

HITACHI

HITACHI PROGRAMMABLE CONTROLLER

EC series



(Actual size)

POWER which is printed on the unit means the allowable fluctuation voltage.

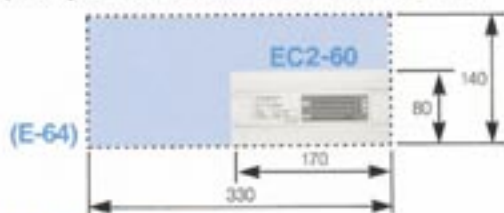
The EC-series

The EC-series is a cost oriented type with excellent performance and easy operability. With the high performance of the E-series contained in a compact body, the EC-series can meet the needs of small-scale control factory automation. The EC-series provides 2 types, 60 models, and they can be connected directly with a personal computer. High function types can be linked with other stations by the RS-485. The number of I/O points provided are 20, 28, 40 and 60, satisfying the requirements of various uses and scales. The programmers can be commonly used with the E/EB/EM-series.

SALES POINTS

(1) Compactness

- The same size as the electronic handbook (W: 170mm×H: 80mm), so that it is easy to install in a machine. Although having the above size, it has a 60 point I/O. Its footprint is 30% of the E-series.
- Depth is just 75mm which is 70% of the E-series.



(2) High Functionality

- A 2k-step memory standard-equipped.
- Up to 96 timers and counters. Excellent cost/performance when you use a number of timers and counters.
- 10kHz 2 phase high speed counter. Simple position control is possible with the encoder.
- Interrupt input. The PLC catches even a fast pulse and responds immediately.
- Analog timer (ECL: High function type) It is easy to set the timer.
- Speed up (EC2) Instruction processing time of EC2 is reduced to about 50% of that of the EC, so a quicker control can be done.

(3) Easy Operation and Maintenance

- Direct connection to a personal computer is possible. It is possible to program and monitor with an IBM computer. An RS-232C port is equipped so that it is possible to connect the personal computer directly.
- Distributed control is possible. CPU linkage with a twisted pair cable realizes economical distributed control of up to 8 stations. (High function type)
- An EEPROM is equipped. Because you do not have to change the battery, battery maintenance is unnecessary.
- Peripheral equipment can be commonly used with the E/EB/EM-series. (PGMJ, PGMJ-R2)

Direct connection with a personal computer
A personal computer



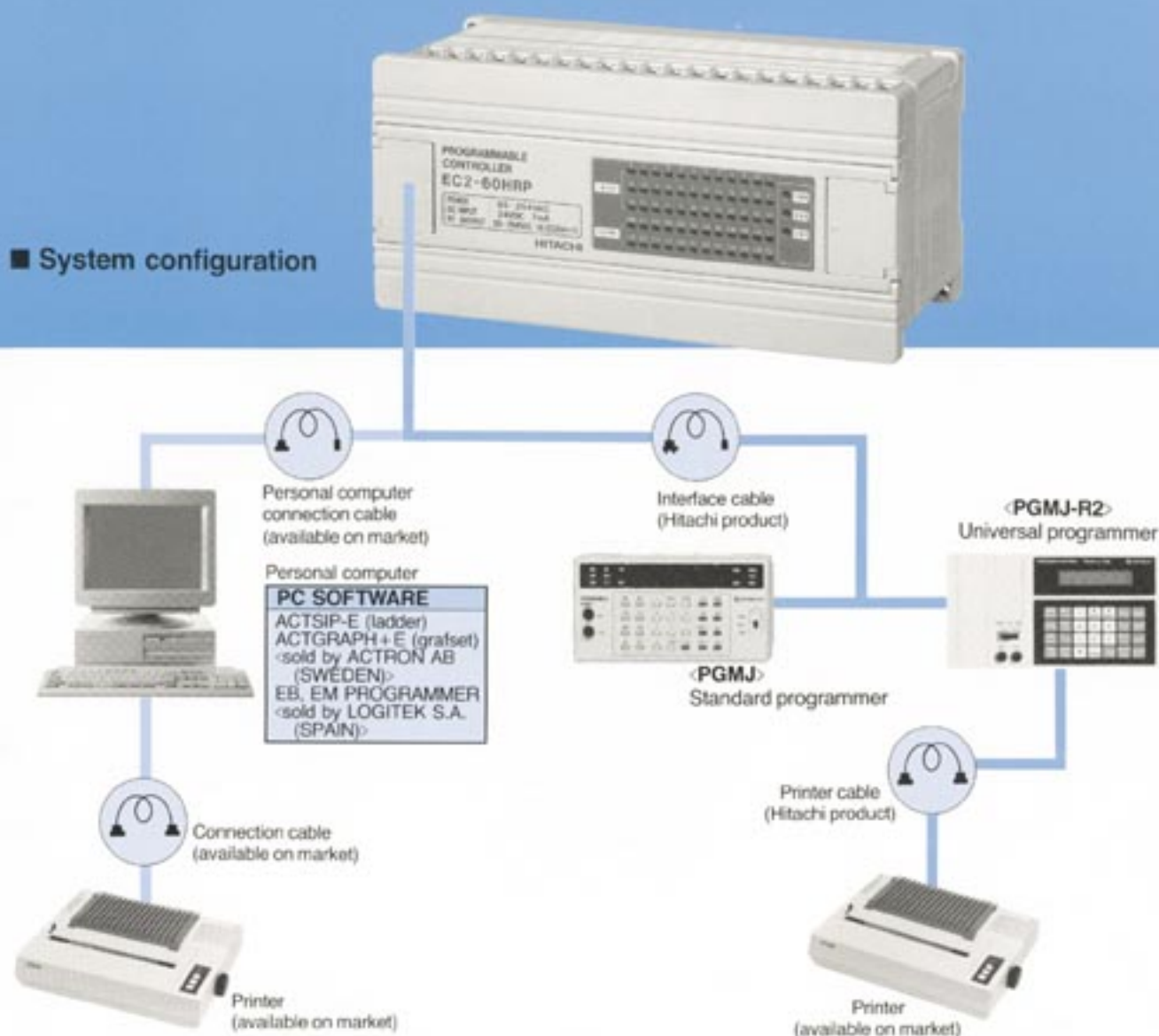
Linkage by the RS-485 (High function type)



Basic Specifications

Item	EC2 (Note 1)	EC (Standard type)	ECL (High function type)	
Control specifications	Processing method	Stored program cyclic system		
	Processing speed	1.5μs/sequence command	16.3μs/constant add command	
		7.5μs/constant add command	16.3μs/constant add command	
User program memory	1949 steps (with the equipped EEPROM, impossible to exchange the chip)			
Command specifications	Sequence command	12 kinds (ORG, STR, AND, OR, ORSTR, ANDSTR, OUT and others)		
	Application command	22 kinds (Edge detection, Step process, Master control, Jump and others)		
	Arithmetic command	36 kinds (Word load, Word out, 4-rule expression, Word OR, Word AND and others)		
Input/output processing specifications	External I/O	20/28/40/60 points (impossible to expand) Input: 24V DC, 7mA, point		
	Max. Output Current	1 circuit	1A(cosφ=1.0)	0.5A
		2 circuits	2A(cosφ=1.0)	0.6A
		4 circuits	4A(cosφ=1.0)	0.8A
		5 circuits	4A(cosφ=1.0)	1.2A
		6 circuits	4A(cosφ=1.0)	1.2A
	Min. output current	1mA at 5V DC		10mA at 24V DC
	Max. leakage current	—		0.1mA at 24V DC
	Max. delay time	ON → OFF	10ms	1ms
		OFF → ON	10ms	1ms
	Isolation method	Relay		Optical coupler
	Internal output	Retentive	256 points (128 words)	
		Non-retentive	256 points (128 words)	
		Special Inc.	12 points + 4 words	
	Timer/counter	Count method	Count up method	
Points		96 points		
TM set value		0.01-9.99 sec, 0.1-99.9 sec, 1-999 sec		
CU set value		1-999		
Analog timer		None		
High speed counter	Count up/down method 1 point, 2 phase, 10kHz, BCD 8 digits		1 point	
CPU link area	None		128 points/8 words (RS-485)	
External interrupt input	1 point		(Note 5)	

■ System configuration



Item	EC2 (Note 1)	EC (Standard type)	ECL (High function type)
Peripheral equipment	Possible to connect a personal computer directly. (RS-232C) Interface cable is necessary when you use current programmers.		
Retentive memory at power failure	2 weeks with a capacitor (at 25°C).		(Note 6)
Power supply voltage	24 V DC (19.2 V to 30 V DC) or 100 V AC to 240 V AC (85 V to 264 V AC)		
Peripherals	PGMJ, PGMJ-R2		
Dielectric strength	1,500 V AC for 1 min. between input/output terminals (including power terminal) and ground terminal		(Note 7)
Insulation resistance	20 M ohms or more for 1 min. between input/output terminals (including power terminal) and ground terminal when measured with 500 V DC megger		
Operating/Storage temperature	0 to 55°C / -10 to 75°C		
Operating/Storage humidity	20 to 90% RH (non-condensing) / 10 to 90% RH (non-condensing)		
Vibration resistance	Conforms to JIS C0911 IIB, 3rd class on condition that vibration with frequency 10 to 55Hz and amplitude 0.2mm is applied for 2 hours in each of X, Y and Z directions		
Shock resistance	Conforms to JIS C0912 on condition that shock of 10G is applied twice in each of X, Y and Z directions		
Noise immunity	Noise voltage 1,500 V p-p, pulse with 1 μ s (measurement by our company method with noise simulator)		
Environment	Must be free from corrosive gas and dust		
Grounding	100 ohms max.		

With [] indicates the case of the transistor output.

* Retentive...Retentive memory at power failure.
 Non-retentive...Non-retentive memory at power failure.
 (Note 1) EC2-(D)(20,28,40,60)HRP are EC2 types which instruction processing time is reduced to about half of that of EC types
 Specifications of EC2 are same as those of EC except for instruction processing time.

(Note 2) T0 to T9 can be set from 0.1 to 999.9 sec.

(Note 3) C0 to C9 can be set from 1 to 9999.

(Note 4) Input X0 to X2 can be used for high speed counter inputs by

program.

(Note 5) Input X3 can be used for an interrupt input by program.

(Note 6) Program memory is an EEPROM, thus it does not need to be backed up.

Only the retentive memory at power failure and current values of timers and counters are backed up. (two weeks at 25°C)

(Note 7) A varistor for suppressing surge is connected to the power supply terminal. Therefore, the internal connector must be separated when testing dielectric strength or insulation resistance of the power supply terminal.

■ EC-series Component List

Item			Model name	Specifications
Basic unit (Memory 1949 steps, Positive logic type)	Standard type	AC power supply	EC2-20HRP	24V DC input 12 points, Relay output 8 points
			EC2-28HRP	24V DC input 16 points, Relay output 12 points
			EC2-40HRP	24V DC input 24 points, Relay output 16 points
			EC2-60HRP	24V DC input 36 points, Relay output 24 points
		DC power supply	EC2-D20HRP	24V DC input 12 points, Relay output 8 points
			EC2-D28HRP	24V DC input 16 points, Relay output 12 points
	High function type (With linkage function)	AC power supply	ECL-40HRP	24V DC input 24 points, Relay output 16 points
			ECL-60HRP	24V DC input 36 points, Relay output 24 points
			ECL-D20HRP	24V DC input 12 points, Relay output 8 points
		DC power supply	ECL-D40HRP	24V DC input 24 points, Relay output 16 points
			ECL-D60HRP	24V DC input 36 points, Relay output 24 points
Basic unit (Memory 1949 steps, Positive logic type)	Standard type	AC power supply	EC2-20HTP	24V DC input 12 points, Transistor output 8 points
			EC2-28HTP	24V DC input 16 points, Transistor output 12 points
			EC2-40HTP	24V DC input 24 points, Transistor output 16 points
			EC2-60HTP	24V DC input 36 points, Transistor output 24 points
		DC power supply	EC2-D20HTP	24V DC input 12 points, Transistor output 8 points
			EC2-D28HTP	24V DC input 16 points, Transistor output 12 points
	High function type (With linkage function)	AC power supply	ECL-20HTP	24V DC input 12 points, Transistor output 8 points
			ECL-40HTP	24V DC input 24 points, Transistor output 16 points
			ECL-60HTP	24V DC input 36 points, Transistor output 24 points
		DC power supply	ECL-D20HTP	24V DC input 12 points, Transistor output 8 points
			ECL-D40HTP	24V DC input 24 points, Transistor output 16 points
			ECL-D60HTP	24V DC input 36 points, Transistor output 24 points
Standard programmer			PGMJ	With audio cassette interface
Universal programmer			PGMJ-R2	Audio cassette interface, RS-232C serial port, (printer interface)
PC software for programming			ACTSIP-E	ACTSIP-E (ladder), ACTGRAPH-E (graphnet)
			ACTGRAPH+E	software for IBM compatible PC, sold by ACTRON AB
Interface cable			EB, EM PROGRAMMER	Software for IBM compatible PC, sold by LOGITEK.
Printer			CNPG-15	1.5m Cable for programmer
Printer cable			(Available on the market)	Recommend EPSON SP-500 (Interface circuit board: Cat No. 8148)
Printer cable			Printer cable	Printer connecting cable with PGMJ-R2

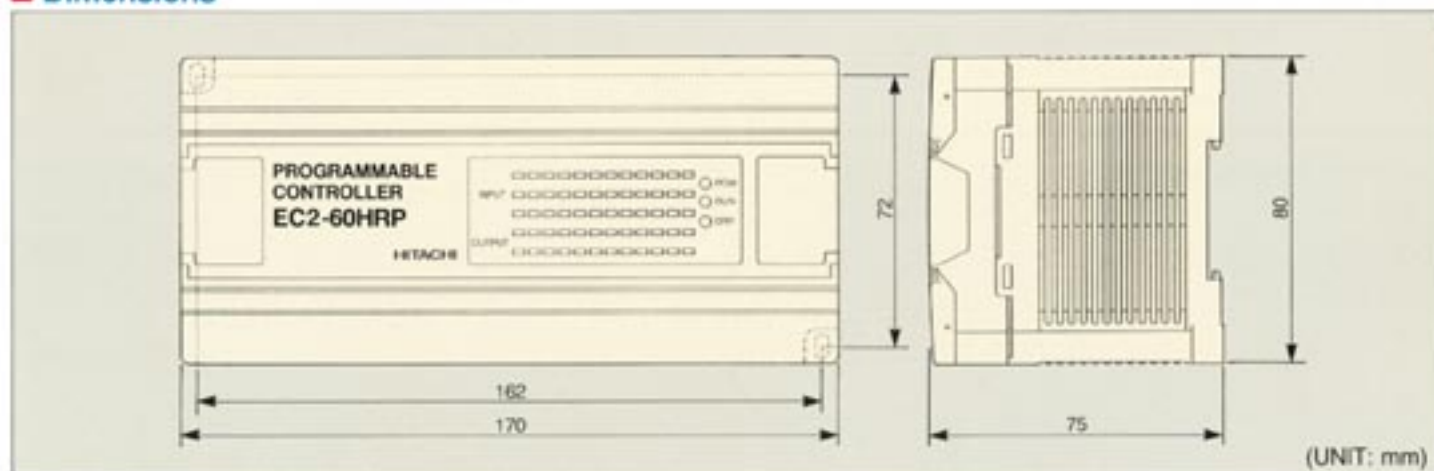
Note 1) CNE-06, CNE-10 (Programmer extension cable) can not be used for the EC-series and the programmers; PGMJ and PGMJ-R2.

Negative logic type models are also available.

Note 2) EC series have CE versions and C-TICK versions. CE mark is attached beside a unit.

Please mention CE-VERSION, with the model name when it is needed at ordering.

■ Dimensions



Specifications in this catalog are subject to change with or without notice, as HITACHI continues to develop the latest technologies and products for our customers.

HITACHI

For further information, please contact your nearest sales representative.

ISO 14001
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