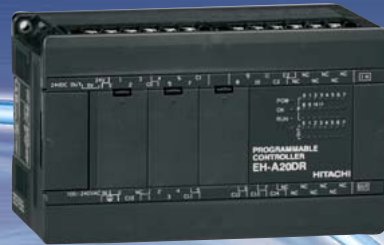


HITACHI
Inspire the Next

MICRO-EH

PROGRAMMABLE CONTROLLER



MICRO-EH



Hitachi's MICRO-EH Series PLC Delivers Various Useful Functions for Small Automation Processes!

"MICRO-EH is an all-in-one type PLC packed with powerful functions."

Functionality



MICRO-EH 20-point type
EH-A20*/D20*****
 ● Input 12 points Output 8 points (Max. 276 points with expansion units)
 ● 16k steps of program memory
 ● 32k words of data memory(WR)
 ● Optional battery for data memory back-up
 ● Size: W150 mm x H90 mm x D76 mm
 ● Max. 100kHz High speed counter
 ● Max. 65kHz Pulse train output / PWM output
 ● Option board (RS-232C,RS-422/485,USB,Memory)
 ● PID function
 ● Real-time clock for event scheduling



MICRO-EH 23-point type
EH-A23*/D23*****
 ● 2 analog inputs and 1 analog output as standard
 ● Up to 32 displays can be connected via RS-422/485 serial communication
 ● Input 13 points Output 10 points (Max. 279 points with expansion units)
 ● 16k steps of program memory
 ● 32k words of data memory(WR)
 ● Optional battery for data memory back-up
 ● Real-time clock for event scheduling
 ● Size: W150 mm x H90 mm x D76 mm



MICRO-EH 28-point type
EH-A28*/D28*****
 ● Input 16 points Output 12 points (Max. 284 points with expansion units)
 ● 16k steps of program memory
 ● 32k words of data memory(WR)
 ● Up to 32 displays can be connected via RS-422/485 serial communication
 ● Optional battery for data memory back-up
 ● Real-time clock for event scheduling
 ● Size: W150 mm x H90 mm x D76 mm



MICRO-EH 40-point type
EH-A40*/D40*****
 ● Input 24 points Output 16 points (Max. 296 points with expansion units)
 ● 16k steps of program memory
 ● 32k words of data memory(WR)
 ● Optional battery for data memory back-up
 ● Size: W150 mm x H90 mm x D76 mm
 ● Max. 100kHz High speed counter
 ● Max. 65kHz Pulse train output / PWM output
 ● Option board (RS-232C,RS-422/485,USB,Memory)
 ● PID function
 ● Real-time clock for event scheduling



MICRO-EH 64-point type
EH-A64*/D64*****
 ● Input 40 points Output 24 points (Max. 320 points with expansion units)
 ● 16k steps of program memory
 ● 32k words of data memory(WR)
 ● Optional battery for data memory back-up
 ● Size: W195 mm x H90 mm x D76 mm
 ● Max. 100kHz High speed counter
 ● Max. 65kHz Pulse train output / PWM output
 ● Option board (RS-232C,RS-422/485,USB,Memory)
 ● PID function
 ● Real-time clock for event scheduling

High Performance in a Small Size

- 12-bit analog input/output (23-point type)
- Two built-in potentiometers (except for 10-point type)
- Built-in high-speed counter (10/14/23/28-point type :10kHz, 20/40/64-point type :100kHz)
- PWM and pulse train output (MICRO-EH with DC output)
- Maximum 176 I/O points (64-point type x 1 + 28-point expansion unit x 4)
- Flash memory for storing user programs - user program is retained without battery
- Battery for data memory back-up (20/23/28/40/64-point type)
- Built-in real-time clock (20/23/28/40/64-point type)
- Digital filter
- Power supply for sensors

User-friendliness

- Removable terminals for easy set-up (except for 10-point type)
- Easy installation by snapping on a DIN rail or screwing onto a panel
- Easy-to-see terminal layout indication

Compatibility with H/EH series PLC

Same programming software for utilization of valuable existing user programs

Conformity to Global Standards

CE, UL, c-UL and C-Tick approvals

Network Compatibility

- RS-232C port standard
- RS-422/485 port as standard for 23/28-point type (up to 32 units connectable)

Environmental Friendliness

- Laser marking for elimination of sticker type nameplates
- ABS material for easy recycling
- Battery-less operation for waste reduction

New release

- 23/28-point type: Extension of program capacity (3k steps→15.7k steps). Extension of data memory capacity (4,096 words→32,768 words).
- Thermocouple expansion unit.
- 64 points expansion unit.
- Positioning expansion unit.



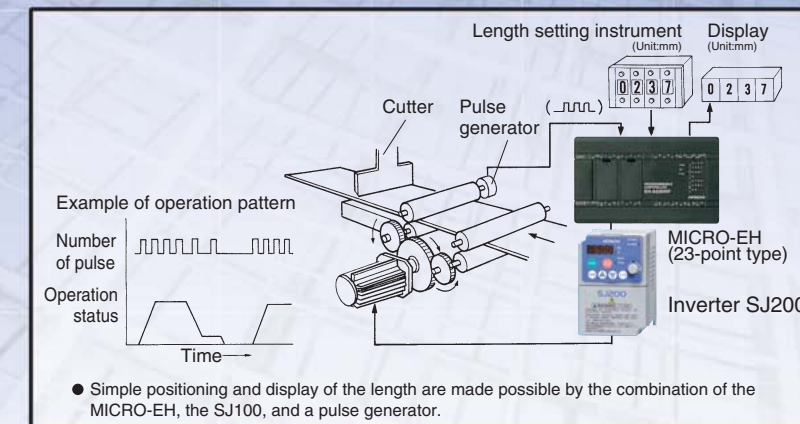
MICRO-EH 14-point type
EH-A14*/D14*****
 ● Input 8 points Output 6 points (Max. 270 points with expansion units)
 ● 3k steps of program memory
 ● Size: W95 mm x H90 mm x D76 mm



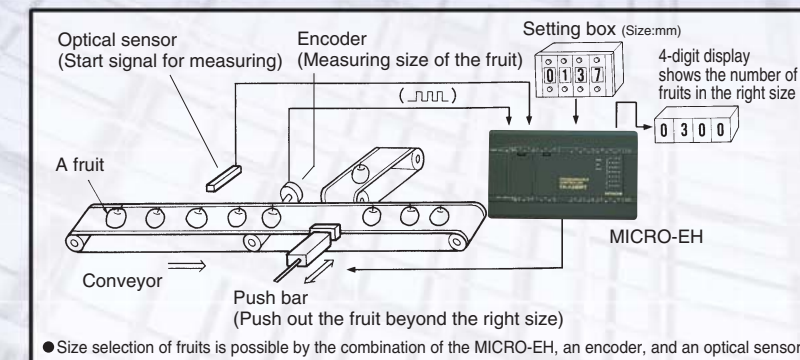
Smallest MICRO-EH 10-point type
EH-D10**
 ● Input 6 points Output 4 points (Not expandable)
 ● Easily mounted on machines or other equipment thanks to its small size (D:47 mm)
 ● Size: W75 mm x H90 mm x D47 mm
 ● Max. 3k steps of program memory even with 10-point type

Application Examples

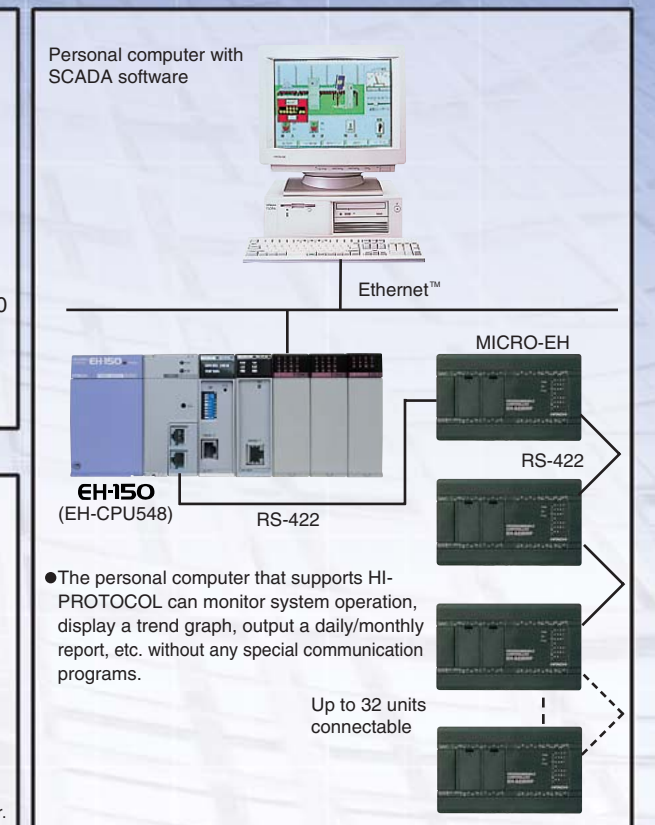
Machine Control: Simple positioning control for Cutting Machine



Line Control: Fruit Size Selection



Network Control: Monitoring System with SCADA software



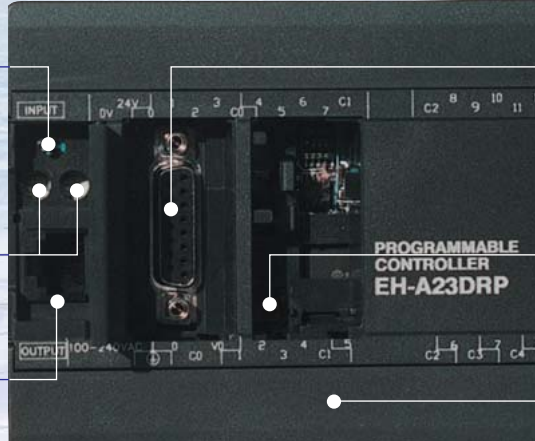
FEATURES

High Performance in a Small Size

RUN/STOP Switch

Potentiometers

RS-232C Port



RS-422/485 Port

(20/40/64-point type is supported by option board)

Connector for Battery

Removable Terminals

12-bit analog input/output (23-point type)

23-point type has 2 analog inputs and 1 analog output as standard.

This feature makes it possible for 23-point type to be connected directly with various sensors and actuators without adding any analog input /output modules.

Either voltage or current can be selected at each point.

[Input: 0-10 V or 0-20 mA, Output: 0-10 V or 0-20 mA]



This feature can be applied to a pump system for reservoirs using water level sensors.



Two built-in potentiometers (except for 10-point and 20/40/64-point type)

Timer constant value can be easily changed using these potentiometers even if you do not have a programming device.

Values set by the potentiometers are always reflected in the special internal output. Smoothing is possible for these values.

[The value of the potentiometer 1 and 2 are stored in WRF03E and WRF03F respectively.]

[Smoothing: to average the value that varies with time by dividing the specified value.]

[The timer value must be set by a variable in advance.]



With these potentiometers, operation interval can be tuned easily.



Potentiometers

The FLASH memory which protects a user's program

FLASH memory for backup of a user's program.

The user program is stored in FLASH memory so that the user program can be retained in case the battery goes dead.

If user program are changed frequently, the lifetime of FLASH memory will be shorter.

3 Please refer to the application manual about the times over writing to FLASH memory.

Built-in high-speed counter

A high-speed counter is provided as standard eliminating the need for an additional counter module for high-speed applications. 14/23/28-point type with DC input can count up to 1-phase 4 channels.

14/23/28-point type: Max.10kHz

20/40/64-point: Max.100kHz

Select one mode from:

1-ph 4ch, 2ph 2ch, or 2-ph 1ch+1-ph 2ch [20/40/64-point]

1-ph 4ch, 1-ph 2ch, or 2-ph 1ch + 1-ph 1ch [14-/23-/28-point]

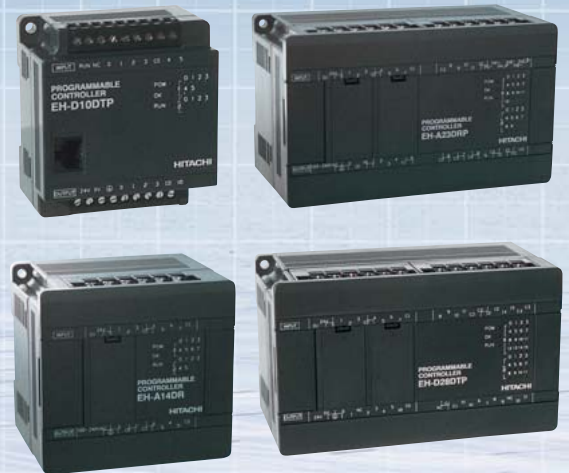
1-ph 3ch, 1-ph 2ch, or 2-ph 1ch [10-point]

By taking input directly from an external encoder, the position of the object being controlled can be detected.

[The functions that can be used (pulse train, PWM, interruption input, etc.) vary in each mode.]



This feature can be applied to the detection of the position of objects on various assembly, processing, and testing lines.



PWM and pulse train output (MICRO-EH with DC output)

PWM output is provided as standard.



Temperature control and light brightness control are possible by modulating the pulse width.

10/14/23/28-point: up to 2kHz 20/40/64-point: up to 65kHz

Pulsetrain output is also provided as standard



Simple positioning control, fine tuning of conveyor's moving distance, etc. are possible by pulse train output with acceleration/deceleration function.

10/14/23/28-point: Max.5kHz 20/40/64-point: Max.65kHz



NEW

Maximum 320 I/O points (64-point type x1 + 64-point expansion unit x4)

Up to 4 expansion units can be connected.

(except for 10-point type)

Cable length is up to 2 meters in total.



Flash memory for storing user programs

To protect valuable programs from being erased during power failure, the MICRO-EH contains flash memory for storing user programs.

Battery for data memory back-up (20/23/28/40/64-point type)

An optional battery is mountable for data memory back-up.

Power supply for sensors (14/20/23/28/40/64-point type and 14/28-point expansion unit)

The 24V terminal at the input terminal block can supply current to external equipment.

[When this power is used as the power supply for the input part of the MICRO-EH, the remaining power can be used for sensors.]

Built-in real-time clock (20/23/28/40/64-point type)

A real-time clock is provided as standard (20/23/28/40/64-point type) for event scheduling.

Digital filter

Filtering delay time can be adjusted to eliminate chattering. It can be set between 0 and 20 ms in units of 0.5 ms.

User-friendliness

Removable terminals for easy set up (except for 10-point type)

Replacement of the MICRO-EH can be accomplished in a fraction of the time.

Easy installation by snapping on a DIN rail or screwing onto a panel

Terminal protective covers are hinged and can stay open for easy wiring.
Terminal layout indication on the front panel can be read even when the protective covers are open.



Compatibility with H/EH series PLC

Same programming software for utilization of valuable existing user programs -LADDER EDITOR for Windows®

[Pro-H (IEC61131-3) is also available.]

LADDER EDITOR for Windows®



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

Conformity to Global Standards

CE, UL, c-UL and C-Tick approvals



Please refer to P28-29 for details.

Network Compatibility

RS-232C port as standard (Port 1)

Communication speed can be selected from 4800, 9600, 19200, and 38400 bps.*¹

Modem control function is incorporated. (except for 10-point type)

* 1: Communication speed for 10-point type is fixed at 4800 bps.



By connecting the port 1 with a peripheral unit, the created programs can be transferred, the programs stored in the CPU can be read/verified, and CPU operating status can be monitored. In addition, a monitoring system that connects the display device, etc. can be configured.

RS-422/485 port as standard for 23/28-point type (port 2)

Either RS-422 or RS-485 can be selected by the connection wiring.



1:n station communication by HI-PROTOCOL is possible via the port 2*². By creating and including a control procedure based on HI-PROTOCOL on the personal computer that will become the host, it is then possible to control 32 units from one host.

* 2: When performing 1:n station communication using port 2, the transmission control procedure that can be used is restricted by the interface. Since transmission and reception are started up at the same time in transmission control procedure 2, it is not possible to perform communication with an RS-485 interface. The table shown right reflects the correspondence between transmission control procedure and interface.

		RS-422	RS-485
Transmission control procedure 1	1:1	Possible	Possible
	1:n	Possible	Possible
Transmission control procedure 2	1:1	Possible	Impossible
	1:n	Possible	Impossible

RS-232C Port



RS-422/485 Port

Option Communication board for 20/40/64-point type

With RS-232C or RS-422/485 or USB-232C conversion communication board communication port 2 can be used as a programming port or a general-purpose port.

Option Memory board for 20/40/64-point type

With Memory board, it can be used for backup of a user program etc.

Environmental Friendliness

Laser marking system is employed for the MICRO-EH series to eliminate sticker type nameplates. ABS material is used for outer case of the MICRO-EH for easy recycling. Battery-less operation with flash memory helps reduce waste.

SYSTEM CONFIGURATION

10-point Type

6 inputs and 4 outputs (not expandable)
10-point type MICRO-EH can be easily mounted on machines or equipment thanks to its small size (D:47 mm).



14/20/23/28/40/64-point Type

NEW Maximum 4 expansion units can be connected to each type.

- 14-point type: Maximum 168 inputs and 102 outputs (4 expansion units), 270 points in total
- 20-point type: Maximum 172 inputs and 104 outputs (4 expansion units), 276 points in total
- 23-point type: Maximum 173 inputs and 106 outputs (4 expansion units), 279 points in total
- 28-point type: Maximum 176 inputs and 108 outputs (4 expansion units), 284 points in total
- 40-point type: Maximum 184 inputs and 112 outputs (4 expansion units), 296 points in total
- 64-point type: Maximum 200 inputs and 120 outputs (4 expansion units), 320 points in total



Cable length: Max. 2 m in total

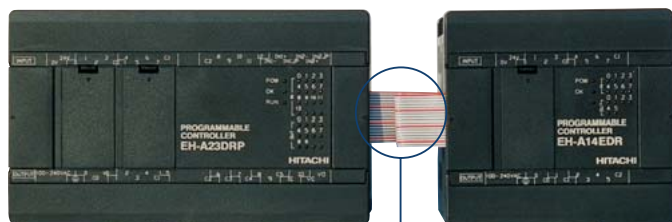


Photo (above) is a case of 14-point type expansion units

Three different lengths of expansion cable are available.

- EH-MCB01: For placement of an expansion unit next to a basic unit, 10 cm long
(1 piece of 10cm expansion cable is attached to each expansion unit.)
- EH-MCB05: For vertical arrangement of the MICRO-EH, 50 cm long
- EH-MCB10: For more flexible arrangement, 1m long

Maximum cable length between the basic unit and the expansion unit is 2 m.

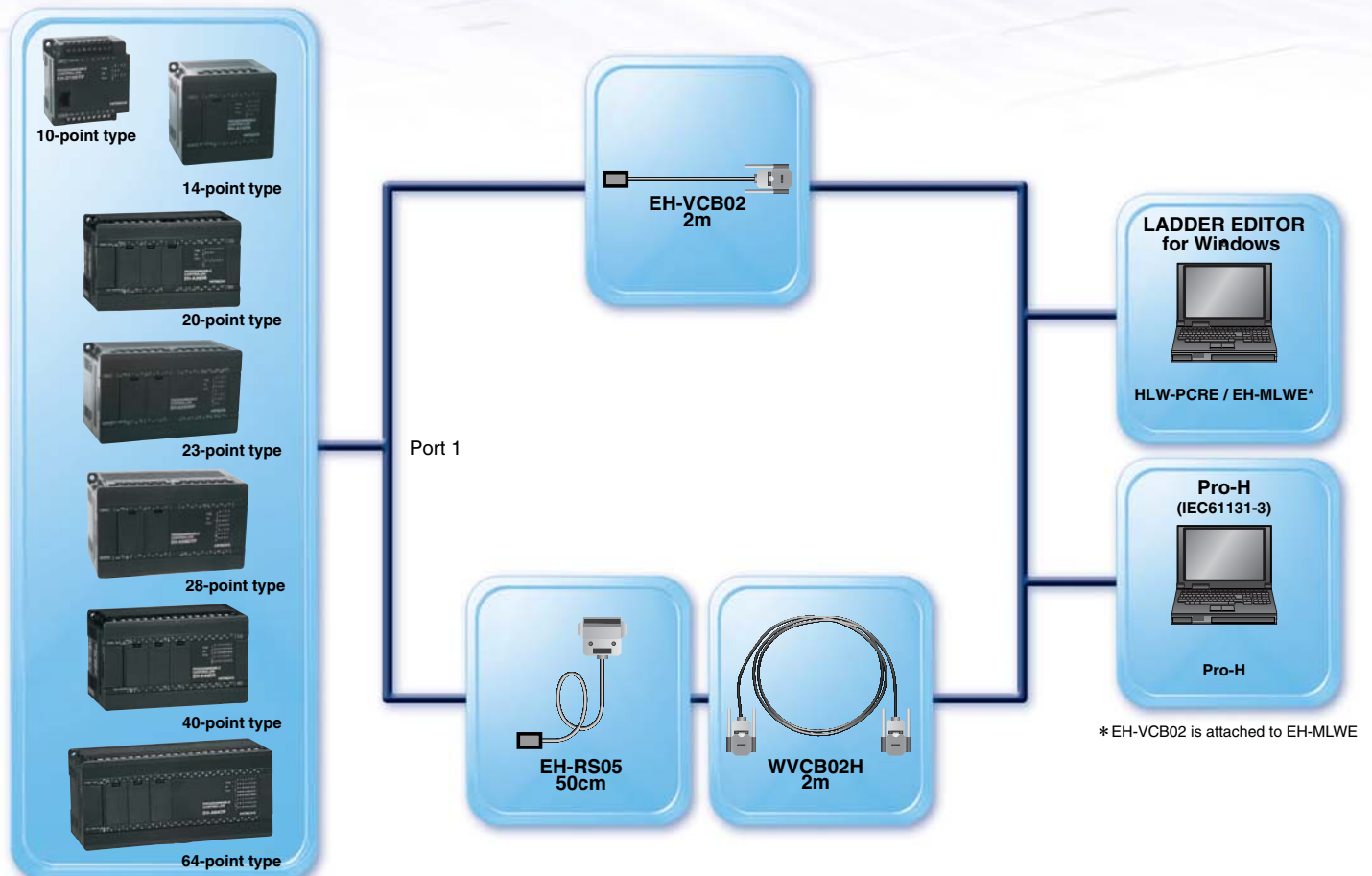
Functional Specifications

Item	10-point type	14-point type	20-point type	23-point type	28-point type	40-point type	64-point type
RS-232C port	1	1	1	1	1	1	1
RS-422/485 port	—	—	1(Optional)	1	1	1(Optional)	1(Optional)
High-speed counter	10kHz 1-phase 3ch, 1-phase 2ch or 2-phase 1ch	10kHz 1-phase 4ch, 1-phase 2ch or 2-phase 1ch + 1phase 1ch	100kHz 1-phase 4ch, 2-phase 2ch or 2-phase 1ch + 1phase 2ch	10kHz 1-phase 4ch, 1-phase 2ch or 2-phase 1ch + 1phase 1ch		100kHz 1-phase 4ch, 2-phase 2ch or 2-phase 1ch + 1phase 2ch	
Interruption input	3 points		4 points				
PWM output	2kHz (in total)		65kHz (each channel)	2kHz (in total)		65kHz (each channel)	65kHz (each channel)
Pulse train	5kHz (in total)		65kHz (each channel)	5kHz (in total)		65kHz (each channel)	65kHz (each channel)
Analog input	8-bit : 1ch *1	—	—	12bit:2ch(0-10V or 0-20mA)	—	—	—
Analog output	—	—	—	12bit:1ch(0-10V or 0-20mA)	—	—	—
Potentiometer	—	10-bit : 2ch	—	10-bit : 2ch		—	—
Battery(optional)	—	—	EH-MBATL	EH-MBAT or EH-MBATLC		EH-MBATL	
Real-time clock	—	—	Yes	Yes	Yes	Yes	Yes
Digital filter	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Power source	AC100/200V	No	Yes	Yes	Yes	Yes	Yes
	DC24V	Yes	Yes	Yes	Yes	Yes	Yes
Input	DC	Yes	Yes	Yes	Yes	Yes	Yes
	AC	No	Yes	No	No	Yes	No
Output	TR DC24V	Yes	Yes	Yes	Yes	Yes	Yes
	RY	Yes	Yes	Yes	Yes	Yes	Yes
	SSR	No	Yes	No	No	Yes	No
Positioning expansion	No	No	Yes	Yes	Yes	Yes	Yes

※1 : EH-D10DRA only

CONNECTION WITH PERIPHERAL EQUIPMENT

MICRO-EH



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

New release of 20/40/64-point type

**Built-in high-speed counter (4ch Max.100kHz 32bits) as standard.
MICRO-EH 20/40/64-point type.**

20/40/64-point unit

I/O points is up

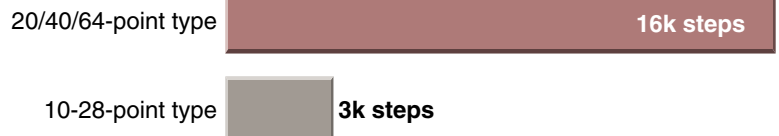
20-point type : Input 12 points, Output 8 points
40-point type : Input 24 points, Output 16 points
64-point type : Input 40 points, Output 24 points



User program memory, Data memory is up.

Program capacity is extended to 16k steps, and data memory capacity is extended to 32k words, which enables 64-point type to support middle range

User program memory



Data memory



New FUN commands

54 kinds of commands are added. The added FUN commands are a data conversion command, a floating point arithmetic, etc.

4ch, 100kHz, 32 bits high-speed counter

The counter of 20/40/64-point type can support up to 100kHz(single phase) or 60kHz (2-phase) pulses. The 16-bit counter is extended to the 32-bit counter.

1-phase

20/40/64-point type	100kHz 32 bits
10-28-point type	10kHz 16 bits

2-phase

20/40/64-point type	60kHz 32 bits
10-28-point type	10kHz 16 bits

Pulse train output

A pulse output with an output frequency of 65kHz is possible for 20/40/64-point type. Moreover, the number of output pulses can be set up by 32 bits.

Pulse train output

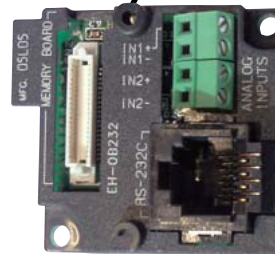
20/40/64-point type	65kHz 32 bits (each channel)
10-28-point type	5kHz (total) 16 bits

PWM output

20/40/64-point type	65kHz (each channel)
10-28-point type	2kHz (total)

Selectable option boards

A function is expandable by attaching an option board in a basic unit. With RS-232C or RS-422/485 or USB-232C conversion communication board, communication port 2 can be used as an programming port or a general-purpose port. With Memory board, it can be used for backup of a user program etc. A communication board and a memory board can be used together.



232C board



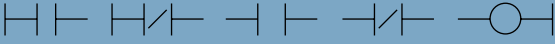
Memory board

PID function

PID function is supported by 20/40/64-point unit.

PRODUCT SPECIFICATIONS

10/14/23/28-point type CPU Specifications

Model	Name	10-point type	14-point type	23-point type	28-point type		
Control specifications	CPU	32-bit RISC processor					
	Processing system	Stored program cyclic system					
	Processing speed	Basic instructions	0.9 μ s / instruction				
		Application instructions	Several 10 μ s / instruction				
User program memory		3 k steps max. (FLASH memory)	16 k steps max. (FLASH memory)				
Operation processing specifications	Instruction language	Basic instructions	39 types such as LD, LDI, AND, ANI, OR, ORI, ANB, ORB, OUT, MPS, MRD, MPP, etc.				
		Arithmetic instructions Application instructions	62 types (arithmetic, application, control, FUN command etc.)				
	Ladder	Basic instructions	39 types such as 				
		Arithmetic instructions Application instructions	62 types (arithmetic, application, control, FUN command etc.)				
I/O processing specifications	External I/O	I/O processing system	Refresh processing				
		Maximum number of points	10 points	126 points	135 points	140 points	
	Internal output	Bit	1,984 points (R0 to R7BF)				
		Word	4,096 words (WR0 to WRFFF)		32,768 words (WR0 to WR7FFF)		
		Special	Bit	64 points (R7C0 to R7FF)			
			Word	512 words (WRF000 to WRF1FF)			
	Timer counter	Bit/word shared	16,384 points, 1,024 words (M0 to M3FFF, WM0 to WM3FF)				
		Number of points	256 points (TD + CU) *1				
		Timer set value	0 to 65,535, timer base 0.01 s, 0.1 s, 1 s (0.01s has maximum 64 points *2)				
		Counter set value	1 to 65,535 times				
Edge detection		512 points (DIF0 to DIF511: Decimal) + 512 points (DFN0 to DFN511: Decimal)					
Peripheral equipment	Program system	Instruction language, ladder diagram					
	Peripheral unit	Programming software (LADDER EDITOR DOS version/Windows® version, Pro-H) Instruction language programmer and form graphic display programmer cannot be used.					
Maintenance functions	Self-diagnosis	PLC error (LED display): Microcomputer error, watchdog timer error, memory error, program error, system ROM/RAM error, scan time monitoring, battery voltage low detection, etc.					

*1: The same numbers cannot be used with the timer counter.

*2: Only timers numbered 0 to 63 can use 0.01 s for their timer base.

10/14/23/28-point type Input/Output Specifications



Input/Output specification and points of Basic unit (○number corresponds to the number of table of specification.)

Type	Model Name	Power		Input	Input Point		Output	Output Point							
		24V DC	100/200V AC		24V DC	100/200V AC		Relay Output	Transistor Output		Transistor Output (source ESCP)		Transistor Output(source)	SSR	
									Low Current	High Current	Low Current	High Current			
(1)	(4)	(5)	(7)	(8)	(9)	(10)	(11)	(13)							
10 Points	EH-D10DT	○		24V DC x 6	6 (1)		Transistor x 4(sink)		4 (1)						
	EH-D10DTP	○		24V DC x 6	6 (1)		Transistor x 4(source)		4 (1)						
	EH-D10DR	○		24V DC x 6	6 (1)		Relay x 4	4 (1)							
14 Points	EH-D14DT	○		24V DC x 8	8 (2)[4,4]		Transistor x 6(sink)		4 (1)	2					
	EH-D14DTP	○		24V DC x 8	8 (2)[4,4]		Transistor x 6(source)		4 (1)	2					
	EH-D14DTPS	○		24V DC x 8	8 (2)[4,4]		Transistor (source ESCP) x 6				4 (1)	2			
	EH-D14DR	○		24V DC x 8	8 (2)[4,4]		Relay x 6	6 (3)[1,1,4]							
	EH-A14DR	○	○	24V DC x 8	8 (2)[4,4]		Relay x 6	6 (3)[1,1,4]							
	EH-A14AS		○	AC x 8		8 (2)[4,4]	SSR x 6								6 (2)[2,4]
23 Points	EH-D23DRP	○		24V DC x 13 Analog x 2(12bits)	13 (3) [4,4,5]		Relay x 9 Transistor x 1(source) Analog 1(12bits)	9 (5) [4,1,1,1,2]						1 (1)	
	EH-A23DRP		○	24V DC x 13 Analog x 2(12bits)	13 (3) [4,4,5]		Relay x 9 Transistor x 1(source) Analog 1(12bits)	9 (5) [5,1,1,1,2]						1 (1)	
	EH-A23DR		○	24V DC x 13 Analog x 2(12bits)	13 (3) [4,4,5]		Relay x 10 Analog 1(12bits)	10 (6) [1,4,1,1,1,2]							
28 points	EH-D28DT	○		24V DC x 16	16 (4) [4,4,4,4]		Transistor x 12(sink)		8 (2)[6,6]	4					
	EH-D28DTP	○		24V DC x 16	16 (4) [4,4,4,4]		Transistor x 12(source)		8 (2)[6,6]	4					
	EH-D28DTPS	○		24V DC x 16	16 (4) [4,4,4,4]		Transistor (source ESCP) x 12				8 (2)[6,6]	4			
	EH-D28DRP	○		24V DC x 16	16 (4) [4,4,4,4]		Relay x 11 Transistor x 1(source)	11 (6) [4,1,1,1,1,3]						1 (1)	
	EH-D28DR	○		24V DC x 16	16 (4) [4,4,4,4]		Relay x 12	12 (7) [1,4,1,1,1,1,3]							
	EH-A28DRP		○	24V DC x 16	16 (4) [4,4,4,4]		Relay x 11 Transistor x 1(source)	11 (6) [4,1,1,1,1,3]						1 (1)	
	EH-A28DR		○	24V DC x 16	16 (4) [4,4,4,4]		Relay x 12	12 (7) [1,4,1,1,1,1,3]							
	EH-A28AR		○	AC x 16		16 (4) [4,4,4,4]	Relay x 12	12 (7) [1,4,1,1,1,1,3]							
	EH-A28AS		○	AC x 16		16 (4) [4,4,4,4]	SSR x 12								12 (4) [2,4,2,4]

The value of (): number of common. The value of []:number of I/O points to each common.

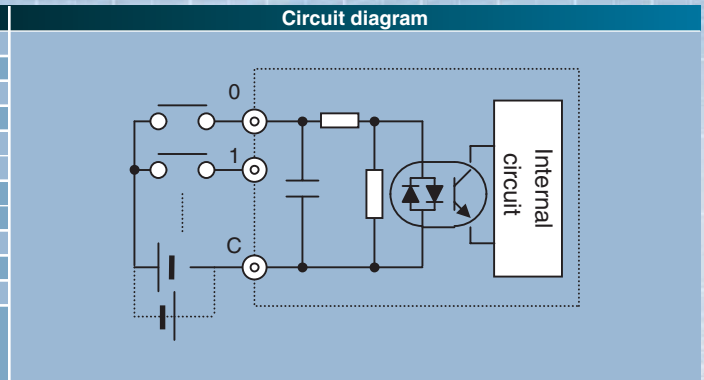
Input/Output specification and points of Expansion unit (○number corresponds to the number of table of specification.)

Type	Model Name	Power		Input	Input Point			Output	Output Point						
		24V DC	100/200V AC		24V DC 0.5ms less	24V DC 4msTYP	24V DC 2msTYP		Relay Output	Relay Output	Transistor Output(sink)	Transistor Output		Transistor Output (source ESCP)	
												Low Current	High Current	Low Current	High Current
(2)	(3)	(5)	(6)	(12)	(7)	(8)	(9)	(10)							
8 points	EH-D8EB	○		24V DC x 8			8 (2)[4,4]								
	EH-D8ER	○		-				Relay x 8	8 (2)[4,4]						
	EH-D8ETPS	○		-				Transistor (source ESCP) x 8					8 (1)		
	EH-D8ET	○		-				Transistor x 8(sink)		8 (1)					
	EH-D8EDR	○		24V DC x 4	4 (1)			Relay x 4	4 (3)[1,1,2]						
	EH-D8EDTPS	○		24V DC x 4	4 (1)			Transistor (source ESCP) x 4						2 (1)	2
14 points	EH-D8EDT	○		24V DC x 4	4 (1)			Transistor x 4(sink)				2 (1)	2		
	EH-D14EDT	○		24V DC x 8	8 (2)[4,4]			Transistor x 6(sink)				4 (1)	2		
	EH-D14EDTP	○		24V DC x 8	8 (2)[4,4]			Transistor x 6(source)				4 (1)	2		
	EH-D14EDTPS	○		24V DC x 8	8 (2)[4,4]			Transistor (source ESCP) x 6						4 (1)	2
	EH-D14EDR	○		24V DC x 8	8 (2)[4,4]			Relay x 6	6 (3)[1,1,4]						
16 points	EH-A14EDR		○	24V DC x 8	8 (2)[4,4]			Relay x 6	6 (3)[1,1,4]						
	EH-D16ED	○		24V DC x 16			16 (3)[4,4,8]								
	EH-D16ER	○		-				Relay x 16	16 (3)[4,4,8]						
	EH-D16ETPS	○		-				Transistor (source ESCP) x 16						16 (2)[10,6]	
28 points	EH-D16ET	○		-				Transistor x 16(sink)		16 (2)[10,6]					
	EH-D28EDT	○		24V DC x 16	16 (4) [4,4,4,4]			Transistor x 12(sink)				8 (2)[6,6]			
	EH-D28EDTP	○		24V DC x 16	16 (4) [4,4,4,4]			Transistor x 12(source)				8 (2)[6,6]			
	EH-D28EDTPS	○		24V DC x 16	16 (4) [4,4,4,4]			Transistor (source ESCP) x 12						8 (2)[6,6]	4
	EH-D28EDR	○		24V DC x 16	16 (4) [4,4,4,4]			Relay x 12	12 (7) [1,4,1,1,1,1,3]						
	EH-A28EDR		○	24V DC x 16	16 (4) [4,4,4,4]			Relay x 12	12 (7) [1,4,1,1,1,1,3]						

The value of (): number of common. The value of []:number of I/O points to each common.

① DC input (Basic units)

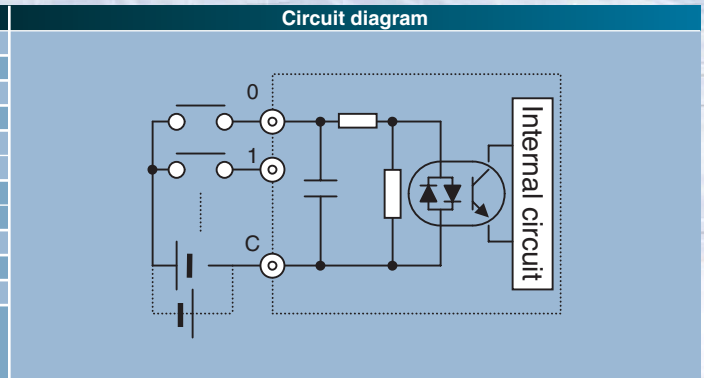
Item		Specification
Input voltage		24 V DC
Allowable input voltage range		0 to 30 V DC
Input impedance		Approx. 2.8 kΩ
Input current		Approx. 7.5 mA
Operating voltage	ON voltage	15 V DC (min) / 4.5 mA (max)
	OFF voltage	5 V DC (max) / 1.5 mA (max)
Input lag	OFF → ON	0.5 to 20 ms (configurable)
	ON → OFF	0.5 to 20 ms (configurable)
Polarity		None
Insulation system		Photocoupler insulation
Input display		LED (green)
External connection		10-point type: fixed type terminal block 14/23/28-point types: Removable type screw terminal block (M3)



*1: Common terminals are separated each other.

② DC input (Expansion units)

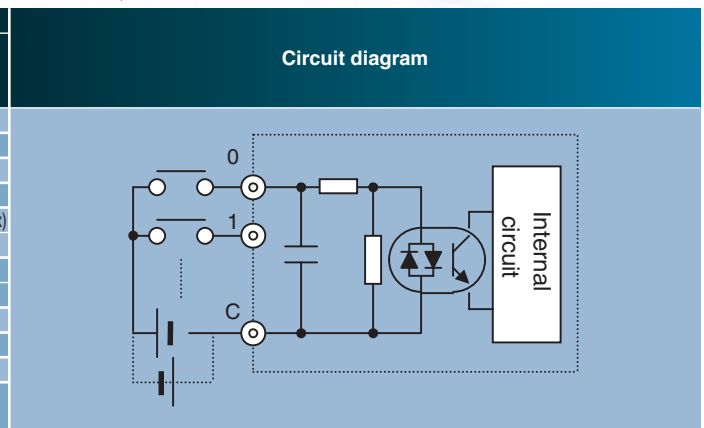
Item		Specification
Input voltage		24 V DC
Allowable input voltage range		0 to 30 V DC
Input impedance		Approx. 2.8 kΩ
Input current		Approx. 7.5 mA
Operating voltage	ON voltage	15 V DC (min) / 4.5 mA (max)
	OFF voltage	5 V DC (max) / 1.5 mA (max)
Input lag	OFF → ON	0.5 ms or less
	ON → OFF	0.5 ms or less
Polarity		None
Insulation system		Photocoupler insulation
Input display		LED (green)
External connection		10-point type: fixed type terminal block 14/23/28-point types: Removable type screw terminal block (M3)



*1: Common terminals are separated each other.

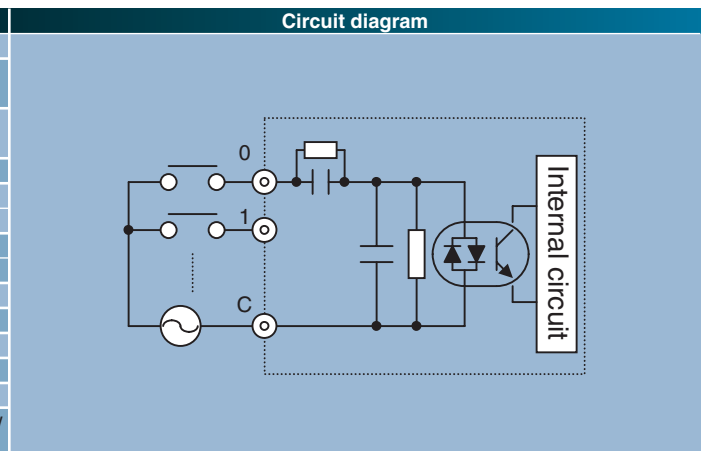
③ DC input (8points / 16points expansion units)

Item	Specification	
	EH-D8EDR EH-D8EDTPS EH-D8EDT	EH-D8ED EH-D16ED
Input voltage		24 V DC
Allowable input voltage range		0 to 30 V DC
Input impedance		Approx. 2.8 kΩ Approx. 4.8 kΩ
Input current		Approx. 7.5 mA Approx. 4.8 mA
Operating voltage	ON voltage	15 V DC (min) / 4.5 mA (max)
	OFF voltage	5 V DC (max) / 1.5 mA (max)
Input lag	OFF → ON	4ms (TYP) 2ms(TYP)
	ON → OFF	4ms (TYP) 2ms (TYP)
Polarity		None
Insulation system		Photocoupler insulation
Input display		LED (green)
External connection		Removable type screw terminal block (M3)



④ AC input

Item		Specification
Input voltage		100 to 120 V AC
Allowable input voltage range		85 to 132 V AC 50 -5 % to 60 +5 % Hz
Input impedance		Approx. 14.6 kΩ (60 Hz) Approx. 17.6 kΩ (50 Hz)
Input current		Approx. 7 mA RMS (100 V AC/60 Hz)
Operating voltage	ON voltage	80 V AC (min.) 4.5 mA
	OFF voltage	30 V AC (max.) 2 mA
Input lag	OFF → ON	25 ms (max.) *1
	ON → OFF	30 ms (max.) *1
Number of input points		See Chapter 4.
Number of common		See Chapter 4.
Polarity		None
Insulation system		Photocoupler insulation
Input display		LED (green)
External connection		14/28-point types: Removable type screw terminal block (M3)



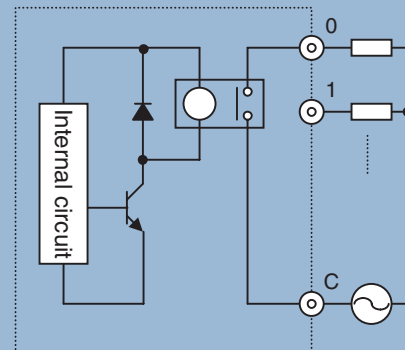
*1: Delay by hardware only. Delay by digital filter (software filter) 0.5 to 20 ms is not included.

*2: Common terminals are separated each other.

⑤ Relay output

Item	Specification
Rated load voltage	5 to 250 V AC, 5 to 30 V DC
Minimum switching current	10 mA
Leak current	15 mA or less
Maximum load current	1 circuit 1 common 2 A (24 V DC, 240 V AC) 5 A
Output response time	OFF → ON ON → OFF 15 ms (max) 15 ms (max)
Surge removing circuit	None
Fuse	None
Insulation system	Relay insulation
Output display	LED (green)
Externally supplied power (for driving the relays)	Not necessary
Contact life	20,000,000 times (mechanical) 200,000 times (electrical: 2 A)
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
External connection	Removable type screw terminal block (M3)

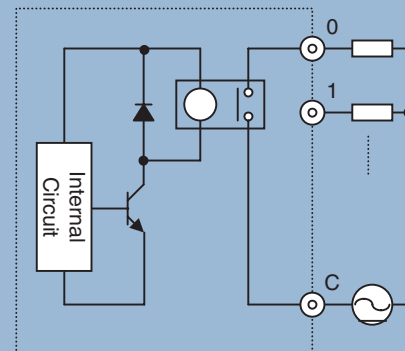
Circuit diagram



⑥ Relay output (8points / 16points expansion unit)

Item	Specification
Rated load voltage	5 to 250 V AC, 5 to 30 V DC
Minimum switching current	1 mA
Leak current	15 mA or less
Maximum load current	1 circuit 1 common 2 A (24 V DC, 240 V AC) 5 A
Output response time	OFF → ON ON → OFF 15 ms (max) 15 ms (max)
Surge removing circuit	None
Fuse	None
Insulation system	Relay insulation
Output display	LED (green)
Externally supplied power (for driving the relays)	Not necessary
Contact life	20,000,000 times (mechanical) 200,000 times (electrical: 1.5 A)
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
External connection	Removable type screw terminal block (M3)

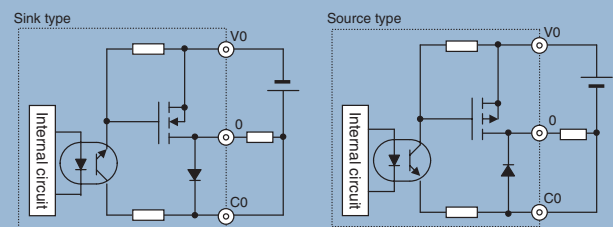
Circuit diagram



⑦ DC Transistor output: LCD-DC-Low Current

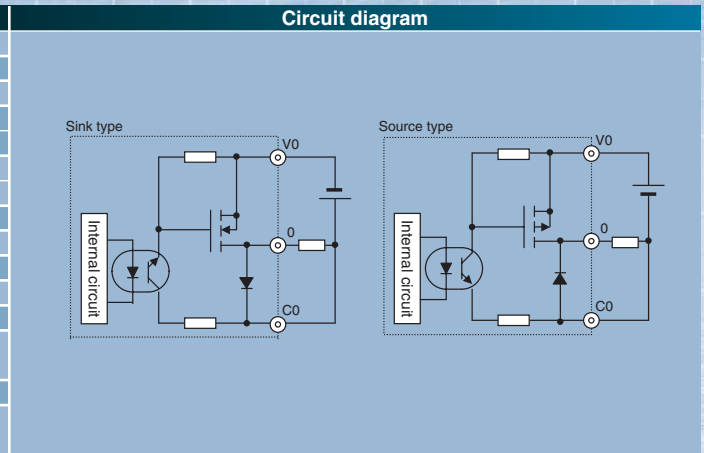
Item	Specification
Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	1 mA
Leak current	0.1 mA (max)
Maximum load current	1 circuit 1 common 0.75 A/24 V DC 0.5 A/12 V DC 3 A
Output response time	OFF → ON ON → OFF 0.1 ms (max) 24 V DC 0.2A 0.1 ms (max) 24 V DC 0.2A
Surge removing circuit	None
Fuse	None
Insulation system	Photocoupler insulation
Output display	LED (green)
Externally supplied power	30 to 12 V DC
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
Output voltage drop	0.3 V DC (max)
External connection	Removable type screw terminal block (M3)

Circuit diagram



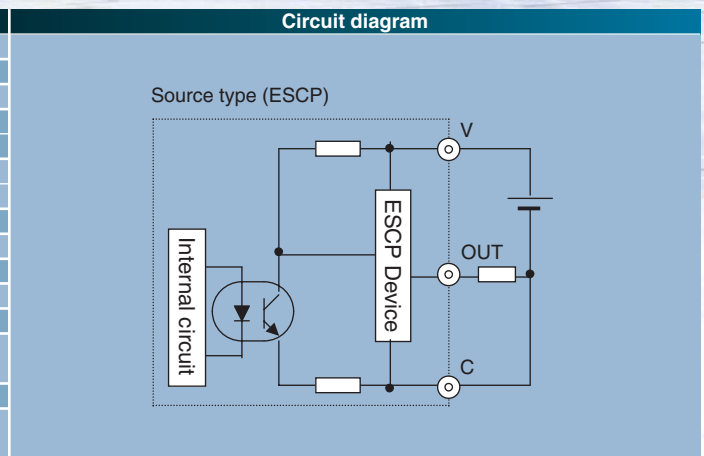
⑧ DC Transistor output: HCDC-High Current

Item	Specification
Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	1 mA
Leak current	0.1 mA (max)
Maximum load current	1 circuit 1 common 3 A
Output response time	OFF → ON ON → OFF 0.1 ms (max) 24 V DC 0.2A 0.1 ms (max) 24 V DC 0.2A
Surge removing circuit	None
Fuse	None
Insulation system	Photocoupler insulation
Output display	LED (green)
Externally supplied power	30 to 12 V DC
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
Output voltage drop	0.3 V DC (max)
External connection	Removable type screw terminal block (M3)



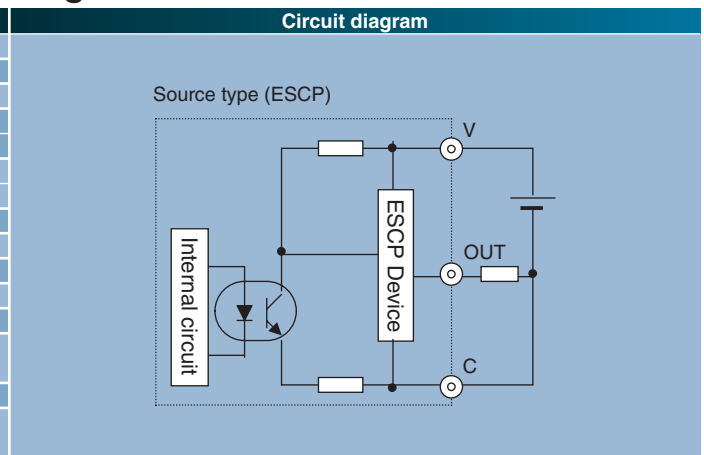
⑨ DC Transistor output (ESCP type): LCDC-Low Current

Item	Specification
Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	10 mA
Leak current	0.1 mA (max)
Maximum load current	1 circuit 1 common 3 A
Output response time	OFF → ON ON → OFF 0.5 ms (max) 24 V DC 0.2A 0.5 ms (max) 24 V DC 0.2A
Surge removing circuit	None
Fuse	None
Insulation system	Photocoupler insulation
Output display	LED (green)
Externally supplied power	30 to 12 V DC
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
Output voltage drop	0.3 V DC (max)
External connection	Removable type screw terminal block (M3)



⑩ DC Transistor output (ESCP type): HCDC-High Current

Item	Specification
Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	10 mA
Leak current	0.1 mA (max)
Maximum load current	1 circuit 1 common 3 A
Output response time	OFF → ON ON → OFF 0.05 ms (max) 24 V DC 0.2A 0.05 ms (max) 24 V DC 0.2A
Surge removing circuit	None
Fuse	None
Insulation system	Photocoupler insulation
Output display	LED (green)
Externally supplied power	30 to 12 V DC
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
Output voltage drop	0.3 V DC (max)
External connection	Removable type screw terminal block (M3)

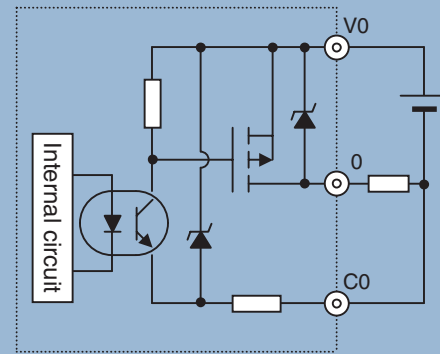


⑪ DC Transistor output (Source type)

Item	Specification
Rated load voltage	24 / 12 / 5 V DC 24 V DC +20 %, -80 %
Minimum switching current	1 mA
Leak current	0.1 mA (max)
Maximum load current	1 circuit
	1 common
Output response time	OFF → ON
	ON → OFF
Surge removing circuit	None
Fuse	None
Insulation system	Photocoupler insulation
Output display	LED (green)
Externally supplied power to V terminal	30 to 16 V DC
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
Output voltage drop	0.3 V DC (max)
External connection	Removable type screw terminal block (M3)

Circuit diagram

Source type

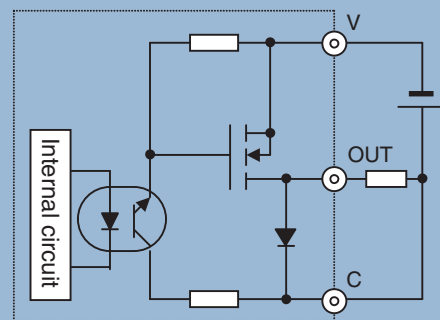


⑫ DC Transistor output

Item	Specification
Y100 output specifications	sink type
Rated load voltage	24VDC
Minimum switching current	1mA
Leak current	0.1 mA(MAX)
Maximum load current	1 circuit
	1 common
Output response time	OFF → ON
	ON → OFF
Surge removing circuit	None
Fuse	None
Insulation system	Photocoupler insulation
Output display	LED (green)
Externally supplied power (for the V terminal power supply)	12 to 30 V DC
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
Output voltage drop	0.3 V DC (max)
External connection	Removable type screw terminal block (M3)

Circuit diagram

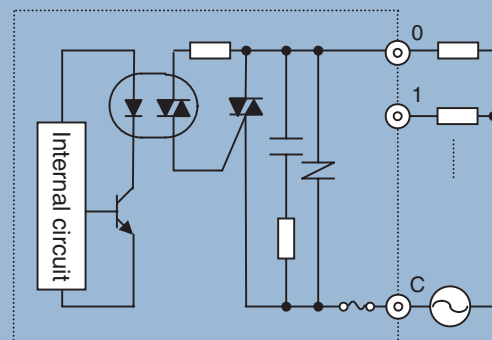
Sink type



⑬ AC output (SSR)

Item	Specification
Rated voltage	100/240 V AC
Output voltage	100 -15 % to 240 +10 % V AC
	50 -5 % to 60 +5 % Hz
Maximum load current	1 circuit
	1 common
Minimum load current	100 mA
Maximum leakage current	1.8 mA 115 V AC(max)
	3.5 mA 230 V AC(max)
Maximum inrush current	5 A (at 1 cycle or less)/point
	10 A (at 1 cycle or less)/common
Maximum delay time	OFF → ON
	ON → OFF
Insulation system	Phototriac insulation
Fuse *1	Used
Surge removing circuit	Sunabar circuit + varistor
Voltage drop	1.5 V RMS (max)
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
External connection	Removable terminal block (M3)

Circuit diagram

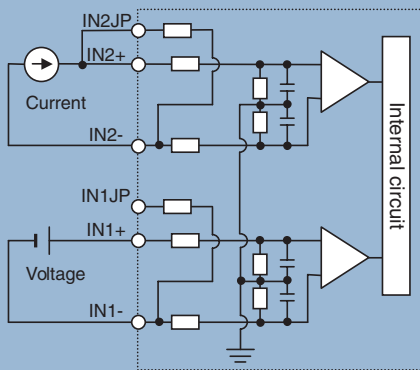


*1: It is necessary to repair the module if the load short-circuits and causes the fuse to melt.
Note that the fuse cannot be replaced by users.

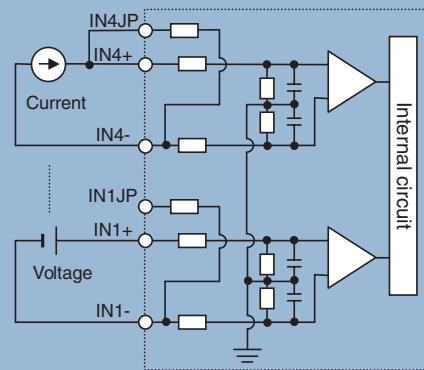
Analogue Input Specifications

Module type	23 points module	Analog expansion unit
Input channel	2 ch	4 ch
Input range	0-10 V (10.24V max.)	0-10V (10.24V max.)
	–	-10 to +10V ($\pm 10.24V$ max.)
	0-20 mA (20.48 mA max.)	0-20 mA (20.48 mA max.)
	–	4-20 mA (20.38 mA max.)
Resolution		12 bits
Accuracy		$\pm 1\%$ of full scale
Linearity		Max. ± 3 units
Current input impedance		Approx. 249 Ω
Voltage input impedance	Approx. 100 k Ω	Approx. 200 k Ω
Input delay time		20 ms
Channel to internal circuit insulation	Not insulated	Insulated
Channel-to-channel insulation		Not insulated

Circuit diagram (23 points type)



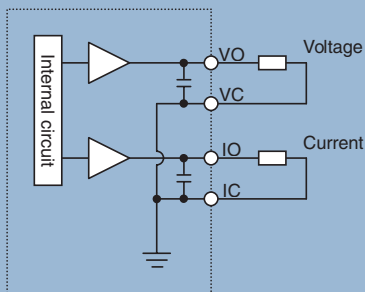
Circuit diagram (Analog expansion unit)



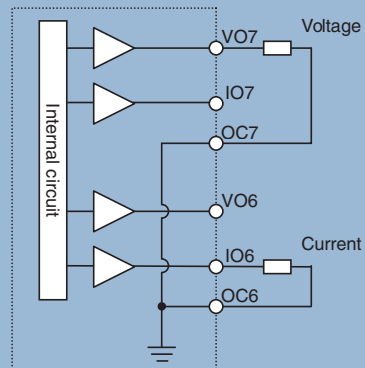
Analogue Output Specifications

Module type	23 points type module	Analog expansion unit
Output channel	1 ch	2 ch
Output range	0-10V (10.24V max.)	0-10V (10.24V max.)
	0-20mA (20.48mA max.)	0-20mA (20.48mA max.)
	–	4-20mA (20.38mA max.)
Resolution		12 bits
Accuracy		$\pm 1\%$ of full scale
Current output		
Allowable load		10 to 500 Ω
Output allowable capacity		Maximum 2,000 pF
Output allowable inductance		Maximum 1 H
Voltage output		
Allowable load		Minimum 10 k Ω
Output allowable impedance		Maximum 1 μF

Circuit diagram (23 points type)



Circuit diagram (Analog expansion unit)



High-Speed Counter Specifications

Available input		Single phase	Two phase
Input voltage	ON	X0, X2, X4, X6	X0 and X2 in pair
	OFF		
Count pulse width			15 V
Maximum count frequency			5 V
Count register			100 µs
Coincidence output			10 kHz each channel
On/Off-preset			16 bits
Upper/lower limit setting			Allowed
Preload/strobe			Allowed

Since 10 points type does not have input X6, counter channel is up to 3 ch.

PWM Output/Pulse Train Output Specifications

Available outputs	23-point and 28-point type Relay Output	10/14/28-point Transistor Output
Load voltage	Y100 (optional)	Y100-Y103 (optional)
Minimum load current	5/12/24 V	12/24 V
PWM max. output frequency *1		1 mA
Pulse train max. output frequency *1		2 kHz total
		5 kHz total

*1: Relay outputs cannot keep up with high frequencies; these outputs should be used at the operating frequency upon confirmation.

RTD Input Specifications

ITEM	Specifications	
No. of input channel	4	
RTD type supported	Pt100 (2 or 3 wire)	
Input Ranges	-100.0 °C to +600.0 °C -148.0 °F to +1,112.0 °F	
Input resolution	0.1 °C / 0.1 °F	
Accuracy	+/-0.5% of full scale over temp. range	
Error detection	Data H7FFF and LED blinking at below -110°C (-166°F) or beyond +610°C (+1,130°F). (including wire breaking or cable disconnection)	
Response time	141 ms	563 ms
Cable length (shielded)	100 m (Max.) *	

* Note : The max. cable length is 100m, however it depends on noise environment or other conditions.

Potentiometer Analogue Input Specifications


Number of potentiometer inputs	2
Input range	0-1023 (H0-H3FF)
Resolution	10 bits
Input filter	By user settings

Interrupt Input Specifications

Input that can be used	X1, X3, X5, X7 (by user settings)
Input voltage	ON 15 V
	OFF 5 V

20/40/64 points type Input/Output Specifications

20/40/64-point type CPU Specifications

Specification	Item	20/40/64-point type		
Control Spec.	CPU	32-bit RISC processor		
	Processing system	Stored program cyclic system		
	Processing Speed	Basic 0.9 μs / instruction		
	Application	Several 10 μs / instruction		
	User program memory	16 ksteps max. (FLASH memory)		
Operation Spec.	Instruction language	Basic instructions	39 types such as LD, LDI, AND, ANI, OR, ORI, ANB, ORB, OUT, MPS, MRD, MPP, etc.	
		Arithmetic instructions Application instructions	132 types (arithmetic, application, control, FUN command etc.)	
	Ladder	Basic	39 types such as 	
		Arithmetic instructions Application instructions	132 types (arithmetic, application, control, FUN command etc.)	
I/O processing Spec.	External I/O	I/O processing system	Refresh processing	
		Max. number of points	20-point type:132 points, 40-point type:152 points, 64-point type:176 points,	
	Internal output	Bit	1,984 points (R0 to R7BF)	
		Word	32,768 words (WR0 to WR7FFF)	
		Special	Bit	64 points (R7C0 to R7FF)
			Word	512 words (WRF000 to WRF1FF)
	Timer / counter	Bit/Word shared	16,384 points 1,024 words (M0 to M3FFF, WM0 to WM3FF)	
		Number of points	512 points (TD+CU) However, TD is up to 256 points *1	
		Timer set value	0 to 65,535, timer base 0.01 s, 0.1 s, 1 s (64 points are maximum for 0.01 s *2)	
		Counter set value	1 to 65,535 times	
	Edge detection	512 points (DIF0 to DIF511:decimal) + 512 points (DFN0 to DFN511:decimal)		
Peripheral equipment	Program system	Command language, ladder program		
	Peripheral unit	Programming software (LADDER EDITOR DOS version / Windows® version, Pro-H) Command language programmer, portable graphic programmer cannot be used.		
Maintenance functions	Self-diagnosis	PLC error (LED display): Microcomputer error, watchdog timer error, memory error, program error, system ROM/RAM error, scan time monitoring, battery voltage low detection, etc.		

*1 The same numbers cannot be shared by the timer and the counter. TD is 0 to 255.

*2 Only timers numbered 0 to 63 can use 0.01s for their time base.

20/40/64 points Basic unit Input/Output specification (○number corresponds to the number of table of spification.)

Type	Model Name	Power		Input	Input Point 24V DC	Output	Output Point				
		24V DC	100/200V AC				Relay Output ②	Transistor Output		Transistor Output (source ESCP)	
								③	④	Low Current ⑤	High Current ⑥
20 Points	EH-A20DR		○	DC 24V x 12	12 (3)[4,4,4]	Relay x 8 8 (5) [1,4,1,1,1]					
	EH-D20DR	○		DC 24V x 12	12 (3)[4,4,4]	Relay x 8 8 (5) [1,4,1,1,1]					
	EH-D20DT	○		DC 24V x 12	12 (3)[4,4,4]	Transistor x 8(sink) Transistor (source ESCP) x 8	4 (1)	4 (1)			
	EH-D20TTPS	○		DC 24V x 12	12 (3)[4,4,4]	Transistor x 8(sink) Transistor (source ESCP) x 8	4 (1)			4 (1)	
40 Points	EH-A40DR		○	DC 24V x 24	24 (2)[8,16]	Relay x 16 16 (6) [6,2,4,2,2,*1]					
	EH-D40DR	○		DC 24V x 24	24 (2)[8,16]	Relay x 16 16 (6) [6,2,4,2,2,*1]					
	EH-D40DT	○		DC 24V x 24	24 (2)[8,16]	Transistor x 16(sink) Transistor (source ESCP) x 16	4 (2)[4]*1	12 (2)[12]*1			
	EH-D40TTPS	○		DC 24V x 24	24 (2)[8,16]	Transistor x 16(sink) Transistor (source ESCP) x 16	4 (2)[4]*1			12 (2)[12]*1	
64 Points	EH-A64DR		○	DC 24V x 40	40 (2)[16,24]	Relay x 24 24 (9) [6,2,4,2,2,2,2,2]					
	EH-D64DR	○		DC 24V x 40	40 (2)[16,24]	Relay x 24 24 (9) [6,2,4,2,2,2,2,2]					
	EH-D64DT	○		DC 24V x 40	40 (2)[16,24]	Transistor x 24(sink) Transistor (source ESCP) x 24	4 (2)[4]*1	20 (6)[8,8,4]*1			
	EH-D64TTPS	○		DC 24V x 40	40 (2)[16,24]	Transistor x 24(sink) Transistor (source ESCP) x 24	4 (2)[4]*1			16 (4)[8,8]*1	4 (2)[4]*1

The value of () : number of common. The value of [] : number of I/O points to each common.

*1: Although it is two common to the number of outputs of each common, it connects inside.

64 points Expansion unit Input/Output specification (○number corresponds to the number of table of specification.)

Type	Model Name	Power		Input	Input Point 24V DC	Output	Output Point				
		24V DC	100/200V AC				Relay Output ⑧	Transistor Output		Transistor Output (source ESCP)	
								③	④	Low Current ⑤	High Current ⑥
64 Points	EH-A64EDR		○	DC 24V x 40	40 (2) [16,24]	Relay x 24 24 (9) [6,2,4,2,2,2,2,2]					
	EH-D64EDR	○		DC 24V x 40	40 (2) [16,24]	Relay x 24 24 (9) [6,2,4,2,2,2,2,2]					
	EH-D64EDT	○		DC 24V x 40	40 (2) [16,24]	Transistor x 24(sink) Transistor (source ESCP) x 24	4 (2)[4]*1	20 (6)[8,8,4]*1			
	EH-D64EDTPS	○		DC 24V x 40	40 (2) [16,24]	Transistor x 24(sink) Transistor (source ESCP) x 24	4 (2)[4]*1			16 (4)[8,8]*1	4 (2)[4]*1

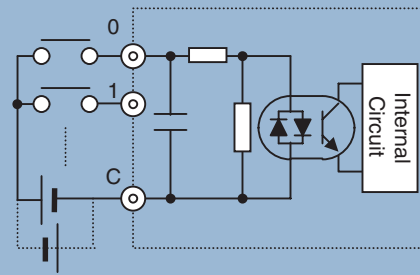
The value of () : number of common. The value of [] : number of I/O points to each common.

*1: Although it is two common to the number of outputs of each common, it connects inside.

① DC input

Item	Specification	
	X0, X2, X4, X6	Except the following
Input voltage	24V DC	
Allowable input voltage range	0 to 30V DC	
Input impedance	Approx.2.7 kΩ	Approx.4.7 kΩ
Input current	Approx.8 mA	Approx.4.8 mA
Operating voltage	ON voltage	18 VDC (min) / 4.5mA (max)
	OFF voltage	5 VDC (min) / 1.8mA (max)
Input lag	OFF → ON	2 to 20 ms (user setup is possible.)
	ON → OFF	2 to 20 ms (user setup is possible.)
Polarity	None	
Insulation system	Photocoupler insulation	
Input display	LED (Green)	
External connection	Removable type screw terminal block (M3)	

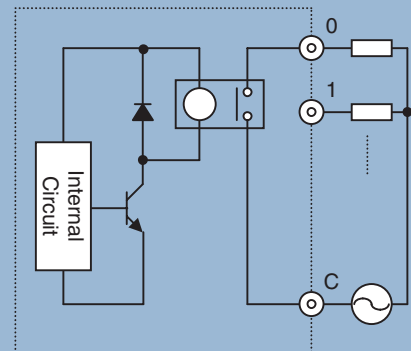
Internal Circuit



② Relay output

Item	Specification	
	Rated load voltage	5 to 250V AC, 5 to 30V DC
Minimum switching current	10 mA (5VDC)	
Maximum load current	1 circuit	2A (24V DC, 240V AC)
	1 common	5A
Output response time	OFF → ON	15 ms (max)
	ON → OFF	15 ms (max)
Surge removal circuit	None	
Fuse	None	
Insulation system	Relay insulation	
Output display	LED (Green)	
Externally supplied power (For driving relays)	Not used	
Contact life*1	20,000,000 times (mechanical)	
	200,000 times (electrical : 2A)	
Insulation	1,500V or more (external - internal) 500V or more (external - external)	
External connection	Removable type screw terminal block (M3)	

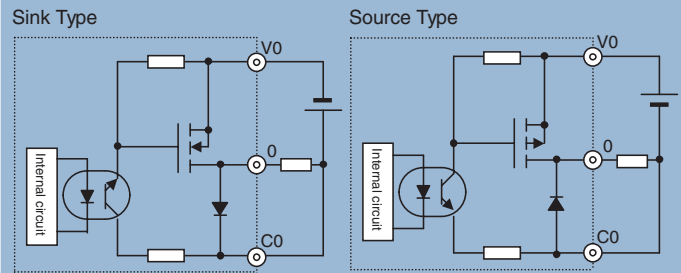
Internal Circuit



③ DC Transistor output

Item	Specification	
	Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	10mA	
Leak current	0.1 mA (max)	
Maximum load current	1 circuit	0.5 A/24 V DC 0.3 A/12 V DC
	1 common	2.0 A
Output response time	OFF → ON	5μs (max) /24 V DC 0.2A
	ON → OFF	5μs (max) /24 V DC 0.2A
Surge removing circuit	None	
Fuse	None	
Insulation system	Photocoupler insulation	
Output display	LED (green)	
Externally supplied power	12 to 30 V DC	
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)	
Output voltage drop	0.3 V DC (max)	
External connection	Removable type screw terminal block (M3)	

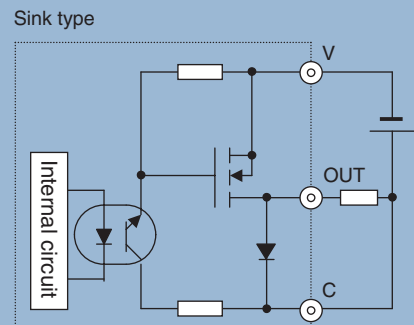
Circuit diagram



④ DC Transistor output

Item	Specification	
	Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	10 mA	
Leak current	0.1 mA (max)	
Maximum load current	1 circuit	0.5 A
	1 common	64-point type : 3 A, 40-point type : 5 A, 20-point type : 2 A,
Output response time	OFF → ON	0.1 ms (max) 24 V DC 0.2A
	ON → OFF	0.1 ms (max) 24 V DC 0.2A
Surge removing circuit	None	
Fuse	None	
Insulation system	Photocoupler insulation	
Output display	LED (green)	
Externally supplied power	12 to 30 V DC	
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)	
Output voltage drop	0.3 V DC (max)	
External connection	Removable type screw terminal block (M3)	

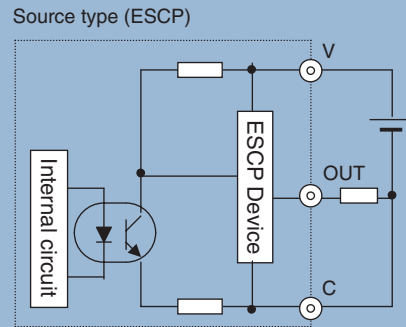
Circuit diagram



⑤ DC Transistor output (ESCP type) ... LCDC-Low Current

Item	Specification
Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	10 mA
Leak current	0.1 mA (max)
Maximum load current	1 circuit 1 common 0.7 A
Output response time	OFF → ON ON → OFF 0.5 ms (max)/24 V DC 0.5 ms (max)/24 V DC
Number of output points	16 pts. (Refer to terminal arrangement and wiring)
Number of common	2 pts. (Refer to terminal arrangement and wiring)
Surge removing circuit	None
Fuse	None
Insulation system	Photocoupler insulation
Output display	LED (green)
Externally supplied power	12 to 30 V DC
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
Output voltage drop	0.3 V DC (max)
External connection	Removable type screw terminal block (M3)

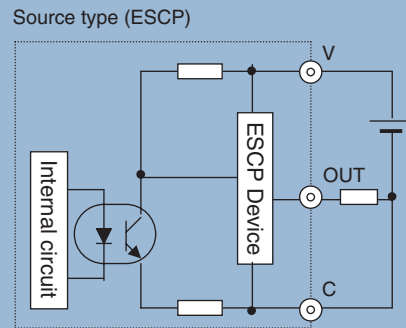
Circuit diagram



⑥ DC Transistor output (ESCP type) ... HCDC-High Current

Item	Specification
Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	10 mA
Leak current	0.1 mA (max)
Maximum load current	1 circuit 1 common 1.0 A 3.0 A
Output response time	OFF → ON ON → OFF 0.5 ms (max)/24 V DC 0.5 ms (max)/24 V DC
Surge removing circuit	None
Fuse	None
Insulation system	Photocoupler insulation
Output display	LED (green)
Externally supplied power	12 to 30 V DC
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
Output voltage drop	0.3 V DC (max)
External connection	Removable type screw terminal block (M3)

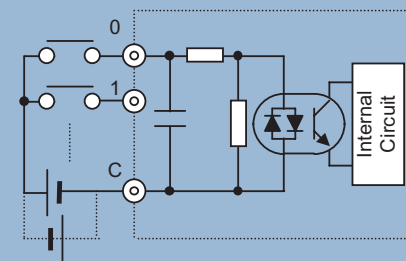
Circuit diagram



⑦ DC input (64 points expansion unit)

Item	Specification	
	X0, X2, X4, X6	Except the left
Input voltage	24V DC	
Allowable input voltage range	0 to 30V DC	
Input impedance	Approximately 2.7 k Ω	Approximately 4.7 k Ω
Input current	8 mA typical	4.8 mA typical
Operating voltage	ON voltage	18 VDC (min) / 4.5mA (max)
	OFF voltage	5 VDC (min) / 1.8mA (max)
Input lag	OFF → ON	2 ms or less
	ON → OFF	2 ms or less
Polarity	None	
Insulation system	Photocoupler insulation	
External connection	Removable type screw terminal block (M3)	

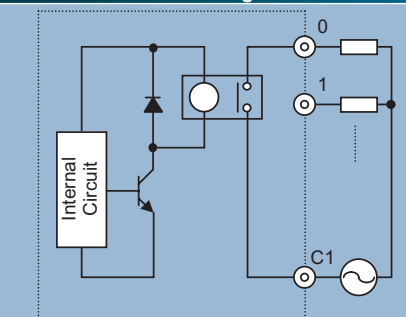
Circuit diagram



⑧ Relay output (64 points expansion unit)

Item	Specification
Rated load voltage	5 to 250V AC, 5 to 30V DC
Maximum load current	1 circuit 1 common 2A (24V DC, 240V AC)
Output response time	OFF → ON ON → OFF 15 ms (max) 15 ms (max)
Surge removing circuit	None
Fuse	None
Insulation system	Relay insulation
External connection	Removable type screw terminal block (M3)
Contact life	20,000,000 times (mechanical) 200,000 times (electrical : 1.5A)
Insulation	1500V or more (external - internal) 500V or more (external - external)

Circuit diagram



High speed counter

Item	Single	2-phase
Choices for counter input channels	X0, X2, X4, X6	Use X0 and X2 in pair / Use X4 and X6 in pair
Input voltage	ON	18 V
	OFF	5 V
Width of count pulse	10 μ s	17 μ s
Maximum count frequency	100 kHz	60 kHz
Count register	16 bits / 32 bits (depend on operation mode)	
Coincidence output	Possible (or assigned as standard output)	
ON / OFF preset	Possible (or assigned as standard output)	
Upper / lower limit setting	Impossible (16 bits counter : ring counter ... 0 to 65,535) (32 bits counter : ring counter ... 0 to 4,294,967,295)	
Pre-load / Strobe	Possible (or assigned as standard input)	

Pulse train output / PWM output

Item	Specification
Available outputs	Y100-Y103 (optional)
Load voltage	12 / 24 V
Minimum load current	1 mA
PWM max. output frequency	each channel 65,535 Hz
Pulse train max. output frequency	each channel 65,535 Hz

* : Please do not use a relay output type as a pulse output.

Interrupt Input Specifications

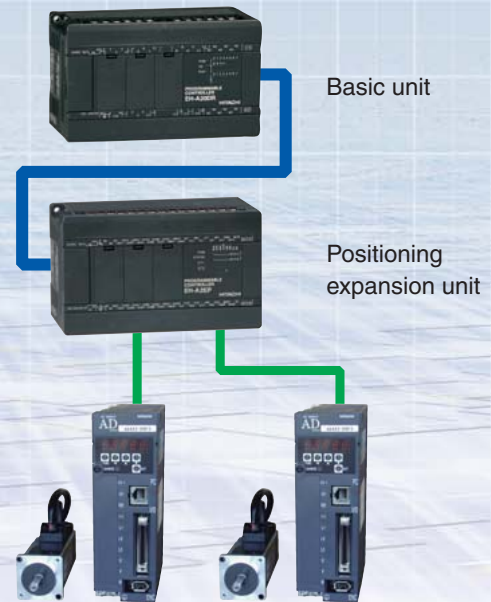
Input that can be used	X1, X3, X5, X7 (by user settings)	
Input voltage	ON	18 V
	OFF	5 V

Positioning expansion unit

Features

- Positioning control or speed control is enabled by pulse train output (max. 2Mpps) if the stepping motor or servo is connected.
- 2-axes can be controlled in one positioning expansion unit. There is no interpolation function.
- 2 positioning expansion units can be connected to one basic unit. Combination other expansion unit is also possible.
- Operating information that can store with 2 axes is 256 data. For these operating information, max. 499 continuing operations in one axis.
- Modbus RTU is used for the communication protocol. The positioning expansion unit can work without a basic unit using communication of modbus RTU.
- The tool to be able to set various parameters easily was prepared.

Note : Positioning expansion unit is supported by 20/23/28/40/64 basic unit.
Basic unit produced before March 2008 cannot be used for expansion unit.



Functional specifications

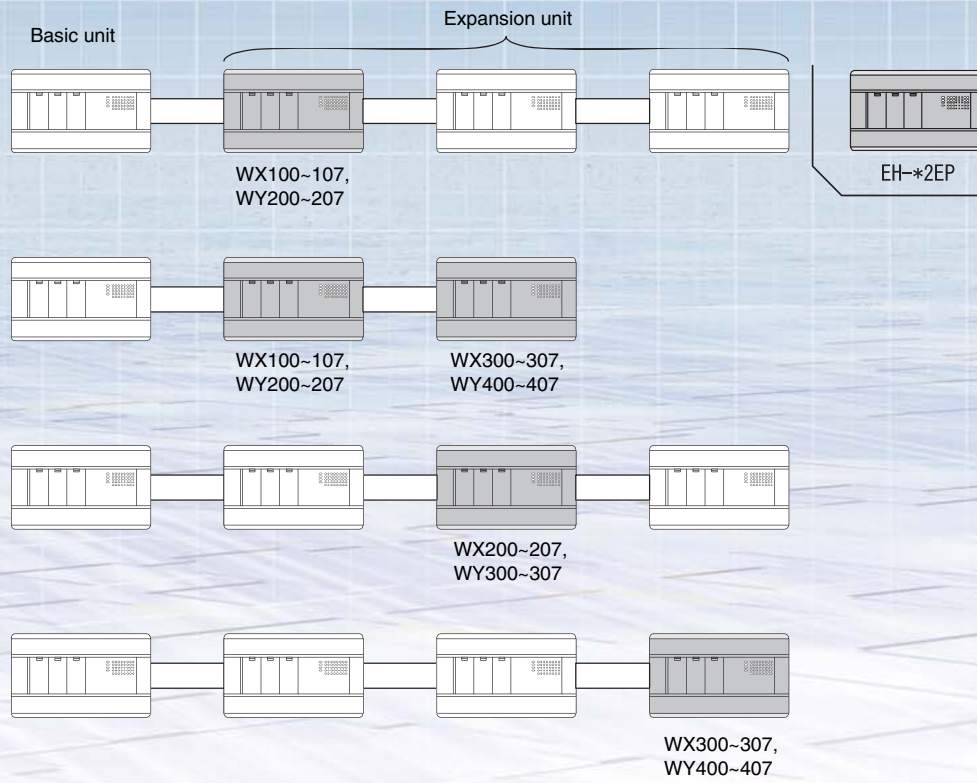
Item		Specifications
Number of axes		2 axes
Maximum velocity		2M pulses/s
Positioning system	Move type	(1) Absolute + Increment method (2) Increment method
	Position rollover	Linear, rotation
	Positioning instruction unit	Pulse, μm , inch, degree, Free-form
	Speed instruction range *1	1 to 2M pulse/s
	Acceleration and deceleration	Linear Acc/Dec, S-shaped Acc/Dec
	Dwell time	0 to 32,768 ms (1 ms unit)
	Acc/Dec rate *2	1 to 50,000,000 (pulse/s ² , $\mu\text{m/s}^2$, inch/s ² , degree/s ² , Free-form/s ²)
	Backlash revision	0 to 65,535 (pulse, μm , inch, degree, Free-form)
	Range	+2,147,463,647 to -2,147,463,648 pulse
Positioning data	Pulse output type	(1) Pulse train [CW / CCW] (2) Clock + direction signal [CK/direction]
	Pulse output method	Line driver output
Positioning data	Number of memorable data	256 (non-volatility)
	Setting method	Sequence program from PLC and personal computer Auto operation, manual operation
Operation mode		Auto operation, manual operation
Homing function		Free homing, Low-speed homing, High-speed homing 1 (OFF edge), High-speed homing 2 (marker stop)
Manual (JOG) operation		Pulse output by manual input signal or command
Auto operation		Pulse output according to profile data registered with sequence table.
Feedrate override function		1 to 100% (Speed scale rate, 1% unit)
I/O assignment		Word X 8W / Word Y 8W (Positioning expansion unit uses assignment for two expansion units.)
Communication function *3	Protocol	Modbus RTU
	Transmission speed	9600, 19200, 57600, 115200bps

*1: Minimum unit for speed depends on "Max. velocity" set to the common parameter.

*2: Settable ranges for acceleration and deceleration depend on "Max. velocity" set to the common parameter.

*3: Communication board for MICRO-EH (20/40/60-point types) is required for communication.

■ Number of I/O No. (Input/Output register) become either of four pattern shown below.



Input register is WXu00 - Wxu07(u:unit No.).
Output register is WYu'00 - WYu'07(u':unit No.).

Thermocouple Expansion Unit

Input Specifications

Item		Specification			
No. of channels		4 channels			
Supported thermocouple		Type K, J, E, S, T, B, N			
Each type of specification (Ambient temp. 0 to 55 °C)	Type	Accuracy guaranteed range	accuracy (*1)	Resolution	Input range
	K	-200 to 1200 °C	± 0.4% (FS)	0.1 °C / 0.2 °F	-270 to 1370 °C
	J	-40 to 750 °C	± 0.3% (FS)	0.1 °C / 0.2 °F	-270 to 1200 °C
	E	-200 to 900 °C	± 0.3% (FS)	0.1 °C / 0.2 °F	-270 to 1000 °C
	S	0 to 1600 °C	± 1.0% (FS)	1.0 °C / 2.0 °F	-50 to 1760 °C
	T	-200 to 350 °C	± 0.8% (FS)	0.1 °C / 0.2 °F	-270 to 400 °C
	B	600 to 1700 °C	± 1.0% (FS)	1.0 °C / 2.0 °F	0 to 1820 °C
	N	-200 to 1200 °C	± 0.4% (FS)	0.1 °C / 0.2 °F	-270 to 1300 °C
	50mV	-50 to 50mV	± 0.5% (FS)	0.01 mV	-50 to 50mV
	100mV	-100 to 100mV	± 0.5% (FS)	0.02 mV	-100 to 100mV
Conversion data		15bits + sign (0.1 °C / 0.1 °F / 0.01mV)			
Isolation	Between channels	Not isolated			
	Between channel and internal circuit	Isolated by photo coupler			
Cold junction temperature input range		-20 to 80 °C			
Cold junction temperature compensation		± 2 °C or less (ambient temp. 0 to 55 °C)			
Diagnostic error (Over flow or breaking wire)		Conversion data: H7FFF (LED blinks at error channel)			
Conversion time (4 channels all)		563msec (thermocouple) / 141msec (mV)			
External wiring length (*2)		Max. 100 m			

*1: Overall error is sum of accuracy for each sensor and cold junction temperature compensation. Error of thermocouple is not included in the above accuracy. Above accuracy is guaranteed under the condition of 10 minutes after power ON.

*2: Note : The max. cable length is 100m, however it depends on noisy environment or other conditions.

Analog output Specifications (EH-D6ETC only)

Item		Specification	
No. of analog output		2 channels, single output	
Output Ranges (Selected by DIP switch)		0-10 V (10.23 V Max.) / 0-20 mA (20.48 mA Max.)	
Resolution		12 Bits	
Accuracy		±1% of full scale over temp. range	
Conversion time		8.8 ms	
Current outputs	Output load range and max. voltage	10 to 500 Ω, 10 V	
	Output capacitance and inductance	2000 pF max., 1 Henry max.	
Voltage outputs	Output load range	10 kΩ min.	
	Output load inductance	1 micro F max.	

20/40/64 points type Option board Specifications

No.	Type		Function
1	EH-OBMEM	Memory board	Backup of a user program and the special internal output for a setup of special function.
2	EH-OB232	RS-232C Communication board	RS-232C serial communication port, Analog input 2ch
3	EH-OB485	RS-422/485 Communication board	RS-422 / 485 serial communication port, Analog input 2ch
4	EH-OBUSB	USB board	USB communication port

① Memory board

Item	Specification
Memory capacity	16ksteps (128k byte)
Size	19 x 41.5 x 7.6 mm

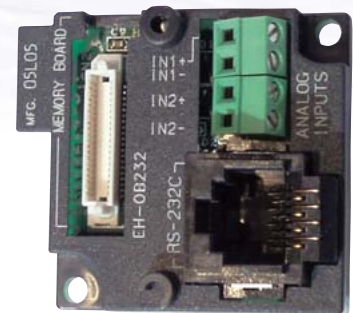


② RS-232C Communication board RS-232C port Specification

Item	Specification
Number of port	1
Cable length	Max. 15 m
Communication system	Half duplex
Baud rate	4,800 – 38,400bps(Dedicated port) 300 – 57,600bps(General-purpose port)
Connection mode	1 : 1
Protocol	Hi-Protocol(procedure1/2) / Non-Protocol

Analog Input Specification

Item	Specification
No. of input	2 ch.
Input range	0-10V (10.24V max.)
Accuracy	±1% of full scale
Resolution	10 bits
Input impedance	100 kΩ
Isolation between channels	Not isolated
Isolation between CPU and analog signal	Not isolated



③ RS-422/485 Communication board RS-422 / 485 port Specification

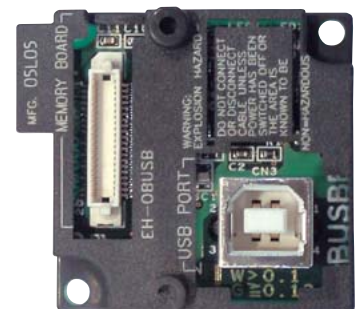
Item	Specification
Number of port	1
Cable length	Max. 500 m
Communication system	Half duplex
Baud rate	4,800 – 38,400bps(Dedicated port) 300 – 57,600bps(General-purpose port)
Connection mode	1 : N (Max. 32)
Protocol	Hi-Protocol(procedure1/2) / Non-Protocol

Analog Input Specification

Item	Specification
No. of input	2 ch.
Input range	0-10V (10.24V max.)
Accuracy	±1% of full scale
Resolution	10 bits
Input impedance	100 kΩ
Isolation between channels	Not isolated
Isolation between CPU and analog signal	Not isolated

④ USB board

Item	Specification
Function	USB 232C conversion
USB version	Correspond USB 2.0
Connector	Straight B type
Power	BUS power
Connection mode	1 : 1
COM port Driver	Download from FTDI



Since this board is a converter from RS-232C to USB, the USB port of PC must be regarded as RS-232C port. For this reason, COM port driver is necessary for your PC. Please download the driver from following URL and install so that USB port works as serial port.

I/O ASSIGNMENT

Basic unit / expansion unit

Unit		I/O Classification	10 - point type	14 - point type	20 - point type	23 - point type	28 - point type	40 - point type	64 - point type	
Basic Unit	Digital	Input	Slot 0 : X48	X0~5	X0~7	X0~11	X0~12	X0~15	X0~23	X0~39
		Output	Slot 1 : Y32	Y100~103	Y100~105	Y100~107	Y100~109	Y100~111	Y100~115	Y100~123
	Analog	Input	Slot 2 : empty 16	-	-	-	-	-	-	-
		Output	Slot 3 : X4W	-	-	-	WX30~31	-	-	-
Expansion Unit 1	Digital	Input	Slot 4 : Y4W	-	-	-	WY40	-	-	-
		Output	Unit 1 / Slot0 : B1/1	-	X1000~1015	-	-	-	-	-
	Analog	Input	Unit 1 / Slot0 : FUN0	-	Y1016~1031	-	-	-	-	-
		Output	Unit 1 / Slot0 : FUN0	-	WX101~104	-	-	-	-	-
Expansion Unit 2	Digital	Input	Unit 2 / Slot0 : B1/1	-	X2000~2015	-	-	-	-	
		Output	Unit 2 / Slot0 : FUN0	-	Y2016~2031	-	-	-	-	
	Analog	Input	Unit 2 / Slot0 : FUN0	-	WX201~204	-	-	-	-	
		Output	Unit 2 / Slot0 : FUN0	-	WY206~207	-	-	-	-	
Expansion Unit 3	Digital	Input	Unit 3 / Slot0 : B1/1	-	X3000~3015	-	-	-	-	
		Output	Unit 3 / Slot0 : FUN0	-	Y3016~3031	-	-	-	-	
	Analog	Input	Unit 3 / Slot0 : FUN0	-	WX301~304	-	-	-	-	
		Output	Unit 3 / Slot0 : FUN0	-	WY306~307	-	-	-	-	
Expansion Unit 4	Digital	Input	Unit 4 / Slot0 : B1/1	-	X4000~4015	-	-	-	-	
		Output	Unit 4 / Slot0 : FUN0	-	Y4016~4031	-	-	-	-	
	Analog	Input	Unit 4 / Slot0 : FUN0	-	WX401~404	-	-	-	-	
		Output	Unit 4 / Slot0 : FUN0	-	WY406~407	-	-	-	-	

64-points expansion unit

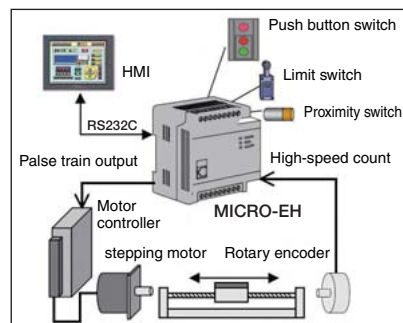
Unit		I/O Classification	10 - point type	14 - point type	20 - point type	23 - point type	28 - point type	40 - point type	64 - point type
Expansion Unit 1	Digital	Input	Slot 0 : X48	-	-	-	X1000~1039	-	-
		Output	Slot 1 : Y32	-	-	-	Y1100~1123	-	-
			Slot 2 : empty 16	-	-	-	-	-	-
Expansion Unit 2	Digital	Input	Slot 0 : X48	-	-	-	X2000~2039	-	-
		Output	Slot 1 : Y32	-	-	-	Y2100~2123	-	-
			Slot 2 : empty 16	-	-	-	-	-	-
Expansion Unit 3	Digital	Input	Slot 0 : X48	-	-	-	X3000~3039	-	-
		Output	Slot 1 : Y32	-	-	-	Y3100~3123	-	-
			Slot 2 : empty 16	-	-	-	-	-	-
Expansion Unit 4	Digital	Input	Slot 0 : X48	-	-	-	X4000~4039	-	-
		Output	Slot 1 : Y32	-	-	-	Y4100~4123	-	-
			Slot 2 : empty 16	-	-	-	-	-	-

High speed counter, Pulse train output and PWM output of MICRO-EH

MICRO-EH can perform easily simple positioning control by Pulse train output, and speed control by the PWM output.

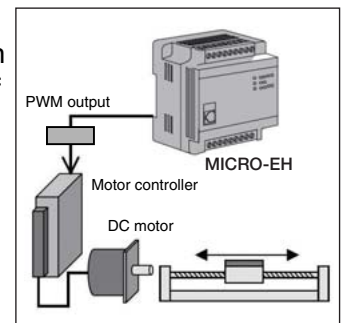
Simple positioning control

With DC (transistor) output type, a pulse train output is possible. MICRO-EH can perform positioning control of a stepping motor etc. by combining a High-speed counter input and a pulse train output.



Speed control

With using PWM output function, MICRO-EH can perform speed control of DC motor instead of conventional control by the analog output.



MICRO-EH

No.	Classification	Model Name	Specifications				Weight(g)	Power Consumption (A)			Standard Compliance		
			Power	Input	Output	Remarks		100 V AC	264 V AC	24 V DC	CE	UL	C-Tick
								Normal	Normal	Normal			
1	10 Points	EH-D10DT	24V DC	24V DC x 6	Transistor x 4	Sink	200	-	-	0.12	○	○	○
2		EH-D10DTP	24V DC	24V DC x 6	Transistor x 4	Source	200	-	-	0.12	○	○	○
3		EH-D10DR	24V DC	24V DC x 6	Relay x 4		200	-	-	0.12	○	○	○
4	14 Points	EH-D14DT	24V DC	24V DC x 8	Transistor x 6	Sink	300	-	-	0.16	○	○	○
5		EH-D14DTP	24V DC	24V DC x 8	Transistor x 6	Source	300	-	-	0.16	○	○	○
6		EH-D14DTPS	24V DC	24V DC x 8	Transistor x 6 (short circuit protection)	Source	300	-	-	0.16	○	-	○
7		EH-D14DR	24V DC	24V DC x 8	Relay x 6		300	-	-	0.16	○	○	○
8		EH-A14DR	100/200 V AC	24V DC x 8	Relay x 6		400	0.1	0.06	-	○	○	○
9		EH-A14AS	100/200 V AC	AC x 8	SSR x 6		380	0.1	0.06	-	○	○	○
10	20 Points	EH-D20DT	24V DC	24V DC x 12	Transistor x 8	Sink	450	-	-	0.18	○	○	○
11		EH-D20DTPS	24V DC	24V DC x 12	Transistor x 8 (short circuit protection)	Source	450	-	-	0.18	○	○	○
12		EH-D20DR	24V DC	24V DC x 12	Relay x 8		470	-	-	0.22	○	○	○
13		EH-A20DR	100/200V AC	24V DC x 12	Relay x 8		550	0.12	0.06	-	○	○	○
14	23 Points	EH-D23DRP	24V DC	24V DC x 13 Analog x 2	Relay x 9 Transistor x 1 Analog x 1	Source	500	-	-	0.3	○	○	○
15		EH-A23DRP	100/200 V AC	24V DC x 13 Analog x 2	Relay x 9 Transistor x 1 Analog x 1	Source	600	0.2	0.06	-	○	○	○
16		EH-A23DR	100/200 V AC	24V DC x 13 Analog x 2	Relay x 10 Analog x 1		600	0.2	0.06	-	○	-	○
17	28 Points	EH-D28DT	24V DC	24V DC x 16	Transistor x 12	Sink	500	-	-	0.2	○	○	○
18		EH-D28DTP	24V DC	24V DC x 16	Transistor x 12	Source	500	-	-	0.2	○	○	○
19		EH-D28DTPS	24V DC	24V DC x 16	Transistor x 12 (short circuit protection)	Source	500	-	-	0.2	○	○	○
20		EH-D28DRP	24V DC	24V DC x 16	Relay x 11 Transistor x 1	Source	500	-	-	0.3	○	○	○
21		EH-D28DR	24V DC	24V DC x 16	Relay x 12		500	-	-	0.3	○	○	○
22		EH-A28DRP	100/200 V AC	24V DC x 16	Relay x 11 Transistor x 1	Source	600	0.2	0.06	-	○	○	○
23		EH-A28DR	100/200 V AC	24V DC x 16	Relay x 12		600	0.2	0.06	-	○	○	○
24		EH-A28AR	100/200 V AC	AC x 16	Relay x 12		500	0.2	0.06	-	○	○	○
25	EH-A28AS	100/200 V AC	AC x 16	SSR x 12		600	0.2	0.06	-	○	○	○	
26	40Points	EH-D40DT	24V DC	24V DC x 24	Transistor x 16	Sink	450	-	-	0.24	○	○	○
27		EH-D40DTPS	24V DC	24V DC x 24	Transistor x 12 (short circuit protection)	Source	450	-	-	0.24	○	○	○
28		EH-D40DR	24V DC	24V DC x 24	Relay x 16		480	-	-	0.32	○	○	○
29		EH-A40DR	100/200 V AC	24V DC x 24	Relay x 16		560	0.15	0.08	-	○	○	○
30	64 Points	EH-D64DR	24V DC	24V DC x 40	Relay x 24		640	-	-	0.5	○	○	○
31		EH-D64DT	24V DC	24V DC x 40	Transistor x 24	Sink	640	-	-	0.5	○	○	○
32		EH-D64DTPS	24V DC	24V DC x 40	Transistor x 24 (short circuit protection)	Source	640	-	-	0.5	○	○	○
33		EH-A64DR	100/200 V AC	24V DC x 40	Relay x 24		720	0.4	0.2	-	○	○	○
34		EH-D8ED	24V DC	24V DC x 8	-		260	-	-	0.07	○	○	○
35		EH-D8ER	24V DC	-	Relay x 8		280	-	-	0.06	○	○	○
36	8 Points Expansion unit	EH-D8ETPS	24V DC	-	Transistor x8 (short circuit protection)	Source	260	-	-	0.03	○	○	○
37		EH-D8ET	24V DC	-	Transistor x 8	Sink	260	-	-	0.02	○	○	○
38		EH-D8EDR	24V DC	24V DC x 4	Relay x 4		300	-	-	0.16	○	○	○
39		EH-D8EDTPS	24V DC	24V DC x 4	Transistor x4 (short circuit protection)	Source	260	-	-	0.16	○	○	○
40		EH-D8EDT	24V DC	24V DC x 4	Transistor x 4	Sink	260	-	-	0.16	○	○	○
41	14 Points Expansion unit	EH-D14EDT	24V DC	24V DC x 8	Transistor x 6	Sink	300	-	-	0.16	○	○	○
42		EH-D14EDTP	24V DC	24V DC x 8	Transistor x 6	Source	300	-	-	0.16	○	○	○
43		EH-D14EDR	24V DC	24V DC x 8	Relay x 6		300	-	-	0.16	○	○	○
44		EH-D14EDTPS	24V DC	24V DC x 8	Transistor x 6 (short circuit protection)	Source	300	-	-	0.16	○	○	○
45	16 Points Expansion unit	EH-A14EDR	100/200 V AC	24V DC x 8	Relay x 6		400	0.1	0.06	-	○	○	○
46		EH-D16ED	24V DC	24V DC x 16	-		260	-	-	0.13	○	○	○
47		EH-D16ER	24V DC	-	Relay x 16		300	-	-	0.11	○	○	○
48		EH-D16ETPS	24V DC	-	Transistor x 16 (short circuit protection)	Source	260	-	-	0.04	○	○	○
49	EH-D16ET	24V DC	-	Transistor x 16	Sink	260	-	-	0.03	○	○	○	
50	28 Points Expansion unit	EH-D28EDT	24V DC	24V DC x 16	Transistor x 12	Sink	500	-	-	0.2	○	-	-
51		EH-D28EDTP	24V DC	24V DC x 16	Transistor x 12	Source	500	-	-	0.2	○	○	○
52		EH-D28EDTPS	24V DC	24V DC x 16	Transistor x 12 (short circuit protection)	Source	500	-	-	0.2	○	○	○
53		EH-D28EDR	24V DC	24V DC x 16	Relay x 12		500	-	-	0.3	○	○	○
54	EH-A28EDR	100/200 V AC	24V DC x 16	Relay x 12		600	0.2	0.06	-	○	○	○	
55	64 Points Expansion unit	EH-A64EDR	100/200 V AC	24V DC x 40	Relay x 24		720	0.2	0.1	-	○	※	○
56		EH-D64EDR	24V DC	24V DC x 40	Relay x 24		640	-	-	0.5	○	※	○
57		EH-D64EDT	24V DC	24V DC x 40	Transistor x 24	Sink	640	-	-	0.4	○	※	○
58		EH-D64EDTPS	24V DC	24V DC x 40	Transistor x 24(short circuit protection)	Source	640	-	-	0.4	○	※	○

*1: 1 piece of 0.1 m expansion cable is attached to each expansion unit

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

MICRO-EH

No.	Classification	Model Name	Specifications				Weight(g)	Power Consumption (A)			Standard Compliance		
			Power	Input	Output	Remarks		100 V AC Normal	264 V AC Normal	24 V DC Normal	CE	UL	C-Tick
59	Analog Expansion unit	EH-D6EAN	24V DC	Analog x 4	Analog x 2		300	–	–	0.16	○	○	○
60		EH-A6EAN	100/200 V AC	Analog x 4	Analog x 2		400	0.1	0.06	–	○	○	○
61	RTD Expansion unit	EH-A6ERTD	100/200 V AC	RTD X 4	Analog x 2		400	0.1	0.06	–	○	○	○
62		EH-A4ERTD	100/200 V AC	RTD X 4	–		400	0.1	0.06	–	○	○	○
63		EH-D6ERTD	24V DC	RTD X 4	Analog x 2		300	–	–	0.16	○	○	○
64		EH-D4ERTD	24V DC	RTD X 4	–		300	–	–	0.16	○	○	○
65	Thermocouple Expansion unit	EH-D6ETC	24V DC	Thermocouple x 4	Analog x 2		300	–	–	0.11	○	○	○
66		EH-D4ETC	24V DC	Thermocouple x 4	–		300	–	–	0.07	○	○	○
67	Positioning Expansion unit	EH-D2EP	24V DC	2-axes positioning, Pulse output: up to 2 MHz		released soon	440	–	–	0.26	○	○	○
68	Positioning Expansion unit	EH-A2EP	100/200 V AC	2-axes positioning, Pulse output: up to 2 MHz		released soon	520	0.12	0.06	–	○	○	○
69	Option board for 20/40/64-point type	EH-OB232	RS-232 Communication board with Analog Input 2ch (10bit)								○	○	○
70		EH-OBMEM	Memory board (16k steps)								○	○	○
71		EH-OB485	RS-422/485 Communication board with Analog Input 2ch (10bit)								○	○	○
72		EH-OBUSB	USB RS-232C conversion board								○	○	○
73	Expansion cable	EH-MCB10	1.0 m								n/a	n/a	n/a
74		EH-MCB05	0.5 m								n/a	n/a	n/a
75		EH-MCB01	0.1 m								n/a	n/a	n/a
76	Lithium battery	EH-MBAT	For data memory back-up			For 2328-point type	–	–	–	–	n/a	n/a	n/a
77		EH-MBATL	For data memory back-up (Long Type)			For 20/40/64-point type					n/a	n/a	n/a
78		EH-MBATLC	For data memory back-up (Long Type)			For 2328-point type					n/a	n/a	n/a
79	Programming software	HLW-PCRE	LADDER EDITOR for Windows®								n/a	n/a	n/a
80		EH-MLWE	LADDER EDITOR MICRO for Windows® *3								n/a	n/a	n/a
81	Connection cable	EH-VCB02	Direct connection between MICRO-EH/EH-150 and personal computer (2m)								n/a	n/a	n/a
82		WVCB02H	Connection with personal computer, EH-RS05 is required.								n/a	n/a	n/a
83		EH-RS05	Adapter cable for WVCB02H								n/a	n/a	n/a

*1: 1 piece of 0.1 m expansion cable is attached to each expansion unit

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

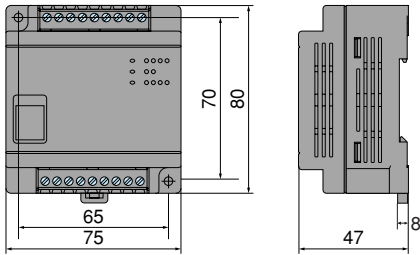
*3: EH-VCB02 is attached

General Specifications

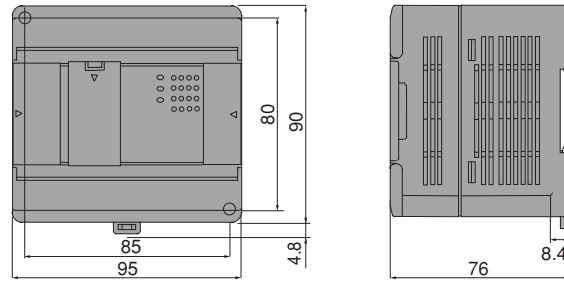
Item	Specification	
Power supply type	AC	DC
Power voltage	100/110/120 V AC (50/60 Hz), 200/220/240 V AC (50/60 Hz)	24 V DC
Power voltage fluctuation range	85 to 264 V AC wide range	19.2 to 30 V DC
Allowable momentary power failure	85 to 100 V AC: For a momentary power failure of less than 10 ms, operation continues 100 to 264 V AC: For a momentary power failure of less than 20 ms, operation continues	19.2 to 30 V DC: For a momentary power failure of less than 10 ms, operation continues
Operating ambient temp.	0 to 55 °C	
Storage ambient temp.	-10 to 75 °C	
Operating ambient humidity	5 to 95 % RH (no condensation)	
Storage ambient humidity	5 to 95 % RH (no condensation)	
Vibration proof	Conforming to IEC (EN) 61131-2 (147m/s ² , 3times in each 3directions X,Y,Z)	
Noise resistance	<input type="checkbox"/> Noise voltage 1,500 Vpp Noise pulse width 100 ns, 1 μs (Noise created by the noise simulator is applied across the power supply module's input terminals. This is determined by our measuring method.) <input type="checkbox"/> Based on NEMA ICS 3-304 <input type="checkbox"/> Static noise: 3,000 V at metal exposed area <input type="checkbox"/> Conforms with EN50081-2 and EN50082-2	
Supported standards	Conforms with UL, CE markings and C-TICK	
Insulation resistance	20 MΩ or more between the AC external terminal and the protection earth (PE) terminal	
Dielectric withstand voltage	(based on 500 V DC megger)	
Grounding	1,500 V AC for one minute between the AC external terminal and the protection earth (PE) terminal	
Environment used	Class D dedicated grounding (grounded by a power supply module)	
Structure	No corrosive gases and no excessive dirt	
Cooling	Attached on an open wall	
Specification	Natural air cooling	

DIMENSIONS

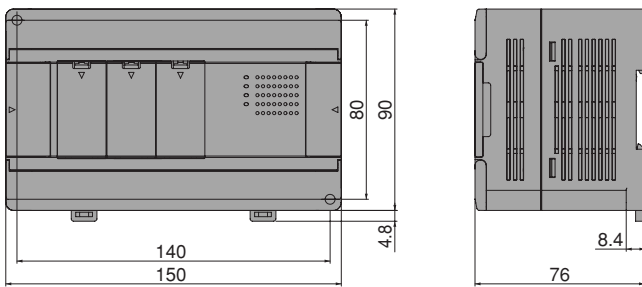
10-point type



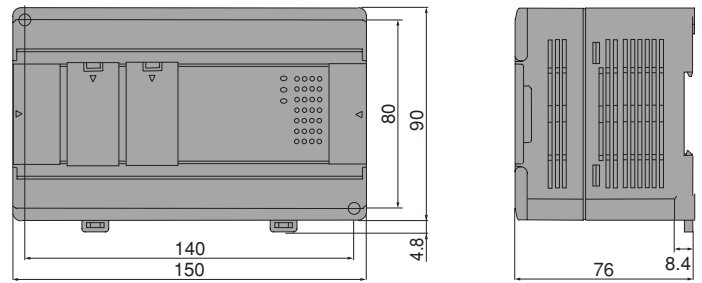
14-point type, 8/16-point expansion unit, Analog Expansion unit
Thermocouple expansion unit



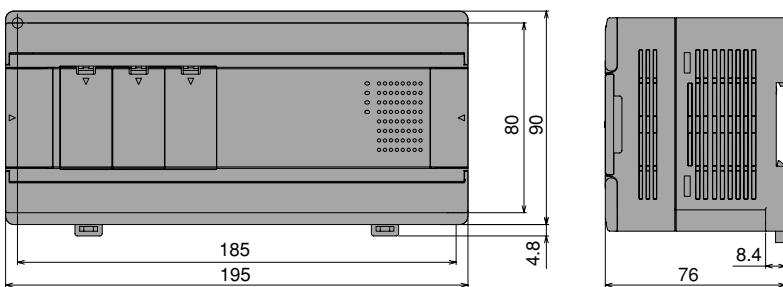
20/40-point type



23/28-point type, Positioning expansion unit



64-point type



[Unit : mm]

Network



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The MICRO-EH series PLCs are produced at the factory registered under the ISO 14001 standard for environmental management system and the ISO 9001 standard for quality management system.