

# Network Communications

Hardware Platforms for Network Computing



**UP-2010  
V1.1**

User's Manual  
Release Date: 2016/03/04

# Overview

## Icon Descriptions

The icons are used in the manual to serve as an indication of interest topics or important messages. Below is a description of these icons:



**NOTE:** This check mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.



**WARNING:** This exclamation point indicates that there is a caution or warning and it is something that could damage your property or product.

## Online Resources

The listed websites are links to the on-line product information and technical support.

Resource	Website
Lanner	<a href="http://www.lannerinc.com">http://www.lannerinc.com</a>
Product Resources	<a href="http://www.lannerinc.com/download-center/">http://www.lannerinc.com/download-center/</a>
RMA	<a href="http://eRMA.lannerinc.com">http://eRMA.lannerinc.com</a>

## Copyright and Trademarks

This document is copyrighted, © 2014 All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, nor for any infringements upon the rights of third parties that may result from such use.

## Acknowledgement

Intel, Pentium and Celeron are registered trademarks of Intel Corp.

Microsoft Windows and MS-DOS are registered trademarks of Microsoft Corp.

All other product names or trademarks are properties of their respective owners.

## Compliances

### CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

### FCC Class A

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.

## Safety Guidelines

### Follow these guidelines to ensure general safety:

- Keep the chassis area clear and dust-free during and after installation.
- Do not wear loose clothing or jewelry that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Disconnect all power by turning off the power and unplugging the power cord before installing or removing a chassis or working near power supplies
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit; always check the circuit.

## LITHIUM BATTERY CAUTION:

Risk of Explosion if Battery is replaced by an incorrect type.  
Dispose of used batteries according to the instructions

## Operating Safety

Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.

Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.

Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

## EMC Notice

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 users will be required to correct the interference at their own expense.

Revision	Date	Description
1.0	2014/12/30	Official release
1.1	2016/03/04	Removed PoE related information

## Consignes de sécurité

Suivez ces consignes pour assurer la sécurité générale :

- Laissez la zone du châssis propre et sans poussière pendant et après l'installation.
- Ne portez pas de vêtements amples ou de bijoux qui pourraient être pris dans le châssis. Attachez votre cravate ou écharpe et remontez vos manches.
- Portez des lunettes de sécurité pour protéger vos yeux.
- N'effectuez aucune action qui pourrait créer un danger pour d'autres ou rendre l'équipement dangereux.
- 
- Coupez complètement l'alimentation en éteignant l'alimentation et en débranchant le cordon d'alimentation avant d'installer ou de retirer un châssis ou de travailler à proximité de sources d'alimentation.
- Ne travaillez pas seul si des conditions dangereuses sont présentes.
- Ne considérez jamais que l'alimentation est coupée d'un circuit, vérifiez toujours le circuit. Cet appareil génère, utilise et émet une énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interférences dans les communications radio.

## Avertissement concernant la pile au lithium

- Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- Jetez les piles usagées conformément aux instructions.
- L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.
- La machine ne peut être utilisée qu'à un lieu fixe comme en laboratoire, salle d'ordinateurs ou salle de classe.

---

## Table of Contents

---

<b>Overview</b>	<b>2</b>
<b>Chapter 1: Introduction</b>	<b>5</b>
<b>System Specification</b>	<b>5</b>
<b>Package Contents</b>	<b>6</b>
<b>Chapter 2: System Components</b>	<b>7</b>
<b>Mechanical Drawing</b>	<b>7</b>
<b>Block Diagram</b>	<b>8</b>
<b>Front Components</b>	<b>9</b>
<b>Rear Components</b>	<b>10</b>
<b>Chapter 3: Motherboard Information</b>	<b>11</b>
<b>Inside UP-2010</b>	<b>11</b>
<b>Jumpers &amp; Connectors on the Intel Rangeley Main Board</b>	<b>12</b>
<b>Jumpers &amp; Connectors on the PCIe I/O Board</b>	<b>13</b>
<b>Connectors and Jumpers List</b>	<b>14</b>
<b>Jumper Settings &amp; Connector Pinouts on the Intel Rangeley Main Board</b>	<b>15</b>
<b>Jumper Settings &amp; Connector Pinouts on the PCIe I/O Board</b>	<b>18</b>
<b>Chapter 4: Hardware Setup</b>	<b>21</b>
<b>Preparing the Hardware Installation</b>	<b>21</b>
<b>Installing System Memories</b>	<b>21</b>
<b>Installing a CompactFlash Card</b>	<b>22</b>
<b>Replacing the PSU (Power Supply Unit)</b>	<b>22</b>
<b>Replacing the Cooling Fans</b>	<b>23</b>
<b>Appendix A: Programming Watchdog Timer</b>	<b>24</b>
<b>Appendix B: Setting up Console Redirections</b>	<b>24</b>
<b>Appendix C: On Linux</b>	<b>25</b>
<b>Appendix D: Terms and Conditions</b>	<b>26</b>

---

# Chapter 1: Introduction

---

Thank you for choosing Lanner UP-2010. Lanner UP-2010 is an enterprise-class 1U rackmount network security appliance with high-density Ethernet ports and PoE capability. Built with Intel® Atom™ C2000 processor, the appliance can offer efficient packet processing abilities and Intel® security instructions at low power consumption. In addition, UP-2010 also comes with Marvell® Prestera® processor to provide high-port density to act as a switch. The appliance is highly ideal for enterprise gateway controller, UTM, Switch or next-generation firewall.

## Features:

- 8 x PoE ports for wireless access points or IP cameras
- High-port density with 24 x 1GbE RJ45 copper ports plus 2 x 10GbE SFP+
- Intel® Atom™ C2758 8-core, 2.4 GHz
- Marvell® Prestera® 98DX3035 packet processor
- Built-in Intel® QuickAssist acceleration technology
- Supports DDR3 ECC memory
- 1 console port, 1 management port, 2 x USB ports

## System Specification

<b>Form Factor</b>	1U Rackmount	
<b>Platform</b>	Processor Options	Intel® Atom™ Processor C2758 (4M Cache, 2.40 GHz)
	Chipset	N/A
<b>BIOS</b>		64Mb Flash Memory with AMI® BIOS
<b>System Memory</b>	Technology	DDR3 ECC supported
	Max. Capacity	Up to 16GB
	Socket	2 x 204 SO-DIMM
<b>OS Support</b>		Supports 32-bit/64-bit operating systems
<b>Storage</b>		1 x SATA 2.5" HDD/SSD (optional) 1 x CompactFlash card
<b>Network Interface</b>	Management Port	1 x RJ-45 by Intel I210
	LOM Port	N/A
	Bypass	N/A
	Ethernet	1 x MGT port 24 x RJ45 ports 2 x 10G SFP+ ports
	NIC module space	N/A
<b>I/O Connectors</b>	Reset	Software / Hardware reset (Control by GPIO) default SW reset
	Console	1 x RJ45 console
	USB	2 x USB 2.0 ports
	LED	Power/Status/HDD
	FAN	3x FAN connectors 5pin (support SMART FAN)
	IPMI	1x RJ-45 connector for IPMI management
	SATA	1 x SATA connector
<b>Power supply</b>		500W Input 100-240V, 50-60Hz, 7-3.5A
<b>System Cooling</b>		2 x cooling fans (supporting smart fan)
<b>Thermal</b>		1 x heatsink
<b>Environment</b>	Operating Temperature	0° to 40° C
	Storage Temperature	-40° C to 70° C
	Operating Humidity	5% to 90%
<b>Dimensions (unit: mm)</b>		431 X 44 X 355 (W x H x D)
<b>Certification</b>		CE, FCC, RoHS

## Package Contents

Your package contains the following items:

- 1 – WG-UP2010 POE Switch System
- 2 – Power cable
- 1 – Ear Rack mount kit with screws
- 1 – Console cable
- 1 – LAN Cable (Red)
- 1 – Doc Kit for WG

Note: If you should find any components missing or damaged, please contact your dealer immediately for assistance

## Ordering Information

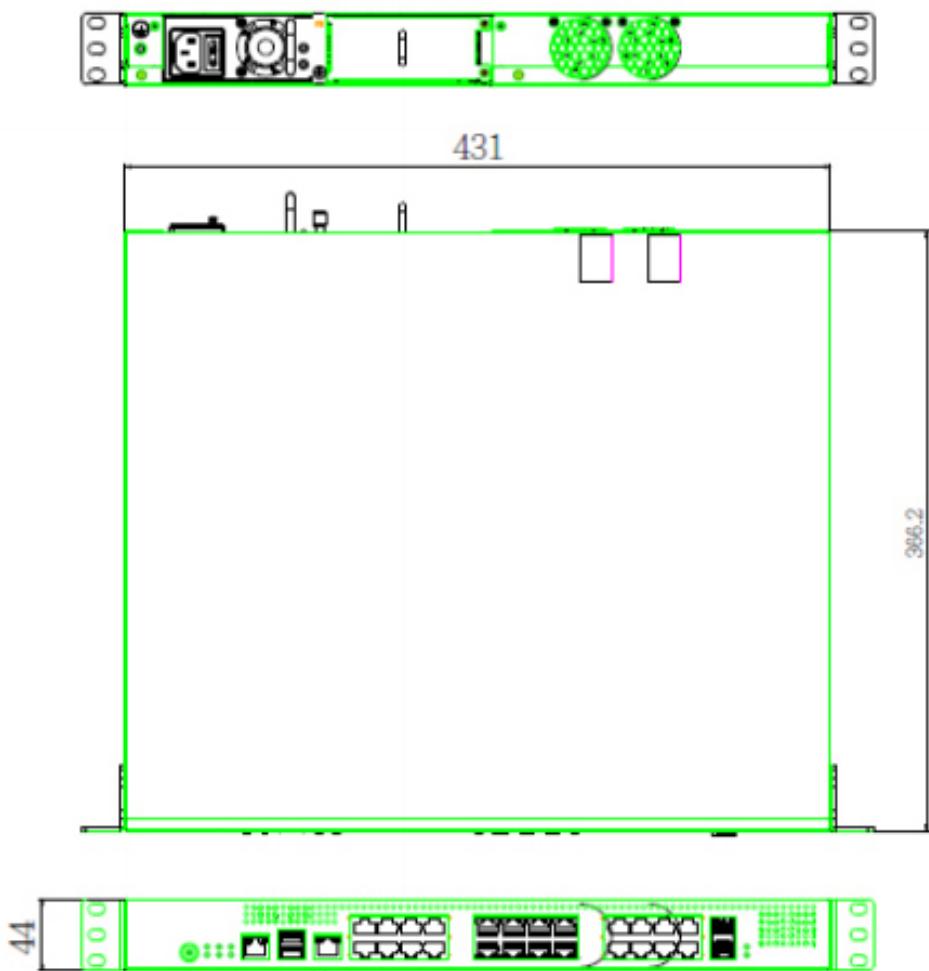
**UP-2010**

24 ports RJ45 (Marvell 98DX3035) w/o bypass, Intel® Atom™ Processor C2718 (4MB Cache, 2.00 GHz) FC-BGA13E, Tray, MB-UP2010W + FCUPWG2010

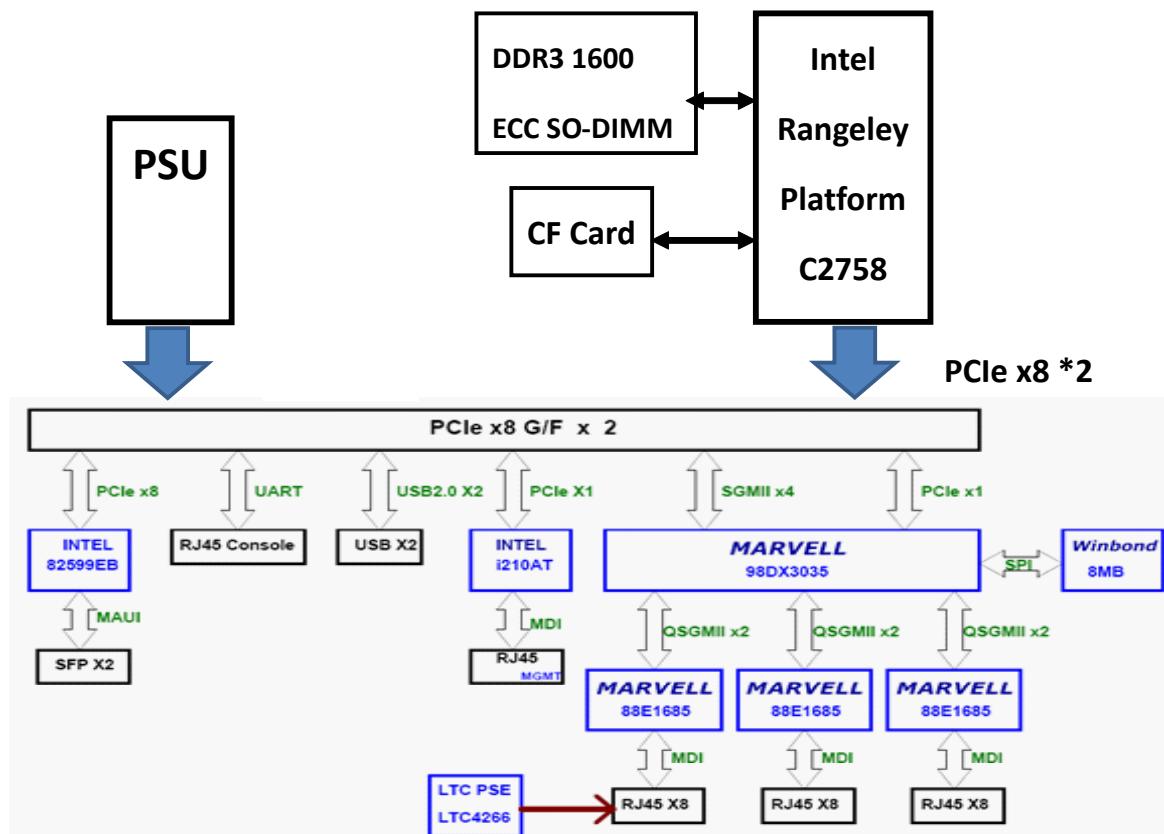
## Chapter 2: System Components

### Mechanical Drawing

**Dimensions (W x H x D): 431 x 44 x 366.2 mm**



## Block Diagram



## Front Components



Component	Description	Remarks
F1 LED Indicators	Power/Status/HDD	
F2 Console	1 x RJ-45 port to be connected with a terminal PC for diagnose and management purposes	
F3 USB 2.0 Ports	2 x USB 2.0 type A connectors.	
F4 Management	1 x RJ-45 management port	
F5 LAN ports	24 x Ethernet LAN ports	
F6 SPF ports	2 x 10GbE SPF network ports	
F7 Power switch	Power switch	

## Rear Components



Component	Description	Remarks
R1 Fan	2 x cooling fans	
R2 PSU	500W power supply unit	

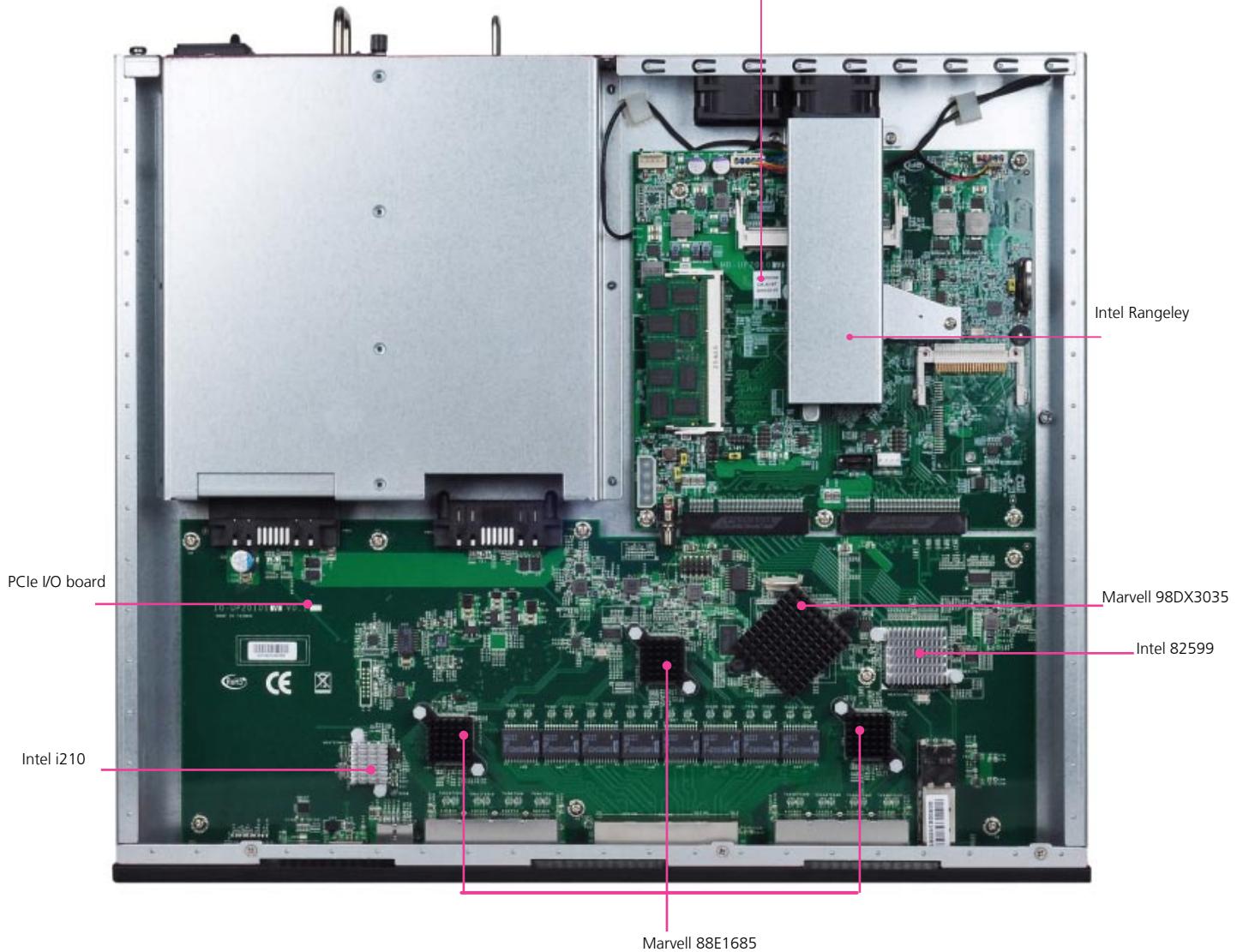
# Chapter 3:

## Motherboard Information

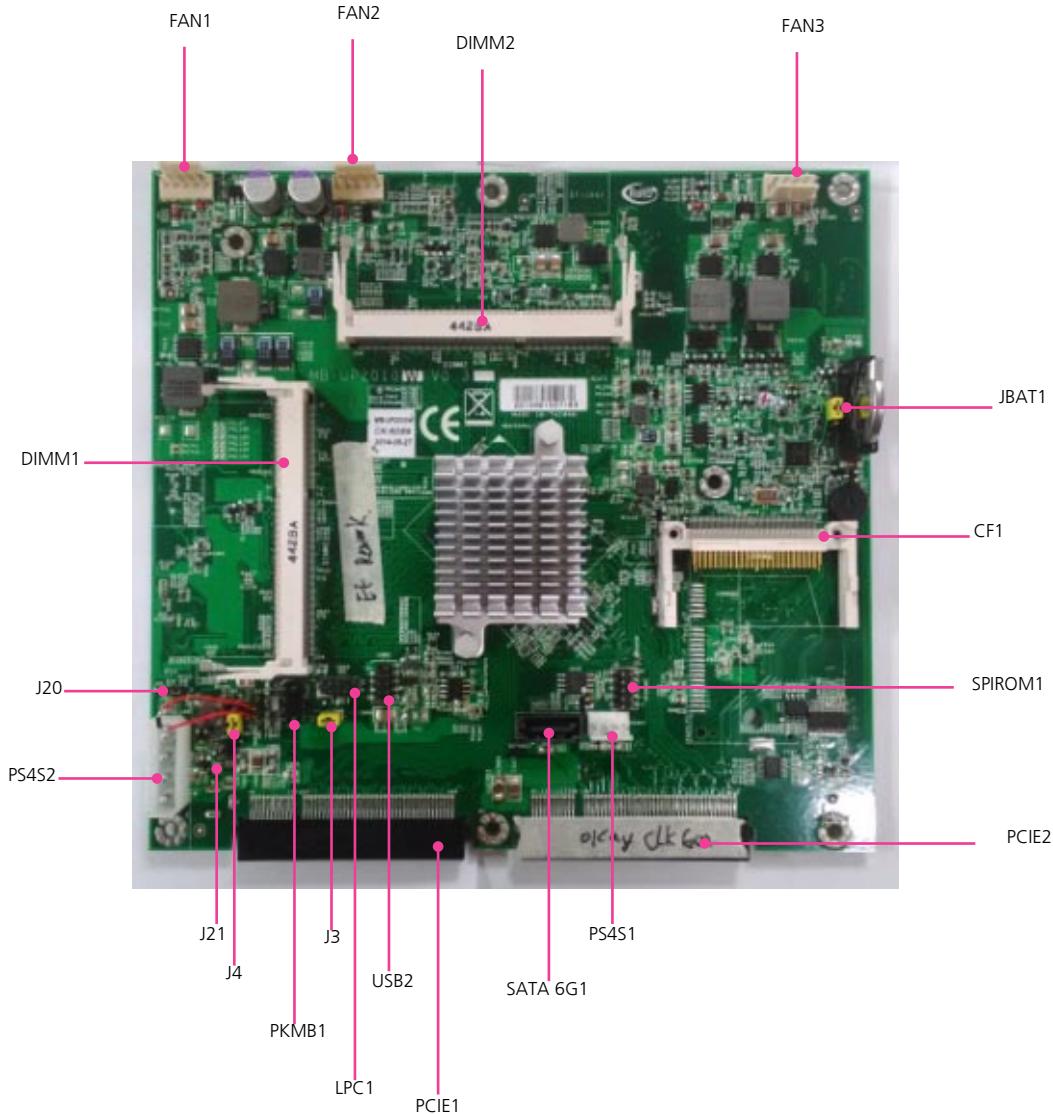
### Inside UP-2010

The internal of UP-2010 is a composition of the Intel Rangeley main board and a PCIe module board for high-density network ports powered by Marvell engines and Intel controllers.

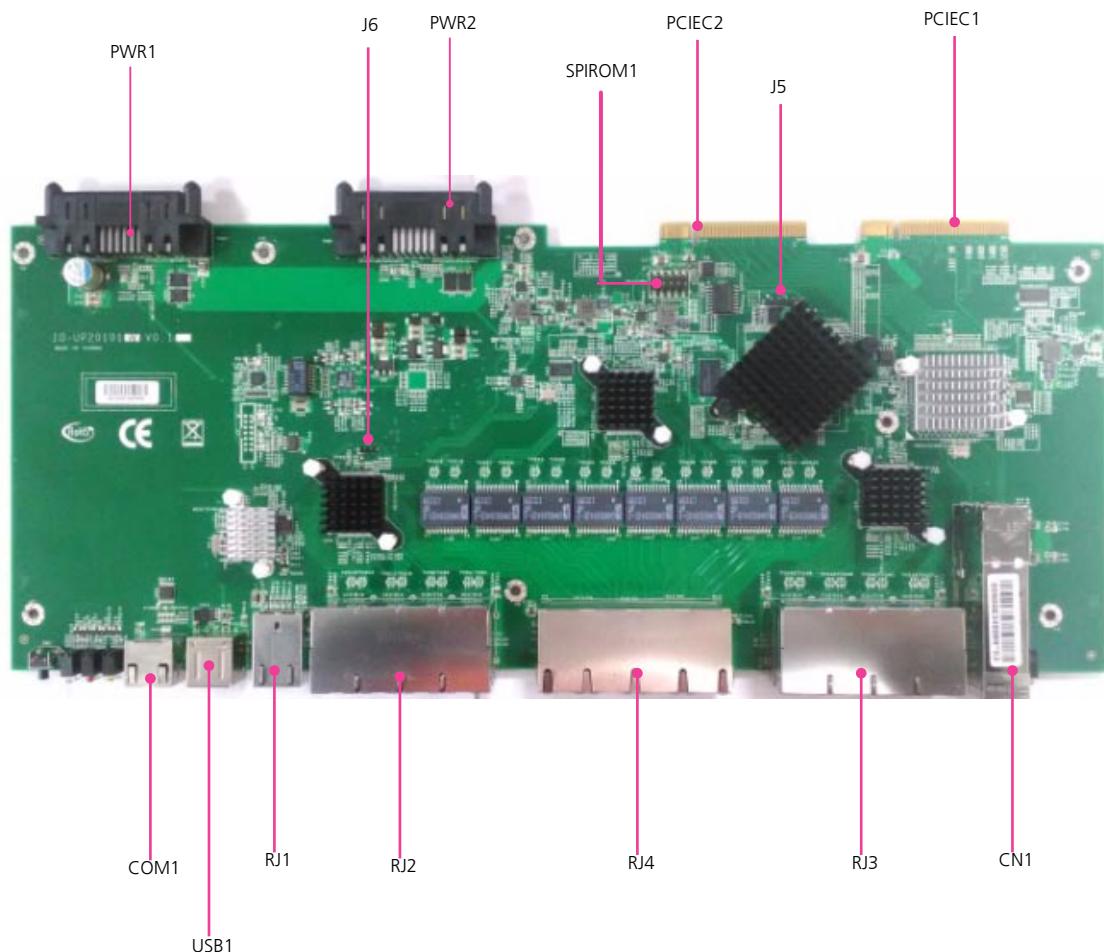
The main Intel Rangeley board



## Jumpers & Connectors on the Intel Rangeley Main Board



## Jumpers & Connectors on the PCIe I/O Board



## Connectors and Jumpers List

### Connectors/Jumpers on the Intel Rangeley board

Labels	Function
DIMM 1,2	2x DDR SO-DIMM sockets
FAN1, 2, 3	3 x FAN connectors
CF1	1 x CompactFlash socket
SATA6G1	1 x SATA port at 6Gbps interface
PS4P1	1 x SATA 4-pin power connector
PS4P2	1 x SATA DOM power connector
PKMB1	1 x keyboard/mouse connector
PCIE1, 2	2 x PCIe x 8 lanes sockets
J4	Reset mode jumper setting
J3	RTEST clear mode jumper setting
J20	TPM physical presence Select
JBAT1	CMOS clear
J21	AT mode select
LPC1	Low Pin Count pin header
USB2	1 x USB pin header
SPIROM1	1 x SPIROM pin header

### Connectors/Jumpers on the PCIe I/O board

Labels	Function
PWR1, 2	2 x power supply unit connectors
CN1	2 x SFP connectors
PCIEC1,C2	2 x PCIe x 8 lanes connectors
SPIROM1	1 x SPIROM pin header
RJ4	8 x RJ45 Ports Connector w/o transformer (2X4)
RJ2, 3	8 x RJ45 Ports Connector w/transformer (2X4)
RJ1	8 x RJ45 Ports Connector w/transformer (2X4)
COM1	RJ45 console
USB1	2 x USB connectors
J5	Ethernet Switch debug port
J6	MDC/MDIO I/F Option

# Jumper Settings & Connector Pinouts on the Intel Rangeley Main Board

## CF1: CompactFlash socket

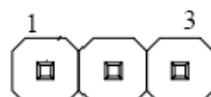
### J4: Reset mode setting



Pin No.	Description
1	HW Reset
2	Switch input (default 1-2)
3	SW Reset



### J3: RTEST Clear



Pin No.	Description
1	NC
2	AVN_RTEST_N
3	GND

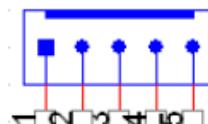
### J20: TPM Physical Presence Select



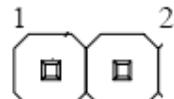
Pin No.	Description
1	P3V3
2	PP
3	GND

Pin No.	Description	Pin No.	Description
1	GND	26	DET1
2	CF_DD3	27	CF_DD11
3	CF_DD4	28	CF_DD12
4	CF_DD5	29	CF_DD13
5	CF_DD6	30	CF_DD14
6	CF_DD7	31	CF_DD15
7	-CF_DCS0	32	-CF_DCS1
8	GND	33	CF_VS1
9	GND	34	CF_DIOR_N
10	GND	35	CF_DIOW_N
11	GND	36	WE#
12	GND	37	CF_IDEIRQ
13	VCC_CF	38	VCC_CF
14	GND	39	MST_SLV
15	GND	40	CF_VS2
16	GND	41	CF_IDERST_N
17	GND	42	CF_IORDY
18	CF_DA2	43	CF_DMARQ
19	CF_DA1	44	CF_DDACK_N
20	CF_DA0	45	CF_FACT_N
21	CF_DD0	46	CF_PDIAG
22	CF_DD1	47	CF_DD8
23	CF_DD2	48	CF_DD9
24	GND	49	CF_DD10
25	DET2	50	GND

## FAN1, 2, 3: wafer fan connectors

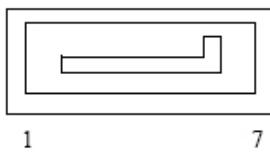


### J21 AT Mode Select

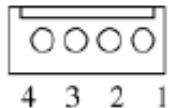


Pin No.	Description
1	P3VSB
2	MR

Pin No.	Description
1	PWM
2	NC
3	TACH
4	P12V
5	GND

**SATA6G1: SATA port**

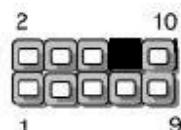
Pin No.	Description
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

**PS4S1: SATA 4-pin power port**

Pin No.	Description
1	12V
2	GND
3	GND
4	5V



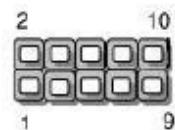
Pin No.	Description	Pin No.	Description
1	+P5V KM	2	MS_L_CLK
3	MS_L_DAT	4	NC
5	KB_L_DAT	6	NC
7	GND	8	KB_L_CLK

**LPC1: Low Pin Count pin header**

Pin No.	Description	Pin No.	Description
1	CLK_33M_P80	2	LPC_AD1
3	PLTRST_PORT80_N	4	LPC_ADO
5	LPC_FRAME_N	6	P3V3
7	LPC_AD3	8	key ping
9	LPC AD2	10	GND

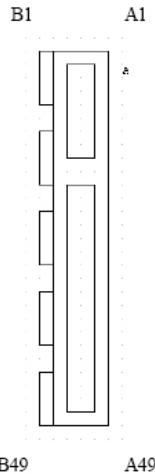
**USB2: 2X10 Pin header**

Pin No.	Description	Pin No.	Description
1	+P5V_USB2_L	2	+P5V_USB2_L
3	USB2_SB_L_DN	4	USB3_SB_L_DN
5	USB2_SB_L_DP	6	USB3_SB_L_DP
7	GND	8	GND
9	GND	10	Key ping

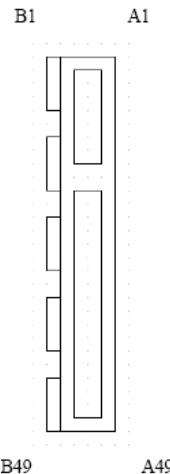
**SPIROM1: SPI ROM Pin header**

Pin No.	Description	Pin No.	Description
1	SPI_HOLD0_L	2	NC
3	PMU_AVN_SPI_R_CS0	4	V_3P3_SPI
5	PMU_AVN_SPI_MISO	6	NC
7	NC	8	PMU_AVN_SPI_R_CLK
9	GND	10	PMU_AVN_SPI_R_MOSI

### PCIE1: PCIe x 8 lane socket



### PCIE2: PCIe x 8 lane socket

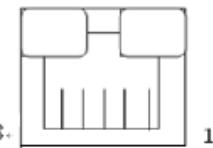


Pin No.	Side B	Side A
1	+12V	NC
2	+12V	+12V
3	+12V	+12V
4	GND	GND
5	SMB_CLK	CLK_EN
6	SMB_DAT	P3V3
7	GND	P3V3
8	P3VSB	P3V3
9	P3VSB	P3VSB
10	P3VSB	P3VSB
11	PMU_WAKE#	PLTRST_PCIE_N
12	P3V3	GND
13	P3V3	SIO_GP44
14	GND	SIO_GP45
15	GND	GND
16	PCIE_AVN_C_TXP15	PCIE_AVN_RXP15
17	PCIE_AVN_C_TXN15	PCIE_AVN_RXN15
18	GND	GND
19	PCIE_AVN_C_TXP14	NC
20	PCIE_AVN_C_TXN14	GND
21	GND	PCIE_AVN_RXP14
22	GND	PCIE_AVN_RXN14
23	PCIE_AVN_C_TXP13	GND
24	PCIE_AVN_C_TXN13	GND
25	GND	PCIE_AVN_RXP13
26	GND	PCIE_AVN_RXN13
27	PCIE_AVN_C_TXP12	GND
28	PCIE_AVN_C_TXN12	GND
29	GND	PCIE_AVN_RXP12
30	NC	PCIE_AVN_RXN12
31	NC	GND
32	GND	NC
33	PCIE_AVN_C_TXP11	NC
34	PCIE_AVN_C_TXN11	GND
35	GND	PCIE_AVN_RXP11
36	GND	PCIE_AVN_RXN11
37	PCIE_AVN_C_TXP10	GND
38	PCIE_AVN_C_TXN10	GND
39	GND	PCIE_AVN_RXP10
40	GND	PCIE_AVN_RXN10
41	PCIE_AVN_C_TXP9	GND
42	PCIE_AVN_C_TXN9	GND
43	GND	PCIE_AVN_RXP9
44	GND	PCIE_AVN_RXN9
45	PCIE_AVN_C_TXP8	GND
46	PCIE_AVN_C_TXN8	GND
47	GND	PCIE_AVN_RXP8
48	NC	PCIE_AVN_RXN8
49	GND	GND

Pin No.	Side B	Side A
1	+12V	+12V
2	+12V	+12V
3	+12V	+12V
4	+12V	+12V
5	+12V	+12V
6	+12V	+12V
7	+12V	+12V
8	+12V	+12V
9	+12V	+12V
10	P5VSB	P5VSB
11	P5VSB	P5VSB
12	HDD_LED#	GND
13	SP1_RTS_N	USB_IO1_DP
14	SP1_CTS_N	USB_IO1_DN
15	SP1_TXD	GND
16	SP1_RXD	USB_IO0_DP
17	SIO_GP46	USB_IO0_DN
18	GND	GND
19	STATUS_GRN	USB_OCO_N
20	STATUS_YEW	GND
21	GND	CLK_BUF_DP
22	GND	CLK_BUF_DN
23	PCIE_AVN_C_TXP0	GND
24	PCIE_AVN_C_TXN0	GND
25	GND	PCIE_AVN_RXP0
26	GND	PCIE_AVN_RXN0
27	PCIE_AVN_C_TXP4	GND
28	PCIE_AVN_C_TXN4	GND
29	GND	PCIE_AVN_RXP4
30	PHY_MDC_I2C_CLK	PCIE_AVN_RXN4
31	PHY_MDC_I2C_DAT	GND
32	GND	RST_BTN_N
33	SGMII_C_TXP0	NC
34	SGMII_C_TXN0	GND
35	GND	SGMII_RXP0
36	GND	SGMII_RXN0
37	SGMII_C_TXP1	GND
38	SGMII_C_TXN1	GND
39	GND	SGMII_RXP1
40	GND	SGMII_RXN1
41	SGMII_C_TXP2	GND
42	SGMII_C_TXN2	GND
43	GND	SGMII_RXP2
44	GND	SGMII_RXN2
45	SGMII_C_TXP3	GND
46	SGMII_C_TXN3	GND
47	GND	SGMII_RXP3
48	NC	SGMII_RXN3
49	FP_PWRBTN_N	GND

## Jumper Settings & Connector Pinouts on the PCIe I/O Board

### COM1: RJ45 Console port



### J6: MDC/MDIO I/F Option



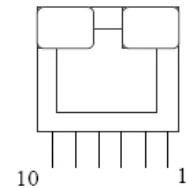
Pin No.	Description
1	SW_MDC0
2	SW_MDIO0
3	GND

Pin No.	Description	Pin No.	Description
1	NRTS_N	5	GND
2	NC	6	LNSINA
3	LNSOUTA	7	NC
4	GND	8	NCTS_N

### J5: Ethernet Switch debug port



Pin No.	Description
1	NC
2	SP2_RXD
3	SP2_TXD
4	NC
5	GND



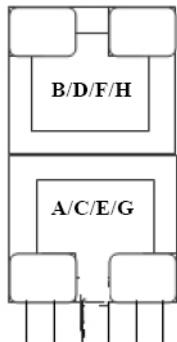
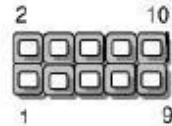
### RJ1: RJ45 Connector w/transformer

Pin No.	Description
1	LAN1_MDX0P_C
2	LAN1_MDX0N_C
3	LAN1_MDX1P_C
4	LAN1_MDX1N_C
5	GND
6	GND
7	LAN1_MDX2P_C
8	LAN1_MDX2N_C
9	LAN1_MDX3P_C
10	LAN1_MDX3N_C

### USB1: Dual USB connectors

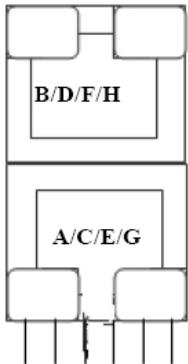
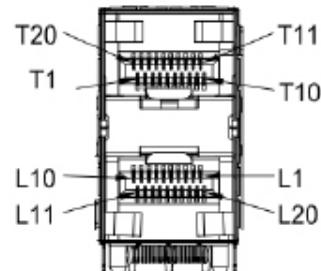


Pin No.	Description	Pin No.	Description
1	+P5V_USB0_L	5	+P5V_USB0_L
2	USB0_SB_L_DN	6	USB1_SB_L_DN
3	USB0_SB_L_DP	7	USB1_SB_L_DP
4	GND	8	GND

**RJ2/3: RJ45 8 Port Connector w/transformer (2X4)**

**SPIROM1: SPI ROM Pin header**


Pin No.	Description	Pin No.	Description
1	SW_SPI_HOLD_N	2	NC
3	SPI_CS_N	4	P3VSB
5	SW_SPI_MISO	6	NC
7	NC	8	SW_SPI_SCK
9	GND	10	SW_SPI_MOSI

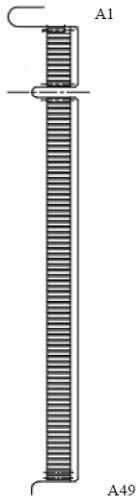
Pin No.	Description	Pin No.	Description
A/C/E/G 1	TDPO	B/D/F/H 1	TDPO
A/C/E/G 2	TDNO	B/D/F/H 2	TDNO
A/C/E/G 3	TDP1	B/D/F/H 3	TDP1
A/C/E/G 4	TDN1	B/D/F/H 4	TDN1
A/C/E/G 5	TDP2	B/D/F/H 5	TDP2
A/C/E/G 6	TDN2	B/D/F/H 6	TDN2
A/C/E/G 7	TDP3	B/D/F/H 7	TDP3
A/C/E/G 8	TDN3	B/D/F/H 8	TDN3
A/C/E/G 9	NC	B/D/F/H 9	NC
A/C/E/G 10	GND	B/D/F/H 10	GND

**RJ4 :RJ45 8 Port Connector w/o transformer (2X4)**

**CN1 :Dual SFP+ connectors**


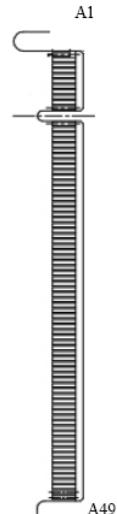
Pin No.	Description	Pin No.	Description
T/L 1	GND	T/L 2	TXFault
T/L 3	TXDis	T/L 4	SDA
T/L 5	SCL	T/L 6	MOD_ABS
T/L 7	RS0	T/L 8	RX_LOS
T/L 9	RS1	T/L 10	GND
T/L 11	GND	T/L 12	RD-
T/L 13	RD+	T/L 14	GND
T/L 15	P3V3	T/L 16	P3V3
T/L 17	GND	T/L 18	TD+
T/L 19	TD-	T/L 20	GND

Pin No.	Description	Pin No.	Description
A/C/E/G 1	DXPO	B/D/F/H 1	DXPO
A/C/E/G 2	DXNO	B/D/F/H 2	DXNO
A/C/E/G 3	DXP1	B/D/F/H 3	DXP1
A/C/E/G 4	DXP2	B/D/F/H 4	DXP2
A/C/E/G 5	DXN2	B/D/F/H 5	DXN2
A/C/E/G 6	DXN1	B/D/F/H 6	DXN1
A/C/E/G 7	DXP3	B/D/F/H 7	DXP3
A/C/E/G 8	DXN3	B/D/F/H 8	DXN3

**PCIEC2: PCIe x 8 lane connector (gold fingers)**



**PCIEC1: PCIe x 8 lane connector (gold fingers)**



Pin No.	Side B	Side A
1	+12V	NC
2	+12V	+12V
3	+12V	+12V
4	GND	GND
5	SMB_CLK	CLK_EN
6	SMB_DAT	P3V3
7	GND	P3V3
8	P3VSB	P3V3
9	P3VSB	P3VSB
10	P3VSB	P3VSB
11	PMU_WAKE#	PLTRST_PCIE_N
12	P3V3	GND
13	P3V3	SIO_GP44
14	GND	SIO_GP45
15	GND	GND
16	PCIE_AVN_C_TXP15	PCIE_AVN_RXP15
17	PCIE_AVN_C_TXN15	PCIE_AVN_RXN15
18	GND	GND
19	PCIE_AVN_C_TXP14	NC
20	PCIE_AVN_C_TXN14	GND
21	GND	PCIE_AVN_RXP14
22	GND	PCIE_AVN_RXN14
23	PCIE_AVN_C_TXP13	GND
24	PCIE_AVN_C_TXN13	GND
25	GND	PCIE_AVN_RXP13
26	GND	PCIE_AVN_RXN13
27	PCIE_AVN_C_TXP12	GND
28	PCIE_AVN_C_TXN12	GND
29	GND	PCIE_AVN_RXP12
30	NC	PCIE_AVN_RXN12
31	NC	GND
32	GND	NC
33	PCIE_AVN_C_TXP11	NC
34	PCIE_AVN_C_TXN11	GND
35	GND	PCIE_AVN_RXP11
36	GND	PCIE_AVN_RXN11
37	PCIE_AVN_C_TXP10	GND
38	PCIE_AVN_C_TXN10	GND
39	GND	PCIE_AVN_RXP10
40	GND	PCIE_AVN_RXN10
41	PCIE_AVN_C_TXP9	GND
42	PCIE_AVN_C_TXN9	GND
43	GND	PCIE_AVN_RXP9
44	GND	PCIE_AVN_RXN9
45	PCIE_AVN_C_TXP8	GND
46	PCIE_AVN_C_TXN8	GND
47	GND	PCIE_AVN_RXP8
48	NC	PCIE_AVN_RXN8
49	GND	GND

Pin No.	Side B	Side A
1	+12V	+12V
2	+12V	+12V
3	+12V	+12V
4	+12V	+12V
5	+12V	+12V
6	+12V	+12V
7	+12V	+12V
8	+12V	+12V
9	+12V	+12V
10	P5VSB	P5VSB
11	P5VSB	P5VSB
12	HDD_LED#	GND
13	SP1_RTS_N	USB_IO1_DP
14	SP1_CTS_N	USB_IO1_DN
15	SP1_TXD	GND
16	SP1_RXD	USB_IO0_DP
17	SIO_GP46	USB_IO0_DN
18	GND	GND
19	STATUS_GRN	USB_OCO_N
20	STATUS_YEW	GND
21	GND	CLK_BUF_DP
22	GND	CLK_BUF_DN
23	PCIE_AVN_C_TXP0	GND
24	PCIE_AVN_C_TXN0	GND
25	GND	PCIE_AVN_RXP0
26	GND	PCIE_AVN_RXN0
27	PCIE_AVN_C_TXP4	GND
28	PCIE_AVN_C_TXN4	GND
29	GND	PCIE_AVN_RXP4
30	PHY_MDC_I2C_CLK	PCIE_AVN_RXN4
31	PHY_MDC_I2C_DAT	GND
32	GND	RST_BTN_N
33	SGMII_C_TXP0	NC
34	SGMII_C_TXN0	GND
35	GND	SGMII_RXP0
36	GND	SGMII_RXN0
37	SGMII_C_TXP1	GND
38	SGMII_C_TXN1	GND
39	GND	SGMII_RXP1
40	GND	SGMII_RXN1
41	SGMII_C_TXP2	GND
42	SGMII_C_TXN2	GND
43	GND	SGMII_RXP2
44	GND	SGMII_RXN2
45	SGMII_C_TXP3	GND
46	SGMII_C_TXN3	GND
47	GND	SGMII_RXP3
48	NC	SGMII_RXN3
49	FP_PWRBTN_N	GND

# Chapter 4:

## Hardware Setup

### Preparing the Hardware Installation

**WARNING:** To reduce the risk of personal injury, electric shock, or damage to the equipment, please make sure the device is totally powered off and without any power source connected.

1. Shut off the system and remove all power connections.
2. Loosen and remove the screws on the left, right and rear sides of the system, as shown below.



3. Gently lift the top compartment.



### Installing System Memories

The system comes with 2 x 204-pin DDR3 SO-DIMM sockets up to 16GB each on the Intel Rangeley main board. Please follow the steps below for installations.

1. Locate the DIMM sockets near the CPU
2. Insert DIMM modules into the sockets until they are firmly seated.



## Installing a CompactFlash Card

The system comes with a CF card slot on the Intel Rangeley main board. Please follow the steps below for installation.

1. Locate the CF card slot nearby the CPU.
2. Insert the CF card until firmly seated.



**Note:** The device has an error proof design so that the card will not be inserted if it is in the wrong orientation. You should insert the CF card with the arrow on the CompactFlash facing up and pointing toward the connector.

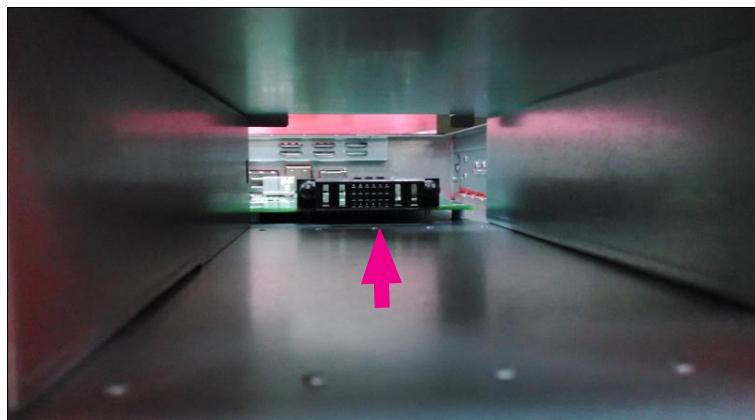
## Replacing the PSU (Power Supply Unit)

Please follow the instructions below to replace the power supply unit in case it is worn out.

1. Loosen the security screw circled in the image below.
2. Once you have loosened the security screw, simply pull the handle towards your side.



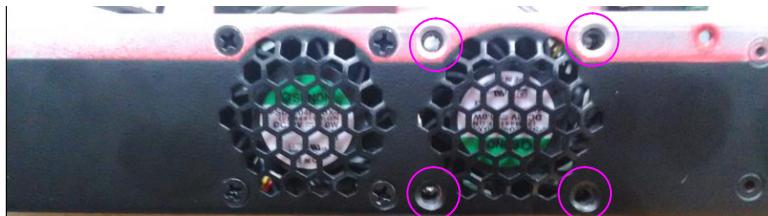
3. Once the old PSU is removed, locate the internal PSU connector and install a new PSU.



## Replacing the Cooling Fans

Please follow the instructions below to replace the cooling fans in case they are worn out.

1. Loosen and remove the 4 screws on the fan.



2. Remove the FAN connector(s) and take out the used fan.

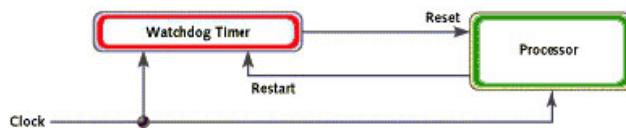
3. Install a new one by connecting the FAN connectors and fix it with 4 screws as shown in the first step.



# Appendix A: Programming Watchdog Timer

A watchdog timer is a piece of hardware that can be used to automatically detect system anomalies and reset the processor in case there are any problems. Generally speaking, a watchdog timer is based on a counter that counts down from an initial value to zero. The software selects the counter's initial value and periodically restarts it. Should the counter reach zero before the software restarts it, the software is presumed to be malfunctioning and the processor's reset signal is asserted. Thus, the processor will be restarted as if a human operator had cycled the power.

For sample watchdog code, see *watchdog* folder on the *Driver and Manual CD*



To execute the sample code: enter the number of seconds to start count down before the system can be reset. Press start to start the counter and stop to stop the counter..

Dwd\_tst --swt xxx (Set Watchdog Timer 1-255 seconds)

wd\_tst[\*] --start (Start Watchdog Timer)

wd\_tst --stop (Stop Watchdog Timer)

For sample watchdog code, see *watchdog* folder on the *Driver and Manual CD*

# Appendix B: Setting up Console Redirections

Console redirection lets you monitor and configure a system from a remote terminal computer by re-directing keyboard input and text output through the serial port. This following steps illustrate how to use this feature. The BIOS of the system allows the redirection of console I/O to a serial port. With this configured, you can remotely access the entire boot sequence through a console port.

1. Connect one end of the console cable to console port of the system and the other end to serial port of the Remote Client System.
2. Configure the following settings in the BIOS Setup menu:  
BIOS > Advanced > Remote Access Configuration > Serial Port Mode > [115200, 8 , n ,1 ]
3. Configure Console Redirection on the client system. The following illustration is an example on Windows platform:
  - a. A. Click the start button, point to Programs > Accessories > Communications and select Hyper Terminal.
  - b. B. Enter any name for the new connection and select any icon.
  - c. Click OK.
  - d. From the "Connect to". Pull-down menu, select the appropriate Com port on the client system and click OK.
  - e. Select 115200 for the Baud Rate, None. for Flow control, 8 for the Data Bit, None for Parity Check, and 1 for the Stop Bit.

# Appendix C:

## On Linux

Follow these instructions when installing the Intel® LAN controller base driver for the in Red Hat® and Linux operating system.

1. Insert the motherboard/system support CD to the optical drive and mount the optional drive in the Linux platform.
2. Copy the base driver tar file from the motherboard/system support CD to the directory of your local hard disk. The Intel® LAN driver for Linux OS is located in the following directory:

\Driver\LAN\_Driver\PRO1000\LINUX. The name format of driver file is "e1000-<Version>.tar.gz". For example: the file name of driver version 7.0.38 is "e1000-7.0.38.tar.gz".

3. Untar/unzip the archive, where <x.x.x> is the version number for the driver tar file:

```
tar zxf e1000-<x.x.x>.tar.gz
```

4. Change to the driver src directory on your system, where <x.x.x> is the version number for the driver tar:

```
cd e1000-<x.x.x>/src/
```

5. Compile the driver module by typing the following command:

```
make install
```

6. The binary will be installed as:

/lib/modules/<kernel\_version>/kernel/drivers/net/e1000.o

The install locations listed above are the default locations. They might not be correct for certain Linux distributions.

7. Load the module using either the insmod or modprobe command:

```
modprobe igb
```

```
insmod igb
```

Note that for 2.6 kernels the insmod command can be used if the full path to the driver module is specified. For example:

```
insmod /lib/modules/<KERNEL VERSION>/kernel/drivers/net/igb/igb.ko
```

With 2.6 based kernels also make sure that older igb drivers are removed from the kernel, before loading the new module:

```
rmmod igb; modprobe igb
```

8. Assign an IP address to the interface by entering the following, where <x> is the interface number:

```
ifconfig eth<x> <IP_address>
```

9. Verify that the interface works. Enter the following, where <IP\_address> is the IP address for another machine on the same subnet as the interface that is being tested:

```
ping <IP_address>
```

# **Appendix D:**

## **Terms and Conditions**

### **Warranty Policy**

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas the manufacturer will bear the after service freight charges for goods returned to the user.
3. The buyer will pay for repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on "RMA Service," RMA goods will be returned at customer's expense.
5. The following conditions are excluded from this warranty:

Improper or inadequate maintenance by the customer  
Unauthorized modification, misuse, or reversed engineering of the product Operation outside of the environmental specifications for the product.

### **RMA Service**

#### Requesting a RMA#

6. To obtain a RMA number, simply fill out and fax the "RMA Request Form" to your supplier.
7. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.
8. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.
9. Mark the RMA# clearly on the box.



**Note:** Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.