HITACHI
Inspire the Next

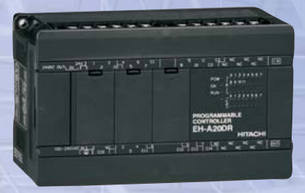
MICRO-EH

PROGRAMMABLE CONTROLLER

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."

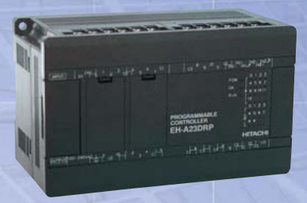
Functionality



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)
- NEW 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 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 H80 mm x D47 mm
- Max. 3k steps of program memory even with 10-point type

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

1. 23/28-point type: Extension of program capacity (3k steps→15.7k steps).
Extension of data memory capacity (4,096 words→32,768 words).
2. Thermocouple expansion unit.
3. 64 points expansion unit.
4. Positioning expansion unit.

MICRO-EH 28-point type

EH-A28★★/D28★★

- Input 16 points Output 12 points (Max. 284 points with expansion units)
- NEW 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

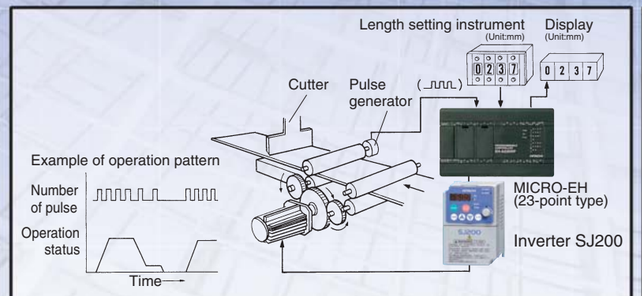
MICRO-EH 64-point type

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

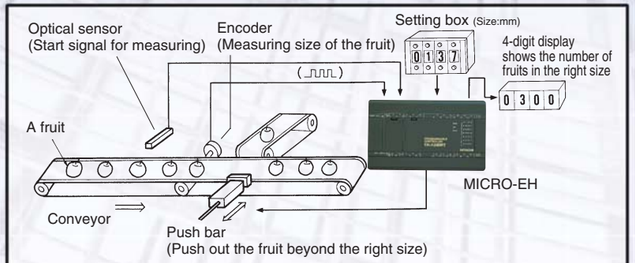
Application Examples

Machine Control: Simple positioning control for Cutting Machine



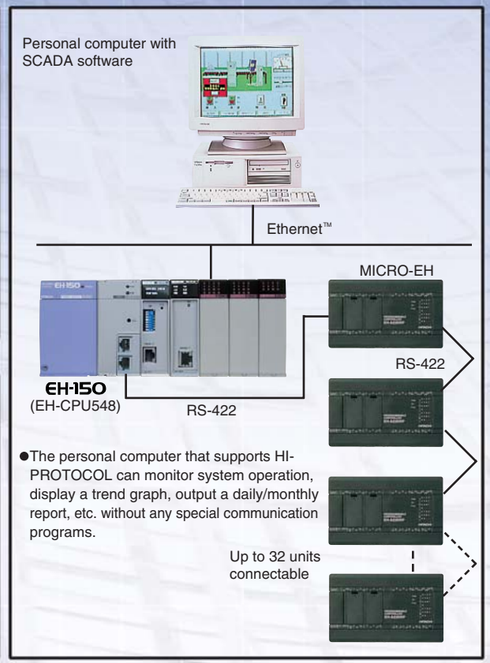
- Simple positioning and display of the length are made possible by the combination of the MICRO-EH, the SJ100, and a pulse generator.

Line Control: Fruit Size Selection



- Size selection of fruits is possible by the combination of the MICRO-EH, an encoder, and an optical sensor.

Network Control: Monitoring System with SCADA software



- The personal computer that supports HI-PROTOCOL can monitor system operation, display a trend graph, output a daily/monthly report, etc. without any special communication programs.

FEATURES

High Performance in a Small Size

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.

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.
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 outputis also prorided 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 m eters 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.

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.

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

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

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.

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.]

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

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

With RS-232C or RS-422/485 or USB-232C convertion 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

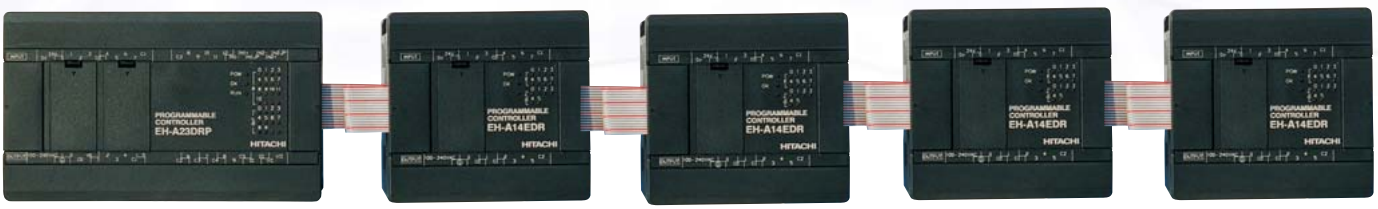
10-point Type

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

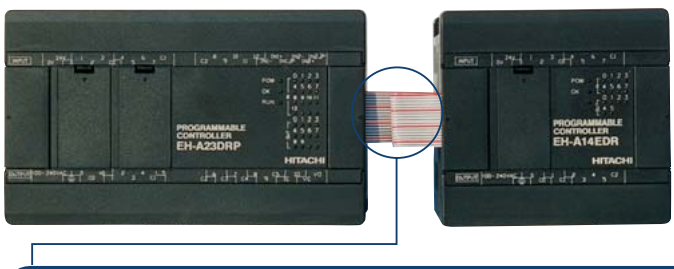


Photo (above) is a case of 14-point type expansion units

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.

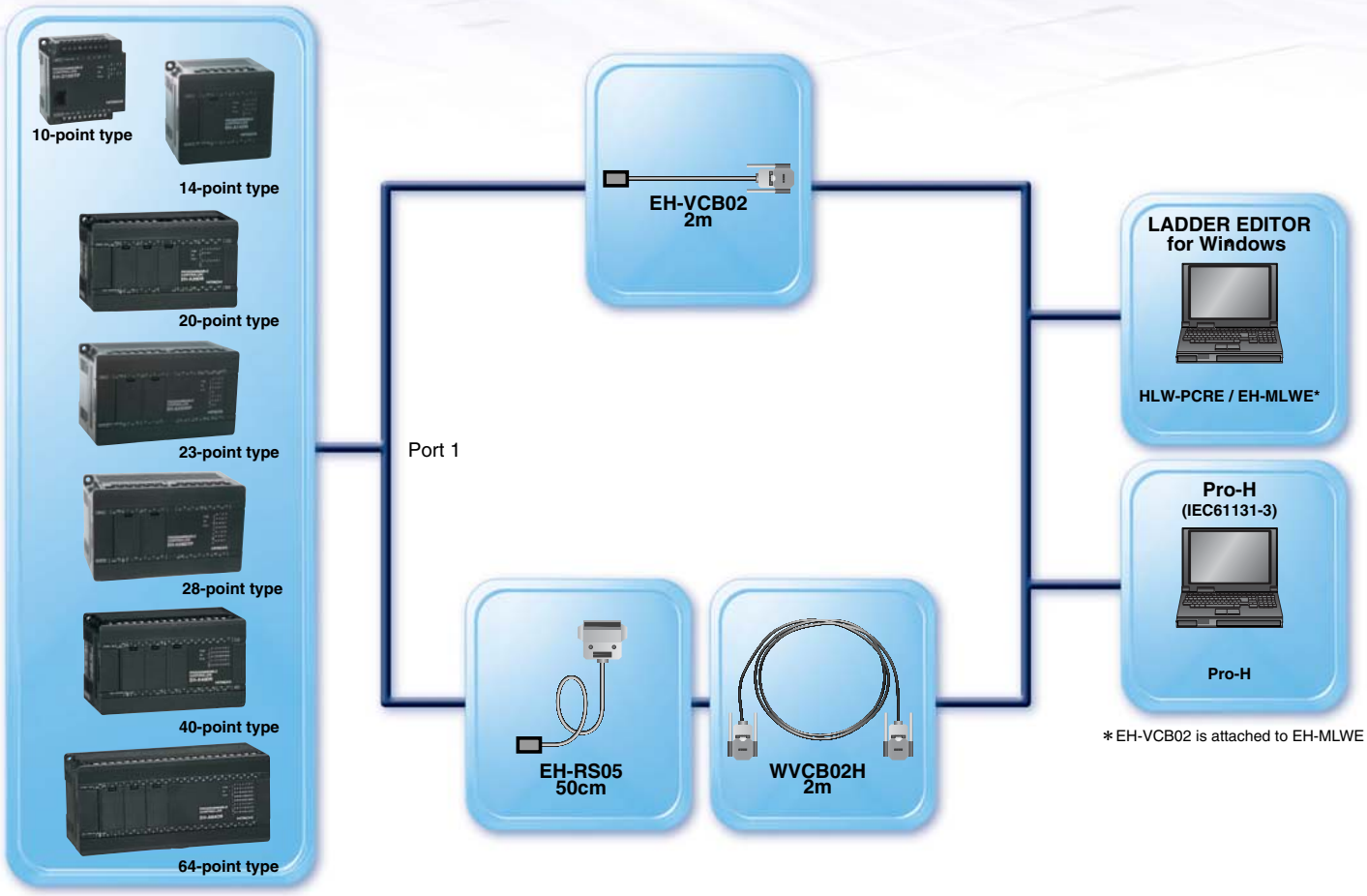
Functional Specifications

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(Optinal)	1	1	1(Optinal)	1(Optinal)
High-speed counter		10kHz 1-phace 3ch, 1-phace 2ch or 2-phace 1ch	10kHz 1-phace 4ch, 1-phace 2ch or 2-phace 1ch + 1phace 1ch	100kHz 1-phace 4ch, 2-phace 2ch or 2-phace 1ch + 1phace 2ch	10kHz 1-phace 4ch, 1-phace 2ch or 2-phace 1ch + 1phace 1ch		100kHz 1-phace 4ch, 2-phace 2ch or 2-phace 1ch + 1phace 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	Yes
	DC24V	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Input	DC	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	AC	No	Yes	No	No	Yes	No	No
Output	TR DC24V	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	RY	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SSR	No	Yes	No	No	Yes	No	No
Positioning expansion		No	No	Yes	Yes	Yes	Yes	Yes

※1 : EH-D10DRA only

CONNECTION WITH PERIPHERAL EQUIPMENT

MICRO-EH



*EH-VCB02 is attached to EH-MLWE

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.

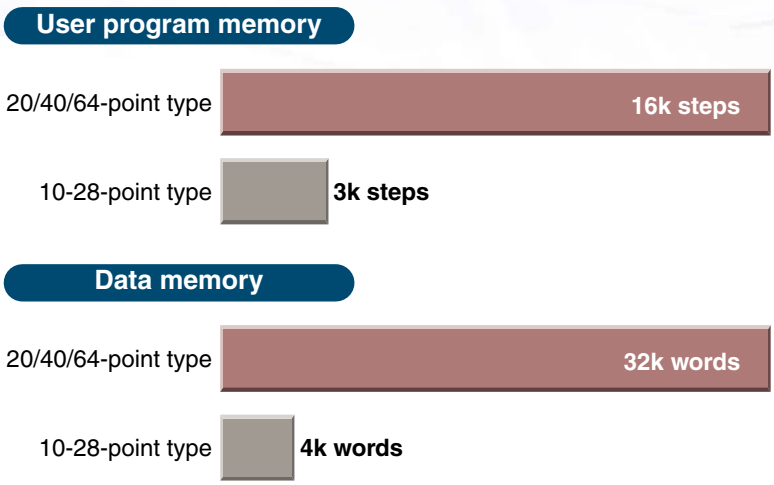
20/40/64-point unit

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



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

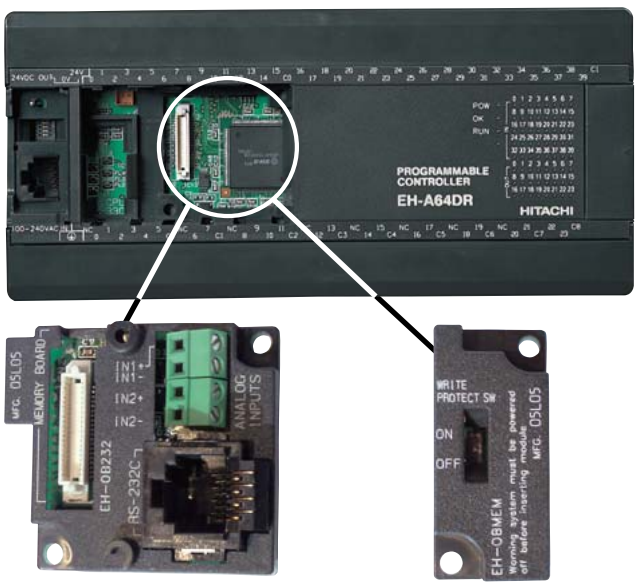
PWM output

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 convertion 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 μs / instruction			
		Application instructions		Several 10 μs / 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)			
		Bit/word shared		16,384 points, 1,024 words (M0 to M3FFF, WM0 to WM3FF)			
	Timer counter	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	SSR
									Low Current	High Current	Low Current	High Current	Output(source)	
					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]

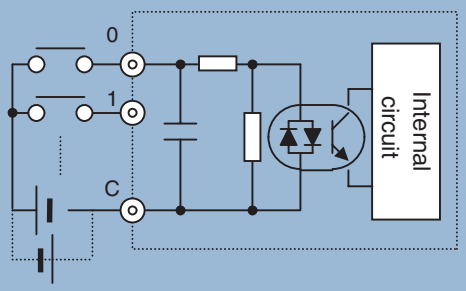
The value of ( ): number of common. The value of [ ]:number of I/O points to each common.

Input/Output specification and points of Expasion 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-D8ED~~	○		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]						
	~~EH-A14EDR~~		○	24V DC x 8	8 (2)[4,4]			Relay x 6	6 (3)[1,1,4]						
16 points	~~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]	
	~~EH-D16ET~~	○		–				Transistor x 16(sink)			16 (2)[10,6]				
28 points	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]						

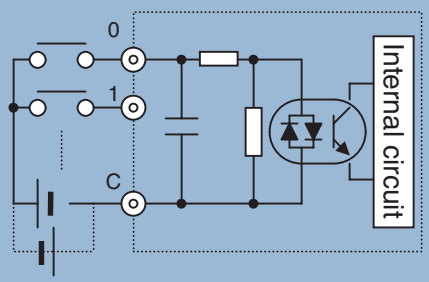
The value of ( ): number of common. The value of [ ]:number of I/O points to each common.

①DC input (Basic units)

Item		Specification	Circuit diagram
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)	

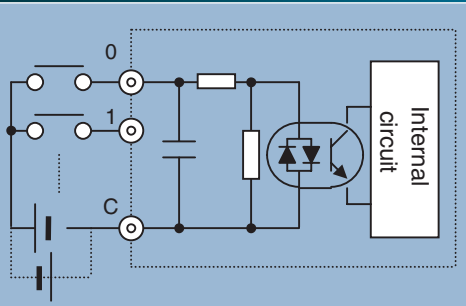
*1: Common terminals are separated each other.

②DC input (Expansion units)

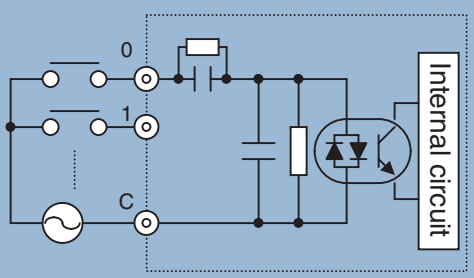
Item		Specification	Circuit diagram
Input voltage		24 V DC	
Allowable input voltage range		0 to 30 V DC	
Input impedance		Approx. 2.8 kΩ	
Input current		Approx. 7.5 mA	
Operating voltage	ON voltage	15 V DC (min) / 4.5 mA (max)	
	OFF voltage	5 V DC (max) / 1.5 mA (max)	
Input lag	OFF → ON	0.5 ms or less	
	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.

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

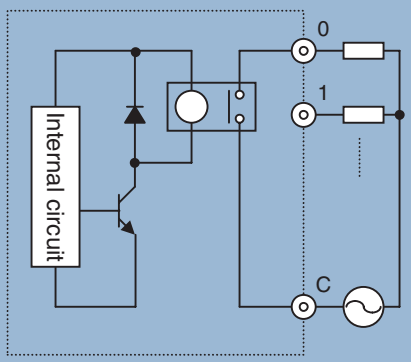
Item		Specification		Circuit diagram
		EH-D8EDR EH-D8EDTPS EH-D8EDT	EH-D8ED EH-D16ED	
Input voltage		24 V DC		
Allowable input voltage range		0 to 30 V DC		
Input impedance		Approx. 2.8 kΩ	Approx. 4.8 kΩ	
Input current		Approx. 7.5 mA	Approx. 4.8 mA	
Operating voltage	ON voltage	15 V DC (min) / 4.5 mA (max)	15 V DC (min) / 3.0 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)		

④AC input

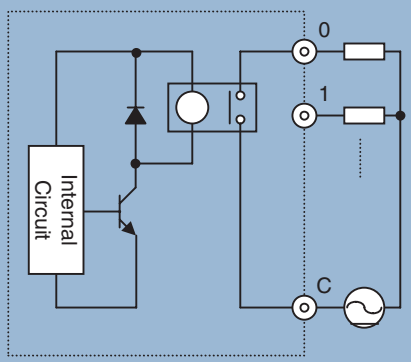
Item		Specification	Circuit diagram
Input voltage		100 to 120 V AC	
Allowable input voltage range		85 to 132 V AC 50 -5 % to 60 +5 % Hz	
Input impedance		Approx. 14.6 kΩ (60 Hz) Approx. 17.6 kΩ (50 Hz)	
Input current		Approx. 7 mA RMS (100 V AC/60 Hz)	
Operating voltage	ON voltage	80 V AC (min.) 4.5 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.

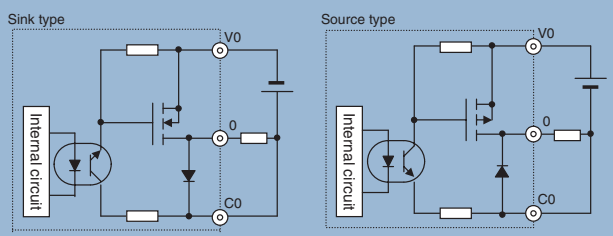
⑤Relay output

Item		Specification	Circuit diagram
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	2 A (24 V DC, 240 V AC)	
	1 common	5 A	
Output response time	OFF → ON	15 ms (max)	
	ON → OFF	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)	

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

Item		Specification	Circuit diagram
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	2 A (24 V DC, 240 V AC)	
	1 common	5 A	
Output response time	OFF → ON	15 ms (max)	
	ON → OFF	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)	

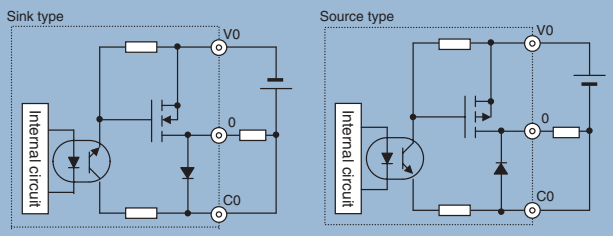
⑦DC Transistor output: LCDC-Low Current

Item		Specification	Circuit diagram
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	0.75 A/24 V DC 0.5 A/12 V DC	
	1 common	3 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		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)	

⑧DC 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	1A/24 V DC
	1 common	3 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		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)

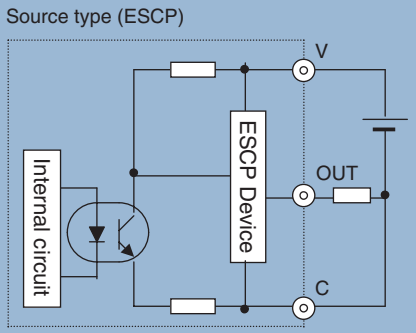
Circuit diagram



⑨DC 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	0.7A/24 V DC
	1 common	3 A
Output response time	OFF → ON	0.5 ms (max) 24 V DC 0.2A
	ON → OFF	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)

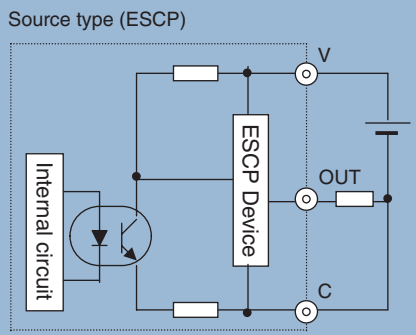
Circuit diagram



⑩DC 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 A
	1 common	3 A
Output response time	OFF → ON	0.05 ms (max) 24 V DC 0.2A
	ON → OFF	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)

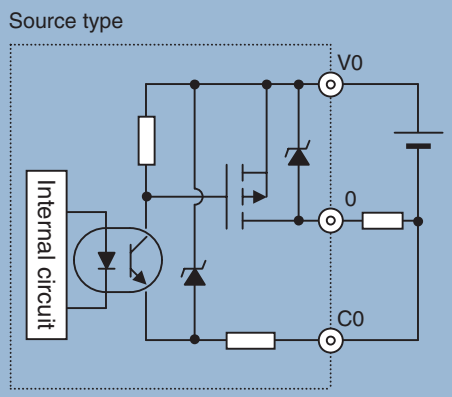
Circuit diagram



⑪DC 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	0.75 A/24 V DC 0.5 A/12 V DC 0.25 A/5 V DC
	1 common	0.75 A
Output response time	OFF → ON	0.1 ms (max) 24 V DC 0.2 A
	ON → OFF	0.1 ms (max) 24 V DC 0.2 A
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)

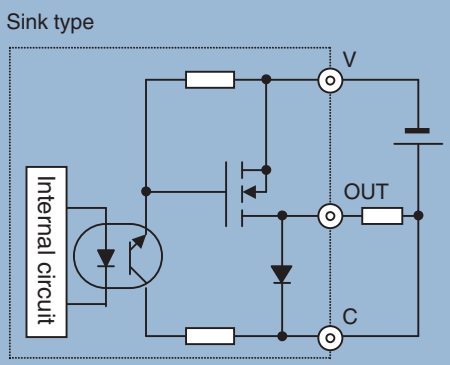
Circuit diagram



⑫DC 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	0.5A
	1 common	3A
Output response time	OFF → ON	0.5ms (max) 24V DC 0.2A
	ON → OFF	0.5ms (max) 24V DC 0.2A
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)

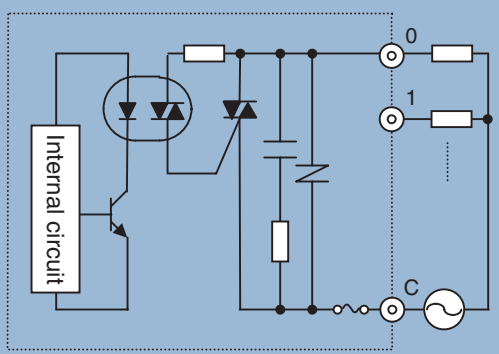
Circuit diagram



⑬AC 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	0.5 A 240 V AC
	1 common	2 A
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	1 ms or less
	ON → OFF	1 ms + 1/2 cycle or less
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

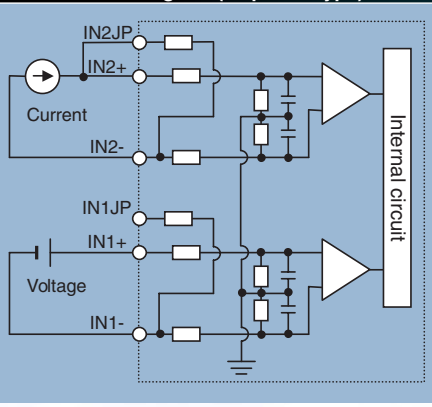


*1: It is necessary to repair the module if the load short-circuits and causes the fuse to melt.
Note that the fuse cannot be replaced by users.

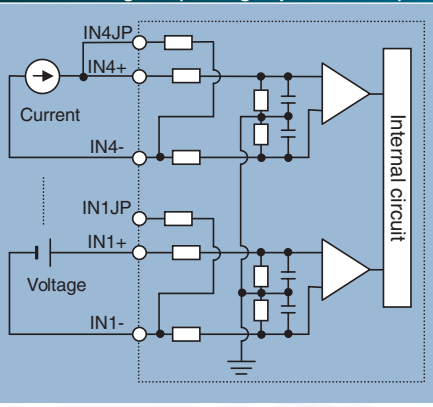
Analogue Input Specifications

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 (±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	±1 % of full scale	
Linearity	Max. +/-3 units	
Current input impedance	Approx. 249 Ω	
Voltage input impedance	Approx. 100 kΩ	Approx. 200 kΩ
Input delay time	20 ms	
Channel to internal circuit insulation	Not insulated	Insulated
Channel-to-channel insulation	Not insulated	

Circuit diagram (23 points type)



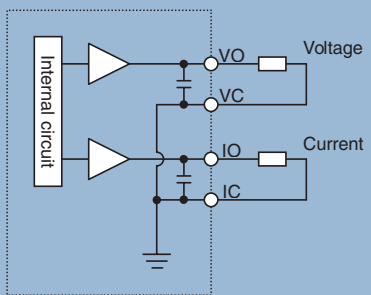
Circuit diagram (Analog expansion unit)



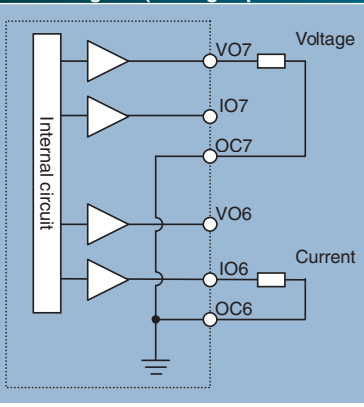
Analogue Output Specifications

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	±1 % of full scale	
Current output Allowable load Output allowable capacity Output allowable inductance	 10 to 500 Ω Maximum 2,000 pF Maximum 1 H	
Voltage output Allowable load Output allowable impedance	 Minimum 10 kΩ Maximum 1 µF	

Circuit diagram (23 points type)



Circuit diagram (Analog expansion unit)



High-Speed Counter Specifications

		Single phase	Two phase
Available input		X0, X2, X4, X6	X0 and X2 in pair
Input voltage	ON	15 V	
	OFF	5 V	
Count pulse width		100 µs	
Maximum count frequency		10 kHz each channel	
Count register		16 bits	
Coincidence output		Allowed	
On/Off-preset		Allowed	
Upper/lower limit setting		Not 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

	23-point and 28-point type Relay Output	10/14/28-point Transistor Output
Available outputs	Y100 (optional)	Y100-Y103 (optional)
Load voltage	5/12/24 V	12/24 V
Minimum load current	1 mA	
PWM max. output frequency *1	2 kHz total	
Pulse train max. output frequency *1	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)
		Special Word	512 words (WRF000 to WRF1FF)
		Bit/Word shared	16,384 points 1,024 words (M0 to M3FFF, WM0 to WM3FF)
	Timer / counter	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 24V DC	Power 100/200V AC	Input	Input Point 24V DC ①	Output	Output Point: Relay Output ②	Transistor Output ③	Transistor Output ④	Transistor Output (source ESCP) Low Current ⑤	Transistor Output (source ESCP) 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)		4 (1)	4 (1)		
	EH-D20DTPS	○		DC 24V x 12	12 (3)[4,4,4]	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)		4 (2)[4]*1	12 (2)[12]*1		
	EH-D40DTPS	○		DC 24V x 24	24 (2)[8,16]	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) [6,2,4,2,2,2,2,2,2]				
	EH-D64DR	○		DC 24V x 40	40 (2)[16,24]	Relay x 24	24 (9) [6,2,4,2,2,2,2,2,2]				
	EH-D64DT	○		DC 24V x 40	40 (2)[16,24]	Transistor x 24(sink)		4 (2)[4]*1	20 (6)[8,8,4]*1		
	EH-D64DTPS	○		DC 24V x 40	40 (2)[16,24]	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 eath common, it connects inside.

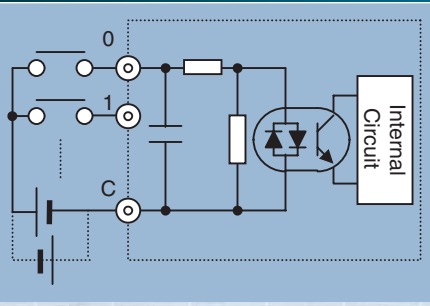
64 points Expansion unit Input/Output specification (○number corresponds to the number of table of specification.)

Type	Model Name	Power 24V DC	Power 100/200V AC	Input	Input Point 24V DC ⑦	Output	Output Point: Relay Output ⑧	Transistor Output ③	Transistor Output ④	Transistor Output (source ESCP) Low Current ⑤	Transistor Output (source ESCP) High Current ⑥
64 Points	EH-A64EDR		○	DC 24V x 40	40 (2) [16,24]	Relay x 24	24 (9) [6,2,4,2,2,2,2,2,2]				
	EH-D64EDR	○		DC 24V x 40	40 (2) [16,24]	Relay x 24	24 (9) [6,2,4,2,2,2,2,2,2]				
	EH-D64EDT	○		DC 24V x 40	40 (2) [16,24]	Transistor x 24(sink)		4 (2)[4]*1	20 (6)[8,8,4]*1		
	EH-D64EDTPS	○		DC 24V x 40	40 (2) [16,24]	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 eath common, it connects inside.

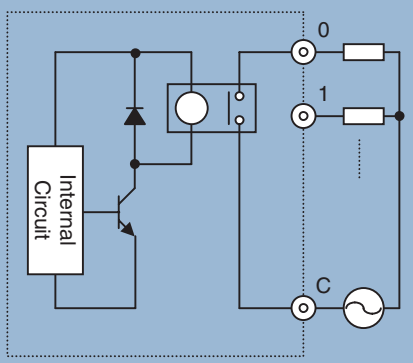
①DC input

Item		Specification		Internal Circuit
		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)	18 VDC (min) / 3.3mA (max)	
	OFF voltage	5 VDC (min) / 1.8mA (max)	5 VDC (max) / 1.6mA (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)		



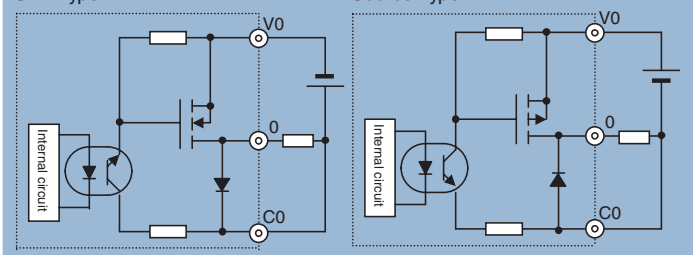
②Relay output

Item		Specification	Internal Circuit
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)	



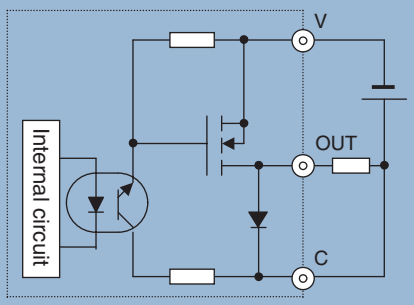
③DC Transistor output

Item		Specification	Circuit diagram
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)	



④DC Transistor output

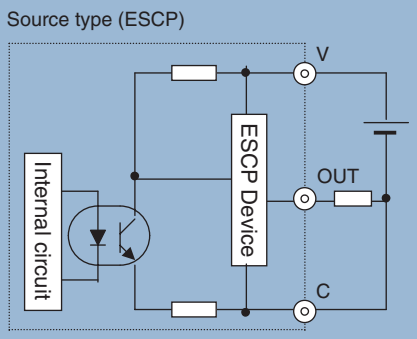
Item		Specification	Circuit diagram
Rated load voltage		24/12 V DC (+10 %, -15 %)	
Minimum switching current		10 mA	
Leak current		0.1 mA (max)	
Maximum load current	1 circuit	0.5 A	
	1 common	64-point type : 3 A, 40-point type : 5 A, 20-point type : 2 A,	
Output response time	OFF → ON	0.1 ms (max) 24 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)	



⑤DC 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	0.7 A
	1 common	64-point type:3A, 40-point type:5A, 20-point type:2.8A
Output response time	OFF → ON	0.5 ms (max)/24 V DC
	ON → OFF	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)

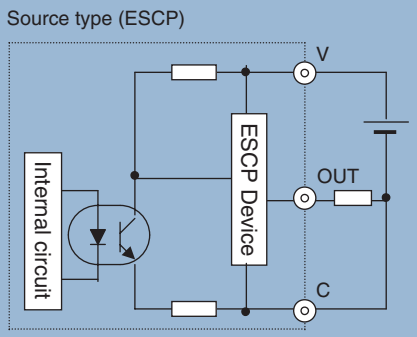
Circuit diagram



⑥DC 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	1.0 A
	1 common	3.0 A
Output response time	OFF → ON	0.5 ms (max)/24 V DC
	ON → OFF	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)

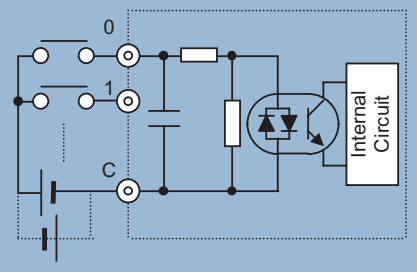
Circuit diagram



⑦DC 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 kΩ	Approximately 4.7 kΩ
Input current		8 mA typical	4.8 mA typical
Operating voltage	ON voltage	18 VDC (min) / 4.5mA (max)	18 VDC (min) / 3.3mA (max)
	OFF voltage	5 VDC (min) / 1.8mA (max)	5 VDC (max) / 1.6mA (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)	

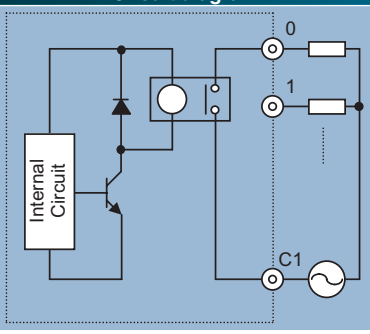
Circuit diagram



⑧Relay output (64 points expansion unit)

Item		Specification
Rated load voltage		5 to 250V AC, 5 to 30V DC
Maximum load current	1 circuit	2A (24V DC, 240V AC)
	1 common	–
Output response time	OFF → ON	15 ms (max)
	ON → OFF	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 µs	17 µs
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

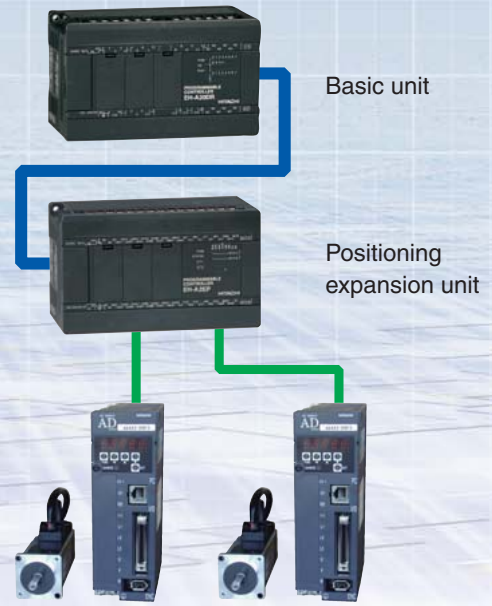
Input that can be used		X1, X3, X5, X7 (by user settings)
Input voltage	ON	18 V
	OFF	5 V

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.

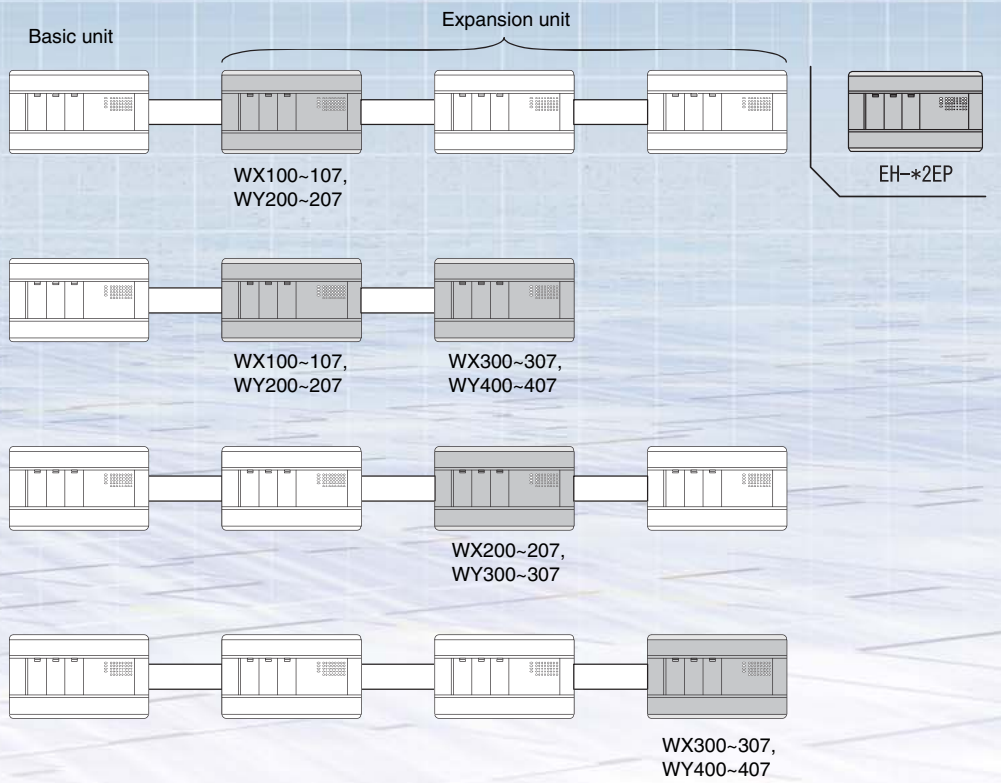


Functional specifications

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 , µm/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
	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
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 ℃)		Type	Accuracy guaranteed range	accuracy (*1)	Resolution	Input range
		K	-200 to 1200 ℃	± 0.4% (FS)	0.1 ℃ / 0.2 ℉	-270 to 1370 ℃
		J	-40 to 750 ℃	± 0.3% (FS)	0.1 ℃ / 0.2 ℉	-270 to 1200 ℃
		E	-200 to 900 ℃	± 0.3% (FS)	0.1 ℃ / 0.2 ℉	-270 to 1000 ℃
		S	0 to 1600 ℃	± 1.0% (FS)	1.0 ℃ / 2.0 ℉	-50 to 1760 ℃
		T	-200 to 350 ℃	± 0.8% (FS)	0.1 ℃ / 0.2 ℉	-270 to 400 ℃
		B	600 to 1700 ℃	± 1.0% (FS)	1.0 ℃ / 2.0 ℉	0 to 1820 ℃
		N	-200 to 1200 ℃	± 0.4% (FS)	0.1 ℃ / 0.2 ℉	-270 to 1300 ℃
		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 ℃ / 0.1 ℉ / 0.01mV)			
Isolation	Between channels		Not isolated			
	Between channel and internal circuit		Isolated by photo coupler			
Cold junction temperature input range			-20 to 80 ℃			
Cold junction temperature compensation			± 2 ℃ or less (ambient temp. 0 to 55 ℃)			
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 Output capacitance and inductance	10 to 500 Ω , 10 V 2000 pF max., 1 Henry max.
Voltage outputs	Output load range Output load inductance	10 kΩ min. 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

①Memory board

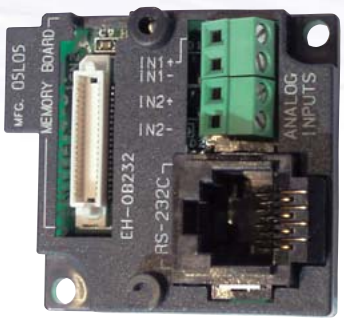
Item	Specification
Memory capacity	16ksteps (128k byte)
Size	19 x 41.5 x 7.6 mm

②RS-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 cale
Resolution	10 bits
Input impedance	100 kΩ
Isolation between channels	Not isolated
Isolation between CPU and analog signal	Not isolated



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

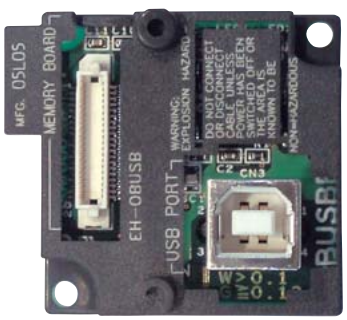
Item	Specification
Number of port	1
Cable length	Max. 500 m
Communication system	Half duplex
Baud rate	4,800 – 38,400bps(Dedicated port) 300 – 57,600bps(General-purpose port)
Connection mode	1 : N (Max. 32)
Protocol	Hi-Protocol(procedure1/2) / Non-Protocol

Analog Input Specification

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

④USB 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.

http://www.ftdichip.com/Drivers/VCP.htm

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	Solt 1 : Y32	Y100~103	Y100~105	Y100~107	Y100~109	Y100~111	Y100~115	Y100~123
			Slot 2 : empty 16	–	–	–	–	–	–	–
	Analog	Input	Slot 3 : X4W	–	–	–	WX30~31	–	–	–
		Output	Slot 4 : Y4W	–	–	–	WY40	–	–	–
Expansion Unit 1	Digital	Input	Unit 1 / Slot0 : B1/1	–	X1000~1015					
		Output		–	Y1016~1031					
	Analog	Input	Unit 1 / Slot0 :FUN0	–	WX101~104					
		Output		–	WY106~107					
Expansion Unit 2	Digital	Input	Unit 2 / Slot0 : B1/1	–	X2000~2015					
		Output		–	Y2016~2031					
	Analog	Input	Unit 2 / Slot0 :FUN0	–	WX201~204					
		Output		–	WY206~207					
Expansion Unit 3	Digital	Input	Unit 3 / Slot0 : B1/1	–	X3000~3015					
		Output		–	Y3016~3031					
	Analog	Input	Unit 3 / Slot0 :FUN0	–	WX301~304					
		Output		–	WY306~307					
Expansion Unit 4	Digital	Input	Unit 4 / Slot0 : B1/1	–	X4000~4015					
		Output		–	Y4016~4031					
	Analog	Input	Unit 4 / Slot0 :FUN0	–	WX401~404					
		Output		–	WY406~407					

64-points expansion unit

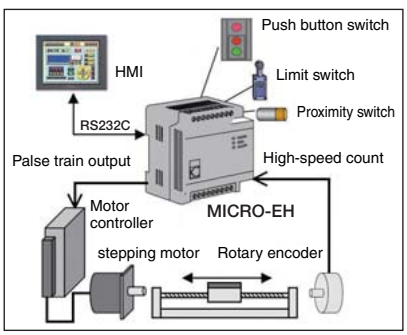
Unit			I/O Classification	10 - point type	14 - point type	20 - point type	23 - point type	28 - point type	40 - point type	64 - point type
Expansion Unit 1	Digital	Input	Slot 0 : X48	–	X1000~1039					
		Output	Solt 1 : Y32	–	Y1100~1123					
			Slot 2 : empty 16	–	–	–	–	–	–	–
Expansion Unit 2	Digital	Input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

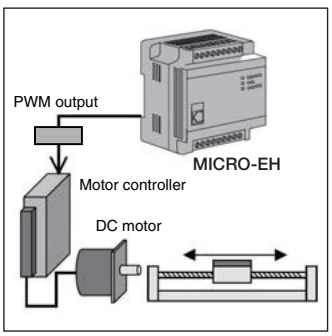
Simple positioning control

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 Normal	264 V AC Normal	24 V DC Normal	CE	UL	C-Tick
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)	Souse	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)	Souse	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	8 Points Expansion unit	EH-D8ED	24V DC	24V DC x 8	–		260	–	–	0.07	○	○	○
35		EH-D8ER	24V DC	–	Relay x 8		280	–	–	0.06	○	○	○
36		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		EH-A14EDR	100/200 V AC	24V DC x 8	Relay x 6		400	0.1	0.06	–	○	○	○
46	16 Points Expansion unit	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		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 23/28-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 23/28-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 Winodws® *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

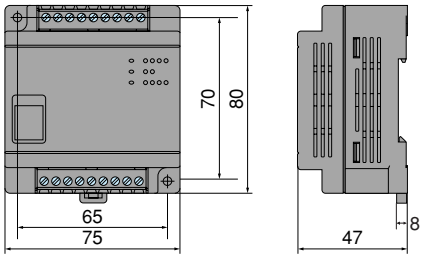
*1: 1 piece of 0.1 m expansion cable is attached to each expansion unit
*2: Windows is a registered trademark of Microsoft Corp. in the U.S. and other countries.
*3: EH-VCB02 is attached

General Specifications

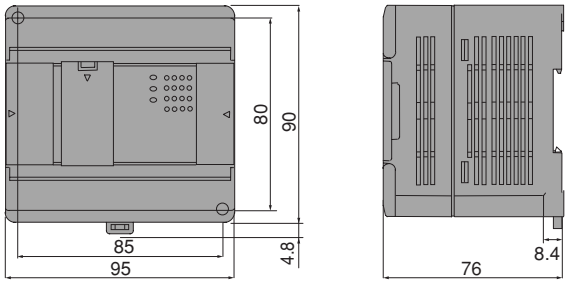
Item	Specification	
Power supply type	AC	DC
Power voltage	100/110/120 V AC (50/60 Hz), 200/220/240 V AC (50/60 Hz)	24 V DC
Power voltage fluctuation range	85 to 264 V AC wide range	19.2 to 30 V DC
Allowable momentary power failure	85 to 100 V AC: For a momentary power failure of less than 10 ms, operation 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 ℃	
Storage ambient temp.	-10 to 75 ℃	
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/s², 3times in each 3directions X,Y,Z)	
Noise resistance	○ 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.) ○ Based on NEMA ICS 3-304 ○ Static noise: 3,000 V at metal exposed area ○ Conforms with EN50081-2 and EN50082-2	
Supported standards	Conforms with UL, CE markings and C-TICK	
Insulation resistance Dielectric withstand voltage	20 MΩ or more between the AC external terminal and the protection earth (PE) terminal (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

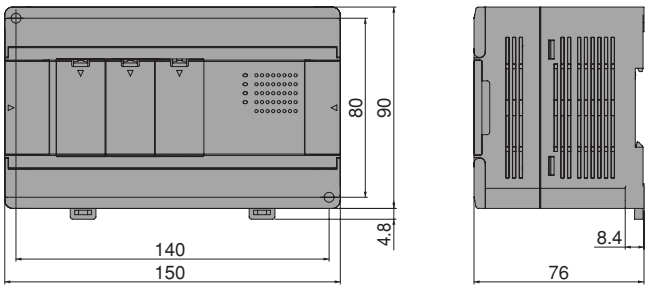
10-point type



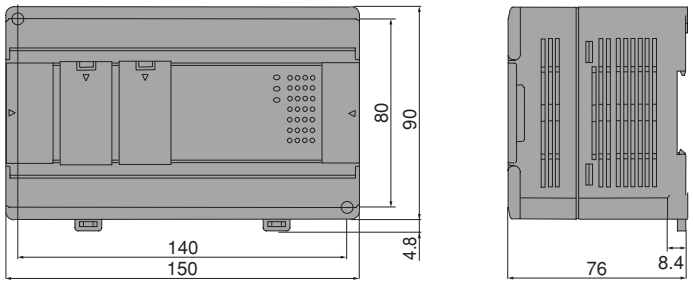
14-point type,8/16-point expansion unit, Analog Expansion unit Thermocouple expansion unit



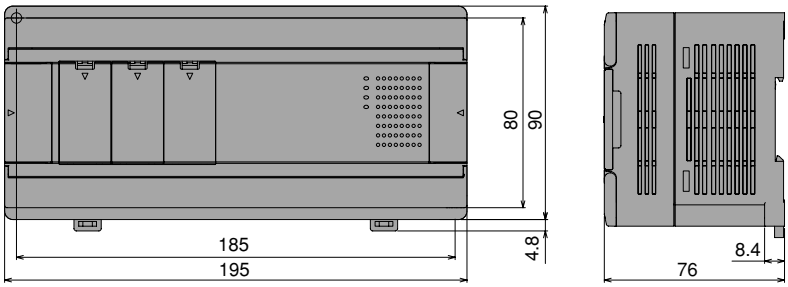
20/40-point type



23/28-point type,Positioning expansion unit



64-point type



[Unit : mm]

Network

Germany

Hitachi Europe GmbH
Industrial Components & Equipment Group
Am Seestern 18
D-40547 Düsseldorf
TEL: ⟨49⟩ (211) 5283-0
FAX: ⟨49⟩ (211) 5283-649
http://www.hitachi-eu.com/
http://www.hitachi-ds.com/

U.S.A

Hitachi America, Ltd.
Industrial Systems Division
50 Prospect Avenue
Tarrytown, NY 10591-4698
TEL: ⟨1⟩ (914) 631-0600
FAX: ⟨1⟩ (914) 631-3672
http://www.hitachi.us/

China

Hitachi East Asia Limited
4th Floor, North Tower
World Finance Centre, Harbour City
Canton Road, Tsim Sha Tsui, Kowloon
Hong Kong
TEL: ⟨852⟩ 2735-9218
FAX: ⟨852⟩ 2375-3192

Hitachi (China) Ltd.
18th Floor, Beijing Fortune Building,
5 Dong San Huan Bei Lu,
Chao Yang District, Beijing 100004, China
TEL: ⟨86⟩(10) 6590-8111
FAX: ⟨86⟩ (10) 6590-8110
http://www.hitachi.com.cn/

Hitachi (Shanghai) Trading Co., Ltd.
1408, Rui Jin Building,
No.205, Maoming Road(S)
Shanghai, 200020
TEL: ⟨86⟩ (21) 6472-1002
FAX: ⟨86⟩ (21) 6472-4990
http://www.hitachi.com.cn/

Hitachi East Asia Limited Taipei Branch
3rd Floor, Hung Kuo Building No.167
Tun-Hwa North Road, Taipei (105), Taiwan
TEL: ⟨886⟩ (2) 2718-8777
FAX: ⟨886⟩ (2) 2718-8180

Singapore

Hitachi Asia Ltd.
Power & Industrial Systems Group
24 Jurong Port Road
#03-05, Office Block
CWT Distripark
Singapore 619097
TEL: ⟨65⟩ (6271)-6086
FAX: ⟨65⟩ (6278)-4521
http://www.hitachi.com.sg/

Thailand

Hitachi Asia (Thailand) Co., Ltd.
18th Floor, Ramaland Building
952 Rama IV Road, Bangrak
Bangkok 10500
TEL: ⟨66⟩ (2) 632-9292
FAX: ⟨66⟩ (2) 632-9299
http://www.hitachi.co.th/

Australia

Hitachi Australia Pty Ltd.
Level 3, 82 Waterloo Road
NORTH RYDE NSW 2113
Australia
TEL: ⟨61⟩ (2) 9888-4100
FAX: ⟨61⟩ (2) 9888-4188
http://www.hitachi.com.au/

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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.

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