

# Programmable Logic Controller EH-150 EHV Series

Modular PLC

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# Programmable Logic Controller

# EH-150 EHV Series

## Modular PLC

### High Speed, large capacity EHV CPU module with Ethernet port

- High speed processing, 20ns per binary instruction
- Large capacity program memory  
Max. 128 ksteps
- Large capacity comment memory  
Max. 1 MByte
- Integrated Ethernet, Serial and USB communication ports
- 7 Segment LED error display



### 3 Communication ports

- Ethernet port (10BASE-T/100BASE-TX)
- USB port (Ver2.0 FullSpeed 12 Mbps)
- Serial port (RS-232C/RS-422/RS-485)

### High speed processing 20ns

- 20ns/basic command
- A program of 20ksteps size can be executed in 1ms or less.

### Large capacity memory

- Program memory Max. 128 ksteps (FLASH memory)
- Comment memory Max. 1 MByte
- Data memory Max. 228 kwords



### Comment memory

- Max. 1 MByte of comment memory, separate from the program memory

### Improved programming interface

- New Commands (Edge Coil/Edge Processing Box etc.)
- Additional Data Types: Signed integer/Floating point/ASCII data
- Bit designation for word access register

### 7 Segment LED Display

- Display for error codes and user data

**EHV-CPU64**  
(64 ksteps)



**EHV-CPU128**  
(128 ksteps)



**EHV-CPU16**  
(16 ksteps)



**EHV-CPU32**  
(32 ksteps)



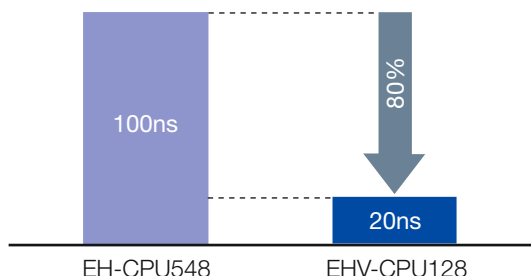
# Programmable Logic Controller

# EH-150 EHV Series

## Modular PLC

### High speed processing

Thanks to a high speed processor, the execution time per binary instruction is 20ns. As a result, a program of 20ksteps size can be executed in 1ms or less.



### Online change during RUN is improved

Thanks to a redundant user memory, online changes are executed immediately without delay. In addition, the timing of the execution of an online change can be selected by the user.

### Various additional ladder commands

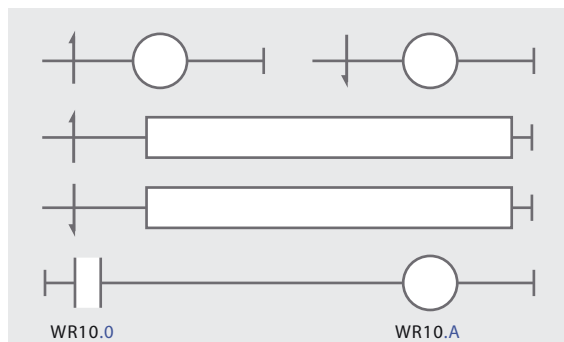
Various new commands such as edge coil, edge processing box etc. have been added. Also, new data types such as signed integer, floating point and ASCII data have been added.

### Large capacity program memory

A large user program memory of max. 128ksteps is available. The data memory size is max. 228kWords.

### Comment memory

As well as the program and data memory, a separate comment memory is also available. The size of the comment memory is max. 1 MByte. The comment memory is not affected by the size of program or data.



### All the modules of EH-150 series can be used



All the input and output modules as well as the communication modules of EH-150 series can be used with EHV-Series. A max. of 5 expansion racks is possible (EHV-CPU128 : Max. 5, EHV-CPU64 : Max. 4, EHV-CPU32/16 : Max. 2). This results in a max. of 4,224 I/O points (using 64pts. modules), the max. No. of I/O modules is 66. Therefore the EHV-Series is also suitable for large scale control systems.

Expansion : 5 maximum  
66 modules maximum  
4,224 points maximum  
(using 64 pts. units)



Note : Although mixture of EH-IOCH/EH-IOCH2 is possible, be sure to use EH-IOCH2 for the 5th step of expansion.



## Improved Interface

### Ethernet communication port

The integrated Ethernet port of the EHV-CPU's has the same specifications as the Ethernet module EH-ETH. 4 logical ports for programming and monitoring are available and 6 ports for data exchange. Intensive monitoring and data collection can be realized through the CPU directly without additional communication module. 10BASE-T and 100BASE-TX are supported.

### USB port

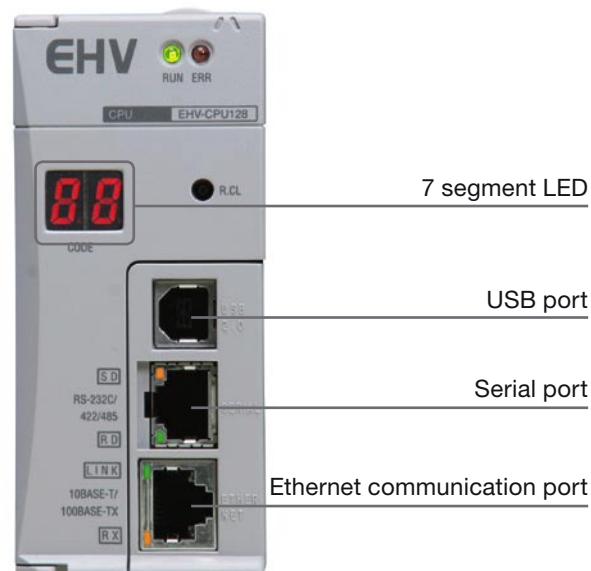
The integrated USB port enables fast downloading of the user program.

### Serial port

A serial port (RS-232C/422/485) is also available which can be used in H-Protocol mode and in general purpose mode (ASCII communication).

### 7 segment LED

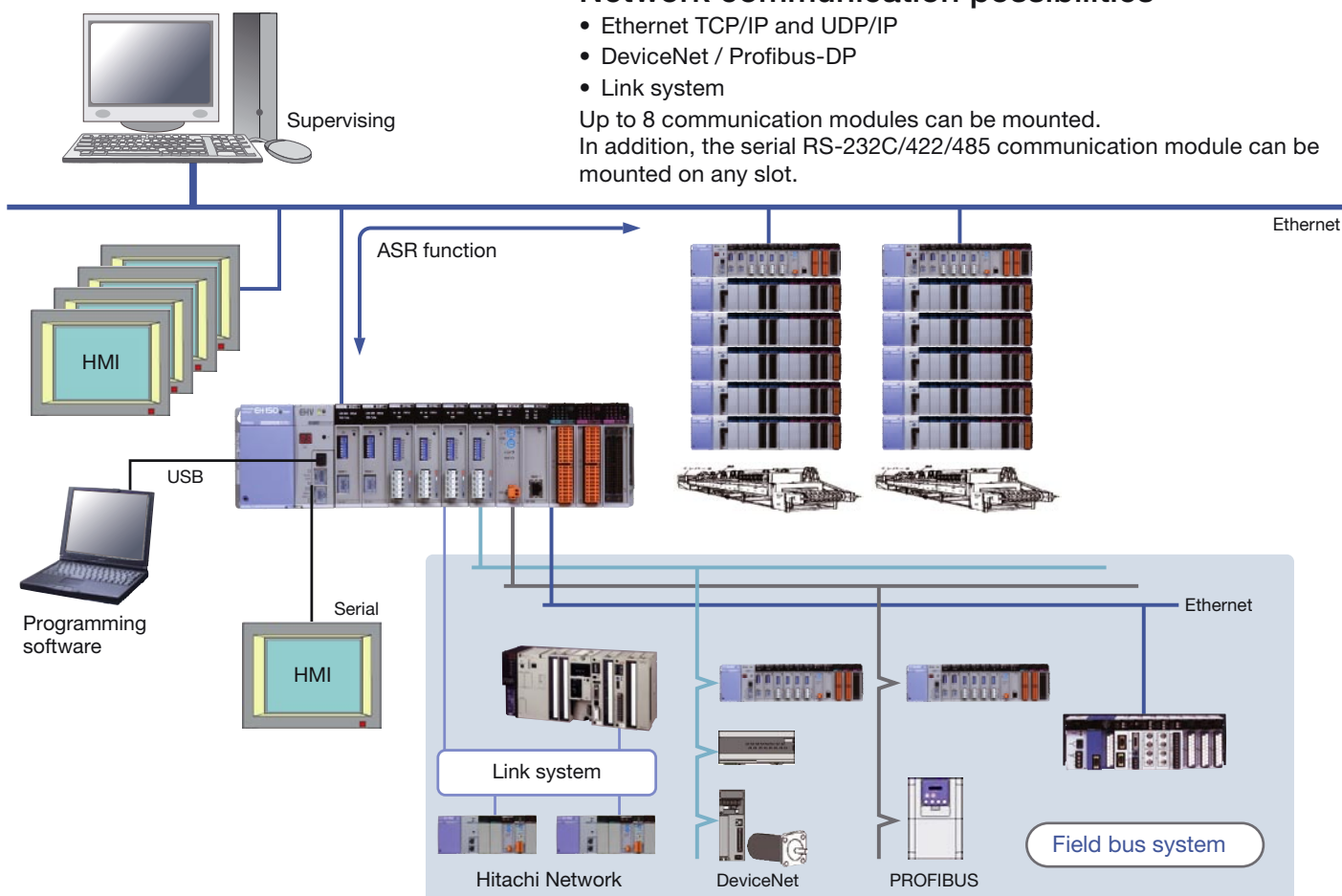
As standard, the error code is displayed on the integrated 7 segment display. In addition, user data, such as timer/counter progress values can also be displayed by the ladder program.



### Network communication possibilities

- Ethernet TCP/IP and UDP/IP
- DeviceNet / Profibus-DP
- Link system

Up to 8 communication modules can be mounted. In addition, the serial RS-232C/422/485 communication module can be mounted on any slot.



# Programmable Logic Controller

# EH-150 EHV Series

## Modular PLC

### Overview of the I/O module lineup

Wide variety of modules to meet various applications demands

DC and AC digital input and output modules



#### 8/16 pts. Input module

(terminal block)

- EH-XD8 : 8 pts. 24 VDC
- EH-XD16 : 16 pts. 24 VDC
- EH-XDL16 : 16 pts. 24 VDC  
(Input lag 16 ms)
- EH-XA16 : 16 pts. 100 to 120 VAC
- EH-XAH16 : 16 pts. 200 to 240 VAC



#### 8/16 pts. Output module

(terminal block)

- EH-YT8 : 8 pts. Transistor (sink)
- EH-YTP8 : 8 pts. Transistor (source)
- EH-YT16 : 16 pts. Transistor (sink)
- EH-YTP16 : 16 pts. Transistor (source)
- EH-YS4 : 4 pts. Triac
- EH-YS16 : 16 pts. Triac
- EH-YR12 : 12 pts. Relay
- EH-YR16 : 16 pts. Relay
- EH-YR8B : 8 pts. Isolated relay



#### 32 pts. Input module

(connector)

- EH-XD32 : 32 pts. 24 VDC



#### 32 pts. Output module

(connector)

- EH-YT32 : 32 pts. Transistor (sink)
- EH-YTP32 : 32 pts. Transistor (source)



#### 64 pts. Input module

(connector)

- EH-XD64 : 64 pts. 24 VDC



#### 64 pts. Output module

(connector)

- EH-YT64 : 64 pts. Transistor (sink)
- EH-YTP64 : 64 pts. Transistor (source)



#### 32 pts. Input module

(Spring type terminal block)

- EH-XD32E : 32 pts. 24 VDC
- EH-XDL32E : 32 pts. 24 VDC  
(Input lag 16 ms)



#### 32 pts. Output module

(Spring type terminal block)

- EH-YT32E : 32 pts. Transistor (sink)
- EH-YTP32E : 32 pts. Transistor (source)

## Analog Input-Output modules



### Analog Input modules

- EH-AX44 : 12-bit analog input, Current 4-20 mA, Voltage 0-10 V, 4 ch each
- EH-AX8V : 12-bit analog input, Voltage 0-10 V, 8 ch
- EH-AX8H : 12-bit analog input, Voltage -10 to 10 V, 8 ch
- EH-AX8I : 12-bit analog input, Current 4-20 mA, 8 ch
- EH-AX8IO : 12-bit analog input, Current 0-22 mA, 8 ch
- EH-AXH8M : 14-bit analog input, Current 0-22 mA / 4-22 mA, Voltage -10 to 10 V / 0-10 V, 8 ch

### Analog Output modules

- EH-AY22 : 12-bit analog output, Current 4-20 mA, Voltage 0-10 V, 2 ch each
- EH-AY4V : 12-bit analog output, Voltage 0-10 V, 4ch
- EH-AY4H : 12-bit analog output, Voltage -10 to 10 V, 4 ch
- EH-AY4I : 12-bit analog output, Current 4-20 mA
- EH-AY2H : 12-bit analog output, Voltage -10 to 10 V, 2 ch
- EH-AYH8M : 14-bit analog output, Current 0-22 mA / 4-22 mA, voltage 0-10 V, 8 ch

### Temperature Detective Input modules

- EH-PT4 : Signed 15-bit, Pt 100 ohms / Pt 1000 ohms, 4 ch
- EH-TC8 : Signed 15-bit, Thermo-couple (K, E, J, T, B, R, S, N) 8 ch

## Positioning, Counter modules



### 1-axis positioning module

- EH-POS : Open collector output  
Line driver output



### 4-axes positioning module

- EH-POS4 : Line driver output



### High speed counter module

- EH-CU : Maximum 100 kHz, 2 ch
- EH-CUE : Maximum 100 kHz, 1 ch

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## Overview of the I/O module lineup

Wide variety of modules to meet various applications demands



### Serial communication Module : EH-SIO

Interface : RS-232C×1, RS-232C/422/485×1  
 Communication mode : Half-duplex  
 Communication speed : 300-57600 bps  
 Communication protocol : Non-protocol  
 Modbus ASCII  
 Modbus RTU  
 HI-Protocol



### Ethernet™ Module : EH-ETH

Auto Sending/Receiving function (ASR)  
 Maximum 6 connections  
 Task code communication  
 Maximum 4 connections  
 10Mbps (10 BASE-T)  
 TCP/IP, UDP/IP  
 Setup function using a general-purpose Web browser



### CPU Link Module (Coaxial cable) : EH-LNK

Max. 64 units / 1 loop  
 Max. 8 units / 1 CPU  
 (The capacity of the power supply module has to be considered)  
 1,024 words / 1 loop (8,192 words / 8 loops)  
 Between stations : max. 500 m  
 Total extension : max. 1,000 m



### CPU Link Module (Optical cable) : EH-OLNK

Max. 64 units / 1 loop  
 Max. 8 units / 1 CPU  
 (The capacity of the power supply module has to be considered)  
 1,024 words / 1 loop (8,192 words / 8 loops)  
 Between stations : max. 1 km  
 Total extension : max. 15 km



EH-RMP

EH-10CP

### PROFIBUS® Master / Slave Controller

Number of slave-connected units: Max. 124  
 (A repeater is required to connect 32 or more nodes)  
 Max. number of installed I/O modules per Slave Controller: 16  
 Communication speed max. 12Mbps  
 Communication distance max. 1,200m (9.6 kbps)  
 Communication and Network module



EH-RMD

EH-IOCD

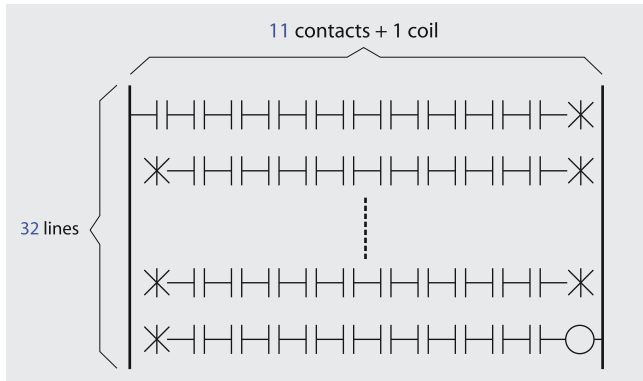
### DeviceNet™ Master / Slave Controller

Number of slave-connected units: Max. 63  
 Max. number of installed I/O modules per Slave Controller: 16  
 Communication speed max. 500kbps  
 Communication distance max. 500m (125 kbps)

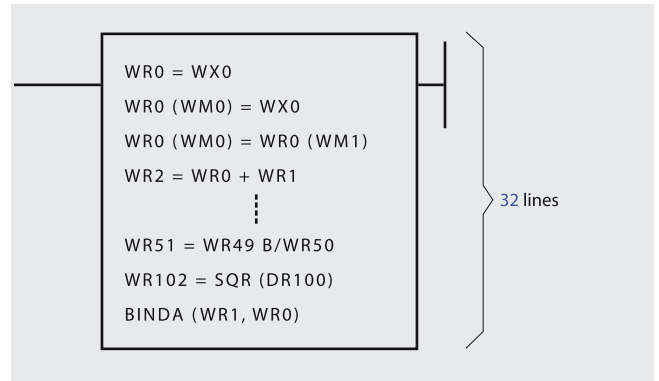


## Various ladder command additions

The max. number of elements of one circuit is expanded.

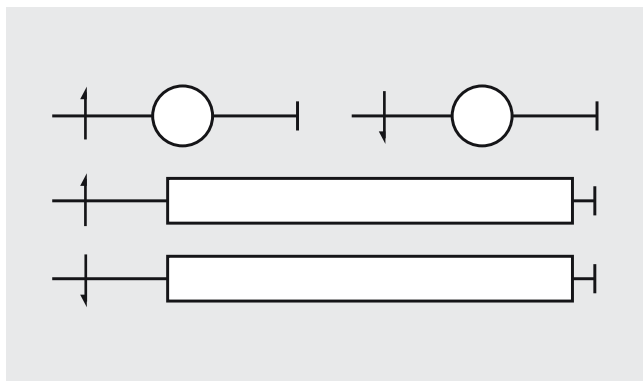


The max. number of lines of one processing box is expanded.



### Edge Coil and Edge Processing Box

Edge Coil and Edge Processing Box are added to Rising edge (DIF) and Falling edge (DFN)



### Data type command

Relational box, Substitution statement and mathematical operations are complemented with signed and floating point data types.

#### Signed Relational box



#### Floating point addition

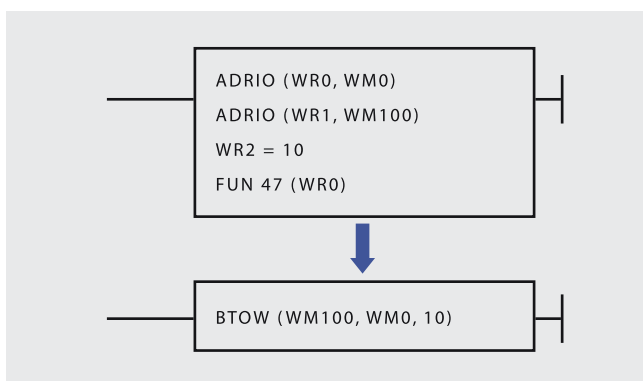
DR104.FL=DR100.FL+DR102.FL

#### Substitutes ASCII character string

WR0.ASC.9 = "Hello □ EHV"

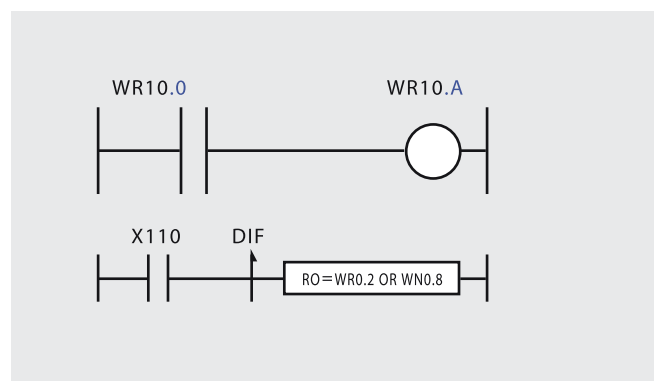
### Application FUN command

Easier and more user friendly



### Bit designation command

A dedicated Bit designation for internal Word registers (WR/WN) is available



# Programmable Logic Controller

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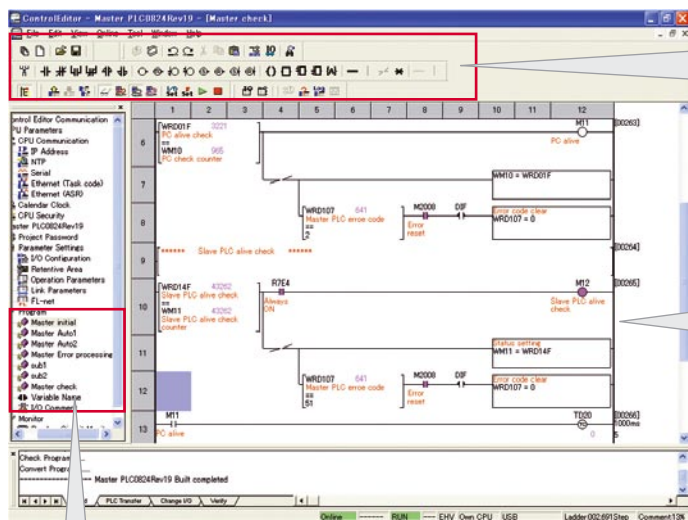
## Modular PLC

## Programming Software for the EHV-Series

“Control Editor” is the programming software for the EHV-Series

**Improved efficiency for user program development thanks to new functionalities:**

- Program sheet structure which allows easy program management, combination and division of a user program.
- Easy to use and maximum efficiency thanks to the advantage of the standard Windows interface.



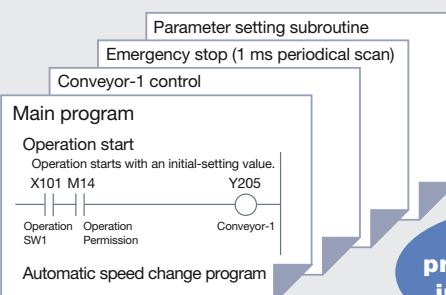
### Easy and Visual interface for other brands' PLC users

- Off-line
- On-line
- Circuit Monitor
- Download
- Upload
- Search

### How to use the programming interface:

1. Sample screen of the user program, including contacts, coils and arithmetic boxes.
2. Easy setting of the I/O-configurations, I/O-monitor, etc.
3. Separate screens for network settings.

### Project: EHV production line control system

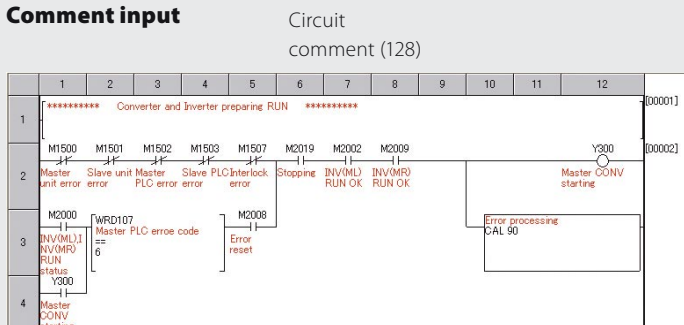


**Several program sheets in one project**

### Program conversion tool

- Multiple program sheets for multi-purpose and multi-programmer usage.
- Easy program management, combination and separation of user programs.
- Each program sheet can be copied easily by right mouse click after opening multiple Control Editor sessions.

### Comment input



I/O comment (32)

Each type of comment can be downloaded to CPU.

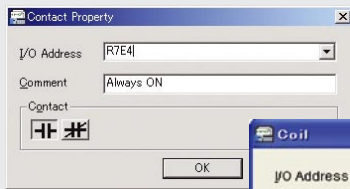
### Program convert tool

The Ladder program of the H series and EH150 series can be converted. It is convertible to the file format of the Control Editor with an attached program convert tool.

## How to use the programming interface

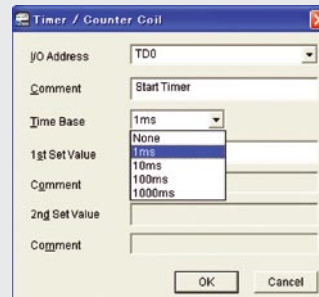
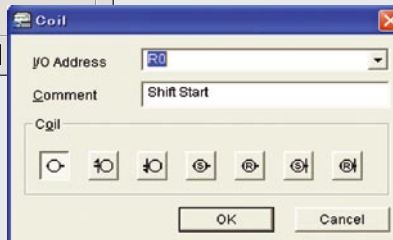
Improved efficiency for user program development thanks to new functionalities:

### ① Sample screens of contact and coil definition windows.



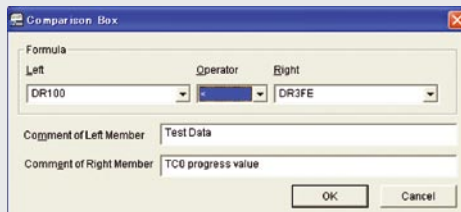
A comment can be input simultaneously.

A symbol can be selected by icon

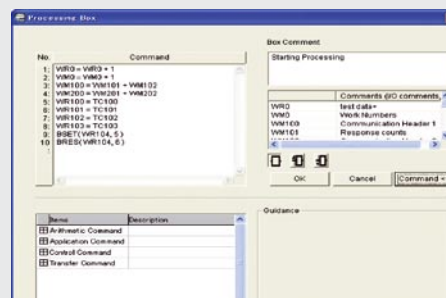


Time base 1 ms, 10 ms, 100 ms, 1 s, max. 2560 points

### ② Sample screens of arithmetic box programming



selection of a comparison mark



1. Max. 32 commands can be input in a processing box
2. Guidance displayed by clicking command in the list
3. Box comment can be input simultaneously

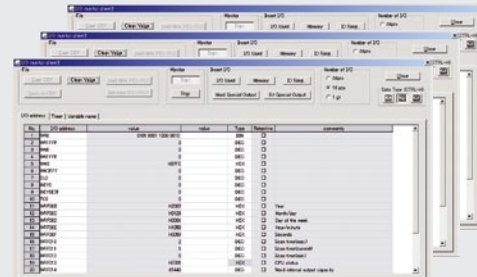
### ③ Easy setting of the I/O-configuration and the I/O-monitor list

#### I/O configuration



1. Configuration of each slot can be selected by a module list.
2. Guidance of I/O addresses is displayed according to the slot no.
3. Read I/O configuration in online mode is possible.

#### I/O monitor



1. Several I/O monitor screens can be opened (max. 16).
2. I/O monitor pattern can be saved and opened by CSV file format.
3. Data types can be selected for all I/O, or for each I/O individually.

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#### ③ Various setting screens.

Various configurations can be managed from the project tree including network and communication.

Serial

Ethernet ASR

IP address

Ethernet Task code

Calendar clock

CPU LINK

Retentive area

Serial Port Communication

CPU Communication Setting (Serial Port)

CPU Communication Setting (Ethernet ASR)

CPU Communication Setting (Ethernet Task Code)

Ethernet Clock Setting

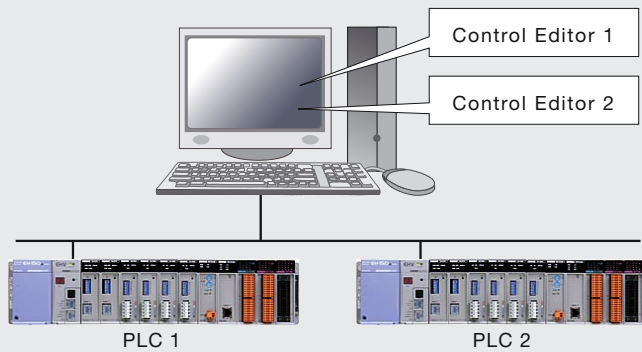
LINK Parameter Setting

Retentive Area Setting

Project tree:

- PC communication settings
- CPU parameters
- CPU settings
- IP address
- NTP
- Serial communication
- Ethernet (task code)
- Ethernet (ASR)
- Calendar clock
- CPU security
- Project1
- Project password
- Parameters settings
- I/O Configurations
- Retentive area
- Operation parameters
- Link parameters
- FL-net parameters
- Program
- Variable name
- I/O comment
- Monitor
- Random circuit monitor
- I/O monitor sheet1

#### ④ Others.



Two or more Control Editor sessions can be started on one personal computer. In case of Ethernet connection, two or more CPUs can be accessed.

No.	Hour	Log
273	2006.12.25 16:31	28 Program transfer
272	2006.12.25 16:31	21 CPU initialize
271	2006.12.25 16:30	28 Battery error
270	2006.12.25 16:30	26 [71] Battery error
269	2006.12.25 16:28	24 Power on
268	2006.12.21 16:58	25 RUN
267	2006.12.21 16:58	25 STOP

Update Close

#### CPU History

EHV CPU is able to store user's operation (error code, power on/off, etc.)



## CPU

Item		Specification			
<b>Type</b>		EHV-CPU128	EHV-CPU64	EHV-CPU32	EHV-CPU16
<b>Control specifications</b>	<b>User program memory</b>	128 ksteps	64 ksteps	32 ksteps	16 ksteps
	<b>CPU</b>	32-bit RISC processor / High speed Operation processor			
	<b>Processing method</b>	Stored program cyclic method			
	<b>Processing speed</b>	Contact 20 ns, Coil 40 ns			
<b>Calculation processing specifications</b>	<b>Basic commands</b>	54 types			
	<b>Arithmetic / Application commands</b>	160 types			
<b>I/O processing specifications</b>	<b>External I/O</b>	<b>I/O processing method</b>	Refresh processing		
		<b>External I/O points (64-point I/O module)</b>	4,224 points maximum	3,520 points maximum	2,112 points maximum
		<b>number of mounted module</b>	66 modules maximum	55 modules maximum	33 modules maximum
		<b>Expansion</b>	5 units*1	4 units	2 units
	<b>Internal output</b>	<b>Remote I/O</b>	1,024 points x4 master stations		
		<b>Bit (R)</b>	1,984 points (R0 ~ R7BF)		
		<b>Word (WR)</b>	61,440 words (WR0 ~ WRFFFF)		
		<b>Word (WN)</b>	131,072 words (WN0 ~ WN1FFFF)	32,768 words (WN0 ~ WN7FFF)	
		<b>Bit / word shared (M / WM)</b>	524,288 points, 32,768 words (M0 ~ M7FFFF, WM0 ~ WM7FFF)		
		<b>Special internal output</b>	Bit 2,112 points (R7C0 ~ RFFF) Word 4,096 words (WRF000 ~ WRFFFF)		
		<b>CPU LINK*2</b>	16,384 points 1,024 words x8 loops Link system 1: L0 ~ L3FFF / WL0 ~ WL3FF Link system 2: L10000 ~ L13FFF / WL1000 ~ WL13FF Link system 3: L20000 ~ L23FFF / WL2000 ~ WL23FF Link system 4: L30000 ~ L33FFF / WL3000 ~ WL33FF Link system 5: L40000 ~ L43FFF / WL4000 ~ WL43FF Link system 6: L50000 ~ L53FFF / WL5000 ~ WL53FF Link system 7: L60000 ~ L63FFF / WL6000 ~ WL63FF Link system 8: L70000 ~ L73FFF / WL7000 ~ WL73FF		
		<b>Timer and counter</b>	<b>Number of points*3</b>	2,560 points (Timer 2,560 points / Counter 512 points)	
		<b>Timer set value</b>	0 ~ 65,535, Time base 1, 10, 100[ms], 1[s]		
		<b>Counter set value</b>	1 ~ 65,535 times		
<b>Edge detection*4</b>		DIF 512 points + DFN 512 points Edge coil (up) 1,024 points Edge coil (down) 1,024 points Edge Processing Box (up) 1,024 points Edge Processing Box (down) 1,024 points			
<b>Comment memory</b>		1 MByte	512 kbyte		
<b>Communication port</b>	<b>Serial port</b>	RS-232C / RS-422 / RS-485			
	<b>Ethernet port</b>	1 port (Peripheral equipment, Network) 10BASE-T / 100BASE-TX			
	<b>USB port</b>	1 port (Peripheral devices) Ver2.0 FullSpeed 12Mbps			
<b>Peripheral equipment</b>	<b>Program method</b>	Ladder			
	<b>Peripheral devices</b>	Programming Software (Control Editor) *Program by LADDER EDITOR is not supported. PRN files are convertible for the file for Control Editor with an attached program conversion tool			
<b>Additional function</b>	<b>Clock function</b>	Yes			
	<b>Modem control function</b>	Yes			
<b>Maintenance functions</b>	<b>Self-diagnosis</b>	PLC error (7 segment display): microcomputer error, watchdog timer error, memory error, program error, system ROM / RAM error, scan time monitoring, battery under-voltage detection, and others			

1: Although mixture of EH-IOCH/EH-IOCH2 is possible, be sure to use EH-IOCH2 for the 5th step of expansion

2: The number of CPU LINK modules is limited by total current consumption also. Set up your system not to exceed current supplied by power supply module.

3: The same numbers cannot be used with the timer and the counter.

4: Number of edge is controlled by Control Editor.

## Power supply module

Item		EH-PSA	EH-PSD
<b>Input</b>	<b>Rated voltage</b>	85 to 264 V AC	21.6 to 26.4 V DC
	<b>Current</b>	1 A or less (85 to 264 V AC)	1.25 A or less (24V DC)
	<b>Inrush current</b>	50 A or less (Ta = 25°C), 100 A or less (Ta = 55°C)	50 A or less (Ta = 25°C), 100 A or less (Ta = 55°C)
<b>Output Current</b>	<b>5 V DC</b>	3.8 A	3.8 A
	<b>24 V DC</b>	0.4 A	-
<b>Weight</b>	Approximately 0.36 kg (0.79 lb)		

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### DC and AC Input Modules

Item	Specification				
Type	EH-XD8	EH-XD16	EH-XDL16	EH-XA16	EH-XAH16
Input specification	DC input		AC input		
Input voltage	24 V DC		100 to 120 V AC		200 to 240 V AC
Allowable input voltage range	19.2 to 30 V DC		85 to 132 V AC		170 to 264 V AC
Input impedance (Approximately)	3.5 kΩ	5.9 kΩ	16 kΩ (50 Hz), 13 kΩ (60 Hz)	32 kΩ (50 Hz), 27 kΩ (60 Hz)	
Input current (Approximately)	6.9 mA	4.0 mA	4.8 to 7.6 mA (100 V AC / 50Hz)	4.3 to 8.0 mA (200 V AC / 50Hz)	
Operating voltage	ON voltage	15 V or more		79 V AC	164 V AC
	OFF voltage	5 V or less		20 V AC	40 V AC
Input lag	OFF → ON	5 ms or less (4 ms TYP)	16 ms or less (13 ms TYP)	15 ms or less	
	ON → OFF	5 ms or less (4 ms TYP)	16 ms or less (13 ms TYP)	25 ms or less	
	ON → OFF	5 ms or less (4 ms TYP)	16 ms or less (13 ms TYP)	25 ms or less	
Number of input points	8 points / module	16 points / module		16 points / module	
Number of common points	2 common points / 8 inputs*	2 common points / 16 inputs*		2 common points / 16 inputs*	
Polarity	None			None	
Insulation method	Photocoupler insulation			Photocoupler insulation	
Input display	LED (green)			LED (green)	
Weight	Approximately 0.16 kg (0.35 lb.)			Approximately 0.18 kg (0.4 lb.)	
External connection	Removable screw terminal block (M3)			Removable screw terminal block (M3)	
Internal current consumption (5 V DC)	Approximately 30 mA	Approximately 50 mA		Approximately 50 mA	Approximately 50 mA

\* Commons are connected internally.

### Transistor Output Modules

Item	Specification				
Type	EH-YT8	EH-YT16	EH-YTP8	EH-YTP16	EH-YTP16S (with short-circuit protection)*
Output specification	Transistor output (sink type)		Transistor output (source type)		
Rated load voltage	12/24 V DC (+10%, -15%)		12/24 V DC (+10%, -15%)		
Minimum switching current	1 mA		1 mA		
Leak current	0.1 mA		0.1 mA		
Maximum load current	1 point	0.5 A		0.8 A	
	1 common	2.4 A	4 A	2.4 A	4 A
Output response time	OFF → ON	0.3 ms or less		0.3 ms or less	
	ON → OFF	1 ms or less		1 ms or less	
Number of output of points	8 points / module	16 points / module	8 points / module	16 points / module	
Number of common points	1 common point / 8 outputs*	1 common point / 16 outputs*	1 common point / 8 outputs*	1 common point / 16 outputs*	
Surge suppression circuit	Diode		Diode		
Fuse*1	4 A / common	8 A / common	4 A / common	8 A / common	Built-in
Insulation method	Photocoupler insulation			Photocoupler insulation	
Output display	LED (green)			LED (green)	
Weight	Approximately 0.16 kg (0.35 lb.)			Approximately 0.16 kg (0.35 lb.)	
External connection	Removable screw terminal block (M3)			Removable screw terminal block (M3)	
Internal current consumption (5 V DC)	Approximately 30 mA	Approximately 50 mA	Approximately 30 mA	Approximately 50 mA	
External power supply*2 (For supplying power to the S terminal)	12/24 V DC (+10%, -15%) (maximum 30 mA)		12/24 V DC (+10%, -15%) (maximum 30 mA)		

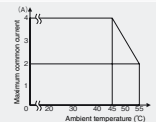
\*1: The module needs to be repaired in case a load short causes a blown fuse. Furthermore, the fuse cannot be replaced by the user.

\*2: It is necessary to supply 12/24 V DC externally to the S terminal.

### Relay and AC (SSR) Output Modules

Item	Specification				
Type	EH-YR8B	EH-YR12	EH-YR16	EH-YS4	EH-YS16
Output specification	Independent relay output	Relay output		Triac output	
Rated load voltage	100/240 V AC, 24 V DC			100/240 V AC (85 to 250 V AC)	
Minimum switching current	1 mA (5 V DC except after switching with excessive current)				
Leak current	None				
Maximum load current	1 point	2 A	5 A	8 A	2 A
	1 common	2 A	5 A	8 A	2 A
Output response time	OFF → ON	10 ms or less		1 ms or less	
	ON → OFF	10 ms or less		1 ms + 1/2 cycles or less	
Number of output of points	8 points/module	12 points / module	16 points/module	4 points / module	16 points / module
Number of common points	1 common point / 1 output	1 common point / 12 outputs (Common terminal is 2 points)*1	1 common point / 16 outputs (Common terminal is 2 points)*1	1 common point / 4 outputs	1 common point / 16 outputs (Common terminal is 2 points)*1
Surge suppression circuit	Varistor (voltage characteristic of varistor : 423 ~ 517V)	None		Varistor	
Fuse	None			4 A / 1 common	6.3 A / 1 common*3
Insulation method	Relay insulation	Photocoupler insulation	Relay insulation	Photo-triac insulation	
Output display	LED (green)			LED (green)	
Weight	Approximately 0.16 kg (0.35 lb.)	Approximately 0.20 kg (0.44 lb.)	Approximately 0.16 kg (0.35 lb.)	Approximately 0.18 kg (0.40 lb.)	Approximately 0.23 kg (lb.)
External connection	Removable type screw terminal block (M3)				
Internal current consumption (5 V DC)	Approximately 220 mA	Approximately 40 mA	Approximately 430 mA (Approximately 430 mA)*2	Approximately 70 mA	Approximately 250 mA
External power supply*2 (For supplying power to the S terminal)	Not used	24 V DC (+10%, -5%) (maximum 70 mA)	Not used	Not used	Not used

Derating chart



\*1: The common terminals are connected internally.

\*2: 24 V DC must be supplied externally to drive the relays. (The 24 V output of the power module may be used.)

## 32-/64-point DC Input Module



EH-XD32

EH-XD64

### 32-/64-point DC Input Module

Item	Specification	
Type	EH-XD32	EH-XD64
Input specification	DC input	
Input voltage	24 V DC	
Allowable input voltage range	19.2 to 30 V DC	20.4 to 28.8 V DC
Input impedance	Approximately 5.6 kΩ	
Input derating	-	See the derating chart
Input current	Approximately 4.3 mA	
Operating voltage	ON voltage	15 V or more
	OFF voltage	5 V or less
Input lag	OFF → ON	5 ms or less
	ON → OFF	5 ms or less
	ON → ON	1 ms or less
Number of input points	32 points / module	64 points / module
Number of common points	32 points / 1 common (common terminal is 4*)	
Polarity	None	
Insulation method	Photocoupler insulation	
Input display	LED (green)*2	
Weight	Approximately 0.15kg (0.33lb.)	Approximately 0.14kg (0.31lb.)
External connection	Connector	
Internal current consumption (5V DC)	Approximately 60 mA	Approximately 80 mA
Derating chart		

\*1: Commons are connected internally.

\*2: There are 16 LED displays. Use the toggle switch to select a group of input points to be displayed.

## 32-/64-point DC Output Module



EH-YT32  
EH-TYTP32

EH-YT64  
EH-YTP64

### 32-/64-point DC Output Module

Item	Specification			
Type	EH-YT32	EH-YTP32	EH-YT64	EH-YTP64
Output specification	Transistor output (sink type)	Transistor output (source type)	Transistor output (sink type)	Transistor output (source type)
Rated load voltage	12 / 24 V DC (+10%, -15%)			
Minimum switching current	1 mA			
Leak current	0.1 mA or less			
Maximum load current	1 point	0.2 A		0.1 A
	1 common	4.0 A*1		3.2 A
Output response time	OFF → ON	0.3 ms or less		
	ON → OFF	1 ms or less		
	ON → ON	1 ms or less		
Number of output of points	32 points / module		64 points / module	
Number of common points	32 points / 1 common			
Surge removal circuit	Diode			
Fuse*2	10 A / 1 common		5 A / 1 common	
Insulation method	Photocoupler insulation			
Output display	LED (green)*3			
Short-circuit protection	Short-circuit protection function			
Weight	Approximately 0.16 kg (0.35 lb.)		Approximately 0.13 kg (0.29 lb.)	
External connection	Connector			
Internal current consumption (5 V DC)	Approximately 90 mA		Approximately 120 mA	
External power supply*4 (For supplying power to the S terminal)			12 / 24 V DC (+10%, -15%) (Maximum 100 mA)	

\*1: Total current for 4 common pins. The maximum current for 1 pin is 3A.

\*2: The fuse is soldered in the PC board. When it is blown, it is not allowed for user to replace as safety reason.

\*3: There are 16 points for each LED display. The displayed group is toggled using a switch.

\*4: It is necessary to supply 12/24 V DC to the S terminal

# Programmable Logic Controller

# EH-150 EHV Series

## Modular PLC

### Spring type terminal DC Input Module



Spring Type Terminal DC Input Module

Item	Specification	
	EH-XD32E	EH-XDL32E
Type	DC input	
Input specification	24 V DC	
Input voltage	20.4 to 28.8 V DC	
Allowable input voltage range	Approximately 5.6 kΩ	
Input impedance	Approximately 4.3 mA (24 V DC)	
Input current	15 V or more	
Operating voltage	ON voltage	5 V or less
	OFF voltage	
Input lag	OFF → ON	1 ms or less
	ON → OFF	1 ms or less
Number of input points	32 points/module	
Number of common points	8 points/1 common (number of common terminals is 4)	
Polarity	None	
Insulation isolation	Photocoupler isolation	
Input display	LED (green)*1	
External connection	Euro-terminal	
Internal current consumption (5 V DC)	Approximately 60 mA	

\*1: There are 16 points for each LED display. The displayed group is toggled using a switch and LED display is renewed by refresh processing.

### Spring type terminal DC Output Module



Spring Type Terminal DC Output Module

Item	Specification	
	EH-YT32E	EH-YTP32E
Type	Transistor output (sink type)	Transistor output (source type)
Output specification	12/24 V DC (+10%, -15%)	
Rated load voltage	1 mA	
Minimum switching current	0.1 mA or less	
Leak current	0.2 A	
Maximum load current	1 point	1.0 A
	1 common	
Output response time	OFF → ON	0.3 ms or less
	ON → OFF	1 ms or less
Number of output points	32 points/module	
Number of common points	8 points/1 common (number of common terminals is 4)	
Surge removal ladder	Diode	
Fuse*1	10 A/common	
Isolation system	Photocoupler isolation	
Output display	LED (green)*2	
Short-circuit protection	Built-in short-circuit protection function	
External connection	Euro-terminal	
Internal current consumption (5 V DC)	Approximately 90 mA	
External power supply*3 (For supplying power to the S terminal)	12/24 V DC (+10%, -15%) (maximum 30 mA)	

\*1: The module needs to be repaired when a fuse blows out. Because the fuse can not be replaced by the user, please send back the module to our distributors for repair in such case.

\*2: There are 16 points for each LED display. The display group is switched using a switch and LED display is renewed by refresh processing.

\*3: It is necessary to supply 12/24 V DC from outside to the S terminal.

### Cable for 32/64 points I/O modules

With a 40-pole connector at one end	
Type	Cable length
EH-32XY04	4 m



## Analog Input Modules

Item		Specification				
Type		EH-AX44	EH-AX8V	EH-AX8H	EH-AX8I	EH-AX8IO
Current input range		4 to 20 mA (Ch. 0 to 3)	-		4 to 20 mA	0 to 22 mA
Voltage input range		0 to 10 V DC (Ch. 4 to 7)	0 to 10 V DC	-10 to 10 V DC	-	
Resolution		12 bits				
Conversion time		5 ms or less				
Overall accuracy		±1 % or less (of full-scale value)				
Input impedance	Current input	Approximately 100 Ω	-		Approximately 100 Ω	
	Voltage input	Approximately 100 kΩ				-
Insulation	Channel-Internal circuit	Photocoupler insulation				
	Between channels	No insulation				
Number of channels	Current input	4 channels / module (Ch. 0 to 3)	-		8 channels/module	
	Voltage input	4 channels / module (Ch. 4 to 7)	8 channels/module		-	
Weight		Approximately 0.18 kg (0.4 lb.)				
External connection		Removable screw terminal block (M3)				
Internal current consumption (5 VDC)		Approximately 100 mA				
External power supply		24 V DC (+20%, 5%) Approximately 0.15 A (Approximately 0.4 A at power On)				
External wiring		2-core shield wire (20 m (65.62 ft.) or less)				

## Analog Input Module

Item		Specification	
		EH-AXH8M	
Model name		EH-AXH8M	
Input range (Selected by the switch.)		Voltage 0 to 10 V DC/-10 to 10 V DC Current 0 to 22 mA/4 to 22 mA	
Resolution (Selected by the switch)	0 to 10 V 0 to 22 mA	Voltage 1 mV or 1/16384 (14 bits) Current 0.002 mA or 1/16384 (14 bits)	
Conversion time		8.9 ms / 8 channels	
Overall accuracy		Voltage ±0.5% or less (Full scale) Current ±0.8% or less (Full scale)	
Linearity		±0.1% or less (Full scale)	
Input filter (Selected by the switch)	Enable	Approx. 90 ms (to reach 90% after step input)	
	Disable	18 ms or less (to reach 90% after step input)	
Input impedance	Voltage	Differential 200 kΩ	
Isolation	Current	249 Ω	
	Between channel and internal bus	Photo coupler	
Number of channel	Between channels	Not isolated	
		Differential voltage input 8 ch. or Current input 8 ch. (selected per 4 ch.)	
Weight		Approx 0.15 kg (0.35 lb.)	
I/O assignment		WX8W	
Wiring		Removable terminal block (M3)	
Internal current consumption (5 V DC)		Max. 70 mA	
External power supply		24 V DC (+20 %, -15 %) Approx. 0.04 A (Approx. 0.3 A at power on)	
Cable		Shielded pair cable (Max. 20 m)	

## Analog Output Modules

Item		Specification				
Type		EH-AY22	EH-AY4V	EH-AY4H	EH-AY2H	EH-AY4I
Voltage output range		0 to 10 V DC (Ch. 0 to 1)	0 to 10 V DC	-10 to 10 V DC		-
Current output range		4 to 20 mA (Ch. 2 to 3)	-			4 to 20 mA
Resolution		12 bits				
Conversion time		5 ms or less				
Overall accuracy		±1 % or less (of full-scale value)				
External load resistor	Voltage output	10 kΩ or more				-
	Current output	0 to 500 Ω	-			0 to 350 Ω
Insulation	Channel-Internal circuit	Photocoupler insulation				
	Between channels	No insulation				
Number of channels	Voltage output	2 channels / module (Ch. 0 to 1)	4 channels / module	2 channels / module	-	
	Current output	2 channels / module (Ch. 2 to 3)	-		4 channels / module	
Weight		Approximately 0.18 kg (0.4 lb.)				
External connection		Removable screw terminal block (M3)				
Internal current consumption (5 VDC)		Approximately 100 mA			Approximately 130 mA	
External power supply		24 V DC (+20%, -15%) Approximately 0.15 A (Approximately 0.5 A at power On)				
External wiring		2-core shield wire (20 m (65.62 ft.) or less)				

## Analog Output Module

Item		Specification	
		EH-AYH8M	
Model name		EH-AYH8M	
Output range (Selected by the switch.)		Voltage 0 to 10 V DC Current 0 to 22 mA/4 to 22 mA	
Resolution (Selected by the switch)		Voltage 1 mV or 1/16384 (14 bits) Current 0.002 mA or 1/16384 (14 bits)	
Conversion time		8.9 ms / 8 channels	
Overall accuracy		±0.8% or less (Full scale)	
Linearity		±0.2% or less (Full scale, in range 0 to 10V / 0.05 to 22mA)	
Output filter* (Selected by the switch)	Disable	18 ms or less (to reach 90% of set value)	
	Enable	200 ms or less (to reach 90% of set value)	
Output impedance	Voltage	Min. 10 kΩ	
	Current	Max. 400Ω	
Isolation	Between channel and internal bus	Photo coupler	
	Between channels	Not isolated	
Number of output channel		Voltage output 8 ch. or Current output 8 ch. (selected per 4 ch.)	
Weight		Approx 0.18 kg (0.4lb.)	
I/O assignment		WY8W	
Wiring		Removable terminal block (M3)	
Internal current consumption (5VDC)		Max. 70mA	
External power supply		24 V DC (+20 %, -15 %) Approx. 0.15 A (Approx. 0.4 A at power on)	
Cable		Shielded pair cable (Max. 20m)	

## Resistance Temperature Detective Input Module

Item		Specification	
		EH-PT4	
Type		Platinum resistance temperature detector Pt 100 (JIS C 1604-1989) / Pt 1000	
Temperature-sensing element		Signed 15 bits	
Temperature conversion data		Signed 15 bits	
Accuracy*1	-20 °C to 40 °C (Pt 100)	±0.1 °C @ 25 °C ±0.5 °C (0 to 55 °C)	
	-50 °C to 400 °C (Pt 100)	±0.6 °C @ 25 °C ±3 °C (0 to 55 °C)	
	-50 °C to 400 °C (Pt 1000)	±0.8 °C @ 25 °C ±6 °C (0 to 55 °C)	
Temperature measuring range		-20 to +40 °C / -50 to +400 °C (2 mA constant current system)	
Number of input points		4	
Conversion time		Approximately 0.5 second per four inputs	
Insulation	Between input and internal circuit	Photocoupler insulation	
	Between inputs	No insulation	
Weight		Approximately 0.15 kg (0.33 lb.)	
External Connection		Removal terminal block (M3)	
Unused terminal processing		Unused terminals (for current, voltage and ground) should be shorted at the terminal block (Temperature conversion data for one of the four values is H7FFF)	
External wiring register		The maximum total wiring resistance from current terminal to ground terminal is 2 Ω.	
External wiring		3 cores shielded cable	
Additional function		Linearization	
Resolution	-20 °C to 40 °C (Pt100)	0.0024 °C	
	-50 °C to 400 °C (Pt100)	0.024 °C	
	-50 °C to 400 °C (Pt1000)	0.024 °C	
Internal current consumption (5 V DC)		Approximately 160 mA	
Externally supplied power		24V DC ±10%, Maximum current consumption is 70 mA	

\*1: Accuracy 10 minutes after power on.

## Thermocouple Input Module

Item		Specification	
		EH-TC8	
Type		EH-TC8	
Number of input points		8 points / module	
Type of sensor		K,E,J,T,B,R,S,N (Selected by the setting switch on the PWB)	
Insulation		Photocoupler (Channel - internal circuit)	
Conversion time		860 ms / 8 channels or 108 ms / 8 channels (Selected by the setting switch on the PWB)	
Temperature conversion data		15 bits binary data (Negative values are indicated in two's complements)	
Resolution		0.1 °C/0.1 °F (Selected by the setting switch on the PWB), 1 °C/1 °F (B, R, S)	
Accuracy		±0.3 to 1.0% F5	
Error detection		Turn on LED and Value 7FFFH (Each channel)	
Internal current consumption (5V AC)		Approximately 70 mA	
External power source		24 V DC	

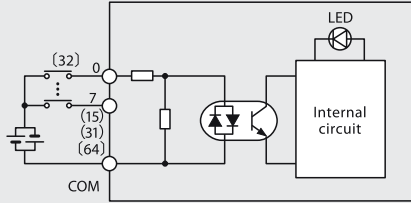
# Programmable Logic Controller

# EH-150 EHV Series

## Modular PLC

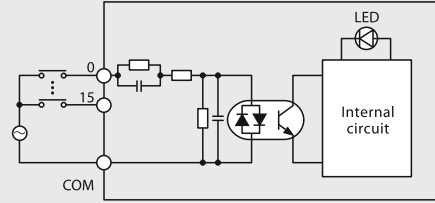
### Internal Circuit Diagrams

#### DC Input (8, 16, 32 and 64 points)



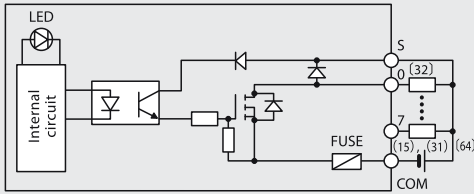
Model: EH-XD8, EH-XD16, EH-XD16, EH-XD32, EH-XD64

#### AC Input (16 points)



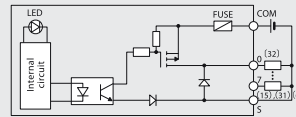
Model: EH-XA16, EH-XAH16

#### Transistor Output (8, 16, 32 and 64 points) (Sink Type)

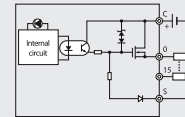


Model: EH-YT8, EH-YT16, EH-YT32, EH-YT64

#### Transistor Output (8, 16, 32 and 64 points) Source Type

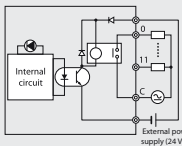


Model: EH-YTP8, EH-YTP16, EH-YTP32, EH-YTP64

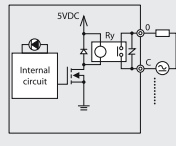


Model: EH-YTP16S

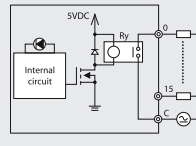
#### Relay Output (8, 12 and 16 points)



Model: EH-YR12

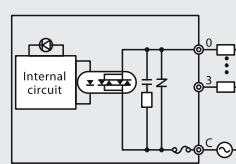


Model: EH-YR8B

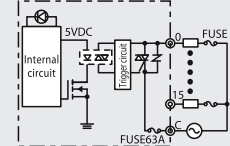


Model: EH-YR16

#### AC (SSR) Output (4 points)

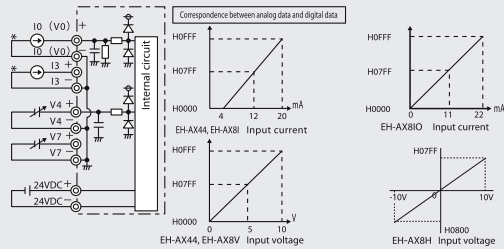


Model: EH-YS4



Model: EH-YS16

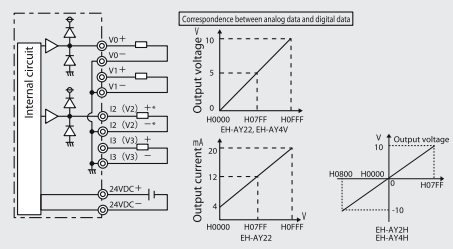
#### Analog Input



Model: EH-AX44, EH-AX8V, EH-AX8H, EH-AX8I, EH-AX8IO

\* In the case of EH-AX44, current input.

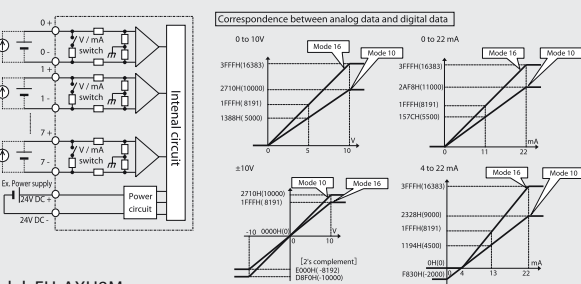
#### Analog Output



Model: EH-AY22, EH-AY2, HEH-AY4V, EH-AY4H, EH-AY4I

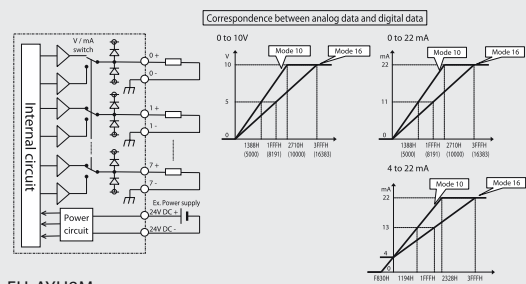
\* In the case of EH-AY22, current output.

#### Analog Input (EH-AXH8M)



Model: EH-AXH8M

#### Analog Output (EH-AYH8M)



Model: EH-AYH8M



## Counter Module

Item		Specification		
Type		EH-CU	EH-CUE	
Counter specification	Maximum number of count	32 bit (0 to 4, 294, 967, 295)		
	Maximum frequency	100 kHz (25 kHz when multiple of 4)		
	Count mode	Select via dip switch settings. (Common to both channels for the EH-CU) 2 phases; 1 phase (cw/ccw, ck, U/D); 2 phases, multiplication by 4		
	Number of channels	2 channels	1 channel	
	Differential current	4 mA or higher		
	Differential input voltage	12 to 24 V DC		
	Insulation method	Minimum ON voltage	10 V DC	
		Maximum OFF voltage	4 V DC	
	Insulation method	Photocoupler		
	Number of input points 3 points x 2 channels	A: A, CW, CK B: B, CCW, U/D M: Marker (z)	Phase difference of each channel (A - B) during 2-phase counting +45 to +125° when up, -45° to -125° when down	
	Minimum counter pulse width	ON: 4 μs or higher; OFF: 4 μs or higher		
	Minimum marker pulse width	10 μs or higher (Detected via ON edge)		
	External wiring method	30-Pin batch connector for both channels 30-pin connector		
	External wiring	Wired with twisted pair wires and batch shielded wires		
Output specification	Output voltage	12/24 V DC (30 V DC maximum)		
	Load current	20 mA / point maximum		
	Output method	Open collector output		
	Minimum load current	1 mA		
	Output delay time	ON → OFF	1 ms or less	
		OFF → ON	1 ms or less	
	Voltage drop when ON	1.5 V maximum		
	Number of external output points	Normal counter	4 points / module	2 points / module
		Ring counter	Current value = Set Value 1 or current value > Set Value 1 Current value = Set Value 2	
	Leak current	0.5 mA maximum		
	Polarity	(-) common within the module		
	External power supply	12/24 V DC (30 V DC maximum)		
	Insulation method	Photocoupler		
	Weight	Approximately 0.16 kg (0.35 lb.)		
Internal current consumption	5 V 310 mA			



## 1-axis Pulse Positioning Module

Item		Specification			
Type		EH-POS			
Functional specification	Number of control axes	1-axis			
	Highest frequency	400 k pulse/s			
	Positioning data	Capacity	256 points		
		Setting procedures	Sequence program		
	Positioning	Method	Absolute system / Absolute system + increment system / Increment system		
		Positioning command	Pulse specification / μm specification / inch specification / degree specification		
		Speed command	Automatic, manual, home position return		
		Speed stage	6.25 pulse/s to 400 k pulse/s μm/s, inch/s, degree/s input function 10 stages		
		Acceleration / deceleration system	Trapezoid acceleration / deceleration S-curve acceleration / deceleration (3-stage acceleration / deceleration)		
		Acceleration / deceleration time	1 to 65,535 ms		
		Backlash	0 to 255 pulse		
	High / low limit setting	+2,147,483,647 to -2,147,483,648 pulse			
	Pulse output method		Pulse chain (CW / CCW) / Clock + direction signal (CK / direction) (Use dip switches 1 and 2 to select the pulse output method and to switch between positive and negative logic for the selected method.)		
		Pulse output procedures	Open collector output (Photocoupler insulation) / Line driver output (Photocoupler insulation)		
Home position return function	Arbitrary origin / Low speed origin return / High speed origin return 1 / High speed origin return 2 / Absolute value encoder home position return				
Manual (JOG) operation	Possible				
Teaching	Pulse output by manual input signal				
Operation when the CPU has stopped	Operation may be performed via I/O setting or using the positioner.				
Absolute value encoder input	Supports the Σ series and Σ II series by Yasukawa Denki and the P series by Sanyo Denki, AD series by Hitachi.				
I/O interface specification	Output	Pulse train (CW / CCW) output Clock + direction signal (CK / direction) Pulse output	1. Line collector output Photocoupler insulation (30 VDC maximum, 30 mA resistive load) 2. Line driver output Photocoupler insulation (5 VDC) 100 μA or less		
		Maximum leakage current	0.8 V maximum (at output current 30 mA)		
	Maximum voltage drop at ON	10.8 to 30 V DC			
	Input voltage	Approximately 2.2 kΩ			
	Input	Input impedance	Approximately 10 mA (24 V DC)		
		Operation voltage	Minimum ON voltage	9 V	
			Maximum OFF voltage	3.6 V	
		Input lag	ON → OFF	1 ms or less	
OFF → ON	1 ms or less				
Polarity	Only the encoder signal input uses the plus common inside the module. Other inputs do not specify polarity.				
Insulation method	Photocoupler				
Weight	Approximately 0.17 kg (0.37 lb.)				
Internal current consumption	5 V DC, 300 mA, 600 mA (When the positioner is connected).				
External power supply	5 V DC ±5%, 100 mA (For pulse chain output) 24 V DC, 10 mA/point (For external control input)				

- Note**
- 1: Stopping the CPU during operation causes the motor to decelerate and come to a stop.
  - 2: The maximum travel per single movement is 2,147,483,647 pulses. When an operation attempts to move beyond the maximum travel, the motor decelerates and stops at the maximum travel position

# Programmable Logic Controller

# EH-150 EHV Series

## Modular PLC



### 4-axis Pulse Positioning Module

Item		Specification	
Type		EH-POS4	
Number of controlled axes		4-axes	
Number of interpolation axes		Linear interpolation: up to 4 axes Circular interpolation: 2 axes	
Maximum speed		1 M pulse/s	
Positioning data	Number of positioning points	Maximum 256 points/axis (storage in the module)	
	Setting method	1) Ladder Program 2) Positioning Data Setting tool	
Positioning	Positioning mode	1) Absolute mode 2) Absolute and Incremental 3) Incremental	
	Positioning Unit	1) Pulse 2) $\mu\text{m}$ 3) inch 4) degree	
	Speed unit	1 pulse/s - 1M pulse/s (Auto, Manual, Homing) $\mu\text{m/s}$ , inch/s, degree/s (selectable by common parameter)	
	Number of speed stage	Maximum 256 stages (in continuous operation)	
	Acceleration and Deceleration	Linear S-curve (3 types)	
	Acceleration and Deceleration time	1 up to 65 535 ms	
	Backlash	0 - 65 535 pulses	
	Operation range	-2,147,483,648 up to +2,147,483,647 pulses -214,748,364.8 up to +214,748,364.7 $\mu\text{m}$ -21,474.83648 up to +21,474.83647 inch -21,474.83648 up to +21,474.83647 degree	
	Pulse train signal	1) 2 Pulse signal (CW pulse and CCW pulse) 2) Pulse and Direction signal (PLS and SIG) (Selectable by common parameter)	
	Output method	Line driver	
	Homing	1) Free home position 2) Low speed homing 3) High speed homing 1 (Off edge stop) 4) High speed homing 2 (Phase Z input stop) 5) Absolute encoder homing	
	Applied servo amp in absolute homing		Hitachi AD series
Manual operation		Manual command	
Teaching function		Teaching command	
Operation on CPU stopping		Available	
Output	Pulse & Sign	Line driver (SN75158(TI))	
	"High" voltage	Minimum 2.4 V	
	"Low" voltage	Maximum 0.4 V	
Phase input	Phase Z input and Absolute encoder serial signal	Line driver (input impedance: 220 ohm)	
Input	Input voltage	20.4 up to 28.8 V DC	
	Input impedance	Approx. 5.6 k ohm	
	Input current	Approx. 4.3 mA (24 V DC)	
	Operation voltage	"ON" voltage	Minimum 15 V DC
		"OFF" voltage	Maximum 5 V DC
	Delay	"ON" to "OFF"	Maximum 1 ms
		"OFF" to "ON"	Maximum 1 ms
Polarity	No		
Isolation	Photo-coupler		
Weight		Approximately 0.13 kg (0.29 lb.)	
Consumption current		5 V DC, 850 mA (supplied from Power module)	
External power supply		24 V DC, approx. 4.3 mA/point (for external input)	

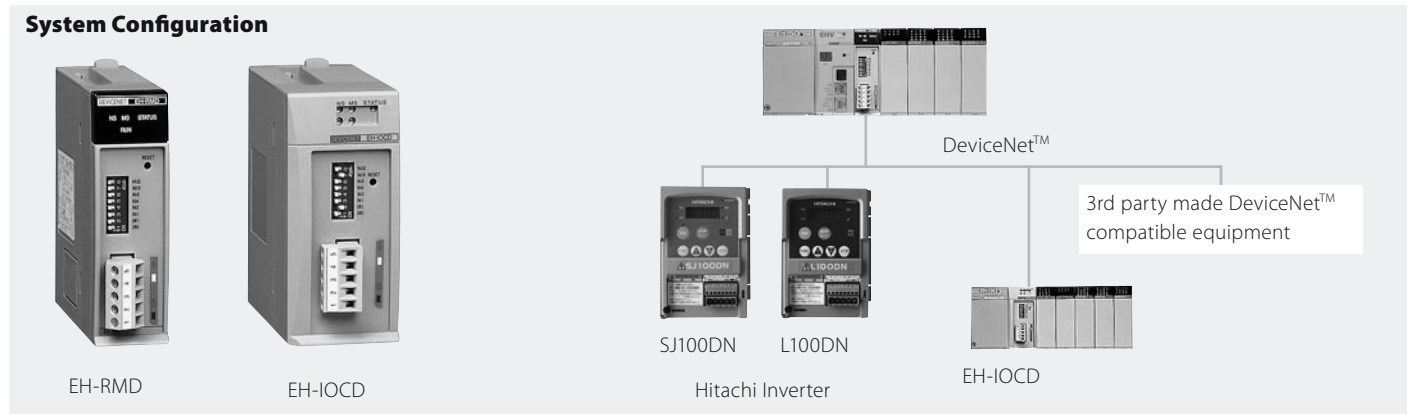
Note: When CPU is turned "RUN" to "STOP" or "STOP" to "RUN", the servo motor stops.



## Communication Modules

### DeviceNet™ Master/Slave Modules

#### System Configuration



#### General Specifications

Item	Specification	
	EH-RMD	EH-IOCD
Internal current consumption	5 V DC, 280 mA	5 V DC, 320 mA
Weight	Approximately 0.15 kg (0.33 lb.)	Approximately 0.17 kg (0.37 lb.)
External power supply	100 (3.94) 24 V DC ±10 % (supplied from communication connector)	
Mounted slot position	Only slot 0 to 2 on basic base, Max. two times / CPU	CPU Slot

#### Performance Specifications

Item	Specification			
	EH-RMD		EH-IOCD	
	LINK mode		REMOTE mode	
No. of installed units	2 units (only on communication slot)		4 units (only on communication slot)	
No. of slave-connected units	63 units			
I/O assignment	LINK		REMOTE2	
Output data	256 words (WL0-)		64 words (WX1000-, WY1000-)	
Input data	256 words (WL200-)			
Communication protocol	DeviceNet 2.0 standard			
Supported connections	1] Poll I/O connection			
	2] Bit strobe I/O connection			
	3] Cyclic I/O connection			
	4] Change of state (COS) I/O connection			
	5] Explicit message connection			
Connection mode	1] Multi-drop connection			
	2] Multi-branch connection using T branch			
Communication speed	500k/250k/125kbps (set by DIP switches)			
Cable	Dedicated DeviceNet cable			
Communication distance	Communication	Maximum	Each sub-line	Total sub-line
	500 kbps	100 m or less	6 m or less	39 m or less
	250 kbps	250 m or less	6 m or less	78 m or less
	125 kbps	500 m or less	6 m or less	156 m or less

The maximum network length shows the value when a thick trunk cable is used.

Note : Please prepare the configuration software (EH-RMACFGE) for set-up.

Item	Specification			
	EH-IOCD			
Number of installed I/O modules	16 units / EH-IOCD (Use the EH-IOCH2 to install 9 or more units.)			
Output data	256 words			
Input data	256 words			
Communication protocol	DeviceNet 2.0 standard			
Supported connections	Poll I/O connection / Bit Strobe I/O connection / Cyclic I/O connection / Change of state (COS) I/O connection / Explicit message connection			
Connection mode	Multi-drop connection / Multi-drop connection using T branch			
Baud rate	500 k / 250 k / 125 kbps (switched by DIP switches)			
Cable	Dedicated DeviceNet Cable (see Note below)			
Communication distance	Communication speed	Maximum network length	Each sub-line length	Total sub-line length
	500 kbps	100 m or less	6 m or less	39 m or less
	250 kbps	250 m or less	6 m or less	78 m or less
	125 kbps	500 m or less	6 m or less	156 m or less

The maximum network length shows the value when a thick trunk cable is used.

#### Node Address and Communication Speed Settings

Node address	NA1	NA2	NA4	NA8	NA16	NA32
0	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF
·						
·						
62	OFF	ON	ON	ON	ON	ON
63	ON	ON	ON	ON	ON	ON
<b>Baudrate</b>	<b>DR0</b>	<b>DR1</b>				
125	OFF	OFF				
250	ON	OFF				
500	OFF	ON				
	ON	ON				

Legend:  NA32,  NA16,  NA8,  NA4,  NA2,  NA1,  DR1,  DR0.   
 → ON

#### Supported I/O Modules

The I/O modules that are supported by the EH-IOCD are as follows:

Type	Input size (word)	Output size (word)
EH-XD8		
EH-XD16		
EH-XDL16	1	0
EH-XA16		
EH-XAH16		
EH-XD32		
EH-XD32E	2	0
EH-XDL32E		
EH-XD64	4	0
EH-PT4	4	0
EH-AX44		
EH-AX8V		
EH-AX8H		
EH-AX8I	8	0
EH-AX8IO		
EH-AXH8M		
EH-TC8		
EH-YT8		
EH-YT16		
EH-YTP8		
EH-YPT16		
EH-YTP16S		
EH-YS4	0	1
EH-YS16		
EH-YR8B		
EH-YR12		
EH-YR16		
EH-YT32		
EH-YTP32		
EH-YT32E	0	2
EH-YTP32E		
EH-YT64	0	4
EH-YTP64		
EH-AY22		
EH-AY2H		
EH-AY4V	0	8
EH-AY4H		
EH-AY4I		
EH-AYH8M		
EH-POS		
EH-POS4	4	4
EH-CU		
EH-CUE	5	3

• DeviceNet is a trademark of Open DeviceNet Vendor Association.

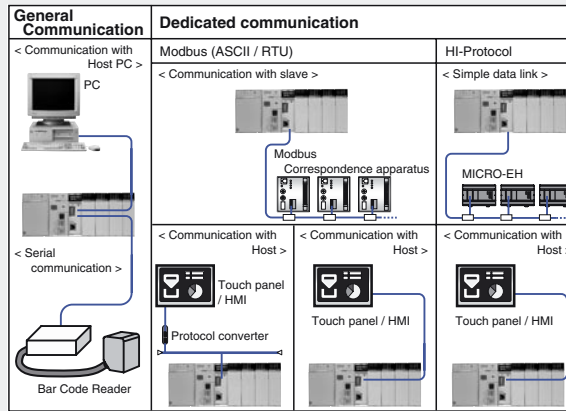
# Programmable Logic Controller

# EH-150 EHV Series

## Modular PLC

### DeviceNet™ Master/Slave Module

#### System Configuration



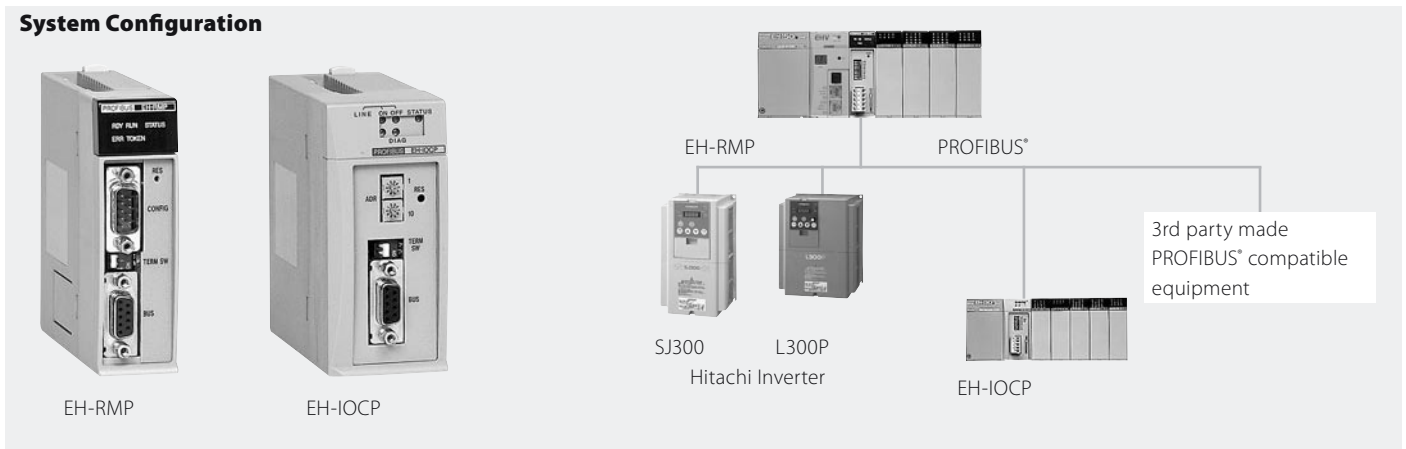
#### General Specifications

Item	Specification
	EH-SIO
Interface	RS-232C x 1 RS-232C/422/485 x 1
Communication mode	Half-duplex
Communication speed(bps)	300 / 600 / 1200 / 2400 / 48200 / 9600 / 19200 / 38400 / 57600
Maximum communication data	Maximum 1024 byte
Communication protocol	Non-protocol Modbus ASCII Modbus RTU Hi-Protocol(*)
Remarks	Simple data link by Hi-Protocol

(\*) For Touch panel/HMI (Control Editor cannot be used)

## PROFIBUS® Master/Slave Module

### System Configuration



### General Specifications

Item	Specification	
	EH-RMP	EH-IOCP
Current consumption	5 V DC, 600 mA	
Weight	Approximately 0.13 kg (0.29 lb.)	Approximately 0.16 kg (0.35 lb.)
Mounted slot position	Only slot 0 to 2 on basic base, max. two times / CPU	CPU Slot

### Performance Specifications

Item	Specification	
	EH-RMP	
Number of installed units	2 units / CPU (can only be installed in slots 0 to 2)	
Number of supported slave units	Maximum of 124 units. However, a repeater is required to connect 32 or more units.	
Number of output words	256 words	
Number of input words	256 words	
Baud rate: Segment length	9.6 kbps : 1,200 m	
	19.2 kbps : 1,200 m	
	45.45 kbps : 1,200 m	
	93.75 kbps : 1,200 m	
	187.5 kbps : 1,000 m	
	500 kbps : 400 m	
	1,500 kbps : 200 m	
	3 Mbps : 100 m	
Self-diagnostics	System ROM / RAM check Watchdog timer	
	GSD file	File name: Hita1004.gsd. Please contact Hitachi sales office.

Note : Please prepare the configuration software for set-up.

Item	Specification
	EH-IOCP
Number of installed I/O modules	16 units / EH-IOCP (use the EH-IOCH2 to install 9 or more units.)
Node address setting range	1 to 99
Input/output capacity	208 words
Data update time	5 ms
Baud rate: Segment length	9.6 kbps : 1,200 m
	19.2 kbps : 1,200 m
	93.75 kbps : 1,200 m
	187.5 kbps : 1,000 m
	500 kbps : 400 m
	1,500 kbps : 200 m
	3 Mbps : 100 m
	6 Mbps : 100 m
Self-diagnostics	System ROM / RAM check Watchdog timer
	GSD file

### Supported I/O List

The I/O modules that are supported by the EH-IOCP are as follows:

Type	Input size (word)	Output size (word)
EH-XD8	1	0
EH-XD16		
EH-XDL16		
EH-XA16		
EH-XAH16	2	0
EH-XD32		
EH-XD32E		
EH-XDL32E		
EH-XD64	4	0
EH-PT4		
EH-AX44	8	0
EH-AX8V		
EH-AX8H		
EH-AX8I		
EH-AX8IO	8	0
EH-AXH8M		
EH-TC8		
EH-YT8	0	1
EH-YT16		
EH-YTP8		
EH-YTP16		
EH-YTP16S		
EH-Y54		
EH-Y516		
EH-YR8B		
EH-YR12		
EH-YR16		
EH-YT32	0	2
EH-YTP32		
EH-YT32E		
EH-YTP32E		
EH-YT64	0	4
EH-YTP64		
EH-AY22	0	8
EH-AY4V		
EH-AY4H		
EH-AY4I		
EH-AYH8M	4	4
EH-POS		
EH-POS4		
EH-CU	5	3
EH-CUE		

PROFIBUS is a registered trademark of Profibus User Organisation

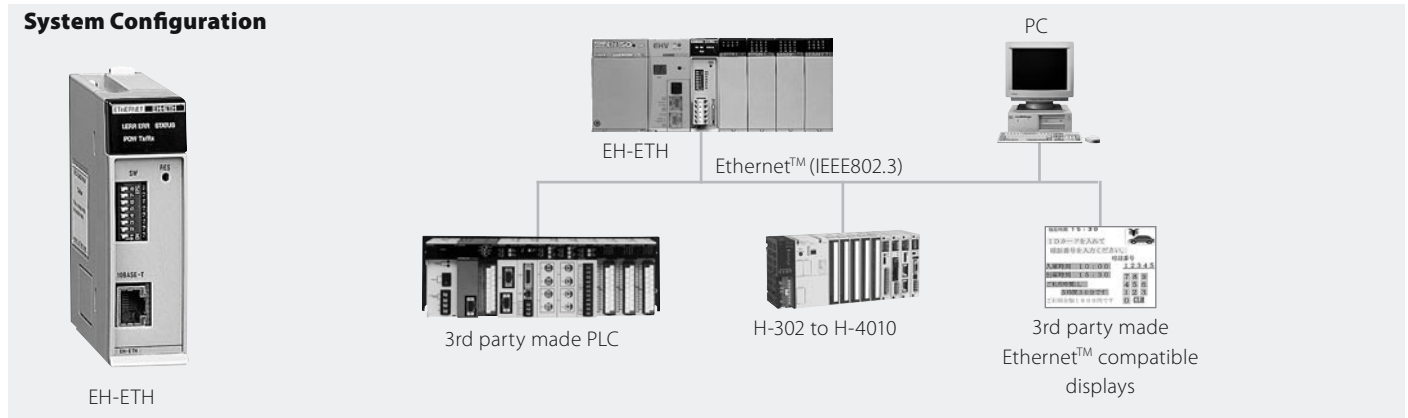
# Programmable Logic Controller

# EH-150 EHV Series

## Modular PLC

### Ethernet™ Module

#### System Configuration



#### General Specifications

Item	Specification
Internal current consumption	5 V DC, 260 mA
Weight	0.15 kg (0.33 lb.)
Mounted slot position	Only slot 0 to 2 on basic base, max. two times / CPU

#### Performance Specifications

Item	Specification	
Transfer specification	Ethernet standard	IEEE802.3 standard
	Transfer modulation method	Base band
	Medium access method	CSMA / CD
	Transfer speed	10 Mbps
	Maximum segment length	100 (m)
ASR connection	Number of simultaneous connections: Maximum 6 Transmission data: Maximum 1,454 bytes/try	
Task code communication	Number of simultaneous connections: Maximum 4	

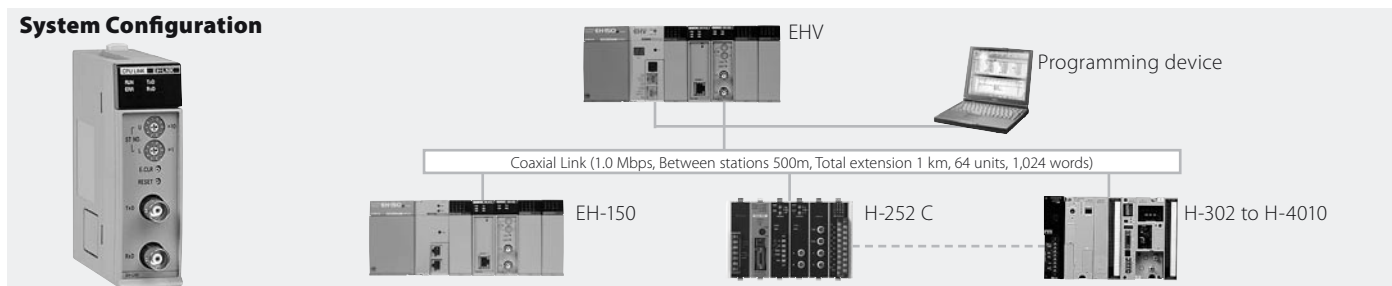
#### Functional Specifications

Item	Specification
Setup function	<ul style="list-style-type: none"> <li>Select the setup mode by using a DIP switch, and perform initial settings such as the IP address, transmission operation specification, and transmission/reception area specification using a general-purpose Web browser.</li> <li>The IP address can also be set by programming with a ladder program.</li> </ul>
Auto Sending / Receiving function, event transmission function	<ul style="list-style-type: none"> <li>Data can be transmitted and received periodically by specifying an internal output signal in a table format.</li> <li>Data can be transmitted and received by signal variation (event) in a ladder program.</li> </ul>
Task code communication	<ul style="list-style-type: none"> <li>Either TCP / IP or UDP / IP can be specified.</li> <li>H series task code communication can be performed.</li> </ul>
Test function	<ul style="list-style-type: none"> <li>Internal loop and external loop check functions are supported.</li> <li>One-to-one transmission / reception test function is supported.</li> </ul>

• Ethernet is a trademark of Xerox Corporation.

## CPU Link Module (Coaxial cable)

### System Configuration



### Specifications

Item		Specification
Type		EH-LNK
		Max. 64 units / 1 loop
Functional specification	Number of connected Link module	Max. 8 units / 1 CPU (8 loops / 1 CPU)
	Number of mounted units	1,024 words / 1 loop (8,192 words / 8 loops)*1
	Number of Link points	Common data area system
	Data delivery system	Parameter setting from peripheral device
	Send / Receive distinction on data area allocation	0 to 63; designated by rotary switch
	Designation of Station No.	1.0 Mbps
	Communication speed	Half – duplex serial transfer, frame synchronization
	Transfer method	Token passing
	Communication method	Base band
	Modulation method	At the time of transfer of 1,024 words with 64 stations connected – Approx. 390ms*2
Transfer path specification	Refresh time	CRC, overrun check, time out, open circuit, parameter error (dual designation of station No., overlapped Link area, etc.)
	Error check	System ROM / RAM check, watchdog timer check, transfer loop back check
	Self – diagnosis	Loop type
	Transfer path form	Max. 500 m
	Cable length	Max. 1,000 m
	Between stations	Bypass system
	Total extension	5D2V with shield or equivalent
	Error station processing	413631-1 (made by AMP) or equivalent
	Recommended cable	5 VDC Approximately. 550 mA
	Recommended connector	

#### Internal Current consumption

\*1: No retentive area.

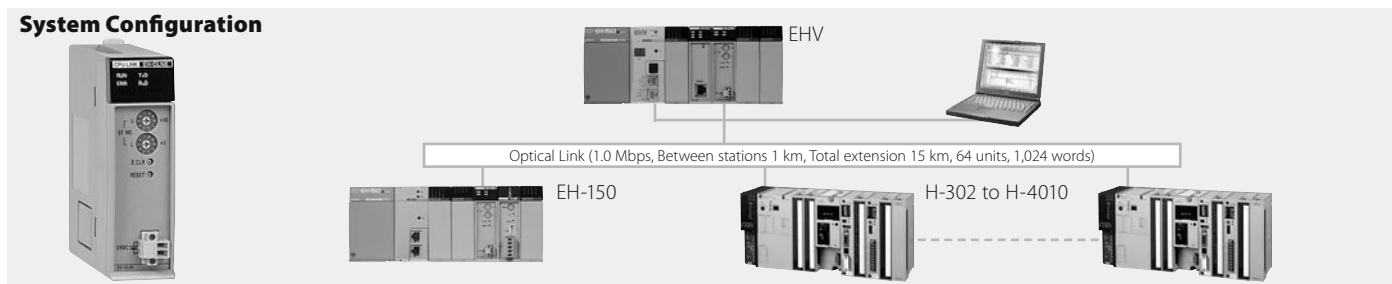
\*2: This could be more in case peripheral devices access to CPU via link network.

\*3: The number of CPU LINK modules is limited by total current consumption also. Set up your system not to exceed current supplied by power supply module.

\*4: About Function for accessing other stations. When other stations is H series/EH-150, H series/EH-150 can not be programmed and monitored by Control Editor. Also EHV can not be programmed and monitored by programming software for H series/EH-150.

## CPU Link Module (Optical cable)

### System Configuration



### Specifications

Item		Specification
Type		EH-OLNK
		Max. 64 units / 1 loop
Functional specification	Number of connected Link module	Max. 8 units / 1 CPU (8 loops / 1 CPU)
	Number of mounted units	1,024 words / 1 loop (8,192 words / 8 loops)*1
	Number of Link points	Common data area system
	Data delivery system	Parameter setting from peripheral device
	Send / Receive distinction on data area allocation	0 to 63; designated by rotary switch
	Designation of Station No.	1.0 Mbps
	Communication speed	Half – duplex serial transfer, frame synchronization
	Transfer method	Token passing
	Communication method	Base band
	Modulation method	In case of 1,024 words data and 64 stations connected – Approx. 390ms*2
Transfer path specification	Refresh time	CRC, overrun check, time out, open circuit, parameter error (dual designation of station No., overlapped Link area, etc.)
	Error check	System ROM / RAM check, watchdog timer check, transfer loop back check
	Self – diagnosis	Loop type
	Transfer path form	Max. 1,000 m
	Cable length	Max. 15,000 m
	Between stations	Bypass system (In case of supply a 5 V DC from the outside.)
	Total extension	CA7103-(1)M-(2)L(3)1 JAPAN OPNEX product (1) Cable length, (2) Cable type, (3) Core number
	Error station processing	
	Recommended Cable and connector	5 V DC Approximately. 480 mA

#### Internal Current consumption

\*1: No retentive area.

\*2: This could be more in case peripheral devices access to CPU via link network.

\*3: The number of CPU LINK modules is limited by total current consumption also. Set up your system not to exceed current supplied by power supply module.

\*4: About Function for accessing other stations. When other stations is H series/EH-150, H series/EH-150 can not be programmed and monitored by Control Editor. Also EHV can not be programmed and monitored by programming software for H series/EH-150.

# Programmable Logic Controller

# EH-150 EHV Series

## Modular PLC

## Components List

Item	Model name	Specification	I/O assignment symbol	Remarks	CE	UL	
CPU module	EHV-CPU128	4,224 I/O points maximum(*1), 20 ns/commands, program capacity 128 ksteps, Ethernet port/Serial port/USB port	-		•	•	
	EHV-CPU64	3,520 I/O points maximum(*1), 20 ns/commands, program capacity 64 ksteps, Ethernet port/Serial port/USB port	-		•	•	
	EHV-CPU32	2,112 I/O points maximum(*1), 20 ns/commands, program capacity 32 ksteps, Ethernet port/Serial port/USB port	-		•	•	
	EHV-CPU16	2,112 I/O points maximum(*1), 20 ns/commands, program capacity 16 ksteps, Ethernet port/Serial port/USB port	-		•	•	
Power supply module	EH-PSA	Input 100 to 240 V AC, Output 5 V DC 3.8 A, 24 V DC 0.4 A	-		•	•	
	EH-PSD	Input 21.6 to 26.4 V DC, Output 5 V DC 3.8 A	-		•	•	
Base unit	EH-B53A	3 I/O modules can be installed	-	Basic base and expansion base are the same product.	•	•	
	EH-B55A	5 I/O modules can be installed	-		•	•	
	EH-B58A	8 I/O modules can be installed	-		•	•	
	EH-B511A	11 I/O modules can be installed	-		•	•	
	EH-XD8	8 points, 24 V DC input, Removable terminal block	X16		•	•	
Input module	EH-XD16	16 points, 24 V DC input, Removable terminal block	X16	•	•		
	EH-XDL16	16 points, 24 V DC input Removable terminal block (Input lag 16ms)	X16	•	•		
	EH-XD32	32 points, 24 V DC input, Connector	X32	•	•		
	EH-XD32E	32 points, 24 V DC input, Spring type terminal block	X32	•	•		
	EH-XDL32E	32 points, 24 V DC input, Spring type terminal block (Input lag 16ms)	X32	•	•		
	EH-XD64	64 points, 24 V DC input, Connector	X64	•	•		
	EH-XA16	16 points, 100 to 120 V AC input, Removable terminal block	X16	•	•		
	EH-XAH16	16 points, 200 to 240 V AC input, Removable terminal block	X16	•	•		
	Output module	EH-YT8	8 points, Transistor output 12/24 V DC, Removable terminal block (sink type)	X16	•	•	
		EH-YTP8	8 points, Transistor output 12/24 V DC, Removable terminal block (source type)	X16	•	•	
EH-YR8B		8 points, Relay output, 100/240 V AC, 24 V DC, Removable terminal block	X16	•	-		
EH-YR12		12 points, Relay output, 100/240 V AC, 24 V DC, Removable terminal block	X16	•	•		
EH-YR16		16 points, Relay output, 100/240 V AC, 24 V DC, Removable terminal block	X16	•	-		
EH-YT16		16 points, Transistor output 12/24 V DC, Removable terminal block (sink type)	X16	•	•		
EH-YTP16		16 points, Transistor output 12/24 V DC, Removable terminal block (source type)	X16	•	•		
EH-YTP16S		16 points, Transistor output 12/24 V DC with short circuit protection, Removable terminal block (source type)	X16	With short-circuit protection function	•	•	
EH-YT32		32 points, Transistor output, 12/24 V DC, Connector (sink type)	Y32	•	•		
EH-YTP32		32 points, Transistor output, 12/24 V DC, Connector (source type)	Y32	•	•		
EH-YT32E		32 points, Transistor output, 12/24 V DC, Spring type terminal block (Sink type logic)	Y32	•	•		
EH-YTP32E		32 points, Transistor output, 12/24 V DC, Spring type terminal block (Source type logic)	Y32	•	•		
EH-YT64		64 points, Transistor output, 12/24 V DC, Connector (sink type)	Y64	•	•		
EH-YTP64		64 points, Transistor output, 12/24 V DC, Connector (source type)	Y64	•	•		
EH-Y54		4 points, Triac output, 100/240 V AC, Removable terminal block	Y16	•	•		
EH-Y516		16 points, Triac output output, 100/240 V AC, Removable terminal block	Y16	•	-		
Analog input module	EH-AX44	12-bit analog input, Current 4-20 mA, Voltage 0-10 V, 4ch each	WX8W	•	•		
	EH-AX8V	12-bit analog input, Voltage 0-10 V, 8ch	WX8W	•	•		
	EH-AX8H	12-bit analog input, Voltage -10 to 10 V, 8ch	WX8W	•	•		
	EH-AX8I	12-bit analog input, Current 4-20 mA, 8ch	WX8W	•	•		
	EH-AX8IO	12-bit analog input, Current 0-22 mA, 8ch	WX8W	•	•		
	EH-AXH8M	14-bit analog input, Current 0-22 mA/4-22 mA, Voltage -10 to 10 V/0-10 V, 8ch	WX8W	•	•		
	EH-PT4	Signed 15-bit, Pt 100 ohms/Pt 1000 ohms, 4ch	WX4W	•	•		
	EH-TC8	Signed 15-bit, Thermo-couple (K,E,J,T,B,R,S,N) 8ch	WX8W	•	•		
Analog output module	EH-AY22	12-bit analog output, Current 4-20 mA, Voltage 0-10 V, 2ch each	WY8W	•	•		
	EH-AY4V	12-bit analog output, Voltage 0-10 V, 4ch	WY8W	•	•		
	EH-AY4H	12-bit analog output, Voltage -10 to 10 V, 4ch	WY8W	•	•		
	EH-AY2H	12-bit analog output, Voltage -10 to 10 V, 2ch	WY8W	•	•		
	EH-AY4I	12-bit analog output, Current 4-20 mA	WY8W	•	•		
	EH-AYH8M	14-bit analog output, Current 0-22 mA/4-22 mA, voltage 0-10 V, 8ch	WY8W	•	•		
I/O controller	EH-IOCH2	I/O control module	-		•	•	
Dummy module	EH-DUM	Module for open slots	Empty		•	•	
Counter module	EH-CU	High speed counter input, Maximum frequency of 100 kHz, 2 channels, 1/2-phase switchable, 4-point open collector output	FUN0		•	•	
	EH-CUE	High speed counter input, Maximum frequency of 100 kHz, 1 channel, 1/2-phase switchable, 2-point open collector output	FUN0		•	•	
Positioning module	EH-POS	1-axis positioning module	4W/4W		•	•	
	EH-POS4	4-axis positioning module	4W/4W		•	•	
Communication module	EH-LNK	Coaxial CPU Link Module	LINK		•	•	
	EH-OLNK	Optical CPU Link Module	LINK		•	•	
	EH-ETH	Ethernet module IEEE802.3 standard, 10 BASE-T	COMM		•	•	
	EH-SIO	Serial Communication Module (RS-232C, RS-422/485)	4W/4W		•	•	
	EH-RMD	DeviceNet master module 256-word input, 256-word output, Up to 2 units can be installed per CPU Remote master module 1024 points (IN+OUT), Up to 4 units can be installed per CPU	LINK/REMOTE2		•	•	
	EH-IOCD	DeviceNet slave module, 256-word input and 256-word output	-		•	•	
	EH-RMP	PROFIBUS master module 256-word input, 256-word output, Up to 2 units can be installed per CPU	LINK		•	•	
	EH-IOCP	PROFIBUS slave module, 209-word input and 209-word output	-		•	•	
	Programming software	EH-CTE-E	Programming software (for EHV) control editor for Windows 2000/XP*2	-		-	-

\*1: When 64 points I/O module is used

\*2: Supported Os Windows2000 SP4, WindowsXP SP2

Windows is a registered trademark of Microsoft Corp. in the U.S. and other countries.



Item	Model name	Specification	Remarks	CE	UL
Cable for connecting basic base to I/O controller	EH-CB05A	Length: 0.5 m (1.64 ft.) (Between Base unit and EH-IOCH2) (for 2 or 5 expansion bases)		•	–
	EH-CB10A	Length: 1 m (3.28 ft.) (Between Base unit and EH-IOCH2) (for 2 or 5 expansion bases)		•	–
	EH-CB20A	Length: 2 m (6.56 ft.) (Between Base unit and EH-IOCH2) (for 2 or 5 expansion bases)		•	–
I/O connector cable for EH-POS	EH-POC10	Length: 1 m (3.28 ft.)		–	–
	EH-POC20	Length: 2 m (6.56 ft.)		–	–
	EH-POC50	Length: 5 m (16.4 ft.)		–	–
Conversion cable for connecting peripheral devices	EH-RS05	Adapter cable for WVCB02H (0.5 m 19.69 in.)		–	–
Peripheral devices	WVCB02H	Connection with a personal computer, EH-RS05 is required. (2 m (6.56 ft.))	*3	–	–
	EH-Prog20	Direct connection between EH-150 and a personal computer (2 m (6.56 ft.))	*3	–	–

\*3: EH-VCB02 and WVCB02H are serial cables for control editor.

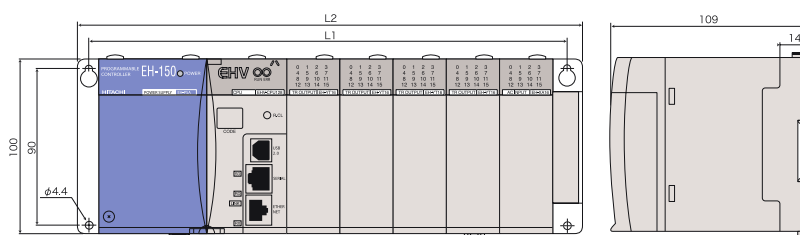
Form	Usage	Remarks
LIBAT-H	Lithium battery	The battery is used in common with the H series.
EH-LCN	L-type connector for the turn of coaxial connector. (for coaxial type CPU link module.)	

## General Specifications

Item	Specification
Power voltage	AC receiving power
	DC receiving power
Power voltage fluctuation range	AC
	DC
Allowable instantaneous power failure	
Operating ambient temperature	
Operating ambient humidity	
Vibration resistance	
Noise resistance	
Insulation resistance	
Dielectric withstand voltage	
Grounding	
Usage environment	
Structure	
Cooling	

## Dimensions

[Unit: mm]



	Base	EH-BS11A	EH-BS8	EH-BS5	EH-BS3
Number of I/O modules		11	8	5	3
L1		447	357	267	207
L2		462.5	372.5	282.5	222.5
Weight		0.4 kg (0.88 lb.)	0.36 kg (0.79 lb.)	0.28 kg (0.62 lb.)	0.22 kg (0.49 lb.)

# Programmable Logic Controller EH-150 EHV Series

Modular PLC

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## Hitachi Europe GmbH

Am Seestern 18 · D-40547 Düsseldorf  
Tel. +49-211-52 83 -0 · Fax +49-211-52 83 -649  
Internet: [www.hitachi-ds.com](http://www.hitachi-ds.com)  
E-Mail: [info@hitachi-ds.com](mailto:info@hitachi-ds.com)

