

**HITACHI**  
Inspire the Next

# MICRO-EH

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PROGRAMMABLE CONTROLLER



# MICRO-EH



# Hitachi's MICRO-EH Series PLC Delivers for Small Automation Processes!

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

Functionality

## 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,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 (23/28/64- point type)
- Built-in real-time clock (23/28/64- 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



High-functional MICRO-EH

### EH-D23\*\*\*/A23\*\*\*

- 2 analog inputs and 1 analog output as standard
- 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
- 23 I/O points(Max. 135 points with expansion units)
- 3k steps of program memory



Smallest MICRO-EH

### EH-D10\*\*\*

- Easily mounted on machines or other equipment thanks to its small size (D:47 mm)
- Size: W75 mm x H80 mm x D47 mm
- 10 I/O points (Not expandable)
- Max. 3k steps of program memory even with 10-point type



Standard MICRO-EH

### EH-D14\*\*\*/A14\*\*\*

- AC power supply compatible standard type
- Size: W95 mm x H90 mm x D76 mm
- 14 I/O points (Max. 126 points with expansion units)
- 3k steps of program memory

# Offers Various Useful Functions



Multi-functional MICRO-EH

## EH-D28\*\*\* / A28\*\*\*

- 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
- 28 I/O points (Max. 140 points with expansion units)
- 3k steps of program memory



Highest model of MICRO-EH

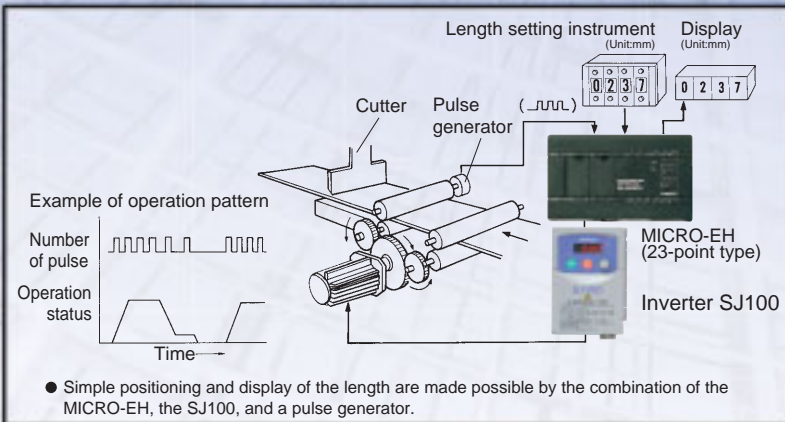
## EH-D64\*\*\* / A64\*\*\*

- Input 40 points Output 24 points (Max. 176 points with expansion units)
- 16k steps of program memory
- 32k words of data memory(WR)
- Max. 100kHz High speed counter
- Max. 65kHz Pulse train output / PWM output
- Option board (RS-232C, RS-422/485, USB, Memory)

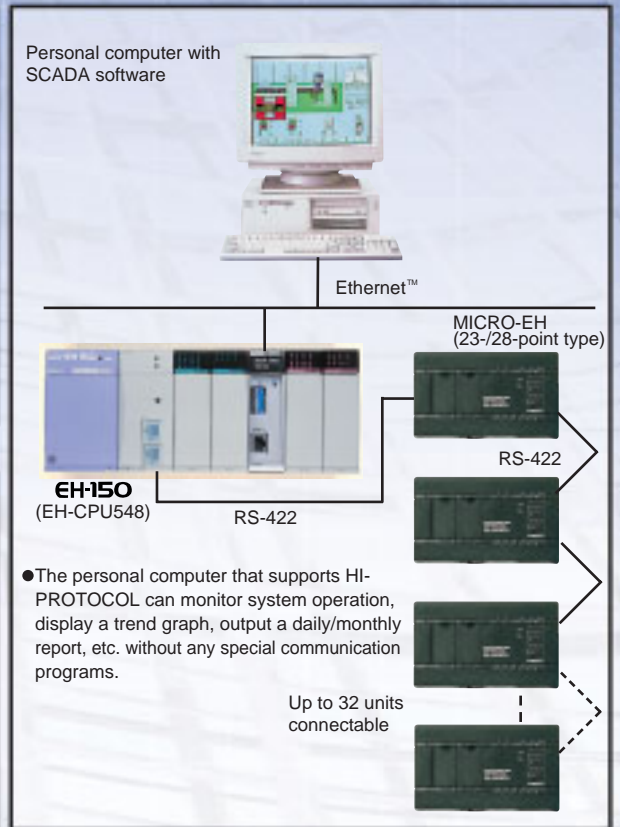


## Application Examples

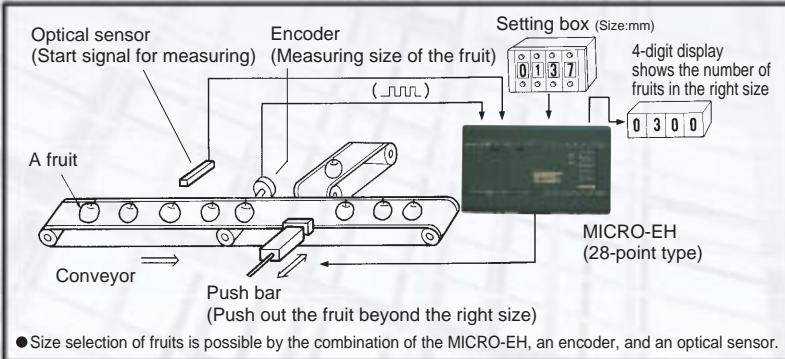
### Machine Control: Simple positioning control for Cutting Machine



### Network Control: Monitoring System with SCADA software



### Line Control: Fruit Size Selection



# New release of 64-point type

Built-in high-speed counter (4ch Max. 100kHz 32bits) as standard.  
Highest model of MICRO-EH.

Analog expansion unit, 8-point/16-point expansion unit are added to lineup.

64-point unit **New**

## I/O points is up

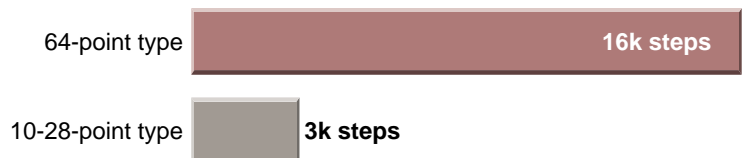
Input 40 points, Output 24 points  
Max. 176 points (28-point expansion unit x 4)



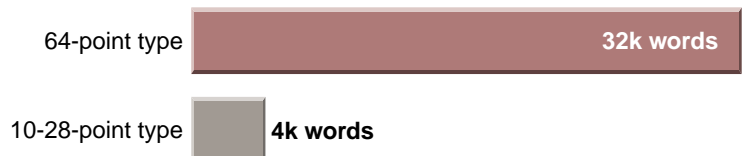
## User program memory, Data memory is up.

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 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

64-point type 100kHz 32 bits

10-28-point type 10kHz 16 bits

### 2-phase

64-point type 60kHz 32 bits

10-28-point type 10kHz 16 nits

## Pulse train output

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

### Pulse train output

64-point type 65kHz 32 bits(each channel)

10-28-point type 5kHz(total) 16 bits

### PWM output

64-point type 65kHz (each channel)

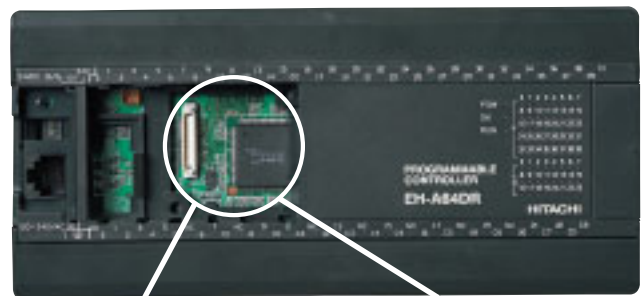
10-28-point type 2kHz(total)

## 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 bord



Memory board

# FEATURES

## High Performance in a Small Size

RUN/STOP Switch

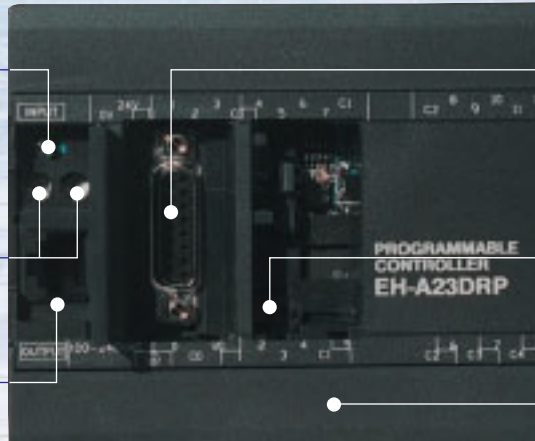
RS-422/485 Port

Potentiometers

Connector for Battery

RS-232C Port

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 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.]



Potentiometers



With these potentiometers, operation interval can be tuned easily.

## 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

64-point:Max.100kHz

Select one mode from:

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

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

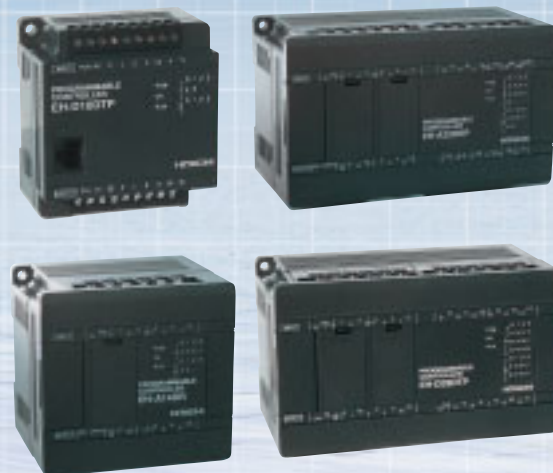
1-ph 3ch, 1-ph 2ch, or 2-ph 1ch [10-point]

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 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 64-point:Max.65kHz

## Maximum 176 I/O points (64-point type x1 + 28-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 (23/28/64-point type)

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

## Power supply for sensors (14/23/28/64-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 (23/28-point type)

A real-time clock is provided as standard (23/28-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.]

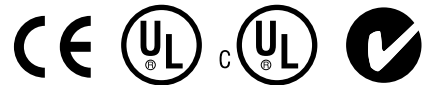
LADDER EDITOR for Windows®



## Conformity to Global Standards

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

UL, c-UL and C-tick of 64-point type and 8/16-point expansion unit are in schedule.



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



## Network Compatibility

### RS-232C port as standard (Port 1)

Communication speed can be selected from 4800, 9600, 19200, and 38400 bps.\*<sup>1</sup>

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)

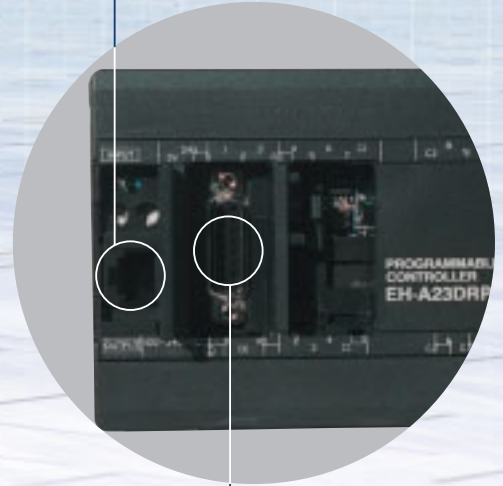
Either RS-422 or RS-485 can be selected by the connection wiring.



1:n station communication by HI-PROTOCOL is possible via the port 2\*<sup>2</sup>. 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-232C Port



#### RS-422/485 Port

		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

## 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

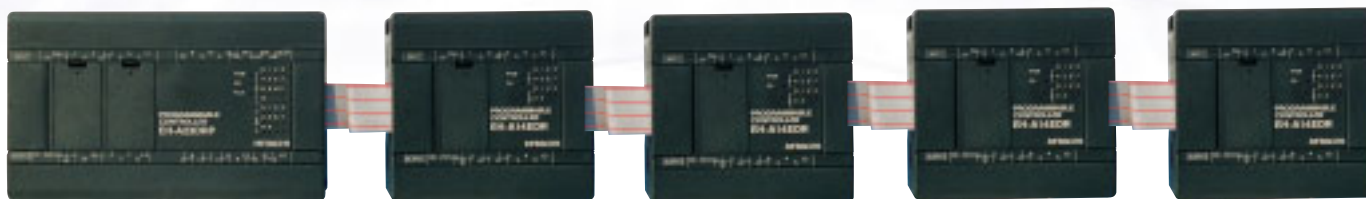
6 inputs and 4 outputs (not expandable)  
10-point type MICRO-EH can be easily mounted on machines or equipment thanks to its small size (D:47 mm).



## 14/23/28/64-point Type

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

- 14-point type: Maximum 72 inputs and 54 outputs (4 expansion units), 126 points in total
- 23-point type: Maximum 77 inputs and 58 outputs (4 expansion units), 135 points in total
- 28-point type: Maximum 80 inputs and 60 outputs (4 expansion units), 140 points in total
- 64-point type: Maximum 104 inputs and 72 outputs (4 expansion units), 176 points in total



Cable length: Max. 2 m in total

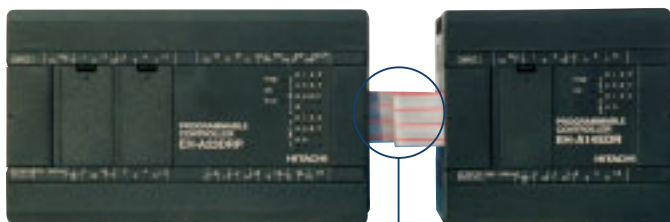


Photo (above) is a case of 14-point type expansion units


## 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.

# PRODUCT SPECIFICATIONS

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

Model	Name	10-point type	14-point type	23/28-point type		
<b>Control specifications</b>	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)				
<b>Operation processing specifications</b>	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.)			
<b>I/O processing specifications</b>	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)			
		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)				
<b>Peripheral equipment</b>	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.				
<b>Maintenance functions</b>	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.

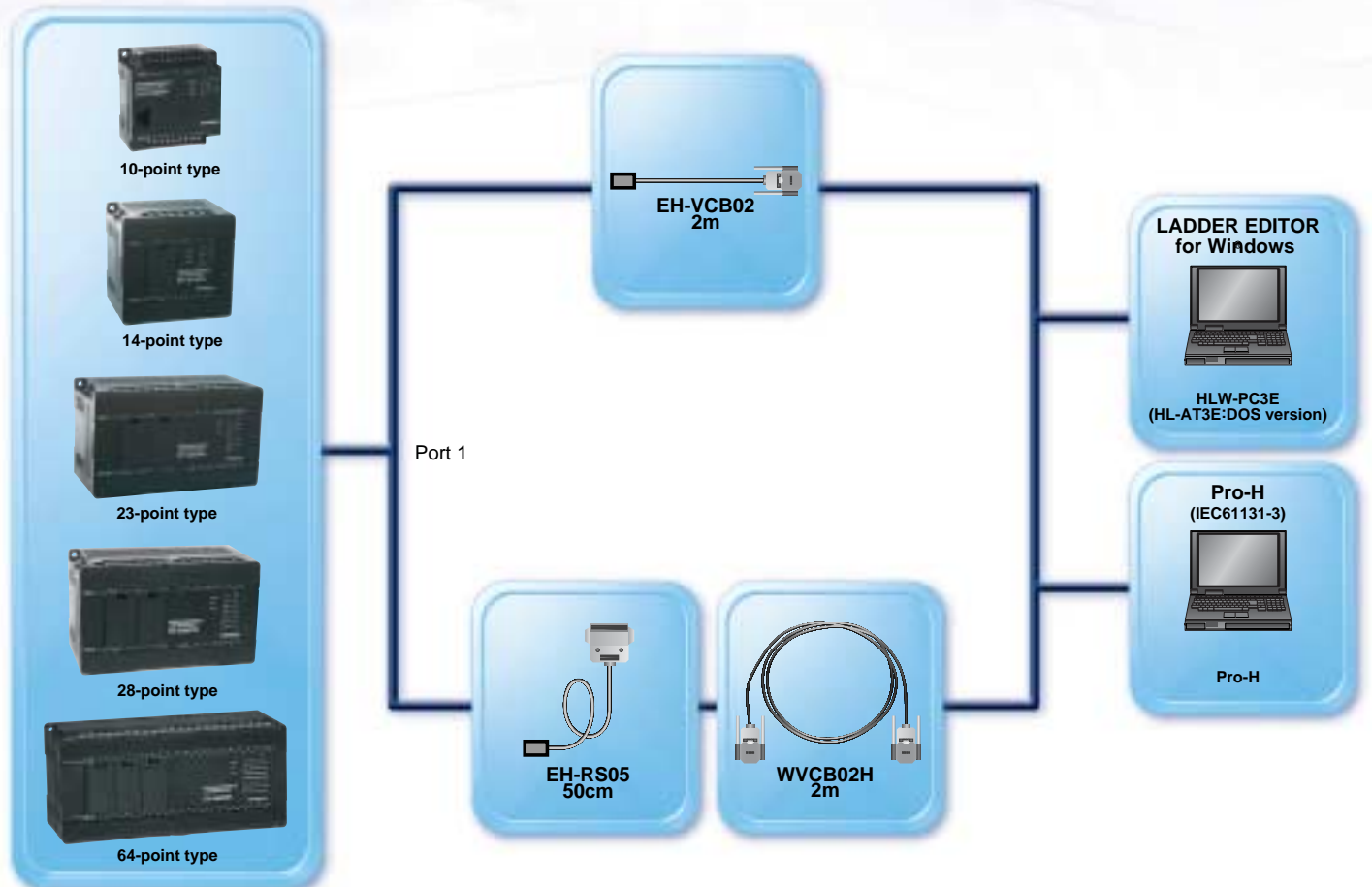
## Functional Specifications

Item	10-point type	14-point type	23-point type	28-point type	64-point type
RS-232C port	1	1	1	1	1
RS-422/485 port	-	-	1	1	1(Optional)
High-speed counter	10kHz 1-phase 3ch , 1-phase 2ch or 2-phase 1ch		10kHz 1-phase 3ch , 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 ( 4 points ,PWM and pulse train in total )		65kHz
Pulse train			5kHz ( in total )		65kHz
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	-	-
battery	-	-	Optional	Optional	Optional
Real-time clock	-	-	Yes	Yes	Yes
Digital filter	Yes	Yes	Yes	Yes	Yes
Power source	AC100/200V	No	Yes	Yes	Yes
	DC24V	Yes	Yes	Yes	Yes
Input	DC	Yes	Yes	Yes	Yes
	AC	No	Yes	Yes	No
	TR DC24V	Yes	Yes	Yes	Yes
Output	RY	Yes	Yes	Yes	Yes
	SSR	No	Yes	No	Yes
					No

1 : EH-D10DRA only

## CONNECTION WITH PERIPHERAL EQUIPMENT

MICRO-EH



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# 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			
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) [5,1,1,1,1,3]						1 (1)	
	EH-D28DR			24V DC x 16	16 (4) [4,4,4,4]		Relay x 12	12 (7) [1,5,1,1,1,1,3]							
	EH-A28DRP			24V DC x 16	16 (4) [4,4,4,4]		Relay x 11 Transistor x 1(source)	11 (6) [5,1,1,1,1,3]						1 (1)	
	EH-A28DR			24V DC x 16	16 (4) [4,4,4,4]		Relay x 12	12 (7) [1,5,1,1,1,1,3]							
	EH-A28AR			AC x 16		16 (4) [4,4,4,4]	Relay x 12	12 (7) [1,5,1,1,1,1,3]							
	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.

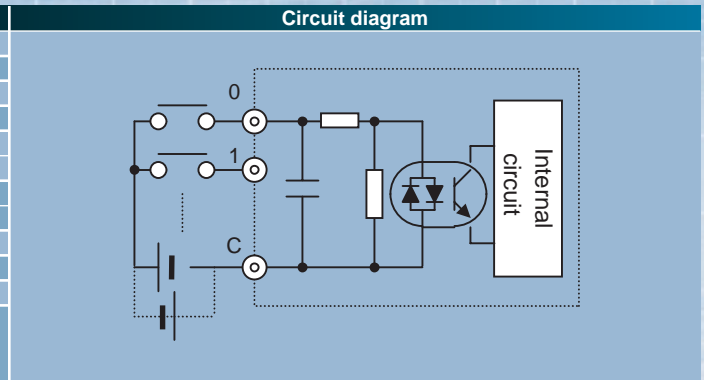
## Input/Output specification and points of Expansion unit ( number corresponds to the number of table of specification.)

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 (source ESCP)	Transistor Output		Transistor Output (source ESCP)		
													Low Current	High Current	Low Current	High Current	
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-D14EDT			24V DC x 8	8 (2)[4,4]			Transistor x 4(sink)				2 (1)	2				
	EH-D14EDTP			24V DC x 8	8 (2)[4,4]			Transistor x 6(sink)				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]								
	EH-D16ED			24V DC x 16			16 (3)[4,4,8]	-									
16 points	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]						
	EH-D28EDT			24V DC x 16	16 (4) [4,4,4,4]			Transistor x 12(sink)				8 (2)[6,6]	4				
	EH-D28EDTP			24V DC x 16	16 (4) [4,4,4,4]			Transistor x 12(source)				8 (2)[6,6]	4				
	EH-D28EDTPS			24V DC x 16	16 (4) [4,4,4,4]			Transistor (source ESCP) x 12						8 (2)[6,6]	4		
28 points	EH-D28EDR			24V DC x 16	16 (4) [4,4,4,4]			Relay x 12	12 (7) [1,5,1,1,1,1,3]								
	EH-A28EDR			24V DC x 16	16 (4) [4,4,4,4]			Relay x 12	12 (7) [1,5,1,1,1,1,3]								

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

## DC input (Basic units)

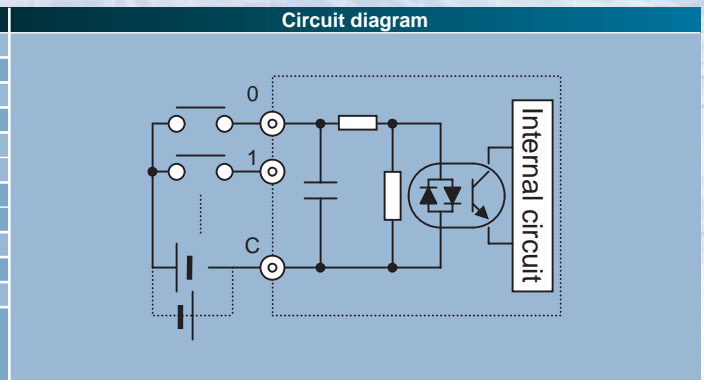
Item		Specification
Input voltage		24 V DC
Allowable input voltage range		0 to 30 V DC
Input impedance		Approx. 2.8 k
Input current		7.5 mA typical
Operating voltage	ON voltage	15 V DC (min) / 4.5 mA (max)
	OFF voltage	5 V DC (max) / 1.5 mA (max)
Input lag	OFF → ON	0.5 to 20 ms (configurable)
	ON → OFF	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.

## DC input (Expansion units)

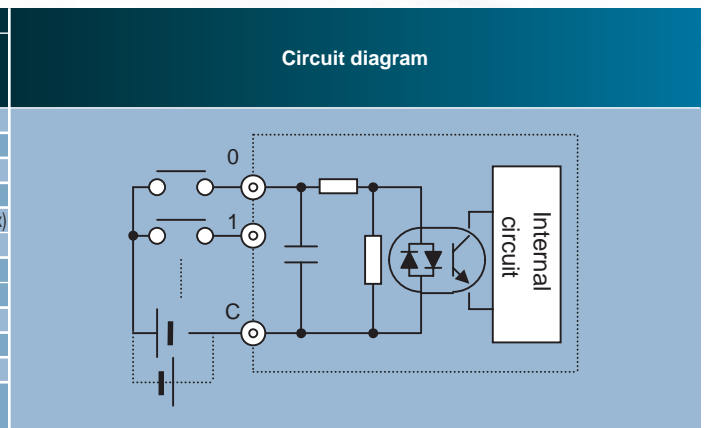
Item		Specification
Input voltage		24 V DC
Allowable input voltage range		0 to 30 V DC
Input impedance		Approx. 2.8 k
Input current		7.5 mA typical
Operating voltage	ON voltage	15 V DC (min) / 4.5 mA (max)
	OFF voltage	5 V DC (max) / 1.5 mA (max)
Input lag	OFF → ON	0.5 ms or less
	ON → OFF	0.5 ms or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

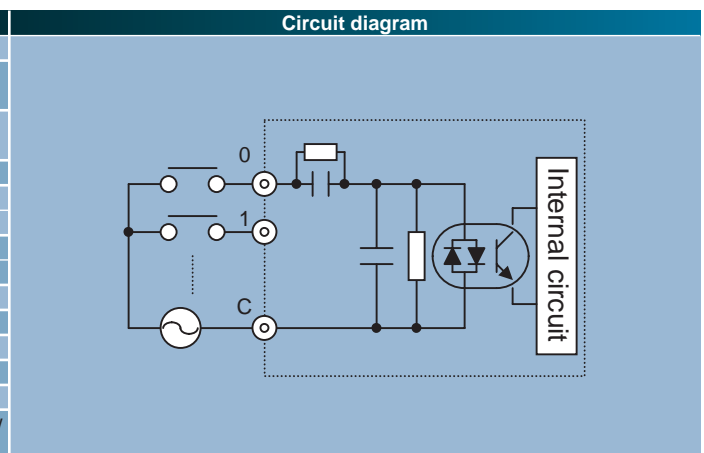
## DC input (8points / 16points expansion units)

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 k      Approx. 4.8 k
Input current		7.5 mA typical      4.8 mA typical
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)



## AC input

Item		Specification
Input voltage		100 to 120 V AC
Allowable input voltage range		85 to 132 V AC
Input impedance		50 -5 % to 60 +5 % Hz Approx. 14.6 k (60 Hz) Approx. 17.6 k (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)

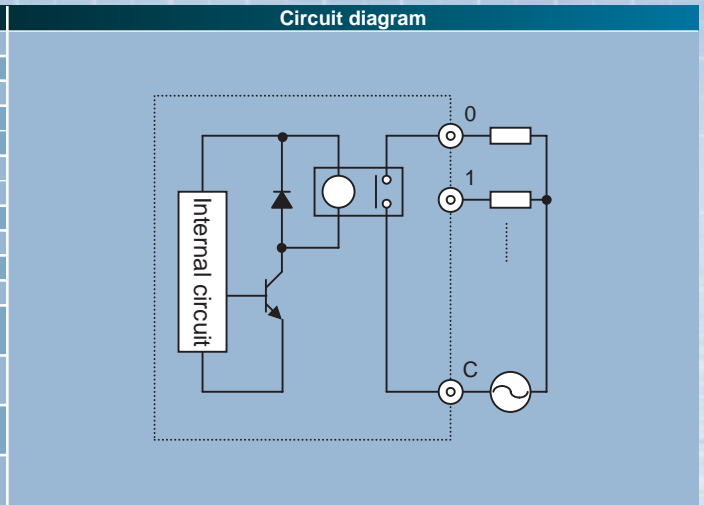


\*1: Delay by hardware only. Delay by digital filter (software filter) 0.5 to 20 ms is not included.

\*2: Common terminals are separated each other.

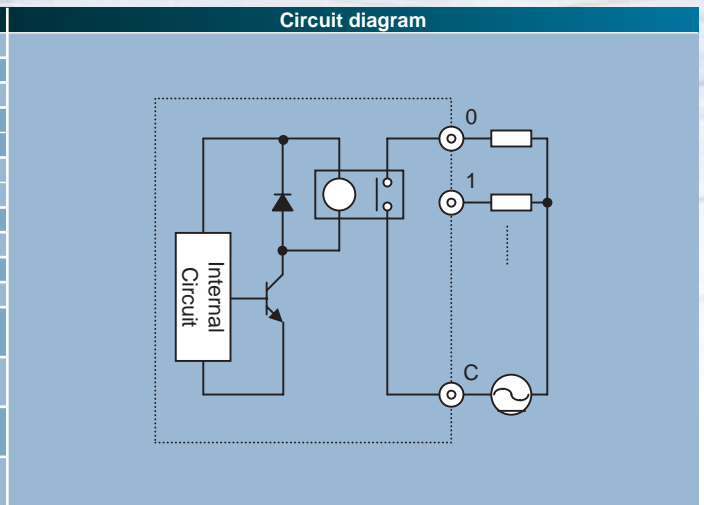
## Relay output

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: 2 A)
Insulation	1,500 V or more (external-internal) 500 V or more (external-external)
External connection	Removable type screw terminal block (M3)



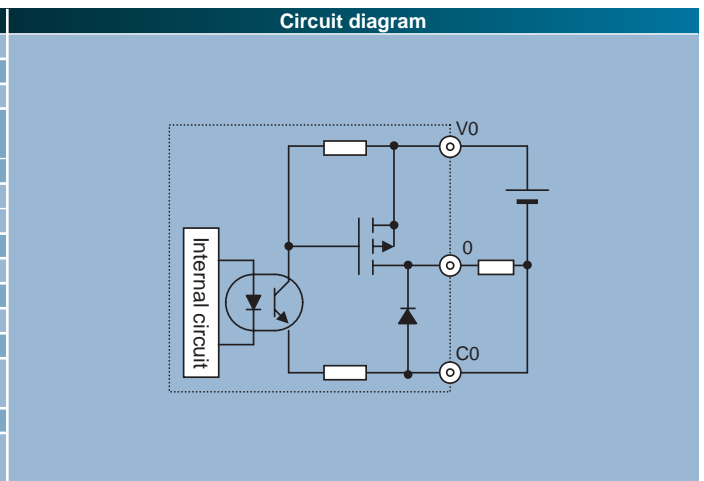
## Relay output (8points / 16points expansion unit)

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)



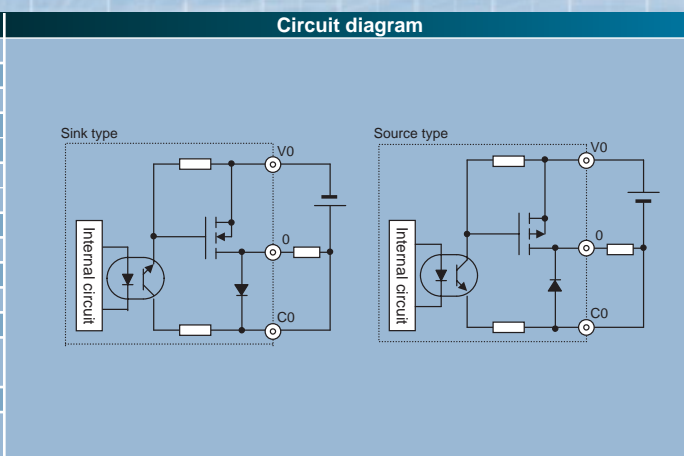
## DC Transistor output: LCDC-Low Current

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)



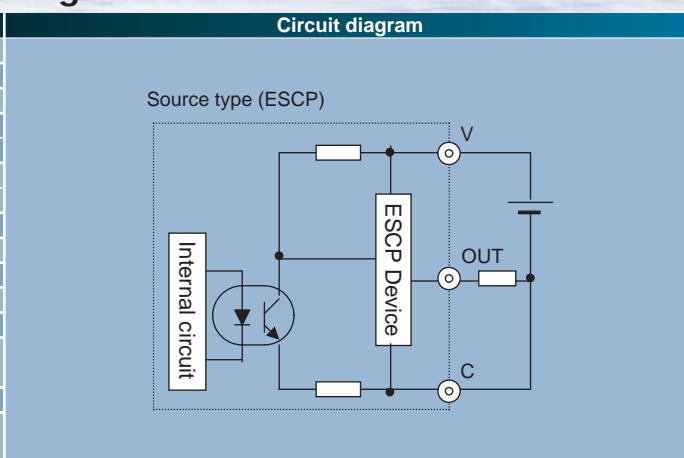
## DC Transistor output: HCDC-High Current

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)



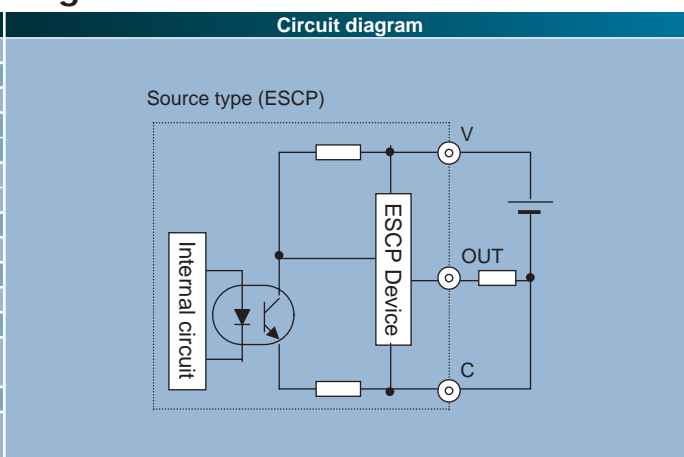
## DC Transistor output (ESCP type): HCDC-High Current

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 0.5 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)



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

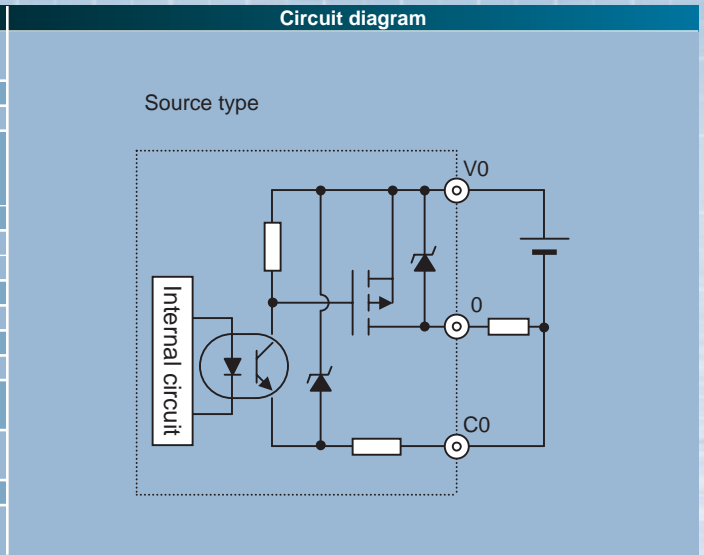
Item	Specification
Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	10 mA
Leak current	0.1 mA (max)
Maximum load current	1 circuit 1 common 3 A
Output response time	OFF → ON ON → OFF 0.05 ms (max) 24 V DC 0.2A 0.05 ms (max) 24 V DC 0.2A
Surge removing circuit	None
Fuse	None
Insulation 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)





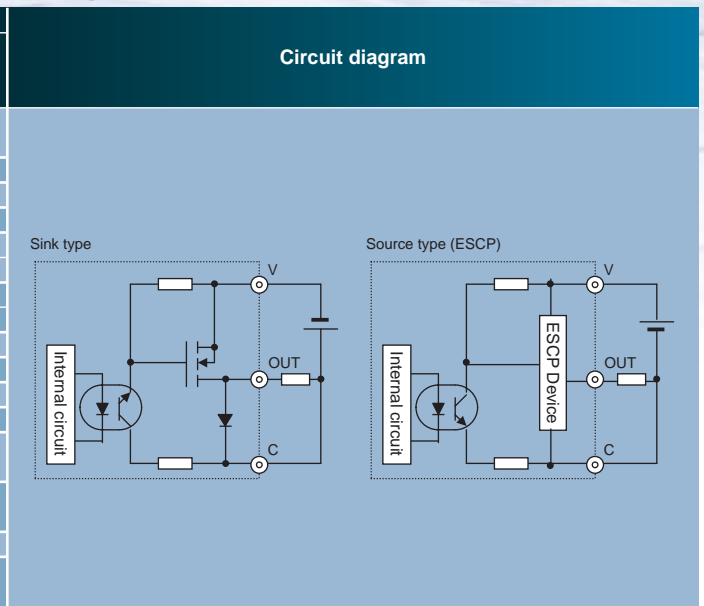
## DC Transistor output (Source type)

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



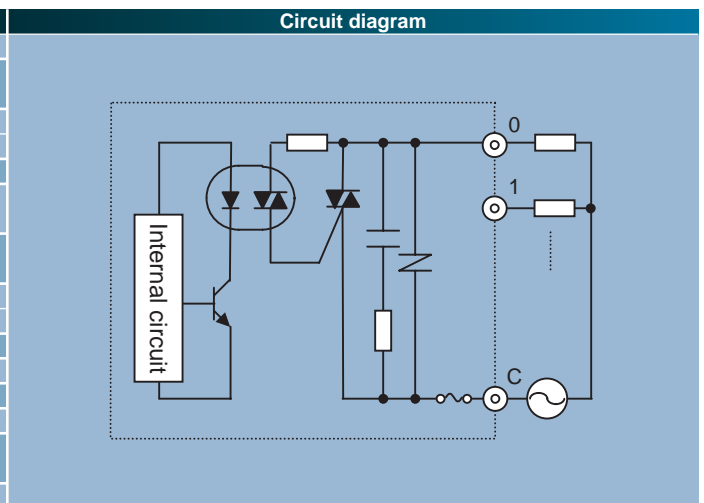
## DC Transistor output (8points / 16points expansion unit)

Item	Specification	
	EH-D16ET EH-D8ET EH-D8EDT	EH-D16ETPS EH-D8ETPS EH-D8EDTPS
Y100 output specifications	sink type	source type (ESCP)
Rated load voltage	24VDC	
Minimum switching current	1mA	10mA
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)	



## 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
	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
Maximum delay time	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)

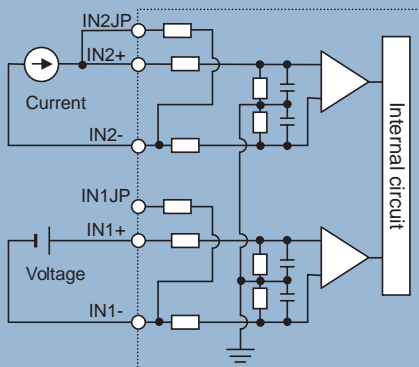


\*1: It is necessary to repair the module if the load short-circuits and causes the fuse to melt.  
Note that the fuse cannot be replaced by users.

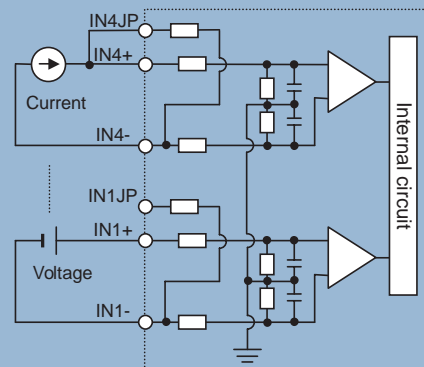
# Analogue Input Specifications

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.)
	0-20 mA (20.48 mA max.)	-10 to +10V ( $\pm 10.24V$ max.)
	-	0-20 mA (20.48 mA max.)
Resolution		12 bits
Accuracy		$\pm 1\%$ of full scale
Linearity		Max. $\pm 3$ units
Current input impedance		Approx. 249
Voltage input impedance	Approx. 100 k	Approx. 200 k
Input delay time		20 ms
Channel to internal circuit insulation	Not insulated	Insulated
Channel-to-channel insulation		Not insulated

Circuit diagram (23 points type)



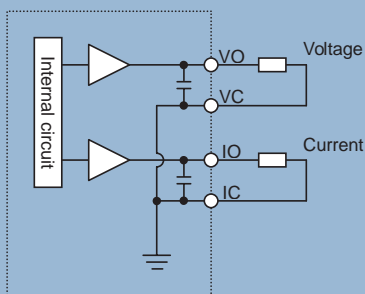
Circuit diagram (Analog expansion unit)



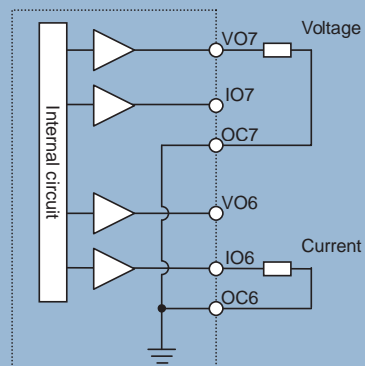
# Analogue Output Specifications

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
Output allowable capacity		Maximum 2,000 pF
Output allowable inductance		Maximum 1 H
Voltage output		
Allowable load		Minimum 10 k
Output allowable impedance		Maximum 1 $\mu F$

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 channels
Pulse train max. output frequency *1		5 kHz total channels

\*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

# 64 points type Input/Output Specifications

## 64 points type CPU Specifications

Spec.	Item	64 points. type		
Control Spec.	CPU	32-bit RISC processor		
	Processing system	Stored program cyclic system		
	Processing Speed	0.9 μs / instruction		
	Application Speed	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	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)	
	Edge detection	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.

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

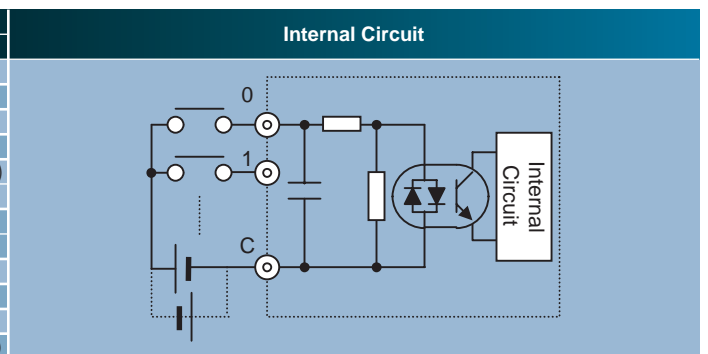
Type	Model Name	Power		Input	Input Point 24V DC	Output	Output Point				
		24V DC	100/200V AC				Relay Output	Transistor Output		Transistor Output (source ESCP)	
								Low Current	High Current	Low Current	High Current
64 Points	EH-A64DR			DC 24V x 40	40 (2)[16,24]	Relay x 24	24 (9) [6,2,4,2,2,2,2,2,2]				
	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 each common, it connects inside.

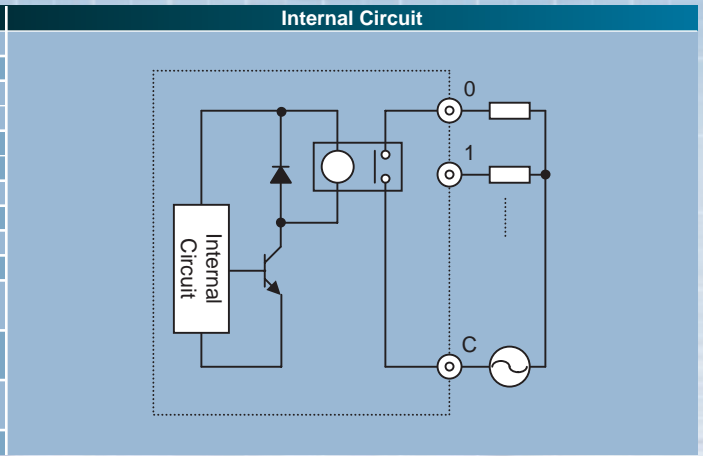
## DC input

Item	Specification	
	X0, X2, X4, X6	Except the following
Input voltage	24V DC	
Allowable input voltage range	0 to 30V DC	
Input impedance	Approximately 2.7 k	Approximately 4.7 k
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 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)	



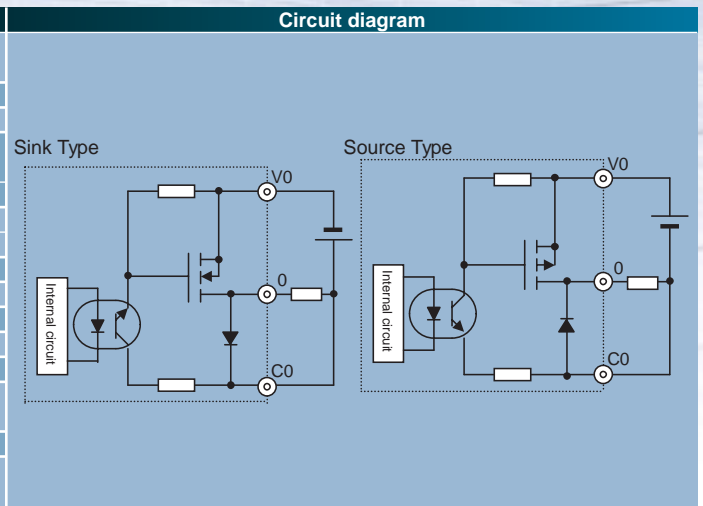
## Relay output

Item	Specification
Rated load voltage	5 to 250V AC, 5 to 30V DC
Minimum switching current	1 mA
Maximum load current	1 circuit 1 common 2A (24V DC, 240V AC) 5A
Output response time	OFF → ON ON → OFF 15 ms (max) 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 <sup>*1</sup>	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)



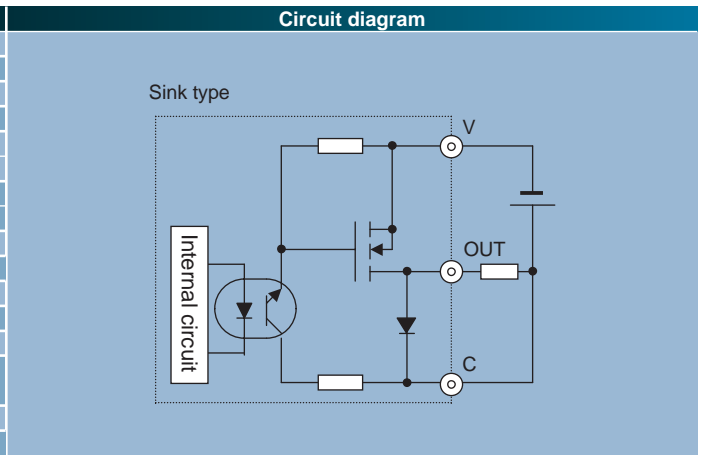
## DC Transistor output

Item	Specification
Rated load voltage	24/12 V DC (+10 %, -15 %)
Minimum switching current	1mA
Leak current	0.1 mA (max)
Maximum load current	1 circuit 1 common 0.5 A/24 V DC 0.3 A/12 V DC 2.0 A
Output response time	OFF → ON ON → OFF 0.1ms (max) /24 V DC 0.2A 0.1ms (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)



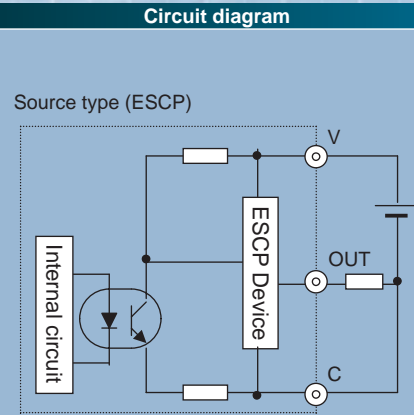
## DC Transistor output

Item	Specification
Output specification	Transistor output
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 0.5 A 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	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)



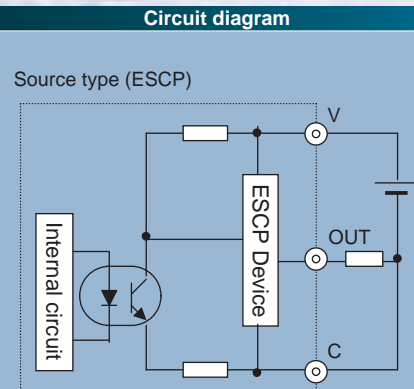
## DC Transistor output (ESCP type) ... LCDC-Low Current

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: 0.7 A 1 common: 2.8 A
Output response time	OFF → ON: 0.05 ms (max)/24 V DC ON → OFF: 0.05 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)



## 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: 1.0 A 1 common: 3.0 A
Output response time	OFF → ON: 0.05 ms (max)/24 V DC ON → OFF: 0.05 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)



## High speed counter

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	65,535 Hz
Pulse train max. output frequency	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: 15 V OFF: 5 V

# 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

## Memory board

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

## 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	300 – 19,200bps
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 k
Isolation between channels	Not isolated
Isolation between CPU and analog signal	Not isolated

## 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	300 – 19,200bps
Connection mode	1 : N (Max. 32)
Protocol	Hi-Protocol(procedure1/2) / Non-Protocol

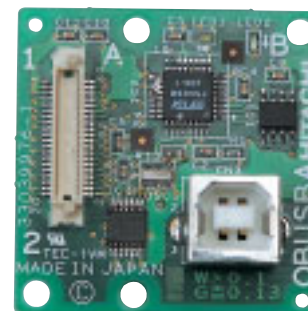


## Analog Input Specification

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 k
Isolation between channels	Not isolated
Isolation between CPU and analog signal	Not isolated

## 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.

<http://www.ftdichip.com/FTWinDriver.htm>

# I/O ASSIGNMENT

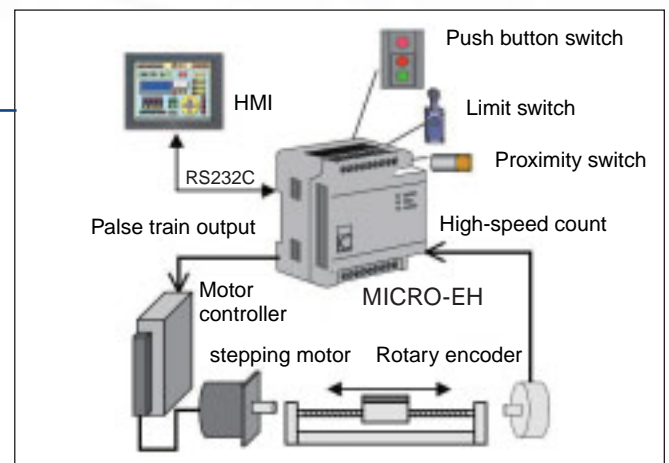
Unit		I/O Classification	10 - point type	14 - point type	23 - point type	28 - point type	64 - point type
Basic Unit	Digital	Input	Slot 0 : X48	X0 ~ 5	X0 ~ 7	X0 ~ 12	X0 ~ 39
		Output	Slot 1 : Y32	Y100 ~ 103	Y100 ~ 105	Y100 ~ 109	Y100 ~ 123
	Analog	Input	Slot 2 : empty 16	-	-	-	-
		Output	Slot 3 : X4W	-	-	WX30 ~ 31	-
Expansion Unit 1	Digital	Input	Slot 4 : Y4W	-	-	WY40	-
		Output	Unit 1 / Slot0 : B1/1	-	X1000 ~ 1031	-	-
	Analog	Input	-	-	Y1016 ~ 1031	-	-
		Output	Unit 1 / Slot0 : FUN0	-	WX101 ~ 104	-	-
Expansion Unit 2	Digital	Input	-	-	WY106 ~ 107	-	-
		Output	Unit 2 / Slot0 : B1/1	-	X2000 ~ 2031	-	-
	Analog	Input	-	-	Y2016 ~ 2031	-	-
		Output	Unit 2 / Slot0 : FUN0	-	WX201 ~ 204	-	-
Expansion Unit 3	Digital	Input	-	-	WY206 ~ 207	-	-
		Output	Unit 3 / Slot0 : B1/1	-	X3000 ~ 3031	-	-
	Analog	Input	-	-	Y3016 ~ 3031	-	-
		Output	Unit 3 / Slot0 : FUN0	-	WX301 ~ 304	-	-
Expansion Unit 4	Digital	Input	-	-	WY306 ~ 307	-	-
		Output	Unit 4 / Slot0 : B1/1	-	X4000 ~ 4031	-	-
	Analog	Input	-	-	Y4016 ~ 4031	-	-
		Output	Unit 4 / Slot0 : FUN0	-	WX401 ~ 404	-	-

## 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.

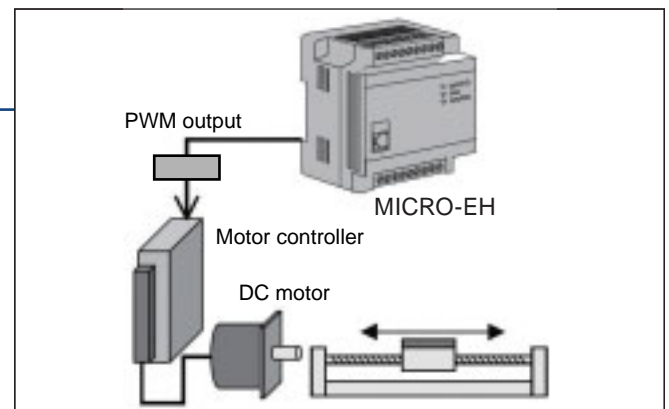
### Simple positioning control

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)		
			Power	Input	Output	Remarks		100 V AC	264 V AC	24 V DC
								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	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
11		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	–
12		EH-A23DR	100/200 V AC	24V DC x 13 Analog x 2	Relay x 10 Analog x 1	Sink	600	0.2	0.06	–
13	28 Points	EH-D28DT	24V DC	24V DC x 16	Transistor x 12	Sink	500	–	–	0.2
14		EH-D28DTP	24V DC	24V DC x 16	Transistor x 12	Source	500	–	–	0.2
15		EH-D28DTPS	24V DC	24V DC x 16	Transistor x 12 (short circuit protection)	Source	500	–	–	0.2
16		EH-D28DRP	24V DC	24V DC x 16	Relay x 11 Transistor x 1	Source	500	–	–	0.3
17		EH-D28DR	24V DC	24V DC x 16	Relay x 12		500	–	–	0.3
18		EH-A28DRP	100/200 V AC	24V DC x 16	Relay x 11 Transistor x 1	Source	600	0.2	0.06	–
19		EH-A28DR	100/200 V AC	24V DC x 16	Relay x 12		600	0.2	0.06	–
20		EH-A28AR	100/200 V AC	AC x 16	Relay x 12		500	0.2	0.06	–
21	EH-A28AS	100/200 V AC	AC x 16	SSR x 12		600	0.2	0.06	–	
22	64 Points	EH-D64DR	24V DC	24V DC x 40	Relay x 24		640	–	–	0.5
23		EH-D64DT	24V DC	24V DC x 40	Transistor x 24	Sink	640	–	–	0.5
24		EH-D64DTPS	24V DC	24V DC x 40	Transistor x 24 (short circuit protection)	Source	640	–	–	0.5
25		EH-A64DR	100/200 V AC	24V DC x 40	Relay x 24		720	0.4	0.2	–
26	8 Points Expansion unit	EH-D8ED	24V DC	24V DC x 8	–		260	–	–	0.07
27		EH-D8ER	24V DC	–	Relay x 8		280	–	–	0.06
28		EH-D8ETPS	24V DC	–	Transistor x8 (short circuit protection)	Source	260	–	–	0.03
29		EH-D8ET	24V DC	–	Transistor x 8	Sink	260	–	–	0.02
30		EH-D8EDR	24V DC	24V DC x 4	Relay x 4		300	–	–	0.16
31		EH-D8EDTPS	24V DC	24V DC x 4	Transistor x4 (short circuit protection)	Source	260	–	–	0.16
32		EH-D8EDT	24V DC	24V DC x 4	Transistor x 4	Sink	260	–	–	0.16
33		EH-D14EDT	24V DC	24V DC x 8	Transistor x 6	Sink	300	–	–	0.16
34	14 Points Expansion unit	EH-D14EDTP	24V DC	24V DC x 8	Transistor x 6	Source	300	–	–	0.16
35		EH-D14EDR	24V DC	24V DC x 8	Relay x 6		300	–	–	0.16
36		EH-D14EDTPS	24V DC	24V DC x 8	Transistor x 6 (short circuit protection)	Source	300	–	–	0.16
37		EH-A14EDR	100/200 V AC	24V DC x 8	Relay x 6		400	0.1	0.06	–
38	16 Points Expansion unit	EH-D16ED	24V DC	24V DC x 16	–		260	–	–	0.13
39		EH-D16ER	24V DC	–	Relay x 16		300	–	–	0.11
40		EH-D16ETPS	24V DC	–	Transistor x 16 (short circuit protection)	Source	260	–	–	0.04
41	EH-D16ET	24V DC	–	Transistor x 16	Sink	260	–	–	0.03	
42	28 Points Expansion unit	EH-D28EDT	24V DC	24V DC x 16	Transistor x 12	Sink	500	–	–	0.2
43		EH-D28EDTP	24V DC	24V DC x 16	Transistor x 12	Source	500	–	–	0.2
44		EH-D28EDTPS	24V DC	24V DC x 16	Transistor x 12 (short circuit protection)	Source	500	–	–	0.2
45		EH-D28EDR	24V DC	24V DC x 16	Relay x 12		500	–	–	0.3
46		EH-A28EDR	100/200 V AC	24V DC x 16	Relay x 12		600	0.2	0.06	–
47	Analog Expansion unit	EH-D6EAN	24V DC	Analog x 4	Analog x 2		300	–	–	0.16
48		EH-A6EAN	100/200 V AC	Analog x 4	Analog x 2		400	0.1	0.06	–
49	RTD Expansion unit	EH-A6ERTD	100/200 V AC	RTD X 4	Analog x 2		400	0.1	0.06	–
50		EH-A4ERTD	100/200 V AC	RTD X 4	–		400	0.1	0.06	–
51		EH-D6ERTD	24V DC	RTD X 4	Analog x 2		300	–	–	0.16
52		EH-D4ERTD	24V DC	RTD X 4	–		300	–	–	0.16
53	Expasion cable	EH-MCB10		1.0 m						
54		EH-MCB05		0.5 m						
55		EH-MCB01		0.1 m						
56	Lithium battery	EH-MBAT		For data memory back-up						
57		EH-MBATL		For data memory back-up (Long Type)		For 64 points type				
58		EH-MBATLC		For data memory back-up (Long Type)		For 23/28 points type				
59	Programming software	HLW-PCRE		LADDER EDITOR for Wndows*						
60		HL-AT3E		LADDER EDITOR DOS version						
61	Connetion cable	EH-VCB02	Direct connection between MICRO-EH/EH-150 and personal computer (2m)							
62		WVCB02H	Conetion with personal computer, EH-RS05 is required.							
63		EH-RS05	Adapter cable for WVCB02H							

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

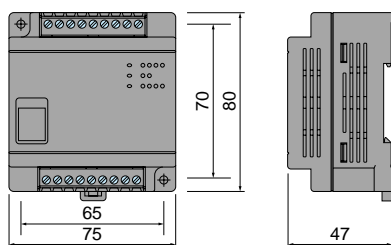
\*2: Windows is a registered trademark of Microsoft Corp. in the U.S. and other countries.

# General Specifications

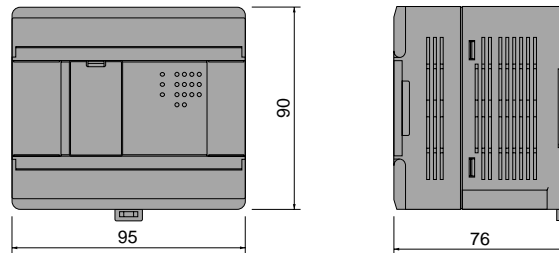
Item	Specification	
Power supply type	AC	DC
Power voltage	100/110/120 V AC (50/60 Hz), 200/220/240 V AC (50/60 Hz)	24 V DC
Power voltage fluctuation range	85 to 264 V AC wide range	19.2 to 30 V DC
Allowable momentary power failure	85 to 100 V AC: For a momentary power failure of less than 10 ms, operation 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	Conforms to JIS C 0911	
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	20 M or more between the AC external terminal and the protection earth (PE) terminal (based on 500 V DC megger)	
Dielectric withstand voltage	1,500 V AC for one minute between the AC external terminal and the protection earth (PE) terminal	
Grounding	Class D dedicated grounding (grounded by a power supply module)	
Environment used	No corrosive gases and no excessive dirt	
Structure	Attached on an open wall	
Cooling	Natural air cooling	
Specification	Natural air cooling	

# DIMENSIONS

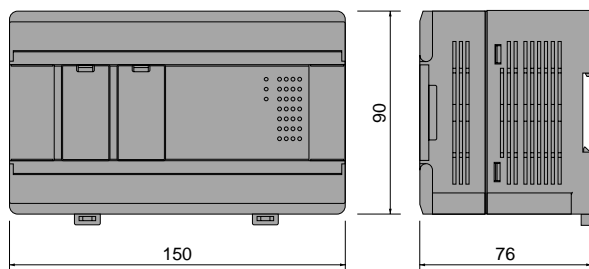
10-point type



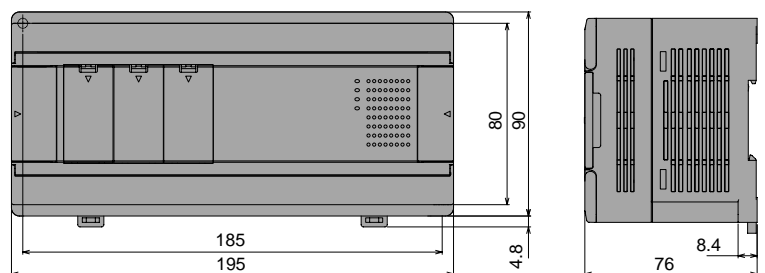
14-point type, 8/16-point expansion unit, Analog Expansion unit



23-/28-point type



64-point type



[Unit : mm]





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**Hitachi Industrial Equipment Systems Co., Ltd.**