

HITACHI

HITACHI PROGRAMMABLE CONTROLLER

H series Board Type



A new board type series with all the functions of the small to medium scale H-200.

Highly evaluated for easy use and high performance, the latest board type H-200 has everything — power supply, central processing unit (CPU), memory, and input/output. With a lineup of 20, 28, 40, and 64 input/output points, a cost-effective system of from 20 to 128 points is possible.

Compact design

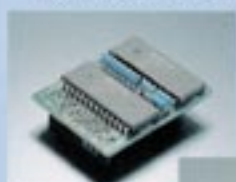
- Hitachi has shrunk this model to 80% of the dimensions of the current E series.

About 80% of installed size
(at 40 point input/output points)

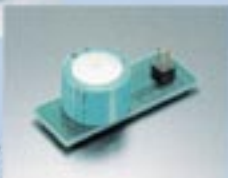


Conveniently maintenance-free

- By using the optional ROM memory pack or large-capacity condenser, the lithium battery can be removed, thus eliminating the need for maintenance.



ROM pack



Large capacity
condenser

Calendar clock and real-time control

- Through special internal output, the year, month, day, day of week, hour, minutes, and seconds can be directly read out. In addition, use of a comparison box, etc., allows free real-time control according to the day or time.



Reservation function, time recording

An array of functions for every need

- **Wide-range input**
The board type series incorporates a range of four voltage inputs, from 4 to 27 V DC. This feature allows an array of input options, including output from TTL voltage and sensors.
- **Multiple power sources for sensors**
The board type series features two power sources — 12 and 24 V DC — as sensor power sources, thus permitting connection with each type of sensor and equipment.
- **Interrupt input**
With 8 interrupt input points, the series allows swift treatment processing when relevant controls act abnormally.
- **Time constant variable filter**
Because you can modify the filter delay time from 0.02ms to 16 seconds, the speed response and chattering elimination are ideal.
- **High-speed counter**
The series features single and two phases, with a high speed of 10 kHz. This simplifies positional setting control when a rotary encoder is connected.

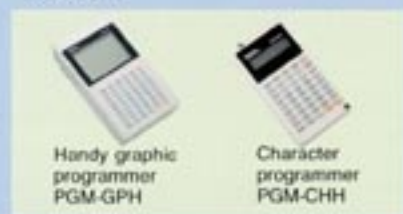
Direct connection with display equipment and personal computer

- An RS-232C interface port allows direct connection of personal computers and display equipment, etc.



Programmers are the same as for H series

- The H series programming device can be used without modification.

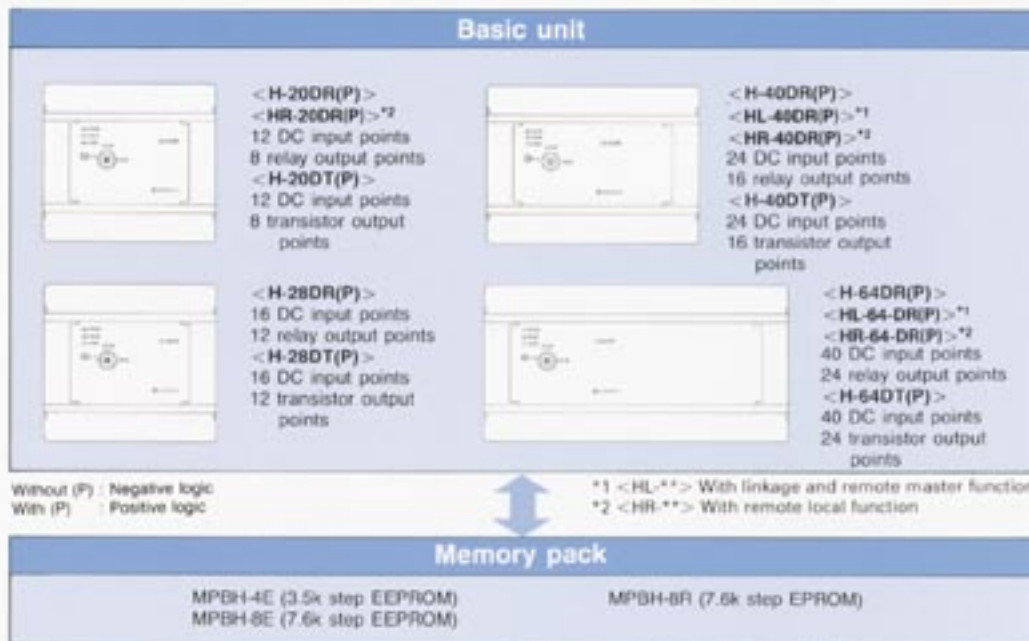


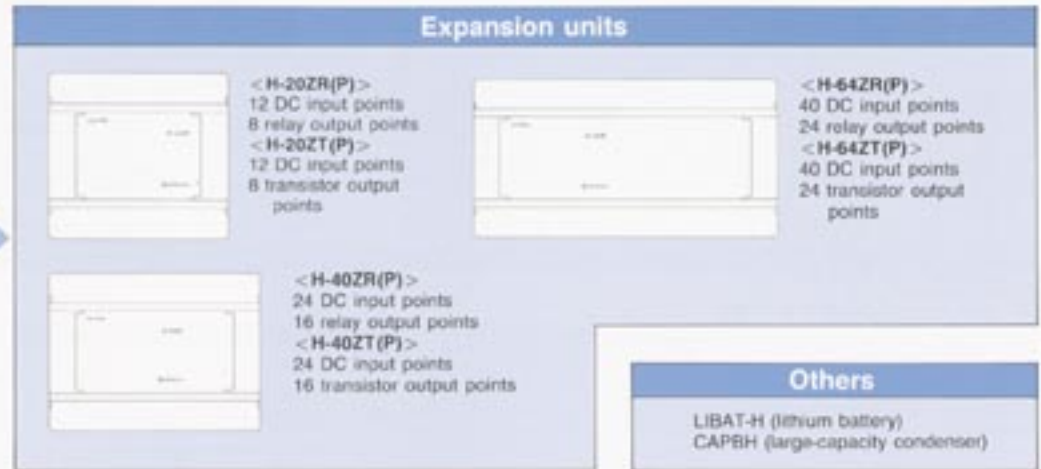
Incorporates the H-200 series' many advanced functions

- **Fixed address method**
The board type series employs a fixed address method that determined the input and output numbers for each slot. Even if an input/output module is changed, there is no effect on other slot numbers.
- **Direct connection to personal computers**
Just one cable is required for connection with a personal computer. The incorporated H series unified protocol allows system monitoring, daily/monthly report creation, production control/indication easily via personal computer.
- **Program change during run**
A program can be changed easily even when the CPU is operating, thus considerably shortening test run times.
- **CALL LADDER function**
Easy circuit copying reduces the need for input.
- **Bit/word common internal output**
Read/write of any word bit information is possible, thus simplifying programming.

System configuration

An extensive equipment configuration that makes the most of expandability and family features.





Without (P) : Negative logic
 With (P) : Positive logic

Programming software

HL-AT3E

Ladder editor
for IBM
computer.

ACTSIP-H (ladder/
ACTGRAPH+(grafcet):
by ACTRON AB
HPPROG (ladder) by LOGITEK S.A.

Guide to all H-200 equipment usable on H series board type

Base		BSM-3A	Output module	Relay output module	POM-RB
		BSM-4A			POM-RBC
Power supply module		BSM-5A	Triac output module	POM-RBH	
		BSM-6A		POM-RBW	
Input module	AC input module	BSM-7A	Transistor output module (sink type)	POM-S	
		BSM-8A		POM-SH	
	DC input module (source type)	BSM-9B	Transistor output module (source type)	POM-SW	
		PSM-A		POM-T	
	External power supply type	PSM-A2	Input/output mixed module	POM-TM	
		PSM-B		POM-TW	
	DC input module (sink type)	PSM-D	Communicating function module	POM-TH	
		PIM-A		POM-TM	
		PIM-AH	Advanced function module	POM-TPH	
		PIM-AW		POM-TPW	
	PIM-D	CPU linkage	PHH-DT		
	PIM-DH		PHM-TT		
	PIM-DW	Host linkage module	ICLH-T		
	PIH-DM		REM-LH2		
	PIM-DG	Remote I/O	RIOM		
	PIM-DGH		RIOH-TM		
	PIM-DGW	High-speed counter	RIOH-TL		
	PIM-DP		RIOH-DT		
	PIM-DPH	Analog input module	CTH		
	PIM-DPW		AGH-I		
 H-200 (module type)		CPU linkage	AGH-IV		
			Host linkage module	AGH-IV2	
		Remote I/O		THH	
			High-speed counter	AGH-O	
		Analog input module		AGH-OD	
	Analog output module		AGH-ODV		

Specifications

An array of functions and modules featuring all the capabilities of the H-200 series.

● Basic unit specifications

Item		H-20DR(P), H-20DT(P)	H-28DR(P), H-28DT(P)	H-40DR(P), H-40DT(P)	H-64DR(P), H-64DT(P)	
Control Specifications	External input points	12 points	16 points	24 points	40 points	
	External output points	8 points	12 points	16 points	24 points	
	Maximum input/output points	128 points (when adding board types) 208 points (when adding module types)				
	Command, ladder diagram	Processing method	Stored program cyclic system			
		Processing speed	1.5μs/command			
		Sequence command	Several ten to several hundred μs/command			
Arithmetic/application command		7.6 k steps (RAM/EPROM/EEPROM) 3.5 k steps (EEPROM)				
User program memory		31 kinds 54 kinds				
Sequence command		31 kinds				
Arithmetic/application command		54 kinds				
Input/output processing specifications	Input/output processing system		Direct processing			
	Internal output	Bit	1984 points (R0 to R7BF)			
		Word	1 k word (WR0 to WR3FF)			
		Special	Bit	64 points (R7C0 to R7FF)		
		Word	64 words (WRF000 to WRF03F)			
	Timer counter	Bit/word common	4096 points/256 words			
		Number of points	512 points (timer and counter) (timer: 0 to 255)			
		Timer set value	0 to 65,535 s, time base 0.01, 0.1, 1 s			
		Counter set value	1 to 65,535			
	Edge detection		128 points for rise, 128 points for fall			
Calendar clock		Year, month, day of week, hour, minute, second				

Without (P) Negative logic
With (P) Positive logic

● Input/output specifications

Item		H-20DR(P) [DT(P)]	H-28DR(P) [DT(P)]	H-40DR(P) [DT(P)]	H-64DR(P) [DT(P)]	
Input specifications	Input voltage	24V DC [21.6 to 26.4V DC]				
	Input current	About 10mA/24V DC (impedance, about 2.4 kΩ)				
	Input signal	I/O indicator lamps on when external inputs ON; I/O indicator lamps off when external inputs OFF.				
	Operational voltage	ON voltage 19 V or more (ON resistance 300 Ω or less); OFF voltage 7 V or less (OFF resistance 200 kΩ or more)				
	Max. input delay time	ON → OFF, OFF → ON 4ms or less				
	Polarity	DR, DT: common ... (-), DRP, DTP: common ... (+)				
Insulation method		Photocoupler				
Output method		Relay output or transistor output				
Output voltage		24 V DC [21 ~ 27 V DC], [24 V DC (3 ~ 26 V DC)]				
Output signal		I/O indicator lamps on when external inputs ON; I/O indicator lamps off when external inputs OFF.				
Output specifications	Max. output load current	1 circuit	2A[0.5A]			
		2 circuits	—	2A[1A]	2A[1A]	
		4 circuits	—	4A[2A]	4A[2A]	
	Min. load current	8 circuits	—	—	4A[4A]	
		—	—	—	4A[4A]	
	Max. leakage current	10mA (0.5V) [10mA]				
	Max. rush current	0mA [0.1mA (24 V DC)]				
	Max. delay time	6A 0.1s [3A 10ms]				
	Common output connection		ON → OFF and OFF → ON 10 ms [ON → OFF and OFF → ON 1ms]			
	Polarity	Independent point	8 sets	—	—	—
2 points/common terminal		—	1 set	—	1 set	
4 points/common terminal		—	1 set	—	2 sets	
8 points/common terminal		—	1 set	1 set	1 set	
8 points/common terminal		—	—	1 set	1 set	
Insulation method		Selection [common terminal ... (-)] Relay [photocoupler]				

Without (P) Negative logic
With (P) Positive logic

Note: [] Indicate values during transistor output type.

● Additional unit specifications

Item	H-20DR(P)[ZT(P)]	H-40DR(P)[ZT(P)]	H-64DR(P)[ZT(P)]
External input points	12 points	24 points	40 points
External output points	8 points	16 points	24 points
External input	24 V DC (equipped with 24 V DC power source)		
External output	Relay output or transistor output		

Without (P) Negative logic
With (P) Positive logic

Note: [] Indicate values during transistor output type.

● General specifications

Item	Details
Operating temperature	0 ~ 55°C
Storage temperature	-10°C to 75°C (memory content guaranty limited to use within operating temperature range)
Operating humidity	20% to 90% RH, with no condensing
Storage humidity	10% to 90% RH, with no condensing
Vibration resistance	Set by JIS C 0911 (16.7Hz multiple vibration width: 3mm, in X, Y, and Z directions)
Noise resistance	• Noise voltage, 1500 V p-p; noise pulse width, 100ns, 1μs ... from noise simulator • NEMA ICS2-230-42-45 • Static electricity noise: Exposed metal areas 3000 V
Insulation resistance	20 MΩ or more between external AC terminal and case earth (FG) terminal (using 500 V DC megger)
Voltage resistance	1500 V AC for 1 minute between external AC terminal and case earth (FG) terminal
Grounding	100 Ω max. (exclusive grounding required)
Atmosphere	Avoid corrosive gases (ammonia, hydrogen sulfide, etc.) and excessive dust
Configuration	Open wall installation type (fitting in one direction only)
Cooling	Natural air-cooling

Module specifications possible for use with H board type (use with H-200)

Input module specifications

Model	PIM-D	PIM-DG	PIM-DH, DW	PIM-DGH, DGW	PIM-DM	PIM-A	PIM-AH, AW	PIM-OP	PIM-OPH, DPW
Input specifications	DC input					AC input		DC input	
Input voltage	21.6 - 26 V DC					85 - 264 V AC		21.6 - 26 V DC	
No. of input points	8 points		16 points		32 points	8 points 16 points		8 points 16 points	
Common Connection	8 points/common terminal					8 points/common terminal		8 points/common terminal	
Polarity	Common terminal (-)	Common terminal (+)	Common terminal (-)	Common terminal (+)		—		Common terminal (-) (sink type)	

Output module specifications

Model	POM-RB	POM-RBH, RBW	POM-S	POM-SH, SW	POM-T	POM-TH, TW	POM-TM	POM-TP	POM-TPH, TPW
Output specifications	Relay output		Triac output		Transistor output				
Output voltage	85 - 264 V AC, 21 - 27 V DC		85 - 264 V AC		3 - 26 V DC		5 - 27 V DC		
No. of output points	8 points 16 points		8 points 16 points		8 points 16 points		32 points 8 points 16 points		
Output common connection	8 points/common terminal		8 points/common terminal		8 points/common terminal		8 points/common terminal		
Polarity	—		—		Common terminal (-)		Common terminal (+) (source type)		

Independent contact relay output module specifications

Model	POM-RBC
Output specifications	Relay output
Output voltage	85 - 264 V AC
No. of output points	8 points
Output common connection	1 point/common terminal
Polarity	—

Input/output mixed module specifications

Model	PHH-DT		PHM-TT	
Input/output specifications	DC input		TTL input	
Input/output voltage	21.6 - 26 V DC		4 - 27 V DC	
No. of input/output points	8 points (0 - 7)		16 points	
Common connection	8 points/common terminal		16 points/common terminal	
Polarity	Common terminal (-)		Common terminal (-)	
			Common terminal (-)	

Counter module specifications

Model	GTH	
Input specifications	Count pulse frequency	
	10kHz max.	
	input pulse voltage level	
	ON	
	OFF	
	No. of pulse input points	
	3 points (A, B, M)	
Output specifications	Output voltage	
	10 - 27 V DC (external supply to module)	
	No. of output points	
	4 points (OUT0, OUT1, OUT2, OUT3)	
Count range	0 - 99990 - 65535	
Count method	<ul style="list-style-type: none"> • two-phase pulse count method (up, down) • Single phase pulse and reverse pulse count methods (two-phase and single-phase selection possible) 	

Analog input/output module specifications

Model	AGH-1	AGH-O	AGH-OD	AGH-IV	AGH-OV	AGH-ODV
Input/output specifications	Analog current input	Analog current output		Analog voltage input	Analog voltage output	
Current range	4 - 20mA	4 - 20mA		0 - 10 V	0 - 10 V	
Resolution	8 bit	8 bit		8 bit	8 bit	
Conversion time	1 ms	1 ms		1 ms	1 ms	
No. of points	8 points	4 points	2 points	8 points	4 points	2 points

12 bit analog input module specifications

Model	AGH-IV2	
Operation mode (changeover with SW)	Current input	Voltage input
Input range	4 - 20mA	0 - 10 V
Resolution	12 bit	
Conversion time	5 ms	
No. of points	8 points	

Thermo coupler input module specifications

Model	THH
External input signal	Thermo couple J, K, T (changed with DIP switch)
Measured temperature range	-100 - 500°C (J type), -100 - 1000°C (K type), -100 - 400°C (T type)
Conversion time	Average 100μs/point
No. of points	8 points

Power supply module specifications

Model	PSM-A	PSM-A2	PSM-B	PSM-D
Input voltage	85 - 132 V AC (switchover) 172 - 264 V AC	85 - 264 V AC	85 - 132 V AC (switchover) 170 - 264 V AC	19.2 - 30 V DC
Output current capacity	CH1 (5V) 1A CH2 (24V) 0.3A CH3 (24V) 0.45 A	1A CH2 + CH3 = 0.7A	1.7A 0.5A 0.25 A (Note 1)	1A 0.3A 1A (Note 2)

(Note 1) External supply possible by switching (Note 2) External supply

CPU linkage and remote I/O module specifications

Model	CPU linkage module IOLH-T	Host PLC linkage module		Remote I/O module (unit)		
		REM-LH2 (Local station)	RIOM (Local station, coaxial cable)	RIOH-TM (Master station)	RIOH-TL (Local station)	RIOH-DT (Local station unit)
Max. no. of connectable modules	8 modules	8 modules/ master station	RIOM 8 modules/ master station	8 local stations/master station		
No. of linkage/remote points	8 words (128 points)	Input 64 points, output 64 points/local station	Input 32 points, output 32 points/local station	128 total input/output points		256 total input/output points
Baud rate	768 kbps		1.5 Mbps	768 kbps		

Remote I/O unit (RIOH-DT) input/output specifications

Input/output specifications	DC input	Transistor output
Input/output voltage	21.6 - 26V DC	5 - 25 V DC
No. of input/output points	16 points (0 - 15)	16 points (15 - 31)
Common connection	8 points/common terminal	8 points/common terminal
Polarity	Common terminal (-)	Common terminal (-)

(Note) Twist pair cables except for RIOM

A handy selection of peripheral equipment with an array of uses and functions.

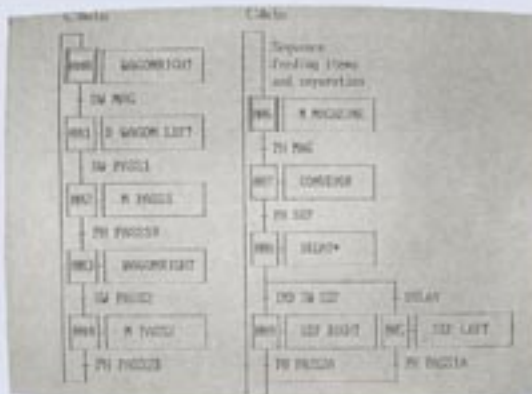
Programming with Personal Computer

Programming/monitoring of H series with IBM PC or compatible PC is possible. The personal computer near yourself will turn into peripheral equipment of PLC for easy operation.

ACTSIP-H is for ladder programming and ACTGRAPH+ is for grafcet programming. These software packages are sold by ACTRON AB.



Software for IBM PC or compatible PC is available. (ACTSIP-H, ACTGRAPH+)



Handy graphic programmer PGM-GPH

Simple debugging while looking at ladder diagram.



- Large liquid crystal display (with EL backlight).
- Program change during run.
- Monitoring with ladder diagram available even if input with instruction language.
- Audio cassette interface capable of high-speed recording and playback. (3 min./7.6 k step).
- Buzzer sound selectable distinctly for office or shop.
- Printouts and ROM writing. (Optional)

Character programmer PGM-CHH

Compact and economical.



- Light (380g), compact (85 × 160 × 35 mm) design.
- Backlit liquid crystal display for reading in dark places.
- User-friendly menu selection function and guide prompting.
- Audio cassette interface capable of high-speed recording and playback. (3 min./7.6 k step).
- Incorporates all basic functions.
- Equipped with a support peg for securing on the top of a desk.

Peripheral equipment function guide

Function	Contents (for HI-LADDER, HI-COMMAND)		Handy graphic programmer	Character programmer	
Editing	Circuit readout	Display without device No.	●	●	
		Display with device No.			
	Circuit insertion		●	●	
	Main circuit insertion		●	●	
	Circuit change		●	●	
	Circuit delete		●	●	
	Cross-reference display				
Comment functions	Device no. display and designation	I/O comment			
		Circuit comment			
Monitor	Circuit monitor	Display without device No.	●	●	
		Display with device No.			
	I/O monitor		●	●	
	Forced setting/resetting		●	●	
Forced output		●	●		
FDD, CMT, ROM writer	Recording	Program	● (CMT only) ▲ (ROM writer only)	● (CMT only)	
		Comment (FDD only)			
	Playback	Program	● (CMT only) ▲ (ROM writer only)	● (CMT only)	
		Comment (FDD only)			
	Verification	Program	● (CMT only) ▲ (ROM writer only)	● (CMT only)	
Comment (FDD only)					
Directory display (FDD only)					
Support functions	Program error check	All circuit grammar check	●	●	
		Master control error check	●	●	
		Jump and sub-routine command destination check (label check)	●	●	
		DIF and DFN no. double-definition check	●	●	
		Timer and counter double-definition check	●	●	
	Program clear	All clear	●	●	
		Partial clear	●	●	
	Protection from power failure	Display	●	●	
		Designation	●	●	
	Program changes during run	(Main) circuit insertion/change/delete	▲		
		Complete I/O change	▲		
		Timer and counter setting level change, I/O no. change	●	●	
	Complete I/O no. change		●	●	
	Printer	All circuit printout		▲ (Serial printer only)	
		Inter-sectional designation printout		▲ (Serial printer only)	
Cross-reference		▲ (Serial printer only)			
Parameter, I/O assignment table printout		▲ (Serial printer only)			
Timer, counter no., usage guide printout		▲ (Serial printer only)			
Internal output data, printout		▲ (Serial printer only)			
Transfer	CPU to programming device (program, data memory)		● (from CMT)	● (from CMT)	
	Programming device to CPU (program, data memory)		● (from CMT)	● (from CMT)	
	Between CPU and programming device (program, data memory, verify)		● (from CMT)	● (from CMT)	
System setting	CPU setting	I/O assignment table production and readout program name setting	●	●	
	Console setting	Buzzer ON/OFF designation	●	●	
Merge	Program merging				

(Note) Multiple circuit insertion possible

● Standard equipment ▲ Optional

Free arrangement to meet control needs.

Model configuration (for H series board type)

Product name	Model	Specifications	
		Input	Output
Basic unit	H-20DR (P), HR-20DR (P) ^{1,2}	24 V DC	Relay output
	H-20DT (P)	24 V DC	Transistor output
	H-28DR (P)	24 V DC	Relay output
	H-28-DT (P)	24 V DC	Transistor output
	H-40DR (P), HL-40DR (P) ¹ , HR-40DR (P) ¹	24 V DC	Relay output
	H-40DT (P)	24 V DC	Transistor output
	H-64DR (P), HL-64DR (P) ¹ , HR-64DR (P) ¹	24 V DC	Relay output
Expansion unit	H-20ZR	24 V DC	Relay output
	H-20ZT	24 V DC	Transistor output
	H-40ZR	24 V DC	Relay output
	H-40ZT	24 V DC	Transistor output
	H-64ZR	24 V DC	Relay output
	H-64ZT	24 V DC	Transistor output
Expansion block	H-16BD	24 V DC	—
	H-16BR	—	Relay output
	H-16BT	—	Transistor output
Expansion cable	CNM-01	Expansion cable 0.1 m	
	CNEB-06	Expansion cable 0.6 m	
	CNM-10	Expansion cable 1 m	
Memory pack	MPBH-4E	EEPROM 3.5 k steps	
	MPBH-8E	EEPROM 7.6 k steps	
	MPBH-8R	EPROM 7.6 k steps	
Others	LIBAT-H	Lithium battery	
	CAPBH	Large-capacity condenser for memory backup	

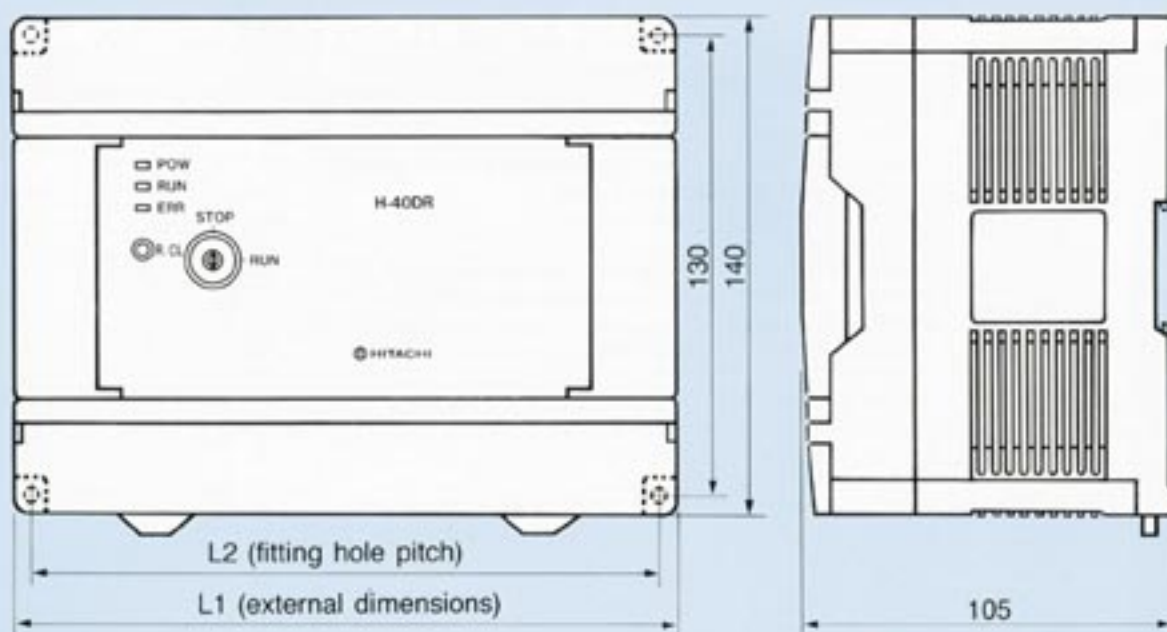
without (P) Negative logic
with (P) Positive logic

*1 With linkage and remote master function.
*2 With remote reset function.

Model configuration module type (for use with H-200)

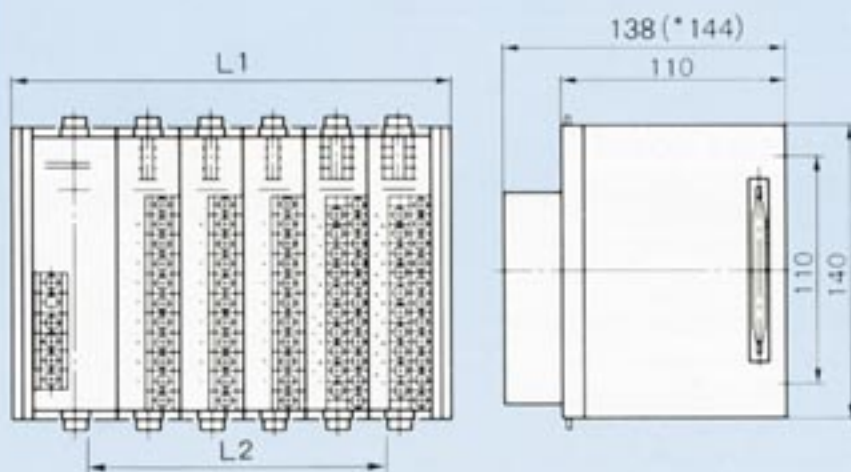
Product name	Type	Specifications	Current consumption (mA)				
			CH1 (5V)	CH2 (24V)	CH3 (24V)		
Base	BSM-3A	3 slots	—	—	—		
	BSM-4A	4 slots	—	—	—		
	BSM-5A	5 slots	—	—	—		
	BSM-6A	6 slots	—	—	—		
	BSM-7A	7 slots	—	—	—		
	BSM-9B	9 slots	—	—	—		
Power supply module	PSM-A	Input 100/200 V AC switchover type	—	—	—		
	PSM-A2	Input 100/200 V AC continuous use type, CH2 + CH3 = 0.7A	—	—	—		
	PSM-B	Input 100/200 V AC switchover type, output capacity addition type	—	—	—		
	PSM-D	Input 24 V DC	—	—	—		
Input module	AC input module	PIM-A	8 points, 100/200 V AC input	1	—	—	
		PIM-AH	16 points, 100/200 V AC input	1	—	—	
		PIM-AW	16 points, 100/200 V AC input (installation/removal terminal type)	1	—	—	
	DC input module (source)	PIM-D	8 points, 24 V DC input	0.5 + (No. of input ON points) × 0.5	—	(No. of input ON points) × 9	
		PIM-DH	16 points, 24 V DC input	—	—	—	
		PIM-DW	16 points, 24 V DC input (installation/removal terminal type)	—	—	—	
		PIM-DM	32 points, 24 V DC input (connector type)	20	—	—	
		External power supply type	PIM-DG	8 points, 24 V DC input	0.5 + (No. of input ON points) × 0.5	—	—
			PIM-DGH	16 points, 24 V DC input	—	—	—
	PIM-DGW		16 points, 24 V DC input (installation/removal terminal type)	—	—	—	
DC input module (sink)	PIM-DP	8 points, 24 V DC input, Sink type	0.5 + (No. of input ON points) × 0.5	—	—		
	PIM-DPH	16 points, 24 V DC input, Sink type	—	—	—		
	PIM-DPW	16 points, 24 V DC input, Sink type (installation/removal terminal)	—	—	—		
Output module	Relay output module	POM-RB	8 points relay output	0.2 + (No. of output ON points) × 0.2	(No. of output ON points) × 10	—	
		POM-RBC	8 points relay output, independent connection point	—	—	—	
		POM-RBH	16 points relay output	—	—	—	
	Triac output module	POM-RBW	16 points relay output (installation/removal terminal)	—	—	—	
		POM-S	8 points triac output	0.3 + (No. of output ON points) × 0.2	(No. of output ON points) × 6.5	—	
		POM-SH	16 points triac output	—	—	—	
		POM-SW	16 points triac output (installation/removal terminal)	—	—	—	
	Transistor output module (sink)	POM-T	8 points transistor output	0.2 + (No. of output ON points) × 0.2	(No. of output ON points) × 6.5	—	
		POM-TH	16 points transistor output	—	—	—	
		POM-TW	16 points transistor output (installation/removal terminal)	—	—	—	
POM-TM	32 points transistor output (connector)	70	—	—			

• H series board type basic unit and expansion units (H-20 ~ H-64)



Type	L1 (external dimensions)	L2 (fitting dimensions)	Weight (kg)
H-20, HR-20	155	145	1.2
H-38	155	145	1.2
H-40, HR-40, HL-40	190	180	1.4
H-64, HR-64, HL-64	270	260	1.8

• Module type (H-200) expansion unit



Type	L1 (external dimensions)	L2 (fitting dimensions)	Weight (kg)
BSM-3A	160	80	0.6
BSM-4A	195	120	0.7
BSM-5A	230	160	0.8
BSM-6A	265	200	0.9
BSM-7A	300	240	1.0
BSM-9B	370	310	1.3

* () indicate where installation/removal terminal used.

(Alteration reserved.)

HITACHI



ISO 9001 Certified
JQA-1000

For further information, please contact your nearest sales representative.