Eddy™ *means real-time*

Eddy Series

User's Guide

Ver 2.0
2007. 11. 15

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Chapter 1. Introduction

SystemBase Embedded Module lineup is composed of largely three catagories; Eddy-Serial Series, Eddy-DIO Series and Eddy-CPU Series. This manual focuses on Eddy-Serial and Eddy-CPU Series.

1.1 About this manual

This manual includes all necessary information from installation to operating Eddy Series (Eddy-CPU, Eddy-S1/Pin, Eddy-S1/DB9, and Eddy-S1/DB9-PoE). Setting Eddy's configurations, status monitoring, firmware update, and other administration work are also included, H/W level integration and S/W setting information can also be found.

1.2 Who should read this manual

This guide is designed for Eddy users and administrators. It is strongly recommended that anyone trying to apply, use, and maintain Eddy read this document. It will be a great starting point for any administrator who wants to easily monitor and control Eddy and its connected devices.

1.3 Contents

Chapter 1. Introduction is a preface with general information and introductory notices.

Chapter 2. Getting Started gives a brief introduction to Eddy series, including features and applications.

Chapter 3. Hardware Descriptions explains the layout and pin specifications with block diagram and drawings.

Chapter 4. Integration assists you connecting Eddy to serial and network environment. It covers first time boot-up and status check procedures.

Chapter 5. Configuration via Web provides ways to configure and to connect Eddy via web browser.

Chapter 6. Configuration via Telnet provides commands and its explanation to configure and to connect Eddy via web Telnet.

Chapter 7. Appendix provides firmware update guides and detailed technical specifications.

1.4 Eddy Documents

The following table summarizes documents included in the Eddy document set.

Table 1-1 Eddy Documents

Document	Description
User's Guide	Eddy's Configuration, and Management Information
Programmer's Guide	Programmer's application development guide, including in-depth approach to compiling, linking, creating and uploading firmware API reference is included with a list of available functions for customized application programming
Portview User's Manual	Guide for SystemBase device server management application Portview
COM Port Redirector User Manual	Guide for SystemBase COM Port Redirector
TestView User Manual	Guide for SystemBase test program TestView

General information on Eddy or embedded device servers can be obtained at our website at http://www.sysbas.com/. Latest documents, software and firmware downloads are available.

Other relevant documents are as follows:

Document	Description
Eddy Spec Sheet	Eddy specifications
Eddy White Paper	An introductory reading for anyone new to embedded device server, which focuses on background, history, market environment, and technology
Eddy Application Notes	Various applications of Eddy presented in diagrams and images

All documents are updated promptly, so check for the recent document updates. The contents in these documents are subject to change without a prior notice.

1.5   Technical Support

You can reach our tech support by following 4 ways;

1. Visit the developer's community at http://www.embeddedmodule.com and share information and tips on Eddy with developers all around the world.

2. Visit us at http://www.sysbas.com/ and go to 'Technical Support' menu. FAQ and questions can be reviewed and submitted.

3. E-mail our technical support team to tech@sysbas.com. Any kind of inquiries, requests, and comments are welcomed.

4. Call us at our customer center at 82-2-855-0501 for immediate support.

Our technical support team will kindly help you get over with the problem.

Chapter 2. Getting Started

Welcome to Eddy! This chapter includes Eddy series overview, main and distinctive features, package contents for each product, and application fields.

2.1 Overview

There are 4 modules in Eddy-Serial Series; Eddy-CPU, Eddy-S1/Pin, Eddy-S1/DB9, and Eddy-S1/DB9-PoE.
Each module includes default applications for serial and LAN communication, and supports plug-and-play features. By switching to the custom mode, users can program any application and upload it on to the module. This application then is executed on the module. In order to write and compile programmer's source code, Software Development Kit (SDK) LemonIDE® is required. SDK is included in the Development Kit package. Please refer to Programming Guide and LemonIDE® user's manual included in the Development Kit for detailed information on the SDK.
SDK is not necessary for users using Eddy in default presettings.

◆ Eddy-CPU

Eddy-CPU is an embedded module based on ATMEL AT91SAM9260-CJ processor with 32MB SDRAM, 4MB Flash Memory, 1 Ethernet port with 10/100Mbps, 16 bit address / 8 bit data bus interface supporting external device connection, and maximum 17 programmable IO pins. Programmers can easily implement RS232/422/485 serial driver or I2C interface with library type example codes and evaluation kit circuit diagrams.
Eddy-CPU is implemented on a small form factor (42 * 25mm) with on-board memory and integrated 10/100Mbps network interface. Developers can minimize time and cost spent on developing application products.

Figure 2-1 Eddy-CPU

◆ **Eddy-S1/Pin**

RJ-45 Ethernet port is included to provide direct connection to network.

For serial communication, RS232 only or RS422/485 combo interface is available. In the combo module, RS422/485 setting can be adjusted with software, using web interface.

Acceptable external power input ranges from 3.0 to 5.5V through pin headers.

Please check labeled input voltage on top of the module before supplying power. Improper voltage feed may damage the module.
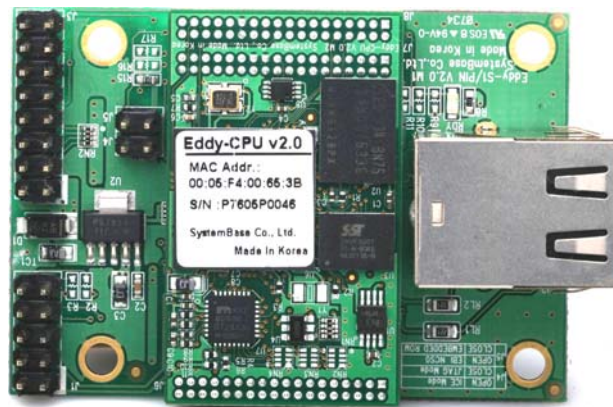
Figure 2-2   Eddy-S1/Pin

◆ **Eddy-S1/DB9**

RJ-45 Ethernet port is included to provide direct connection to network.

For serial communication, RS232 only or RS422/485 combo interface is available through DB9 male connector. In the combo module, RS422/485 setting can be adjusted with software, using web interface.

External power input is provided as 5V DC Jack.

Please check labeled input voltage on top of the module before supplying power. Improper voltage feed may damage the module.

Figure 2-3   Eddy-S1/DB9

◆ **Eddy-S1/DB9-PoE**

This module can operate as a powered device (PD), which accepts power input from the twisted pair Category 5 Ethernet cable as specified in IEEE 802.3af Power-over-Ethernet (PoE) standard.

With an auxiliary 5V DC power jack, power supply can be automatically channeled to 5V adaptor when PSE (Power Sourcing Equipment) is out of order. Seamless power supply is guaranteed. PSE power can be used again when the PSE resumes to normal operation.

For serial communication, RS232 only or RS422/485 combo interface is available through DB9 male connector. In the combo module, RS422/485 setting can be adjusted with software, using web interface.

Figure 2-4   Eddy-S1/DB9-PoE

◆ **Eddy Development Kit (Eddy DK)**

Eddy Development Kit (Eddy DK) helps programmers to test and customize their own Eddy applications easily, with 1 piece of Eddy-S1/Pin module included in the package. The kit includes evaluation board, all necessary connectors, and programming environment with documentations and guidelines. Please refer to Programming Guide included in the Development Kit for detailed information on the DK.
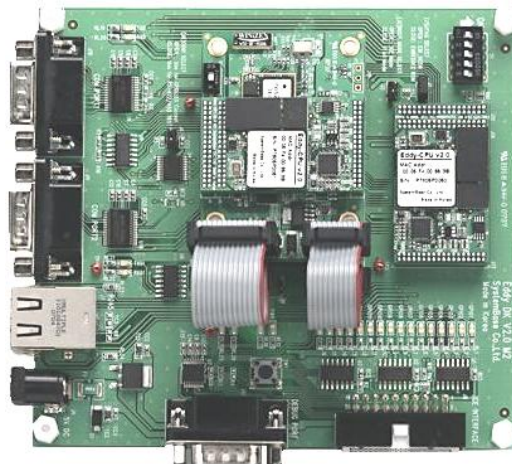
Figure 2-5   Eddy-DK

◆ **Eddy Software Architecture**
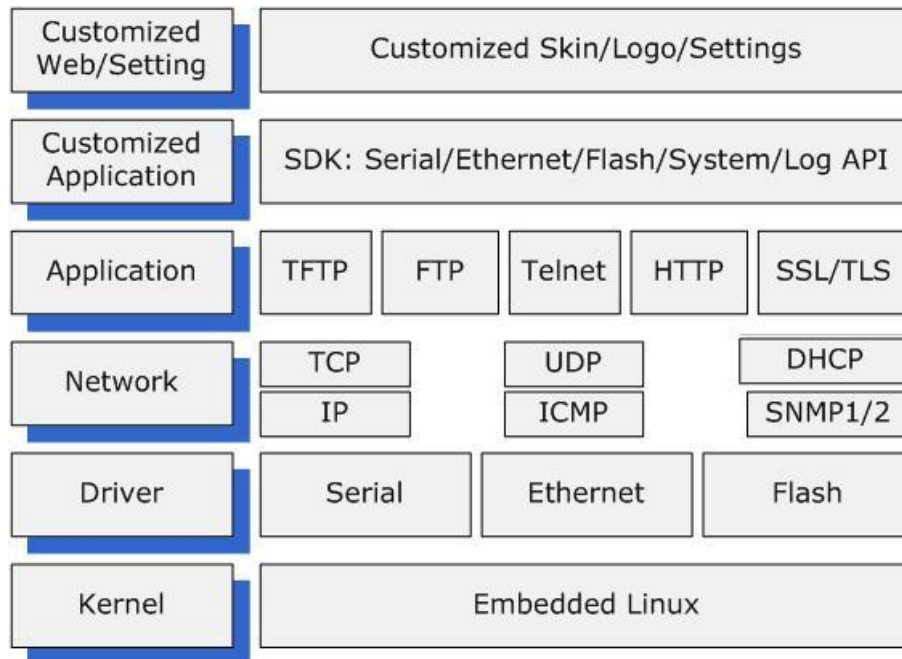
Figure 2-6   Eddy Software Architecture

2.2 Features

Various features of Eddy make it a universal yet distinctive embedded solution.

Below lists main features of Eddy Serial Series. Others will explicitly appear throughout this guide.

- Premium-level hardware with ARM9 180MHz CPU, 4MB Flash, and 32MB SDRAM
- Selectable RS232 only or RS422/485 combo interfaces
- Max 921.6Kbps serial speed
- Program and run your own application
- SystemBase SDK and API support for application programming (included in Development Kit)
- Small size to fit in to any hardware
- 10/100Mbps Ethernet port (auto MDIX)
- SystemBase COM Port Redirector for better adaptability
- Extensive configuration and monitoring with Portview
- Firmware upload with Web, FTP, and TFTP
- Configuration with Web, Telnet, SNMP, and Portview
- Various customizing options
- Standard Linux environment for openness in executable applications
- Multiple Programmable IO pins for customized applications

2.3   Package Checklist

Eddy package is composed of following components. Make sure every component is included with your package.

◆ **Eddy Package Contents**
All module packages include a module and a CD with utilities and documents.
Module 1pc (Eddy-S1/Pin, Eddy-S1/DB9, or Eddy-S1/DB9-PoE)
CD-ROM (Utilities and documents)

2.4   Applications

Eddy can be applied to many practical applications in various fields. Some are presented below.

◆ **Factory / Industrial Automation**
PLC, Robot arms, Human-Machine Interface, Warehouse rails
Medical instruments, Inspection equipment controllers
Alarming units

◆ **Home Appliances / Electronic Devices**
Power controller, Gaming machines
Scales, Gas detection units, Water & pollution metering devices
Data collection and distribution units

◆ **Financial / Building Automation**
Card readers, Barcode scanners, Kiosks, Point-Of-Sale related devices
Serial printers, Cash registers, Credit card authorization terminals
Biometric detection units, Security devices

◆ **OEM Device Server Distributors**
OEM device server with distributor's own case & brand
Ready-to-go device or customized application / setup mode can be inserted

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Chapter 3. Hardware Description

This chapter provides Eddy's hardware information, including block diagram, layout, pin specifications, dimensions and other hardware-related issues.

3.1 Eddy-CPU

Ethernet port is provided as pin headers, and the transformer and RJ-45 connector should be manually implemented by users. (RJ-45 connector with embedded transformer, normally called LAN-Mate or MAC Jack, can be used as a simpler approach.

16 bit address / 8 bit data bus provides flexibility in external peripheral connectivity and up to 16 programmable IO can be used on user's side.

Chip Selects

Chip select signal	Typical Slave Device	Address Range	Size
NCS0	Flash ROM	0x10000000~x107FFFFF	4MB
NCS2	Application dependent	0x30000000~	
NCS6		0x60000000~	
NCS7		0x70000000~	

Eddy-CPU Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units
Supply Voltage	Vcc	3.0	3.3	3.6	VDC
Supply Current	Icc		300		mA
Operating ambient temperature	T_A	-40		85	℃

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3.1.1 Dimensions

Dimensions of Eddy-CPU are shown below.
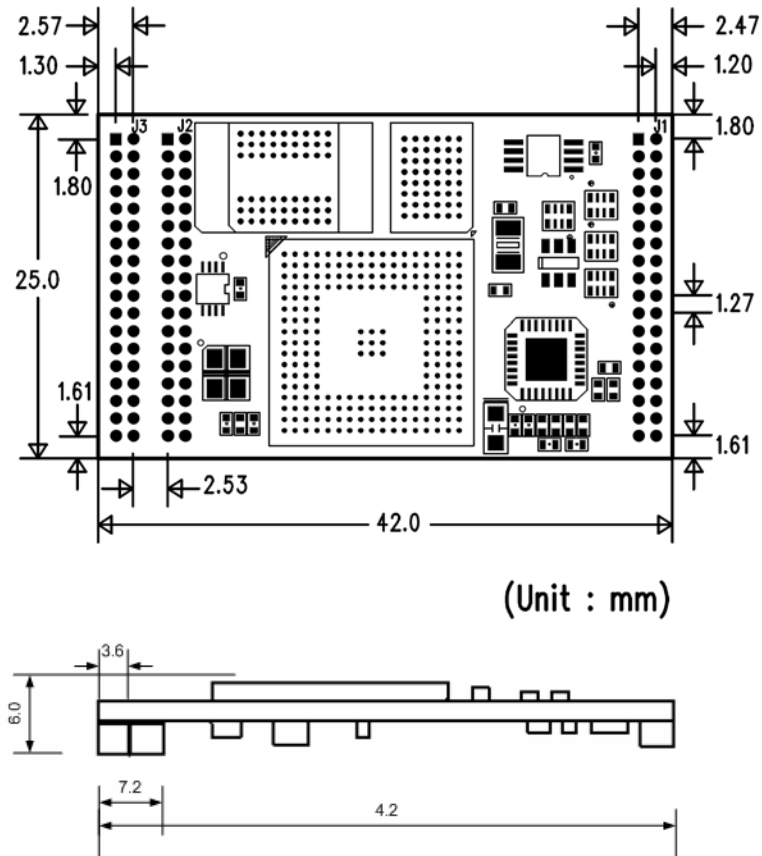
Figure 3-1   Eddy-CPU front and side view

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3.1.2 Pin Specifications

Pin specifications are presented below.
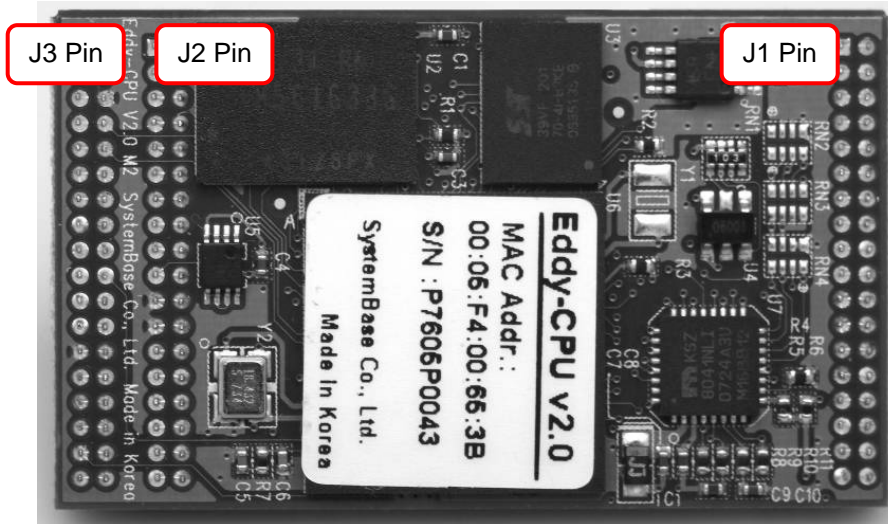
Figure 3-2   Pin Spec

J1 Specifications

J1			
Pin	Desc.	Pin	Desc.
1	MCDB1	2	MCCK
3	MCDB3(SPI0_NPCS0)	4	MCDB2
5	MCCDB(SPI0_MIOSI)	5	SPI0_SPCK
7	HDMA	8	SPI0_MISO
9	HDPA	10	DDM
11	USBCNX	12	DDP
13	RDY#	14	nRESET
15	NTRST	16	RTCK
17	TDO	18	TMS
19	TDI	20	TCK
21	3.3V	22	GND
23	3.3V	24	GND
25	CTS1	26	RTS1
27	TXD1	28	RXD1
29	NC	30	NC
31	LED_Speed	32	LED_link
33	LAN_RX-	34	LAN_RX+
35	LAN_TX-	36	LAN_TX+

J1 Pin Description

Pin No	Name	Description
1	MCDB1	Multimedia Card Slot B Data
2	MCCK	Multimedia Card Clock
3	MCDB3 (SPI0_NPCS0)	Multimedia Card Slot B Data SPI Peripheral Chip Select 0
4	MCDB2	Multimedia Card Slot B Data
5	MCCDB (SPI0_MOSI)	Multimedia Card Slot B Command SPI Master Out Slave In
6	SPI0_SPCK	SPI Serial Clock
7	HDMA	USB Host Port A Data -
8	SPI0_MISO	SPI Master In Slave Out
9	HDPA	USB Host Port A Data +
10	DDM	USB Device Port Data -
11	USBCNX	Used when implementing USB Device Port
12	DDP	USB Device Port Data +
13	RDY#	Output signal for CPU operation status
14	nRESET	Microcontroller Reset input
ICE and JTAG		
15	NTRST	Test Reset Signal
16	RTCK	Return Test Clock
17	TDO	Test Data Out
18	TMS	Test Mode Select
19	TDI	Test Data In
20	TCK	Test Clock
Power Supplies		
21	3.3V	3.0V to 3.6V power input
22	GND	Ground
23	3.3V	3.0V to 3.6V power input
24	GND	Ground
Universal Synchronous Asynchronous Receiver Transmitter USART1		
25	CTS1	USART1 Clear To Send
26	RTS1	USART1 Request To Send
27	TXD1	USART1 Transmit Data
28	RXD1	USART1 Receive Data
29	NC	No Connection
30	NC	No Connection
Ethernet 10/100		
31	LED_Speed	LAN connection speed

Speed	Pin State	LED Definition
10Base-T	H	OFF
100Base-TX	L	ON

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32	LED_link	LAN connection status		
		Link/Activity	Pin State	LED Definition
		No Link	H	OFF
		Link	L	ON
		Activity	Toggle	Blinking
33	LAN_RX-	Physical receive or transmit signal (- differential)		
34	LAN_RX+	Physical receive or transmit signal (+ differential)		
35	LAN_TX-	Physical transmit or receive signal (- differential)		
36	LAN_TX+	Physical transmit or receive signal (+ differential)		

J2 Specifications

Connect USB cable to J1 while the jumper is connected to J2, so that applications can be compiled, linked, created, and uploaded to the Eddy-CPU module. (Please refer to Programmer Guide for more information.)

J2			
Pin	Desc.	Pin	Desc.
1	A15	2	A14
3	A13	4	A12
5	A11	5	A10
7	A9	8	A8
9	A7	10	A6
11	A5	12	A4
13	A3	14	A2
15	A1	16	A0
17	NCS2	18	NWE
19	HRST	20	NRD
21	GND	22	3.3V
23	GND	24	3.3V
25	D7	26	D6
27	D5	28	D4
29	D3	30	D2
31	D1	32	D0
33	NCS6(FIQ)	34	JTAGSEL
35	IRQ0(NCS7)	36	VDDBU

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J2 Pin Description

Pin No	Name	Description
1~16	A[15:0]	Address Bus 0~15
17	NCS2	External device Chip Select signal, 256MB memory area addressable, active low
18	NWE	External device Write Enable signal, active low
19	HRST	External device Reset signal, active high
20	NRD	External device Read signal
21, 23	GND	Ground
22, 24	3.3V	3.0V to 3.6V power input
25~32	D[7:0]	Data Bus
33	NCS6/FIQ	- External device Chip Select signal, 256MB memory area addressable, active low - Fast Interrupt Input
34	JTAGSEL	JTAG boundary scan can be used by connecting pin34 and 36. This pin should not be connected when using ICE(In-Circuit Emulator) or in normal operation status.
35	NCS7/IRQ0	- External device Chip Select signal, 256MB memory addressable, active low - External Interrupt Input
36	VDDBU	JTAG boundary scan can be used by connecting pin34 and 36. This pin should not be connected when using ICE(In-Circuit Emulator) or in normal operation status.

J3 Specifications

J3			
Pin	Desc.	Pin	Desc.
1	PID0	2	PID1
3	PID2	4	PID3
5	PID4	6	GND
7	GPIO1	8	GPIO2
9	GPIO3	10	GPIO4
11	GPIO5	12	GPIO6
13	GPIO7	14	GPIO8
15	GPIO9	16	GPIO10
17	GPIO11	18	GPIO12
19	GPIO13	20	GPIO14
21	GPIO15	22	GPIO16
23	DRXD	24	DTXD
25	GND	26	GND
27	BMS	28	NRST
29	DCD	30	RXD
31	TXD	32	DTR
33	DSR	34	RTS
35	CTS	36	RI

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J3 Pin Description

Pin No	Name	Description
1-5	PID[4:0]	Product ID only used by the manufacturer. Please do not work on these pins.
6, 25, 26	GND	Ground
7~22	GPIO[1:16]	General Purpose In/Out signal Development Kit's LED adjustable <table><tr><td>Pin State</td><td>LED Definition</td></tr><tr><td>H</td><td>ON</td></tr><tr><td>L</td><td>OFF</td></tr></table>
		Debug Unit - DBGU
23	DRXD	Debug Receive Data
24	DTXD	Debug Transmit Data
		Reset/Test
27	BMS	Boot Mode Select signal BMS = 1, Boot on Embedded ROM BMS = 0, Boot on External Memory
28	NRST	External device Reset signal, active low signal
		Universal Synchronous Asynchronous Receiver Transmitter USART0
29	DCD	USART0 Data Carrier Detection
30	RXD	USART0 Receive Data
31	TXD	USART0 Transmit Data
32	DTR	USART0 Data Terminal Ready
33	DSR	USART0 Data Set Ready
34	RTS	USART0 Request To Send
35	CTS	USART0 Carrier To Send
36	RI	USART0 Ring Indicator
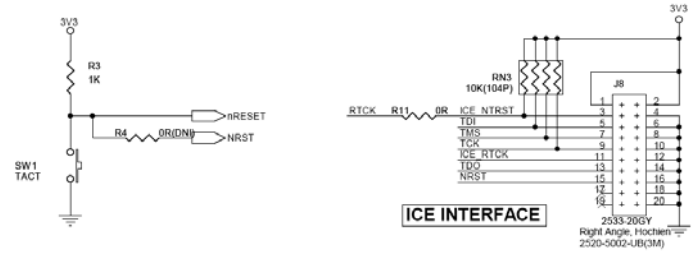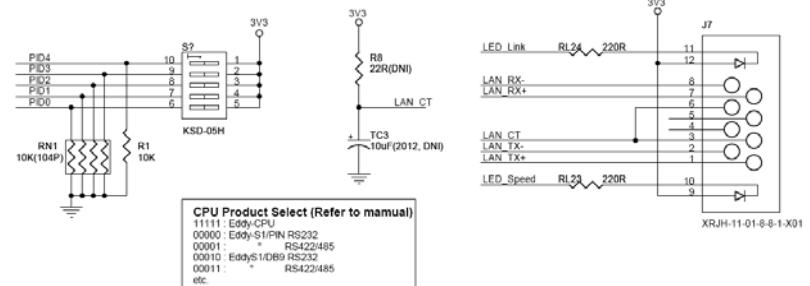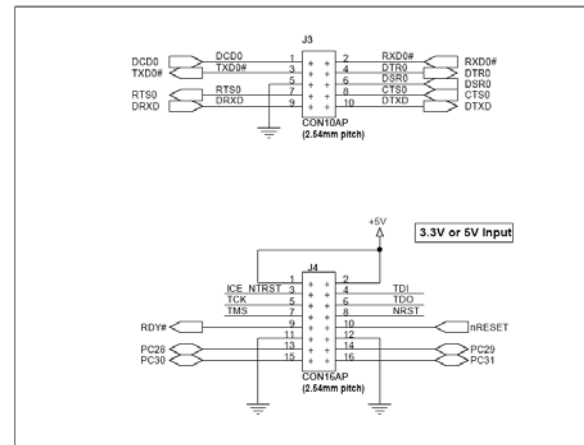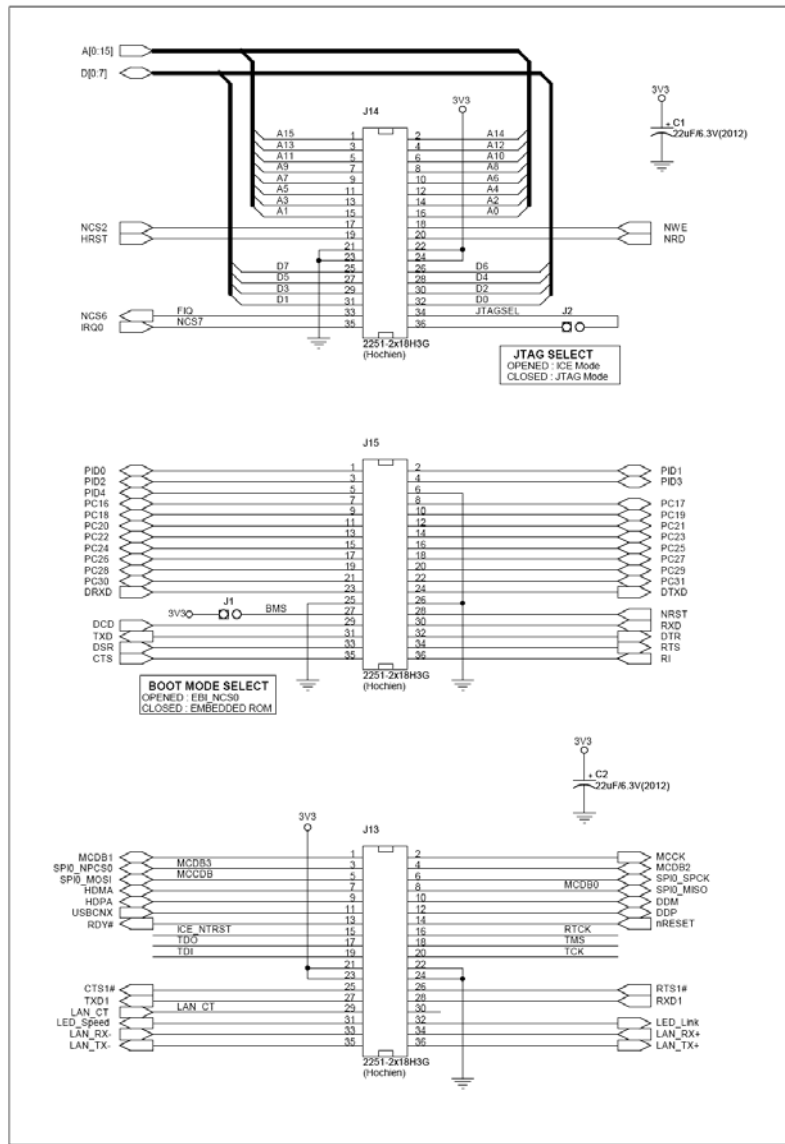
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Eddy-CPU 2.0

JTAG SELECT
OPENED : ICE Mode
CLOSED : JTAG Mode

BOOT MODE SELECT
OPENED : EBI_NCS0
CLOSED : EMBEDDED ROM

Eddy-S1/PIN or Eddy-WS1/PIN

3.3V or 5V Input

CPU Product Select (Refer to mamual)
11111 : Eddy-CPU
00000 : Eddy-S1/PIN RS232
00001 :   "   RS422/485
00010 : EddyS1/DB9 RS232
00011 :   "   RS422/485
etc.

ICE INTERFACE

SystemBase Co., Ltd.
Title: Eddy 2.0 DK
Interface
Size: A3
Rev: 2.0
Date: Tuesday, September 11, 2007
Sheet 1 of 3

Eddy-WS1/TTL
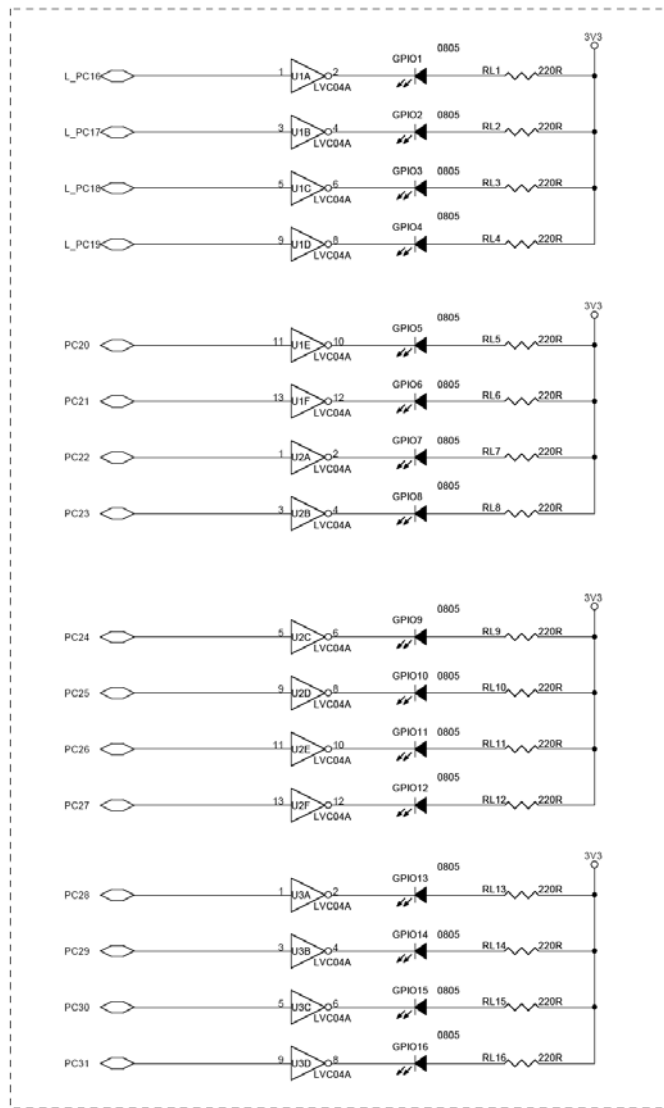
SystemBase Co., Ltd.

Title: Eddy 2.0 DK

Size: A3 Document Number: LED & PWR Rev: 2.0

Date: Tuesday, September 11, 2007 Sheet 2 of 3
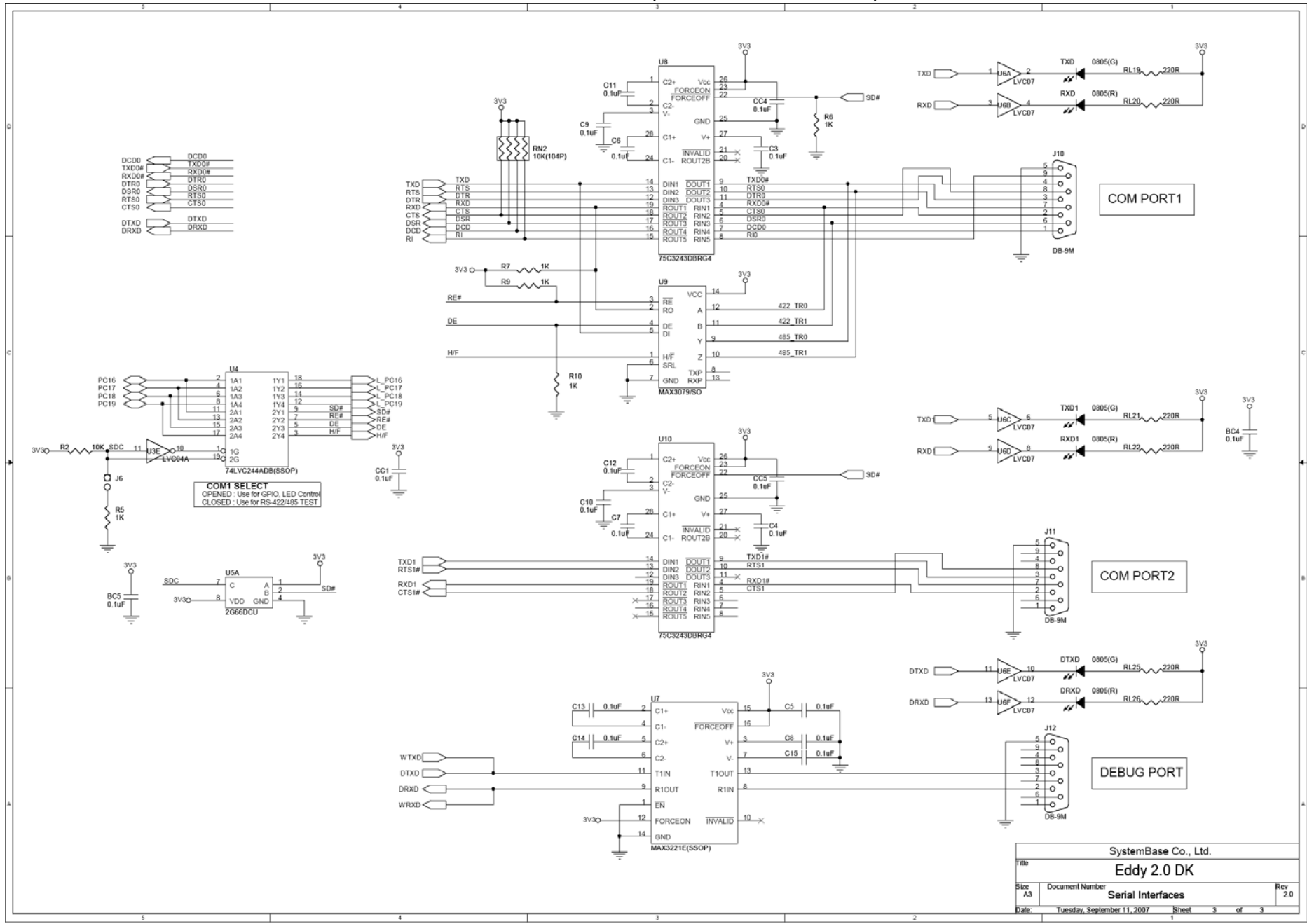
3.2 Eddy-S1/Pin

Ethernet LAN port is in RJ-45 form factor to provide direct network connection. One serial port is provided in pin header interface, supporting either RS232 only or RS422/485 combo. Pins can be connected to any kind of external serial interface of user's preference.
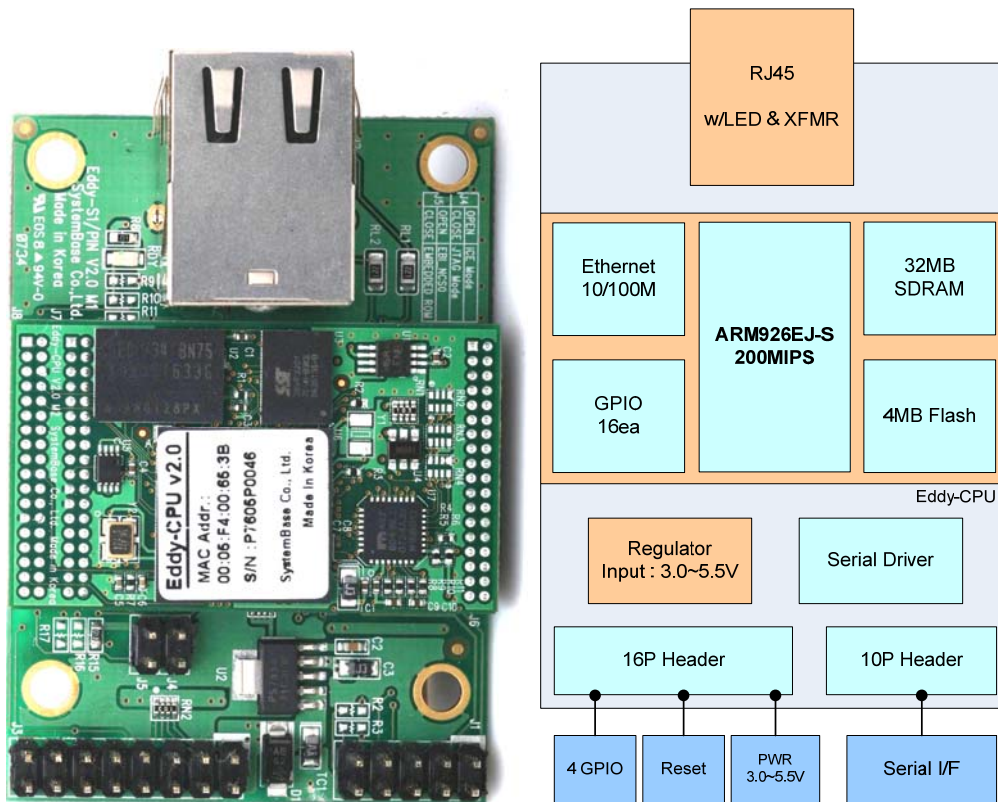
Figure 3-3   Eddy-S1/Pin – Product and block diagram

3.2.1   Dimensions
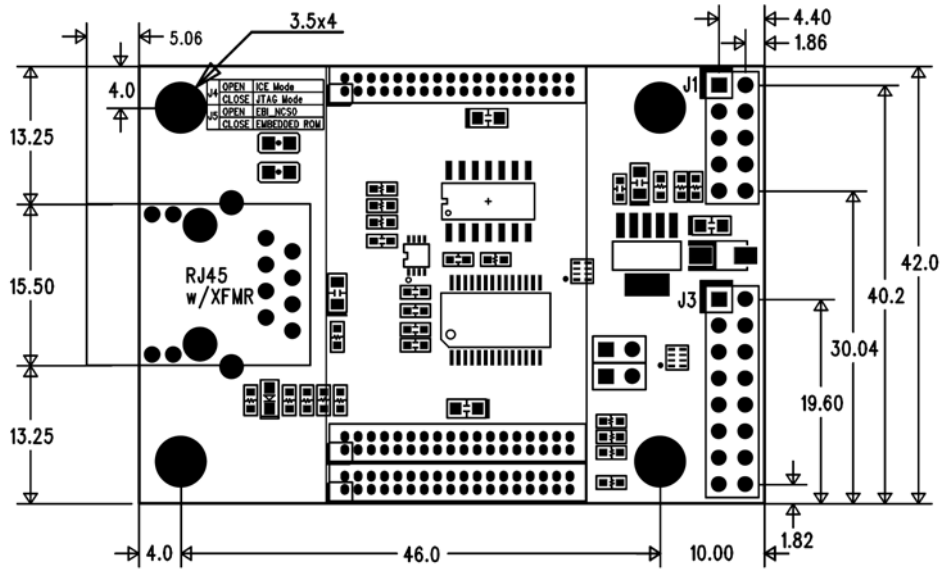
Figure 3-4   Eddy-S1/Pin Front View
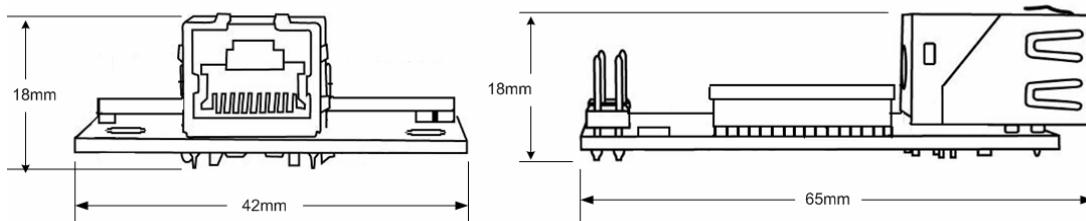
Figure 3-5   Eddy-S1/Pin Side View

3.2.2   Pin Specifications

Pin Specification and its usages are as follows.
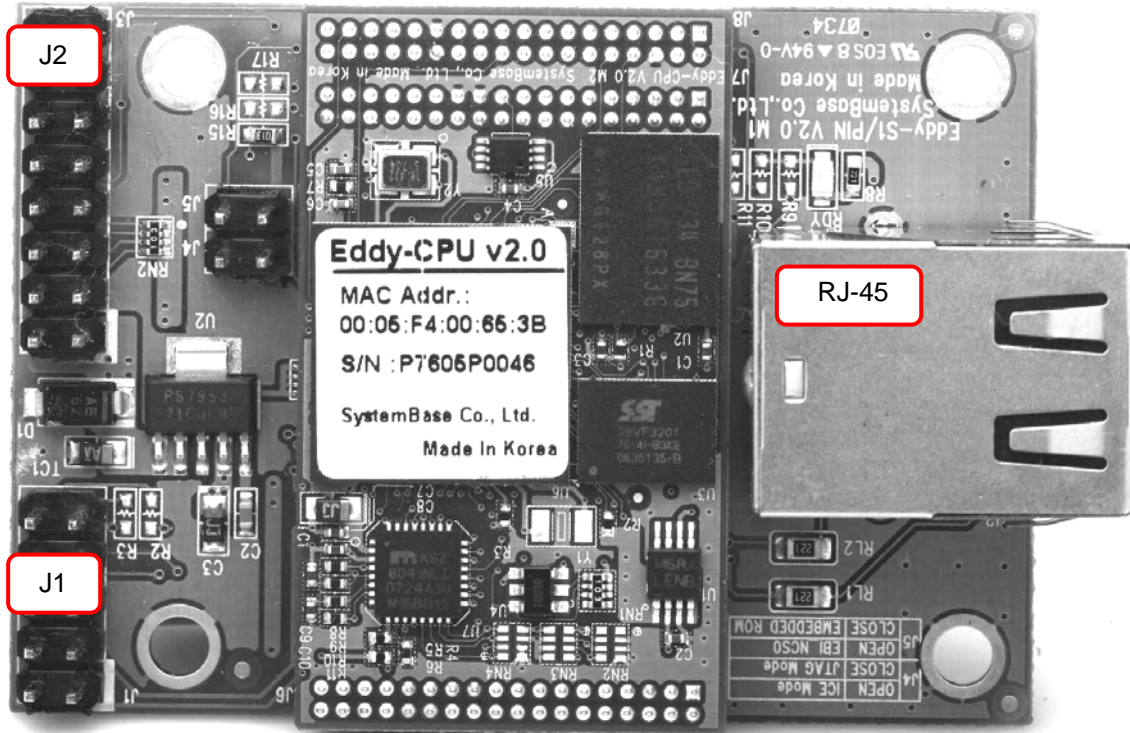
◆ **J1**

Serial 10-pin header connector
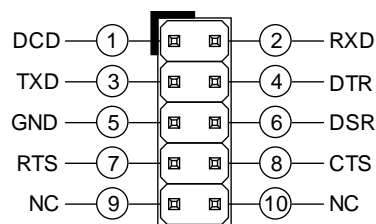
◇ **J1 : RS232**

Pin	Signal	Description
1	DCD	Data Carrier Detection (Input)
2	RXD	Receive Data (Input)
3	TXD	Transmit Data (Output)
4	DTR	Data Terminal Ready (Output)

Pin	Signal	Description
5	GND	Ground
6	DSR	Data Set Ready (input)
7	RTS	Request to Send (Output)
8	CTS	Clear to Send (Input)
9, 10	NC	No Connection

◇ **J1 : RS422 Full Duplex**

Pin	Signal	Description
2	RXD+	Receive differential data positive (Input)
3	TXD+	Transmit differential data positive (Output)
6	RXD-	Receive differential data negative (input)
7	TXD-	Transmit differential data negative (Output)
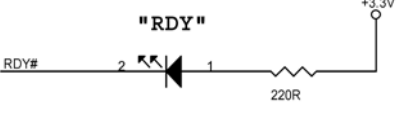
◇ **J1 : RS485 Half Duplex**

Pin	Signal	Description
3	TRX+	Transmit/Receive differential data positive
7	TRX-	Transmit/Receive differential data negative

◆ **J2**

16-pin header connector
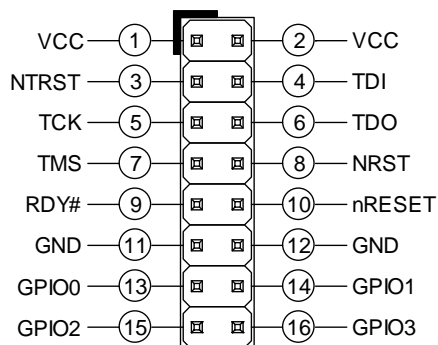
Pin	Signal	Description
1,2	VCC	3.0 ~ 5.5V DC input
3	NTRST	Test Reset Signal
4	TDI	Test Data In
5	TCK	Test Clock
6	TDO	Test Data Out
7	TMS	Test Mode Select
8	NRST	Reset signal for external devices
9	RDY#	**Ready indicator (Active low output)** Processor status can be indicated, when connected as below.
10	nRESET	Connection to external reset switch (Input) As reset logic is built-in, this pin can be connected directly to the switch without any additional circuit. When pressing the switch for more than 5 seconds (low input), factory default settings are restored.
11	GND	Ground
12	GND	Ground
13	GPIO0	Programmable I/O 0 (user-defined I/O)
14	GPIO1	Programmable I/O 1 (user-defined I/O)
15	GPIO2	Programmable I/O 2 (user-defined I/O)
16	GPIO3	Programmable I/O 3 (user-defined I/O)

◆ **RJ-45 Ethernet**

Pin	Signal	Description
1	TXD+	Physical transmit or receive signal (+ differential)
2	TXD-	Physical transmit or receive signal (- differential)
3	RXD+	Physical receive or transmit signal (+ differential)
6	RXD-	Physical receive or transmit signal (- differential)

LED	Description		
Left Green (LAN_Speed)	LAN connection speed		
	Speed	Pin State	LED Definition
	10Base-T	H	OFF
	100Base-TX	L	ON
Right Yellow (LAN_LINK)	LAN connection status		
	Link/Activity	Pin State	LED Definition
	No Link	H	OFF
	Link	L	ON
	Activity	Toggle	Blinking

3.2.3   Serial Interface Setup

Eddy supports RS232 only or RS422/485 combo by hardware. In combo modules, RS422/485 interface can be configured by software.

3.2.4   Terminal Resistors

Terminal Resistors are installed in RS422 or RS485 communication to prevent noise and distortion of long distance data transfer. They help by matching impedance in communication line, and normally 120 ohm resistors are used. The decision to use terminal resistor lies with the user, and one may choose to either install or not install terminal resistors in RS422 or RS485 mode. Installation can be done by connecting RX+ and RX- pin on J1 pin header to the resistor if in RS422 mode, or TRX+ and TRX- pin in RS485 mode.

3.2.5   Terminal Resistor Installation Guide

◆ **RS422**

Install terminal resistors at each end (terminal)

.
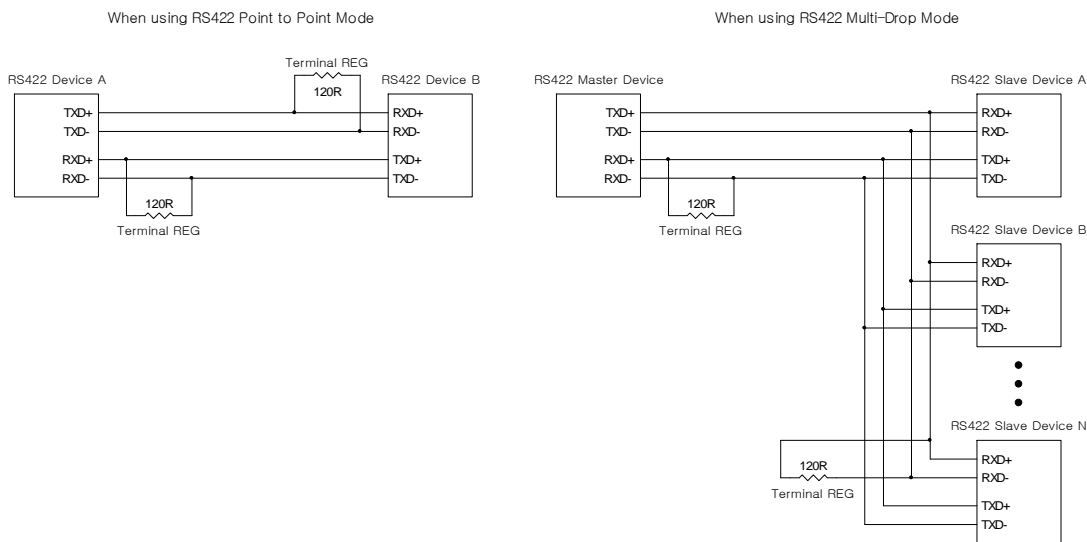
RS485
Install terminal resistors only at each end (not in the middle ones in Multi-Drop structure)
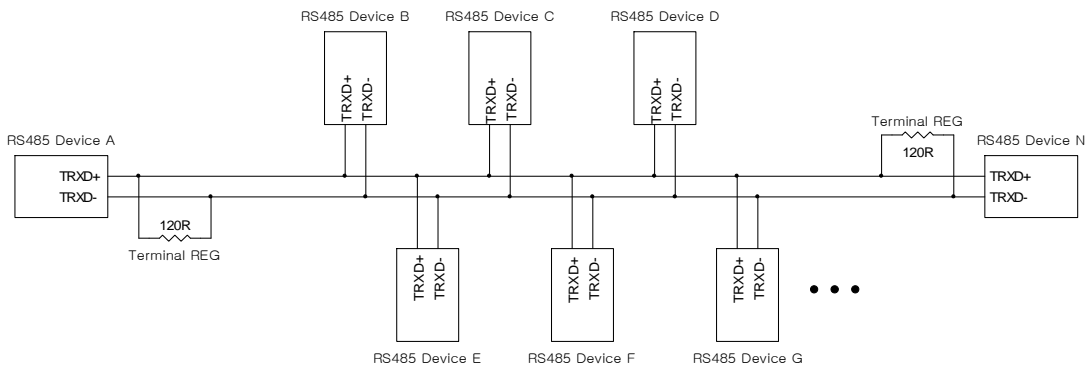
3.3 Eddy-S1/DB9

Ethernet LAN port is in RJ-45 form factor to provide direct network connection. Unlike other modules, this model can be applied without any connection interface.

For serial communication, RS232 only or RS422/485 combo interface is available through DB9 male connector. In the combo module, RS422/485 setting can be adjusted with software, using web interface.

Figure 3-6   Eddy-S1/DB9 – Product Picture and Block Diagram

3.3.1   Dimensions

Figure 3-7   Eddy-S1/DB9 Front View

Figure 3-8   Eddy-S1/DB9 Side View

3.3.2   Pin Specifications

Pin Specification and its usages are as follows
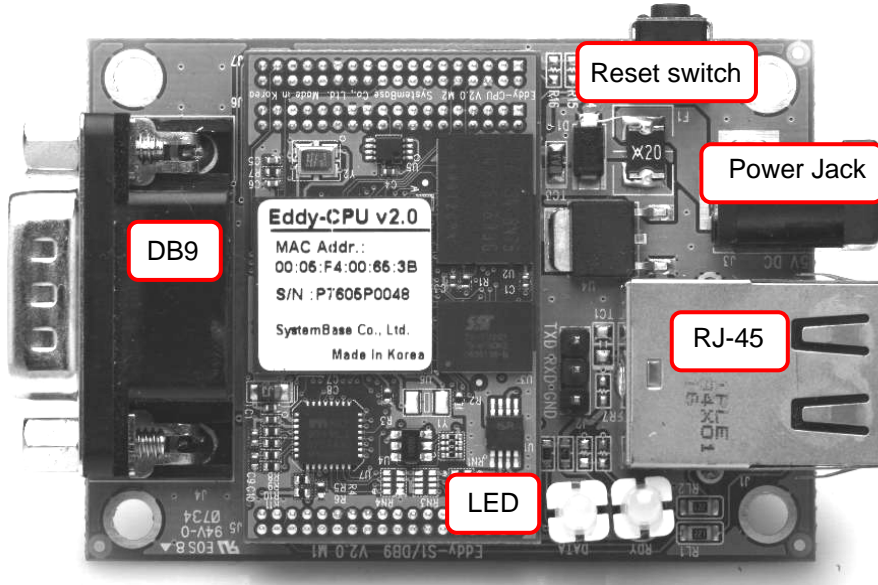
◆ **Power JACK**
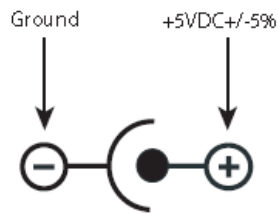
Contact	Polarity
Center	+5VDC ± 5%(over 400mA)
Outer	Ground

◆ **DB9**

Serial Connector

◆ **RS232**

Pin	Signal	Description
1	DCD	Data Carrier Detection (Input)
2	RXD	Receive Data (Input)
3	TXD	Transmit Data (Output)
4	DTR	Data Terminal Ready (Output)
5	GND	Ground
6	DSR	Data Set Ready (input)
7	RTS	Request to Send (Output)
8	CTS	Clear to Send (Input)
9	RI	Ring Indicator (Input)

◆ **RS485 Half Duplex**

Pin	Signal	Description
3	TRX+	Transmit/Receive differential data positive
7	TRX-	Transmit/Receive differential data negative

◆ **RS422 Full Duplex**

Pin	Signal	Description
2	RXD+	Receive differential data positive (Input)
3	TXD+	Transmit differential data positive (Output)
6	RXD-	Receive differential data negative (input)
7	TXD-	Transmit differential data negative (Output)

◆ **LED**

Pin	Signal	Description
1	READY	Indicates the processor status
2	DATA	LED ON when serial data is transmitted

◆ **RJ-45 Port**

Pin	Signal	Description
1	TXD+	Physical transmit or receive signal (+ differential)
2	TXD-	Physical transmit or receive signal (- differential)
3	RXD+	Physical receive or transmit signal (+ differential)
6	RXD-	Physical receive or transmit signal (- differential)

LED	Description		
Left Green (LAN_Speed)	LAN connection speed		
	Speed	Pin State	LED Definition
	10Base-T	H	OFF
	100Base-TX	L	ON
Right Yellow (LAN_LINK)	LAN connection status		
	Link/Activity	Pin State	LED Definition
	No Link	H	OFF
	Link	L	ON
	Activity	Toggle	Blinking

3.4 Eddy-S1/DB9-PoE

This module can operate as a powered device (PD), which accepts power input from the twisted pair Category 5 Ethernet cable as specified in IEEE 802.3af Power-over-Ethernet (PoE) standard.

With a backup 5V DC power jack, power supply can be automatically channeled to 5V adaptor when PSE (Power Sourcing Equipment) is out of order. Seamless power supply is guaranteed. PSE power can be used again when the PSE is in normal operation.

For serial communication, RS232 only or RS422/485 combo interface is available through DB9 male connector. In the combo module, RS422/485 setting can be adjusted with software, using web interface.
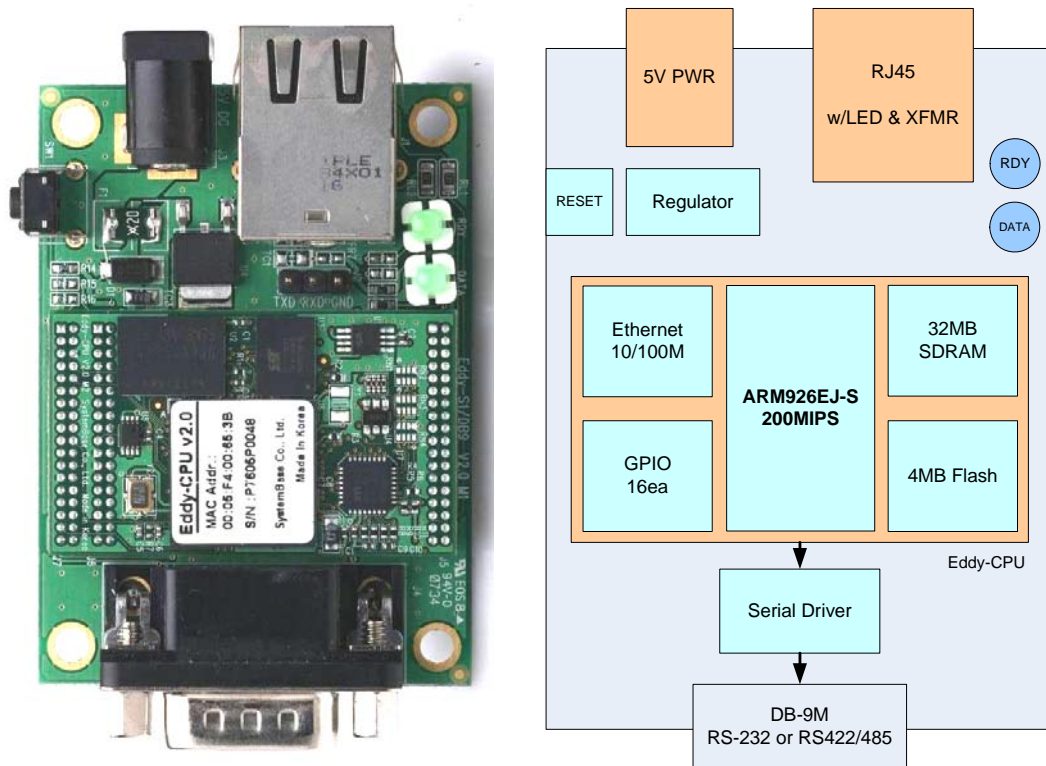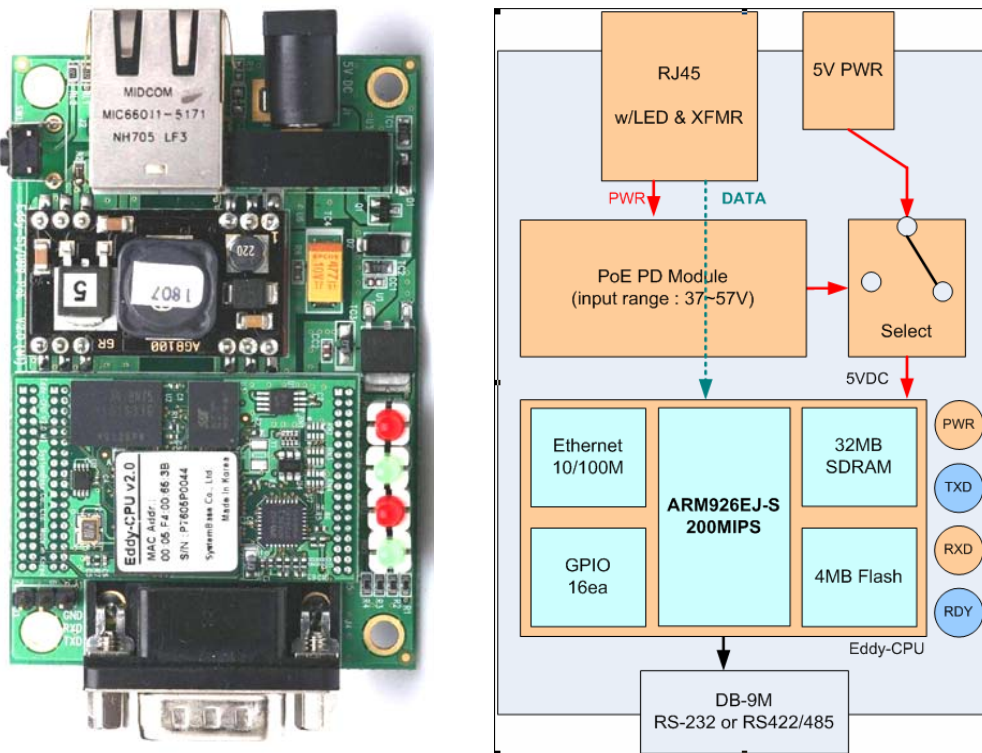

Figure 3-9　Eddy-S1/DB9-PoE – Product Picture and Block Diagram

3.4.1 Dimensions
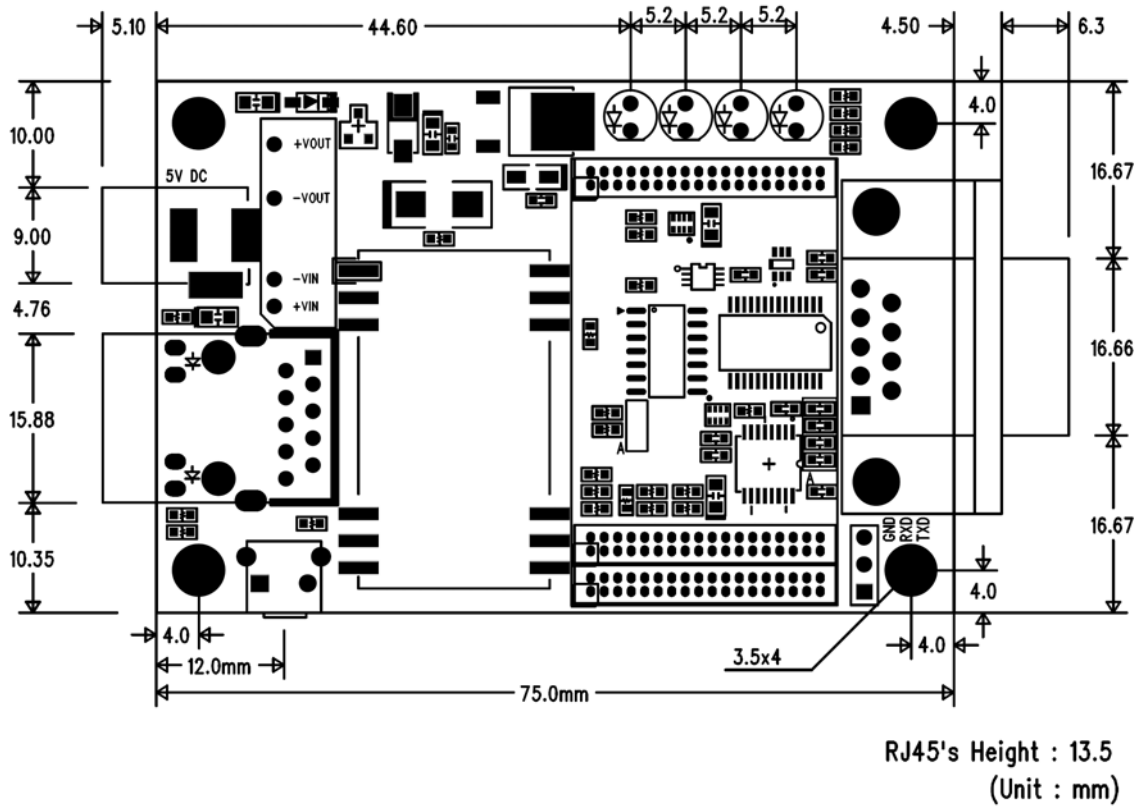
Figure 3-10 Eddy-S1/DB9-PoE Front View
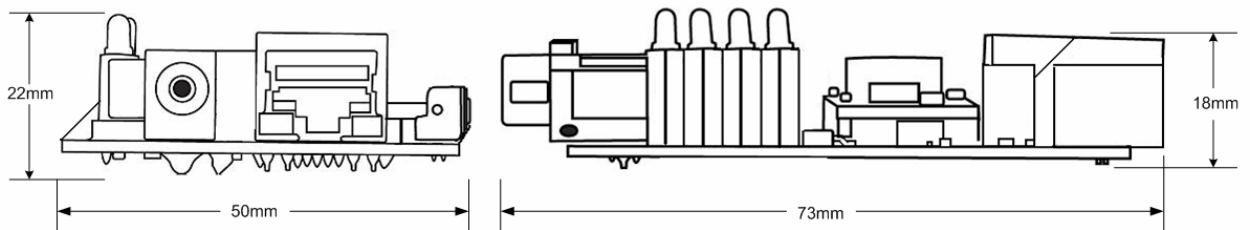
Figure 3-11 Eddy-S1/DB9-PoE Side View

3.4.2   Pin Specifications

Pin Specification and its usages are as follows.
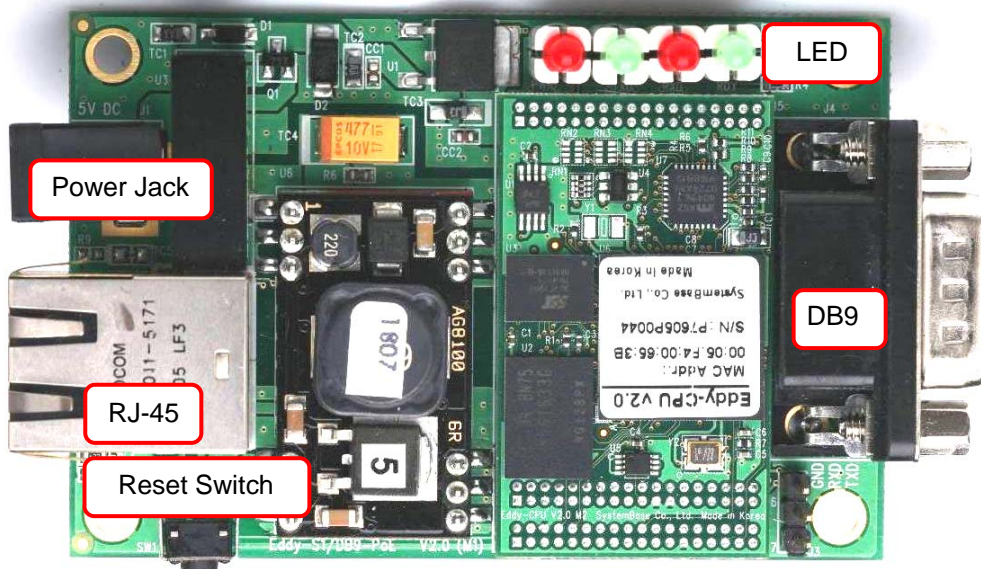
◆ **Power JACK**
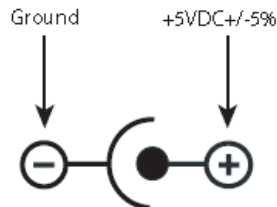
Contact	Polarity
Center	+5VDC ± 5%(400mA or above)
Outer	Ground

◆ **DB9**

Serial Connector

◆ **RS232**

Pin	Signal	Description
1	DCD	Data Carrier Detection (Input)
2	RXD	Receive Data (Input)
3	TXD	Transmit Data (Output)
4	DTR	Data Terminal Ready (Output)
5	GND	Ground
6	DSR	Data Set Ready (input)
7	RTS	Request to Send (Output)
8	CTS	Clear to Send (Input)
9	RI	Ring Indicator (Input)

◆ **RS485 Half Duplex**

Pin	Signal	Description
3	TRX+	Transmit/Receive differential data positive
7	TRX-	Transmit/Receive differential data negative

◆ **RS422 Full Duplex**

Pin	Signal	Description
2	RXD+	Receive differential data positive (Input)
3	TXD+	Transmit differential data positive (Output)
6	RXD-	Receive differential data negative (input)
7	TXD-	Transmit differential data negative (Output)

◆ **LED**

Pin	Signal	Description
1	POWER	LED ON when power is on
2	TXD	LED ON when serial data is transmitted
3	RXD	LED ON when serial data is received.
4	READY	Indicates the processor status

◆ **RJ-45 Port(w/PoE PD Functionality)**
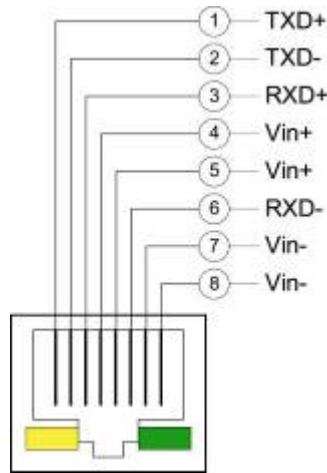
Pin	Signal	Description
1	TXD+	Physical transmit or receive signal (+ differential)
2	TXD-	Physical transmit or receive signal (- differential)
3	RXD+	Physical receive or transmit signal (+ differential)
4	Vin+	PSE positive connection
5	Vin+	PSE positive connection
6	RXD-	Physical receive or transmit signal (- differential)
7	Vin-	PSE negative connection
8	Vin-	PSE negative connection

LED	Description		
Left Green (LAN_Speed)	LAN connection speed		
	Speed	Pin State	LED Definition
	10Base-T	H	OFF
	100Base-TX	L	ON
Right Yellow (LAN_LINK)	LAN connection status		
	Link/Activity	Pin State	LED Definition
	No Link	H	OFF
	Link	L	ON
	Activity	Toggle	Blinking

Chapter 4. Integration

This chapter explains how you can make Eddy to communicate. It deals with LAN and pin header connection guides for Eddy to operate together with the target serial device.
Follow these steps to connect Eddy to the device and network.

4.1 Connection Guide

1) LAN

In order to connect Eddy to network, you need to use RJ45 Ethernet port. It supports both 10Mbps and 100Mbps Ethernet connection (auto-sensing). Since Eddy's LAN port supports MDIX function, you can either connect cross LAN cable or direct LAN cable. Plug one end of a LAN cable to Eddy and the other end to a hub, switch, or any other network device that can provide you with network access.

2) Pin Header

For those models with pin header interface, it is important that you clearly understand which pins you are to connect and how you connect them. For pin specifications, please refer to Chapter 3. Hardware Description. Please note that not all pins must be used. You can selectively connect only those pins relevant to your application.

3) DB9

For Eddy-S1/DB9, you can simply connect Eddy to the destination serial device with a DB9 cable. For pin specifications, please refer to Chapter 3.

4.2 First-time Bootup

First of all, please make sure the power input you supply to the module is corresponding with the Eddy model that you have. If an appropriate power input has been successfully supplied, Eddy will power on and start booting. For those models that require power input through pins (this will leave out DB9 models), you can notice that there are two Power In pins per serial port. It is a good practice to connect both power pins to the power supply for more stability in operation.

Although there is no power LED to check the status, you can check by LEDs on the RJ45 Ethernet port. LED status operation is described in <u>Chapter 3. Hardware Description</u>. In models with DB9, you can simply use a 5V DC power adaptor. In models with Pin Header, issue 3.3 ~ 5V power input.

An IP address is required to access Eddy's web interface or telnet command-line configuration tool. By factory default, Eddy is assigned a static IP address. After the initial connection, you can either manually assign a different IP address or set Eddy to automatically get an IP address from a DHCP server. While this depends on your network environment and policy, it is strongly recommended that you assign Eddy with a unique static IP.

4.3 Connecting to Eddy with IP address

In order to view current Eddy's settings or modify them, you need to make a Web or Telnet connection to Eddy. IP address is required information to make a connection.

There are two ways you can know the current IP address of Eddy.

First is to use a built-in, alias IP address of "10.10.1.1".

Second is to use "Detector" application provided in the Utility & Documents CD. This application allows searching for Eddy modules on the network.

◆ The factory default IP address: **192.168.0.223**

Eddy's default IP address is set to 192.168.0.223. In order to connect with this address, you need to change network configurations so that your PC can connect to the IP 192.168.0.223. Please refer to an example below, and note that values don't necessarily have to be identical to the example below.
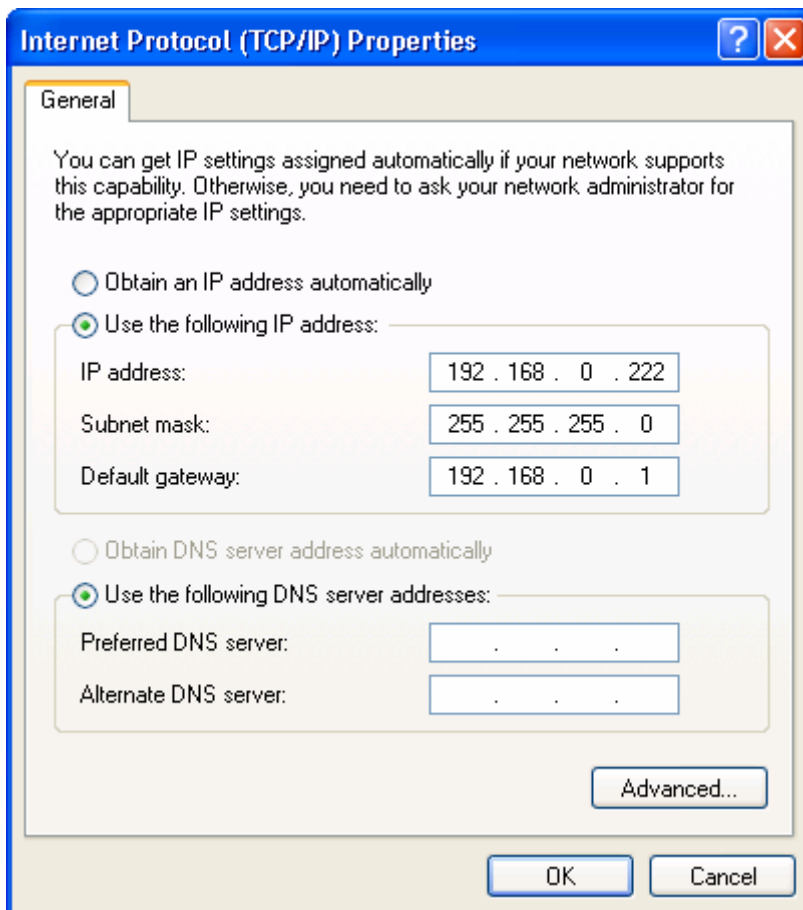
Figure 4-4-1 Connecting to the default IP address

◆ Factory default alias IP address: **10.10.1.1**

In case you configure Eddy to use DHCP to obtain an IP address automatically, you might find it hard to know the IP address to connect to. To provide users with an easier way to know the current IP address, Eddy has a fixed alias IP that is always accessible. Use the address below whenever you cannot find out Eddy's IP address.

In order to connect with this address, you need to change network configurations so that your PC can connect to the IP 10.10.1.1. Please refer to an example below, and note that values do not necessarily have to be identical to the example below.
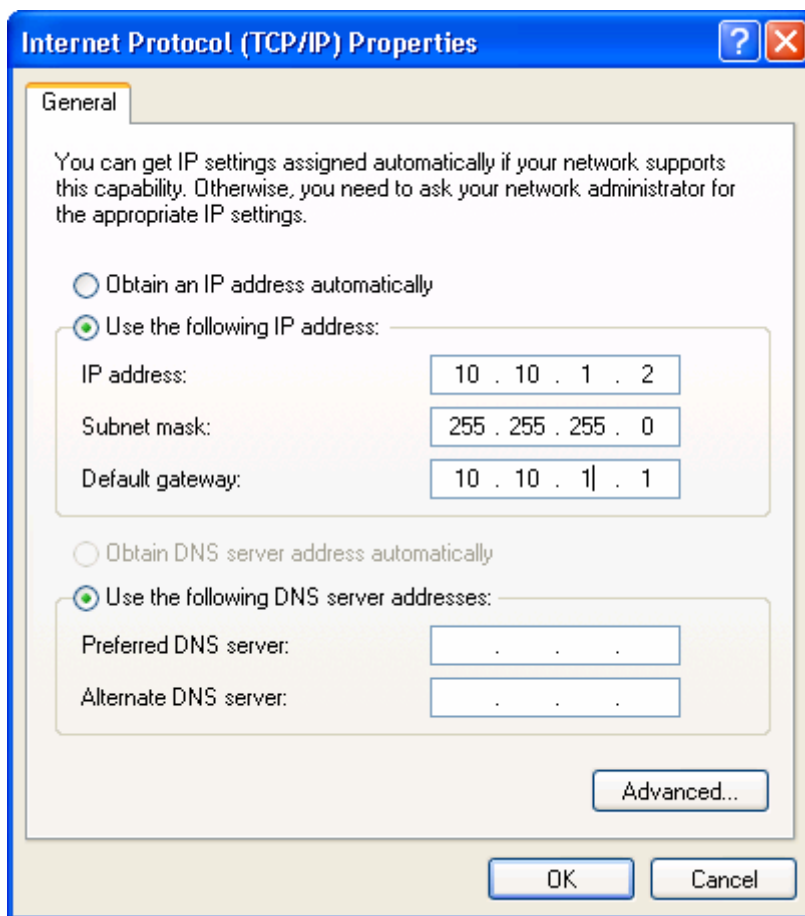
Figure 4-2. Connecting to alias IP address

◆ **Connection via Detector**

By running the Detector program in the Utility & Documents CD included in the Eddy package, you can dynamically search for all Eddy modules on the network and connect to any module. (For more information on Detector, please refer to the Portview manual in the Utility & Documents CD included in the Eddy package)

After running Detector, click Search button on the top-left to display all Eddy modules on the network.

Select the module that you would make a connection to, and click Telnet or Web to connect to the module via Telnet or Web, respectively.
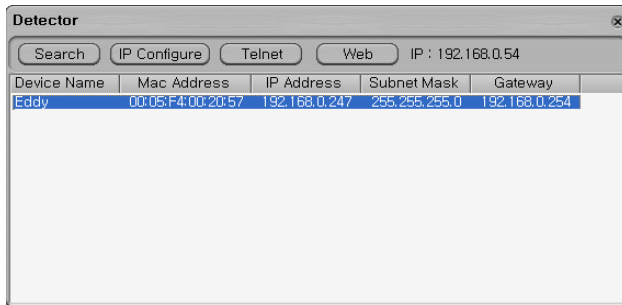
Figure 4-3   Detector Layout

If Eddy module is not on the same network as the PC you are working on, use "IP Configure" button to temporarily assign an IP address that you would like to make a Web or Telnet connection to. If you assign a temporary IP address to Eddy, you need to to change the IP address and restart in Web or Telnet.
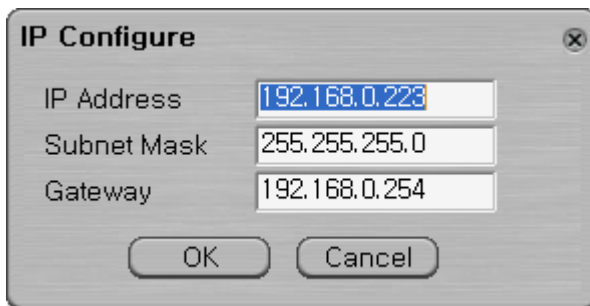
Figure 4-4   Setting Eddy with temporary IP address

Now you are ready to connect to Eddy! There are three options to configure Eddy.

1) Web

You can easily configure Eddy with web interface, accessible from any web browser. For more information, please refer to Chapter 5. Configuration via Web.

2) Telnet

You can configure Eddy with commands after accessing Eddy through Telnet. For more information, please refer to Chapter 6. Configuration via Telnet.

3) Portview
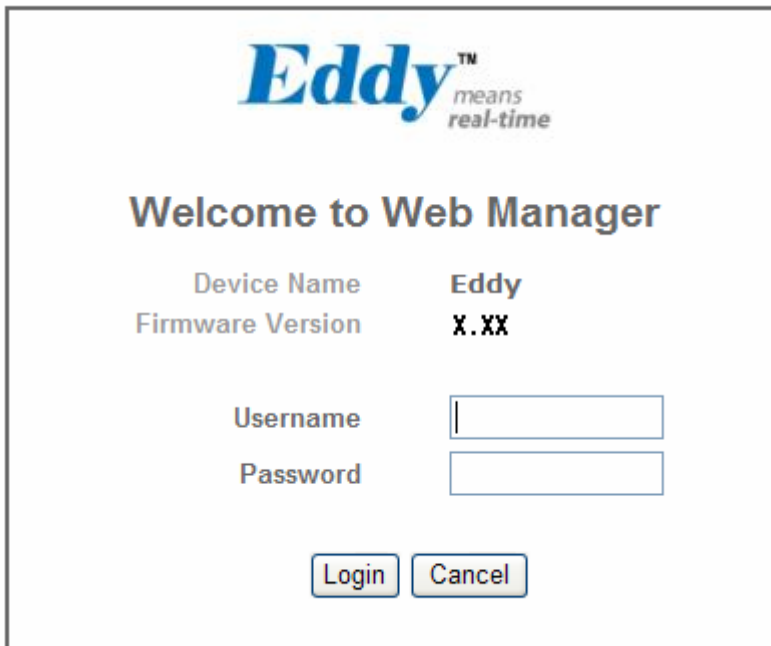
You can use a Windows-based utility Portview from SystemBase to monitor Eddy. For more information on using the utility for your administration purpose, please refer to Portview User Guide.

Chapter 5. Configuration via Web

5.1   Connection

Open your favorite web browser and enter the IP address of Eddy to access Eddy's web manager. Once you are successfully connected, the following front page will show up. You need to enter appropriate username and password to login. Please note that this username and password is used as authentication method for Telnet as well.

◆ **Factory default username:**   **eddy**
◆ **Factory default password:**   **99999999**

Figure 5-1   Eddy Login Page

5.2 Setup Menu

If login process is successful, you will see a web manager's main page, showing summary of your device. On the left, you will see a setup menu, and you can navigate through these options.
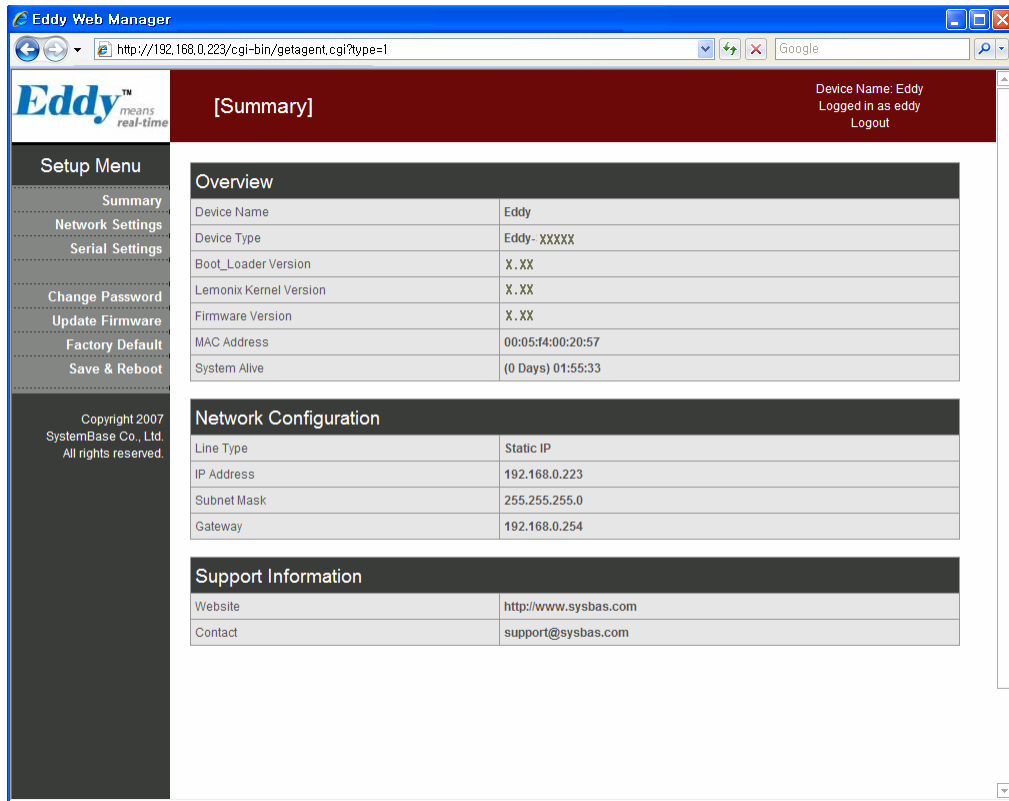
Figure 5-2   Main Page

Main features of Setup Menu are as follows.

Table 5-1 Main features of Setup Menu

Menu	Descriptions
Summary	View a summary of Eddy.
Network Settings	Configure network connection settings.
Serial Settings	Configure detailed operation environment for serial communication.
GPIO Settings	Configure programmable I/O pins.
Change Password	Change ID and password for both Web and Telnet interface.
Update Firmware	Update Eddy's firmware.
Factory Default	Restore all the factory default settings.
Save & Reboot	Save the configurations and reboot Eddy.

5.3   Network Settings

Configure general network environment and network management. After changing values, you need to click **'Submit'** button. Then you will see the same page with modified values. Please note that you have to **'Save & Reboot'** in order to see these changes in effect. Changes will be discarded if you do not save current settings.
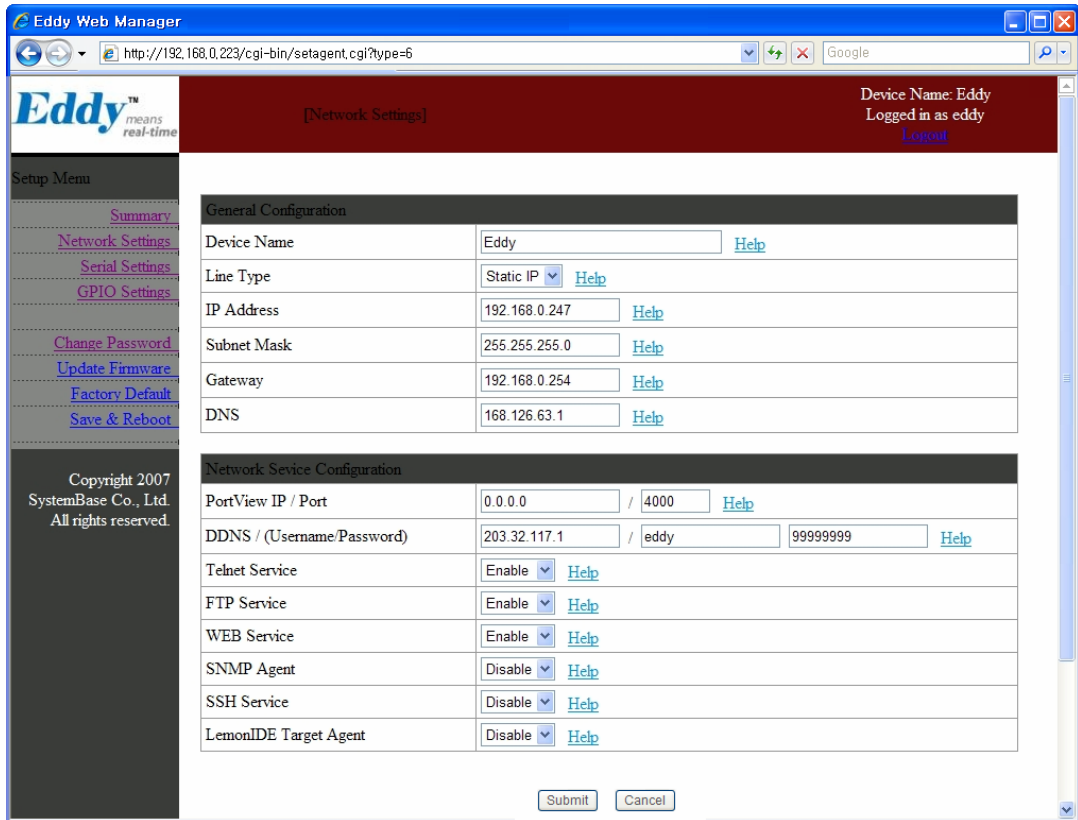
그림 5-3 Network Settings Configuration Page

Main features for General Configuration is as follows.

Table 5-2 Main features of General Configuration

Menu	Default	Descriptions
Device Name	Eddy	Name of the current device
Line Type	Static IP	IP obtaining method for Eddy's network connection.
IP Address	192.168.0.223	Current IP address Eddy is assigned to. (When line type is Static IP, manually enter an appropriate IP address. When line type is DHCP, current IP is displayed, but it is not editable.)

Subnet Mask	255.255.255.0	Current subnet mask Eddy is assigned to. (When line type is Static IP, manually enter an appropriate subnet mask.When line type is DHCP, current subnet mask is displayed, but it is not editable.)
Gateway	192.168.0.254	Current default gateway Eddy is assigned to (When line type is Static IP, manually enter an appropriate default gateway. When line type is DHCP, current default gateway is displayed, but it is not editable.)..
DNS	168.126.63.1	DNS (Domain Name Service) IP address

Main features for Network Service Configuration are as follows.

Table 5-3 Main features for Network Service Configuration

Menu	Default	Descriptions
Portview IP / Port	0.0.0.0 / 4000	Set the IP address and the port number of the PC where Portview is installed. For more information on Portview, please refer to the Portview User Manual. If IP is set to 0.0.0.0, this feature is disabled
DDNS (Username/ Password)	203.32.117.1	Register DDNS server's IP address for DDNS service. DDNS service used in Eddy is supported by http://ddns.nu default ID is eddy and default password is 99999999 if you want to used this ,you should register your own in http://ddns.nu
SNMP	Disable	Enable or disable SNMP(Simple Network Management Protocol) support ▪MIB-II (RFC 1213): System, Interface, IP, ICMP, TCP, UDP ▪MIB-I (RFC 1317): Serial Interface
Telnet Service	Enable	Enable or disable Telnet service. If disabled, you cannot connect to Eddy via Telnet.
FTP Service	Enable	Enable or disable FTP service. If disabled, you cannot connect to Eddy via FTP.
Web Service	Enable	Enable or disable Web service. If disabled, you cannot connect to Eddy via Web.
LemonIDE Target Agent	Disable	Enable or disable remote debugging function used by Eddy development environment, LemonIDE®. For more information, please refer to LemonIDE user manual in the SDK CD included in Eddy-DK package.

5.4 Serial Settings

You can set the communication and operation environment for the serial port. After changing values, you need to click **'Submit'** button. Then you will see the same page with modified values. Please note that you have to **'Save & Reboot'** in order to see these changes in effect. Changes will be discarded if you do not save current settings.
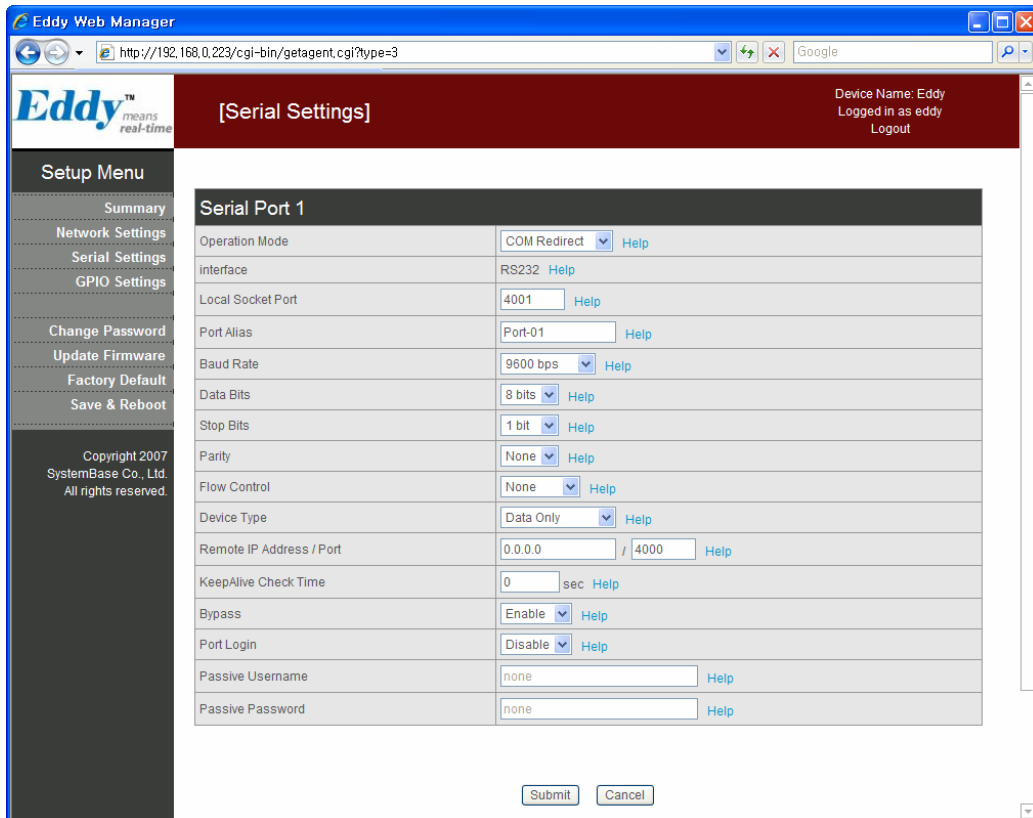
Figure 5-4 Serial settings page

Serial communication settings for Eddy-S1/Pin, S1/TTL, S2/Pin are as follows.

Table 5-4 Main features for Serial Settings

Menu	Default	Descriptions
Interface	RS232 or RS422	▪**Eddy-S1/Pin, S1/DB9, S1/DB9-PoE** Only RS232 interface supported. Fixed. (Default: RS232) ▪**Eddy-S1/Pin-C, S1/DB9-C, S1/DB9-PoE-C** RS422 or RS485 interface is supported. By software, you can select one of these interfaces. (Default: RS422) ▪**Eddy-CPU** User decides the serial interface, meaning Web or Telnet configuration is not possible. For more information on interface configuration, please refer to Chapter 3. Hardware Description.

Menu	Default	Descriptions
Operation Mode	COM (Win200x /XP)	Select the operation protocol, which the serial port would use. ▪**Disable** Do not use this port. ▪**COM** Use the serial port of Eddy as the COM ports of Windows 2000/XP/2003/Vista operated PC. ▪**TCP Server** Eddy works as a socket server, waiting for the client connection on the network. Socket number for awaiting connections can be set in 'Local socket port' field. All data between the socket and the serial port is transferred untouched after the socket connection is established. ▪**TCP Client** Eddy acts as a socket client in this mode. It tries to connect to the server IP address and the socket number assigned when a certain server waits for connection on the network. All data between the socket and the serial port is transferred untouched after the socket connection is established. ▪**TCP Broadcast** Eddy works as a server, accepting up to 5 simultaneous connections from socket clients. Data transmitted from Eddy is broadcast to each socket client. ▪**TCP Multiplex** Eddy works as a server, accepting up to 5 simultaneous connections from socket clients. The difference between TCP Broadcast and TCP Multiplex is that Multiplex allows each socket to communicate exclusively. That is, serial data in response are only transferred to the sender socket. ▪**UDP Server** Eddy works as a UDP server, waiting for UDP connection from the client on the network. Socket number for awaiting connections can be set in 'Local socket port' field. Once a UDP packet is received to the socket that waits for the connection, the data is transmitted to the serial port. The data input from the serial port is put into UDP packets, which eventually are sent to the client. ▪**UDP Client** When the data is input to the serial port, UDP packets are sent using the preset IP address and the socket number of the server.
Local Socket Port	4001	Set the socket number for the port. TCP server and UDP server operation mode makes use of this port for awaiting network socket connections.
Port Alias	Port1	Port alias name for convenience. 16 Characters at maximum.

Menu	Default	Descriptions
Baud Rate	9600 bps	Set communication speed. (Options: 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600 bps)
Data Bits	8	Set the number of bits in each character size. (Options: 5, 6, 7, 8)
Stop Bits	1	Set the number of stop bits.. (Options: 1, 2)
Parity	None	Set parity bit check scheme.. (Options: None, Odd, Even)
Flow Control	None	Set the flow control scheme. (Options: None, Xon/Xoff, RTS/CTS)
Device Type	DataOnly	Set the signal line checking method for the device to be connected to the given serial port. If the mode is set to Data Only, only Txd, Rxd, and Gnd signal lines are used in inter-device communication. If the mode is set to Modem Signals, all modem signals except RI(Ring Indicator) are asserted, tested, and used in communication. (Options: Data Only, Modem Signals)
Remote IP Address / Port	0.0.0.0 / 4000	When the Operation Mode is either TCP Client or UDP Client, set the IP address and the socket number to connect to..
Keepalive	0 sec	After a certain amount of time passes without any communication after the socket connection between the given serial port and the server is established, automatically disconnect the socket connection. Valid from 0 to 32767. For example, if the operation mode is set to TCP Server and Alive Check Time is configured to 10, TCP Server will listen for the client's connection and eventually establish a connection. Since the check time is 10 seconds, the server will wait for 10 seconds until the client connected to it sends any packet. If there is no data for 10 seconds, server will quit the connection and return to the listening state. This option is helpful in preventing communication obstacles that occur when either Eddy or the client quits unexpectedly (i.e. Sudden black out, reboot, LAN cable cut, etc.). In these cases, the other part of communication might not recognize the failure of its partner. Such misunderstanding can cause communication errors. If the value is set to 0, this function is disabled. Once connected socket will be retained until explicitly disconnected. (Only applies to TCP Client, TCP Server, TCP Broadcast, and TCP Multiplex operation modes.)
Bypass	Enable	This needs to be set when consecutive data from the given serial port needs to be transmitted to socket at once. If 100 bytes of character string are to be transmitted from the serial device and bypass is set to Disable, Eddy waits until the entire 100 bytes are received. The maximum size to be transmitted at once is 1500 bytes.

Menu	Default	Descriptions
		Eddy waits in idle state for 5-byte incoming interval, calculated by the communication speed after the last incoming data. If no data is received during this time, Eddy transmits all remaining data to the server in one packet. If set to Enable, however, few bytes' pieces are transmitted right away in a packet, therefore multiple packets sent to the server. This helps in real-time communication, but might cause tremendous traffic on the network.
Port Login	Disable	When the Operation Mode is set to TCP Server, ask for the username and password when the client tries to connect (Options: Enable, Disable)
Passive Username	conuser	When the Operation Mode is set to TCP Server, set the username to ask for. 32 Characters at maximum.
Passive Password	99999999	When the Operation Mode is set as TCP Server, set the password to ask for. 32 Characters at maximum.

5.5 GPIO Settings

Configure operation mode and value for each Programmable I/O pins.

Eddy includes GPIO pins that output 3.3V or detect 3.3V signals.

Eddy-CPU has 16 pins, Eddy-S1/Pin has 4 pins, but Eddy-S1/DB9 and Eddy-S1/DB9-PoE models do not have any GPIO pins.

You can detect either any 3.3V signals from external device, or output 3.3V signal to the external device. You can also program a customized GPIO application, and you can implement it with the SDK included in the Eddy development kit.

After changing values, you need to click **'Submit'** button. Then you will see the same page with modified values. Please note that you have to **'Save & Reboot'** in order to see these changes in effect. Changes will be discarded if you do not save current settings.

Different Eddy modules support different port number of GPIOs. Eddy Web server automatically senses connected Eddy module and its supported GPIO ports and displays it on the Web.

If no GPIO is present in the current model, GPIO settings page is not available.
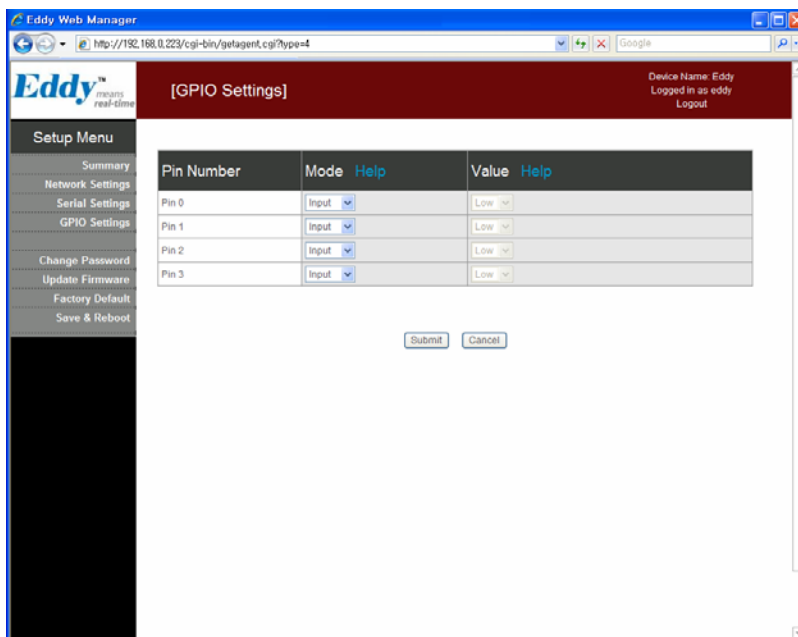
Figure 5-5   Eddy-S1/Pin - GPIO Settings Page
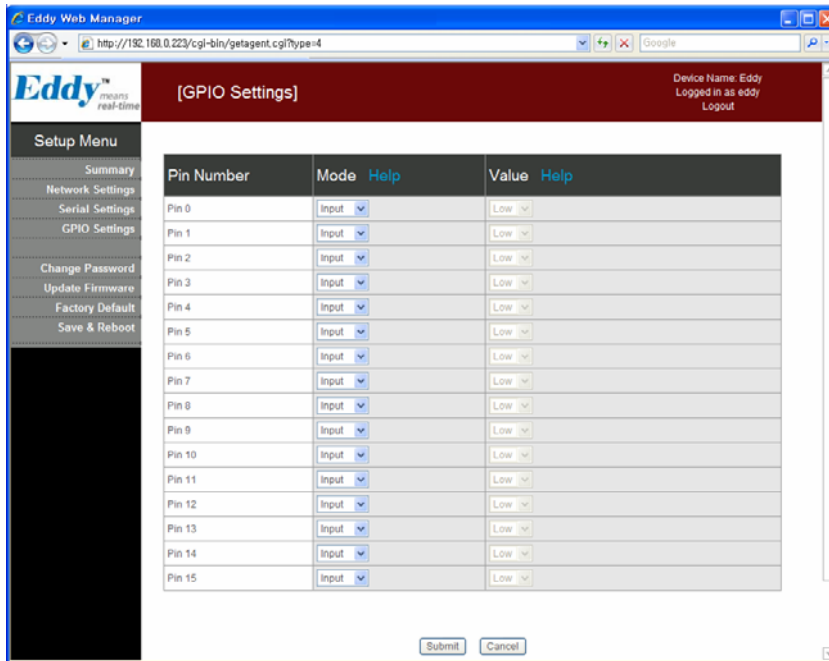
Figure 5-6   Eddy-CPU - GPIO Settings Page

Table 5-5 Main features for GPIO Settings

Menu	Default	Descriptions
Mode	Output	Set current pin's I/O mode. When in output mode, 3.3V output can be controlled. When in input mode, any 3.3V from outside can be detected (Options: Output, Input)
Value	High	Set current pin's output value. (This option only applies to output mode pins) If the value is High, 3.3V is output through the port. (Options: High / Low)

5.6 Change Password

Change Web/Telnet access username and password. After changing values, you need to click **'Submit'** button. Then you will see the same page with modified values. Please note that you have to **'Save & Reboot'** in order to see these changes in effect. Changes will be discarded if you do not save current settings.

◆ **Default user id** : **eddy**
◆ **Default password** : **99999999**
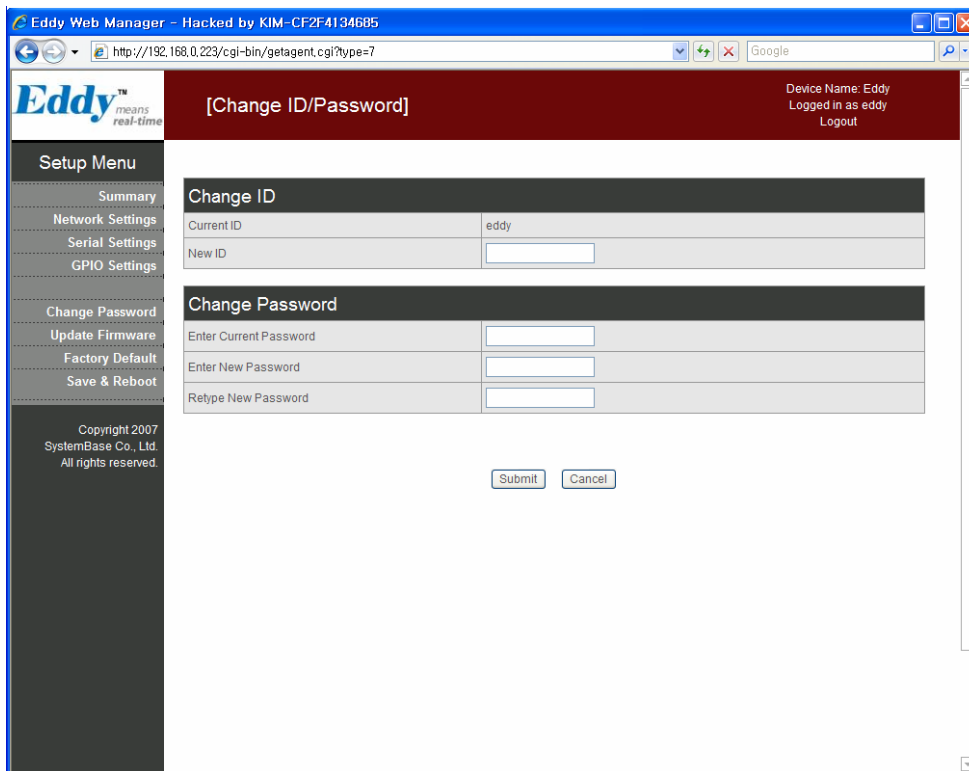
Figure 5-7   Change Password Setting Page
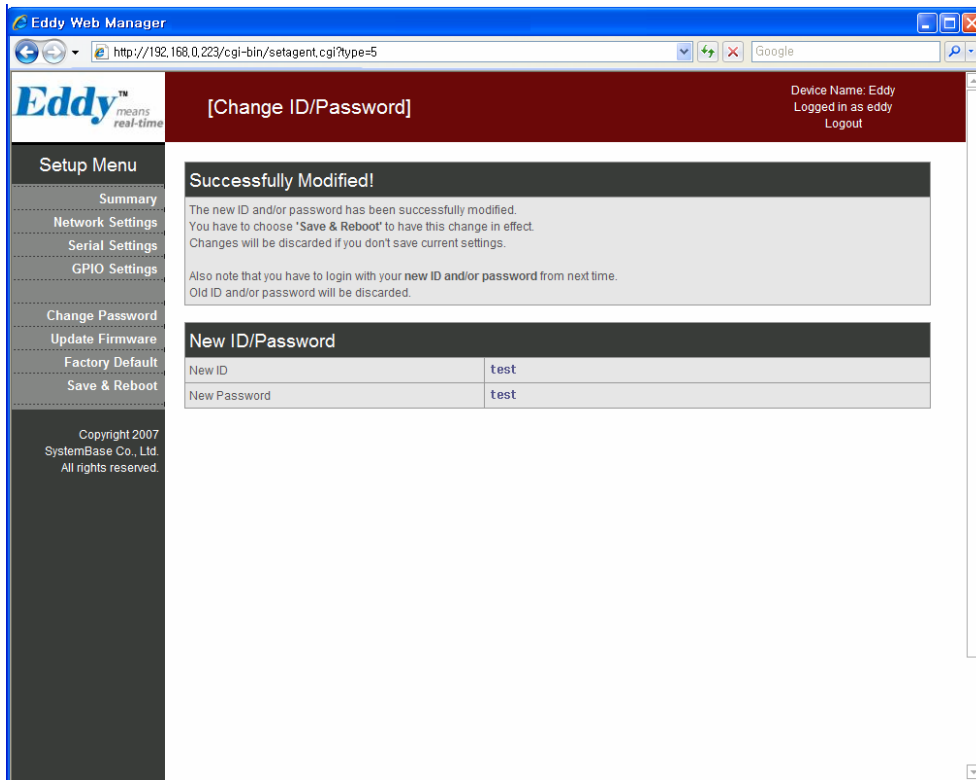
Figure 5-8   After changing the password

5.7 Update Firmware

Firmware is an application embedded in Flash memory of Eddy. Set the location of the firmware file to update, using the 'Browse...' button. The selected firmware will be transferred to Eddy when you click 'Start Update'. After the transmission is complete, Eddy will be automatically restarted to operate with the new firmware.
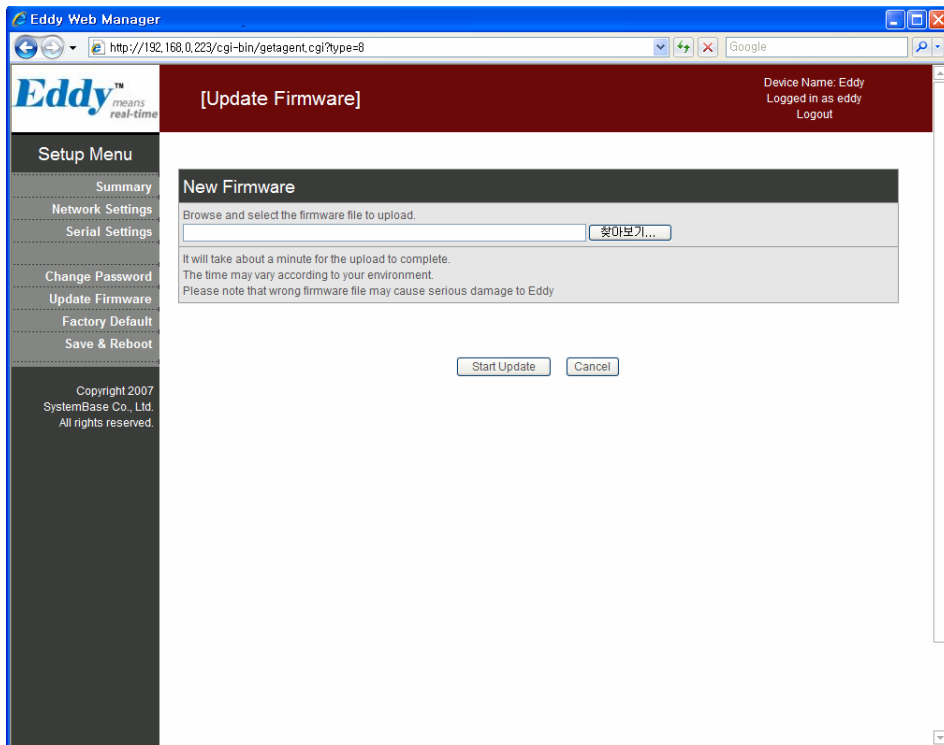
Figure 5-9   Update Firmware Setting Page
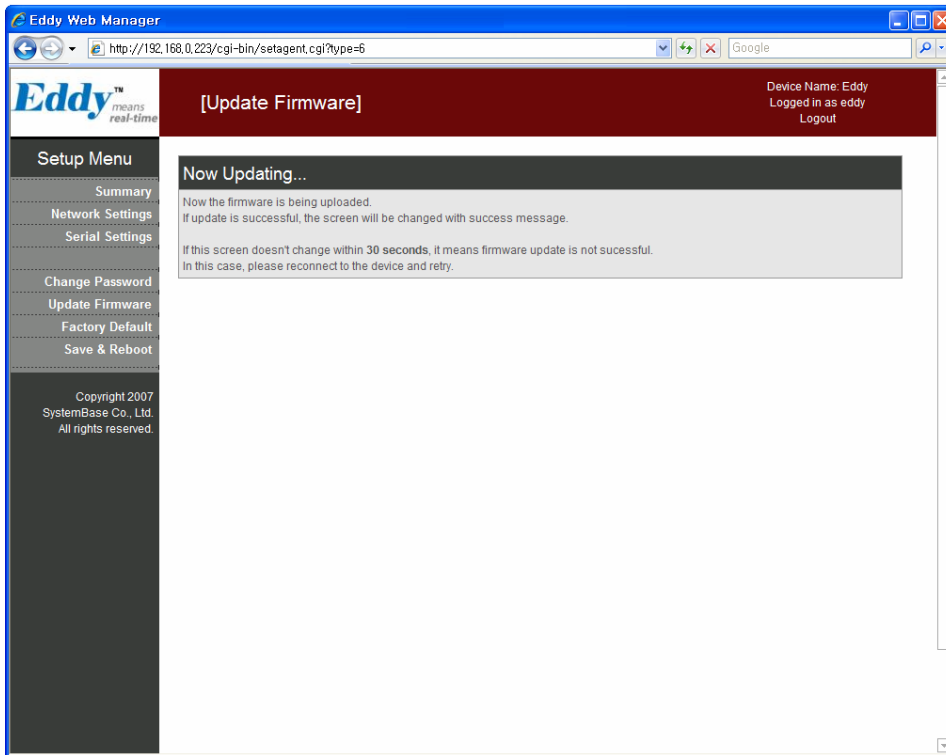
Figure 5-10   Firmware update in progress
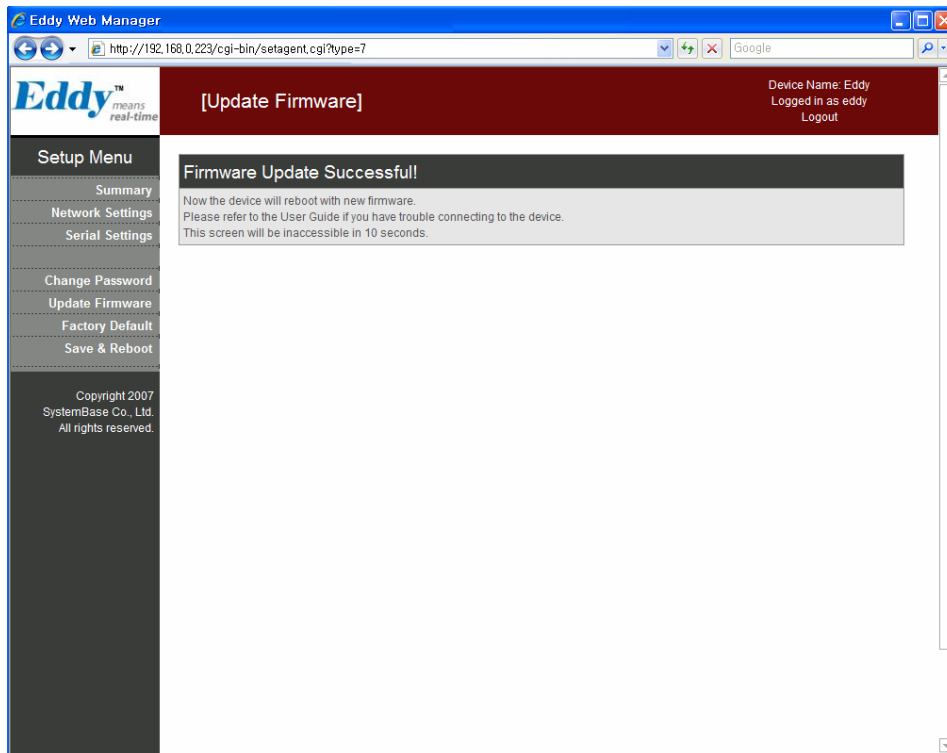
Figure 5-11   Firmware update complete

5.8 Factory Default

Restore all the configuration parameters to the factory default values. Clicking on 'Restore Factory Defaults' button will delete all current settings and restore settings to the initial status. Eddy will automatically reboot.

You cannot turn back the decision once you select this option.

◆ The factory default IP address of Eddy　　　: **192.168.0.223**
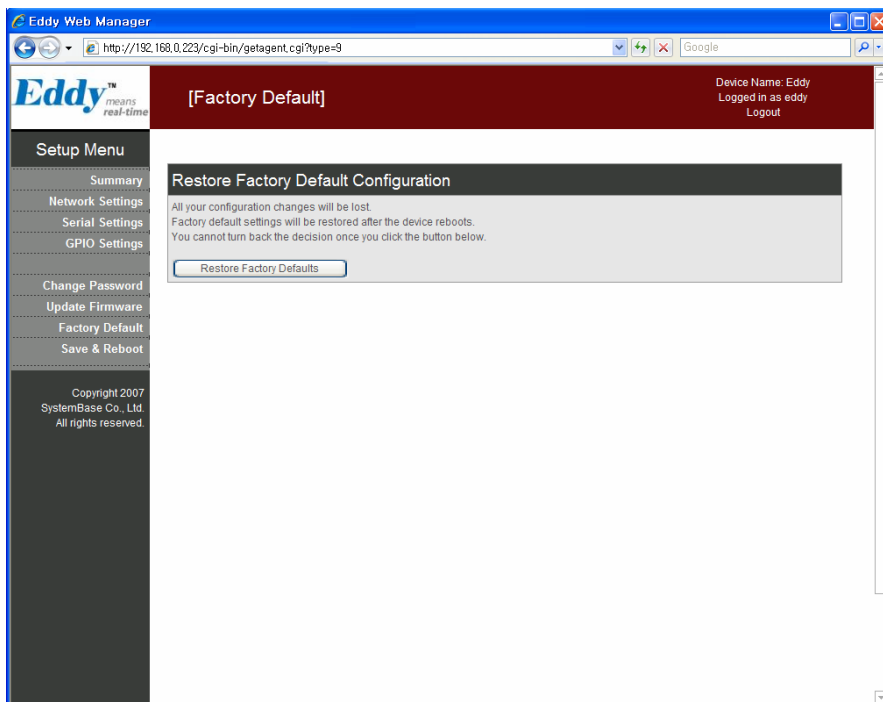
Figure 5-12 Factory Default Page

5.9   Save & Reboot

This option saves changes to the Flash memory and restarts the system to let the changes to take place in the operation.
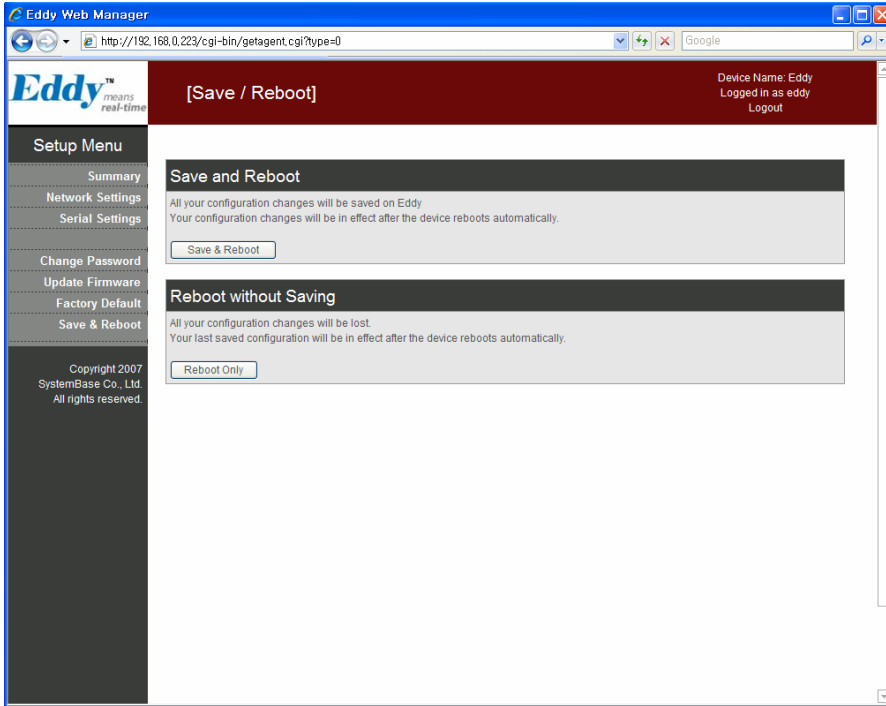
Figure 5-13 Save & Reboot Page

Main features for Save & Reboot are as follows

Table 5-6 Main features for Save & Reboot

Menu	Descriptions
Save and Reboot	'Save & Reboot' reboots Eddy after saving changes to Flash memory.
Reboot without Saving	'Reboot Only' option just reboots Eddy without saving changes. This option can be used to rollback the changes you have mistakenly made.

Chapter 6. Configuration via Telnet

6.1 Connection

Open your telnet client and enter Eddy's IP address to connect. You need to enter appropriate username and password to login. Please note that this username and password is used as authentication method for Web as well. This means if username or/and password has been modified from the telnet interface, modified values have to be entered to connect to web, and vice versa.

◆ Factory default username   : eddy
◆ Factory default password   : 99999999
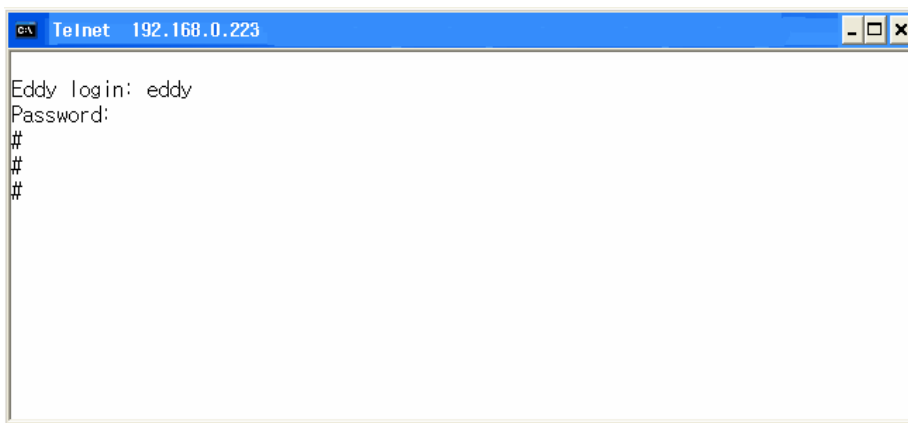
Figure 6-1 Connection via Telnet

[def] command - you can view or configure Eddy's settings
[help] command - you can see help for [def] command

After changing values, you can see modified values with '**def view**' commands. But be careful because these values are not in effect unless you issue a '**def save**' command. Changes will be discarded if you do not save current settings.

6.2 View commands

Commands related to View are as follows.

Table 6-1 def view commands

Commands	Descriptions
def view	Show all information about Eddy.
def view server	Show network and device server's settings.
def view port	Show serial port settings.
def view gpio	Show GPIO pin settings.
def help	Show command list and help.

6.3 Network commands

Configure general network environment and network management.

Table 6-2 Network commands

Commands	Default	Descriptions
def mac \<Mac Address\>	00:05:f4:00:20: 57	Register Eddy's MAC address.
def line [ip / dhcp]	Static IP	IP obtaining method for Eddy's network connection.
def ip \<IP Address\>	192.168.0.223	Set the current IP address Eddy is assigned to. When line type is Static IP, manually enter an appropriate IP address. When line type is DHCP, it is not editable. Instead, current IP address is shown.
def mask \<Subnet mask\>	255.255.255.0	Set the subnet mask Eddy is assigned to. When line type is Static IP, manually enter an appropriate subnet mask. When line type is DHCP, it is not editable. Instead, current subnet mask is shown.
def gateway \<Gateway address\>	192.168.0.1	Set the default gateway Eddy is assigned to. When line type is DHCP, it is not editable. Instead, current gateway address is shown.
def dns \<IP address\>	168.126.63.1	Set the Domain Name Service IP address.
def portviewip \<IP address\>	0.0.0.0	Configures IP of PC which Portview is installed If IP is set to 0.0.0.0, NMS feature is disabled. (Please refer to Portview User's Manual for detailed information.)

def portviewport \<Port Number\>	4000	Set the socket number of the PC with Portview installed.
def snmp [Enable / Disable]	Disable	Enable or disable SNMP(Simple Network Management Protocol) support. ▪MIB-II (RFC 1213): System, Interface, IP, ICMP, TCP, UDP ▪MIB-I (RFC 1317): Serial Interface
def telnet [Enable / Disable]	Enable	Enable or disable Telnet service. If disabled, you cannot connect to Eddy via Telnet.
def ftp [Enable / Disable]	Enable	Enable or disable FTP service. If disabled, you cannot connect to Eddy via FTP.
Def ddns [IP Address]	203.32.117.1	If you set DDNS server IP , DDNS service will be enable. But you set "0.0.0.0" ,this service will disable.
Def ddnsuser [username]	eddy	You can access DDNS server with this ID.
Def ddnspass [password]	99999999	You can access DDNS server with this password.
def web [Enable / Disable]	Enable	Enable or disable Web service. If disabled, you cannot connect to Eddy via Web.
def target_agent [Enable / Disable]	Disable	Enable or disable remote debugging function used by Eddy development environment, LemonIDE®. For more information, please refer to LemonIDE user manual in the SDK CD included in Eddy-DK package.
def name \<Eddy name\>	Name of the module	Set the name of Eddy module. (Max 32 bytes)

6.4   Serial Commands

You can set the communication and operation environment for the serial port. Chapter 5 describes each option in detail. Only a summary of each option is presented here.

Table 6-3 Serial commands

Commands	Default	Descriptions
def port 1 protocol [disable / com / tcp_server / tcp_client / tcp_broadcast / tcp_multiplex / udp_server / udp_client]	com	Select the operation protocol, which the serial port would use.

Commands	Default	Descriptions
def port 1 interface [RS232 / RS422 / RS485]	RS232 or RS422	**·Eddy-S1/Pin, S1/DB9, S1/DB9-PoE** Only RS232 interface supported. Fixed. (Default: RS232) **·Eddy-S1/Pin-C, S1/DB9-C, S1/DB9-PoE-C** RS422 or RS485 interface is supported. By software, you can select one of these interfaces. (Default: RS422) **·Eddy-CPU** User decides the serial interface, meaning Web or Telnet configuration is not possible. For more information on interface configuration, please refer to Chapter 3. Hardware Description.
def port 1 socket <port number>	4001	Set the socket number for the port. TCP Server, TCP Broadcase, TCP Multiplex, and UDP server operation modes make use of this port for awaiting network socket connections.
def port 1 name <name>	Port 1	Port alias name for convenience. 16 Characters at maximum
def port 1 speed [150 / 300 / 600 / 1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 / 230400 / 460800 / 921600]	9600bps	Set communication speed.
def port 1 data [5 / 6 / 7 / 8]	8	Set the number of bits in each character size.
def port 1 stop [1 / 2]	1	Set the number of stop bits.
def port 1 parity [none / odd / even]	none	Set parity bit check scheme.
def port 1 flow [none / xon / rts]	none	Set the flow control scheme.
def port 1 signal [data / modem]	data	Set the signal line checking method for the device to be connected to the given serial port.
def port 1 remote <IP address>	0.0.0.0	When the Operation Mode is set to TCP Client or UDP Client, set the IP address to connect to.
def port 1 remoteport <socket number>	4000	When the Operation Mode is set to TCP Client or UDP Client, set the socket number to connect to.
def port 1 keepalive <0 ~ 32767>	0	After a certain amount of time passes without any communication after the socket connection between the given serial port and the server is established, automatically disconnect the socket connection.
def port 1 bypass [Enable / Disable]	Enable	This option needs to be set when consecutive data from the given serial port needs to be transmitted to socket at once.
def port 1 login [Enable / Disable]	Disable	When the Operation Mode is set to TCP Server, ask for the username and password when the client tries to connect. Set to 1 to enable.

Commands	Default	Descriptions
def port 1 loginname 　　　　　　<username>	None	When the Operation Mode is set to TCP Server, set the username to ask for(Max 8 bytes)
def port 1 loginpass 　　　　　　<password>	None	When the Operation Mode is set as TCP Server, set the password to ask for(Max 8 bytes)

6.5 GPIO commands

Configure operation mode and value for each Programmable I/O pins.

(Only Eddy-CPU and Eddy-S1/Pin modules support this function.)

Table 6-4 GPIO commands

Commands	Default	Descriptions
def gpio <0~15> mode [in / out]	Output	Set current pin's I/O mode.
def gpio <0~3> value [low / high]	High	Set current pin's output value. (This option only applies to output mode pins)

6.6 Username/Password Commands

Configure username and password for Web/Telnet/FTP.

Table 6-5 User/Password configurations

Commands	Default	Descriptions
def username <username>	eddy	Set username to use in Web, Telnet, or FTP. 16 Characters at maximum.
def password <password>	99999999	Set password to use in Web, Telnet, or FTP. 16 Characters at maximum.

6.7 System Commands

Table 6-6 System Commands

Commands	Descriptions
def default	Restore all settings to factory default. Requires reboot for changes to take effect.
def save	Save current configuration settings. Requires reboot for changes to take effect.
reboot	Reboot Eddy.

Chapter 7. Appendix

7.1 Firmware Updates

Eddy supports firmware update with Web or FTP. This section describes update method via FTP and Telnet. Web update is described in Chapter 5. Configuration via Web.

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① Connect to Eddy with FTP, using correct username and password. (Default: eddy, 99999999)

② Issue a command 'bin' for binary file transfer mode. Optionally use 'hash' to see the data transfer mark.

③ Issue 'put' command upload the firmware file.

④ After getting a 'Transfer complete' message, issue a command 'quit' or 'bye' to disconnect. Now we are ready to update the firmware.

```
C:\Temp>ftp 192.168.0.223
Connected to 192.168.0.223.
220 (vsFTPd 2.0.5)
User (192.168.0.223:(none)): eddy
331 Please specify the password.
Password:
230 Login successful.
ftp>
ftp> bi
200 Switching to Binary mode.                Firmware
ftp> hash                                    File
Hash mark printing On  ftp: (2048 bytes/hash mark) .
ftp> put eddy-xx-xxx.bin
200 PORT command successful. Consider using PASV.
150 Ok to send data.
######################################################################
######################################################################
######################################################################
#####################################################
226 File receive OK.
ftp: xxxxxxx bytes sent in 0.86Seconds 2421.81Kbytes/sec.
ftp>
```

Figure 7-1 Firmware updates via FTP

⑤ Connect to Eddy with Telnet, using correct username and password. (Default: eddy, 99999999)

⑥ After the login, you are already at the default directory where the firmware resides. Update can start right away.

⑦ Issue a command 'ls' to make sure firmware files are both successfully uploaded.

⑧ Use 'upgrade' command to write this file into Eddy's Flash memory. Upgrade application automatically detects whether the given firmware is kernel or file system.

Usage: upgrade <firmware filename> (Filename is case-sensitive.)

⑨ Make sure 'Flash Write OK' and 'Flash Verify OK' messages are displayed.

⑩ Enter 'reboot' to restart Eddy. Now Eddy will run with the new firmware.

Figure 7-2 Firmware Update via Telnet

7.2 Eddy-CPU

Category	Item	Specification
Hardware	CPU	ARM926EJ-S(180 MHz)
	Memory	4MB Flash, 32 MB SDRAM
	External Interface	16 bit / 8 bit data bus
	Ethernet Interface	10/100 Base-T (Pin Header)
	GPIO	Max. 16 Programmable I/O Pins
	Power Input	3.3 V (200 mA Max)
	Dimensions	25 * 42 * 6 mm
	Weight	7 g
Network	Protocol	TCP, UDP, Telnet, ICMP, DHCP, TFTP, HTTP, SNMP 1&2, SSH, SSL
	Ethernet	10/100Mbps MAC / PHY
	Network Connection	Static IP, DHCP
Software	O/S	Lemonix® Real Time Linux
	Management	SNMP, Web, PortView
	Upload	TFTP, FTP, Web
	Development Tool	LemonIDE® & SDK
Environment	Operating Temp	-40 ~ 85 ˚C
	Storage Temp	-60 ~ 150˚C
	Humidity	5 ~ 95% Non-Condensing
Programming		Supported
Approvals		CE Class A, FCC Class A, RoHS compliant

7.3   Eddy-Serial

		S1/Pin	S1/Pin_C	S1/DB9	S1/DB9_C	S1/DB9 -PoE	S1/DB9 -PoE_C
Hardware	CPU	ARM926EJ-S (180MHz)					
	Memory	4MB Flash / 32 MB SDRAM					
	LED	None LED		Ready,communication LED		Tx, Rx, Ready, Power LED	
	GPIO	4		0			
	Power Input	3.3V ~ 5V Pin Input		5V Power Jack		5V Power Jack or PoE	
	Power Consumption	5V / 290 mA (1.5 W Max)					
	Dimensions	60*42*16 mm		62*45*19 mm		75*50*19 mm	
	Weight	18.8 g		28.65 g		44.50 g	
software	Operating System	Real Time Linux Lemonix® (Kernel 2.6.x)					
	Mgmt. Tools	SNMP, Portview, Web					
	Terminal	Telnet, SSH					
	Application Upload	TFTP, FTP, Web					
	Web Service	Embedded Web Server					
Serial	Serial Interface	RS232	RS422/485	RS232	RS422/485	RS232	RS422/485
	Serial Port	1 * Pin Header			1 * DB9		
	Serial Speed	150 ~ 921.6 Kbps					
	Signals	TX, RX, DTR, DSR, CTS, RTS, DCD					
	Data Bits	5, 6, 7, 8					
	Stop Bits	1, 2					
	Parity	None, Even, Odd					
	Flow Control	RTS/CTS, Xon/Xoff					
Network	Ethernet Interface	10/100 BASE-T (Auto/ Half/ Full)					
	Ethernet Port	RJ45					
	Connection Type	Static IP, DHCP					
	Protocol	TCP, UDP, Telnet, SSH, SSL/TLS, DDNS, ICMP, DHCP, TFTP, HTTP, SNMP 1 & 2					
Environmental	Operating Temp	-40 ~ 85 °C					
	Storage Temp	-60 ~ 150°C					
	Humidity	5 ~ 95% Non-Condensing					
Programming		Supported					
Approvals		CE Class A, FCC Class A, RoHS compliant					

7.4 Ordering Information

Eddy-CPU	Embedded CPU module/ Programmable 3.3V power input (Pin header interface)
S1/Pin	RS232 Pin header interface 3.3 ~ 5V power input
S1/Pin -C	RS422/485 Pin header interface 3.3 ~ 5V power input
S1/DB9	RS232 DB9 Serial interface 5V power input
S1/DB9-C	RS422/485 DB9 Serial interface 5V power input
S1/DB9-PoE	RS232 DB9 Serial interface 5V(power jack) or PoE(48V)
S1/DB9-PoE-C	RS422/485 DB9 Serial interface 5V(power jack) or PoE(48V)
Eddy DK	Eddy-Serial series development kit

7.5 Package Contents

Eddy-CPU	Eddy-CPU module, Utilities & Documents CD
S1/Pin-series	S1/Pin or S1/Pin-C module, Utilities & Documents CD
S1/DB9-series	S1/DB9 or S1/DB9-C module, Utilities & Documents CD
S1/DB9-PoE-series	S1/DB9-PoE or S1/DB9-PoE-C module, Utilities & Documents CD
Eddy DK	Test board, 1 EA Eddy module, SDK/IDE/Compiler/Documents/Utilities CD, LAN cable, Serial cable, Pin header cable, Board support, Jumper, Power adaptor, Power cable

7.6   FCC Statement

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC FULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:
(1)   THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.
(2)   THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED.
(3)   INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

FCC RF
INTERFERENCE STATEMENT

NOTE:

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.