EH-150
CPU module (EH-CPU) Instruction manual

HITACHI
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Thank you for purchasing a Hitachi Programmable Logic Controller.

To operate it safely, please read this instruction manual and all the user manuals carefully. Please be sure to use the latest versions of user manuals and keep them at hand of end users for future reference.

■ Warranty period and coverage

The warranty period is either 18 months after manufacturing date (MFG No) or 12 months after installation.
Examination and repair within the warranty period is covered. However within the warranty period, the warranty will be void if the fault is due to ;

(1) Incorrect use from instructed in this manual and the application manual.
(2) Malfunction or failure of external other devices than this unit.
(3) Attempted repair by unauthorized personnel.
(4) Natural disasters.

The warranty is for the PLC only, any damage caused to third party equipment by malfunction of the PLC is not covered by the warranty.

■ Repair

Any examination or repair after the warranty period is not covered. And within the warranty period any repair and examination which results in information showing the fault was caused by any of the items mentioned above, the repair and examination cost are not covered. If you have any questions regarding the warranty or repair cost, please contact your supplier or the local Hitachi Distributor. (Depending on failure part, repair might be impossible.)

■ Ordering spare parts and inquiries

Please contact your local suppliers for ordering products/spare parts or any inquiries with providing the following information.

(1) Product name
(2) Manufacturing number (MFG No.)
(3) Details of failure

Safety precautions

■ Definitions and Symbols

DANGER — Indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death.

CAUTION — Indicates a potentially hazardous situation which, if not avoided, can result in minor to moderate injury, or serious damage of product.

: Indicates prohibition

: Indicates Compulsion

DANGER

- Do not touch terminals while power ON. There is a danger of electric shock and/or injury.
- Be sure to install external safety devices outside of the PLC like emergency stop circuit or interlock circuit.

CAUTION

- Be sure that the rated voltage matches the power supply voltage of the unit. Otherwise, there is a danger of breakdown and/or injury and/or fire.
- Only qualified personnel shall carry out wiring work. Otherwise, there is a danger of breakdown and/or injury and/or fire.

COMPULSION

- Be sure to ground the unit. Otherwise, there is a danger of electric shock and/or malfunction.

PROHIBITION

- Do not attempt to modify nor disassemble the unit. There is a danger of breakdown and/or injury and/or fire.

Application Manual

Read the following application manual carefully to use the PLC safely and properly. Be sure to keep the latest version.

Manual name	Manual No.
EH-150 APPLICATION MANUAL	NJI-281* (X)

* : The alphabet between 281 and (X) means version (A,B…).

PLC Wiring

■ Power Wiring

- Appropriate emergency circuitry, interlock circuitry and similar safety measures should be added to the system.
- Appropriate safety measures should be included in the system for unexpected breaking of wire or malsignal caused from instantaneous power failure.
- Applied voltage must be in the range specified in the manual. Otherwise, there is a danger of breakdown and/or injury and/or fire.
- Install an external earth leakage breakers to avoid short circuit accident.
- In case of the following operations, turn off power. Otherwise, there is a danger of breakdown and/or injury and/or fire.
  - Mounting or dismounting CPU and I/O modules.
  - Assembling cabinet or machine including PLC.
  - Wiring.
- Install net filter specified in table-1 or similar. The input and output cable of the net filter should be separated as much as possible. Be sure to ground the net filter.
- A shielded and insulated transformer is recommended.
- The basic and expansion unit should be connected to common power source and powered up together as shown in fig.1.
- Recommends installing a lightning arrester to prevent lightning damages.
- Install a lightning arrester
  To prevent damage to the equipment as a result of being struck by lightning, it is recommended that a lightning arrester be installed for each EH-150's power supply circuit.

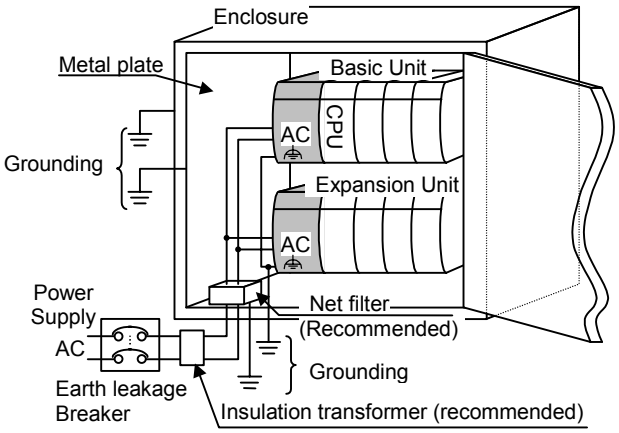


Figure 1 Power wiring example

Table1 Specifications of the net filter

Item		Spec.
Rated voltage		250 VAC
Rated current		5 A
Withstand voltage (V) (between Terminal and case)		1500 V
Insulation resistance (MΩ) (500VDC, 1 min., between terminal and case)		min. 100 MΩ
Attenuation Frequency range (MHz)	Differential mode, more than 40dB	0.5 - 30
	Common mode, more than 40dB	0.15 - 30

Reference : EMC filter ZAC2205-00U (TDK)

■ I/O Wiring

- Be sure that the input/output voltage matches the specified voltage. Otherwise, there is a danger of breakdown and/or fire.
- Use shielded cable for relay outputs module, and connect shields to a functional ground for one side or both sides depending on applications.
- Route the AC power line and I/O lines separated as much as possible. Do not route both cables in a same duct.
- Route the I/O lines and data lines as close as possible to the grounded surfaces such as cabinet elements, metal bars and cabinets panels.
- Wirings for input, output, analogue input, analogue output, RTD input and temperature input modules listed in the table2 Basic components and which I/O assignment is shown as X16, Y16, X8W, Y8W or X4W in the table, use cables as shown below.
  22 – 14 AWG Cu Sol / Str
  And tighten the terminal screws with following torque.
  9 in. – lbs (1.02 Nm)

Common precautions

- Use proper cable ferrules for terminals. Using improper cable ferrules or connecting bare wires to terminals directly might result in fire.
- Do not turn on power, if the unit appears damaged.
- Be sure to check all the field wiring before PLC power on. Otherwise, there is a risk of fire.
- Do not attempt to disassemble, repair or modify any part of the PLC.
- Do not pull on cables or bend cables beyond their natural limit. Otherwise, there is a risk of breaking of wire.
- Check carefully your PLC program before operation.
- Keep PLC modules in their boxes during storage and transport.

Installation environment

Avoid the following locations to install the PLC.

- Excessive dusts, salty air, or conductive materials (iron powder, etc.)
- Direct sunlight.
- Temperature less than 0°C or more than 55°C.
- Humidity less than 20% or more than 90%.
- Dew condensation.
- Direct vibration or impact to the unit.
- Corrosive, explosive or combustible gases.
- Water, chemicals or oil splashing on the PLC.
- Close to noise emission devices.

Installation / Mounting

≺ Base unit mounting ≻

- Fix the base unit by four screws (M4, 20mm (0.78in.) length or more) or by DIN rail tightly.
- To operate PLC within the range of ambient temperature,
  (1) Be sure to take enough draft space. (Top and botton; 50mm (1.97in.) or more, right and left; 10mm (0.39in.) or more)
  (2) Avoid mounting over heat generating devices such as heater, transformer, and high capacity resistor.
  (3) When ambient temperature becomes 55℃ or more install a fan or cooler so that ambient temperature is less than 55℃.
- Avoid mounting inside the panel installed the high-voltage device.
- Mount 200mm (7.87in.) or more away from the high-voltage wire and the power wire.
- Avoid inverted mounting, vertical mounting, and horizontal mounting.

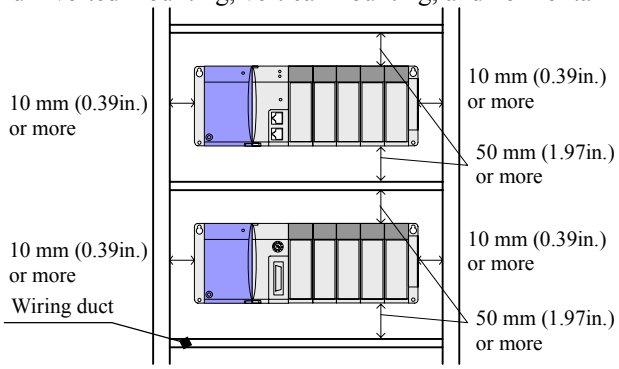
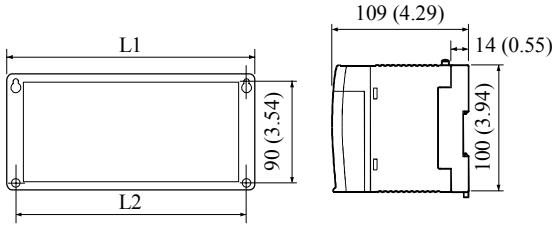


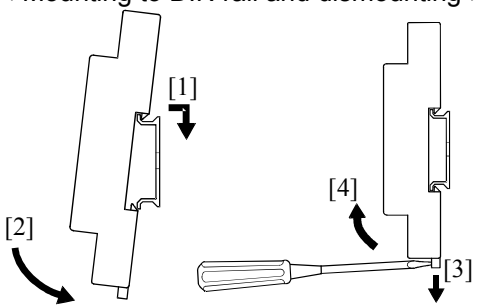
Figure 1 Mounting space



Dimension (mm (in.))

Base	L1	L2
3 slots	222.5 (8.76)	207 (8.15)
5 slots	282.5 (11.12)	267 (10.51)
6 slots	312.5 (12.30)	297 (11.69)
8 slots	372.5 (14.67)	357 (14.04)
11 slots	462.5 (18.21)	447 (17.60)

≺ Mounting to DIN rail and dismounting ≻

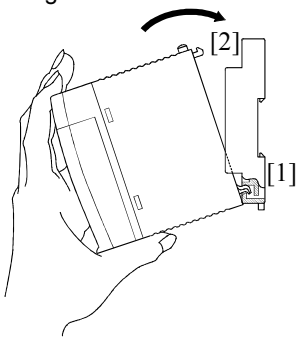


[1] Hang a fixed hook on the back of the base on the DIN rail.
[2] Push the base unit into the DIN rail till it goes click.
Note) After mounting, make sure of fixing the base unit.

[3] Pull the mounting lever fixed on the DIN rail down.
[4] Take the base off like raising the upper part.

≺ Mounting Module ≻

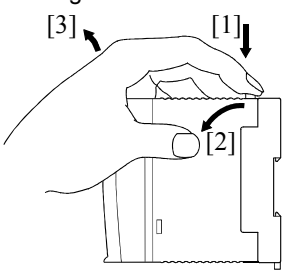
(1) Mounting



[1] Hang the hook in the lower part of the module on the hole in the base.
[2] Push the upper part of the module till it goes click.

Note 1) After mouting the module, check that the module does not come off.
Note 2) The power module is mounted on the left-most side of the base unit.
Note 3) CPU module and I/O contoroller are mounted on the right side of the power module.

(2) Dismounting



[1] Push the lock button.
[2] Pull the upper part of the module forward with pushing the lock button.
[3] Raise the module above while pulling out

Note) Pull the power module out with pushing two lock buttons.

System Equipment

■Module / Unit

Table 2 shows a usable module and unit which can combine with EH-CPU.

Table 2. List of system equipment (1 / 2)

Product	Type	Specification	I/O assignment	Remarks
Power module	EH-PSA	Input 100 to 240 V AC, Output 5 V DC 3.8 A, 24 V DC 0.4 A	—	Fixed installed position
	EH-PSD	Input 21.6 to 26.4 V DC, Output 5 V DC 3.8 A	—	
I/O controller	EH-IOCH2	I/O control module (1 unit / 1expansion installed)	—	Fixed installed position *1 (CPU position)
Base unit	EH-BS3A	3 I/O modules installed	—	Common for both basic and expansion base
	EH-BS5A	5 I/O modules installed	—	
	EH-BS6A	6 I/O modules installed	—	
	EH-BS8A	8 I/O modules installed	—	
	EH-BS11A	11 I/O modules installed	—	
Input module	EH-XD8 *3	8 points, 24 V DC input	X16	
	EH-XD16 *3	16 points, 24 V DC input	X16	
	EH-XDL16 *3	16 points, 24 V DC input, Filter reinforced version	X16	
	EH-XD32	32 points, 24 V DC input	X32	
	EH-XDL32	32 points, 24 V DC input, Filter reinforced version	X32	
	EH-XD32E	32 points, 24 V DC input, Euro-terminal block	X32	
	EH-XDL32E	32 points, 24 V DC input, Euro-terminal block, Filter reinforced version	X32	
	EX-XD64	64 points, 24 V DC input	X64	
	EH-XA16 *3	16 points, 100 to 120 V AC input	X16	
	EH-XAH16 *3	16 points, 200 to 240 V AC input	X16	
Output module	EH-YR8B *3	8 points, Independent relay output, 100/240 V AC, 24 V DC	Y16	
	EH-YR12 *3	12 points, Relay output, 100/240 V AC, 24 V DC	Y16	
	EH-YR16 *3	16 points, Relay output, 100/240 V AC, 24 V DC	Y16	
	EH-YT8 *3	8 points, Transistor output, 12/24 V DC (sink type)	Y16	
	EH-YTP8 *3	8 points, Transistor output, 12/24 V DC (source type)	Y16	
	EH-YT16 *3	16 points, Transistor output, 12/24 V DC (sink type)	Y16	
	EH-YTP16 *3	16 points, Transistor output, 12/24 V DC (source type)	Y16	
	EH-YTP16S *3	16 points, Transistor output, 12/24 V DC (source type)	Y16	Electric short cirucuit protection
	EH-YT32	32 points, Transistor output, 12/24 V DC (sink type) *2	Y32	
	EH-YTP32	32 points, Transistor output, 12/24 V DC (source type) *2	Y32	
	EH-YT32E	32 points, Transistor output, 12/24 V DC (sink type), Euro-terminal block	Y32	
	EH-YTP32E	32 points, Transistor output, 12/24 V DC (source type), Euro-terminal block	Y32	
	EH-YT64	64 points, Transistor output, 12/24 V DC (sink type)	Y64	
	EH-YTP64	64 points, Transistor output, 12/24 V DC (source type)	Y64	
	EH-YS4 *3	4 points, Triac output, 100/240 V AC	Y16	
	EH-YS16 *3	16 points, Triac output, 100/240 V AC	Y16	
Analog input module	EH-AX44 *3	12 bits analog input (4 to 20mA, 0 to 10 V) each 4 ch.	X8W	
	EH-AX8V *3	12 bits analog input 8 ch., Voltage (0 to +10 V)	X8W	
	EH-AX8H *3	12 bits analog input 8 ch., Voltage (-10 to +10 V)	X8W	
	EH-AX8I *3	12 bits analog input 8 ch., Current (4 to 20 mA)	X8W	
	EH-AX8IO *3	12 bits analog input 8 ch., Current (0 to 22 mA)	X8W	
	EH-AXH8M *3	14 bits analog input (0 to 22mA, 4 to 22mA, -10 to +10V, 0 to10V) 8 ch.	X8W	
Analog output module	EH-AY22 *3	12 bits analog output (4 to 20mA, 0 to10 V) each 2 ch.	Y8W	
	EH-AY2H *3	12 bits analog output 2 ch., Voltage (−10 to +10 V)	Y8W	
	EH-AY4V *3	12 bits analog output 4 ch., Voltage (0 to +10 V)	Y8W	
	EH-AY4H *3	12 bits analog output 4 ch., Voltage (−10 to +10 V)	Y8W	
	EH-AY4I *3	12 bits analog output 4 ch., Current (4 to 20 mA)	Y8W	
	EH-AYH8M *3	14 bits analog output (0 to 22mA, 4 to 22mA, 0 to 10V) 8 ch.	Y8W	
Resistance bulb module	EH-PT4 *3	4 channels resistance bulb input, Signed 15 bits, Platinum (Pt 100Ω / Pt 1000Ω)	X4W	
Thermocouple input module	EH-TC8 *3	Singed 15 bits, Thermocouple input (K, E, J, T, B, R, S, N) 8 points	X8W	

*1 CPU module, Power supply module and I/O controller are mounted on the designated positions. It is impossible to mounted on any other positions.

*2 Short circuit protection is effective from May 2001 production or later. (MFG No. 01Exx)

*3 For wiring of I/O modules that refer to above models, use cables as shown below.
22 – 14 AWG Cu Sol / Str.
And tighten the terminal screws with following torque. 9 in. – lbs (1.02Nm)

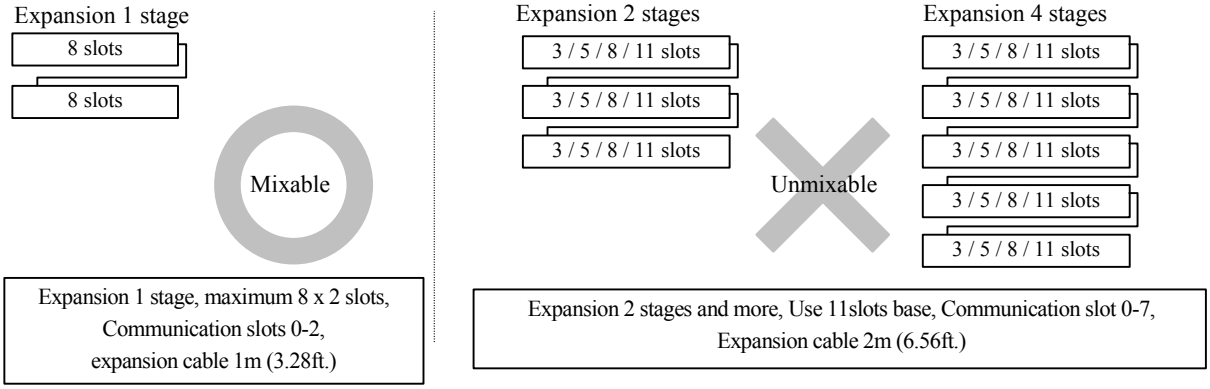
Table 3. List of system equipment (2 / 2)

Product	Type	Specification	I/O assignment	Remarks
High-function module	EH-CU	2 channels high-speed counter input, Maximum frequency of 100 kHz, 1/2-phase switchover, 4 points opened collector output	FUN0	
	EH-CUE	1 channel high-speed counter input, Maximum frequency of 100 kHz, 1/2-phase switchover, 2 points opened collector output	FUN0	
	EH-POS	1 axis pulse positioning module	4W/4W	
	EH-POS4*6	4 axes pulse positioning module	4W/4W	
	EH-ETH*6	Ethernet module IEEE802.3 standard, 10BASE-T, 2 units per CPU	COMM	*4
	EH-LNK*6	CPU Link module (coaxial), 2 units per CPU	CPU link	
	EH-OLNK*6	CPU Link module (optical fiber), 2 units per CPU	CPU link	
	EH-RMD*5	Device Net master module CPU Link assignment … 256/256 words input/output, Up to 2 units per CPU Remote 2 assignment … 64 words input / output meter, Up to 4 units per CPU can be installed.	CPU link / Remote 2	
	EH-RMP*5	PROFIBUS-DP master module, 256/256 words input/output, Up to 2 units per CPU can be installed.	CPU link	
	EH-IOCD	Device Net slave module, 256 words input/256 words output	—	Fixed installed Position (CPU position)
	EH-IOCP	PROFIBUS-DP slave controller, 208 words I/O	—	
	EH-SIO*7	Serial communication module, RS-232C / RS-422 / RS-485, General purpose, Modbus protocol, Hi-Protocol, Simple data link	4W/4W	
Dummy module	EH-DUM	Module for an open slot	—	

*4 When EH-BS3 / 5 / 8 are used, mount on slot 0 to 2 in the basic base.
When EH-BS3A / 5A / 6A / 8A / 11A are used, mount on slot 0 to 7 in the basic base.
*5 Supported by EH-CPU308(A) / 316(A) / 448(A) / 516 / 548.
*6 Supported by EH-CPU308A / 316A / 448(A) / 516 / 548.
*7 Supported by EH-CPU516 / 548.

[Base unit / I/O controller]

Enhanced version of I/O controller and bases (EH-IOCH / IOCH2 and EH-BS3A / 5A / 6A / 8A) can be used with standard version (EH-IOC and EH-BS3 / 5 / 8) only within one expansion base, total 16 slot and communication module on slot 0 to 2.



■ Peripheral devices

Table 4. List of peripheral devices

Product	Type	Specification	Remarks
Portable graphic programmer	PGM-GPH	Portable graphic programmer with a 2m connection cable (PGCB02H)	*8
Command language programmer	PGM-CHH	Command language programmer	
Graphic input device support software	HL-GPCL	Ladder diagram / Command editor LADDER-EDITOR (for GPCL01H *9)	
	HL-PC3	Ladder diagram / Command editor LADDER-EDITOR (for PC98 series) with CPU connection cable	
	HL-AT3E	Ladder diagram / Command editor LADDER-EDITOR (for PC/At compatible personal computer)	
	HLW-PC3	Ladder diagram / Command editor LADDER-EDITOR (for Windows®2000 / XP)	*10
	HLW-PC3E	Ladder diagram / Command editor (English version) LADDER-EDITOR (for Windows®2000 / XP)	*10

*8 Do not use the optional box (model type: PGMIF1H) for the portable graphic programmer.
There is a possibility that EH-150 system will break down because of the high current consumption.
*9 HI-LADDER (attached to GPCL01H) can also by used.
*10 Windows®2000 / XP is compatible from version 3.05. The version before it can be used in Windows®95 / 98 / NT.

Note) MS-DOS, Windows®95, Windows®98, Windows®NT, Windows®2000, Windows®XP are registered trademarks of Microsoft Corporation in U.S.

■ Connection cable

Table 5. List of connection cables

Product	Type	Specification	Remarks
Cable for connecting basic base I/O controller	EH-CB05A	Length 0.5 m (1.64 ft.) (basic to expansion and expansion to expansion)	
	EH-CB10A	Length 1 m (3.28 ft.) (basic to expansion and expansion to expansion)	
	EH-CB20A	Length 2 m (6.56 ft.) (basic to expansion and expansion to expansion)	
Cable for terminal block (followed by W) Cable for I/O wiring	EH-CBM01(W)	1 m	*11
	EH-CBM03(W)	3 m	*11
	EH-CBM05(W)	5 m	*11
	EH-CBM10(W)	10 m	*11
Conversion cable for connecting peripheral devices	EH-RS05	Length 0.5 m (1.64 ft.) between RJ45 and 15-pin (mess)	*12
For peripheral devices	WVCB02H	Length 2 m (3.28 ft.) between CPU and DOS/V (9-pin)	*13
	EH-VCB02	Length 2 m (3.28 ft.) between CPU (modular jack type) and DOS/V (9-pin)	*13

*11 Rating 30V insulation. To be used with 32/64 I /O modules of EH-150 in the same end use enclosure.
*12 Use with WVCB02H.
*13 EH-VCB02 and WVCB02H can be used for connecting H / EH series by Hitachi-IES and LADDER EDITOR for Windows®.

■ Optional

Table 6. List of optional

Type	Use	Remarks
EH-MEMP*14	Program volume of memory board; maximum 48k steps	Installed to optional slot
EH-MEMD*14	Program volume of memory board; maximum 16k steps, Data volume 38k words	
LIBAT-H*15	Lithium battery	Common use with H series

*14 Supported by EH-CPU308(A) / 316(A) / 448(A) / 516 / 548.
*15 One battery is packed in CPU module.

List of Current Consumption

Product	Model name	Current consumption [mA]	Product	Model name	Current consumption [mA]
CPU module	EH-CPU104A	400	Analog input module	EH-AX44	100
	EH-CPU208A	400		EH-AX8V	100
	EH-CPU316A	400		EH-AX8H	100
	EH-CPU516	400		EH-AX8I	100
	EH-CPU548	400		EH-AX8IO	100
I/O controller	EH-IOCH	80		EH-AXH8M	70
	EH-IOCH2	80		EH-PT4	160
Base unit	EH-BS3A	200		EH-TC8	70
	EH-BS5A	200	Analog output module	EH-AY22	100
	EH-BS6A	200		EH-AY2H	100
	EH-BS8A	200		EH-AY4V	100
	EH-BS11A	200		EH-AY4H	100
Input module	EH-XD8	30		EH-AY4I	130
	EH-XD16	50		EH-AYH8M	70
	EH-XDL16	50	Positioning, and Counter module	EH-CU	310
	EH-XD32	60		EH-CUE	310
	EH-XDL32	60		EH-POS	300 (600) *1
	EH-XD32E	60		EH-POS4	850
	EH-XDL32E	60	Communication and network module	EH-ETH	260
	EX-XD64	80		EH-LNK	550
	EH-XA16	50		EH-OLNK	550
	EH-XAH16	50		EH-RMD	280
Output module	EH-YR8B	220		EH-RMP	600
	EH-YR12	40		EH-IOCD	320
	EH-YR16	430		EH-IOCP	600
	EH-YT8	30		EH-SIO	250
	EH-YTP8	30	Dummy module	EH-DUM	0
	EH-YT16	50			
	EH-YTP16	50			
	EH-YTP16S	50			
	EH-YT32	90			
	EH-YTP32	90			
	EH-YT32E	90			
	EH-YTP32E	90			
	EH-YT64	120			
	EH-YTP64	120			
	EH-YS4	70			
	EH-YS16	250			

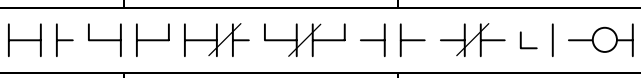
*1: positional connection

General specification

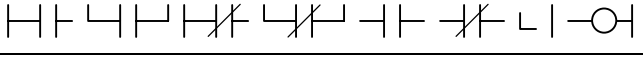
Item		Specification
Power voltage	AC receiving power	100/110/120 V AC (50/60 Hz), 200/220/240 V AC (50/60 Hz)
	DC receiving power	24 V DC
Power voltage fluctuation range		85 to 264 V AC wide range
		21.6 to 26.4 V DC
Allowable instantaneous power failuer		85 to 100 V AC: When instantaneous power failure of less than 10 ms, operation continuues. 100 to 264 V AC: When instantaneous power failure of less than 20 ms, operation continues
Operating ambient temperature		0 to 55 °C [Storage ambient temperature -10 to 75 °C]
Operating ambient humidity		20 to 90 % RH (no condensation) [Storage ambient humidity 10 to 90 % RH (No condensation)]
Vibration resistance		Conforms to JIS C0911
Noise resistance		○ Noise voltage 1,500 Vpp, Noise pulse width100 ns, 1μs (Noise created by the noise simulator is applied across input terminals of the power module. This is determined by measureing methods of this company) ○ Based on NEMA ICS 3-304 (except the input module) ○ Static noise 3,000 V at metal exposed area
Insulation resistance		20 MΩ and more between AC external teminal and case ground (FE) terminal (based on 500 V DC megger)
Dielectric withstand voltage		1,500 V AC for 1 minute between AC external terminal and case ground (FE) terminal
Ground		Class D grounding (ground with the power supply module)
Usage environment		No corrosive gases, no excessive dust
Structure		Open wall-mount type
Cooling		Natural air cooling

Performance specifications

■ EH-CPU104A / EH-CPU208A / EH-CPU316A

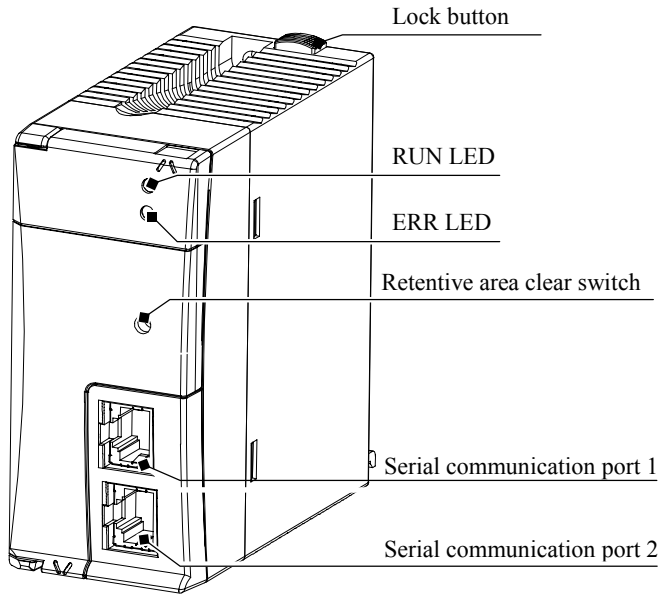
Item	Clasification		EH-CPU104A	EH-CPU208A	EH-CPU316A
Control specifications	CPU		32-bit RISC processor		
	Processing method		Stored program cyclic method		
	Processing speed	Basic command	1.0μs per command		
		Arithmetic command, Application command	From 10μs per command		
	User program memory		3.5k steps	7.6k steps	15.7k steps
Operation processing specifications	Command language	Basic command	39 typs such as LD, LDI, AND, ANI, OR, ORI, ANB, ORB, OUT, MPS, MRD, MPP		
		Arithmetic command, Application command	116 types	117 types	145 types
	Ladder	Basic command	39 types such as 		
		Arithmetic command, Application command	116 types	117 types	145 types
I/O processing specifications	Exteranl I/O	I/O processing method	Reflesh processing		
		Using 64points module	Maximum 512 points	Maximum 1,024 points	
		Expansionable stages	0	1	
		Remote I/O	—		1,024 points ×4 master stations
	Internal output	Bit	1,984 points (R0 to R7BF)		
		Word (WR)	4,096 words (WR0 to WRFFF)	8,192 words (WR0 to WR1FFF)	22,528 words (WR0 to WR57FF)
		Bit/Word shared (WM)	16,384 points 1,024 words (M0 to M3FFF, WM0 to WM3FF)		
		Special Bit	64 points (R7C0 to R7FF)		
		Special Word	512 words (WRF000 to WRF1FF)		
		CPU link	16,384 poitns 1,024 words × 2 loops Link 1 : L0 to L3FFF / WL0 to WL3FF Link 2 : L10000 to L13FFF / WL1000 to WL13FF		
	Timer counter	Number of points	512 points (TD+CU), however TD is up to 256 points. Remarks: The number of a timer and a counter cannot overlat.		
		Timer set value	0 to 65,535, time base 0.01, 0.1, 1[s], however the 0.01s is up tp maximum 64 points.		
		Counter set value	1 to 65,535 times		
	Edge detection		DIF 512 points + DFN 512 points		
Communication function	Serial port	Dedicated port	RS-232C × 2 (port 1, port 2)		
		General-purpose port	—	—	Support (port 1)
		Switching of I/F	—	—	Switchable to RS-422/485 (port 1)
		Modem control function	—	—	Support (port 1)
Peripheral devices	Program method		Command language, ladder diagram, amd others		
	Peripheral devices		Programming software (LADDER EDITOR DOS version / Windows® version) Command language programmer, Portable graphic programmer, Graphic input device		
Extended functions	Calender, clock		—	Support	
Maintenance functions	Self-diagnosis		PLC anomaly (LED display): microcomputer error, watchdog timer error, memory error, program error, system ROM/RAM error, scan time monitoring, battery voltage reduction detection, and others		

■ EH-CPU516 / EH-CPU548

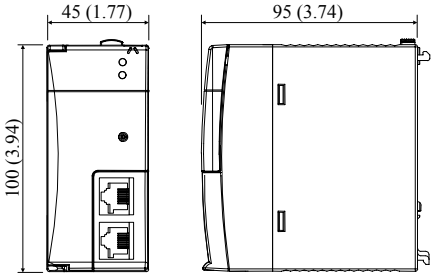
Item	Clasification			EH-CPU516	EH-CPU548
Control specifications	CPU			32-bit RISC processor	
	Processing method			Stored program cyclic method	
	Processing speed	Basic command		0.1μs per command	
		Arithmetic command, Application command		From 10μs per command	
	User program memory			15.7 k steps	48.5 k steps
Operation processing specifications	Command language	Basic command		40 types such as LD, LDI, AND, ANI, OR, ORI, ANB, ORB, OUT, MPS, MRD, MPP	
		Arithmetic command, Application command		153 types such as arithmetic, application, control, FUN command, etc	
	Ladder	Basic command		40 types such as 	
		Arithmetic command, Application command		153 types such as arithmetic, application, control, FUN command, etc	
I/O processing specifications	External I/O	I/O processing method		Reflech processing	
		Using 64 points module		Maximum 2,112 points	Maximum 3,520 points
		Expansionable stages		2	4
		Remote I/O		1,024 points × 4 master stations	
	Internal output	Bit		1,984 points (R0 to R7BF)	
		Word (WR)		22,528 words (WR0 to WR57FF)	50,176 word (WR0 to WRC3FF)
		Bit/Word shared (WM)		16,384 points 1,024 words (M0 to M3FFF, WM0 to WM3FF)	
		Special	Bit	64 points (R7C0 to R7FF)	
			Word	512 words (WRF000 to WRF1FF)	
		CPU link		16,384 points 1,024 words × 2 loops Link 1 : L0 to L3FFF / WL0 to WL3FF Link 2 : L10000 to L13FFF / WL1000 to WL13FF	
	Timer counter	Number of points		512 points (TD+CU), however TD is up tp 256 points and TM is up to 2048 points. Remarks: The number of a timer and a counter cannot overlap.	
		Timer set value		0 to 65,535, time base 0.01, 0.1, 1[s] Remarks: No.0 to 63 of TD and all of TM can use the 0.01s at the timer.	
		Counter set value		1 to 65,535 times	
	Edge detection			DIF 512 points + DFN 512 points (the number of DIF and DFN is decimal)	
Communications functions	Serial port	Dedicated port		RS-232C × 2 (port 1, port 2)	
		General-purpose port		Support (port 1)	
		Swithcing of I/F		Switchable to RS-422 / 485 (port 1)	
		Modem control function		Support (port 1)	
Peripheral devices	Program method			Command language, ladder diagram, and others	
	Peripheral devices			Programming software (LADDER EDITOR DOS version / Windows® version) Command language programmer, Portable graphic programmer, Graphic input devices	
Extended functions	Calender, clock			Support	
Maintenance functions	Self-diagnosis			PLC anomaly (LED display): microcomputer error, watchdog timer error, memory error, program error, system ROM/RAM error, scan time monitoring, battery voltage reduction detection, and others	

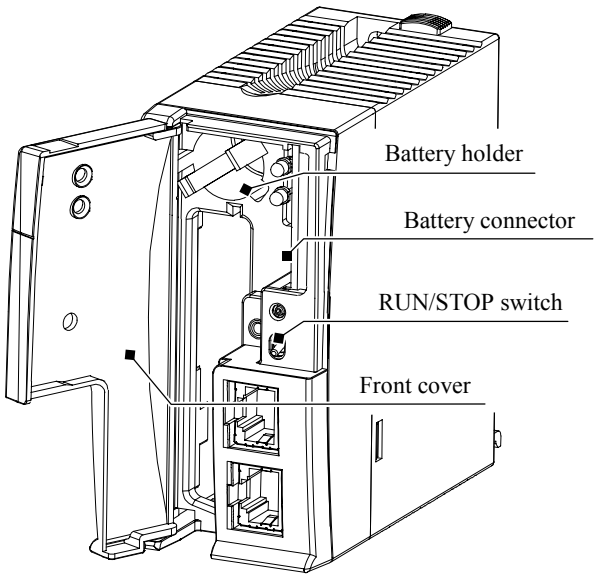
■ CPU module

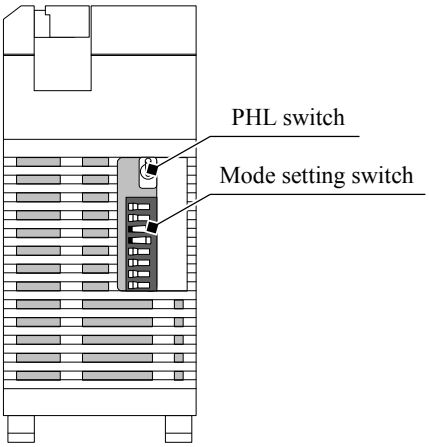
Name and function of each part



Type	EH-CPU104A
	EH-CPU208A
	EH-CPU316A
	EH-CPU516
	EH-CPU548
Weight	Approx. 0.18 kg (0.40 lb.)
Current consumption	400 mA
Dimensions (mm (in.))	



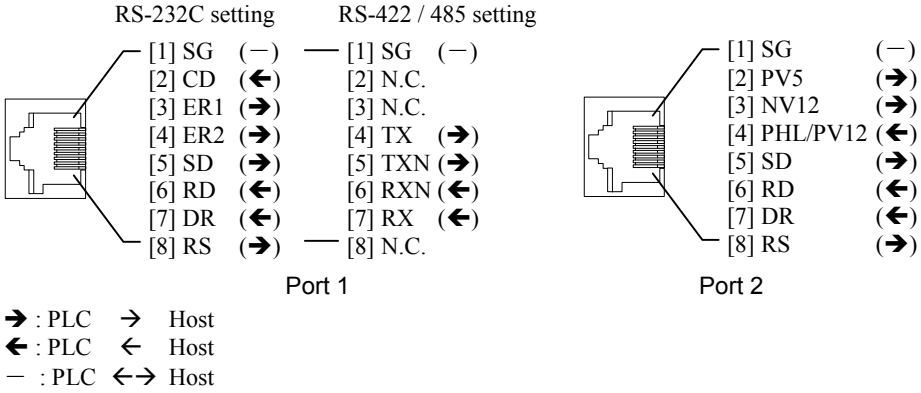




Drawing of CPU module bottom

Explanation of operation	Operations are performed according to the contents of a program created by users. The programming device connected to the communication port of the CPU module writes and reads the user program. Memory is installed in the inside of the CPU module in which the user program and the internal output information are stored. It is possible to back up the internal output data and the clock information by a battery.

Item	Description	Remarks
Lock button	Fix a CPU module to a base unit. Press this button when dismounting. Module can be fixed firmly by ascres of M4 x 10 mm (0.39in.).	
RUN LED	Indicates the operation state of CPU (lighting : RUN, light-out : STOP)	LED is green.
ERR LED	Indicates the error contents by lighting or flashing. (lighting: RUN, OFF: STOP)	LED is red.
Retentive area clear switch	Clears data in retentive area by pushing this switch while the operation stop. Program information is held.	Available at while CPU stop.
RUN / STOP switch	When this switch is in RUN position, CPU starts operation. When in stop position, CPU stops. The following conditions are necessary to make the module run correctly. 1. A user program must be written in the module. 2. When an operation definition input is configured, the designated input must be on. 3. There should be no errors.	

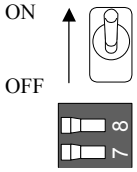
Item	Description
Serial communication port	This is a port for the serial communication with external devices as a dedicated port or a general-purpose port. [Dedicated port] A port for the communication with a programming devices, etc. [General-purpose port] A port for the communication with external devices with the serial communication function on the user program. It is possible to switch the port 1 to the dedicated port. * Both a general-purpose and a dedicated port can be switched to RS-232C / RS-422 / RS-485.  → : PLC → Host ← : PLC ← Host － : PLC ←→ Host
Mode setting switch (DIP switch) PHL switch	Designate the following operating mode by setting this switch. Even if a setting of the switch is changed while the module is energizing, the operating mode does not change. When you switch the operating mode, turn off the power and set correctly. However, a transfer speed of port is set up when DR signal is on from off.

DIP switch / PHL switch			1	2	3	4	5	6	PHL
RUN/STOP	Remote control		**ON**	-	-	-	-	-	-
	RUN switch control		off	-	-	-	-	-	-
Port 1	Dedicated port *	4,800 bps	-	-	**ON**	**ON**	**ON**	-	-
		9,600 bps	-	-	off	**ON**	**ON**	-	-
		19,200 bps	-	-	**ON**	off	**ON**	-	-
		38,400 bps	-	-	off	off	**ON**	-	-
	General-purpose port		-	off	-	-	off	-	-
	Modem mode		-	**ON**	-	-	off	-	-
Port 2	Dedicated port *	4,800 bps	-	-	-	-	-	off	off
		9,600 bps	-	-	-	-	-	**ON**	off
		19,200 bps	-	-	-	-	-	off	**ON**
		38,400 bps	-	-	-	-	-	**ON**	**ON**

DIP switch 7 and 8 should be always off.

* Dedicated port: PC (programming), HMI panel, etc.

[PHL switch]

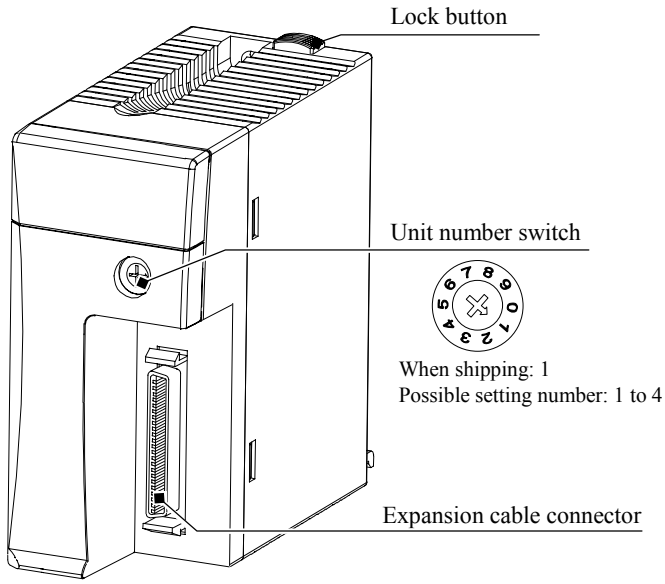


When PHL switch turns on, the PHL signal turns ON and +12V comes out from the connector 4-pin.

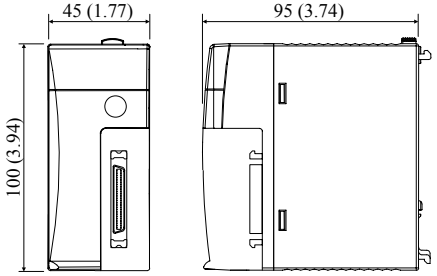
Battery holder Battery Battery connector	[Battery] The battery holds the following data while the PLC power is off. (1) Data memory defined as retentive area. (2) Calendar clock data (WRF00B to WRF00F) (User program is held without battery because it is stored in the back-up memory.) < Attention > ・There is a polarity in the battery. Check the polarity when you connect. ・The battery connector is not connected with the module in order to prevent consumption of battery during distribution or storage. ・Check the battery and connect the lead connector of the battery with the battery connector of the board when using the CPU module. ・See the blow table regarding the life of battery. As a guideline, replace the battery every two years even when the total power failure time is less than the guaranteed value shown in the below table.

The life of battery (Total power failure time) [Hr]	
Guaranteed value（MIN）@55°C	Actual value （MAX） @25°C
2,000	32,000

■ Input/Output Controller

Name and function of each part	
	

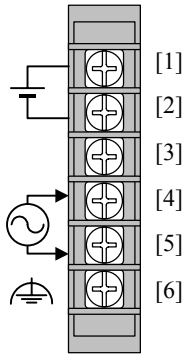
Type	EH-IOCH2
Weight	Approx. 0.14 kg (0.31 lb.)
Current consumption	Approx. 80mA
Dimensions (mm (in.))	



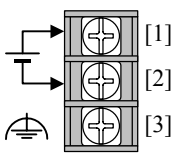
Explanation of functions	The I/O controller is a module to control I/Os of expansion bases. The installing position is on the right side of the power module of the expansion base unit. Set the unit number designated switch in order of 1 to 4 from the nearest to the CPU module. 〈 Attention 〉 ・If the switch is set the number other than 1 to 4, there is a danger of output errors. ・EH-CPU104 / EH-CPU104A cannot be extended. ・As for the use by mixture with the old I/O controller, see the section of "Base unit / I/O controller" shown in 5 pages.

■ Power Module

Item	EH-PSA		EH-PSD
Rated output voltage	5 VDC	24VDC	5 V DC
Maximum DC output current	3.8 A	0.4 A	3.8 A
Efficiency	65 % or more (Load of 5 V 3.8 A 24 V 0.4 A after energizing for 5 min. at room temperature and humidity)		70 % or more (Load of 5 V DC 3.8 A)
Input voltage range	85 to 264 V AC wide range		21.6 to 26.4 V DC
Input current	1 A or less (85 to 264 V AC)		1.25 A or less (at 24 V DC)
Input rush current	50 A or less (Ta = 25 °C), 100 A or less (Ta = 55 °C)		
Output over-current protection	Output shot circuit protection		
Input leak current	3.5 mA or less(60 Hz, 264 V AC)		−
Dielectric withstand voltage	1,500 V AC for 1 min. between (AC input) and (DC output) 750 V AC for 1 min. between (DC output) and (FE)		1,500 V AC for 1 min. between (DC input) and (FE)
Insulation resistance	20 MΩ or more (500 V DC) (1) between AC input and FE (2) between AC input and DC output		20 MΩ or more (500 V DC) between DC input and FE
Vibration resistance	Conforms to JIS C 0911 16.7 Hz double amplitude 3 mm (0.12 in.) X, Y, Z each direction Conforms to JIS C 0040 10−57 Hz single amplitude 0.075 mm , 57−150 Hz constant acceleration 9.8 m/s^2		
Shock resistance	Conforms to JIS C 0912 10G / X, Y, Z each direction, confirms to JIS C 0040 15G / X, Y, Z each direction		



No.	EH-PSA
[1]	24 VDC+
[2]	24 VDC−
[3]	N.C.
[4]	100 – 240 VAC
[5]	100 – 240 VAC
[6]	FE

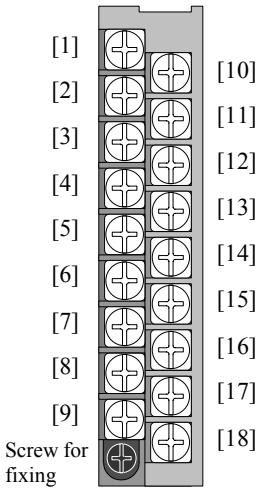


No.	EH-PSD
[1]	24 VDC+
[2]	24 VDC−
[3]	FE

■ Input Module

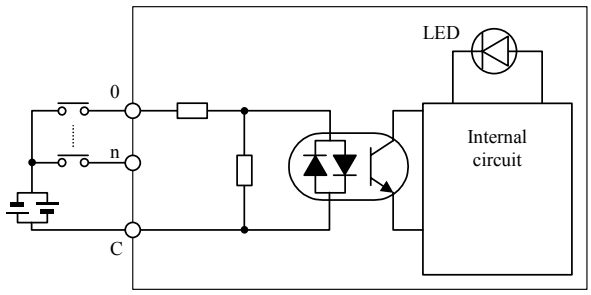
(1) DC Input, AC Input (8 points / 16 points)

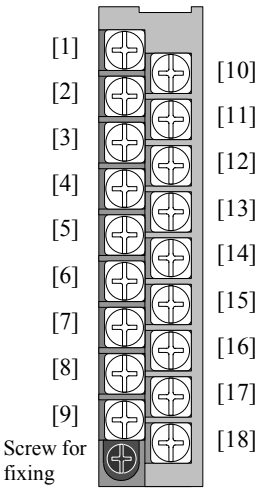
		EH-XD8	EH-XD16	EH-XDL16	EH-XA16	EH-XAH16
Input type		DC input (common use to sink and source)			AC input	
Number of input points		8 points	16 points		16 points	
Input voltage		24V DC (19.2 to 30V DC)			100 to 120V AC (85 to 132V AC)	200 to240V AC (170 to 264V AC)
Input current		Approx. 6.9 mA	Approx. 4.0 mA		4.8 to 7.6mA (100V AC / 50Hz)	4.3 to 8.0mA (200V AC / 50Hz)
Input impedance		Approx. 3.5 kΩ	Approx. 5.9 kΩ		Approx. 16kΩ (50Hz) / Approx. 13kΩ (60Hz)	Approx. 32kΩ (50Hz) / Approx. 27kΩ (60Hz)
Operating voltage	ON voltage	15V or more			79 V AC	164 V AC
	OFF voltage	5V or less			20 V AC	40 V AC
Input response time	ON response	5ms or less		16ms or less	15ms or less	
	OFF response	5ms or less		16ms or less	25ms or less	
Insulation method		Photo-coupler insulation				
Input display		LED display (green)				
External connection		Removable type screw terminal block (M3)				
Number of input points / common		8 points / 1 common	16 points / 1 common (common terminal is 2)			
Internal current consumption		Approx. 30 mA	Approx. 50 mA			



No.	Signal name EH-XD8	EH-XD16	EH-XDL16
[1]	0	0	0
[2]	1	1	1
[3]	2	2	2
[4]	3	3	3
[5]	4	4	4
[6]	5	5	5
[7]	6	6	6
[8]	7	7	7
[9]	C	C	C
[10]	N.C.	8	8
[11]	N.C.	9	9
[12]	N.C.	10	10
[13]	N.C.	11	11
[14]	N.C.	12	12
[15]	N.C.	13	13
[16]	N.C.	14	14
[17]	N.C.	15	15
[18]	C	C	C

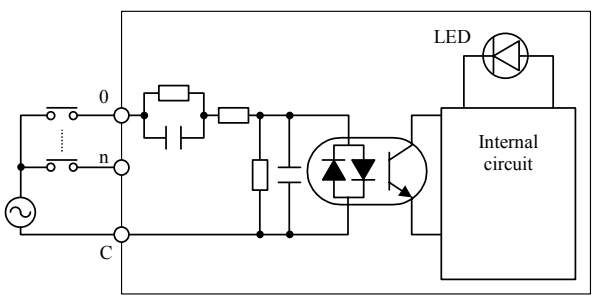
Internal circuit





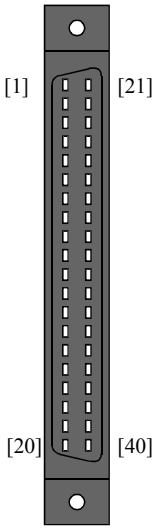
No.	Signal name EH-XA16	EH-XAH16
[1]	0	0
[2]	1	1
[3]	2	2
[4]	3	3
[5]	4	4
[6]	5	5
[7]	6	6
[8]	7	7
[9]	C	C
[10]	8	8
[11]	9	9
[12]	10	10
[13]	11	11
[14]	12	12
[15]	13	13
[16]	14	14
[17]	15	15
[18]	C	C

Internal circuit



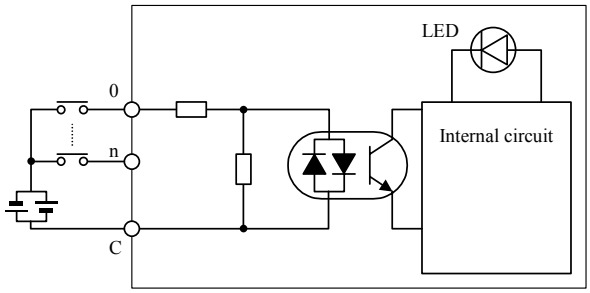
(2) DC Input (32 points)

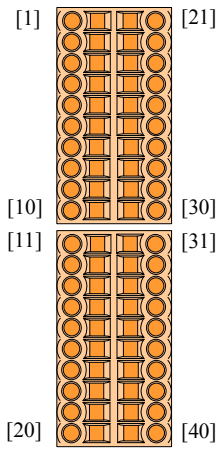
		EH-XD32	EH-XDL32	EH-XD32E	EH-XDL32E
Input type		DC input (common use to sink and source)			
Number of input points		32 points			
Input voltage		24V DC (19.2 to 30.0 V DC)		24V DC (20.4 to 28.8 V DC)	
Input current		Approx. 4.3mA			
Input impedance		Approx. 5.6kΩ			
Operating voltage	ON voltage	15V or more			
	OFF voltage	5V or less			
Input response time	ON response	5ms or less	16ms or less	1ms or less	16ms or less
	OFF response	5ms or less	16ms or less	1ms or less	16ms or less
Insulation method		Photo-coupler insulation			
Input display		LED display (green)			
External connection		Connector		Spring type European terminal block (removable type)	
Number of input points /common		32 points / 1 common (common terminal is 4)		8 points / 1 common (common terminal is 2 each, common of 4 system is independent.)	
Internal current consumption		Approx. 60mA			



EH-XD32, EH-XDL32			
No.	Signal name	No.	Signal name
[1]	0	[21]	16
[2]	1	[22]	17
[3]	2	[23]	18
[4]	3	[24]	19
[5]	4	[25]	20
[6]	5	[26]	21
[7]	6	[27]	22
[8]	7	[28]	23
[9]	C	[29]	C
[10]	8	[30]	24
[11]	9	[31]	25
[12]	10	[32]	26
[13]	11	[33]	27
[14]	12	[34]	28
[15]	13	[35]	29
[16]	14	[36]	30
[17]	15	[37]	31
[18]	C	[38]	C
[19]	N.C.	[39]	N.C.
[20]	N.C.	[40]	N.C.

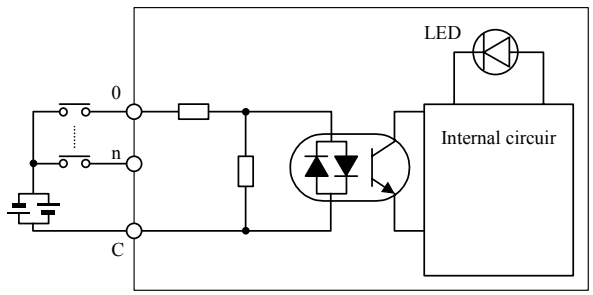
Internal circuit





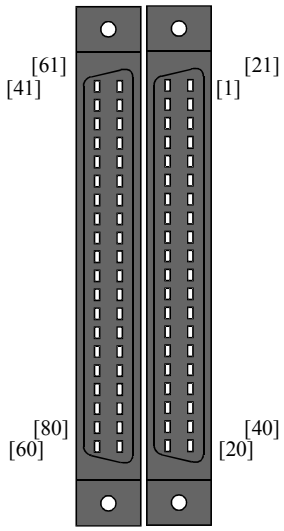
EH-XD32E, EH-XDL32E			
No.	Signal name	No.	Signal name
[1]	0	[21]	16
[2]	1	[22]	17
[3]	2	[23]	18
[4]	3	[24]	19
[5]	4	[25]	20
[6]	5	[26]	21
[7]	6	[27]	22
[8]	7	[28]	23
[9]	C1	[29]	C3
[10]	C1	[30]	C3
[11]	8	[31]	24
[12]	9	[32]	25
[13]	10	[33]	26
[14]	11	[34]	27
[15]	12	[35]	28
[16]	13	[36]	29
[17]	14	[37]	30
[18]	15	[38]	31
[19]	C2	[39]	C4
[20]	C2	[40]	C4

Internal circuit

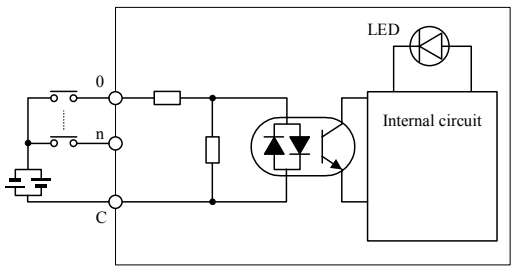


(3) DC Input (64 points)

		EH-XD64
Input type		DC input (common use to sink and source)
Number of input points		64 points
Input voltage		24 V DC (20.4 to 28.8 V DC)
Input current		Approx. 4.3 mA
Input impedance		Approx. 5.6 kΩ
Operating voltage	ON voltage	15 V or more
	OFF voltage	5 V or less
Input response time	ON response	1 ms or less
	OFF response	1 ms or less
Insulation method		Photo-coupler insulation
Input display		LED display (green)
External connection		Connector
Number of input points / 1 common		32 points / 1 common (Common terminal is 4 each, common of 2 systems is independent.)
Internal current consumption		Approx. 80 mA



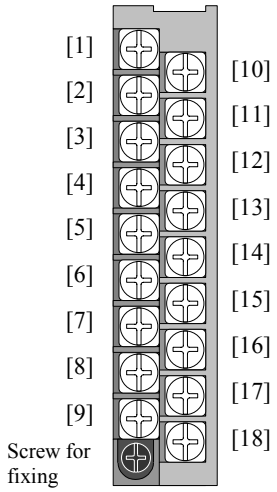
EH-XD64								Internal circuit
No.	Signal name	No.	Signal name	No.	Signal name	No.	Signal name	
[41]	32	[61]	48	[1]	0	[21]	16	
[42]	33	[62]	49	[2]	1	[22]	17	
[43]	34	[63]	50	[3]	2	[23]	18	
[44]	35	[64]	51	[4]	3	[24]	19	
[45]	36	[65]	52	[5]	4	[25]	20	
[46]	37	[66]	53	[6]	5	[26]	21	
[47]	38	[67]	54	[7]	6	[27]	22	
[48]	39	[68]	55	[8]	7	[28]	23	
[49]	C2	[69]	C2	[9]	C1	[29]	C1	
[50]	40	[70]	56	[10]	8	[30]	24	
[51]	41	[71]	57	[11]	9	[31]	25	
[52]	42	[72]	58	[12]	10	[32]	26	
[53]	43	[73]	59	[13]	11	[33]	27	
[54]	44	[74]	60	[14]	12	[34]	28	
[55]	45	[75]	61	[15]	13	[35]	29	
[56]	46	[76]	62	[16]	14	[36]	30	
[57]	47	[77]	63	[17]	15	[37]	31	
[58]	C2	[78]	C2	[18]	C1	[38]	C1	
[59]	N.C.	[79]	N.C.	[19]	N.C.	[39]	N.C.	
[60]	N.C.	[80]	N.C.	[20]	N.C.	[40]	N.C.	



■ Output Module

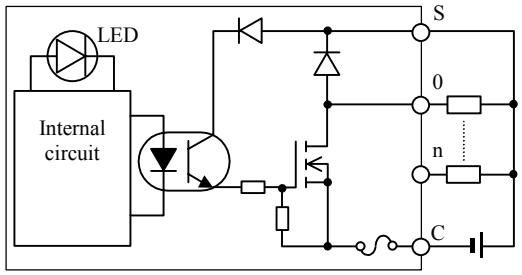
(1) Transistor Output (8 points / 16 points)

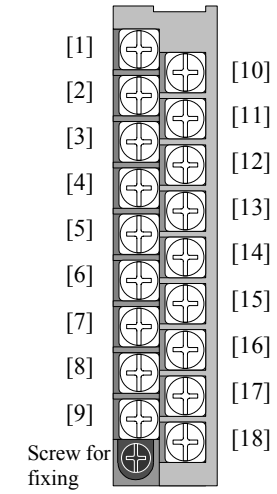
		EH-YT8	EH-YT16	EH-YTP8	EH-YTP16	EH-YTP16S
Output specification		Sink type		Source type		
Number of output points		8 points	16 points	8 points	16 points	
Rated load voltage		12 / 24 V DC (+10%, -15%)				
Minimum switching current		1 mA				
Leak current		0.1 mA				
Maximum load current	1 circuit	0.3A (0.5A MFG No. 02G** or later)		0.3 A (MFG No. 02F** or before) 0.5 A (MFG No. 02G** or later)		0.8A
	1 common	2.4A	4A	2.4A	4A	5A
Output response time	OFF➔ON	0.3ms or less				
	ON➔OFF	1ms or less				
Insulation method		Photo-coupler insulation				
Output display		LED display (green)				
External connection		Removable type screw terminal block (M3)				
Number of output points / 1 common		8 points / 1 common	16 points /1 common	8 points / 1 common	16 points / 1 common	
Surge removal circuit		Diode				Built-in
Fuse		4A / 1 common	8A / 1common	4A / 1 common	8A / 1 common	None
External power supply (prepare by customer)		12 / 24 V DC (+10%, -15%) (Maximum 30mA)				
Internal current consumption		Approx. 30mA	Approx. 50mA	Approx. 30mA	Approx. 50mA	
Short circuit protection function		Not available				Available



No.	Signal name	
	EH-YT8	EH-YT16
[1]	0	0
[2]	1	1
[3]	2	2
[4]	3	3
[5]	4	4
[6]	5	5
[7]	6	6
[8]	7	7
[9]	C	C
[10]	N.C.	8
[11]	N.C.	9
[12]	N.C.	10
[13]	N.C.	11
[14]	N.C.	12
[15]	N.C.	13
[16]	N.C.	14
[17]	N.C.	15
[18]	S	S

Internal circuit

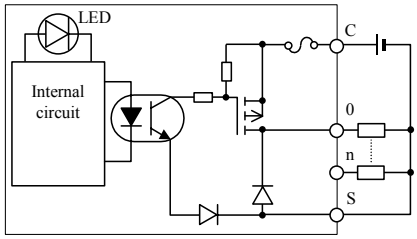




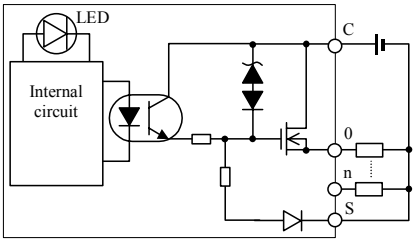
No.	Signal name		
	EH-YTP8	EH-YTP16	EH-YTP16S
[1]	0	0	0
[2]	1	1	1
[3]	2	2	2
[4]	3	3	3
[5]	4	4	4
[6]	5	5	5
[7]	6	6	6
[8]	7	7	7
[9]	C	C	C
[10]	N.C.	8	8
[11]	N.C.	9	9
[12]	N.C.	10	10
[13]	N.C.	11	11
[14]	N.C.	12	12
[15]	N.C.	13	13
[16]	N.C.	14	14
[17]	N.C.	15	15
[18]	S	S	S

Internal circuit

EH-YTP8, EH-YTP16

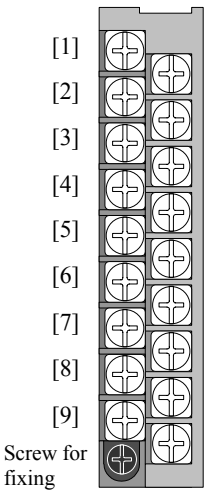


EH-YTP16S



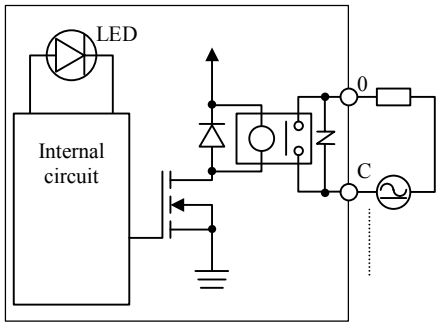
(2) Relay Output (8 points with varistor / 12 points / 16 points)

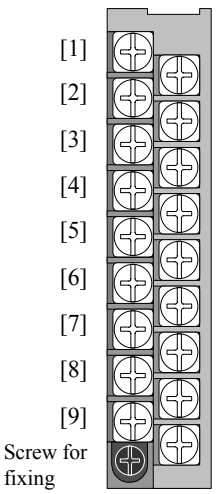
		EH-YR8B	EH-YR12	EH-YR16
Output specification		Relay output		
Number of output points		8 points	12 points	16points
Rated load voltage		100 / 240 V AC, 24 V DC		
Minimum switching current		1 mA (5V DC), except after a great current switching		
Leak current		None		
Maximum load current	1 circuit	2 A		
	1 common	2 A	5 A	8 A
Output response time	OFF➔ON	10 ms or less		
	ON➔OFF	10 ms or less		
Insulation method		Relay insulation	Photo-coupler insulation	Relay insulation
Output display		LED display (green)		
External connection		Removable type screw terminal block (M3)		
Number of output points / 1 common		1 point / 1 common (Each channel is independent.)	12 points / 1 common (Common terminal is 2.)	16 points / 1 common (Common terminal is 2.)
Surge removal circuit		Varistor (Varistor voltage 423 to 517V)	None	
Fuse		None		
External power supply (prepare by customer)		Not used	24VDC (+10%, −15%) (Maximum 70mA)	Not used
Internal current consumption		Approx. 220mA	Approx. 40mA	Approx. 430mA



EH-YR8B	
No.	Signal name
[1]	0
[2]	1
[3]	2
[4]	3
[5]	4
[6]	5
[7]	6
[8]	7
[9]	N.C.
[10]	C.0
[11]	C.1
[12]	C.2
[13]	C.3
[14]	C.4
[15]	C.5
[16]	C.6
[17]	C.7
[18]	N.C.

Internal circuit

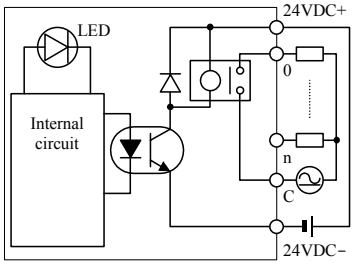




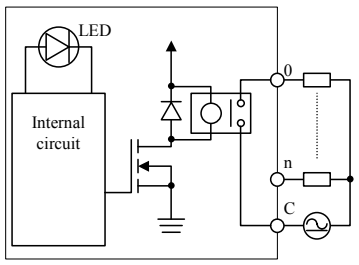
No.	Signal name	
	EH-YR12	EH-YR16
[1]	24VDC+	0
[2]	N.C.	1
[3]	0	2
[4]	1	3
[5]	2	4
[6]	3	5
[7]	4	6
[8]	5	7
[9]	C	C
[10]	24VDC−	8
[11]	N.C.	9
[12]	6	10
[13]	7	11
[14]	8	12
[15]	9	13
[16]	10	14
[17]	11	15
[18]	C	C

Internal circuit

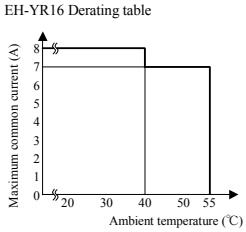
EH-YR12



EH-YR16

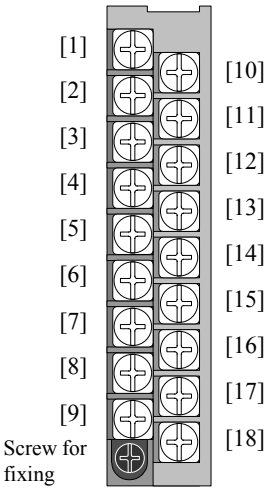


EH-YR16 Derating table



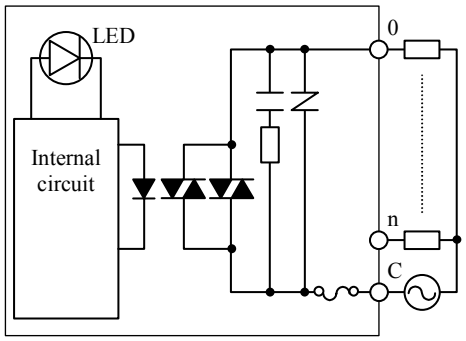
(3) Triac Output Module (4 points / 16 points)

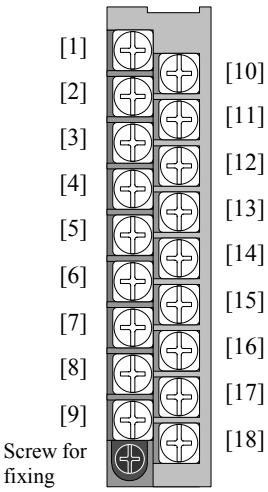
		EH-YS4	EH-YS16
Output specification		Triac output	
Number of output points		4 points	16 points
Rated load voltage		100 / 240 V AC (85 to 250 V AC)	
Minimum switching current		100 mA	10 mA
Leak current		5 mA or less	2 mA or less
Maximum load voltage	1 circuit	0.5 A	0.3 A
	1 common	2 A	4.0 A (ambient temperature 45℃), see the derating table below.
Output response time	OFF➔ON	1 ms or less	
	ON➔OFF	1 ms + 1/2 cycle or less	
Insulation method		Photo-triac insulation	
Output display		LED display (green)	
External connection		Removable type screw terminal block (M3)	
Number of output points / 1 common		4 points / 1 common	16 points / 1 common (Common terminal is 2.)
Surge removal circuit		Varistor	
Fuse		4A / 1 common	6.3A / 1 common (Fuse mount to external is necessary.)
External power supply (prepare by customer)		—	
Internal current consumption		Approx. 70 mA	Approx. 250 mA



EH-YS4	
No.	Signal name
[1]	0
[2]	N.C.
[3]	1
[4]	N.C.
[5]	2
[6]	N.C.
[7]	3
[8]	N.C.
[9]	C
[10]	N.C.
[11]	N.C.
[12]	N.C.
[13]	N.C.
[14]	N.C.
[15]	N.C.
[16]	N.C.
[17]	N.C.
[18]	N.C.

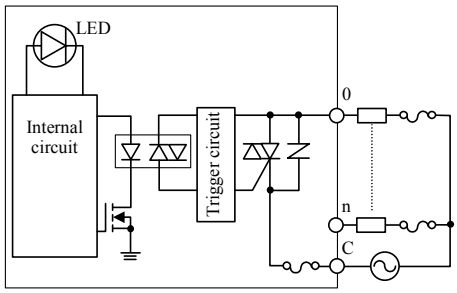
Internal circuit



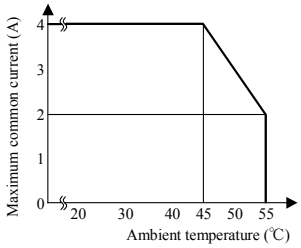


EH-YS16	
No.	Signal name
[1]	0
[2]	1
[3]	2
[4]	3
[5]	4
[6]	5
[7]	6
[8]	7
[9]	C
[10]	8
[11]	9
[12]	10
[13]	11
[14]	12
[15]	13
[16]	14
[17]	15
[18]	C

Internal circuit

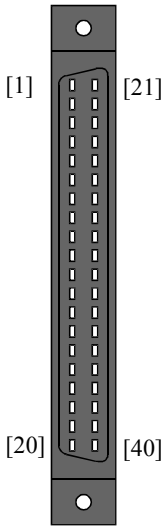


Derating table



(4) Transistor Output Module (32 points)

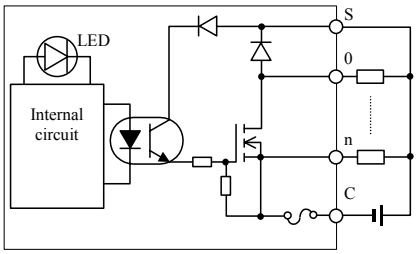
		EH-YT32	EH-YTP32	EH-YT32E	EH-YTP32E
Output specification		Sink type	Source type	Sink type	Source type
Number of output points		32 points			
Rated load voltage		12 / 24 V DC (+10%, -15%)			
Minimum switching current		1 mA			
Leak current		0.1 mA or less			
Maximum load voltage	1 circuit	0.2 A			
	1 common	4.0 A		1.0 A	
Output response time	OFF➔ON	0.3 ms or less			
	ON➔OFF	1 ms or less			
Insulation method		Photo-coupler insulation			
Output display		LED display (green)			
External connection		Connector		Spring type European terminal block (removable type)	
Number of output points / 1 common		32 points / 1 common (Common terminal is 4.)		8 points / 1 common (Common terminal is 4.)	
Surge removal circuit		Diode			
Fuse		10A / 1 common			
External power supply (prepare by customer)		12 / 24 V DC (+10%, −15%)		12 / 24 V DC (+10%, −15%) (Maximum 30mA)	
Internal current consumption		Approx. 90mA			
Short circuit protection function		Available			



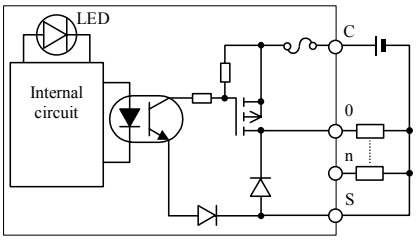
EH-YT32, EH-YTP32			
No.	Signal name	No.	Signal name
[1]	0	[21]	16
[2]	1	[22]	17
[3]	2	[23]	18
[4]	3	[24]	19
[5]	4	[25]	20
[6]	5	[26]	21
[7]	6	[27]	22
[8]	7	[28]	23
[9]	C	[29]	C
[10]	S	[30]	S
[11]	8	[31]	24
[12]	9	[32]	25
[13]	10	[33]	26
[14]	11	[34]	27
[15]	12	[35]	28
[16]	13	[36]	29
[17]	14	[37]	30
[18]	15	[38]	31
[19]	C	[39]	C
[20]	S	[40]	S

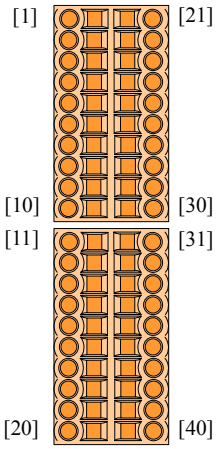
Internal circuit

EH-YT32



EH-YTP32

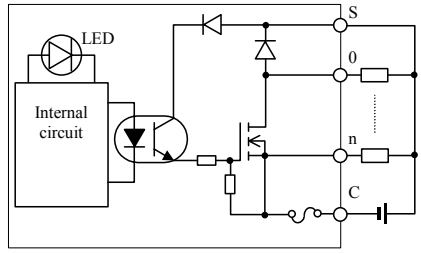




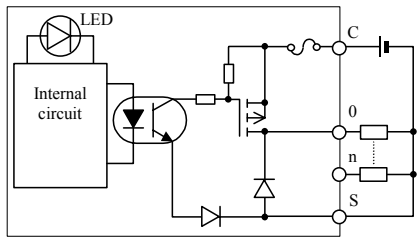
EH-YT32E, EH-YTP32E			
No.	Signal name	No.	Signal name
[1]	0	[21]	16
[2]	1	[22]	17
[3]	2	[23]	18
[4]	3	[24]	19
[5]	4	[25]	20
[6]	5	[26]	21
[7]	6	[27]	22
[8]	7	[28]	23
[9]	C1	[29]	C3
[10]	S1	[30]	S3
[11]	8	[31]	24
[12]	9	[32]	25
[13]	10	[33]	26
[14]	11	[34]	27
[15]	12	[35]	28
[16]	13	[36]	29
[17]	14	[37]	30
[18]	15	[38]	31
[19]	C2	[39]	C4
[20]	S2	[40]	S4

Internal circuit

EH-YT32E

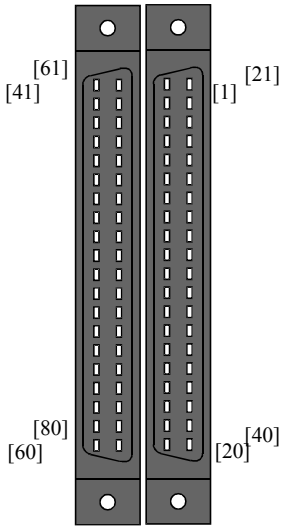


EH-YTP32E



(5) Transistor Output Module (64 points)

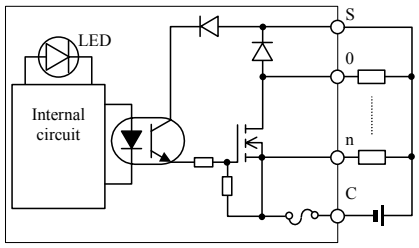
		EH-YT64	EH-YTP64
Output specification		Sink type	Source type
Number of output points		64 points	
Rated load voltage		12 / 24 V DC (+10%, −15%)	
Minimum switching current		1 mA	
Leak current		0.1 mA or less	
Maximum load voltage	1 circuit	0.1 A	
	1 common	3.2 A	
Output response time	OFF➔ON	0.3 ms or less	
	ON➔OFF	1 ms or less	
Insulation method		Photo-coupler insulation	
Output display		LED display (green)	
External connection		Connector	
Number of output points / 1 common		32 points / 1 common	
Surge removal circuit		Diode	
Fuse		5A / 1 common (Common terminal is 4 each, common of 2 systems is independent.)	
External power supply (prepare by customer)		12 / 24 V DC (+10%, −15%) (Maximum 100 mA)	
Internal current consumption		Approx. 120 mA	
Short circuit protection function		Available	

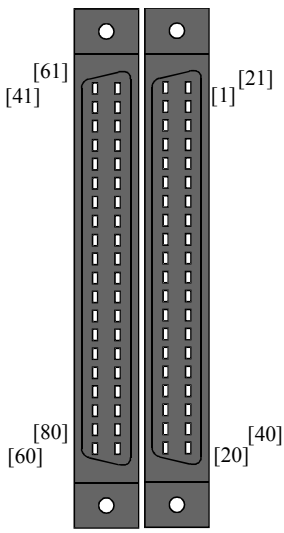


EH-YT64

No.	Signal name	No.	Signal name	No.	Signal name	No.	Signal name
[41]	32	[61]	48	[1]	0	[21]	16
[42]	33	[62]	49	[2]	1	[22]	17
[43]	34	[63]	50	[3]	2	[23]	18
[44]	35	[64]	51	[4]	3	[24]	19
[45]	36	[65]	52	[5]	4	[25]	20
[46]	37	[66]	53	[6]	5	[26]	21
[47]	38	[67]	54	[7]	6	[27]	22
[48]	39	[68]	55	[8]	7	[28]	23
[49]	C2	[69]	C2	[9]	C1	[29]	C1
[50]	S2	[70]	S2	[10]	S1	[30]	S1
[51]	40	[71]	56	[11]	8	[31]	24
[52]	41	[72]	57	[12]	9	[32]	25
[53]	42	[73]	58	[13]	10	[13]	26
[54]	43	[74]	59	[14]	11	[34]	27
[55]	44	[75]	60	[15]	12	[35]	28
[56]	45	[76]	61	[16]	13	[36]	29
[57]	46	[77]	62	[17]	14	[37]	30
[58]	47	[78]	63	[18]	15	[38]	31
[59]	C2	[79]	C2	[19]	C1	[39]	C1
[60]	S2	[80]	S2	[20]	S1	[40]	S1

Internal circuit

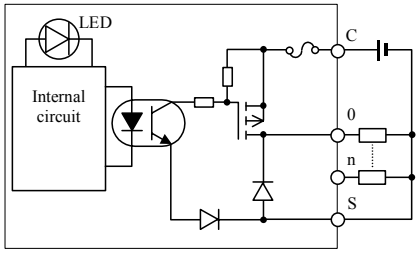




EH-YTP64

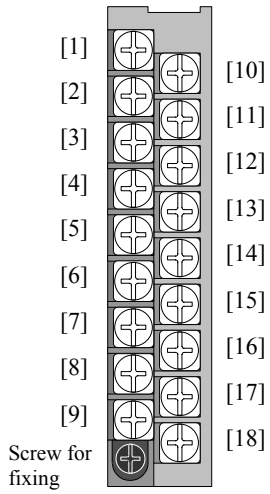
No.	Signal name	No.	Signal name	No.	Signal name	No.	Signal name
[41]	32	[61]	48	[1]	0	[21]	16
[42]	33	[62]	49	[2]	1	[22]	17
[43]	34	[63]	50	[3]	2	[23]	18
[44]	35	[64]	51	[4]	3	[24]	19
[45]	36	[65]	52	[5]	4	[25]	20
[46]	37	[66]	53	[6]	5	[26]	21
[47]	38	[67]	54	[7]	6	[27]	22
[48]	39	[68]	55	[8]	7	[28]	23
[49]	C2	[69]	C2	[9]	C1	[29]	C1
[50]	S2	[70]	S2	[10]	S1	[30]	S1
[51]	40	[71]	56	[11]	8	[31]	24
[52]	41	[72]	57	[12]	9	[32]	25
[53]	42	[73]	58	[13]	10	[13]	26
[54]	43	[74]	59	[14]	11	[34]	27
[55]	44	[75]	60	[15]	12	[35]	28
[56]	45	[76]	61	[16]	13	[36]	29
[57]	46	[77]	62	[17]	14	[37]	30
[58]	47	[78]	63	[18]	15	[38]	31
[59]	C2	[79]	C2	[19]	C1	[39]	C1
[60]	S2	[80]	S2	[20]	S1	[40]	S1

Internal circuit

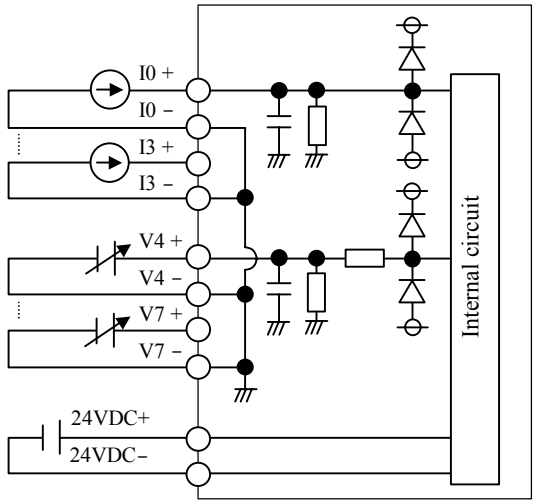


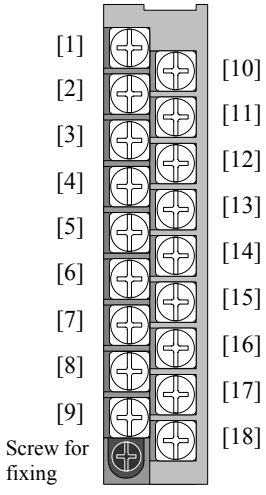
■ Analog Input module

		EH-AX44	EH-AX8I	EH-AX8IO	EH-AX8V	EH-AX8H
Current range		4～20mA		0～22 mA	—	
Voltage range		0 to 10 V DC	—		0 to 10 V DC	±10 V DC
Number of channels	Current	4 (0 to 3 ch)	8 (0 to 7 ch)		—	
	Voltage	4 (4 to 7 ch)	—		8 (0 to 7 ch)	
Resolution		12 bits				
Conversion time		5ms or less				
Overall accuracy		±1% or less (of full scale value)				
Input impedance	Current	Approx. 100 Ω			—	
	Voltage	Approx. 100k Ω	—		Approx. 100k Ω	
Insulation	Channel・Internal circuit	Photo-coupler insulation				
	Between channels	No insulation				
External connector		Removable type screw terminal block (M3)				
Internal current consumption		Approx. 100mA				
External power supply		24V DC (+20%, −15%) Approx. 0.15A (Approx. 0.4A at power-up)				
External wiring		2-core shield wire (20m (65.62ft.) or less)				

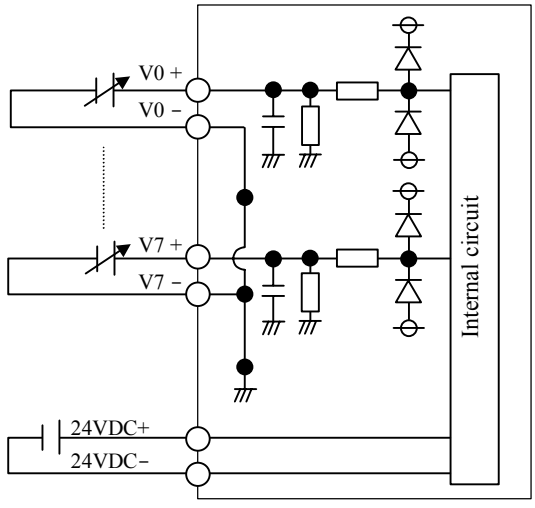


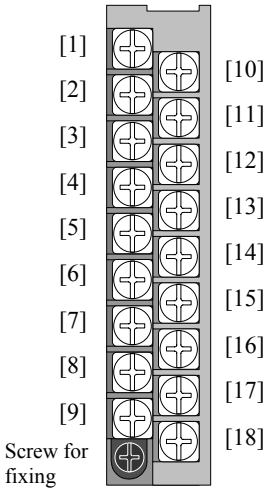
EH-AX44		Internal circuit
No.	Signal name	
[1]	I0 +	
[2]	I1 +	
[3]	I2 +	
[4]	I3 +	
[5]	V4 +	
[6]	V5 +	
[7]	V6 +	
[8]	V7 +	
[9]	24 VDC +	
[10]	I0 −	
[11]	I1 −	
[12]	I2 −	
[13]	I3 −	
[14]	V4 −	
[15]	V5 −	
[16]	V6 −	
[17]	V7 −	
[18]	24 VDC −	





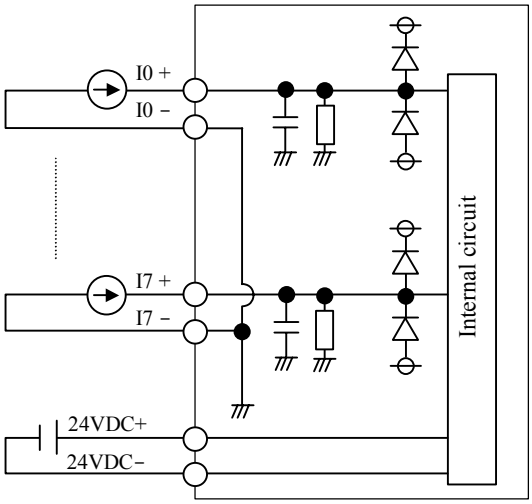
No.	Signal name		Internal circuit
	EH-AX8V	EH-AX8H	
[1]	V0 +	V0 +	
[2]	V1 +	V1 +	
[3]	V2 +	V2 +	
[4]	V3 +	V3 +	
[5]	V4 +	V4 +	
[6]	V5 +	V5 +	
[7]	V6 +	V6 +	
[8]	V7 +	V7 +	
[9]	24 VDC +	24 VDC +	
[10]	V0 −	V0 −	
[11]	V1 −	V1 −	
[12]	V2 −	V2 −	
[13]	V3 −	V3 −	
[14]	V4 −	V4 −	
[15]	V5 −	V5 −	
[16]	V6 −	V6 −	
[17]	V7 −	V7 −	
[18]	24 VDC −	24 VDC −	





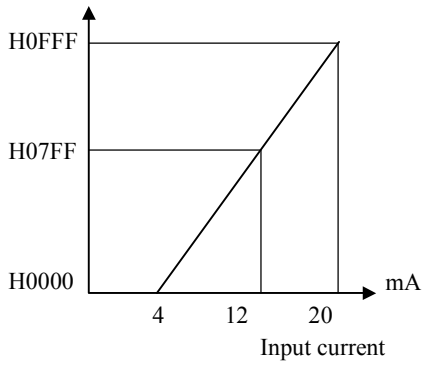
No.	Signal name	
	EH-AX8I	EH-AX8IO
[1]	I0 +	I0 +
[2]	I1 +	I1 +
[3]	I2 +	I2 +
[4]	I3 +	I3 +
[5]	I4 +	I4 +
[6]	I5 +	I5 +
[7]	I6 +	I6 +
[8]	I7 +	I7 +
[9]	24 VDC +	24 VDC +
[10]	I0 −	I0 −
[11]	I1 −	I1 −
[12]	I2 −	I2 −
[13]	I3 −	I3 −
[14]	I4 −	I4 −
[15]	I5 −	I5 −
[16]	I6 −	I6 −
[17]	I7 −	I7 −
[18]	24 VDC −	24 VDC −

Internal circuit

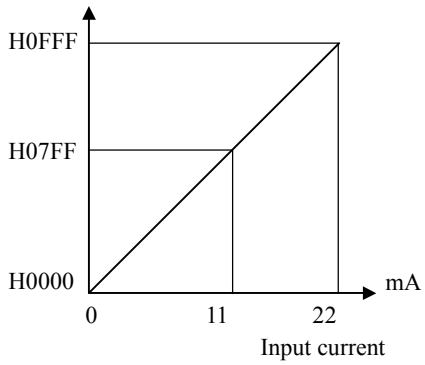


Support for analog data and digital data

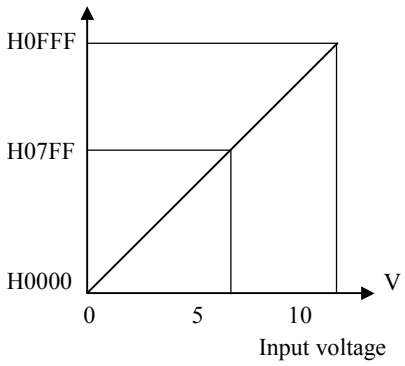
EH-AX44, EH-AX8I



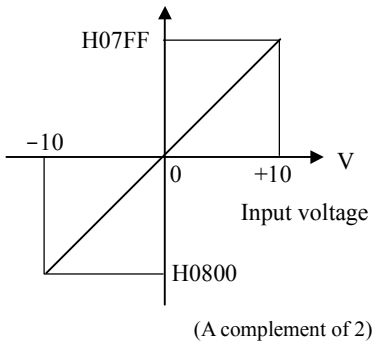
EH-AX8IO



EH-AX44, EH-AX8V



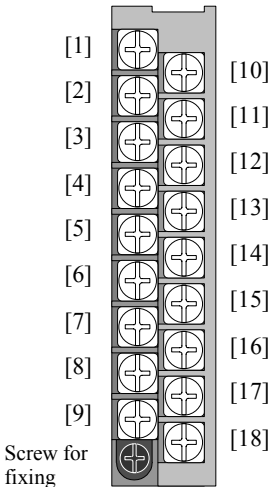
EH-AX8H



(A complement of 2)

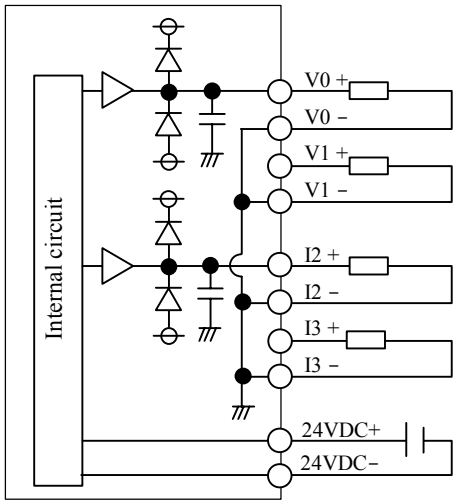
■ Analog Output Module

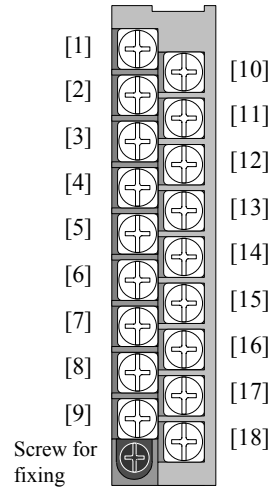
		EH-AY22	EH-AY2H	EH-AY4I	EH-AY4V	EH-AY4H
Current range		4 to 20mA	—	4 to 20mA	—	
Voltage range		0 to 10 V DC	±10 V DC	—	0 to 10 V DC	±10 V DC
Number of channels	Current	2 (2, 3ch)	—	4 (0 to 3ch)		
	Voltage	2 (0, 1ch)		—	4 (0 to 3ch)	
Resolution		12 bits				
Conversion time		5ms or less				
Overall accuracy		±1% (of full scale value)				
External load resistance	Current	0 to 500 Ω	—	0 to 350 Ω	—	
	Voltage	10kΩ or more		—	10kΩ or more	
Insulation	Channel・Internal circuit	Photo-coupler insulation				
	Between channels	No insulation				
External connection		Removal type screw terminal block (M3)				
Internal current consumption		Approx. 100mA		Approx. 130mA	Approx. 100mA	
External power supply		24 V DC (+20% / −15%) Approx. 0.15A (Approx. 0.5A at power-up)				
External wiring		2-core shield wire (20m (65.62ft.) or less)				



No.	Signal name	
	EH-AY22	EH-AY2H
[1]	V0 +	V0 +
[2]	V1 +	V1 +
[3]	I2 +	N.C.
[4]	I3 +	N.C.
[5]	N.C.	N.C.
[6]	N.C.	N.C.
[7]	N.C.	N.C.
[8]	N.C.	N.C.
[9]	24 VDC +	24 VDC +
[10]	V0 −	V0 −
[11]	V1 −	V1 −
[12]	I2 −	N.C.
[13]	I3 −	N.C.
[14]	N.C.	N.C.
[15]	N.C.	N.C.
[16]	N.C.	N.C.
[17]	N.C.	N.C.
[18]	24 VDC −	24 VDC −

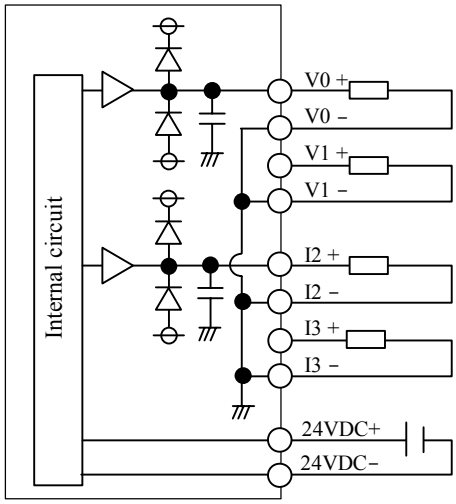
Internal circuit

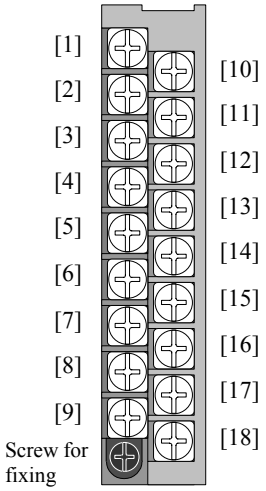




No.	Signal name	
	EH-AY4V	EH-AY4H
[1]	V0 +	V0 +
[2]	V1 +	V1 +
[3]	V2 +	V2 +
[4]	V3 +	V3 +
[5]	N.C.	N.C.
[6]	N.C.	N.C.
[7]	N.C.	N.C.
[8]	N.C.	N.C.
[9]	24 VDC +	24 VDC +
[10]	V0 −	V0 −
[11]	V1 −	V1 −
[12]	V2 −	V2 −
[13]	V3 −	V3 −
[14]	N.C.	N.C.
[15]	N.C.	N.C.
[16]	N.C.	N.C.
[17]	N.C.	N.C.
[18]	24 VDC −	24 VDC −

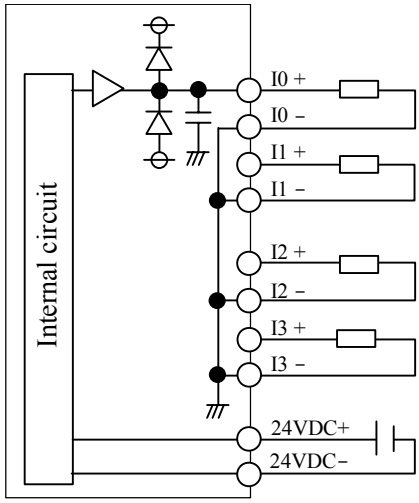
Internal circuit





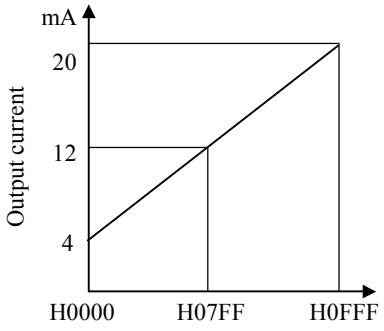
EH-AY4I	
No.	Signal name
[1]	I0 +
[2]	I1 +
[3]	I2 +
[4]	I3 +
[5]	N.C.
[6]	N.C.
[7]	N.C.
[8]	N.C.
[9]	24 VDC +
[10]	I0 −
[11]	I1 −
[12]	I2 −
[13]	I3 −
[14]	N.C.
[15]	N.C.
[16]	N.C.
[17]	N.C.
[18]	24 VDC −

Internal circuit

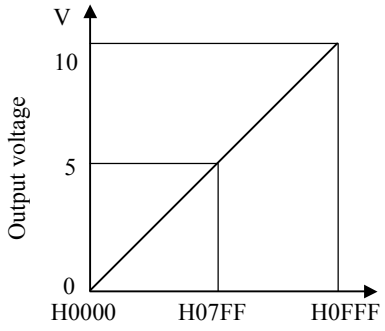


Support for analog data and digital data

EH-AY22, EH-AY4I



EH-AY22, EH-AY4V



EH-AY2H, EH-AY4H