EH-8100 Ethernet-enabled Control Panel User's Manual



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1 OverView

1.1 Introduction.

The EH-8100 Ethernet-enabled control panel is a breakthrough product that brings an all-new operational interface for Ethernet-based control systems or information appliances in the Internet era.

The EH-8100, a stylish control panel, ends the age of walls that are cluttered with switches, control panels and thermostats. Its wall-mounted design with graphic-mode display is ideal for the kitchen, bedroom, bathroom or office... anywhere you want to control whole-house audio and video, home theater, lighting, security and HVAC.

The EH-8100 can be fully customized for any control environment and any decor. Graphic icons and programmable "quick" pushbuttons let users easily select and control any function.

Using reliable Ethernet connectivity or RS-485 or LON to the devices, EH-8100 lets you monitor, control and operate all home automation or building automation devices or controllers easily with just one finger.

EH-8100's internet/Ethernet service also offers the most efficient method of system diagnostics and maintenance, thus reducing the customer's total cost of ownership.

1.2 Features.

- Affordable and stylish design.
- 128 x 64 resolution mono-display.
- 10/100 Base-T Ethernet.
- RS-485 or FTT-10 Support.
- Built-in Temperature sensor.
- 5 Functional Keypad Design.
- Easy wall mounting or back box mounting system.
- MSC-51 compliant MCU with 24 MHz performance.
- Lonworks Support.
- Supports Hardware Ethernet protocol stack: (TCP, UDP, IP, ICMP, IGMP, ARP)
- Provides ISP download on RS-232 port.

1.3 Application.

- Boardrooms.
- Conference centers.
- Home automation.

- •Training rooms.
- Lighting control.
- Environmental control.
- Building automation.
- HVAC applications.

2 Product Specification.

2.1 Hardware Specification

Model	EH-8100-LA	EH-8100-R8	EH-8100-LO	EH-8100-LR	EH-8100-LL	
Descri		Ourse ante DO 405			Supports LAN &	
ption	SUPPORTS LAN	Supports RS-485	Supports LON	RS-485	LON	
Spec.	 * 8051 proce * 128 x 64 re * Built - in T * 5 Function * On chip 64 * External 3 * 12 ~ 30 VE * Screw Phere 2-pin: D 2-pin: T 	essor with 24MH esolution mono emperature sen hal keypad desig 4KB flash memo 2 KB RAM DC enix connector 4 C power input wisted Pair com	Iz performance graphical displa sor n ry -pin munication port	γ γ		
	Network type : 10/100 Base -T Ethernet.	Network type : <i>RS - 485</i>	Network type: FTT-10A 78Kbps	Network type : <i>RS</i> – 485 , 10/100 Base - T <i>Ethaunat</i>	Network type : <i>FTT – 10A</i> , <i>10/100 Base-T</i> <i>Ethermet</i>	
	Sunnort Hardware	865mW / 24V	<i>1 3W / 24V</i>	Linernei	Einernei	
	Ethernet protocol		1.0 // / 2//	Support Hardware	Support Hardware	
	stack:			Ethernet protocol	Ethernet protocol	
	TCP, IP, UDP,			stack :	stack :	
	ICMP, ARP			TCP, IP, UDP,	TCP, IP, UDP,	
	RJ – 45 terminal type			ICMP, ARP	ICMP, ARP	
	connector			RJ - 45 terminal type	RJ - 45 terminal	
				connector	type connector	
	Power Dissipation:					
	1W/24V			Power Dissipation:	Power Dissipation:	
				1W/24V	1.5W/24V	

2.2 Memory map



Memory map of HE-8100

2.3 Miscellaneous (EH-8100)





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2.3.1 Ethernet interface



RJ-45 connector

2.3.2 RS485 interface



Net + & Net - for RS-485 network connector

2.3.3 Lonworks interface (FTT-10A)



Net + & Net – for Lonworks network connector (FTT-10A) Ps. It use serial port to connect that between 8051 processor and Neuron chip.

2.3.4 Key button



Key1 ~ Key5 for function selection base on customer define

2.3.5 LCD display



Display status base on customer define

2.3.6 LED

Link LED for Ethernet attached

The Service LED indicates the node status of the detector.

No light: The node is configured.

Flashing light: The node is unconfigured. Each flash period is 1 second. Fixed light: No software is loaded.

2.3.7 Switch button

Reset Pin for System Reset Service pin (active LOW). Alternates between input and output at a 76 Hz rate. (Built-In Configurable Pull-up)

3 Installation

3.1 Hardware install



1. Mount the frame at desired location,

2. Make necessary connector wirings: POWER: VDC 12 ~ 30V

GROUND: GND

NET+: RS-485+ or LONWORKD

NET-: RS-485- or LONWORKD Or

RJ-45 Ethernet connector

3. Plug in the POWER& NETWORK connector successfully,

then LCD panel should be light.

4. Hang the panel EH8100 up the frame.

3.2 Software configure

Using μ Version 2 of Keil software.

Step 1.

After create project and then "Select Device for Target" to W78C516.



Step 2.

Select project and do "Options for Target"

Options for Target EH81_Web'						
Target Output I	Listing C51 A51 LX51 Loca	te LX51 Misc Debug				
Winbond W78C516						
	<u>X</u> tal (MHz): 24.0	☑ Use On-chip ROM (0x0-0xFFFF)				
Memory Model:	Large: variables in XDATA					
Code Rom Size:	Large: 64K program 🗾					
Operating system:	None 💌	🔽 Use On-chip XRAM (0x0-0xFF)				
Off-chip Code memory Off-chip Code memory Start: Size: Ram Start: Size: Eprom Eprom Ram Ram Ram Ram Code Banking Start: End: far' memory type support						
Banks: 2 Bank Area: 0x0000 0xFFFF Save address extension SFR in interrupts						

- 1. Set Xtal to 24 MHz.
- 2. Memory Model : Large: variables in XDATA.
- 3. Code Rom Size : Large: 64K program.
- 4. Off-chip Xdata memory : 0x0000 to 0xFFFF.

Step 3.

Select "Output" and checked "Create HEX File" HEX Format : HEX-80.

Options for Target 'EH81_Web'	? 🔀					
Target Output Listing C51 A51 LX51 Locate LX51 Misc Debug						
Select Folder for Objects <u>Name of Executable</u> : EH81_Web						
🔽 Debug Information 🧮 Browse Information						
✓ Create HEX File HEX Format: HEX-80						
C Create Library: .\EH81_Web.LIB						
After Make						
🔽 Beep When Complete 🦳 Start Debugging						
Run User Program #1: Brows	e					
Run User Program #2: Brows	e					
確定 取消 Defaults						

Step 4.

Select "C51" and checked "Keep variables in order".

Options for Target EH81_Web'	? 🛛
Target Output Listing C51 A51 LX51 Locate LX51 M Preprocessor Symbols	disc Debug
Code Optimization Level: 8: Common tail merging Emphasis: Favor execution speed Global Register Coloring Don't use absolute register accesses Include	Warninglevel 2 Bits to round for float compare: 3 ✓ Interrupt vectors at address: 0x0000 ✓ Keep variables in order ✓ Enable ANSI integer promotion rules
Paths Misc Controls Compiler control string	
確定 取消 Step 5.	Defaults

Click the "OK" button

5 Firmware Uploading

Setp 1.

Connect program cable and power cable first. HE-8100 will be auto going to firmware uploading mode when the power is on.

Setp 2.

Use ISP WRITER

a. You will enter the window as follow after executing the ispwriter.exe file.

D:\Projects\EH-8100\ref\IspWriter\Defaul	lt.efg - 8051Isp Writer 📃 🗖 🔀
Configuration File <u>AP</u> Setting <u>V</u> iew <u>H</u> elp	
Chip Information	
Select Chip W78E516B	<u> </u>
AP ROM Size : 64K LD R	OM Size : 4K
File Information	
Select Bank0 D:\Projects\EH-8100\Web_Se	rver\EH81_Web.hex
Check Sum : A8C3h	File 40.1K(41014)Bytes
Select Bank <u>1</u>	
Check Sum :	File File Size :
Function	Communication Setting
Program All (Erase+Write+Verify)	Online : Disconnect
Upload (Read + Save)	Port Name: COM1
verify (Verify Codes)	Port Mode: None 💌
eXit LD (Exit LD)	AP Baud Rate: 9600
Status	LD Baud Rate :
Progress: 0%	🔲 Switch to LD by User Command
	User Com <u>M</u> and: (ASCII)
「平井電子	Con <u>N</u> ect
Ready	

b. Click the "Select Chip" button, and choose W78E516B type to going to program.



c. Click the "Select Bank0" button and selecting a file which a HEX format required.

🚺 D:\Projects\EH-8100\ref\IspWriter\Default.cfg	- 8051Isp Writer 📃 🗖 🗙				
Configuration File <u>AP</u> Setting <u>V</u> iew <u>H</u> elp					
Chip Information					
Select Chip W78E516B					
AP ROM Size : 64K LD ROM Si	ze:4K				
開啓	? 🛛				
搜尋位置①: 🗁 Web_Server	· · · • • • · ·				
BAK BH81_Web.hp	EH81_Web_U∨2.Bak				
BH81_Web.MAP	n guer.n 🗇 HII h gVal.h 📾 HTT				
h EH81_REG.H @EH81_Web.plg	HTTPD EL51				
EH81_Web	C HTTPD.C C MAI				
"⊞#÷===##(@). [EH81_web.nex					
檔案類型(I): All Files (*.*)					
Status					
Progress: 0%					
	User Com <u>M</u> and: (ASCII)				
御いは 北原 そ					
	Con <u>N</u> ect				
Keady					

File Format	
File Format • Inte Hex	C Binary
Unused Bytes –	€ 00
OK	

d. Select the communication Setting: Port Name

Communication Setting							
Online : Disconnect							
Port Name: COM1							
Port Mode: None							
AP Baud Rate: 9600							
LD Baud Rate :							
🔲 Switch to LD by User Command							
User Com <u>M</u> and: (ASCII)							
ConNect							
Contrect							

e. Click the "ConNect" button.

D:\Projects\EH-8100\ref\IspWriter\Default.cfg	- 8051Isp Writer 📃 🗖 🔀
<u>Configuration File</u> <u>AP</u> Setting <u>V</u> iew <u>H</u> elp	
Chip Information Select Chip W78E516B	
AP ROM Size : 64K LD ROM Siz	ze:4K
File Information	
Select Bank0 D:\Projects\EH-8100\Web_Server\EH	H81_Web.hex
Check Sum : A8C3h	File 40.1K(41014)Bytes
Select Bank <u>1</u>	<u>~</u>
Check Sum :	File File Size :
Function Program All (Erase+ Write+Verify) Upload (Read + Save) verifY (Verify Codes)	Communication Setting Online : Connected Port Name: COM1 Port Mode: None
e <u>K</u> it LD (Exit LD) Status Progress: 0%	AP Baud Rate: 9600 LD Baud Rate : 57600 Switch to LD by User Command User Com <u>M</u> and: (ASCII)
小 集邦電子 Ready	Con <u>Nect Next Chip</u>

Step 3.

Executing ISP

a. Click "Program All" button that will execute erase and program. Then you can get the window as follow, and click ok.

- Function	Communication Setting			
Program All	(Erase+Write+Verify)	Infomatio	տ 🔀	Connected
Upload	(Read + Save)	(i)	Program OV	COM1 💌
verifY	(Verify Codes)	$\mathbf{\nabla}$	Hogiani. OK!	None
e <u>X</u> it LD	(Exit LD)	(確定	9600 💌
Status Program:	OK!		DD Data Hat	: 57600
Progress: 39039 Bytes (100%)			🔲 Switch to I	.D by User Command
			User Com <u>M</u> an	ıd: (ASCII)

b. Click "verify" button that will execute verify action. Then you can get the window as follow, and click ok.

Function			Communication Setting			
Program All	(Erase+Write+V	erify)	Onli	ne:	Connected	
Upload	(Read + Save)	Infomation		Name:	COM1	-
verif <u>¥</u>	(Verify Codes)			fode:	None	<u>-</u>
e <u>X</u> it LD	(Exit LD)	Venify Venify	y: OK!	aud Rate:	9600	Ψ.
Status Verify	: OK!	······ ******		aud Rate	: 57600	
Progress: 39039	Bytes (100%)			vitch to Ll	D by User C	Command
		User Com <u>M</u> and: (ASCII)				

Step 4.

After update the program of APROM, must remove the program cable and reboot HE-8100. The HE-8100 will be boot from your program of APROM.