal: 5Grms @5 to 500 Hz according to IEC68-2-64
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, According to IEC60068-2-27)
EMC	CE, FCC

1.2.2 Specifications of Vecow RCS-7220

System	
Processor	3rd Generation Intel® Core™ i7/ i5/ i3 Ivy Bridge Processor (6M Cache, up to 3.30 GHz)
Chipset	Intel® QM77
BIOS	AMI
SIO	IT8783F
Memory	DDR3 1066/ 1333/ 1600 MHz, DDR3L 1066/ 1333 MHz, Max. 16GB 2 204-pin SO-DIMM sockets
I/O	
Serial	3 COM RS-232, 1 COM RS-232/ 485/ 422
USB	6 External USB (4 USB 3.0, 2 USB 2.0)+ 1 Internal USB 2.0
Isolated DIO	16 DI, 16 DO
LED	Power, SDD and WDT LEDs
GPIO	16 GPIO
Expansion	
PCI Express	1 PCIe x4, 1 PCIe x16
Mini PCIe	1 Mini PCIe Socket (PCIe + USB + SIM Card Socket) 1 Mini PCIe Socket (PCIe + USB), compatible with mSATA
Graphics	
Chipset	Intel® GMA HD 4000
Display Memory	Shared Memory, up to 1.7GB
Interface	• DB-15 VGA: 1920 x 1200 Max. • DVI-D: 1920 x 1200 Max. • DisplayPort 1: 2560 x 1600 Max. • DisplayPort 2: 1920 x 1200 Max. • LVDS: Dual Channel 24-bit, 1920 x 1200 Max.
Storage	
SATA	2 SATA III 6Gbps
mSATA	2 SATA II 3Gbps
Storage Expansion	CFast Slot, External Hot-Swap, Push-in/ Push-out Ejector
Audio	
Audio Codec	Realtek® ALC892, 5.1 Channel HD Audio
Audio Interface	Line-out, Mic-in, Front Audio Header

Ethernet	
LAN 1	Intel® 82579LM Gigabit LAN, Wake on LAN, PXE Support, iAMT 8.0
LAN 2	Intel® 82574L Gigabit LAN, Wake on LAN, PXE Support
Power	
Power Input	3-pin terminal block for DC-in: V+, V-, Frame Ground ATX: 2-pin Remote Power On/Off Switch
Power Input Voltage	DC-in 6V to 36V
Power Adapter	AC to DC +24V/ 5A, 120W Max. (Optional)
Protection	OnBoard LT4356 for Power Input High Voltage Surge Protection
Others	
Trusted Platform Module (TPM)	Infineon SLB9635, LPC Interface (Optional)
Watchdog Timer	Reset: 1 to 255 sec/ min Per Step
HW Monitor	Temperature, voltages auto throttling control when CPU overheats
Mechanical	
Chasis Construction	Aluminum Housing
Size (W x D x H)	137mm x 252mm x 210mm (5.4” x 9.9” x 8.3”)
Weight	3 kg (6.6 lb)
Mounting	Wall-mount by Mounting Bracket
Environmental	
Operating Temperature	-25°C to 70°C (-13°F to 157°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	10% to 95% Humidity, Non-condensing
Relative Humidity	95% at 70°C
Vibration	Random: 5Grms @5 to 500 Hz according to IEC68-2-64 Sinusoidal: 5Grms @5 to 500 Hz according to IEC68-2-64
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, According to IEC60068-2-27)
EMC	CE, FCC

1.2.2 Specifications of Vecow RCS-7220A

System	
Processor	3rd Generation Intel® Core™ i7/ i5/ i3 Ivy Bridge Processor (6M Cache, up to 3.30 GHz)
Chipset	Intel® QM77
BIOS	AMI
SIO	IT8783F
Memory	DDR3 1066/ 1333/ 1600 MHz, DDR3L 1066/ 1333 MHz, Max. 16GB 2 204-pin SO-DIMM sockets
I/O	
Serial	3 COM RS-232, 1 COM RS-232/ 485/ 422
USB	6 External USB (4 USB 3.0, 2 USB 2.0)+ 1 Internal USB 2.0
Isolated DIO	16 DI, 16 DO
LED	Power, SDD and WDT LEDs
GPIO	16 GPIO
Expansion	
PCI Express	2 PCIe x8
Mini PCIe	1 Mini PCIe Socket (PCIe + USB + SIM Card Socket) 1 Mini PCIe Socket (PCIe + USB), compatible with mSATA
Graphics	
Chipset	Intel® GMA HD 4000
Display Memory	Shared Memory, up to 1.7GB
Interface	• DB-15 VGA: 1920 x 1200 Max. • DVI-D: 1920 x 1200 Max. • DisplayPort 1: 2560 x 1600 Max. • DisplayPort 2: 1920 x 1200 Max. • LVDS: Dual Channel 24-bit, 1920 x 1200 Max.
Storage	
SATA	2 SATA III 6Gbps
mSATA	2 SATA II 3Gbps
Storage Expansion	CFast Slot, External Hot-Swap, Push-in/ Push-out Ejector
Audio	
Audio Codec	Realtek® ALC892, 5.1 Channel HD Audio
Audio Interface	Line-out, Mic-in, Front Audio Header

Ethernet	
LAN 1	Intel® 82579LM Gigabit LAN, Wake on LAN, PXE Support, iAMT 8.0
LAN 2	Intel® 82574L Gigabit LAN, Wake on LAN, PXE Support
Power	
Power Input	3-pin terminal block for DC-in: V+, V-, Frame Ground ATX: 2-pin Remote Power On/Off Switch
Power Input Voltage	DC-in 6V to 36V
Power Adapter	AC to DC +24V/ 5A, 120W Max. (Optional)
Protection	OnBoard LT4356 for Power Input High Voltage Surge Protection
Others	
Trusted Platform Module (TPM)	Infineon SLB9635, LPC Interface (Optional)
Watchdog Timer	Reset: 1 to 255 sec/ min Per Step
HW Monitor	Temperature, voltages auto throttling control when CPU overheats
Mechanical	
Chasis Construction	Aluminum Housing
Size (W x D x H)	137mm x 252mm x 210mm (5.4” x 9.9” x 8.3”)
Weight	3 kg (6.6 lb)
Mounting	Wall-mount by Mounting Bracket
Environmental	
Operating Temperature	-25°C to 70°C (-13°F to 157°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	10% to 95% Humidity, Non-condensing
Relative Humidity	95% at 70°C
Vibration	Random: 5Grms @5 to 500 Hz according to IEC68-2-64 Sinusoidal: 5Grms @5 to 500 Hz according to IEC68-2-64
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, According to IEC60068-2-27)
EMC	CE, FCC

1.2.3 Specifications of Vecow RCS-7211

System	
Processor	3rd Generation Intel® Core™ i7/ i5/ i3 Ivy Bridge Processor (6M Cache, up to 3.30 GHz)
Chipset	Intel® QM77
BIOS	AMI
SIO	IT8783F
Memory	DDR3 1066/ 1333/ 1600 MHz, DDR3L 1066/ 1333 MHz, Max. 16GB 2 204-pin SO-DIMM sockets
I/O	
Serial	3 COM RS-232, 1 COM RS-232/ 485/ 422
USB	6 External USB (4 USB 3.0, 2 USB 2.0)+ 1 Internal USB 2.0
Isolated DIO	16 DI, 16 DO
LED	Power, SDD and WDT LEDs
GPIO	16 GPIO
Expansion	
PCI Express	1 PCIe x16
PCI	1 PCI
Mini PCIe	1 Mini PCIe Socket (PCIe + USB + SIM Card Socket) 1 Mini PCIe Socket (PCIe + USB), compatible with mSATA
Graphics	
Chipset	Intel® GMA HD 4000
Display Memory	Shared Memory, up to 1.7GB
Interface	• DB-15 VGA: 1920 x 1200 Max. • DVI-D: 1920 x 1200 Max. • DisplayPort 1: 2560 x 1600 Max. • DisplayPort 2: 1920 x 1200 Max. • LVDS: Dual Channel 24-bit, 1920 x 1200 Max.
Storage	
SATA	2 SATA III 6Gbps
mSATA	2 SATA II 3Gbps
Storage Expansion	CFast Slot, External Hot-Swap, Push-in/ Push-out Ejector
Audio	
Audio Codec	Realtek® ALC892, 5.1 Channel HD Audio
Audio Interface	Line-out, Mic-in, Front Audio Header

Ethernet	
LAN 1	Intel® 82579LM Gigabit LAN, Wake on LAN, PXE Support, iAMT 8.0
LAN 2	Intel® 82574L Gigabit LAN, Wake on LAN, PXE Support
Power	
Power Input	3-pin terminal block for DC-in: V+, V-, Frame Ground ATX: 2-pin Remote Power On/Off Switch
Power Input Voltage	DC-in 6V to 36V
Power Adapter	AC to DC +24V/ 5A, 120W Max. (Optional)
Protection	OnBoard LT4356 for Power Input High Voltage Surge Protection
Others	
Trusted Platform Module (TPM)	Infineon SLB9635, LPC Interface (Optional)
Watchdog Timer	Reset: 1 to 255 sec/ min Per Step
HW Monitor	Temperature, voltages auto throttling control when CPU overheats
Mechanical	
Chasis Construction	Aluminum Housing
Size (W x D x H)	137mm x 252mm x 210mm (5.4” x 9.9” x 8.3”)
Weight	3 kg (6.6 lb)
Mounting	Wall-mount by Mounting Bracket
Environmental	
Operating Temperature	-25°C to 70°C (-13°F to 157°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	10% to 95% Humidity, Non-condensing
Relative Humidity	95% at 70°C
Vibration	Random: 5Grms @5 to 500 Hz according to IEC68-2-64 Sinusoidal: 5Grms @5 to 500 Hz according to IEC68-2-64
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, According to IEC60068-2-27)
EMC	CE, FCC

1.3 Supported CPU List

Vecow RCS-7000 accepts 3rd generation Intel® i7 | i5 | i3 processors via a rPGA988B CPU socket. The following processors have been tested by Vecow Co., Ltd. for the compatibility with Vecow RCS-7000. Instead of i7-3610QE, i5-3610ME and i3-3120ME, You may also select other processor according to your consideration of application and performance.

Series		Max. TDP	iAMT	Embedded
i7	3840QM	45W	√	
	3820QM	45W	√	
	3740QM	45W	√	
	3720QM	45W	√	
	3632QM	35W		
	3630QM	45W		
	3612QM	35W		
	3610QE	45W	√	O
	3540M	35W	√	
	3520M	35W	√	
i5	**3610ME**	**35W**	√	O
	3380M	35W	√	
	3360M	35W	√	
	3340M	35W	√	
	3320M	35W	√	
	3230M	35W		
	3210M	35W		
i3	3130M*	35W		
	3120ME	35W		O
	3120M*	35W		
	3110M*	35W		

The processors with "O" are listed in Intel® Embedded Roadmap and with a 7-year life cycle support (from 2011 to 2017). The processors with "*" the maximum operation temperature is 55°C.

1.4 Mechanical Dimension

Figure 1.1 RCS-7422 & RCS-7422A & RCS-7404

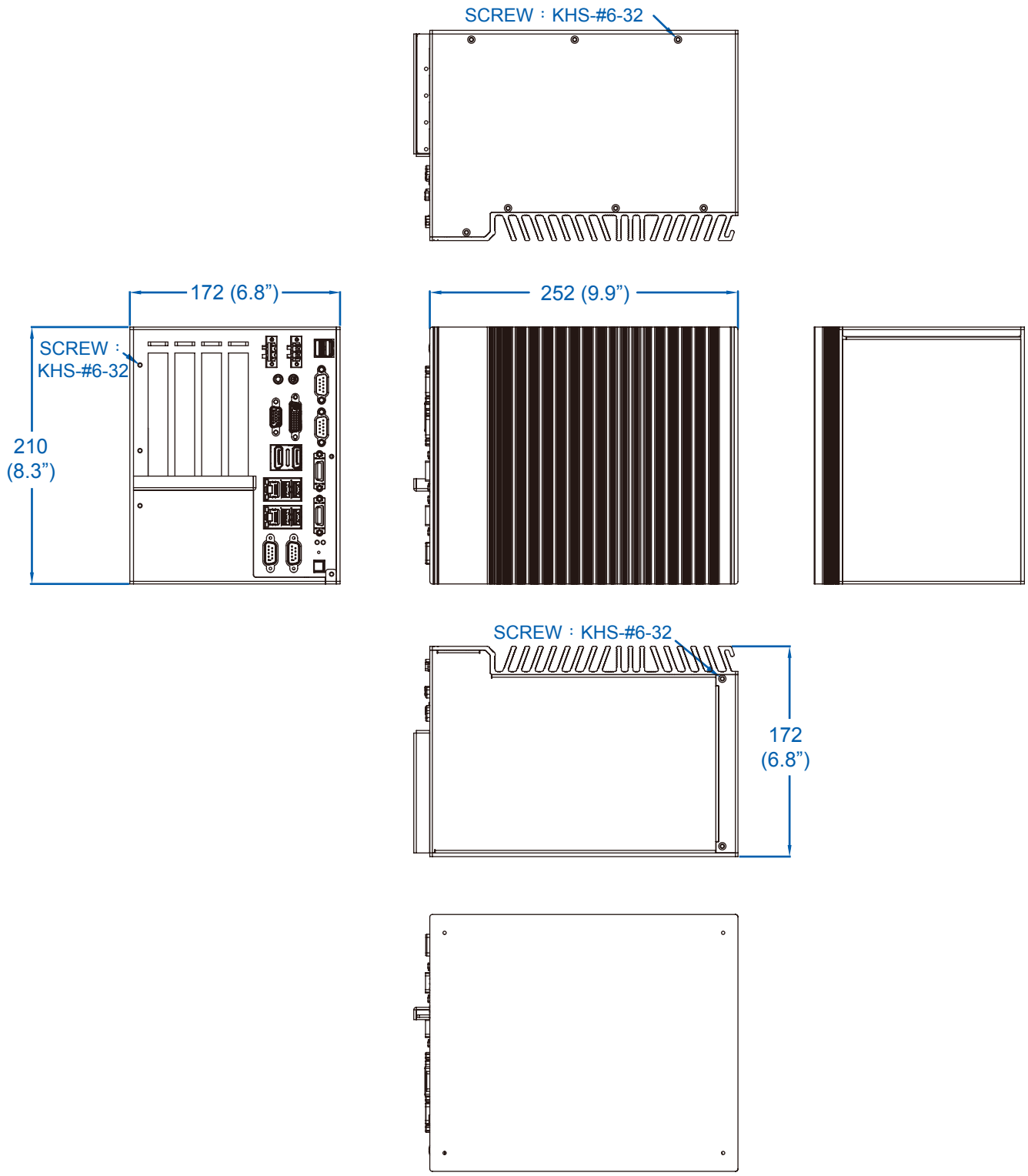
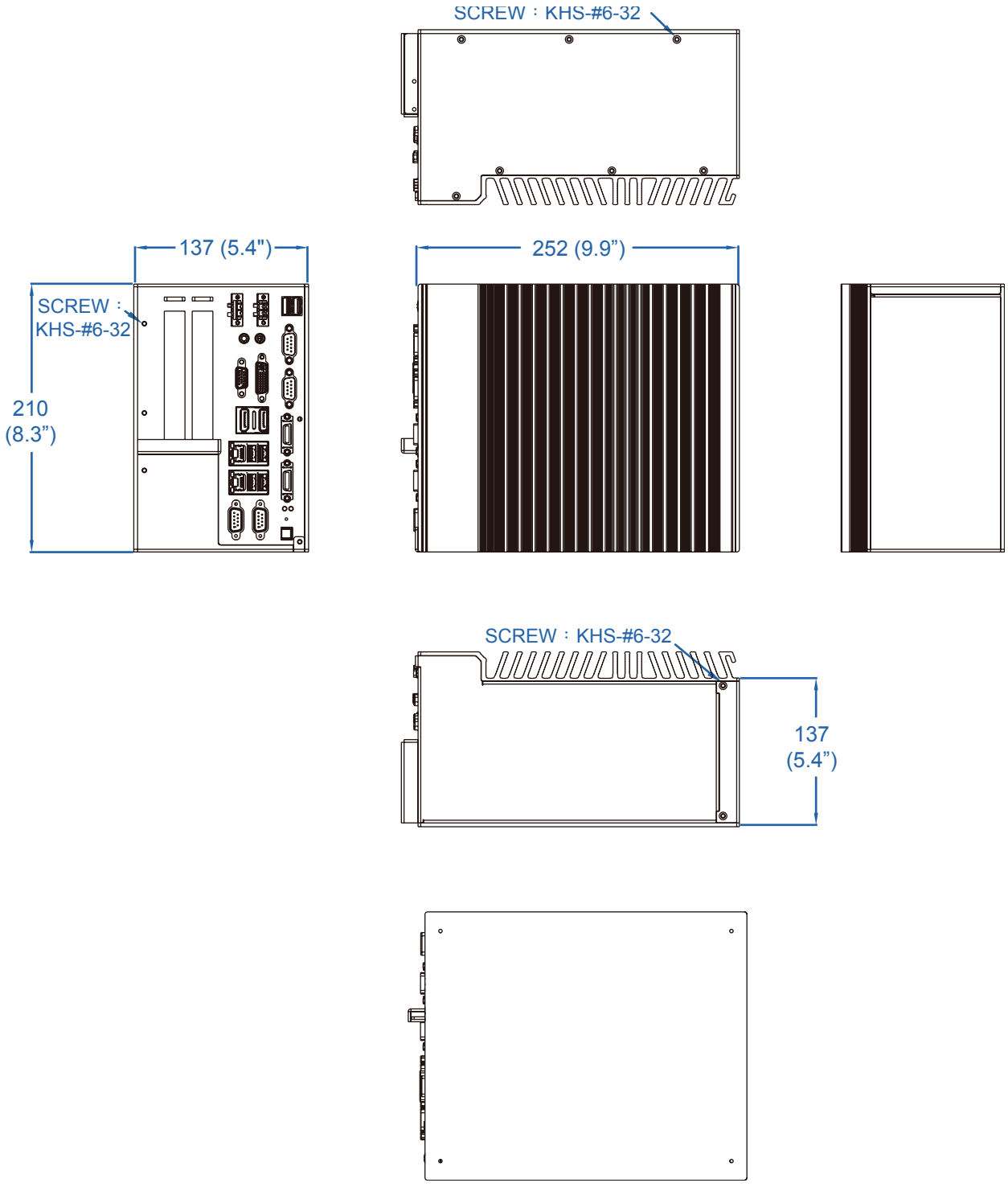


Figure 1.2 RCS-7220 & RCS-7220A & RCS-7211



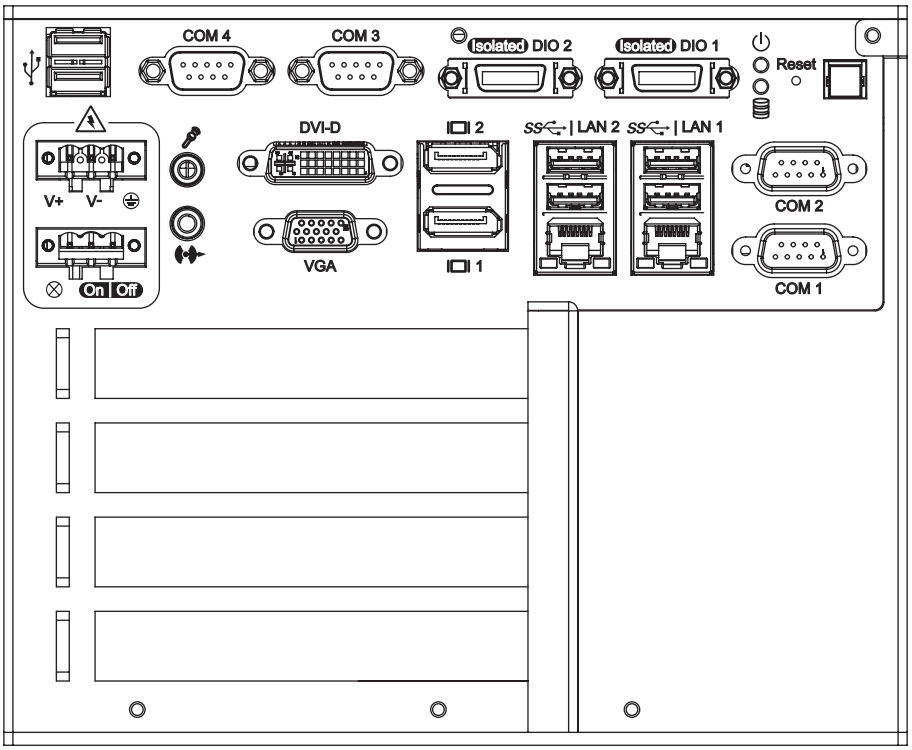
2

GETTING TO KNOW YOUR RCS-7000

2.1 Packing List

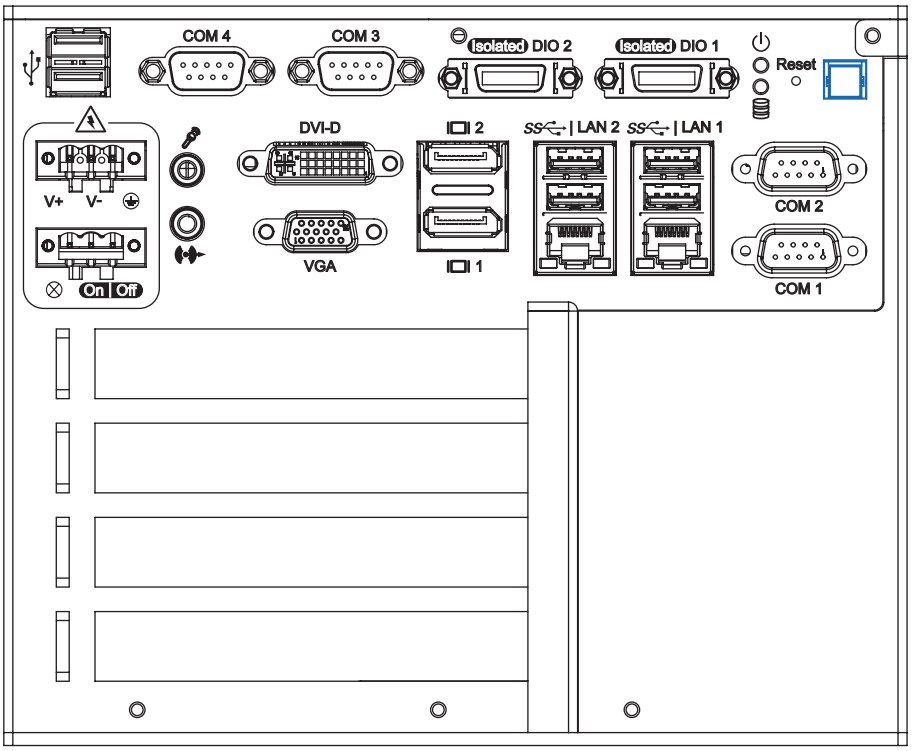
Item	Description	Qty
1	RCS-7000 Fanless Robust Computing System (According to the configuration you order, the RCS-7000 may contain HDD and DDR3 SO-DIMM. Please verify these items if necessary.)	1
2	Accessory box, which contains ● Vecow Drivers & Utilities DVD ● Wall-mounting bracket ● M4 screws for wall-mounting bracket ● 3-pin pluggable terminal block	 1 2 4 2

2.2 Front Panel I/O Functions



All Input / Output connectors are located on front panel of RCS-7000 series. Most connectors like audio, USB, DVI-D, VGA are all designed on front panel.

2.2.1 Power Button



The power button is a non-latched switch with dual color LED (Blue/Orange) for indication S0, S3 and S5 status. Power button dual-color LED indicator:

Status	LED Display	System Situation
S0	Solid Blue	System working
S3, S5	Solid Orange	Suspend to RAM, System off with standby power

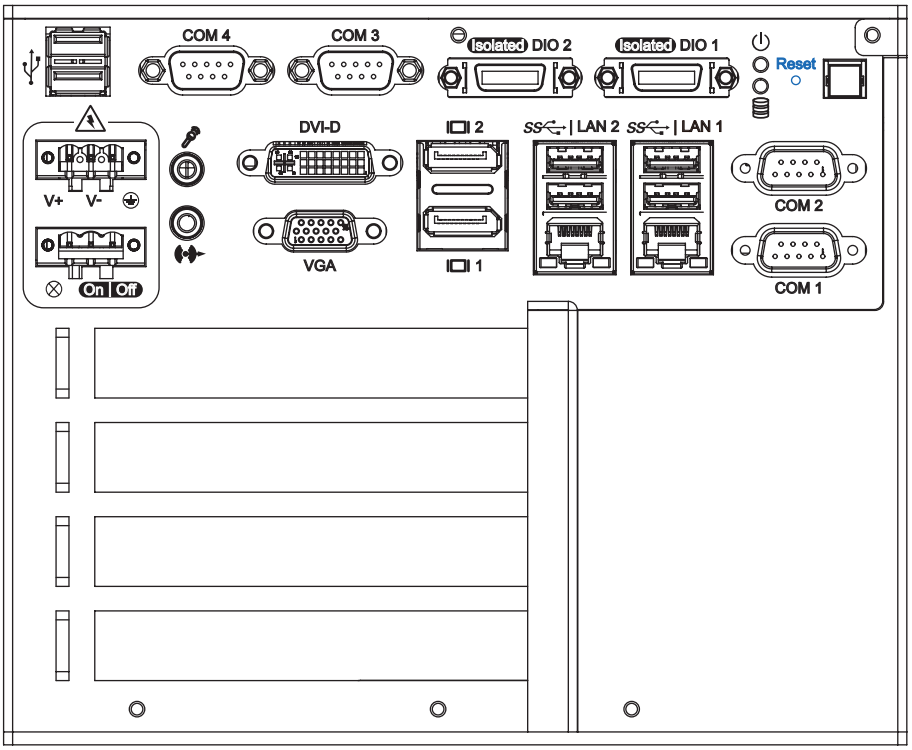
To turn on the RCS-7000 series, press the power button and the blue LED is lighted up.

To turn off the RCS-7000 series, you can either issue a shutdown command in OS, or just simply press the power button.

In case of system halts, you can press and hold the power button for 4 seconds to compulsorily shut down the system.

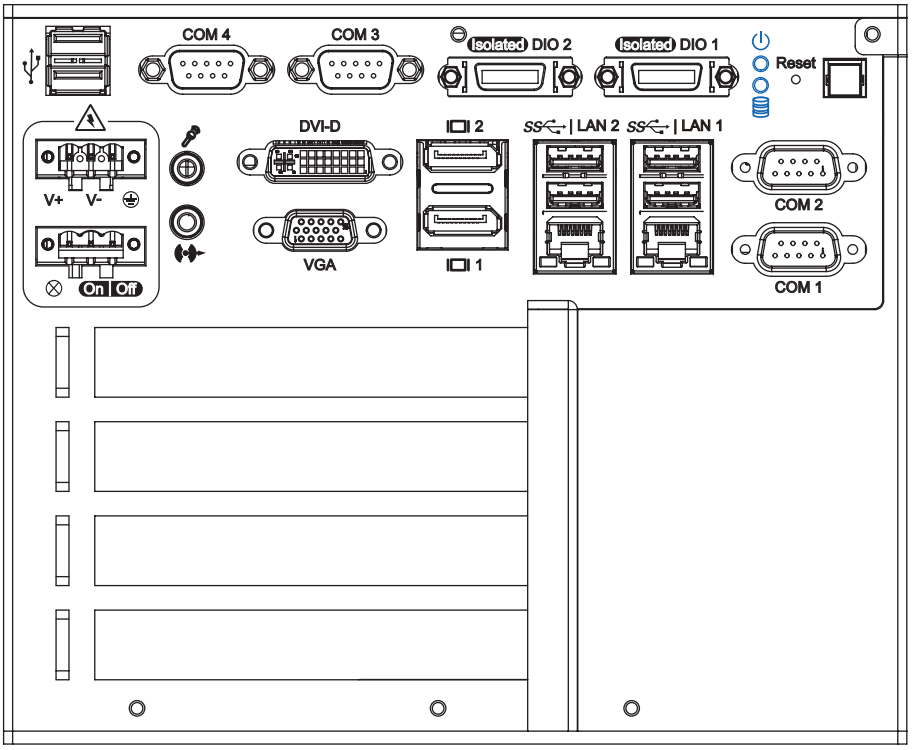
Please note that a 4 seconds interval is kept by the system between two on/off operations (i.e. once turning off the system, you shall wait for 4 seconds to initiate another power-on operation).

2.2.2 Rest Tact Switch



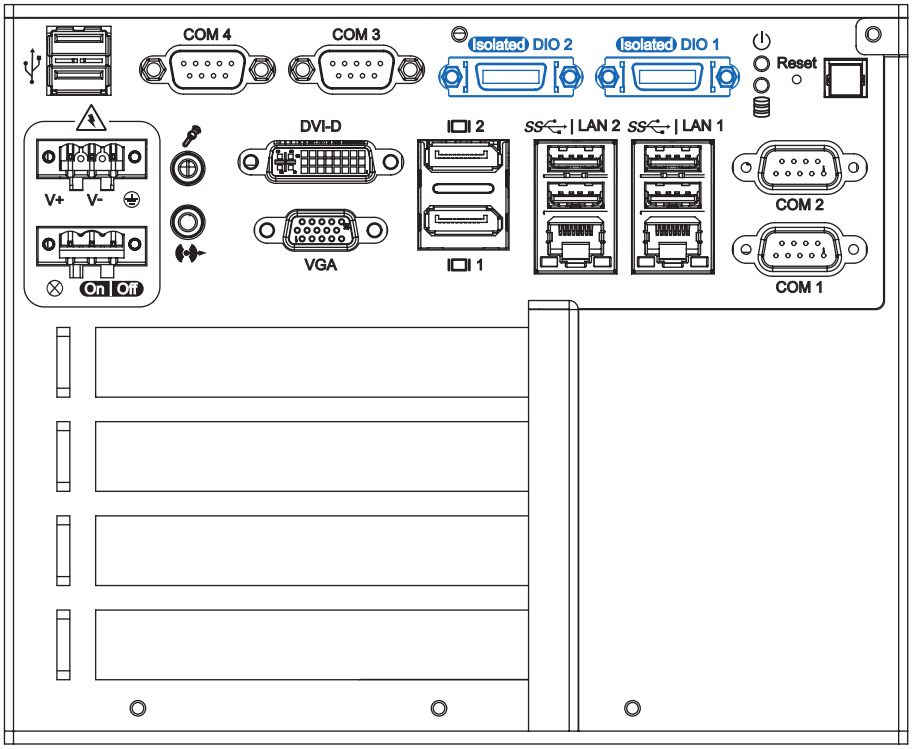
It is a hardware reset switch. Use this switch to reset the system without turning off the power. Momentarily pressing the switch will activate a reset.

2.2.3 Power, HDD LED Indicator



Yellow-HDD LED: A hard disk/ CFast LED. If the LED is on, it indicates that the system's 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.
Green-Power LED: If the LED is solid green, it indicates that the system is powered on.

2.2.4 Dual Isolated 8 DI/ 8 DO



The RCS-7000 series offers dual 16-bit DIO (8-DI / 8-DO) connector. Each bit of DI and DO equipped with a photo-coupler for isolated protection. A power buffer device TPD2007F integrated in 8-DO circuit for motors, solenoids, and lamp drivers applications.

Pin No.	Definition	Mapping to SIO GPIO Function
1	INPUT0	SIO_GPI50
2	INPUT 1	SIO_GPI51
3	INPUT 2	SIO_GPI52
4	INPUT 3	SIO_GPI53
5	INPUT 4	SIO_GPI54
6	INPUT 5	SIO_GPI55
7	INPUT 6	SIO_GPI56
8	INPUT 7	SIO_GPI57
9	DI_COM	
10	GND	

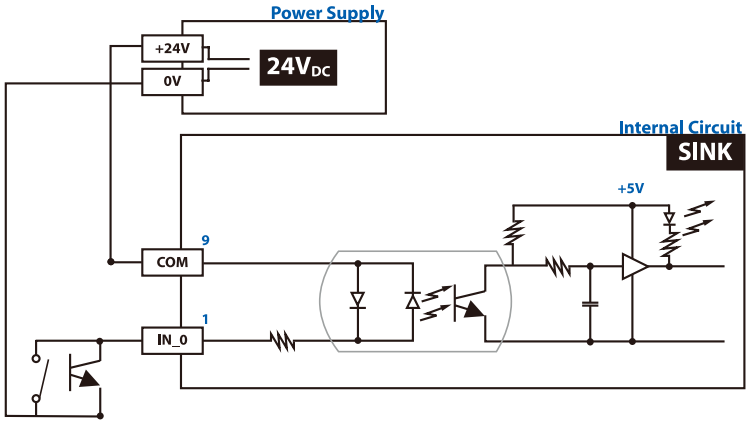
Pin No.	Definition	Mapping to SIO GPIO Function
11	OUTPUT0	SIO_GPO20
12	OUTPUT 1	SIO_GPO21
13	OUTPUT 2	SIO_GPO22
14	OUTPUT 3	SIO_GPO23
15	OUTPUT 4	SIO_GPO24
16	OUTPUT 5	SIO_GPO25
17	OUTPUT 6	SIO_GPO26
18	OUTPUT 7	SIO_GPO27
19	N.C.	
20	External 24VDC Input	

DIO 2 Pin Assignment

Pin No.	Definition	Mapping to SIO GPIO Function
1	INPUT0	SIO_GPI60
2	INPUT 1	SIO_GPI61
3	INPUT 2	SIO_GPI62
4	INPUT 3	SIO_GPI63
5	INPUT 4	SIO_GPI64
6	INPUT 5	SIO_GPI65
7	INPUT 6	SIO_GPI66
8	INPUT 7	SIO_GPI67
9	DI_COM	
10	GND	
11	OUTPUT0	SIO_GPO10
12	OUTPUT 1	SIO_GPO11
13	OUTPUT 2	SIO_GPO12
14	OUTPUT 3	SIO_GPO13
15	OUTPUT 4	SIO_GPO14
16	OUTPUT 5	SIO_GPO15
17	OUTPUT 6	SIO_GPO16
18	OUTPUT 7	SIO_GPO17
19	N.C.	
20	External 24VDC Input	

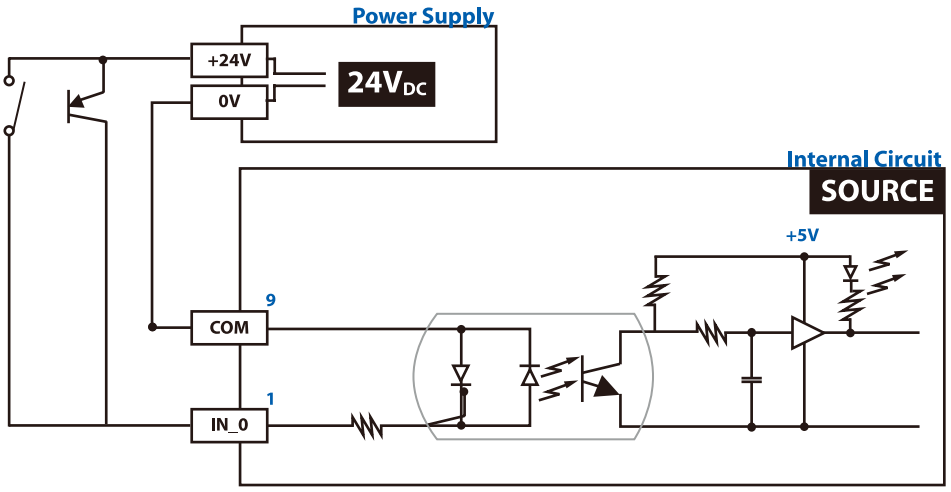
GPI SINK Mode

Isolated GPI input circuit in SINK mode (NPN) is illustrated as follows.



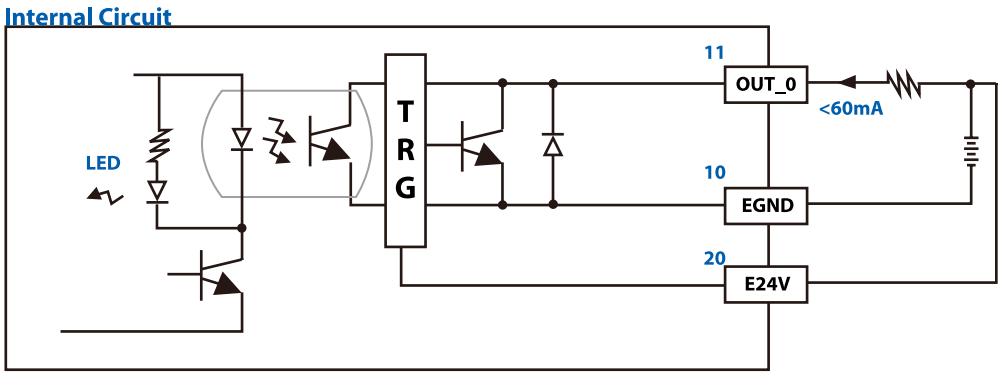
GPI SOURCE Mode

Digital GPI input signal circuit in SOURCE mode (PNP) is illustrated as follow:

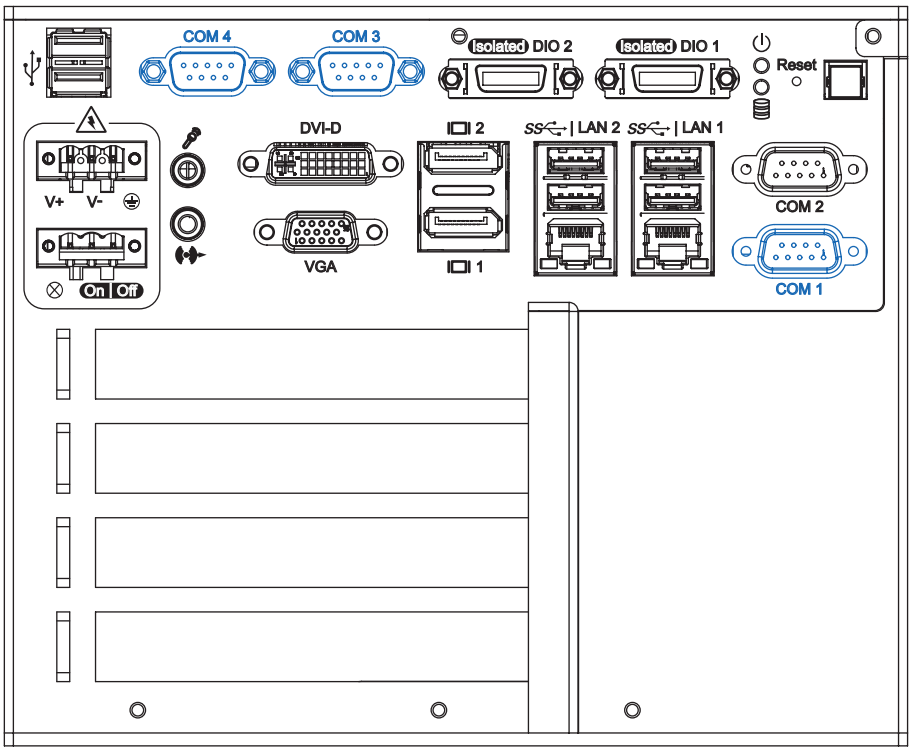


GPO SINK Mode

Digital GPO output circuit in SINK mode (NPN) is illustrated below.



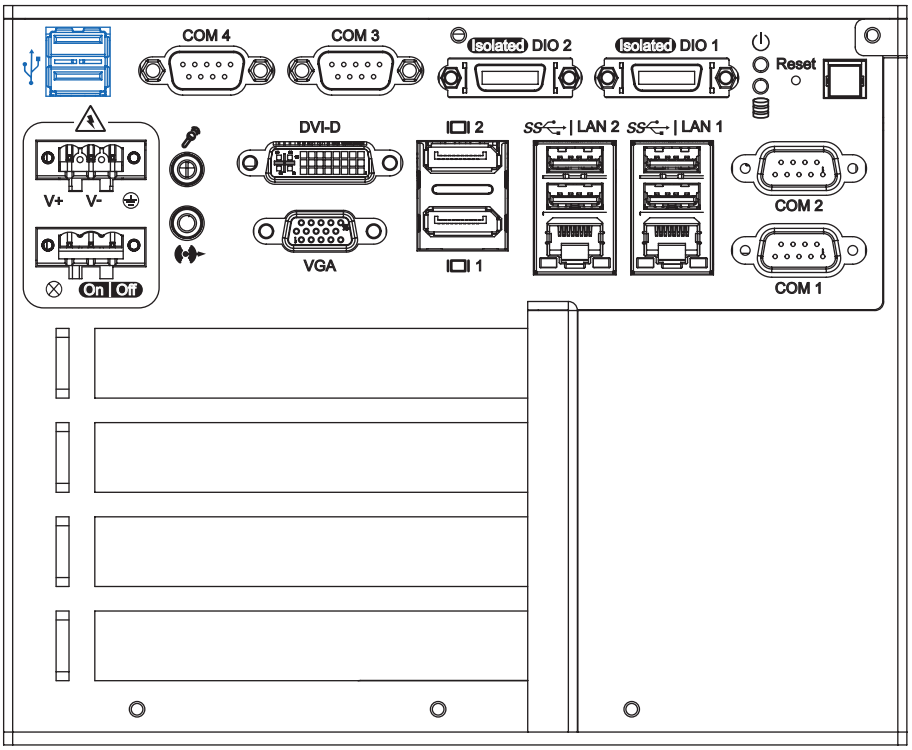
2.2.5 Serial Port, COM 1, COM 3, COM 4



COM1, COM3 and COM4 are RS-232 only and provide up to 115200 bps baud rates. The pin assignments are shown in the following table:

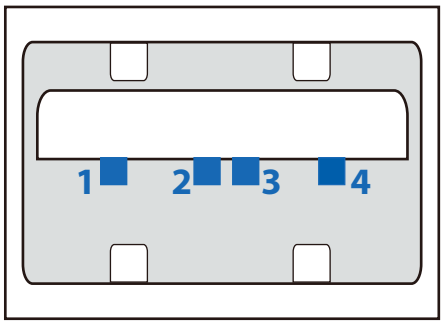
Serial Port	Pin No.	RS-232
COM1, 3, 4	1	DCD
	2	RXD
	3	TXD
	4	DTR
	5	GND
	6	DSR
	7	RTS
	8	CTS
	9	RI

2.2.6 USB 2.0 Port



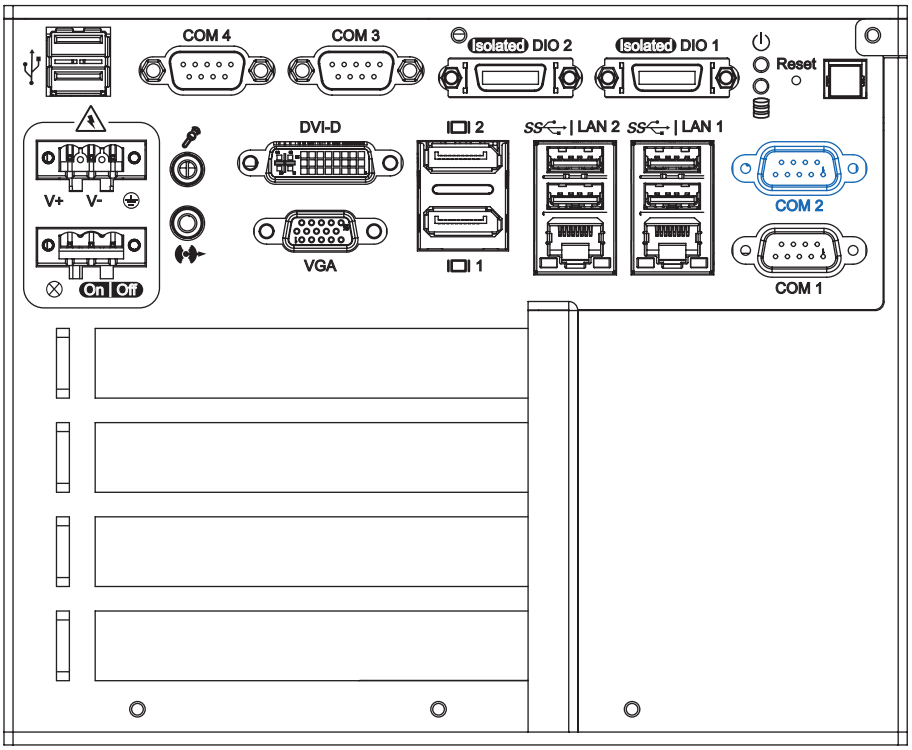
The RCS-7000 series comes with 2 USB 2.0 hosts on the front panel. The USB interface supports Plug and Play, which enables you to connect or disconnect a device whenever you want, without turning off the system.

The hosts can be used for an external flash disk or hard drive for storing large amounts of data. You can also use these USB hosts to connect to a keyboard or a mouse. The following diagram shows the pinouts for USB1 and USB2 port.



Pin No.	1	2	3	4
USB1	+5V	USB1-	USB1+	GND
USB2	+5V	USB2-	USB2+	GND

2.2.7 Serial Port, COM 2



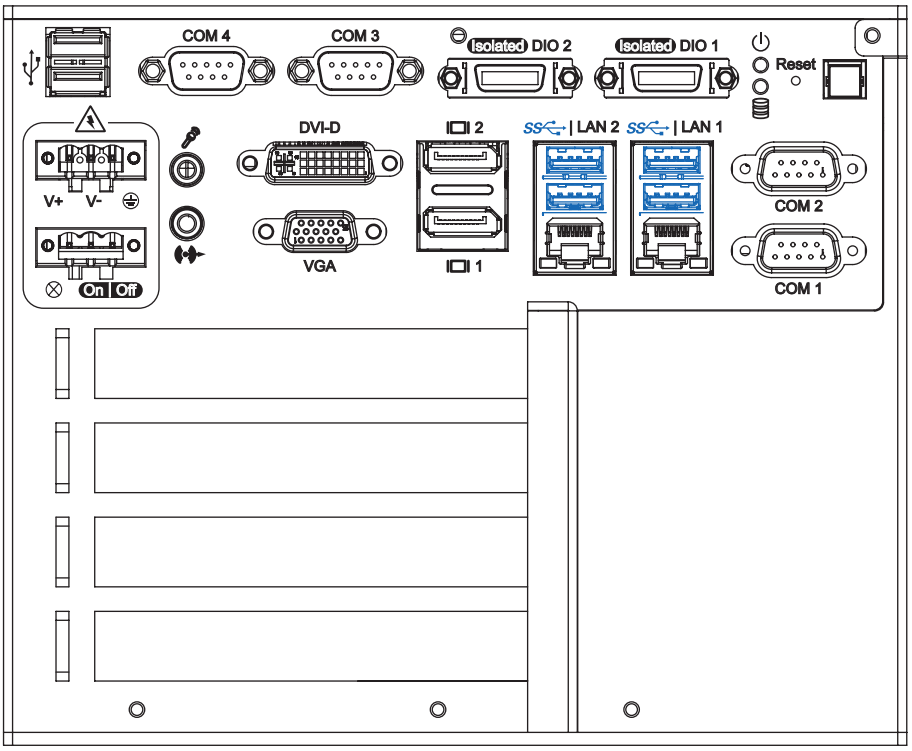
Serial port 2 can be configured for RS-232, RS-422, or RS-485 with auto flow control communication. Serial Port 2 default setting is RS-232, if you want to use RS-422 or RS-485, you can find the setting in BIOS.

BIOS Setting	Function
COM2	RS-232
	RS-422 (5-wire)
	RS-422 (9-wire)
	RS-485
	RS-485 w/z auto-flow control

The pin assignments are shown in the following table:

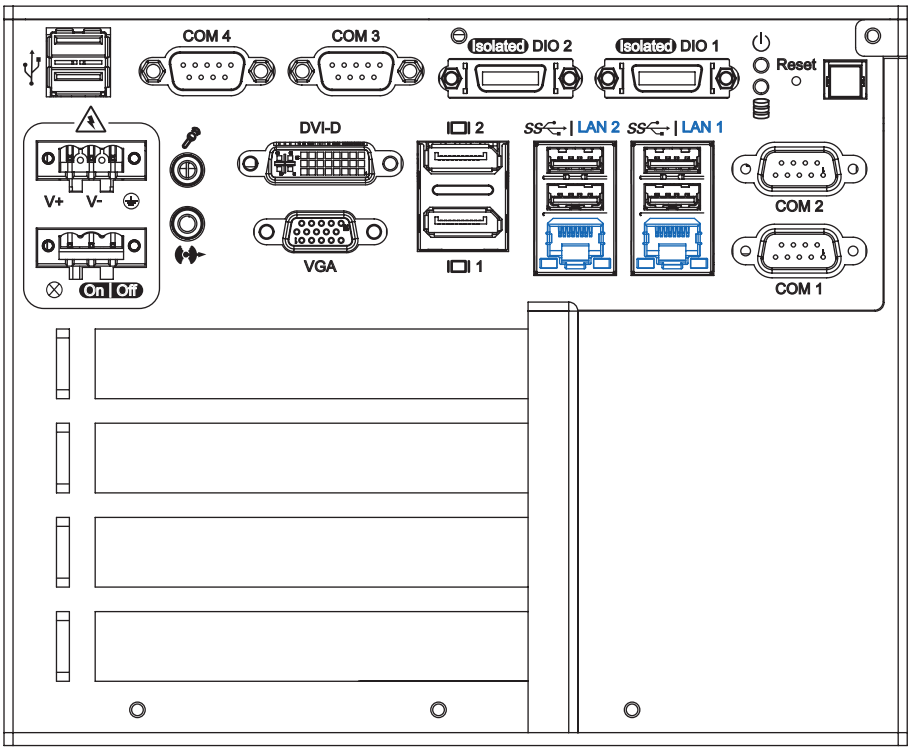
Serial Port	Pin No.	RS-232	RS-422 (5-Wire)	RS-422 (9-Wire)	RS-485 (3-Wire)
2	1	DCD	TXD-	TXD-	DATA-
	2	RXD	TXD+	TXD+	DATA+
	3	TXD	RXD+	RXD+	----------
	4	DTR	RXD-	RXD-	----------
	5	GND	GND	GND	GND
	6	DSR	----------	RTS-	----------
	7	RTS	----------	RTS+	----------
	8	CTS	----------	CTS+	----------
	9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

2.2.8 USB 3.0 Port



The RCS-7000 comes with 4 USB 3.0 hosts on the front panel. These USB 3.0 ports allow data transfers up to 5 Gb/s. The controller supports SuperSpeed (SS), high-speed (HS), full-speed (FS) and los-speed (LS) traffic on the bus.

2.2.9 10/100/1000 Mbps Ethernet Port



The 10/100/1000 Mbps Ethernet LAN ports 1 and 2 use 8-pin RJ-45 connector. LAN1 is equipped with Intel 82579LM for AMT function. LAN2 is equipped with Intel 82574L.

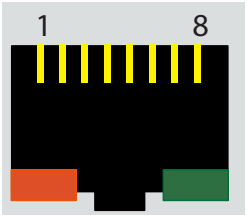
Using suitable RJ-45 cable, you can connect RCS-7000 series system to a computer, or to any other piece of equipment that has an Ethernet connection, for example, a hub or a switch.

Moreover, both of them have Wake-on-LAN and Pre-boot Execution Environment capabilities. The following diagram shows the pinouts for LAN1 and LAN2 port.

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

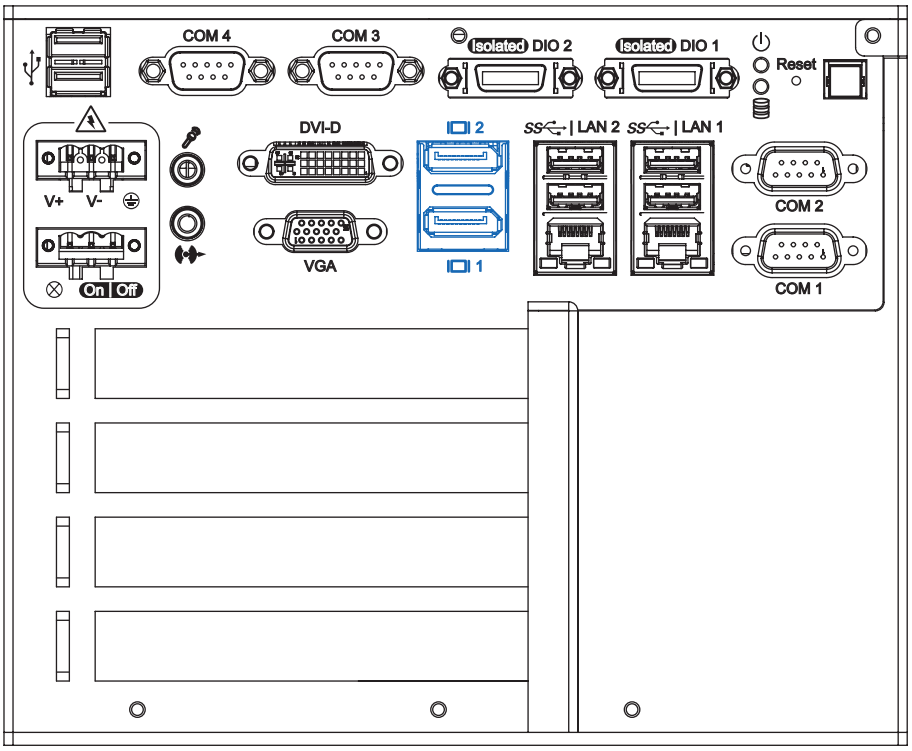
The Ethernet ports use standard RJ-45 jack connectors with LED indicators on the front side to show Active/Link status and Speed status. The LED indicators on the right bottom corners glow a solid green color when the cable is properly connected to a 100 Mbps Ethernet network. The LED indicator on the left bottom corner will flash on and off when Ethernet packets are being transmitted or received.

The LED indicators on the right bottom corners glow a solid orange color when the cable is properly connected to a 1000 Mbps Ethernet network. The LED indicator on the left bottom corner will flash on and off when Ethernet packets are being transmitted or received.



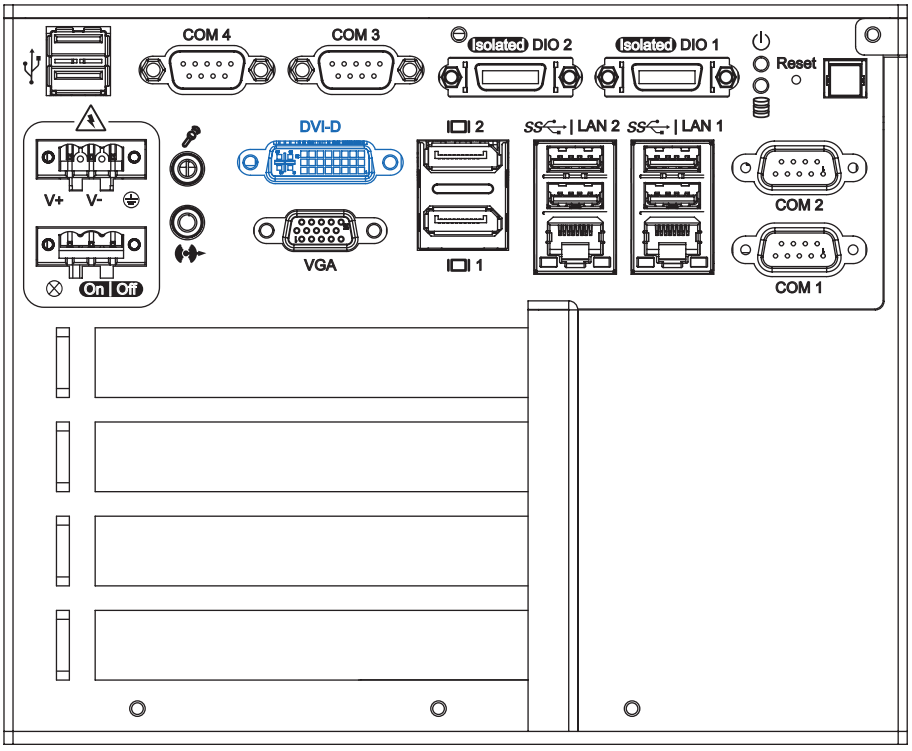
Location	10 Mbps	100 Mbps	1000 Mbps
Right Bottom LED	off	Solid Green	Solid Orange
Left Bottom LED	Flash Yellow	Flash Yellow	Flash Yellow

2.2.10 DisplayPort



Each digital port is capable of driving resolutions up to 2560x1600 at 60 Hz through Display Port.

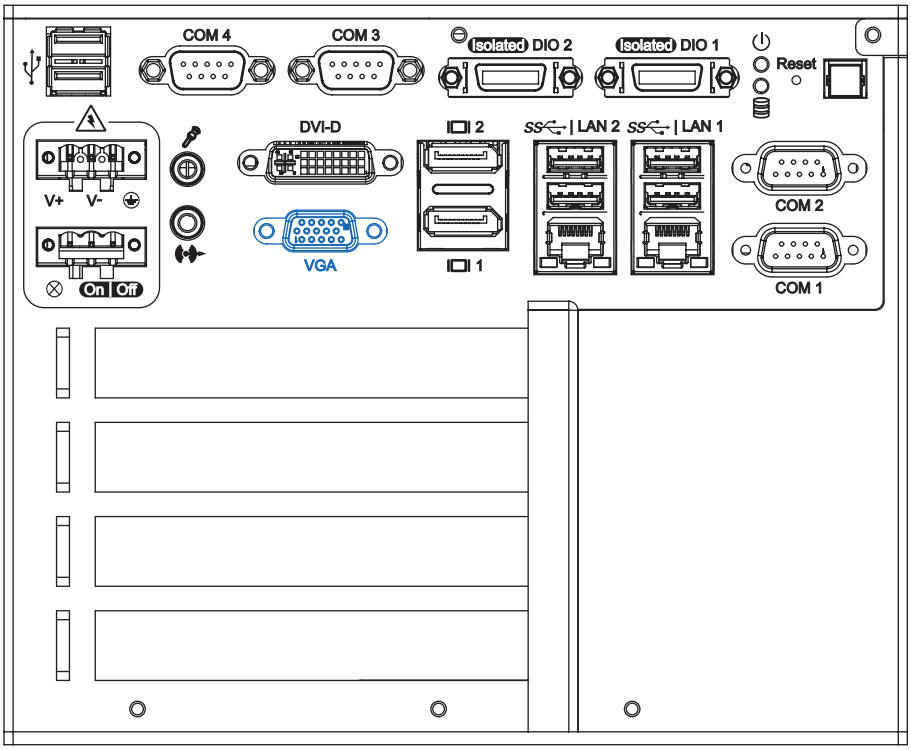
2.2.11 DVI-D Connector/ HDMI Connector



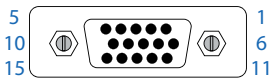
The DVI-D connector on the front panel supports both DVI and HDMI operation mode. This connector can either output DVI signals or HDMI signal.

The DVI output mode supports up to 1920x1200 resolutions and HDMI output mode supports up to 1920x1200 resolutions. The DVI or HDMI mode is automatically selected according to the display device connected. You shall need a DVI-D to HDMI cable when connecting to a HDMI display device.

2.2.12 VGA Connector



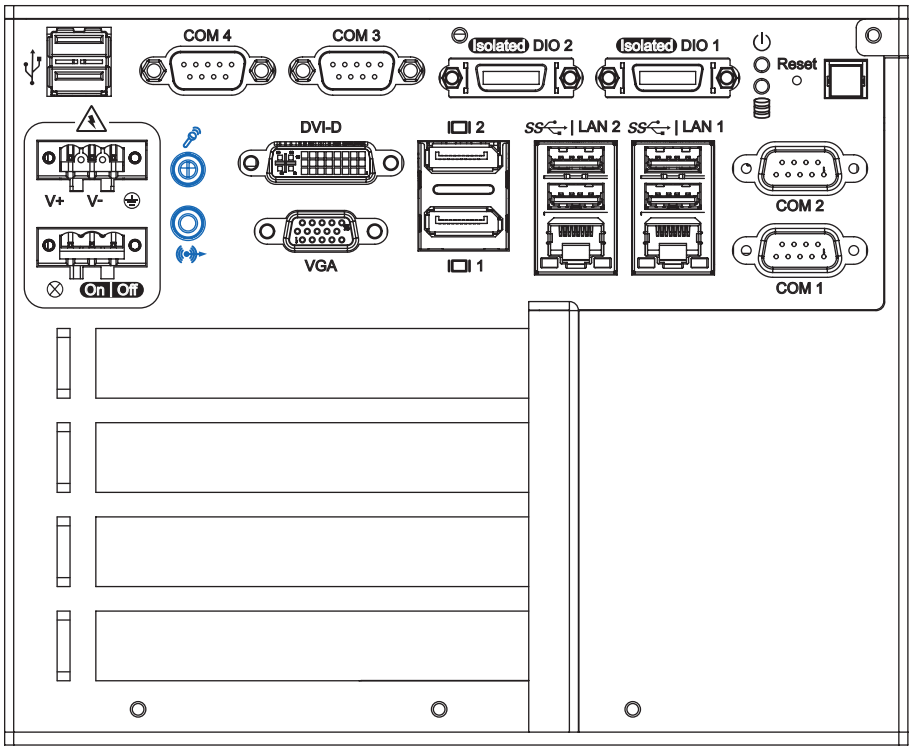
The RCS-7000 series comes with a DB15 female connector on the front panel to connect a VGA monitor. To ensure that the monitor image remains clear, be sure to tighten the monitor cable after connecting it to the RCS-7000 series. The VGA output mode supports up to 1920x1200 resolutions. The pin assignments of the VGA connector are shown below.



Pin No.	Description
1	Red Color Signal
2	Green Color Signal
3	Blue Color Signal
4	NC
5	Ground
6	VGA Detect
7	Ground
8	Ground

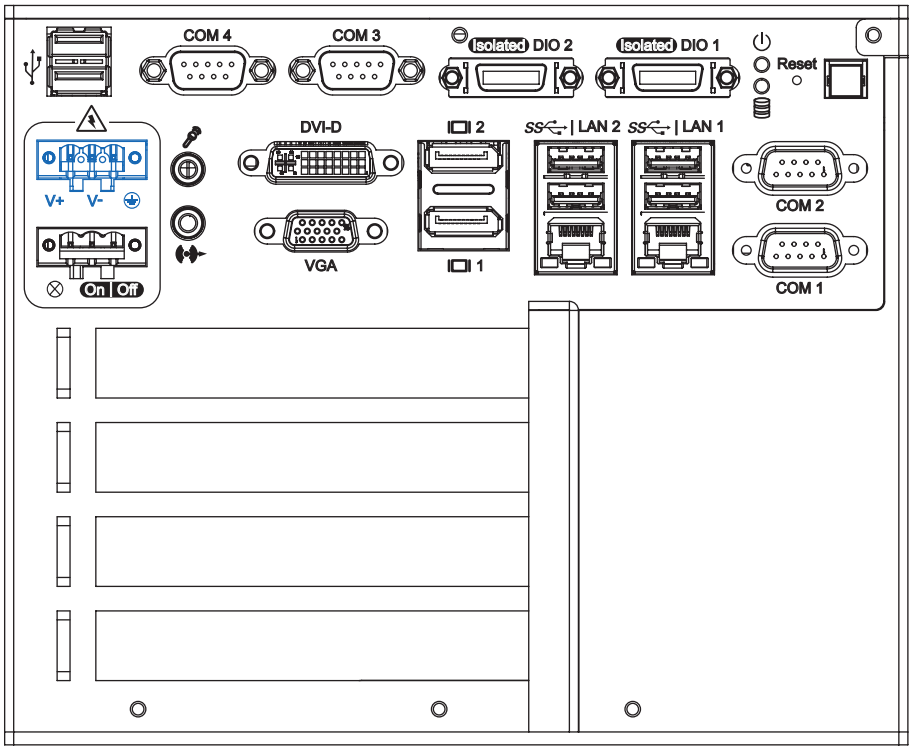
Pin No.	Description
9	VCC
10	Ground
11	NC
12	DDC-DATA
13	H-Sync.
14	V-Sync.
15	DDC-CLK

2.2.13 Audio Connector



The RCS-7000 series offers stereo audio connector of MIC , Line_Out. The audio chip controller is by ALC892 which is compliant with the Intel® Azalia standard. To utilize the audio function in Windows, you need to install corresponding drivers for both Intel® QM77 chipset and Realtek® ALC892 codec.

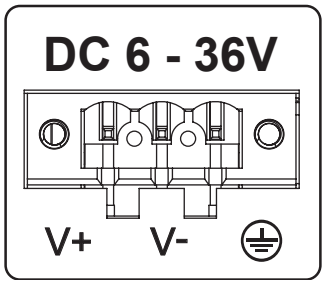
2.2.14 DC-in Power Terminal Block



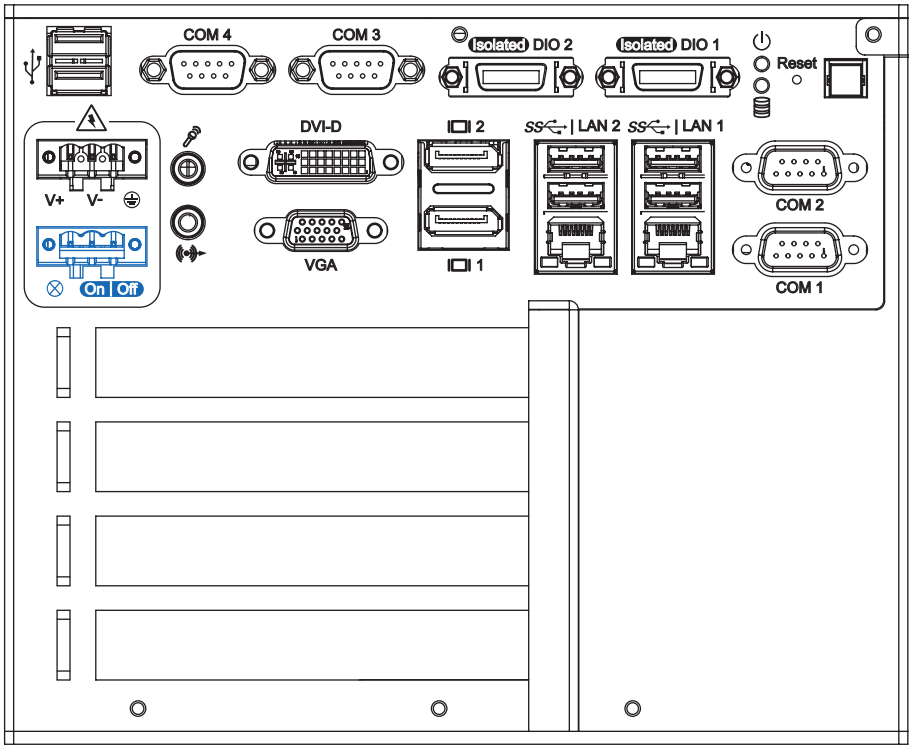
The RCS-7000 series offers 6 to 36 VDC power input with the terminal block. If the power is supplied properly, the Power LED will light up a solid green.

80V power surge protection is design in in LTC4356.Grounding and write routing help limit the effects of noise due to EMI. Run the ground connection from the ground screw to the grounding surface prior to connecting the power.

See the figure shown below for the location of the earth ground on the terminal block power connector. Connect the earth ground wire to an appropriate grounded metal surface.



2.2.15 Remote Power On/ Off Switch



It is a 3-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 support dual function of soft power-on / power-off (instant off or delay 4 second), and suspend mode.

2.3 Main Board Expansion Connectors

The graphic below is the top view of the RCS-7000 series main board which is the main board used in the RCS-7000 series system. It shows the location of the connectors.

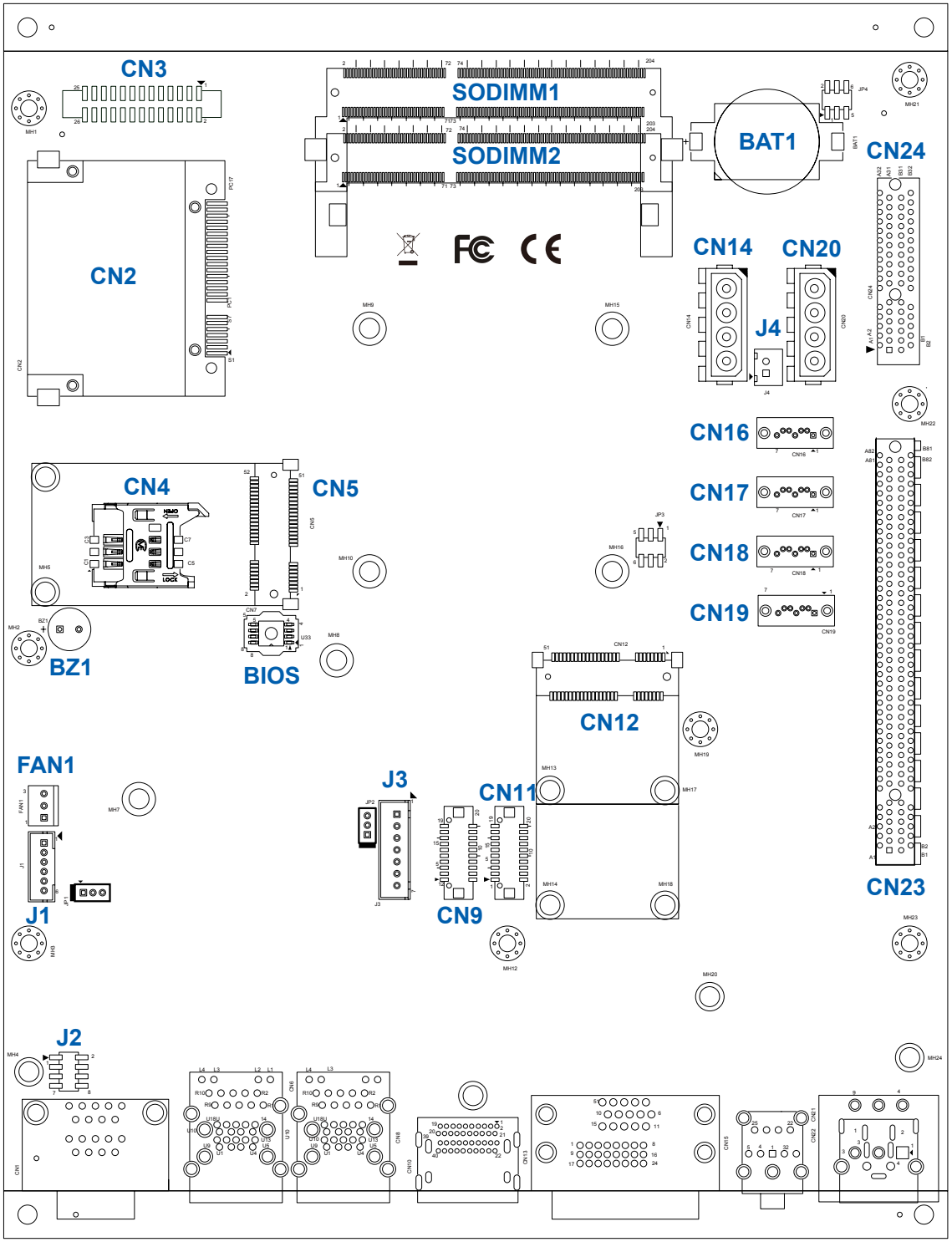
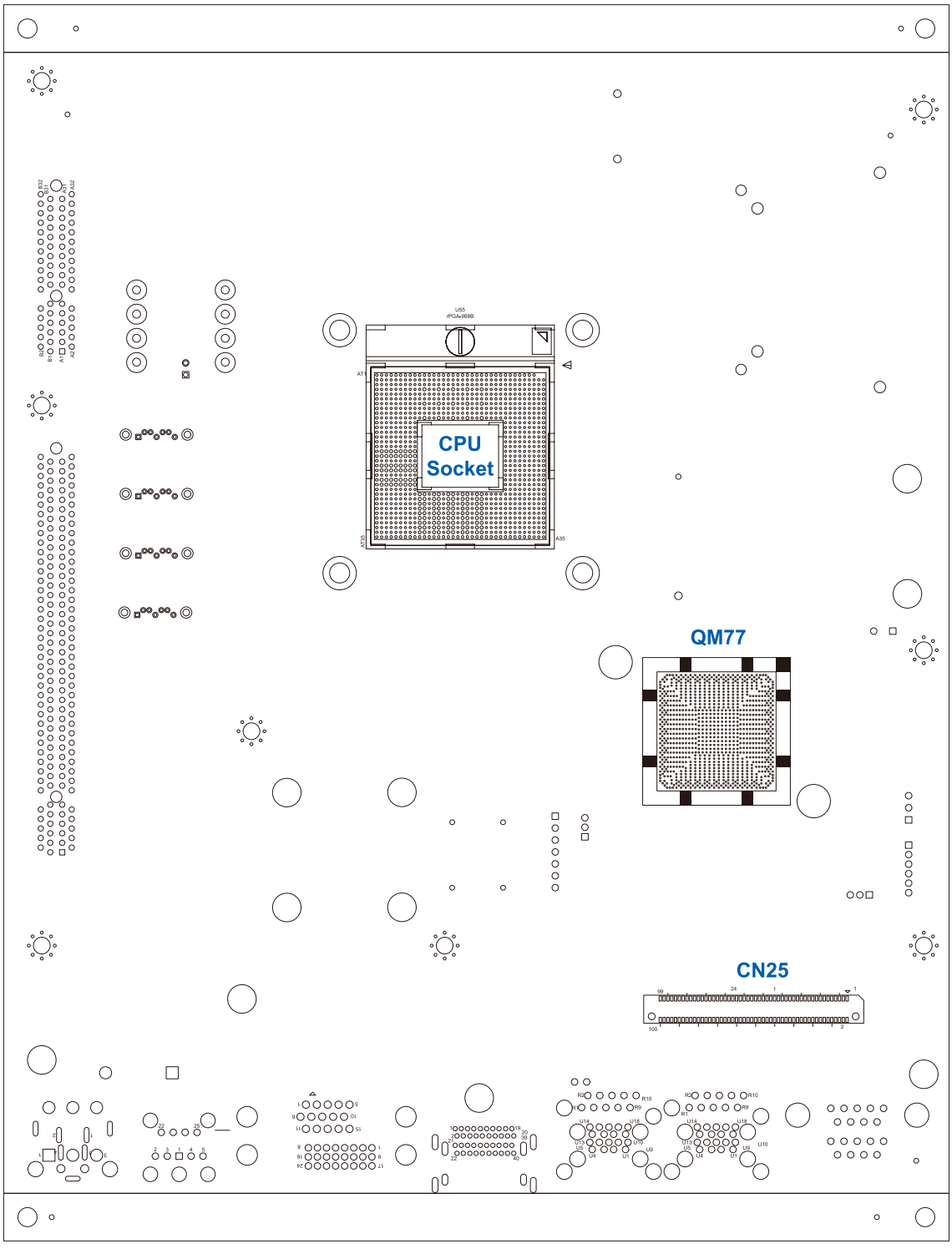
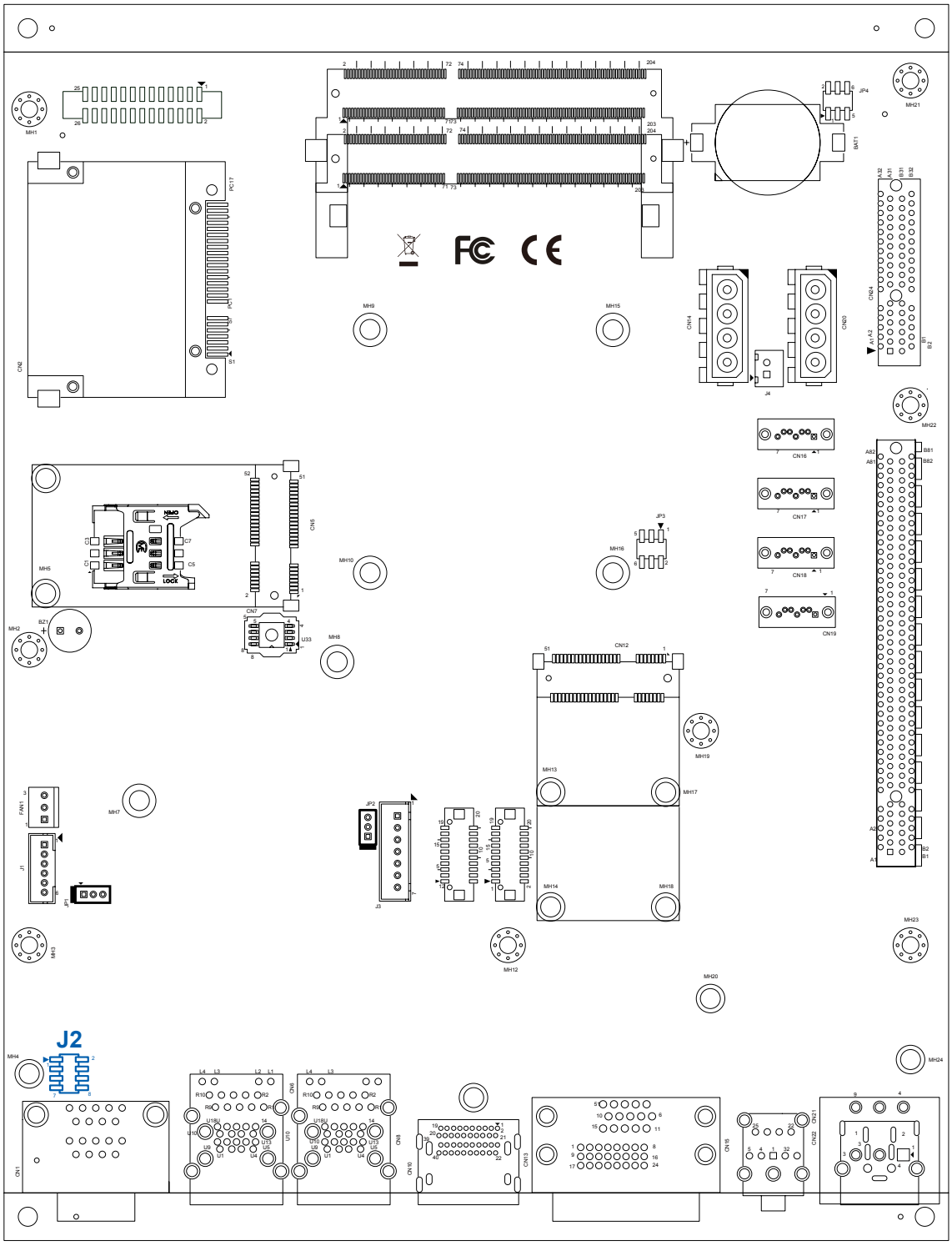


Figure 2.3.1 Internal Connectors and Jumpers

The figure below is the bottom view of the RCS-7000 series main board.



2.3.1 J2 Miscellaneous Pin Header



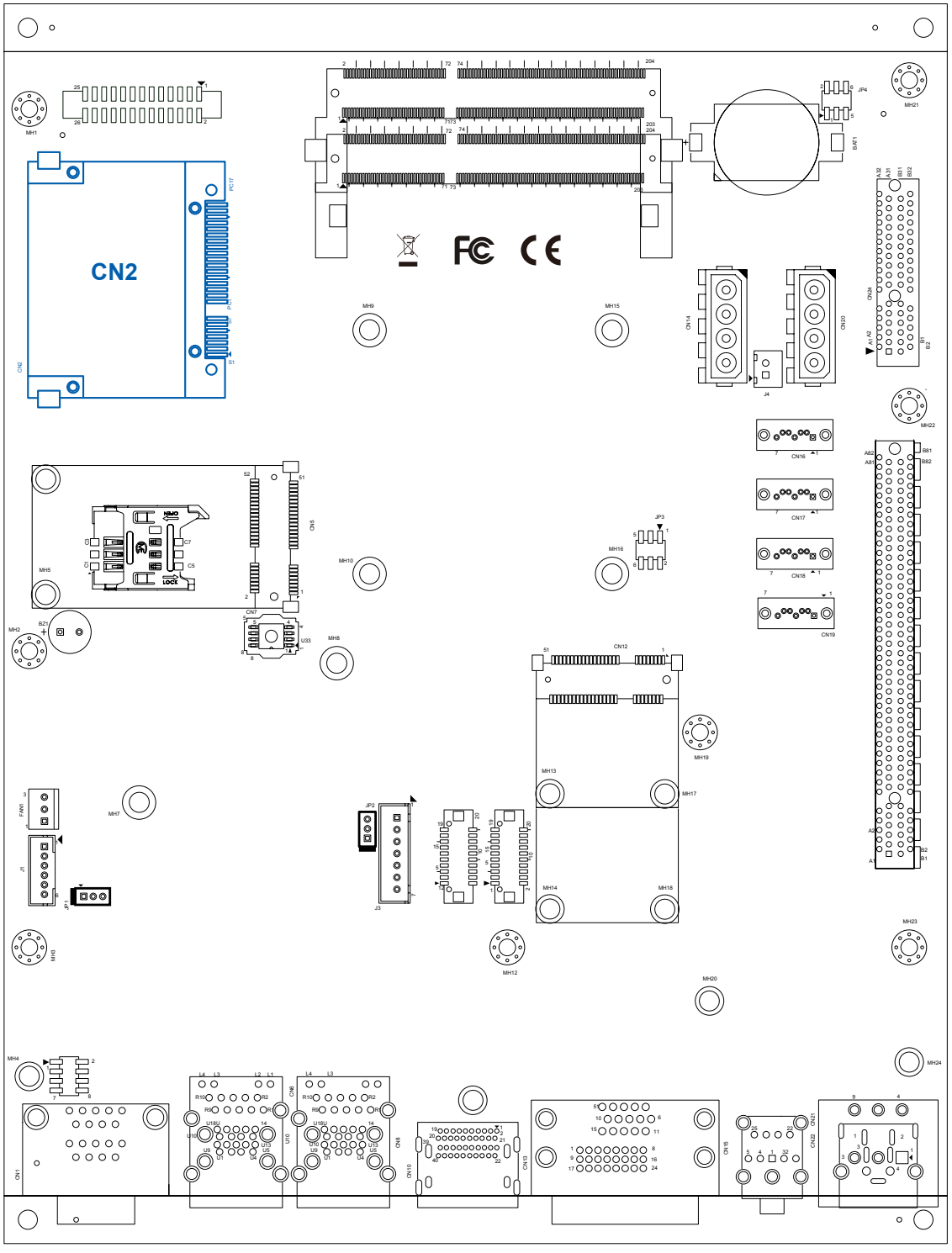
J2 Miscellaneous Pin Header

Group	Pin No.	Description
HDD LED	1	HDLED
	3	HD_LED_N
Reset Button	5	FP_RST_BTN_N
	7	GND

Group	Pin No.	Description
Power LED	2	PWRLED
	4	PWROK_100MS_N
Power Button	6	FP_RST_BTN_N
	8	GND

These pin headers can be used as a backup for the following functions: hard drive LED indicator, reset button, power LED indicator, and power-on/off button. The front and top panel already provides access to these functions. The following table shows the pinouts for Miscellaneous port.

2.3.2 CFast Card



The RCS-7000 series system comes with a CFast socket on the front panel for Type-I / Type-II Compact Flash card. It is implemented by a SATA II Port from QM77 PCH.

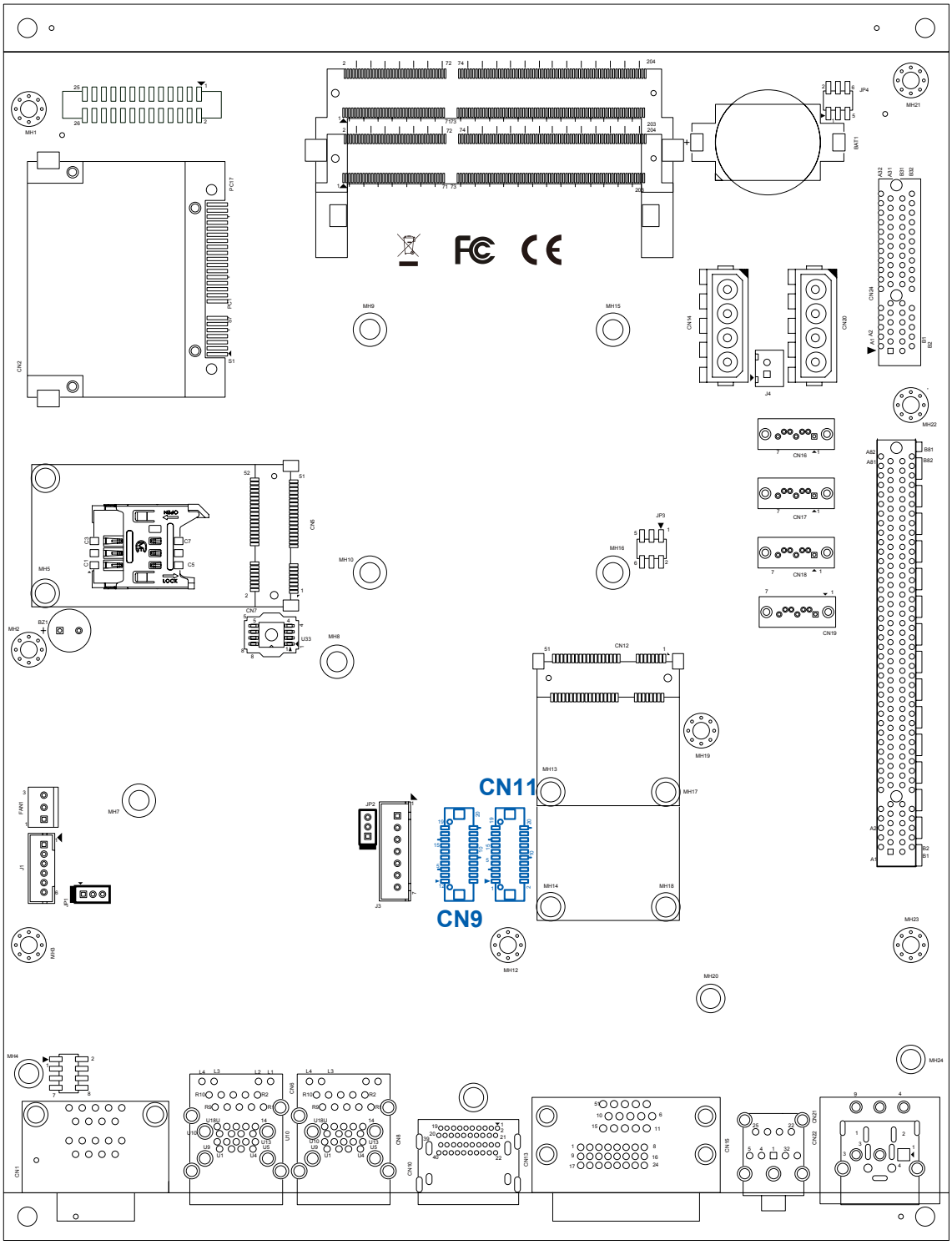
Be sure to disconnect the power source and unscrew the CFast socket cover before installing a CFast card. The RCS-7000 series does not support the CFast hot swap and PnP (Plug and Play) functions.

It is necessary to remove power source first before inserting or removing the CFast card. The following table shows the pinouts for CFast port:

CN2 CFast

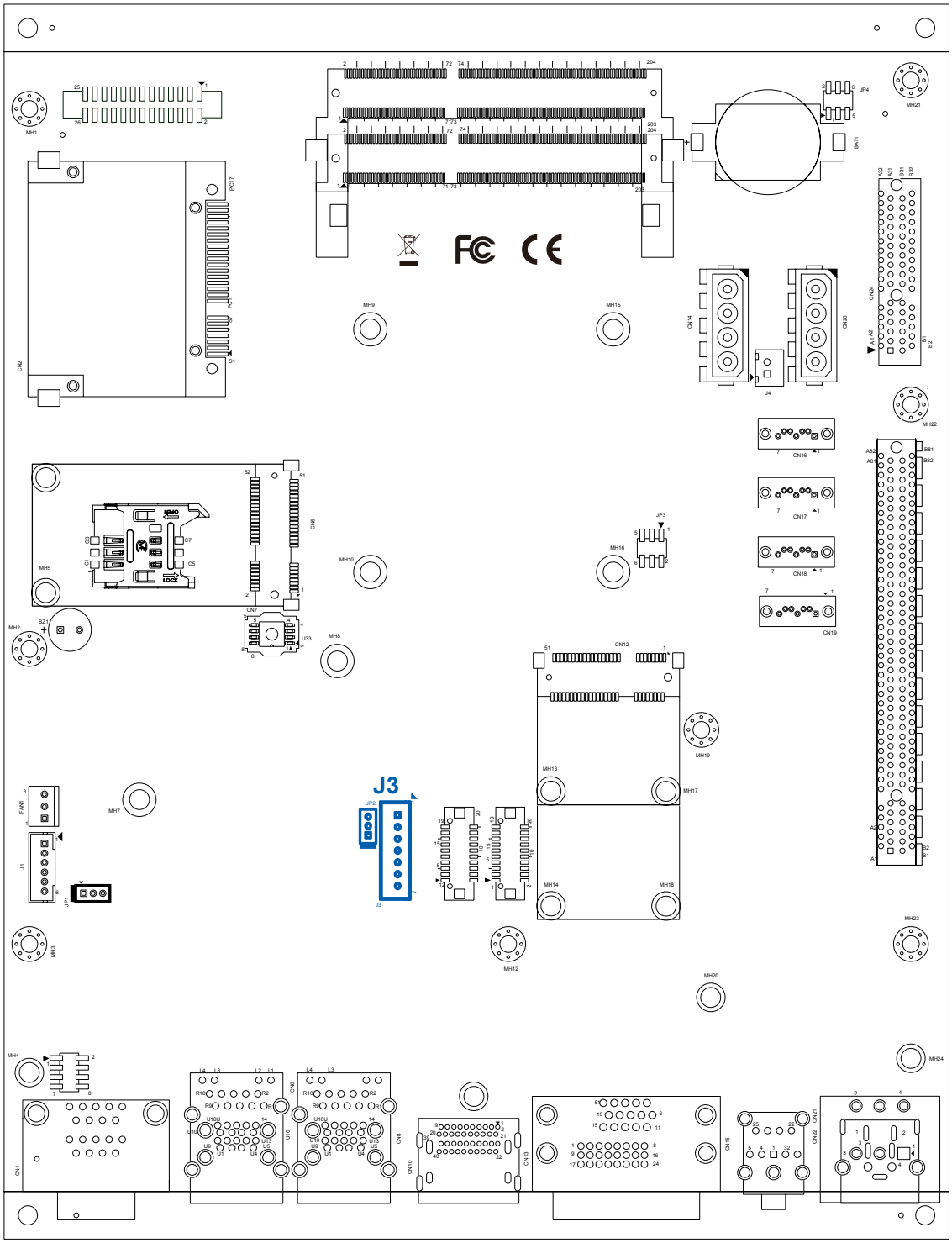
Pin No.	Definition	Pin No.	Definition
S1	GND	PC6	NC
S2	SATA_TX_P2	PC7	GND
S3	SATA_TX_N2	PC8	NC
S4	GND	PC9	CFAST_LED_N
S5	SATA_RX_N2	PC10	NC
S6	SATA_RX_P2	PC11	NC
S7	GND	PC12	NC
PC1	NC	PC13	+3.3V
PC2	GND	PC14	+3.3V
PC3	NC	PC15	GND
PC4	NC	PC16	GND
PC5	NC	PC17	NC

2.3.3 CN9, CN11, J3 LVDS



The RCS-7000 series supports Dual-channel 24-bit LVDS Panel up to 1366x768 pixels panel resolution.

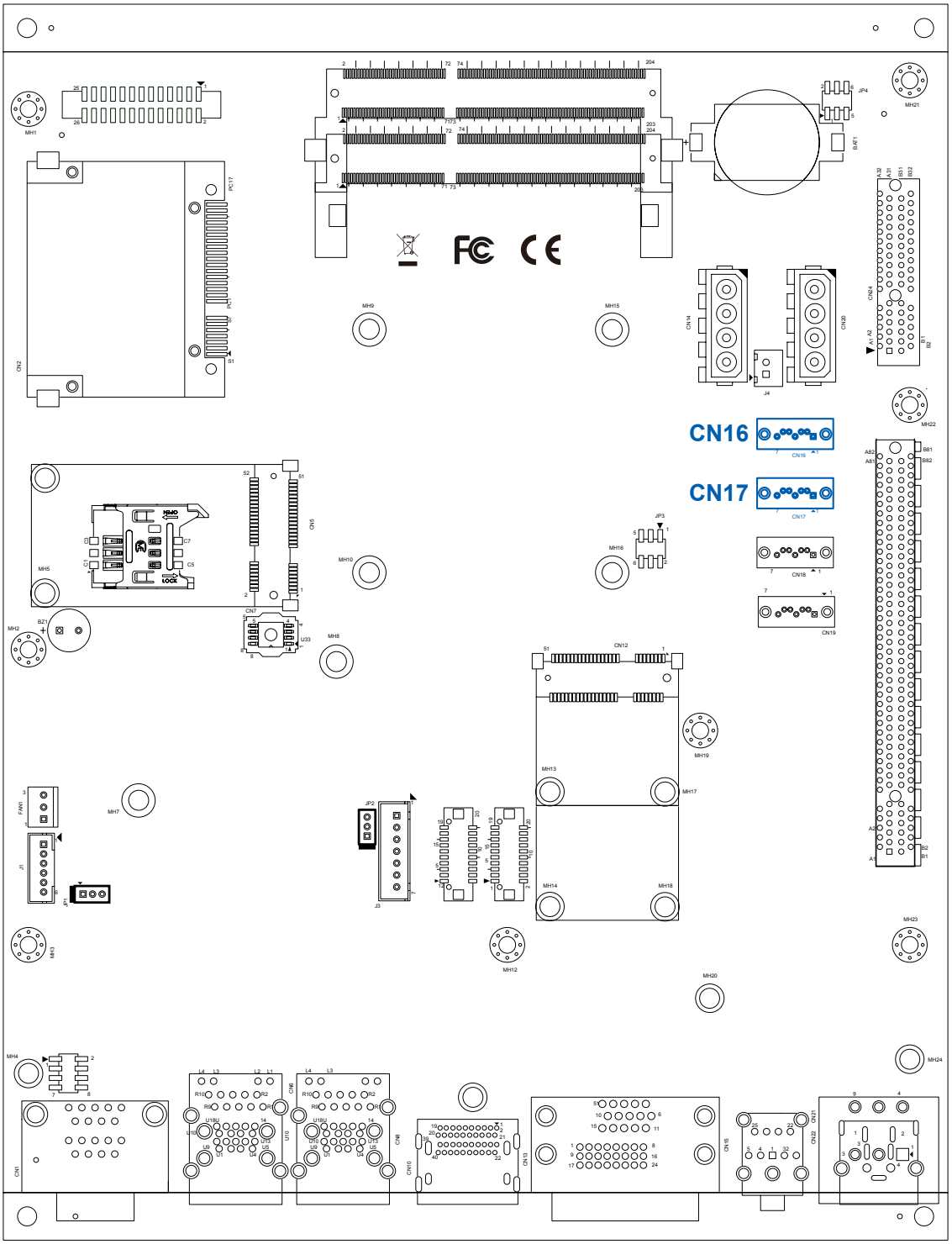
Pin No.	Definition CN11 Channel A	Definition CN9 Channel
1	LDDC_CLK	LDDC_CLK
2	LDDC_DATA	LDDC_DATA
3	PANEL_VDD (+3.3V or +5V by jumper)	PANEL_VDD(+3.3V or +5V by jumper)
4	LA_ DATA0_P	LB_ DATA0_P
5	LA_ DATA3_P	LB_ DATA3_P
6	LA_ DATA0_N	LB_ DATA0_N
7	LA_ DATA3_N	LB_ DATA3_N
8	PANEL_VDD (+3.3V or +5V by jumper)	PANEL_VDD (+3.3V or +5V by jumper)
9	GND	GND
10	LA_ DATA1_P	LB_ DATA1_P
11	LA_ CLKP	LB_ CLKP
12	LA_ DATA1_N	LB_ DATA1_N
13	LA_ CLKN	LB_ CLKN
14	GND	GND
15	GND	GND
16	PANEL_BACKLIGHT (+12V)	PANEL_BACKLIGHT (+12V)
17	LA_ DATA2_P	LB_ DATA2_P
18	PANEL_BACKLIGHT (+12V)	PANEL_BACKLIGHT (+12V)
19	LA_ DATA2_N	LB_ DATA2_N
20	GND	GND



The LCD inverter is connected to J3 via a JST 7-pin, 2.5mm connector to provide +5V/+12V power to the LCD display.

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

2.3.4 CN16, CN17 SATA-III Connector

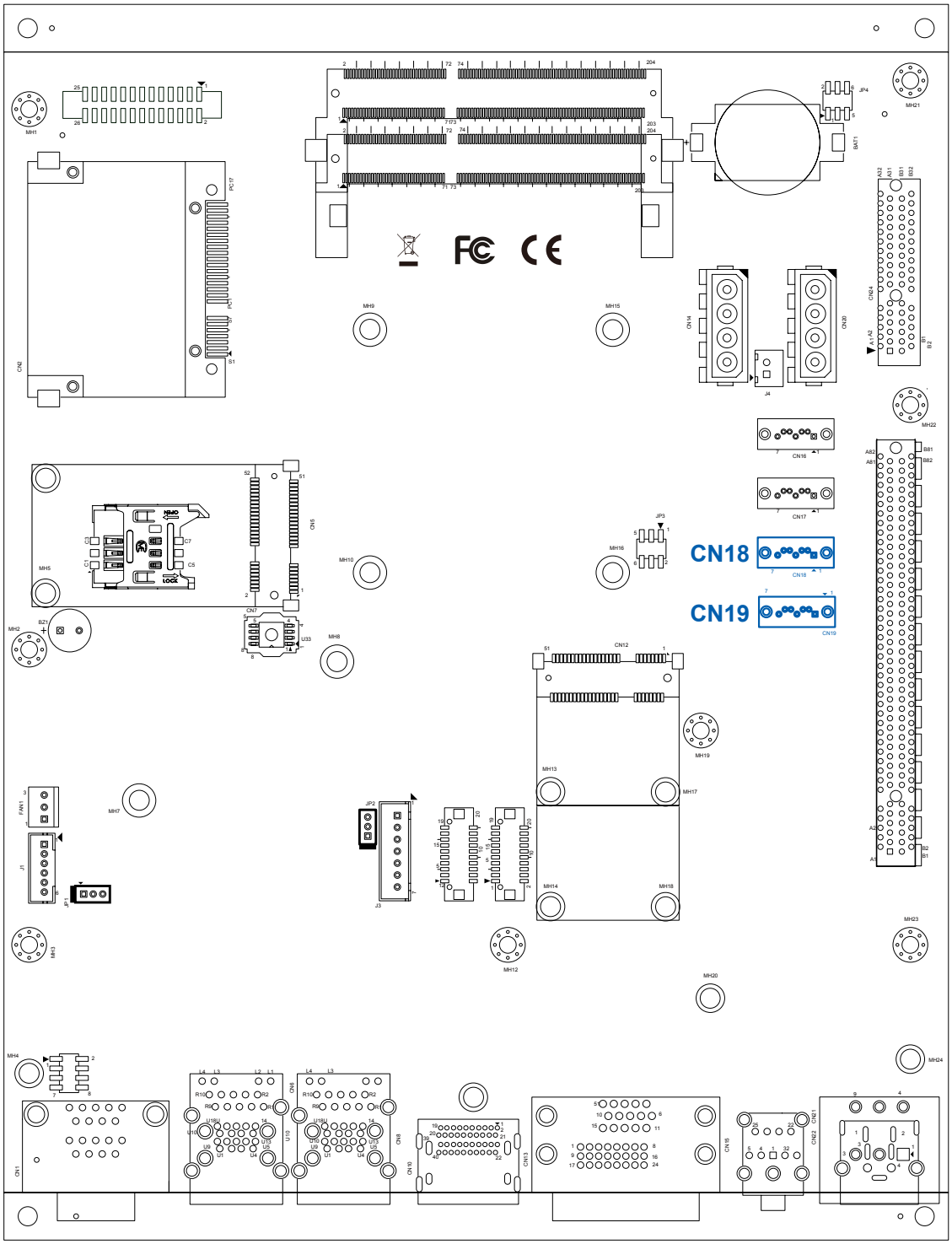


The RCS-7000 series features two high performance Serial ATA III interfaces that eases cabling to hard drives or SSD with thin and short cables while application need larger storage capacity.

CN16, CN17_SATA III Connectors

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

2.3.5 CN18, CN19 SATA-II Connector

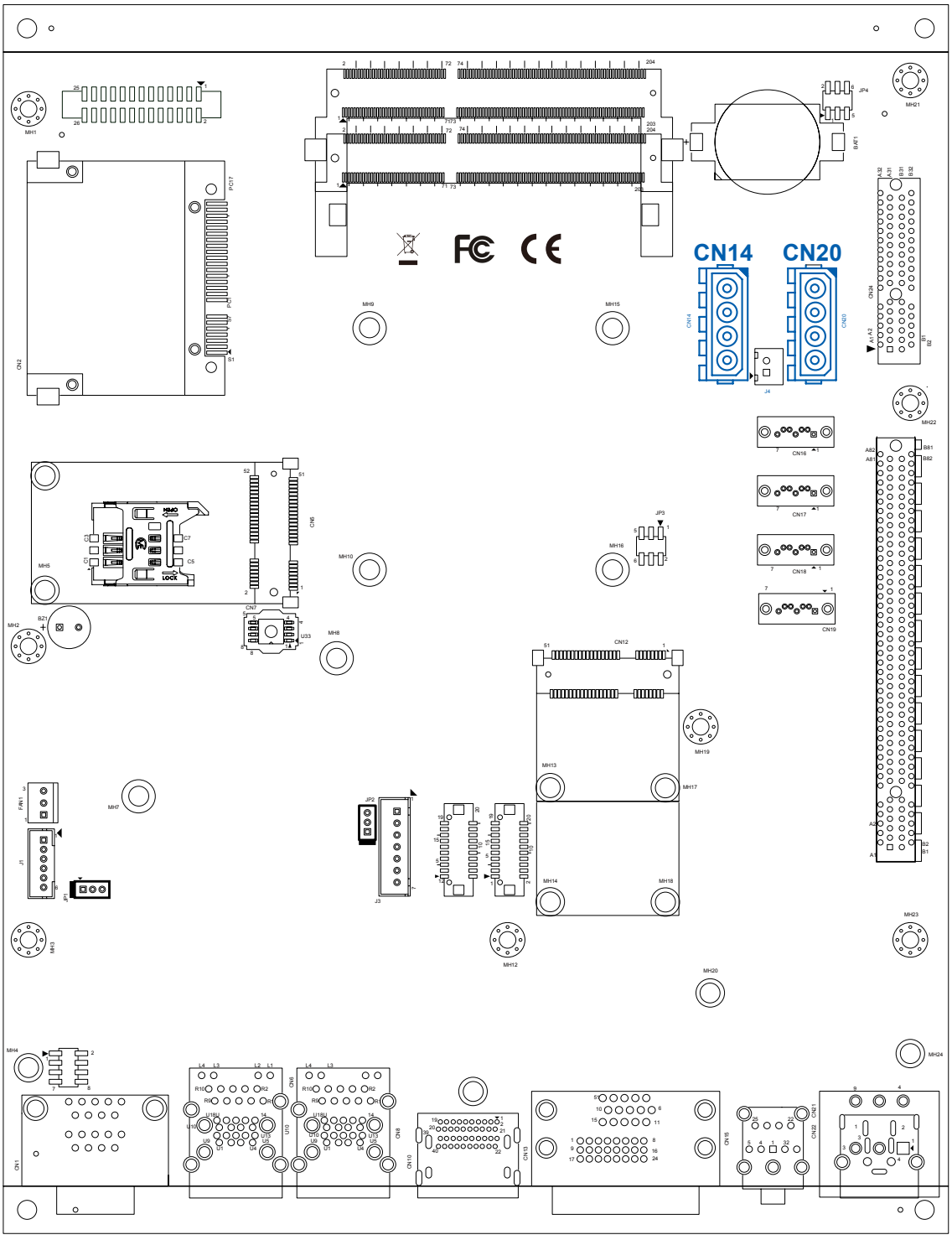


The RCS-7000 series features two high performance Serial ATA II interfaces that ease cabling to hard drives or SSD with thin and short cables while application need larger storage capacity.

CN18, CN19_SATA II Connectors

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

2.3.6 CN14, CN20 SATA Power Connector

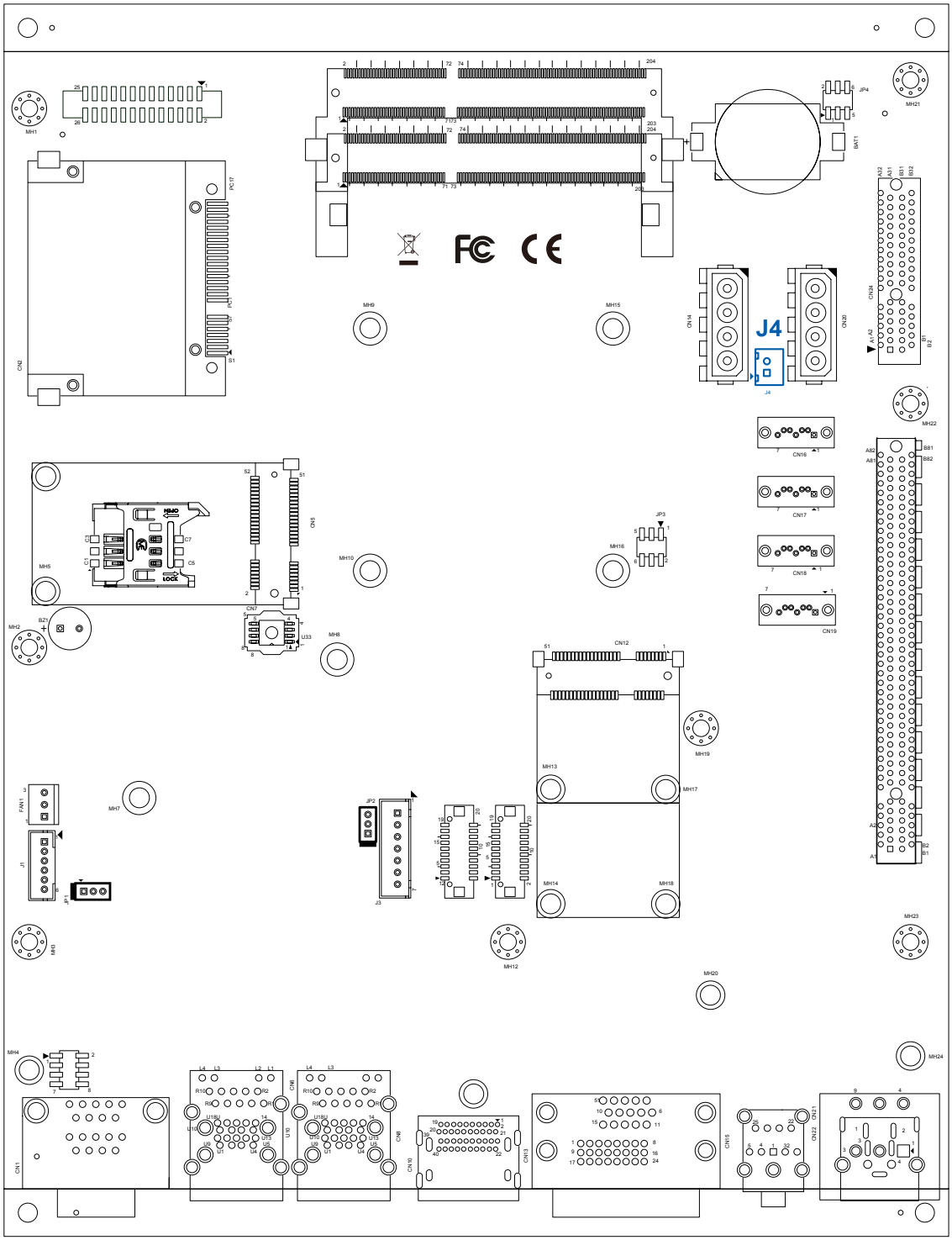


The RCS-7000 series also equips two SATA power connector. It supply 5V (2A max.) and 12V (1A max) current to the hard drive or SSD.

CN14, CN20 SATA HDD Power Connectors

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

2.3.7 SATA DOM Power Connector

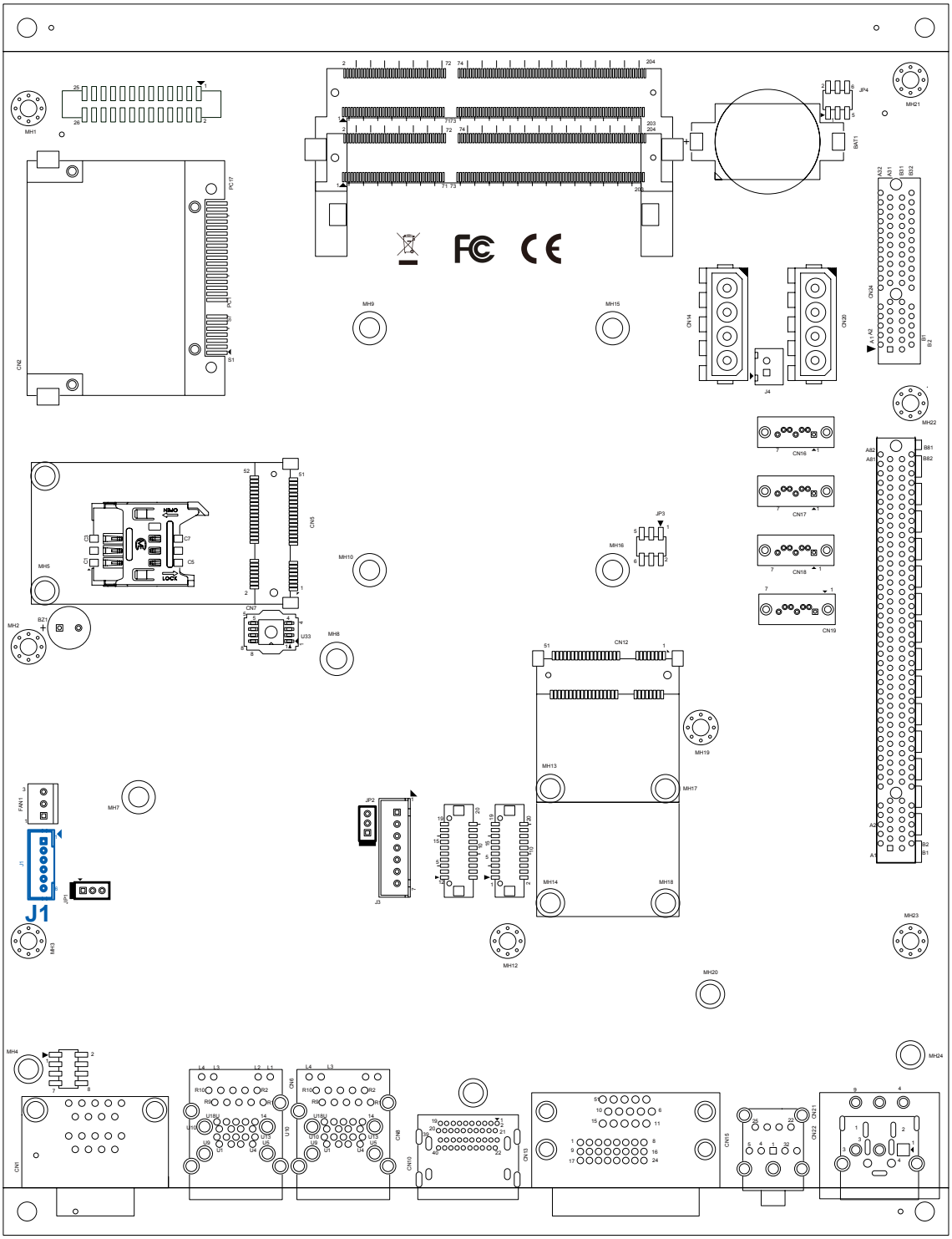


The RCS-7000 series also equips two SATA power connector. It supply 5V (2A max.) and 12V (1A max) current to the hard drive or SSD.

J4 SATA DOM Power Connector

Pin No.	Definition	Pin No.	Definition
1	+5V	2	GND

2.3.8 J1 Internal USB Port



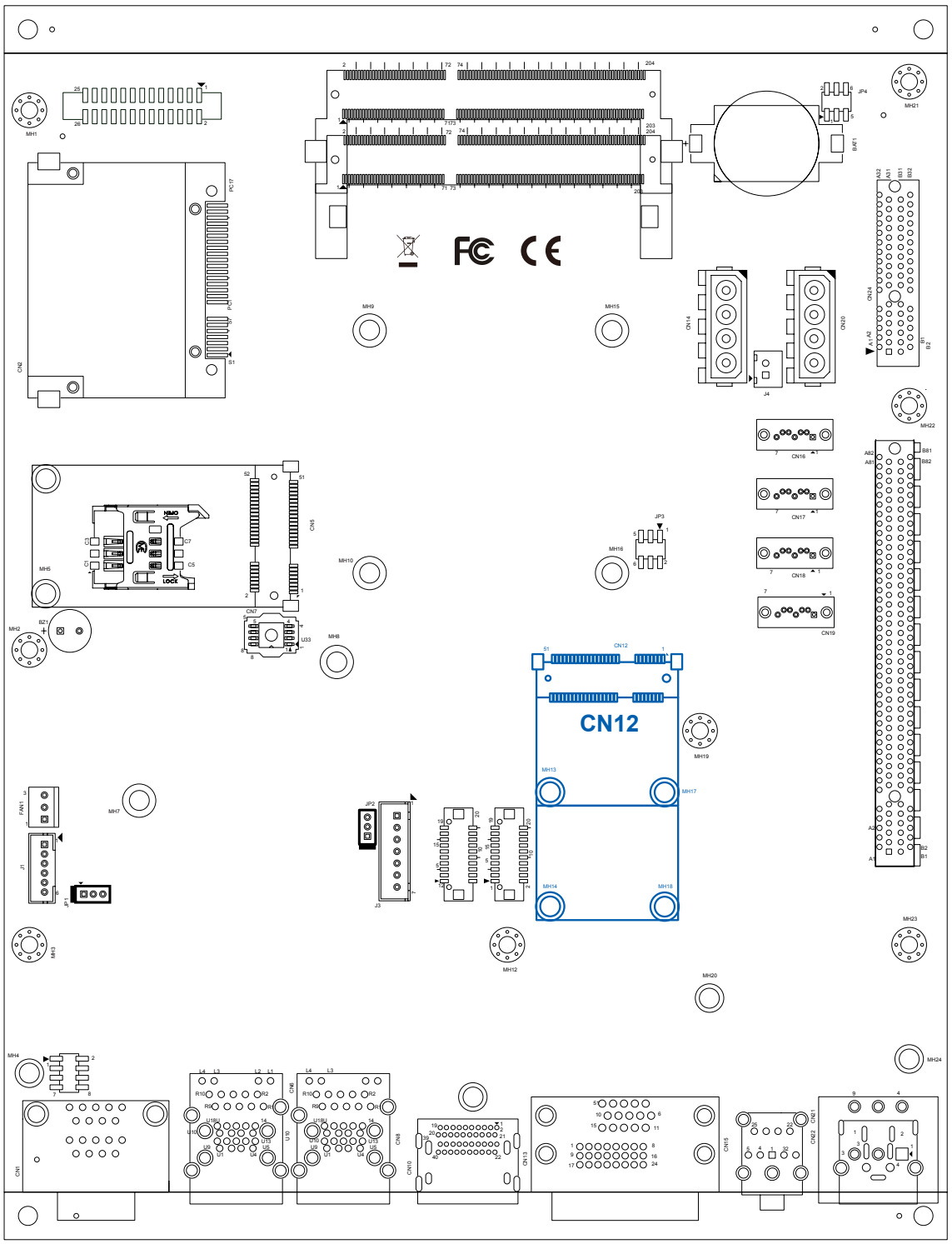
The RCS-7000 series main board provides up to two expansion USB ports using Plug and Play for Dongle Key or LCD touch Panel. The USB interface supports 480 Mbps transfer rate which comply with high speed USB specification Rev. 2.0, and are fuse protected.

The USB interface is accessed through one 1x6-pin JST 2.0mm connector. You will need an adapter cable if you use a standard USB connector. The adapter cable has a 1x6-pin connector on one end and a USB connector on the other.

J1 Internal USB Dual Ports

Pin No.	Definition	Pin No.	Definition
1	USB_VCC	4	USBD2-
2	USBD2+	5	USBD3-
3	USBD3+	6	GND

2.3.9 CN12 Mini PCIe Connector, mSATA Connector



Both mSATA and Mini PCIe share the same form-factor and similar electrical pin-out 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-IO issued an ECN change (ECN #045) to re-define 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.

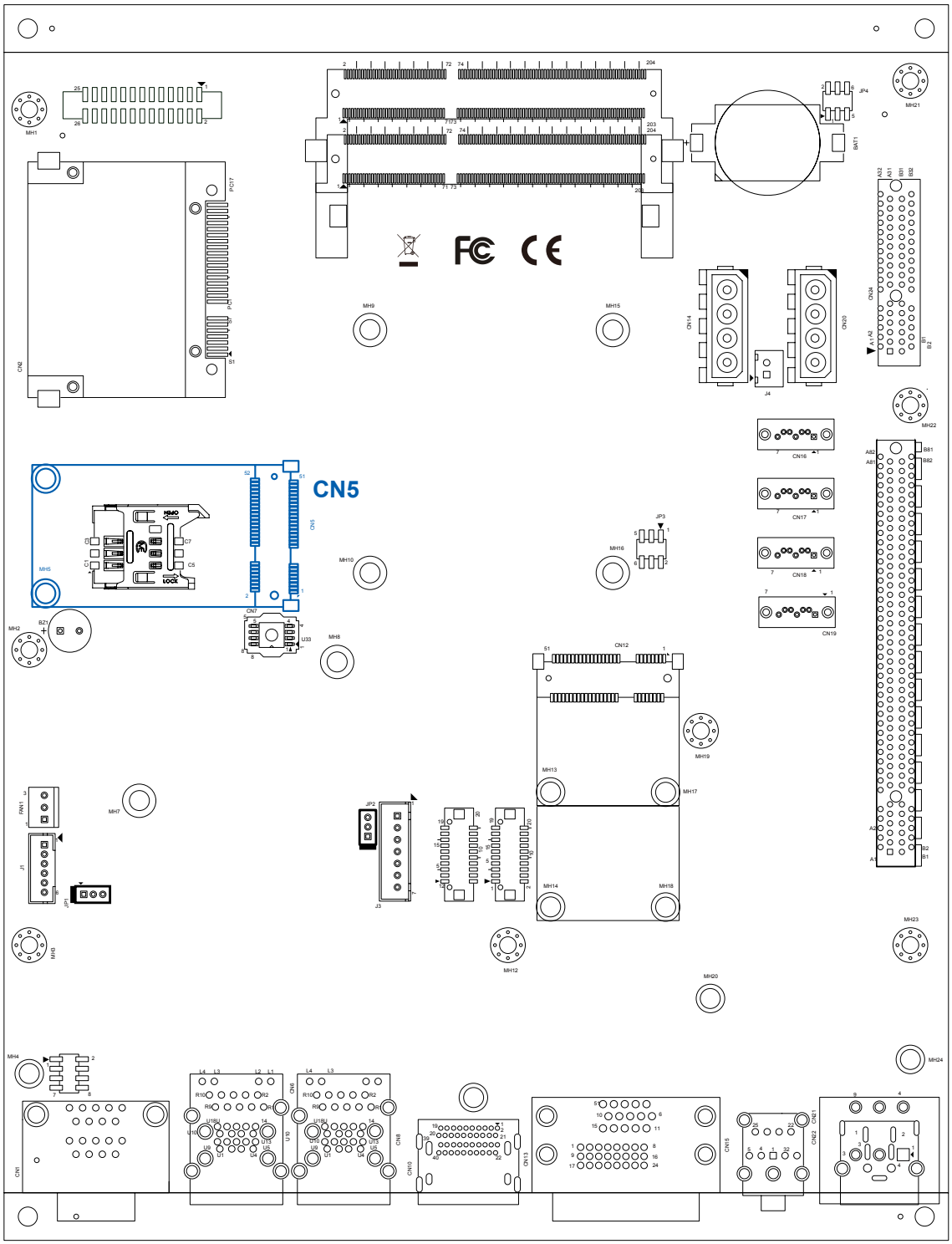
RCS-7000 series using Pin 43 status designed for switching between mSATA drive and Mini PCIe device.

Status	Mini PCIe card	mSATA drive
Pin 43	Logic 0	Logic 1

CN12 Mini PCIe Connector Pin-Out

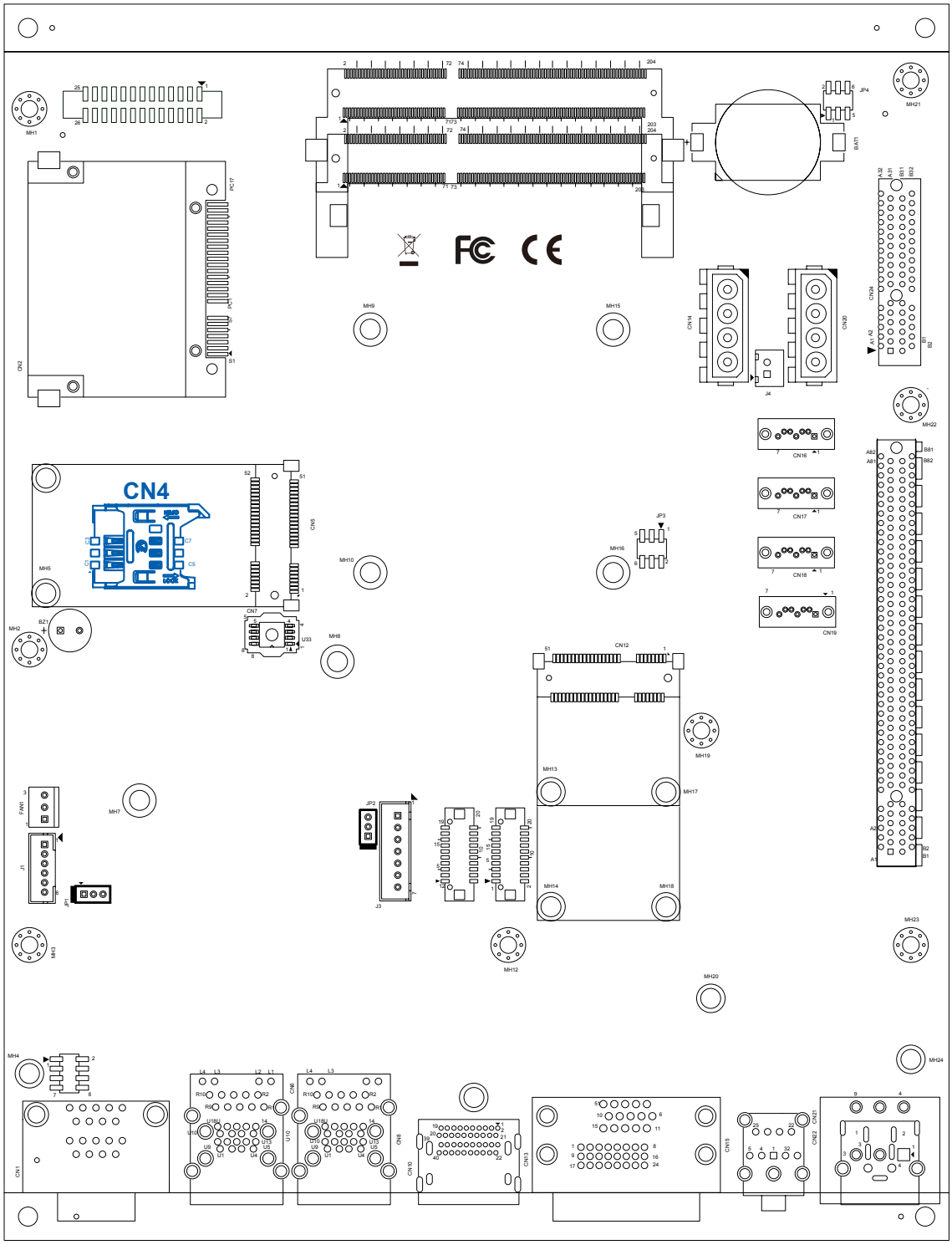
Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
51	Reserved	52	+3.3Vaux	33	PETp0	34	GND
49	Reserved	50	GND	31	PETn0	32	SMB_DATA
47	Reserved	48	+1.5V	29	GND	30	SMB_CLK
45	Reserved	46	Reserved	27	GND	28	+1.5V
43	Status	44	Reserved	25	PERp0	26	GND
41	+3.3Vaux	42	Reserved	23	PERn0	24	+3.3Vaux
39	+3.3Vaux	40	GND	21	GND	22	PERST#
37	GND	38	USB_D+	19	Reserved	20	reserved
35	GND	36	USB_D-	17	Reserved	18	GND
Mechanical Key							
15	GND	16	Reserved	7	CLKREQ#	8	Reserved
13	REFCLK+	14	Reserved	5	Reserved	6	1.5V
11	REFCLK-	12	Reserved	3	Reserved	4	GND
9	GND	10	Reserved	1	WAKE#	2	3.3Vaux

2.3.10 CN5 Mini PCIe Connector, CN4 SIM Card



CN5 Mini PCIe Connector Pin-Out

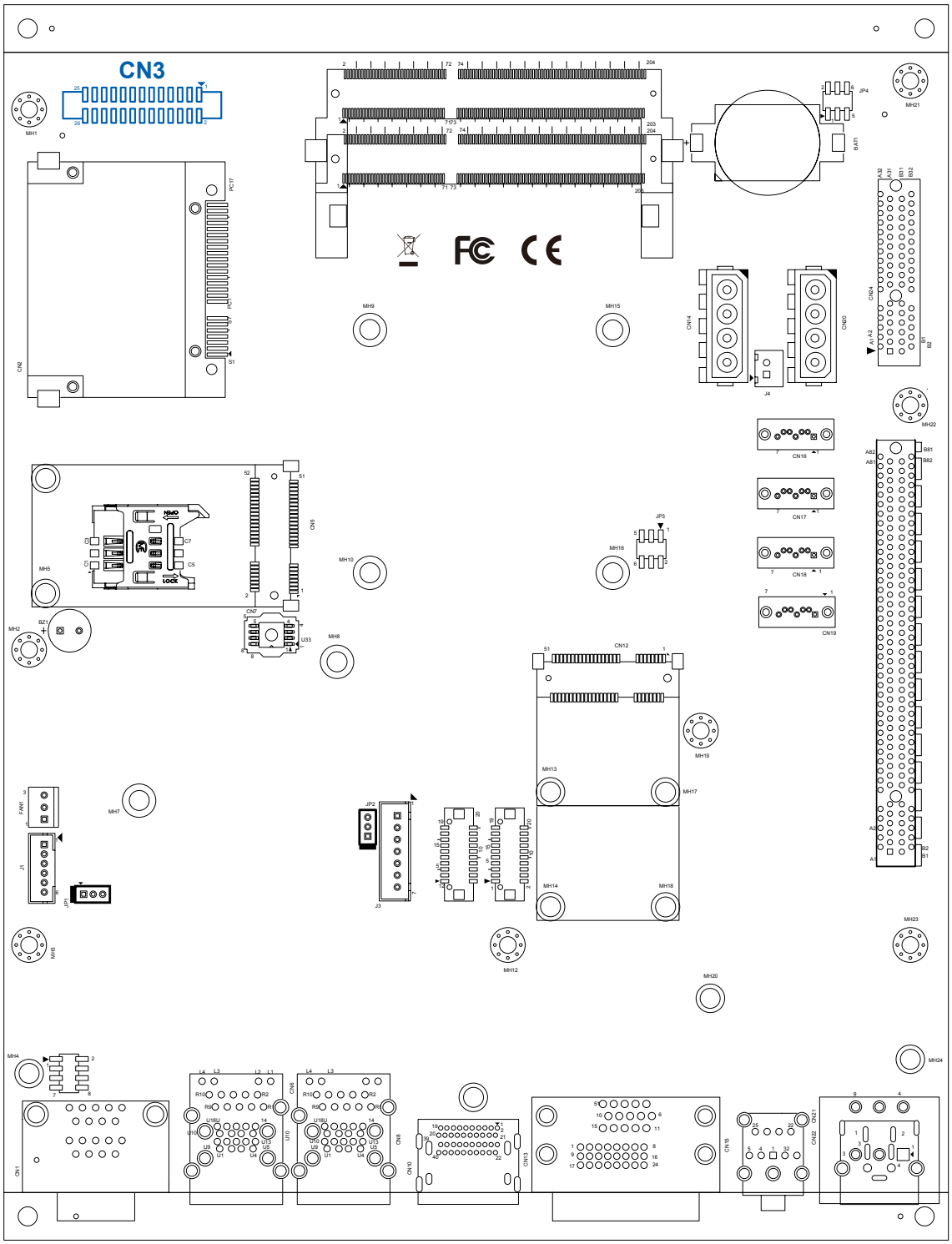
Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
51	Reserved	52	+3.3Vaux	33	PETp0	34	GND
49	Reserved	50	GND	31	PETn0	32	SMB_DATA
47	Reserved	48	+1.5V	29	GND	30	SMB_CLK
45	Reserved	46	Reserved	27	GND	28	+1.5V
43	Status	44	Reserved	25	PERp0	26	GND
41	+3.3Vaux	42	Reserved	23	PERn0	24	+3.3Vaux
39	+3.3Vaux	40	GND	21	GND	22	PERST#
37	GND	38	USB_D+	19	Reserved	20	reserved
35	GND	36	USB_D-	17	Reserved	18	GND
Mechanical Key							
15	GND	16	Reserved	7	CLKREQ#	8	Reserved
13	REFCLK+	14	Reserved	5	Reserved	6	1.5V
11	REFCLK-	12	Reserved	3	Reserved	4	GND
9	GND	10	Reserved	1	WAKE#	2	3.3Vaux



CN4 SIM Card

Pin No.	Definition	Pin No.	Definition
C1	UIM_PWR	C5	GND
C2	UIM_RESET	C6	UIM_VPP
C3	UIM_CLK	C7	UIM_DATA
C4	GND		

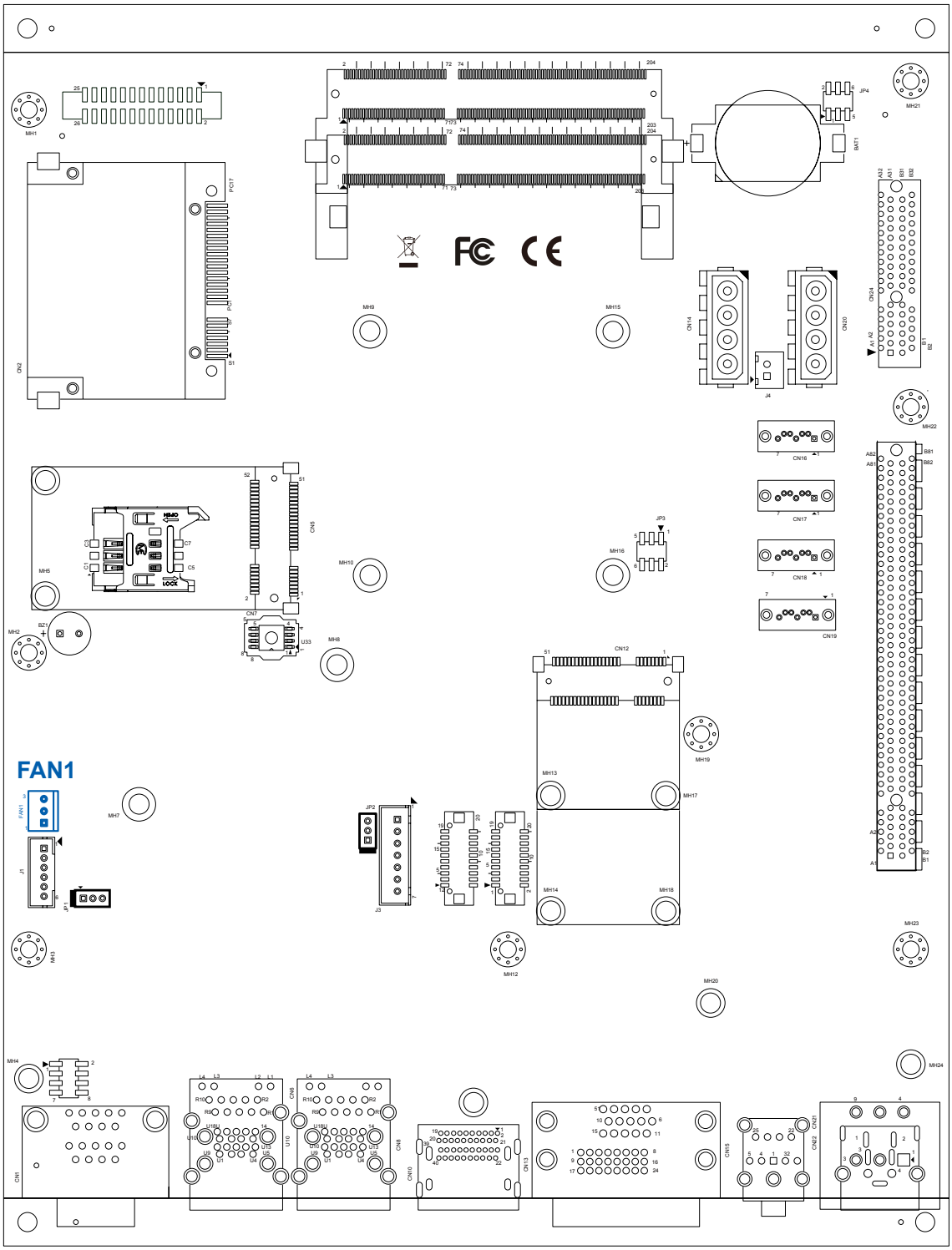
2.3.11 CN3 GPIO



The RCS-7000 series offers 16 programmable I/O within TTL 5V tolerance.
Using SM-bus GPIO Controller PCA9555 at address 40

Pin No.	Definition	Pin No.	Definition
1	GND	14	GND
2	DO_GP0_7	15	DI_GP1_7
3	DO_GP0_6	16	DI_GP1_6
4	DO_GP0_5	17	DI_GP1_5
5	DO_GP0_4	18	DI_GP1_4
6	GND	19	GND
7	DO_GP0_3	20	DI_GP1_3
8	DO_GP0_2	21	DI_GP1_2
9	DO_GP0_1	22	DI_GP1_1
10	DO_GP0_0	23	DI_GP1_0
11	GND	24	GND
12	SMB_DAT_MAIN	25	+5V
13	SMB_CLK_MAIN	26	+5V

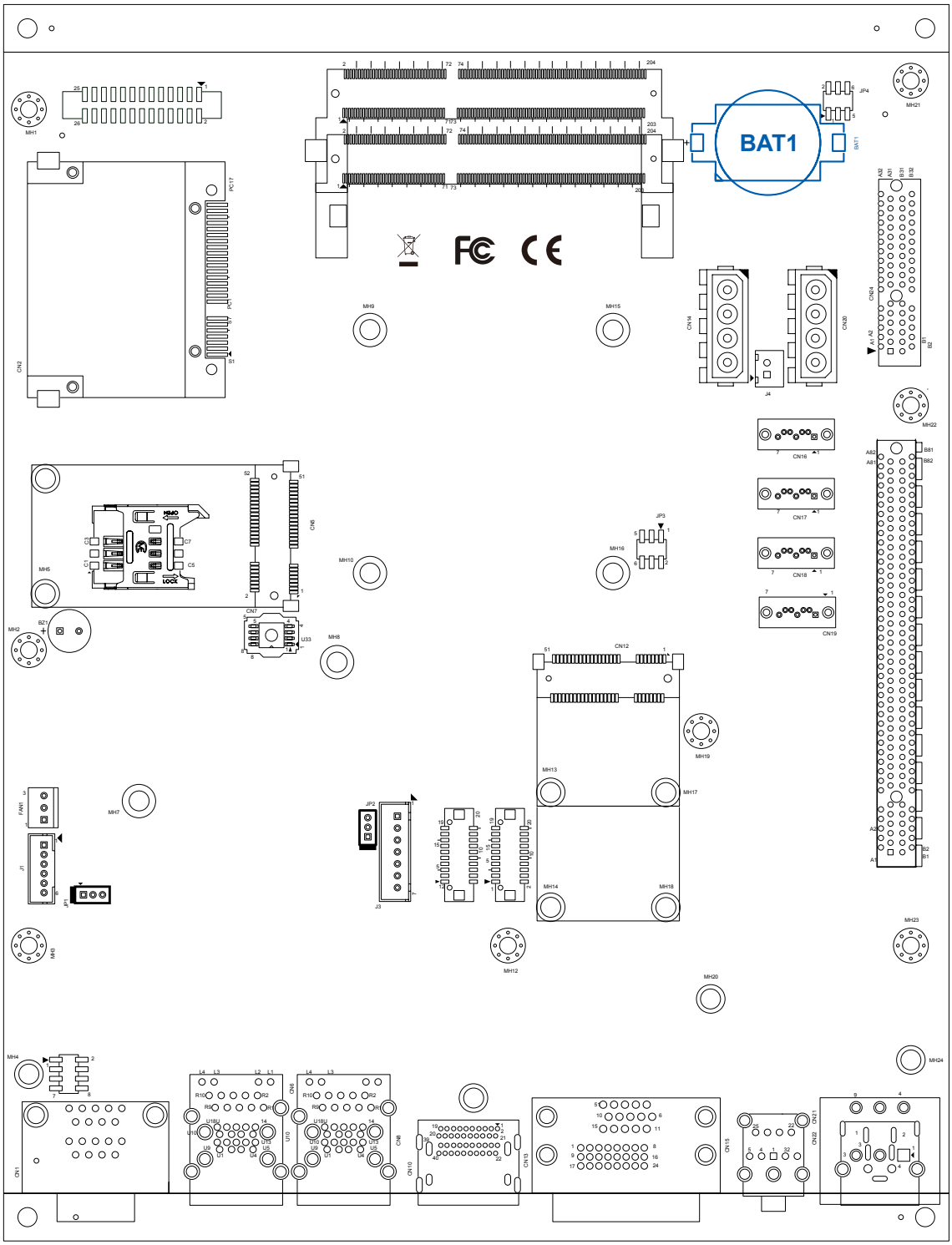
2.3.12 Fan 1



AN power connector supported for better thermal required.

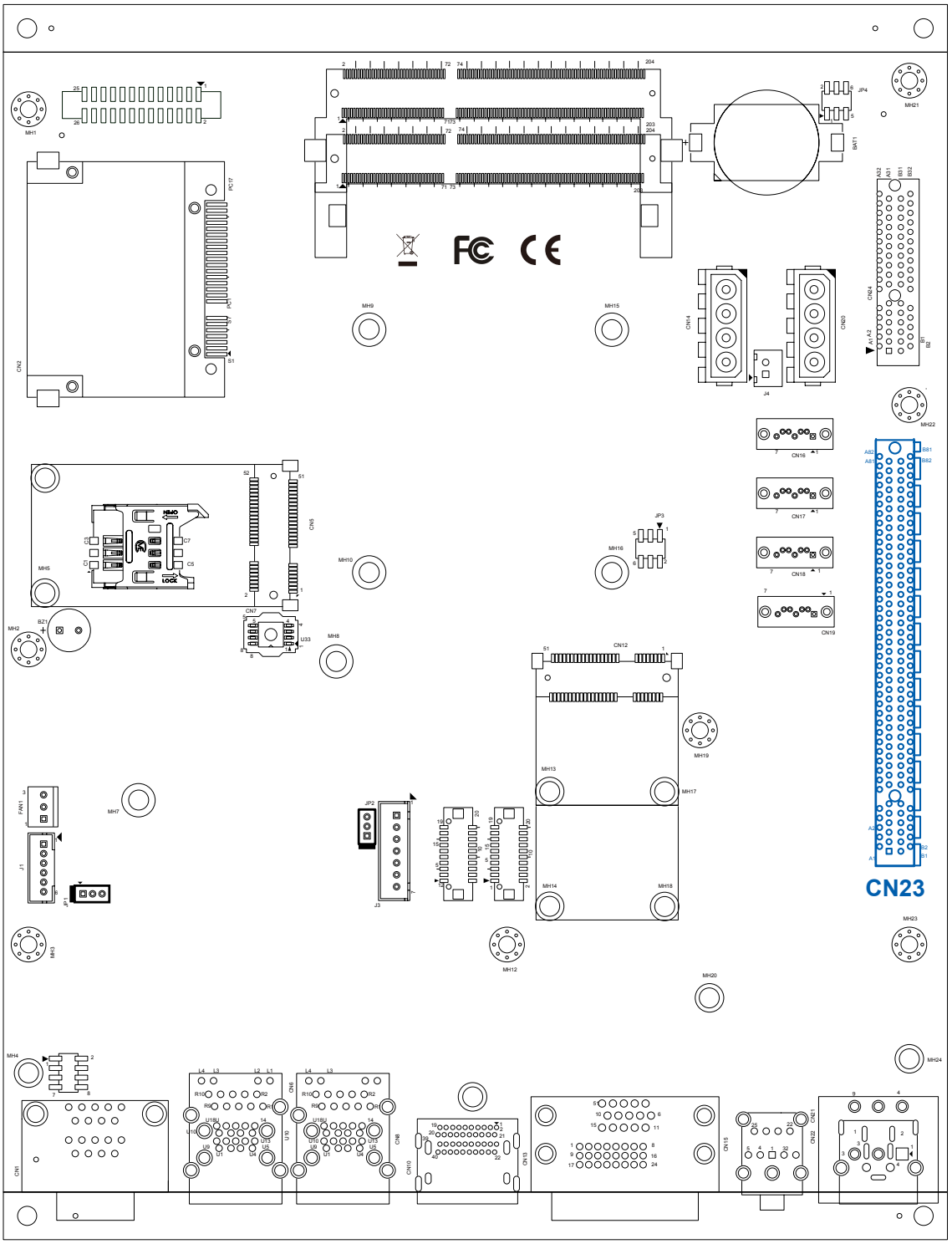
Pin No.	Definition	Pin No.	Definition
1	GND	3	Fan-speed sense
2	+12V (1.5A max)		

2.3.13 Battery



The RCS-7000 series' 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 needs to be changed, please contact the Vecow RMA service team.

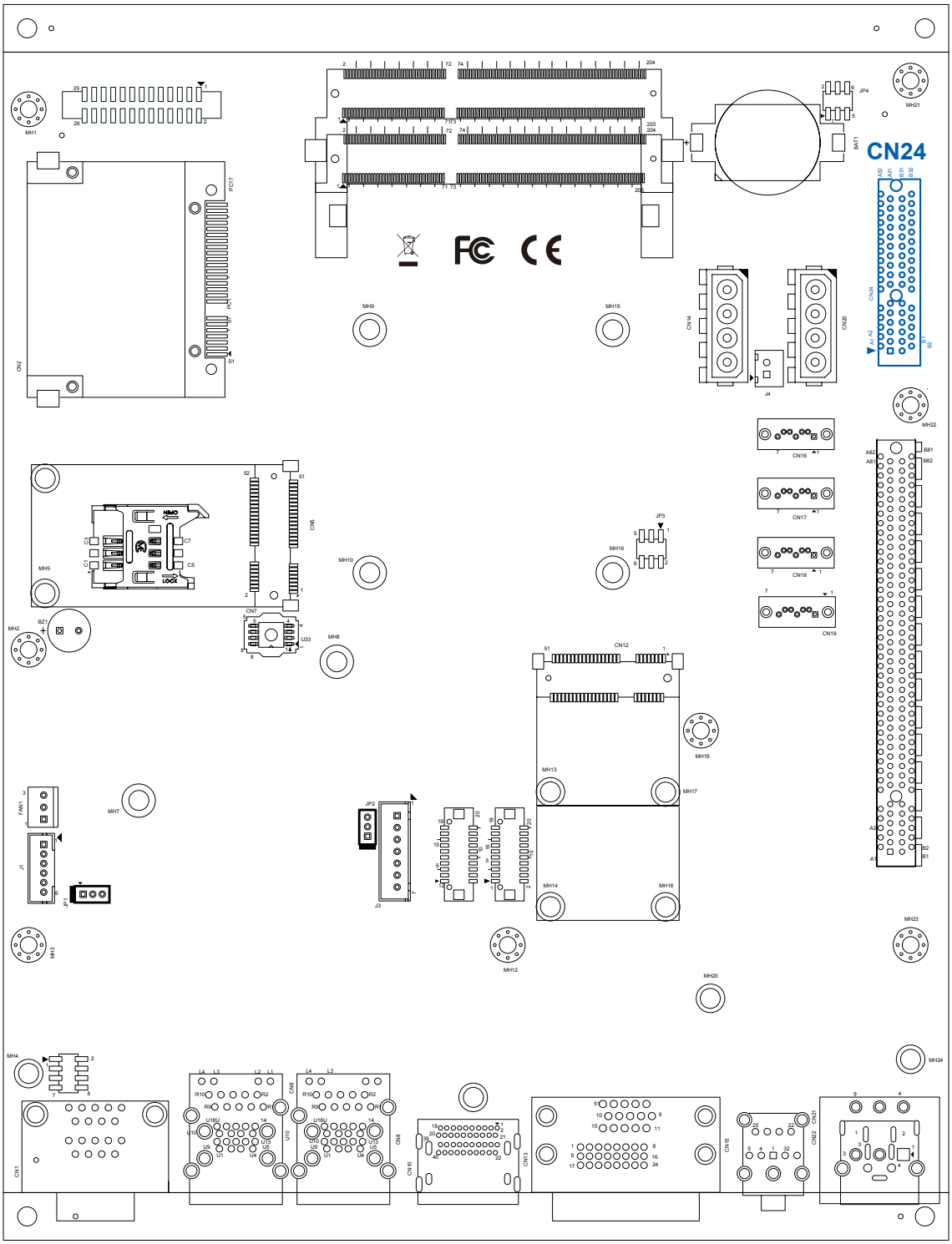
2.3.14 CN23 PCIe x16 Slot



Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
A1	N.C.	A42	GND	B1	+12V	B42	PEG_TX6N
A2	+12V	A43	PEG_RX6P	B2	+12V	B43	GND
A3	+12V	A44	PEG_RX6N	B3	+12V	B44	GND
A4	GND	A45	GND	B4	GND	B45	PEG_TX7P

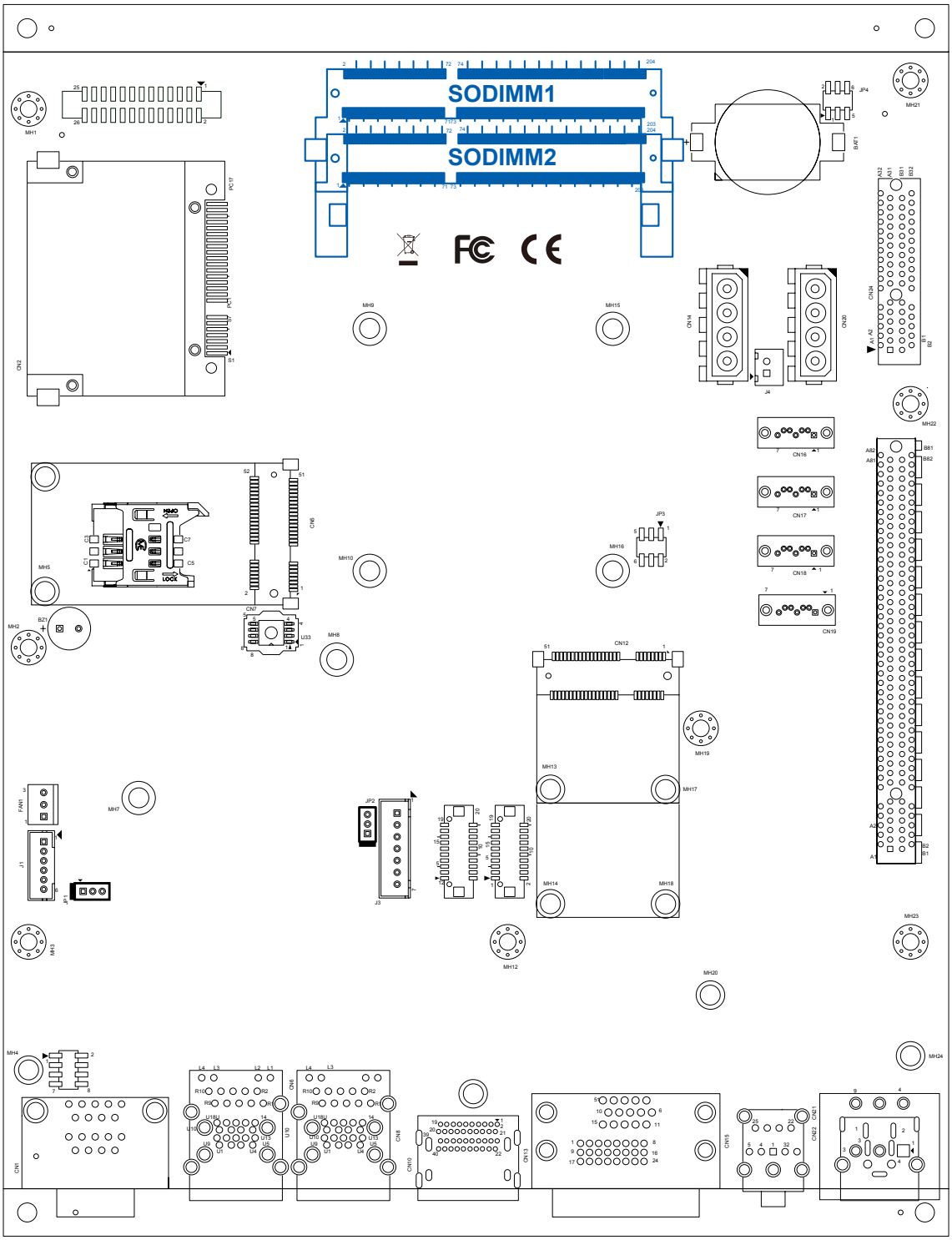
Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
A5	CLK_PEGC_P	A46	GND	B5	SMB_CLK_MAIN	B46	PEG_TX7N
A6	CLK_PEGC_N	A47	PEG_RX7P	B6	SMB_DAT_MAIN	B47	GND
A7	N.C.	A48	PEG_RX7N	B7	GND	B48	N.C.
A8	CLKREQ_PEGA#	A49	GND	B8	+3.3V	B49	GND
A9	+3.3V	A50	N.C.	B9	N.C.	B50	PEG_TX8P
A10	+3.3V	A51	GND	B10	+3.3V AUX	B51	PEG_TX8N
A11	PLT_RST #	A52	PEG_RX8P	B11	WAKE#	B52	GND
A12	GND	A53	PEG_RX8N	B12	N.C.	B53	GND
A13	CLK_PEGA_P	A54	GND	B13	GND	B54	PEG_TX9P
A14	CLK_PEGA_N	A55	GND	B14	PEG_TX0P	B55	PEG_TX9N
A15	GND	A56	PEG_RX9P	B15	PEG_TX0N	B56	GND
A16	PEG_RX0P	A57	PEG_RX9N	B16	GND	B57	GND
A17	PEG_RX0N	A58	GND	B17	N.C.	B58	PEG_TX10P
A18	GND	A59	GND	B18	GND	B59	PEGTX10N
A19	CLKREQ_PEGB#	A60	PEG_RX10P	B19	PEG_TX1P	B60	GND
A20	GND	A61	PEG_RX10N	B20	PEG_TX1N	B61	GND
A21	PEG_RX1P	A62	GND	B21	GND	B62	PEG_TX11P
A22	PEG_RX1N	A63	GND	B22	GND	B63	PEG_TX11N
A23	GND	A64	PEG_RX11P	B23	PEG_TX2P	B64	GND
A24	GND	A65	PEG_RX11N	B24	PEG_TX2N	B65	GND
A25	PEG_RX2P	A66	GND	B25	GND	B66	PEG_TX12P
A26	PEG_RX2N	A67	GND	B26	GND	B67	PEG_TX12N
A27	GND	A68	PEG_RX12P	B27	PEG_TX3P	B68	GND
A28	GND	A69	PEG_RX12N	B28	PEG_TX3N	B69	GND
A29	PEG_RX3P	A70	GND	B29	GND	B70	PEG_TX13P
A30	PEG_RX3N	A71	GND	B30	N.C.	B71	PEG_TX13N
A31	GND	A72	PEG_RX13P	B31	N.C.	B72	GND
A32	CLK_PEGB_P	A73	PEG_RX13N	B32	GND	B73	GND
A33	CLK_PEGB_N	A74	GND	B33	PEG_TX4P	B74	PEG_TX14P
A34	GND	A75	GND	B34	PEG_TX4N	B75	PEG_TX14N
A35	PEG_RX4P	A76	PEG_RX14P	B35	GND	B76	GND
A36	PEG_RX4N	A77	PEG_RX14N	B36	GND	B77	GND
A37	GND	A78	GND	B37	PEG_TX5P	B78	PEG_TX15P
A38	GND	A79	GND	B38	PEG_TX5N	B79	PEG_TX15N
A39	PEG_RX5P	A80	PEG_RX15P	B39	GND	B80	GND
A40	PEG_RX5N	A81	PEG_RX15N	B40	GND	B81	N.C.
A41	GND	A82	GND	B41	PEG_TX6P	B82	N.C.

2.3.15 CN24 PCIe x4 Slot



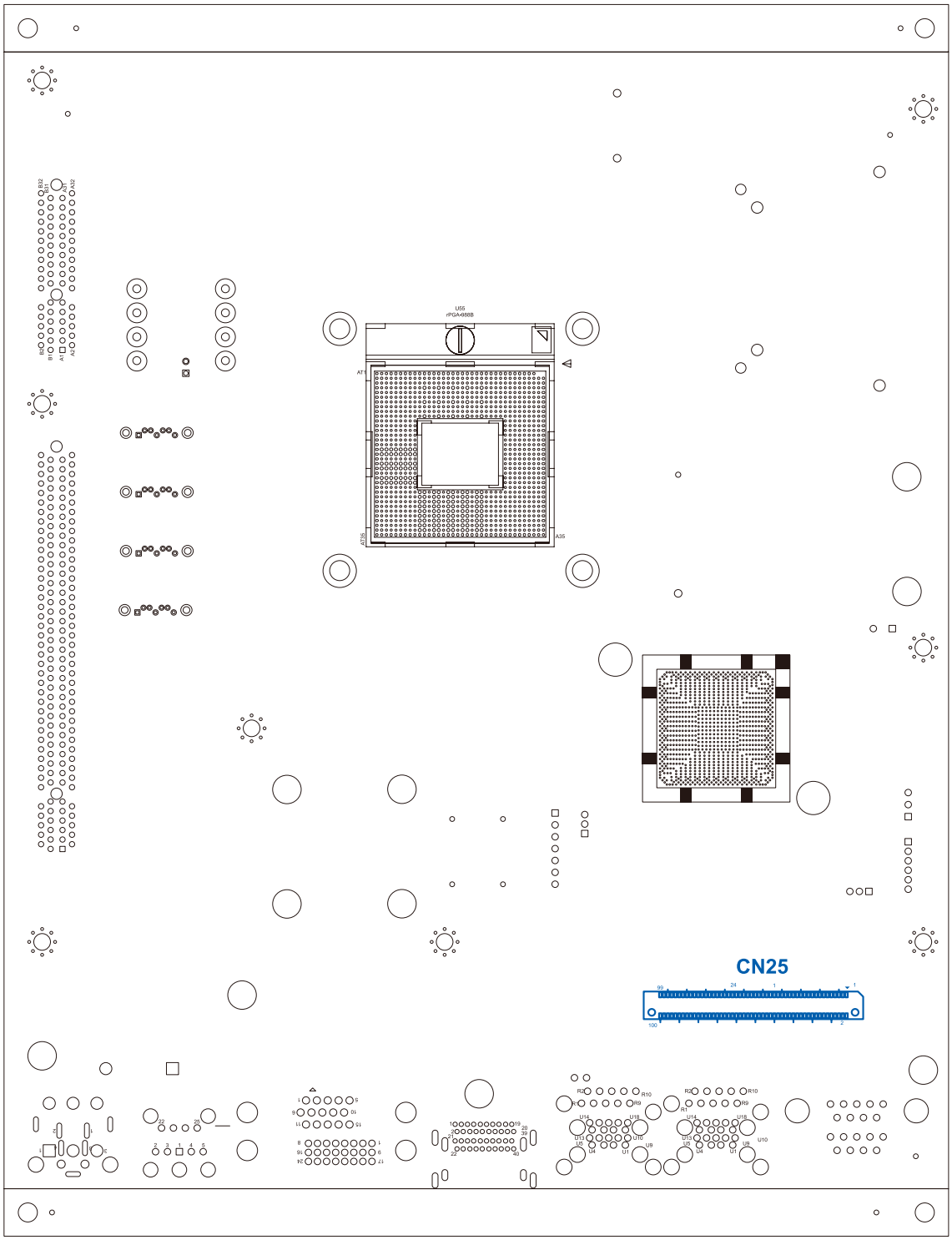
Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
A1	N.C.	A17	PCIE_RXN5	B1	+12V	B17	N.C.
A2	+12V	A18	GND	B2	+12V	B18	GND
A3	+12V	A19	N.C.	B3	+12V	B19	PCIE_TXP6
A4	GND	A20	GND	B4	GND	B20	PCIE_TXN6
A5	CLK_ PCIE5_ LAN6_P	A21	PCIE_RXP6	B5	SMB_CLK_ MAIN	B21	GND
A6	CLK_ PCIE5_ LAN6_N	A22	PCIE_RXN6	B6	SMB_DAT_ MAIN	B22	GND
A7	CLK_ PCIE5_ LAN7_P	A23	GND	B7	GND	B23	PCIE_TXP7
A8	CLK_ PCIE5_ LAN7_N	A24	GND	B8	+3.3V	B24	PCIE_TXN7
A9	+3.3V	A25	PCIE_RXP7	B9	N.C.	B25	GND
A10	+3.3V	A26	PCIE_RXN7	B10	+3.3V AUX	B26	GND
A11	PLT_RST #	A27	GND	B11	WAKE#	B27	PCIE_TXP8
A12	GND	A28	GND	B12	N.C.	B28	PCIE_TXN8
A13	CLK_ PCIE5_ LAN5_P	A29	PCIE_RXP8	B13	GND	B29	GND
A14	CLK_ PCIE5_ LAN5_N	A30	PCIE_RXN8	B14	PCIE_TXP5	B30	CLK_ PCIE5_ LAN8_P
A15	GND	A31	GND	B15	PCIE_TXN5	B31	CLK_ PCIE5_ LAN8_N
A16	PCIE_RXP5	A32	N.C.	B16	GND	B32	GND

2.3.16 Dual SO-DIMM



Automatically detect SO-DIMM DDR3 (1.5V) or DDR3L (1.35V). It could be manual select DDR3 voltage in BIOS setup menu.

2.3.17 CN25 Multiple I / O

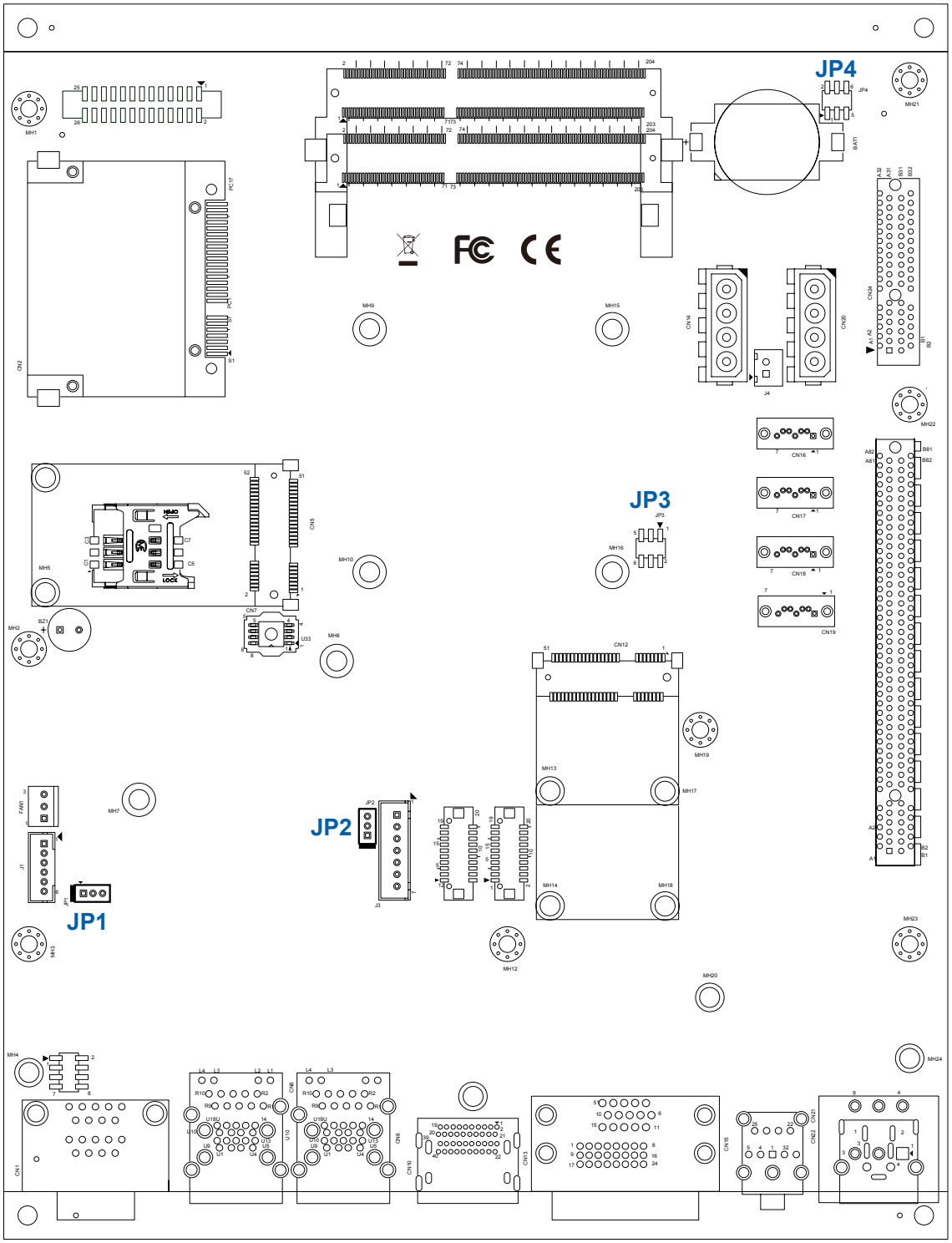


Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
1	PWRBT_ LED_P	2	FP_RST_ BTN_N	51	DIO1_OUT6	52	DIO2_OUT6
3	PWRBT_ LED_N	4	GND	53	DIO1_OUT7	54	DIO2_OUT7
5	FP_PWR_ BTN_P	6	PWR_LED_ P	55	GND(Isolated DIO Ground)	56	GND(Isolated DIO Ground)

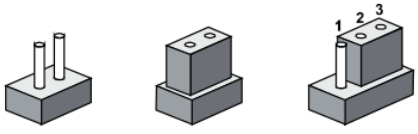
Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
7	GND	8	PWR_LED_N	57	+VDI_COM_DIO1	58	+VDI_COM_DIO 2
9	N.C.	10	HDD_LED_P	59	+VDI_COM_DIO 1	60	+VDI_COM_DIO 2
11	N.C.	12	HDD_LED_N	61	+V24_EXT_DIO 1	62	+V24_EXT_DIO 2
13	N.C.	14	N.C.	63	+V24_EXT_DIO 1	64	+V24_EXT_DIO 2
15	GND(Isolated DIO Ground)	16	GND(Isolated DIO Ground)	65	N.C.	66	N.C.
17	DIO1_IN0	18	DIO2_IN0	67	GND	68	GND
19	DIO1_IN1	20	DIO2_IN1	69	COM3_DCD_Z	70	COM4_DCD_Z
21	DIO1_IN2	22	DIO2_IN2	71	COM3_DSR_Z	72	COM4_DSR_Z
23	DIO1_IN3	24	DIO2_IN3	73	COM3_RXD_Z	74	COM4_RXD_Z
25	GND(Isolated DIO Ground)	26	GND(Isolated DIO Ground)	75	GND	76	GND
27	DIO1_IN4	28	DIO2_IN4	77	COM3_RTS_Z	78	COM4_RTS_Z
29	DIO1_IN5	30	DIO2_IN5	79	COM3_TXD_Z	80	COM4_TXD_Z
31	DIO1_IN6	32	DIO2_IN6	81	COM3_CTS_Z	82	COM4_CTS_Z
33	DIO1_IN7	34	DIO2_IN7	83	GND	84	GND
35	GND(Isolated DIO Ground)	36	GND(Isolated DIO Ground)	85	COM3_DTR_Z	86	COM4_DTR_Z
37	DIO1_OUT0	38	DIO2_OUT0	87	COM3_RI_Z	88	COM4_RI_Z
39	DIO1_OUT1	40	DIO2_OUT1	89	GND	90	GND
41	DIO1_OUT2	42	DIO2_OUT2	91	N.C.	92	N.C.
43	DIO1_OUT3	44	DIO2_OUT3	93	+5V AUX	94	+5V AUX
45	GND(Isolated DIO Ground)	46	GND(Isolated DIO Ground)	95	USB_D_4N	96	USB_D_5N
47	DIO1_OUT4	48	DIO2_OUT4	97	USB_D_4P	98	USB_D_5P
49	DIO1_OUT5	50	DIO2_OUT5	99	GND	100	GND

2.4 Main Board Jumper Setting

The figure below is the top view of the RCS-7000 series main board which is the main board used in the RCS-7000 series system. It shows the location of the jumpers.

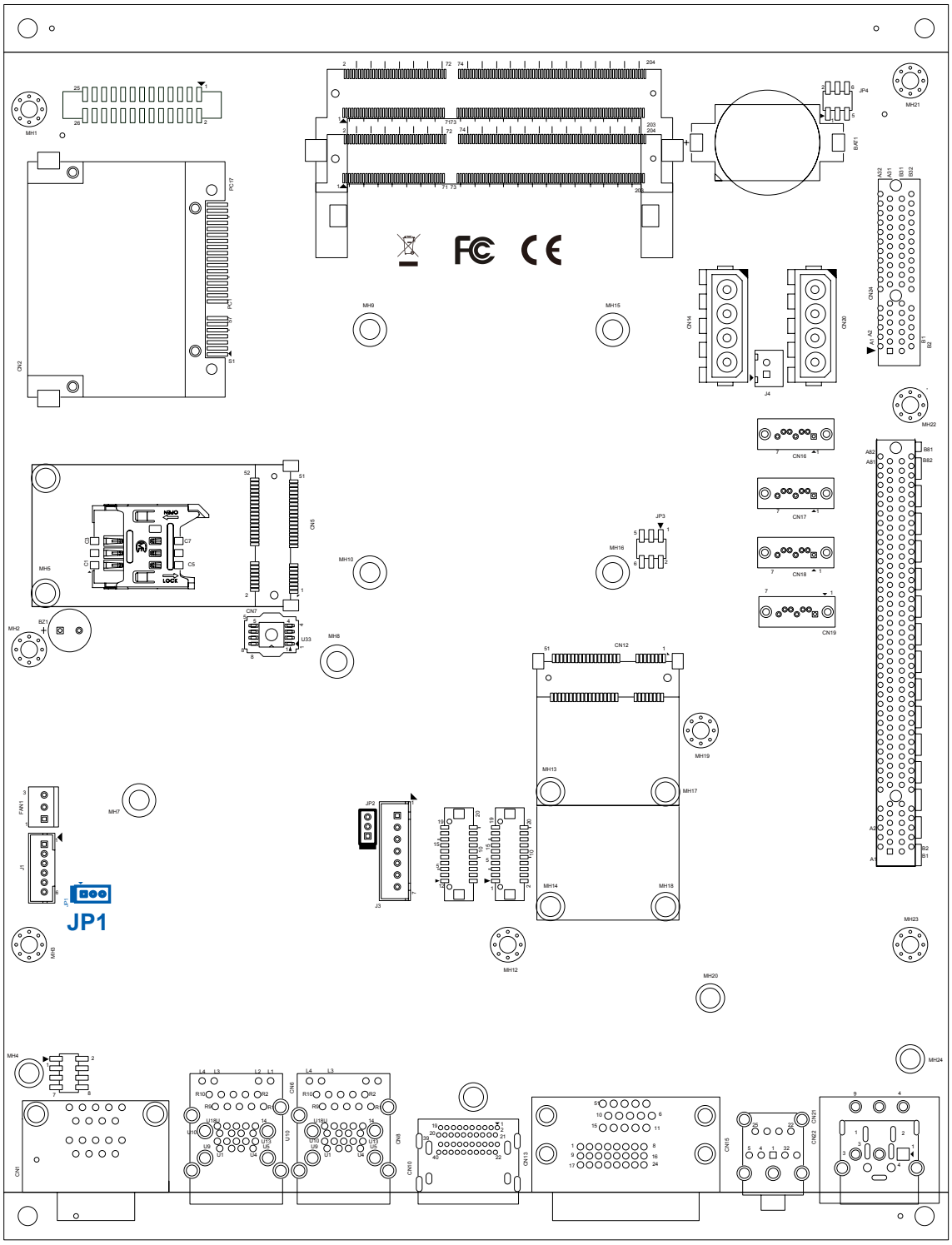


You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper, you connect the pins with the clip. To “open” a jumper, you 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.



open closed closed 2-3

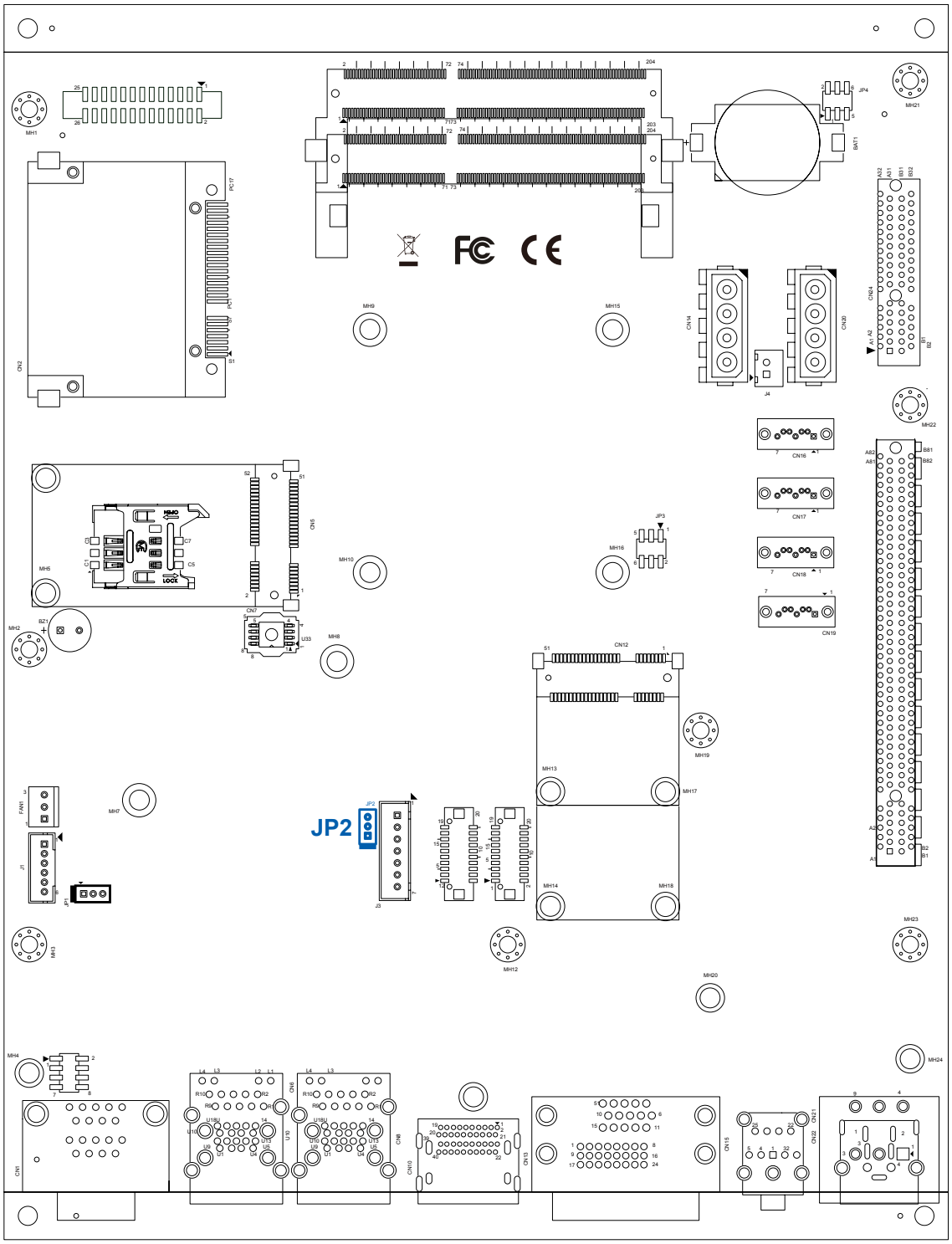
2.4.1 JP1 AT/ ATX Power Mode Jumper Setting



The RCS-7000 series main board contains a jumper that can switch the AT/ATX Power Setting. Normally this jumper should be set with Pin 4 and Pin 6 in ATX power mode. And power on the system by the 2-pin terminal block at the top panel. If you set it with Pin 2 and Pin 4 in AT power mode. It will send the power button signal to power on the system automatically.

Setting	Description	Setting	Description
1-2	AT Mode	2-3	ATX Mode (Default)

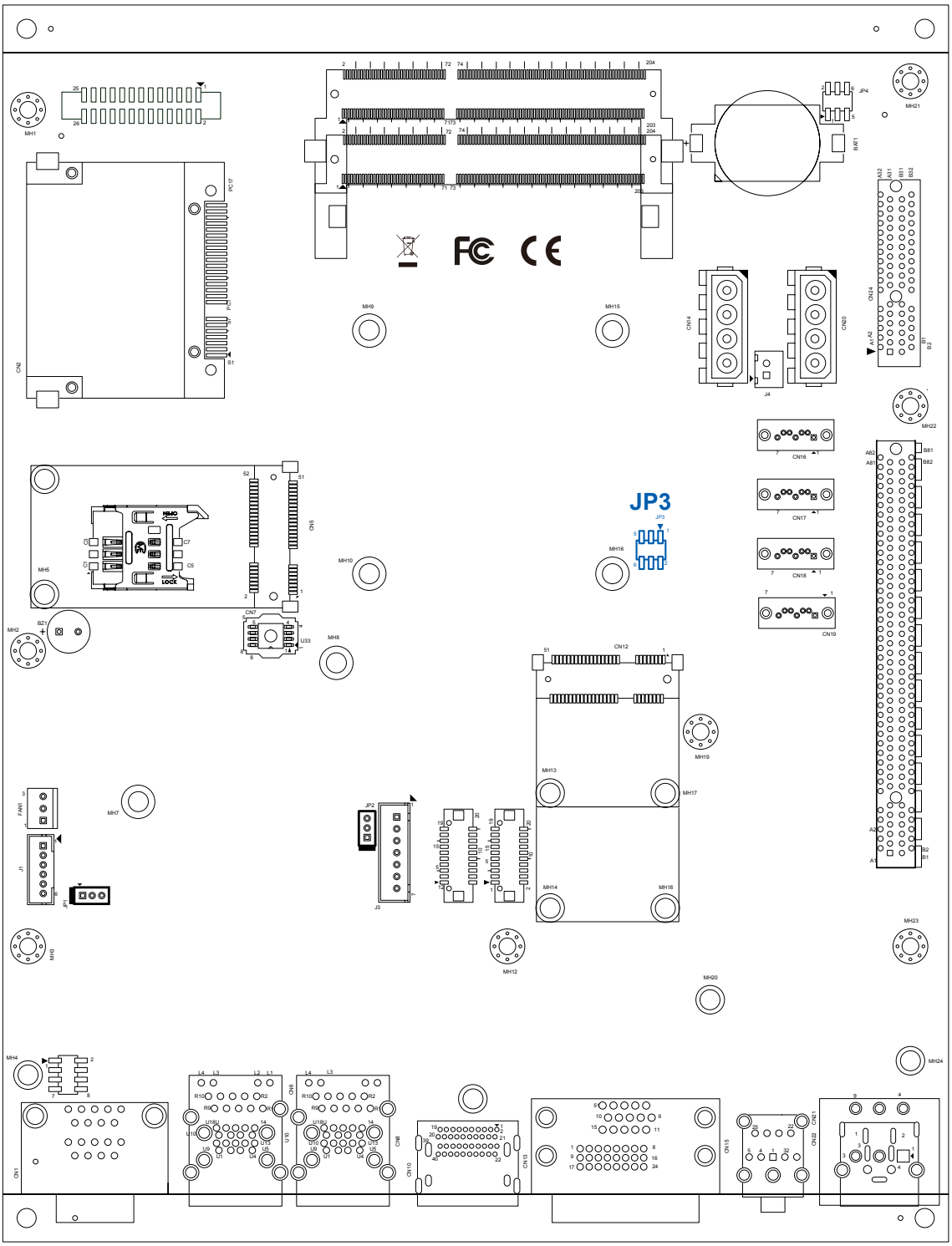
2.4.2 JP2 LVDS Backlight Power Selection



JP2 provides LVDS voltage selection function, closing Pin 1, 2 is for 3.3V LVDS power input; closing Pin 2, 3 is for 5V LVDS power input.

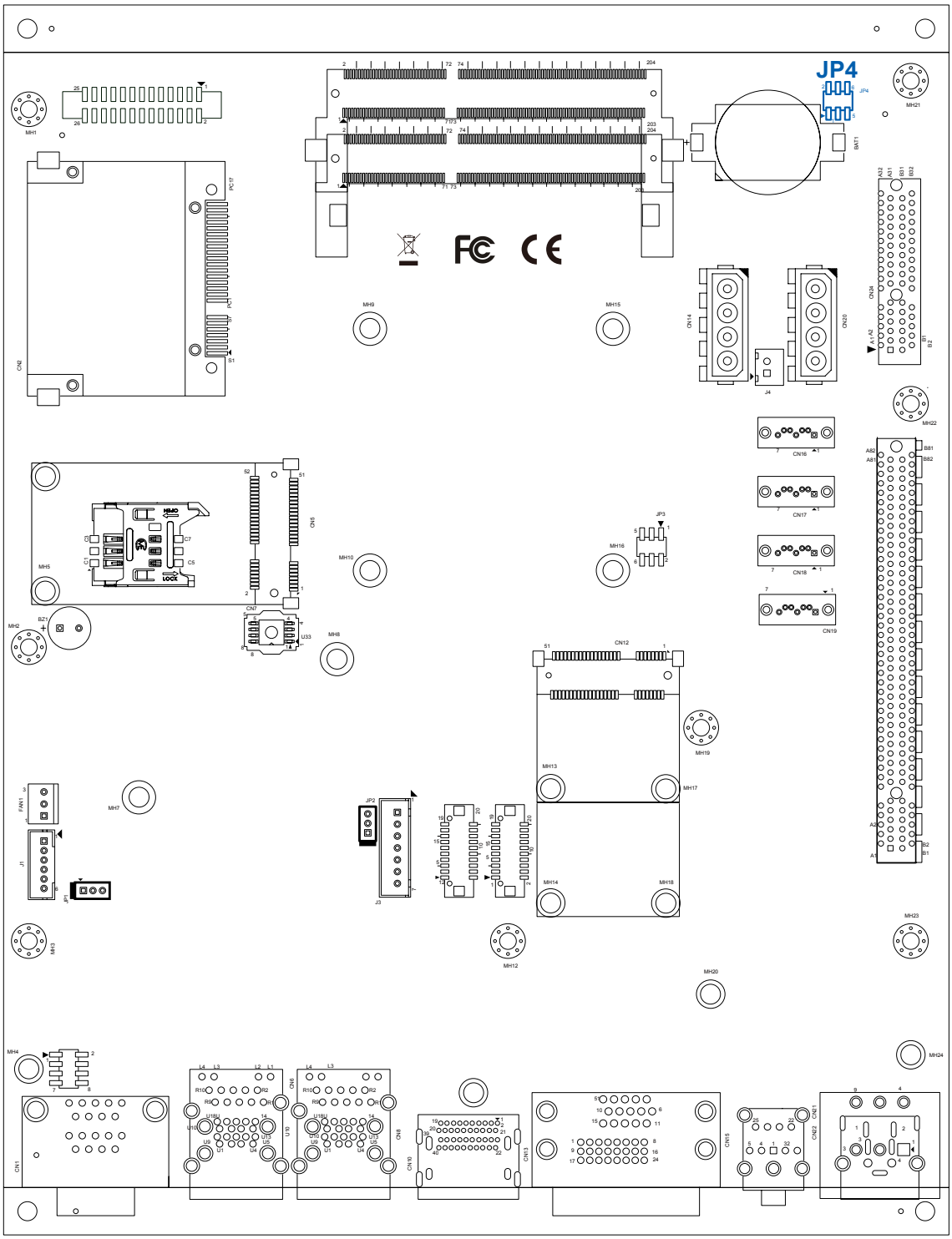
Setting	Description	Setting	Description
1-2	+3.3V (Default)	2-3	+5V

2.4.3 JP3 PCIe x16 Configuration



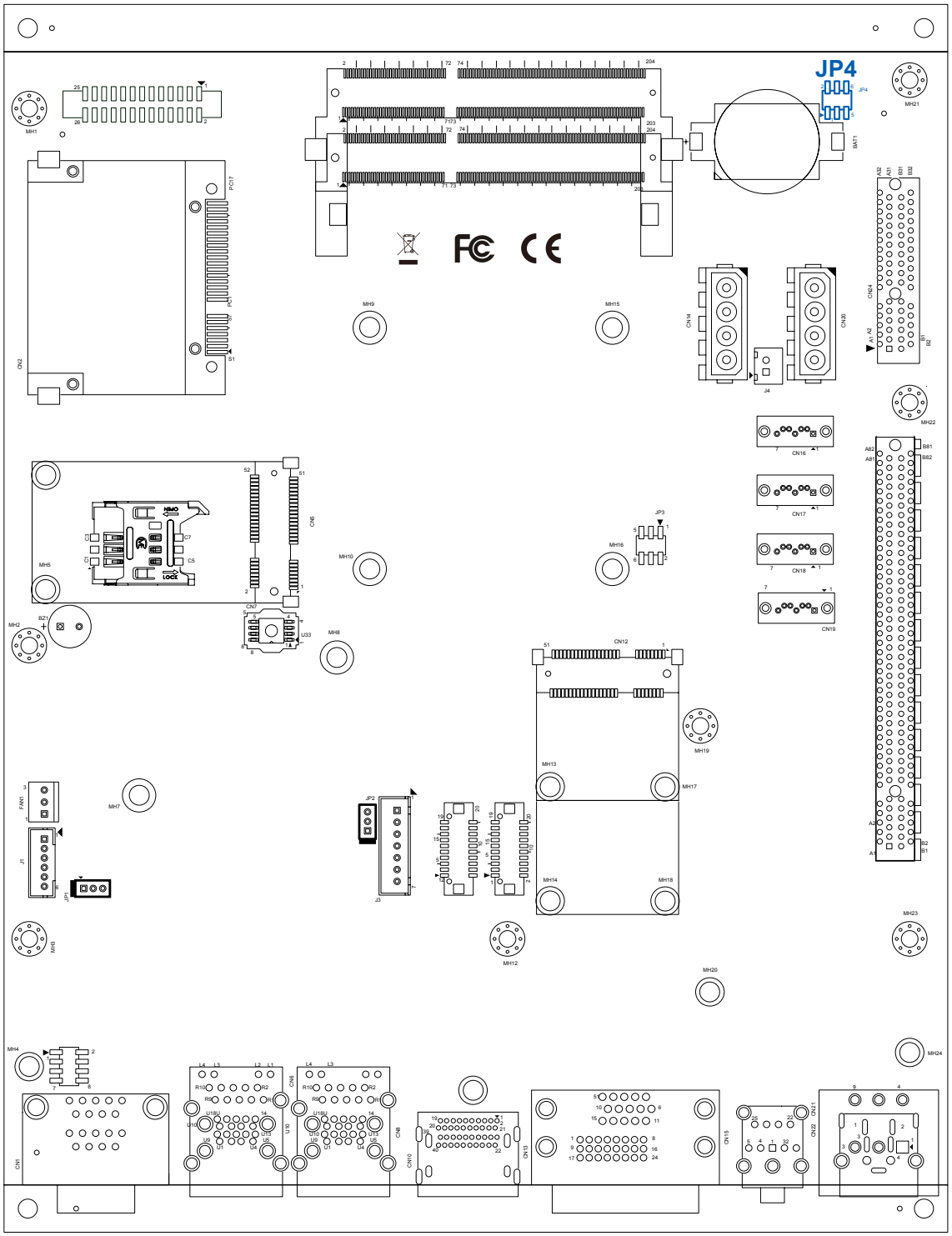
Model	PCI & PCIe Slot	Setting	Description
RCS-7422	2 PCI + 2 PCIe x4	(4-6), (3-5)	X8, x4, x4
RCS-7422A	2 PCI + 1 PCIe x4 + 1 PCIe x8	(4-6), (3-5)	X8, x4, x4
RCS-7404	4 PCI	(2-4), (1-3)	X16 (Default)
RCS-7220	1 PCIe x4 + 1 PCIe x16	(2-4), (1-3)	X16 (Default)
RCS-7220A	2 PCIe x8	(2-4), (3-5)	X8, x8
RCS-7211	1 PCI + 1 PCIe x16	(2-4), (1-3)	X16 (Default)

2.4.4 JP4(A) CMOS Clear Jumper Setting



Setting	Description	Setting	Description
1-3	Normal (Default)	3-5	Clear CMOS

2.4.5 JP4(B) CMOS Clear Jumper Setting



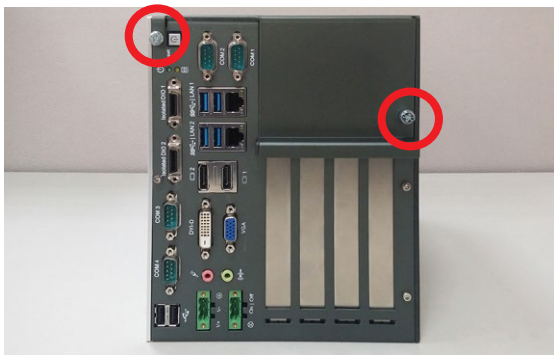
Setting	Description	Setting	Description
2-4	Normal (Default)	4-6	Clear ME

3

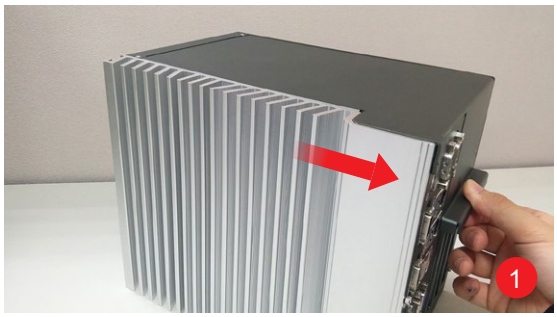
HARDWARE INSTALLATION

Step 1. How To Open Your RCS-7400 Chassis

Remove the top cover of the chassis, loosen the thumbscrews on the front panel by hand screwdriver.

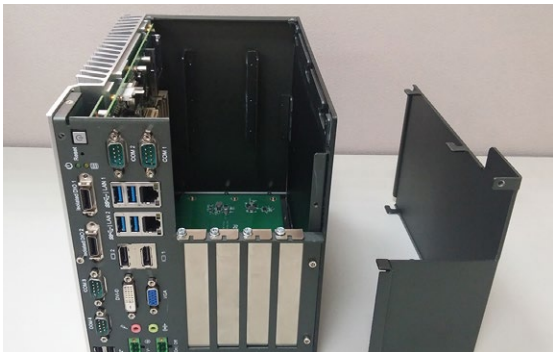


Push out the top cover as the image 1.
Push up the top cover as the image 2.

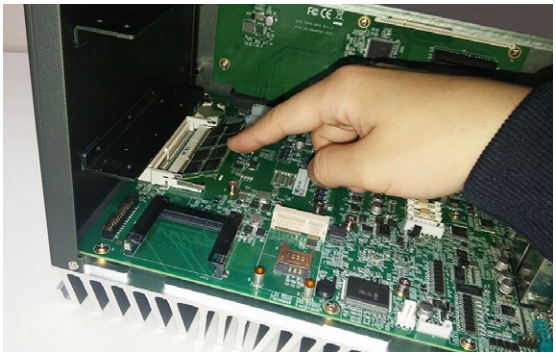


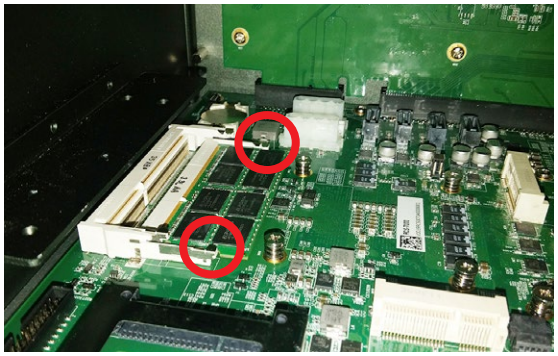
Step 2. Installing DDR3 SO-DIMM Modules

Repeat Step 1.



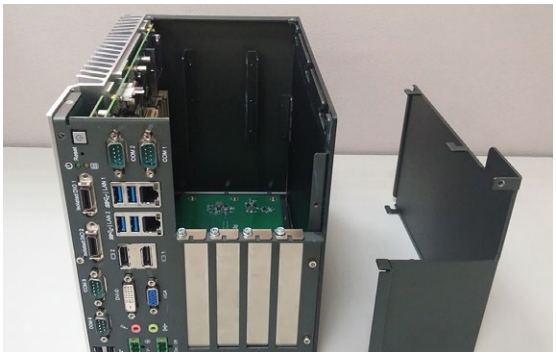
Tile the SODIMM module and insert it to the SODIMM socket. As it's firmly contacted with socket connectors, press it down until the clamps of the socket snap into the latching position of SODIMM module.





Step 3. Installing PCI/PCIe Card

Repeat Step 1.
Loosen M3 PCI/PCIe bracket screw.



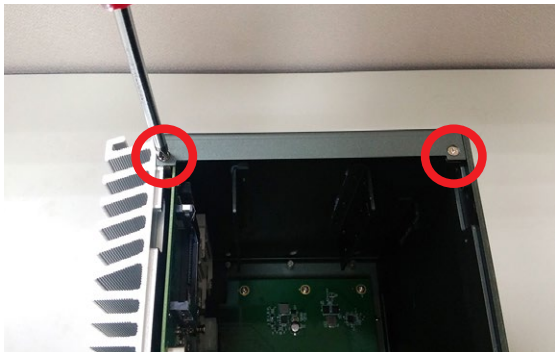
Remove PCI/PCIe bracket, then install PCI/PCIe module, then inser the PCI/PCIe card.

Fasten M3 PCI/PCIe bracket screw.

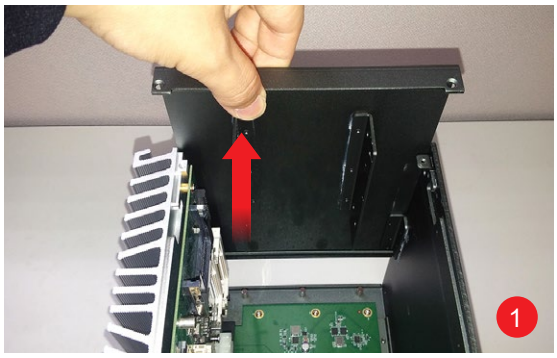
Step 4. Installing HDD/SSD

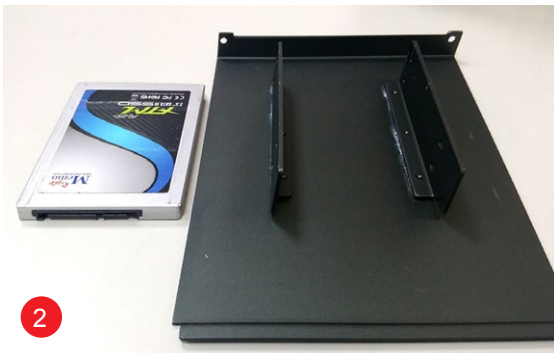
Repeat Step 1.

Loosen 2 pcs F #6x6 screws from the top of the SSD/HDD cover by screwcriver.

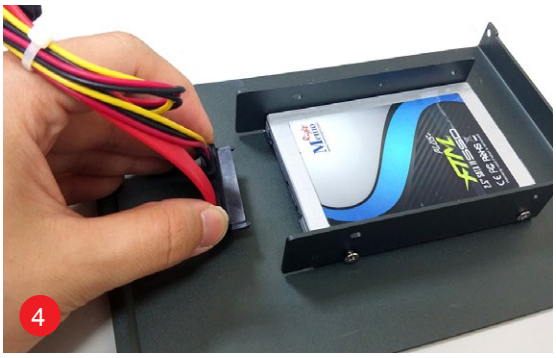


Lift the HDD/SSD cover as the image 1.
Make sure the screw hold of HDD/SSD cover to match HDD/SSD. (Image 2)

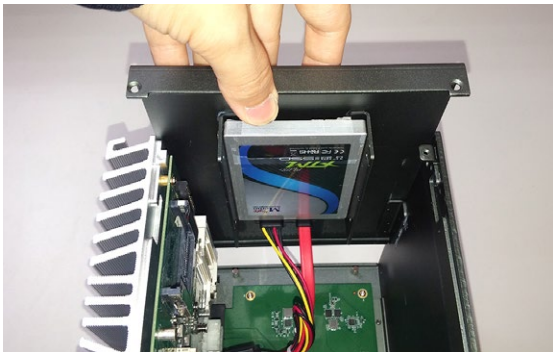


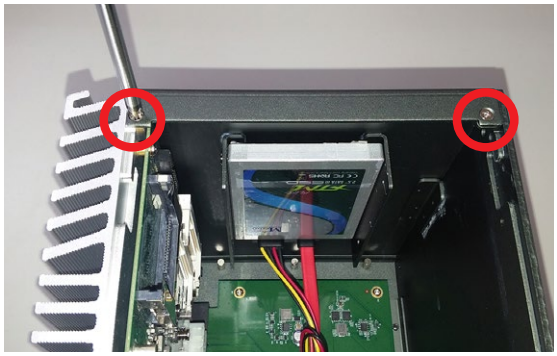


Fasten 4 pcs KH-M3x6 screws to fix the HDD/SSD. (Image3)
Install SATA cable to HDD/SSD. (Image4)

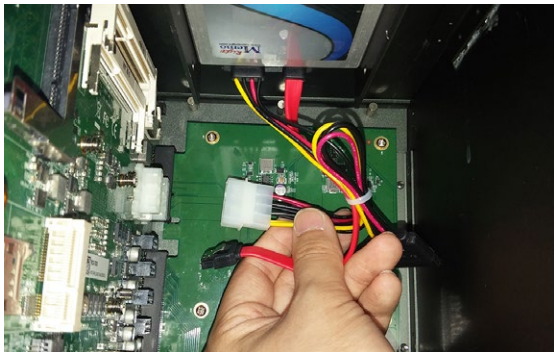


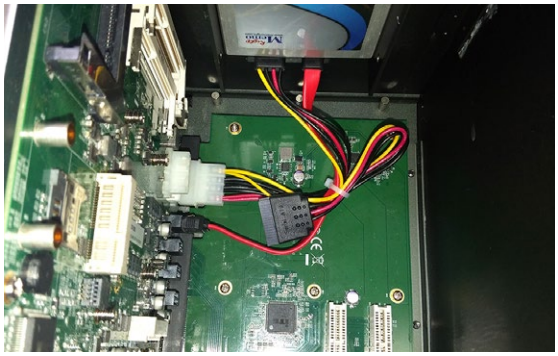
Replace the HDD/SSD cover, then fasten 2 pcs F #6x6 screws.





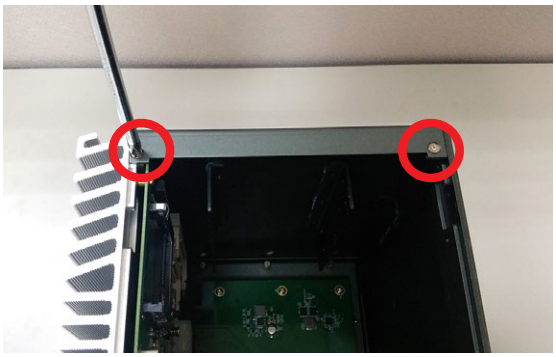
Install SATA cable to mainboard.



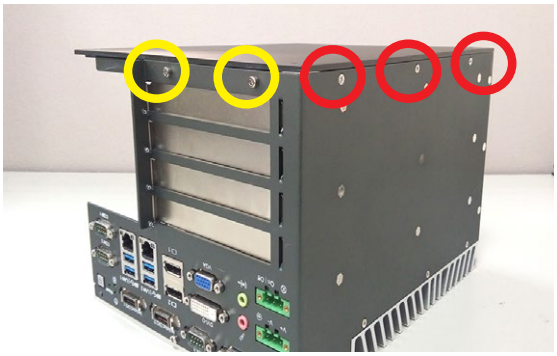


Step 5. Installing Mini PCIe Module

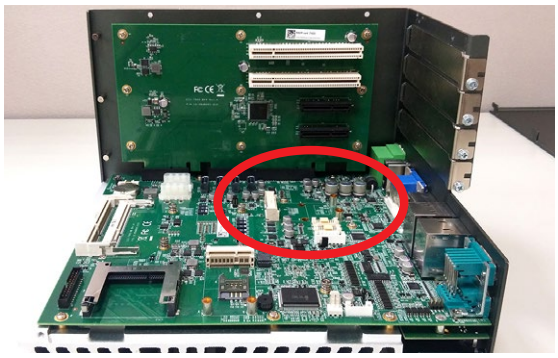
Repeat Step 1.
Loosen 2 pcs F #6x6 screws.

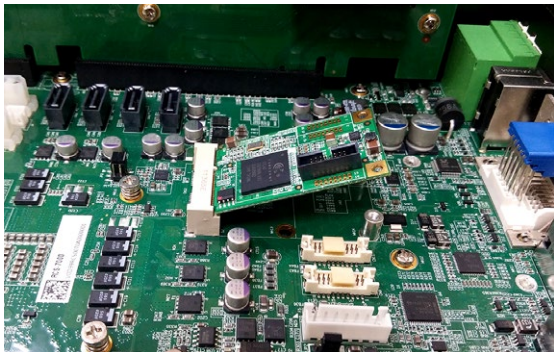
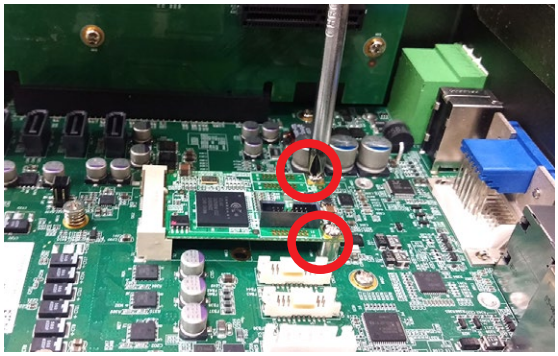
Loosen 2 pcs KSH #6-32 screws as yellow circle and 3 pcs F #6x6 screws as red circle.

Check Mini PCIe socket as red circle.

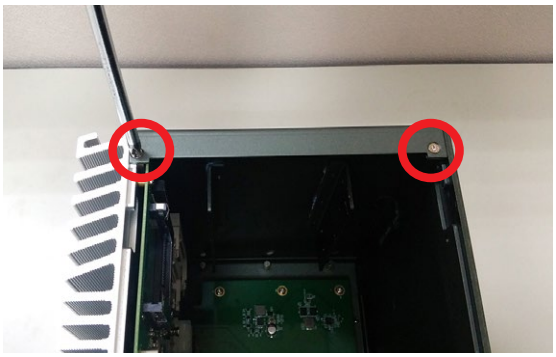



Put your Mini PCIe card in the socket of mainboard, then fasten 2 pcs BH M 2.5x6 screws to lock your Mini PCIe card firmly.

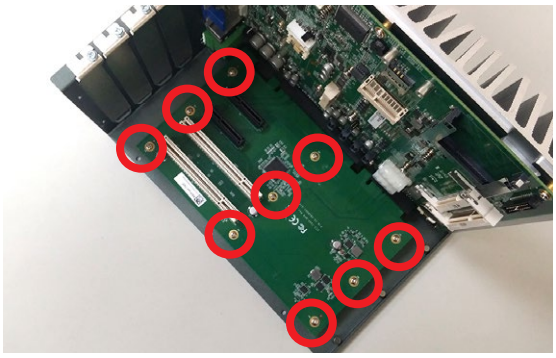
Step 6. Installing CPU

Repeat Step 1.
Loosen 2 pcs F #6x6 screws.

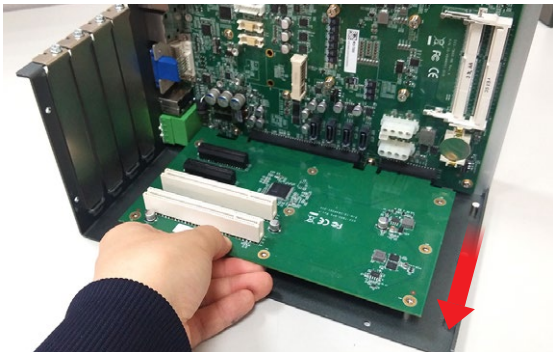
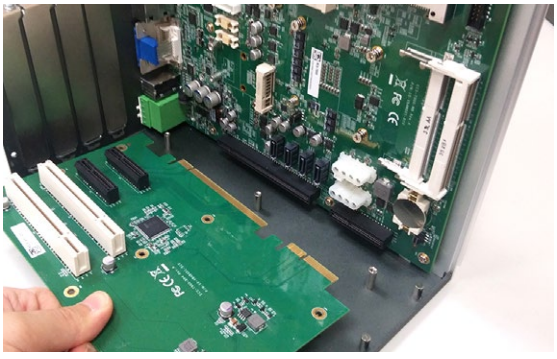



Loosen 2 pcs KSH #6-32 screws as yellow circle and 3 pcs F #6x6 screws as red circle.

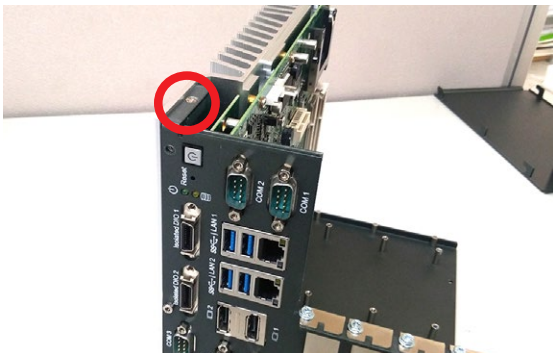

Loosen 9 pcs PH M3x6 screws for Riser Card.

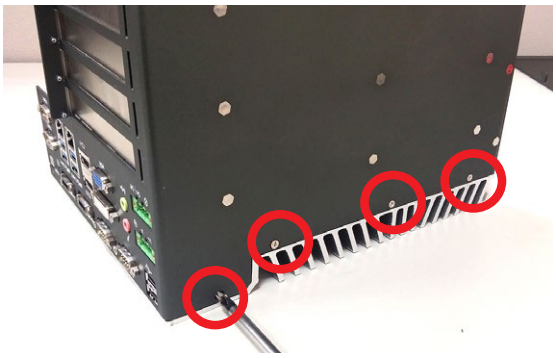



Remove Riser Card

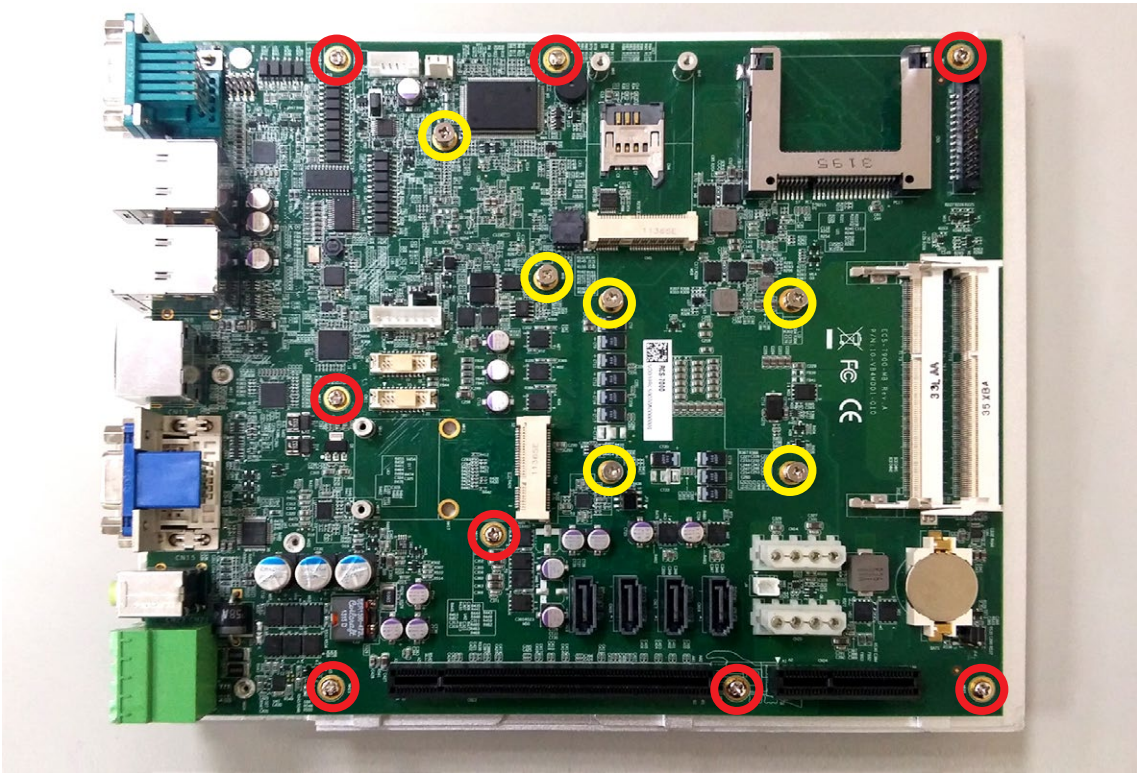
Loosen 5 pcs F #6x6 screws.



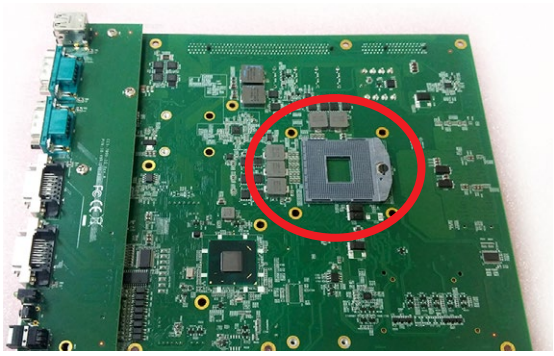


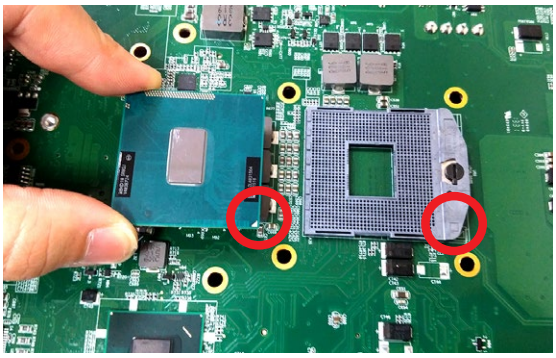
Push chassis as the image 1 and image 2.

Loosen 6 pcs M3x11 Spring screws and 8 pcs PH M3x6 screws.

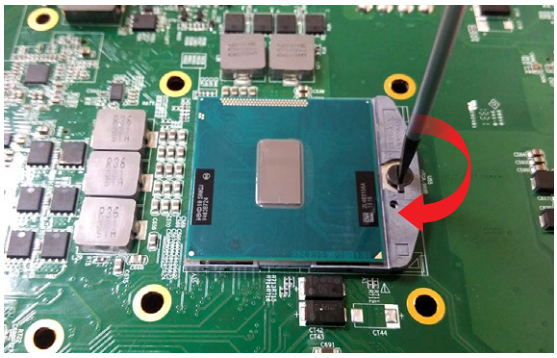


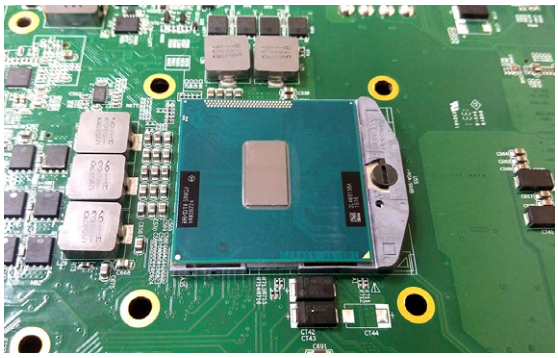
Turn back the mainboard, then check CPU socket.
Note CPU and CPU socket triangle arrow to be the same direction.





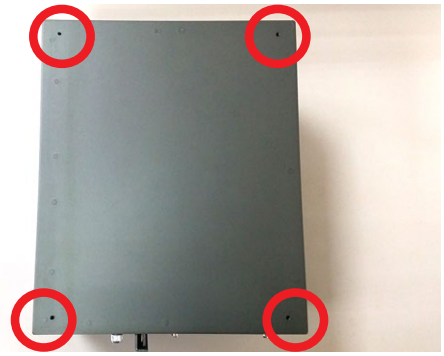
Put the CPU to CPU socket and lock CPU socket.





Step 7. Installing Wall-mounting Bracket

Turn to the bottom and install Wall-mounting Bracket.
Fix two Wall-mounting brackets to the chassis with 4 pcs KH #6-32 screws.



4

BIOS AND DRIVER SETTING

4.1 BIOS Settings

4.1.1 BIOS Setup

The board uses UEFI BIOS that is use Serial Peripheral Interface (SPI) Flash. The SPI Flash contains the BIOS Setup program, POST, the PCI auto-configuration utility, LAN, EEPROM information, and Serial port support. The BIOS setup program is accessed by pressing the <Del> key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins. The menu bar is shown below.

Figure 4-1-1: BIOS Menu Bar

4.2 Main Menu

4.2.1 BIOS Main Menu

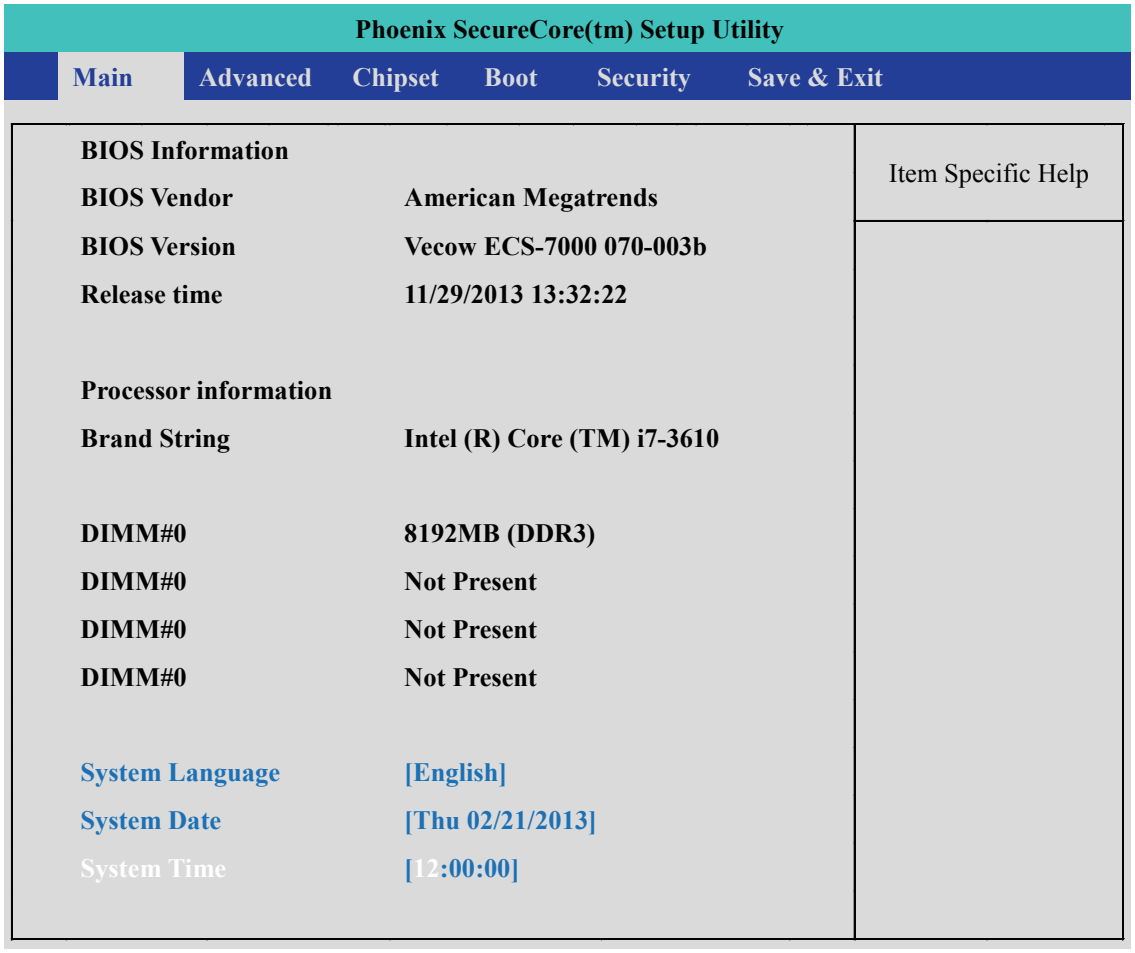


Figure 4-2-1: BIOS Main screen

System Time/ Date :

Press “TAB” key to switch sub-items of value .Then press “ +” key or “-“ key number key for modify value.

In this page, you could make sure you CPU type and DRAM type that you are install into this system.

4.3 Advanced Function

4.3.1 ACPI Setting

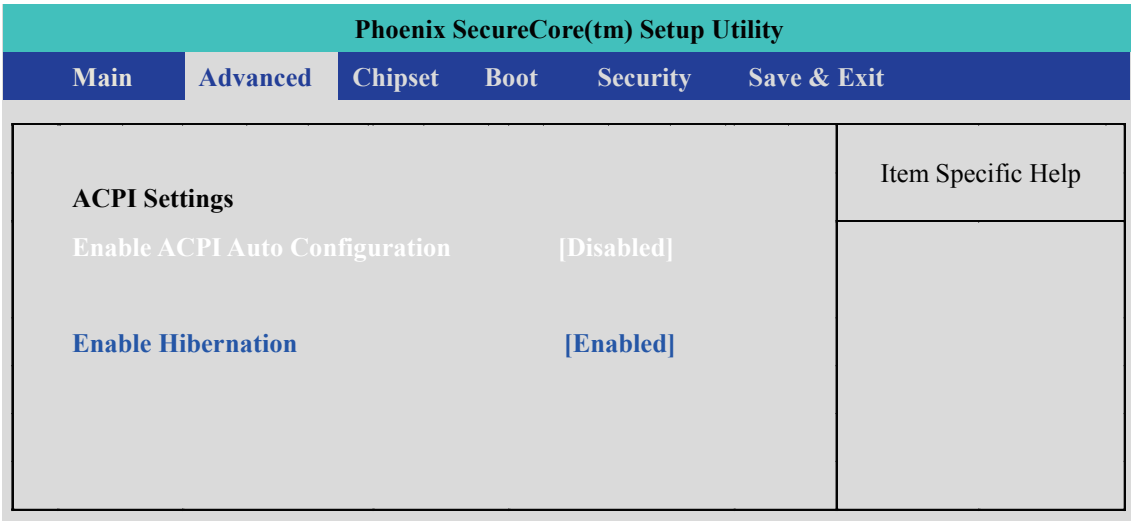


Figure 4-3-1: ACPI Setting setup screen

Enable ACPI Auto Configuration:
This system support ACPI function as auto process. You should Enable / Disable that depend as your O.S.

Enable Hibernation:
It is able to use Hibernate function if O.S support. But some O.S maybe not effective with this function.

4.3.2 Trusted Computing

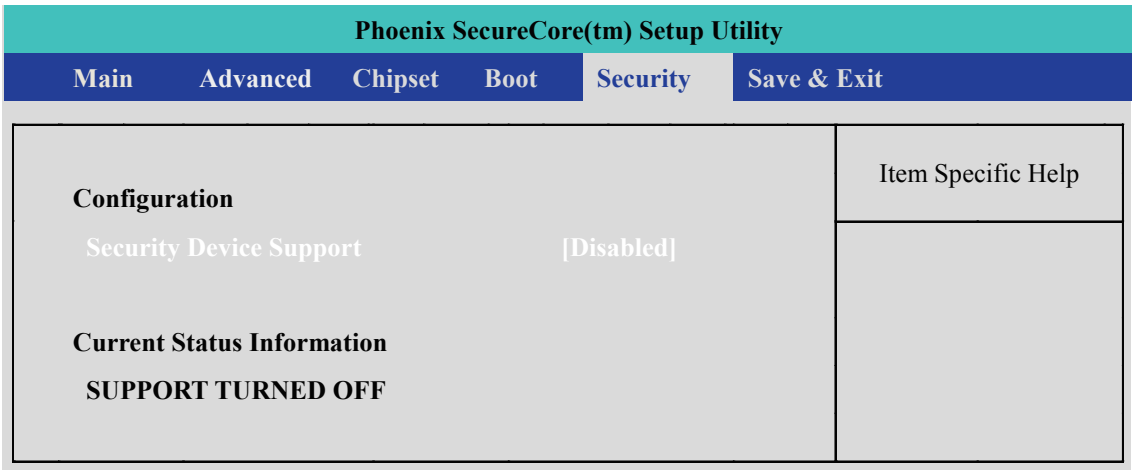


Figure 4-3-2 : Serial Port 1 Setup screen

Serial Port :
Enable or Disable Serial port.

Security Device Support :
Enables or Disables BIOS support for security device. O.S. will now show Security Device. TCG EFT protocol and INT1A interface will not be available.

Current Status Information :
Show as below option

SUPPORT TURNED OFF
SUPPORT TURNED ON

4.3.3 CPU Configuration

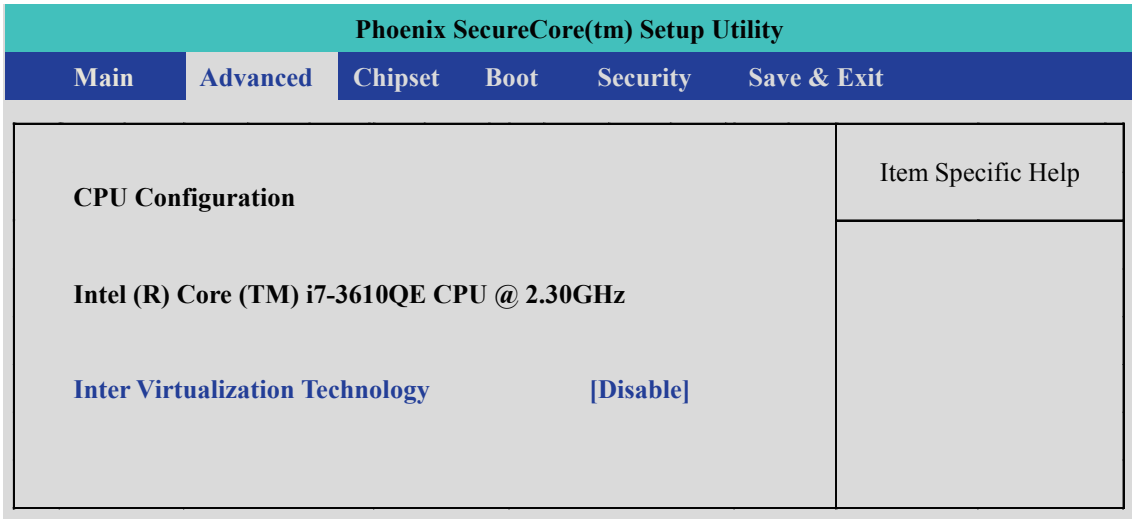


Figure 4-3-3 : CPU Configuration Setup screen

Intel Virtualization Technology :
This for for Virtualization Application or platform usage, when enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology,

4.3.4 SATA Configuration

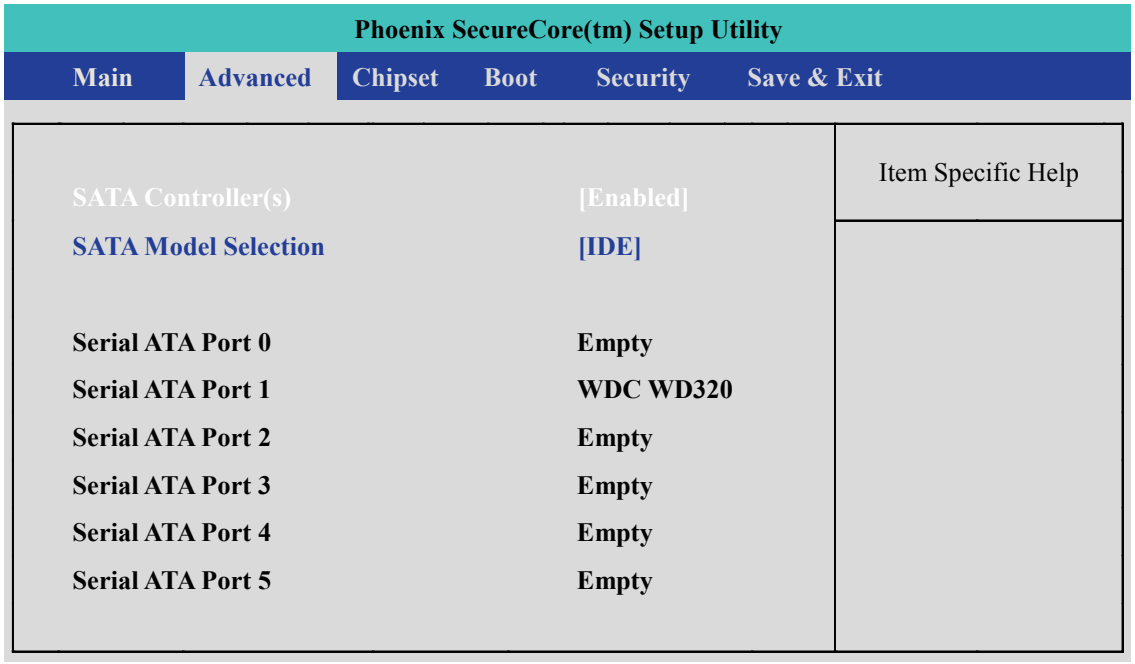


Figure 4-3-4 : SATA Configuration setup screen

SATA Controller(s) :
0988261051
Enables or Disables integrate SATA controller for Storage device use.

SATA Mode Selection :
Determines how the SATA transfer mode for operate. Here have three option for choice [IDE] / [AHCI] / [RAID]. For the RAID mode operate, please see appendix E. for detail information.

Serial Port 0~5 :
This system offers six SATA port for connection SATA device.

4.3.5 AMT Configuration

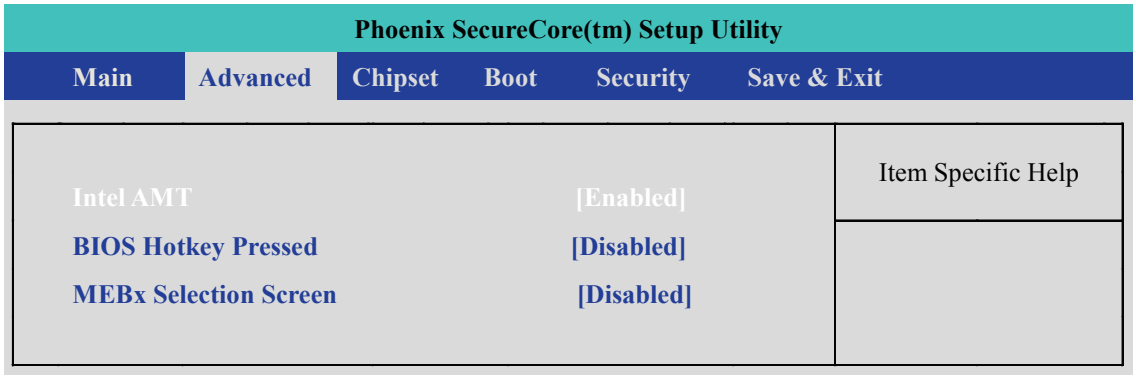


Figure 4-3-5 : AMT Setup screen

Intel AMT :
Enables or Disables Intel(R) Active Management Technology BIOS extension. This option just controls the BIOS extension executes.

4.3.6 Serial Port 1 Configuration

Advanced → IT8783F Super IO Configuration → Serial Port 1

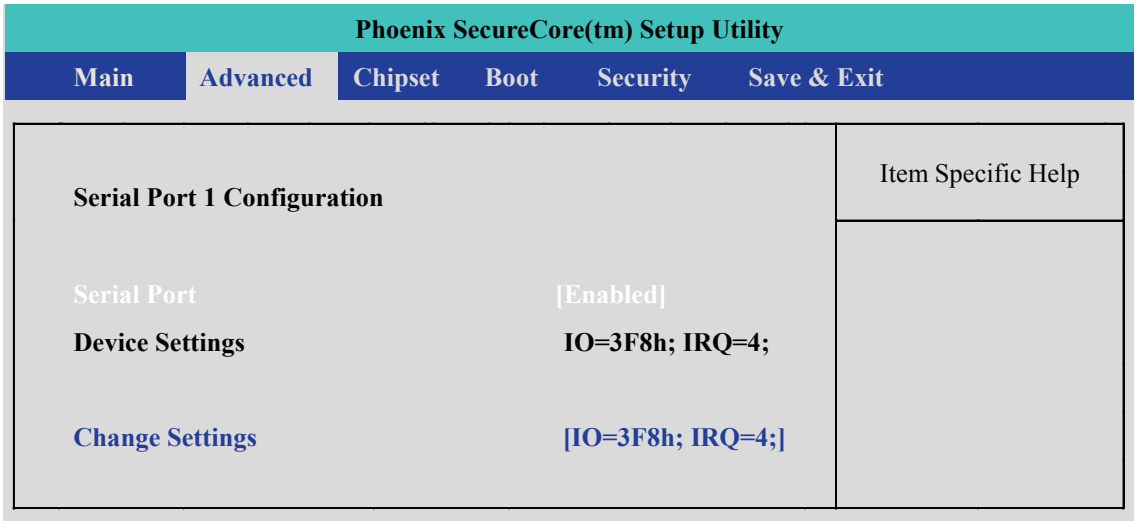


Figure 4-3-6 : Serial Port 1 Setup screen

Serial Port :
Enable or Disable Serial Port.

Device Setting:
Current IO address and interrupt resource of Serial Port.

Change Settings :
Select another device setting.
Here have 4 option :
IO=3F8h; IRQ=4;
IO=2F8h; IRQ=3;
IO=3E8h; IRQ=10;
IO=2E8h; IRQ=11;

4.3.7 Serial Port 2 Configuration

Advanced → IT8783F Super IO Configuration → Serial Port 2

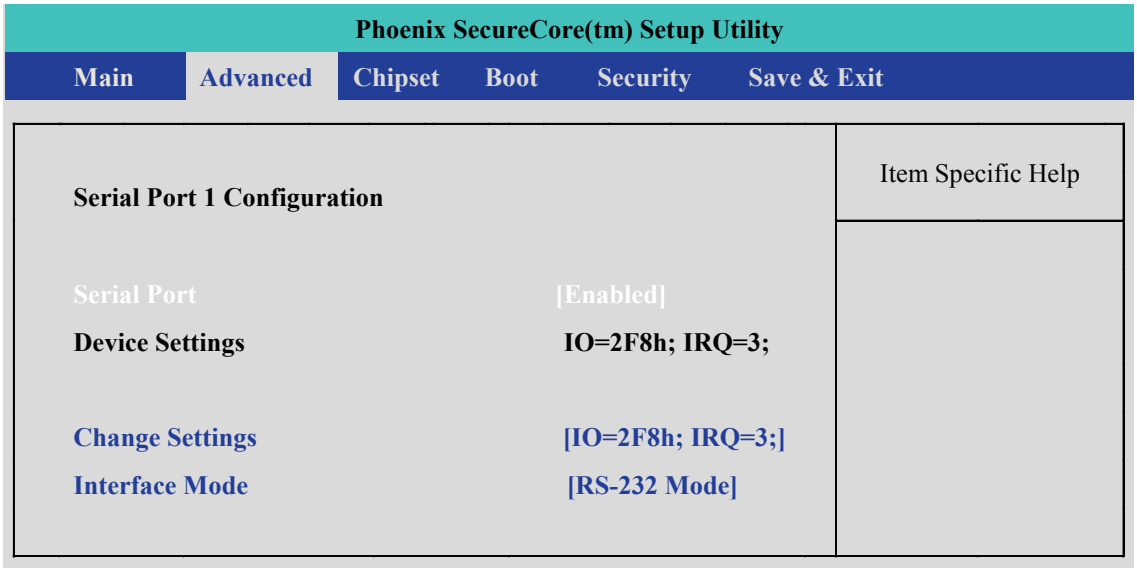


Figure 4-3-7 : Serial Port 2 Setup screen

Serial Port :
Enable or Disable Serial Port.

Device Setting :
Current IO addresses and interrupts resource of Serial Port.

Change Settings :
Select another device setting .
Here have 4 option :
IO=3F8h; IRQ=4;
IO=2F8h; IRQ=3;
IO=3E8h; IRQ=10;
IO=2E8h; IRQ=11;

Interface Mode:
Here have 4 option :
RS-232 Mode
RS-422 Mode
RS-485 Mode

4.3.8 Serial Port 3 Configuration

Advanced → IT8783F Super IO Configuration → Serial Port 3

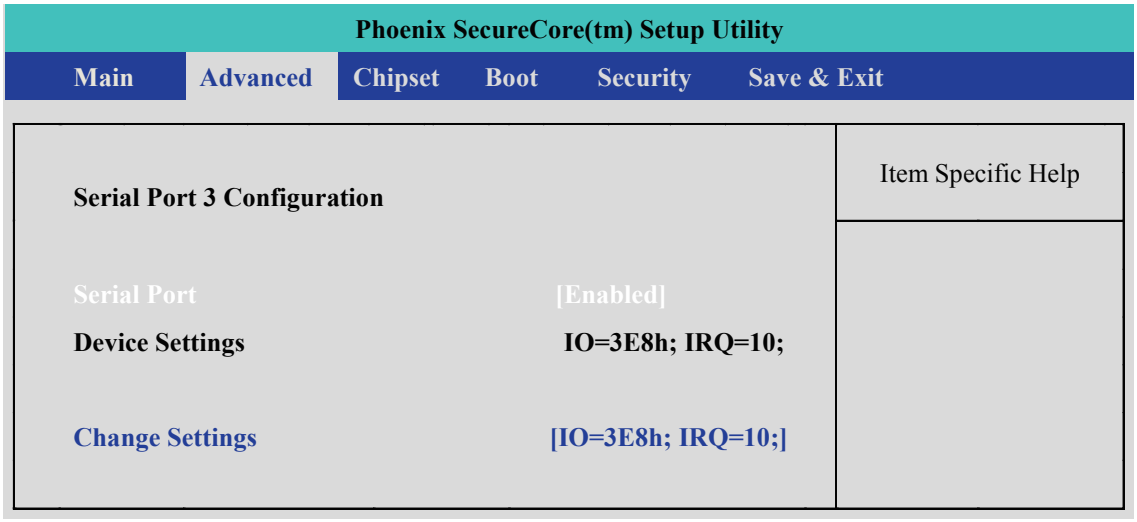


Figure 4-3-8 : Serial Port 3 Setup screen

Serial Port :
Enable or Disable Serial Port.

Device Setting:
Current IO address and interrupt resource of Serial Port.

Change Settings :
Select another device setting .
Here have 4 option :
IO=3F8h; IRQ=4;
IO=2F8h; IRQ=3;
IO=3E8h; IRQ=10;
IO=2E8h; IRQ=11;
IO=2F0h; IRQ=6;
IO=2E0h; IRQ=7;

4.3.9 Serial Port 4 Configuration

Advanced → IT8783F Super IO Configuration → Serial Port 4

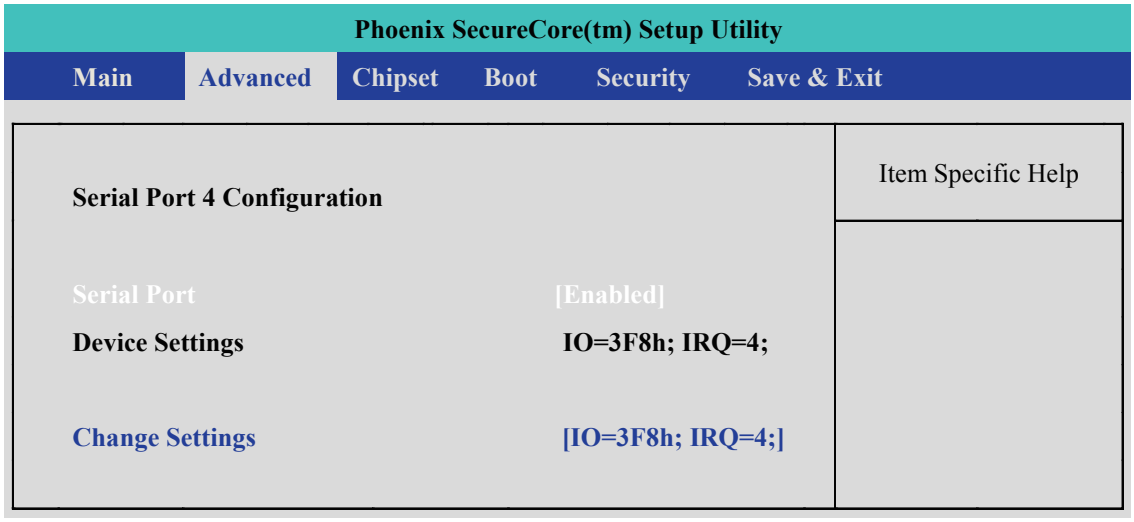


Figure 4-3-9 : Serial Port 4 Setup screen

Serial Port :
Enable or Disable Serial Port.

Device Setting:
Current IO address and interrupt resource of Serial Port.

Change Settings :
Select another device setting.
Here have 4 option :
IO=3F8h; IRQ=4;
IO=2F8h; IRQ=3;
IO=3E8h; IRQ=10;
IO=2E8h; IRQ=11;
IO=2F0h; IRQ=6;
IO=2E0h; IRQ=7;

4.4 Chipset Function

4.4.1 WOL Configuration

Chipset → PCH-IO Configuration → Wake on LAN

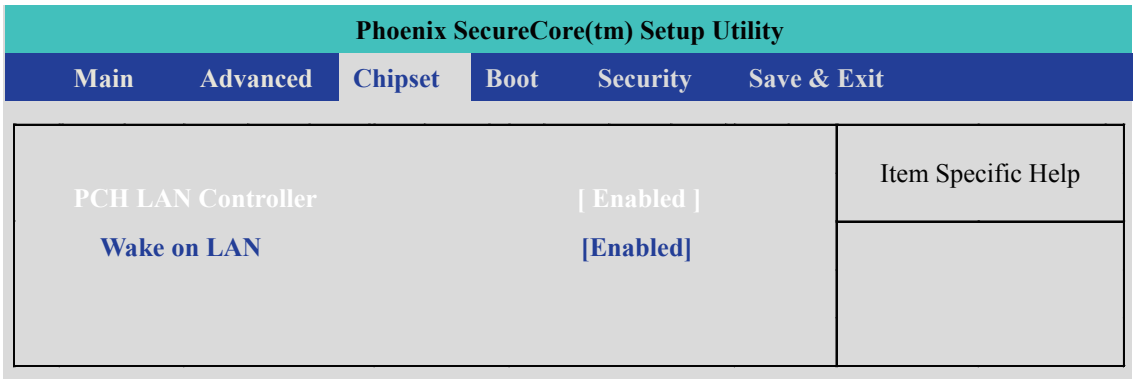


Figure 4-4-1 : Network Setup screen

PCH LAN Controller :
Enable or Disable on board network device.

Wake on LAN :
Enable or Disable integrated LAN to wake the system.
This function also can active by O.S.

4.4.2 Power Loss Configuration

Chipset → PCH-IO Configuration → Restore AC Power Loss

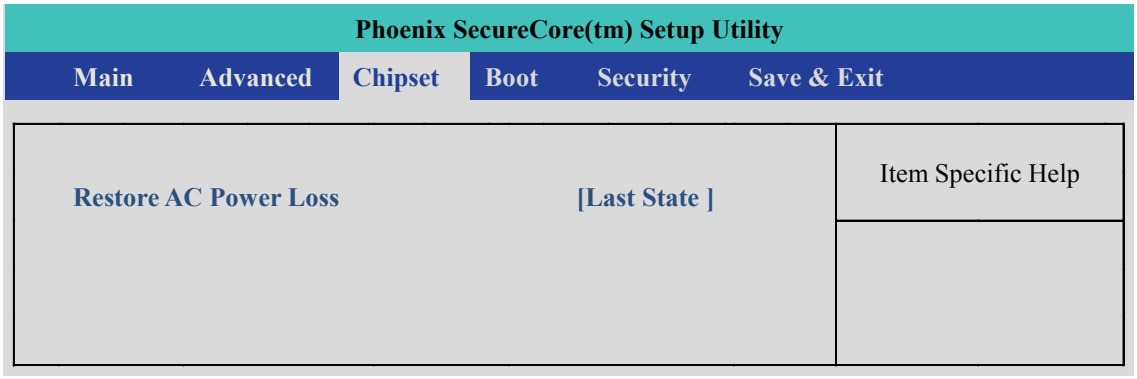


Figure 4-4-2 : Power Loss Setup screen

Restore AC Power Loss :

[Power Off] : When plug-in the power source, system will keep on SB mode.
[Power On] : When plug-in the power source, system will auto booting .
Last State] : When plug-in the power source, system will keep on last power status.

4.5 Boot Function

4.5.1 Boot Option

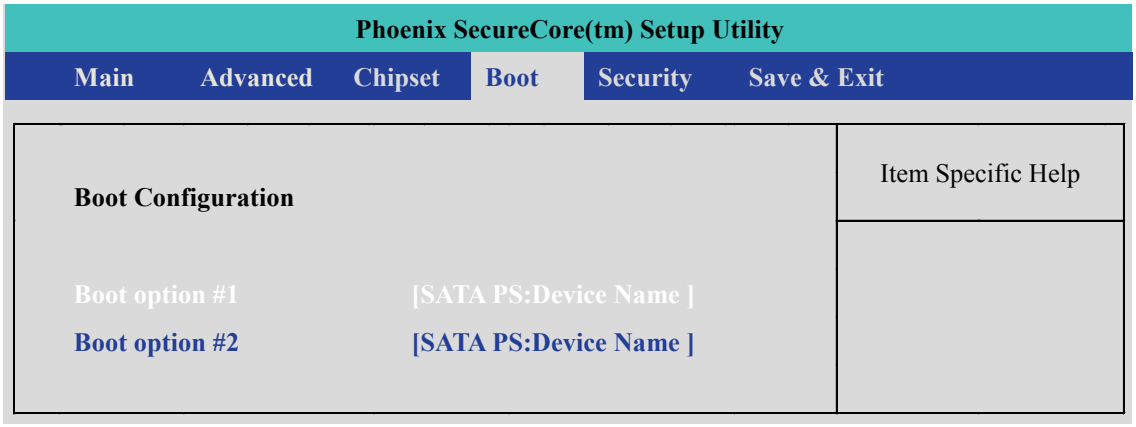


Figure 4-5-1 : Boot Setup screen

Boot option:

When you press “Enter”, you can select which device you would like to boot.

A

APPENDIX A : ISOLATED DIO GUIDE

■ **Description:**
Initialize hardware and resources, and get number of functional borads.

Syntax:
I16 _mnet104_open ()

Argument:

Name	Type	Description
N / C		

Return:

Return Value	Description
ERR_NoError	The function finished execution successfully.
Other	Please reference to the Appendix error table.

■ **Description:**
Get the local DI value.

Syntax:
I16 _mnet104_read_port(U16 Offset, U8 *Val)

Argument:

Name	Type	Description
Offset	U16	Pointer the access DI port address
Val [output]	U8 *	Return the value of local input interface.

Return:

Return Value	Description
ERR_NoError	The function finished execution successfully.
Other	Please reference to the Appendix error table.

Description:
Get the local DI value.

Syntax:
I16 _mnet104_write_port(U16 Offset, U8 Val)

Argument:

Name	Type	Description
Offset	U16	Pointer the access DI port address
Val	U8	Write the value of local input interface.

Return:

Return Value	Description
ERR_NoError	The function finished execution successfully.
Other	Please reference to the Appendix error table.

B

APPENDIX B : GPIO & WDT FUNCTION

The GPIO& WDT are using internal Super IO function. However, you must entry super I/O configuration mode to set it.
The output port is set as GPIO 1 on CN13, reg. index = **0x60**
The input port is set as GPIO 4 on CN12, reg. index = **0x62**.
Super I/O special address port = 0x2E
Super I/O special data port = 0x2F
GPIO Logical device is 0x07

A. Super I/O Definition

```
//write twice 0x87 value.
outportb(Super I/O special address port, 0x87);
outportb(Super I/O special address port, 0x01);
outportb(Super I/O special address port, 0x55);
outportb(Super I/O special address port, 0x55);
```

B. Located on Logical Device 7

```
//write 0x07 on Reg [0x07] , this setup must follow Step A. that can be workable.
outportb(Super I/O special address port, 0x07);
outportb(Super I/O special data port, 0x07);
```

C. Access the Super I/O Register

Base control for write Super I/O register.

```
outportb(special address port, Register Index.);
outportb(special data port, update_value);
```

Base control for read Super I/O register

```
outportb(special address port, Register Index.);
inportb(special data port);  //It will return a BYTE value.
```

D. Start to Access the ECS-7800-PoE GPIO Port

Please refer to source code for set_data() and get_data() function.
Write data to GPO(output) port

set_data(Register Index , update_value);

example :
unsigned char data = 0x82;
set_data(0xE5 , data);
//Set bit 7 & bit 1 of GPO output port as High level ,another bit is Low
Please refer to source code for set_data() and get_data() function.

Read data to GPI(input) port
get_data(Register Index) //It will return a BYTE value.
example :
unsigned char data
get_data(0xF1 , data);
//Get GPI(input) port status on input_data variable.

E. WDT ON/OFF and Timer-Counter setting

Refer to GPIO setting of Step A and B. , located Logical 0x08 for WDT function.

Reg [0x30] is WatchDog ON/OFF control.

WatchDog On : set_data(0x30 , 0x01);
WatchDog Off : set_data(0x30 , 0x00);

Reg [0xF0] is WatchDog timer - counterON/OFF control.

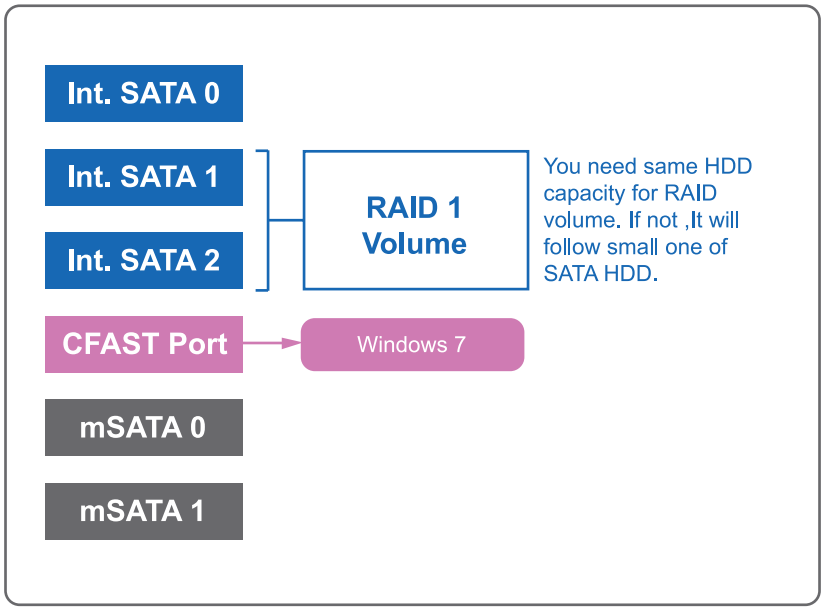
WatchDog counter start : set_data(0xF0 , 0x02);
WatchDog counter start : set_data(0xF0 , 0x00);

Reg [0xF1] is WatchDog time-out value, "Reading" this register returns the current value in the Watch Dog Counter, not the Watch Dog Timer Time-out value..

WatchDog time-out value : set_data(0xF1 ,);

APPENDIX C : RAID INSTALLATION GUIDE

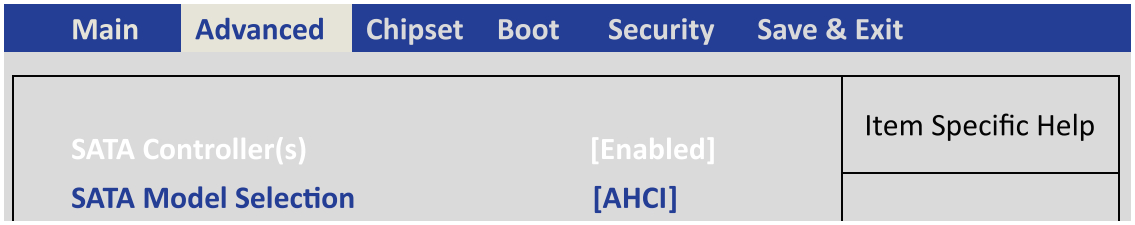
Valuable digital memories are protected against a hard drive failure when the system is configured for any one of three fault-tolerant **RAID** levels: **RAID 0**, **RAID 1**, **RAID 5** or **RAID 10**. By seamlessly storing copies of data on one or more additional hard drives, any hard drive can fail without data loss or system downtime. When the failed drive is removed and a replacement hard drive is installed, data fault tolerance is easily restored.



RAID-Ready to 2-Driver RAID 1" Connect Figure

A. SATA Mode for RAID

Please select SATA Device to RAID mode on BIOS menu.
Advanced->SATA Configuration-> SATA Mode Selection



B. Install O.S.

RCS-7000 series is equipped with 6 SATA ports, include 3 internal SATA ports, 2 mSATA ports and 1 CFAST port. You can select one of SATA port for OS installation. We use CFAST card for Windows 7 OS installation as an example.

For WinXP installation, you should press "F6" while the installation program starting for 'RAID' driver installation. And the best solution that show as item 3. ACHI operate.

C. Install All Device Drivers

Please follow installation sequences:
1.To install chipset driver
2.To install network driver
3.To install ME driver (if available)
4.To install audio driver
5.To install VGA driver

D. Install Intel Rapid Storage Tech. Software

You can get the software on RCS-7000 driver CD.
Also, you can find latest information and software directly from Intel website.

http://www.intel.com/p/en_US/support/highlights/chpsts/imsm

The RAID environment has been done if you completed the steps above.

E. Insert SATA HDD for RAID 1

Please notice, you can use 5 SATA ports for SATA HDD, except the CFAST port.

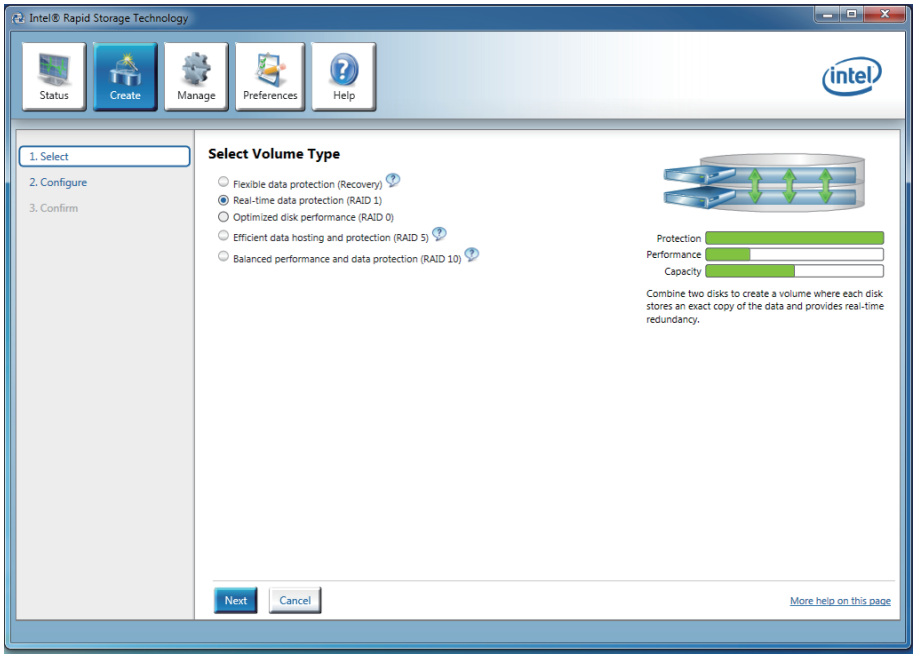
F. Enable Hot Plug Function

Please enable 'Hot Plug' for HardDisk or RAID volume

Hot Plug	**[Enabled]**	

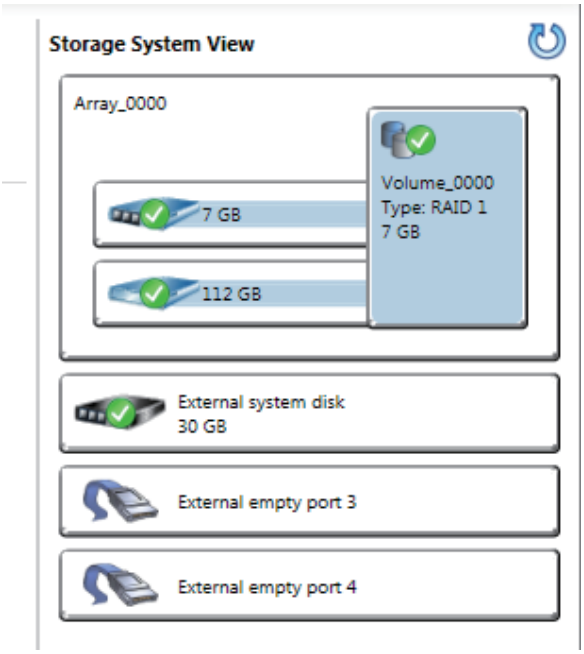
G. Create RAID Volume on Rapid Storage Tech. Software

Because we only have 2 SATA HDDs for RAID volume, there are three options on this page we can choose. We take RAID 1 as our example, please select '**RAID 1**'.

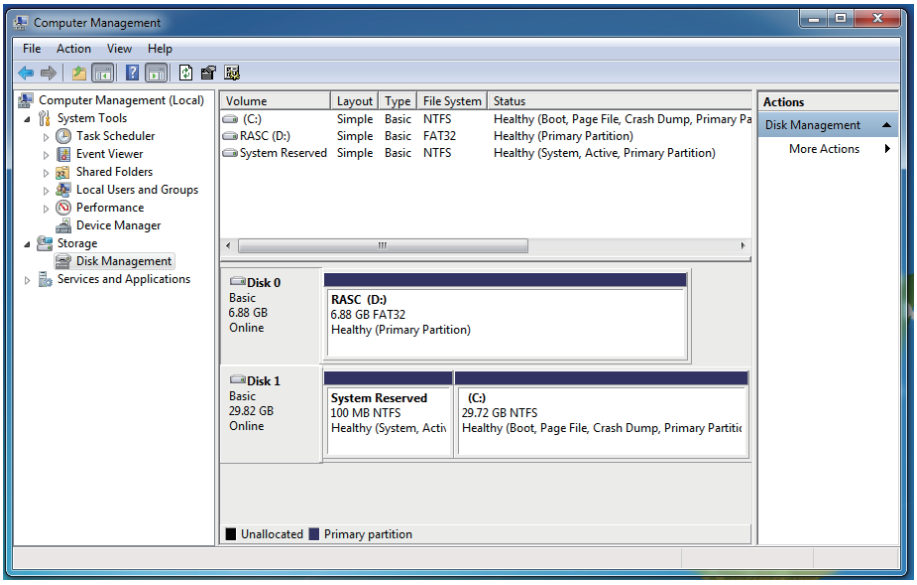


H. Partition on Disk Management

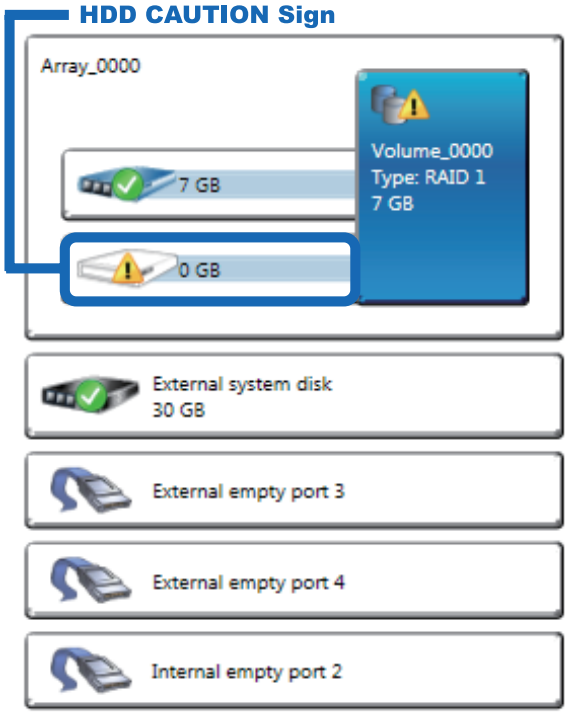
After created RAID 1 volume, you can see the SATA device allocation figure.



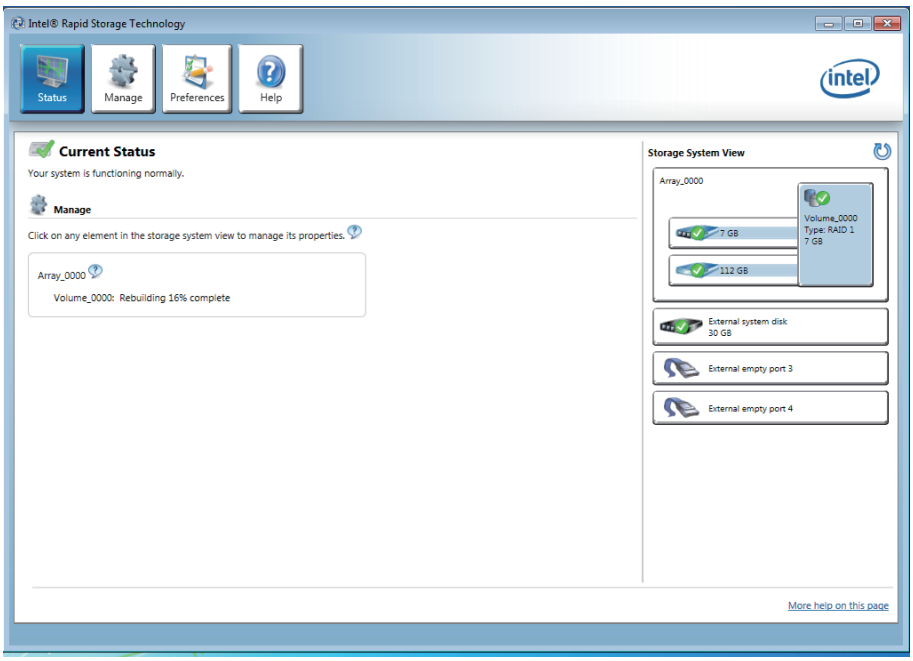
You can see “Volume_000 in SATA device of BIOS menu. To start Disk Management tool and select ‘Initialize Disk’ Then add “Logical device” for Windows access.



I. HDD Caution Sign on RAID Volume

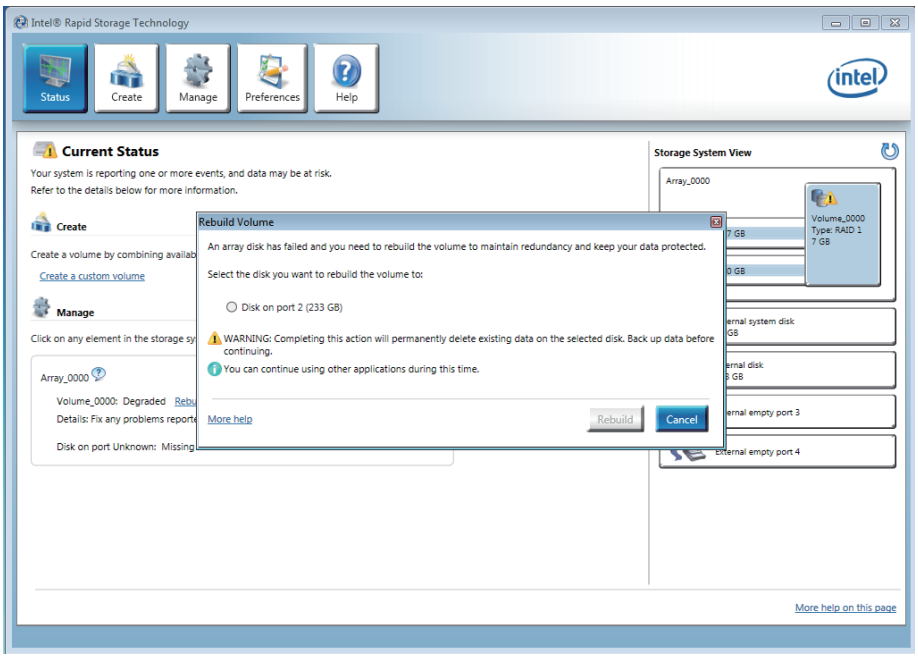


J. Recovery & Auto Re-Build When Use the SAME RAID HDD



K. Recovery & Auto Re-Build When Use the DIFFERENT RAID HDD

There is a warning will pop-up to ask you if the disk is not a member of original RAID volume. If you press 'Rebuild', it will replace the broken SATA HDD to the last one SATA HDD of RAID volume.



* If more help is needed, please contact Vecow Technical Support

Vecow

For further support information, please visit www.vecow.com