

IEC 61131-3 Compliant Programmable Logic Controller

# EHV+ Series

Powered by CoDeSys

**HITACHI**  
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## *Powerful general purpose PLC*





# Powerful and flexible

## Hitachi EHV+ Series

Core of the new powerful general purpose EHV+ CPU series is the CoDeSys V3 runtime system. The result is an open and flexible system which is completed through utilising existing EH-150 modules.



EH-150 system incl. EHV+ CPU and various I/O modules



### Memory capacity

- User program (RAM) up to 1024 kByte
- Boot project (FLASH) up to 1024 kByte
- Source file (FLASH) up to 6 MByte
- Data memory 256 kByte

### Communication interfaces

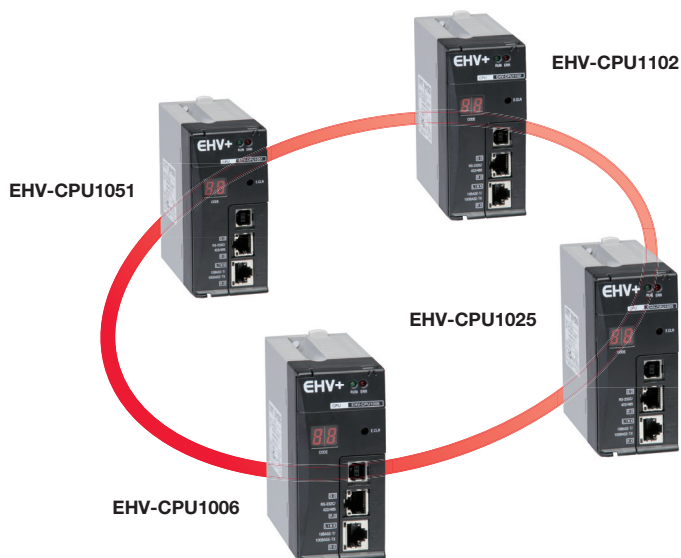
- Ethernet (10BASE-T/100BASE-TX)
- USB interface (Ver. 2.0 Full speed 12 Mbps)
- Serial interface (RS-232C/RS-422/RS-485)

### Programming

- Communication protocol CoDeSys V3
- Programming languages according to IEC 61131-3: LD, IL, FBD, ST, SFC, CFC

### Communication protocols

- Modbus TCP Client
- Modbus RTU Master



### EHV+ CPU module

The new EHV+ series consists of 4 powerful CPUs. The models differ through memory capacities (64, 256, 512, 1024 kByte) whilst maintaining a consistently high performance. The EHV+ CPU is compatible with a variety of open networks through use of the onboard Ethernet interface.

### Programming software EHV-CoDeSys

Thanks to full compliance to the IEC 61131-3 standard, the user can select among 6 programming languages (LD, IL, FBD, ST, SFC, CFC) in EHV-CoDeSys. In addition to the PLC programming functionality, EHV-CoDeSys offers powerful visualisation functions such as an integrated graphical editor, which is useful for testing, commissioning or diagnostic purposes.



# Easy and efficient

## Flexible choice

Flexible choice of editors and usage of library functions considerably decreases programming time

The screenshot displays the CoDeSys IDE interface for a project named 'SCF\_sample\_R01.project'. It features several windows showing different representations of the same PLC logic:

- FBD (Function Block Diagram):** Shows a network with an AND gate receiving 'switch1' and 'switch2' inputs, leading to a coil 'sta\_L4\_covyr'. This coil is also connected to an OR gate, which is connected to a timer 'T#1'.
- STL (Statement List):** Shows the ladder logic converted into text: 

```
1 CAL TON_IL(  
2 IN:= ton_input,  
3 PT:= T#50000,  
4 ET:= ton_elip)  
5 LD TON_IL.Q  
6 ST ton_output  
7 LD Lift_A  
8 OR sta_L4_covyr  
9 ST IL_sample_out
```
- LD (Ladder Diagram):** Shows a network with a timer 'T#2S' and a coil 'B1\_sta\_flag'. A 'NOT' gate is connected to 'switch2' and the 'Q' output of the timer.
- STL (Statement List):** Shows a more complex logic block: 

```
1 L2_wait_timer(IN:= 1, PT:= T#100S);  
2 // L2_wait_timer();  
3 elp_wait:= L2_wait_timer.ET;  
4  
5 IF elp_wait > T#5S THEN  
6 test_out5:=1;  
7 IF elp_wait > T#10S THEN  
8 test_out10:=1;  
9 IF elp_wait > T#15S THEN  
10 test_out15:=1;  
11 IF elp_wait > T#20S THEN  
12 L2_wait_timer(IN:=0);  
13 test_out5:=0;  
14 test_out10:=0;  
15 test_out15:=0;  
16 END_IF  
17 END_IF  
18 END_IF  
19 END_IF  
20 L2_wait_timer(IN:=1);
```
- LD (Ladder Diagram):** Shows a network with a timer 'T#0.5s' and a coil 'go\_R12'. It includes a 'R1TON' block and a coil 'R3\_sta\_flag'.

## Fast and convenient

Fast and convenient debugging/testing during commissioning

This screenshot shows the 'Application (run)' view of the CoDeSys IDE, used for debugging and testing. It displays the same FBD and STL logic as the previous image, but with real-time data:

- FBD:** The 'sta\_L4\_covyr' coil is highlighted in orange, indicating it is active. The 'B1\_sta\_flag' coil is also active. The 'T#1S' timer is shown with a value of 'T#1s'.
- STL:** The 'elp\_wait' variable is shown with a value of 'T#938ms'. The 'test\_out5' variable is shown as '1', 'test\_out10' as '1', and 'test\_out15' as '1'. The 'L2\_wait\_timer' block is shown with 'IN' as '1' and 'PT' as 'T#100s'.
- Messages:** A message window at the bottom shows 'Build complete -- 0 errors, 0 warnings: ready for download!'.

## Specifications

Type		EHV-CPU1006	EHV-CPU1025	EHV-CPU1051	EHV-CPU1102
Processing speed		145 ns/instruction	145 ns/instruction	145 ns/instruction	145 ns/instruction
Memory	User program (RAM)	64 kByte	256 kByte	512 kByte	1024 kByte
	Boot project (FLASH)	64 kByte	256 kByte	512 kByte	1024 kByte
	Source file (FLASH)	2 MByte	6 MByte	6 MByte	6 MByte
	Data memory	256 kByte	256 kByte	256 kByte	256 kByte
	Retain data memory	16 kByte	16 kByte	16 kByte	16 kByte
Supported expansion bases		0	5	5	5
Fieldbus memory		16 kByte (2 kByte × 8 units)			
Processing method		Refresh			
Programming software		EHV-CoDeSys (Version 3.4)			
Programming languages		LD, IL, FBD, ST, SFC, CFC (Continous Function Chart)			
Communication port		CoDeSys V3 protocol			
USB	2.0, Full speed	Programming			
Ethernet	UDP/IP, TCP/IP	Programming / General purpose / Modbus TCP Client / Ethernet IP (under development)			
Serial	RS232C/422/485	Programming / General purpose / Modbus RTU Master			
User Interface	Display	RUN LED, ERR LED, 7-segment LED			
	Run switch	Remote RUN/STOP (RUN position)			
	E.CLR switch	Clear error indication in 7-segment LED			
RTC		Supported (access by RTC FB)			
Battery		Built-in (LIBAT-H)			
Approval		CE, UL, cUL, C-Tick			

## EHV-CoDeSys

Item		Descriptions
System requirements	RAM	1 GB
	Operating System	Windows 2000 or higher (not yet released for the 64-bit platforms of Windows Vista and Windows 7)
	CPU	1 GHz Pentium
	Hard disk	1 GB
	Screen resolution	1024 × 768
Communication cables	USB	Standard USB cable (Type B connector)
	Ethernet	UTP or STP cable (cat5E)
	Serial	EH-PROG40

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