EATON

Powering Business Worldwide

The Eaton Logic Controller.

Compact, modular, and ready to communicate. It's the cost-effective solution to machine control.

The Eaton Logic Controller (ELC) puts sophisticated PLC logic, an extensive set of I/O, and communications capabilities in packages as small as 1"W x 2.4"D x 3.5"H.

ELC Controller and Expansion Modules

Half the size of most PLCs, the Cutler-Hammer ELC puts the right amount of I/O right where you need it.

The right amount of I/O.

Why pay for functionality you don't need? Why be trapped with functionality you can't scale to meet changing needs? Eaton is changing everything with the ELC.
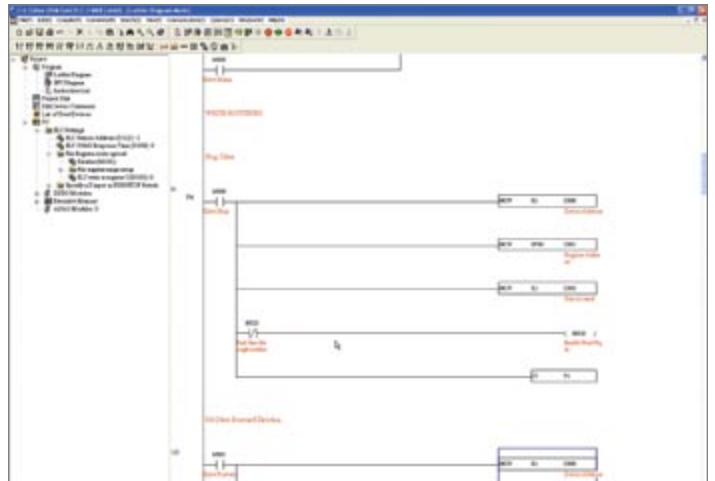
At less than half the size of most PLCs, the Cutler-Hammer ELC is an ideal solution when space is at a premium and specialized I/O needs present themselves.

Space saving. Cost saving.

This space-saving design is as perfectly at home in a small machine control station as it is in an MCC and other enclosed applications where space is critical. Reduced space also means smaller control cabinets and panels, or more capability in the same amount of space. However you look at it, the ELC means value.

ELC Programming Software
Program on your PC and download to the ELC through a serial cable or over Ethernet. Make online changes, monitor and remote control the run/stop operation. Software wizards simplify the programming process.

Machine space is measured in inches.

The ELC is measured the same way.

Add value with the ELC.

While the ELC is perfectly suited for small applications of 40 I/O and less, it can also be expanded to 512 I/O. What's more, with the ELC's two communication ports it can provide a network of distributed controls. The ELC is capable of sharing information with other control and operator interface devices. Its small size allows for reduced panel size, and saves valuable machine space.

ELC's value added differences.

5 controller styles:

- PB Base Model—
14 I/O (8i/6o)
Over 130 instructions provide all the power you need. Two serial ports for master/slave communications.

- PC Clock/Calendar Model—
12 I/O (8i/4o)
Same as the PB model, plus clock/calendar, twice the program steps, distributed I/O, and retentive data storage.

- PA Analog Model—
10 I/O (6i/4o)
Same as the PC model, plus embedded analog I/O.

- PH High-Speed Model—
12 I/O (8i/4o)
Same as the PC model, plus the ability to capture or output 100 kHz pulses.

- PV Advanced Model—
28 I/O (16i/12o)
Almost 10 times faster than the other ELC controllers, high speed I/O to 200 kHz, and additional advanced features. Add left side expansion modules for master communications on networks such as Ethernet and DeviceNet™.

More Controller Features

- High-speed pulse capture and high-speed pulse output on all controllers.

- Broad selection of AC/DC In, relay/transistor and high current output modules.

- Large selection of analog In/Out in various I/O counts per module.

- 2 Modbus® (ASCII / RTU) serial ports: 1 slave only, 1 master/slave.

- Over 200 instructions to choose from: Floating point math, communications, 16- and 32-bit math, logical, block move, block compare, retentive data storage, conversion, time base from clock/calendar.

ELC benefits solve applications:

Size—large PLC features in a 1" package. Half the size of competitive offerings. ELC can retrofit more I/O in the same space or allow more cost savings by reducing cabinet size.

Flexibility—ELC controllers expand from 28 to 512 I/O on the PV models, and 10 to 256 I/O on all other models.

- Add only the amount of I/O you need. Choose I/O counts as small as 2 points and as large as 16 points per module.

- DIN-rail mounting lets you add as many modules as needed by snapping them into mating connectors.

Large PLC Features—
Multiple communications ports, distributed I/O capability, high speed counters, high speed pulse outputs, interrupts, timer resolution to 1ms, PIDs, plus much more.

**Software**—ELCSoft programs in standard ladder or sequential function chart programming.

- Display registers "in use" and modules attached to the ELC.

- Monitor runtime applications. Force (except PB model), and enter/ modify register values.

- Wizards aid programming of ELC Link for distributed I/O, standard communications, high speed counters, pulse outputs, positioning, interrupts, PIDs, and extension module setup.

Communications—
Connecting to networks is easy on Modbus®, Modbus TCP, DeviceNet™, and Profibus.

No racks required
A DIN-rail lets you add as many modules as desired. Just snap on, and slide into place. All connections are done automatically.
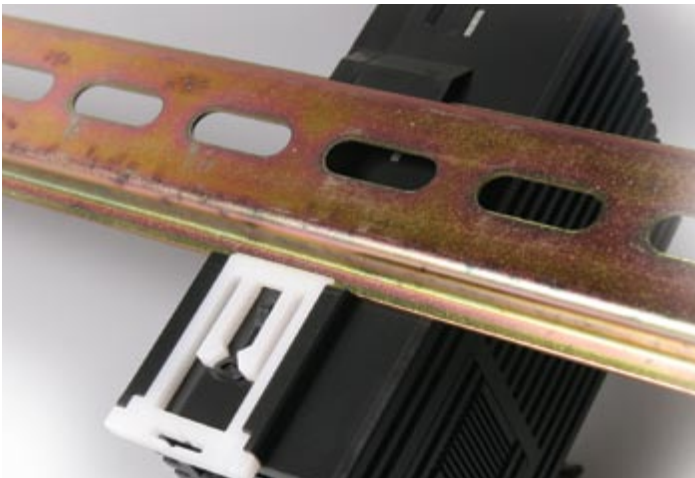
Built-in display
An integral LED display on some models provides user-assigned process monitoring, error messages, alarms, display counts and more.

ELC Features and Specifications

ELC Controller Features and Specifications

Controller	ELC-PB14NNDR/DT	ELC-PA10AADR/DT	ELC-PC12NNAR/DR/DT	ELC-PH12NNDT	ELC-PV28NNDR/DT
Dimensions WxHxD (mm)	25.2 x 90 x 60	37.4 x 90 x 60			70 x 90 x 60
Maximum I/O—Expandable	256 (128 In/128 Out)				512 (256 In/256 Out)
I/O Type—Embedded	14 (8 DI/6DO)	10 (4DI/2DO/2AI/2AO)	12 (8 DI/4 DO)		28 (16DI/12DO)
DC In Sink/Source	Yes				
Execution Speed	Basic instructions—2 µs minimum				0.24 µs minimum
Program Language	Instructions + Ladder Logic + SFC				
Program Capacity (steps)	3792	7920			15,872
Data Memory Capacity (bits)	1280	4096			
Data Memory Capacity (words)	744	5000			10,000
Index Registers	2	8			16
File Memory Capacity (words)	None	1600 Words			10,000 Words
Retentive Storage	Yes				
Commands Basic/Advanced	32/107	32/168			32/193
Floating Point	Yes				
SFC Commands (steps)	128	1024			
Timers Qty	128	244 standard with additional timers for subroutine and retentive applications			
Timers Resolution	1–100ms				
Counters Qty	128	250			253
High Speed Counters (See Note)	Up to 4	Up to 6		Up to 8	Up to 8
Max High Speed Counting (See Note)	2 at 20 kHz	1 at 30 kHz		1 at 100 kHz	2 at 200 kHz
Pulse Output	2 channels, 10 kHz Max	2 channels, 50 kHz Max		100 kHz	200 kHz
PID	Yes				
Master Control Loop	8 Loops				
Subroutines	64 Subroutines	256 Subroutines			
For/Next Loops	Yes				
Interrupts	6	15			22
Real-time Clock / Calendar	No	Built-in			
Password Security	Yes				
Diagnostic Relays	Yes				
Diagnostic Word Registers	Yes				
Specialty Expansion Modules	8 (Analog In/Analog Out/TC/RTD/PT) Modules do not count in total I/O				
Serial Ports	2 Modbus® (ASCII/RTU) 1=Slave (RS-232)/1=Master-Slave (RS-485)				
Remote I/O	No	With 16 other devices			With 32 other devices
Run Time Editing	No	Yes			
Run / Stop Switch	Yes				
Removable Terminal Strips	Yes				
Special Features	—	2, 7-Segment Displays	2 Potentiometers		2 Potentiometers High-speed, left side bus

Note: High speed counter inputs can be used for different types of 32-bit counting, such as single-ended, single-phase two inputs, and quadrature. Therefore, all high speed counters may not be used at the same time. Please refer to the ELC Systems Manual, MN05003003E, for details.

ELC Expansion Module Features

Digital I/O Model	Power	Input Unit		Output Unit	
		Point	Type	Point	Type
Dimensions WxHxD (mm) 25.2 x 90 x 60					
ELC-EX08NNAN	24 Vdc	8	AC	0	—
ELC-EX08NNDN		8	DC Sink or Source	0	—
ELC-EX08NNNR		0		8	Relay
ELC-EX08NNNT		0		8	Transistor
ELC-EX06NNNI		0		6	High Current Relay
ELC-EX08NNDR		4		4	Relay
ELC-EX16NNDR		8		8	Relay
ELC-EX08NNDT		4		4	Transistor
ELC-EX16NNDT		8		8	Transistor

Analog I/O Model	Power	Input Unit		Output Unit	
		Point	Type	Point	Type
Dimensions WxHxD (mm) 25.2 x 90 x 60					
ELC-AN02NANN	24 Vdc	0	—	2	0~+20mA 0V~+10V
ELC-AN04NANN		0	—	4	0~+20mA 0V~+10V
ELC-AN06AANN		4	−20mA~+20mA −10V~+10V	2	0~+20mA 0V~+10V
ELC-AN04ANNN		4	−20mA~+20mA −10V~+10V	0	—
ELC-PT04ANNN		4	Platinum Temp.	0	—
ELC-TC04ANNN		4	Thermocouple	0	—

Electrical Specifications

Input Voltage Requirements	ELC: 24 Vdc (−15%~+20%) (with DC input reverse polarity protection), Expansion Unit: supplied by the ELC
Power Consumption	Typically 3–6W
Insulation Resistance	>5 MΩ at 500 Vdc (Between all inputs/outputs and earth)
Noise Immunity	ESD: 8 kV Air Discharge EFT: Power Line 2 kV, Digital I/O: 1 kV, Analog & Communication I/O: 1 kV Damped-Oscillatory Wave: Power Line: 1 kV, Digital I/O: 1 kV RS: 26 MHz–1 GHz, 10 V/m
Temperature	Operation: 0ºC~55ºC (Temperature), 50~95% (Humidity), Pollution degree 2; Storage: −40ºC~70ºC (Temperature), 5~95% (Humidity)
Vibration/Shock Resistance	Standard: IEC1131-2, IEC 68-2-6 (TEST Fc)/IEC1131-2 & IEC 68-2-27 (TEST Ea)
Certifications	C-Tick, cULus, CE, Class I Div 2 Groups A, B, C, D

ELC Accessories

Catalog Number	Description
ELC-PS01	24 Watt, 1 Amp Power Supply
ELC-PS02	48 Watt, 2 Amp Power Supply
ELC-HHP	Hand-Held Programmer (includes cable)
ELC-CBPCELC3	Cable to Connect a PC or ELC-GP unit to ELC, 3 meters (DB9 pin female to 8 pin DIN)
ELC-CBPCGP3	Cable to Connect a PC to an ELC-GP unit, 3 meters (DB9 pin female to DB9 pin female)
ELC-GPXFERMOD	Program transfer module for ELC-GP units
ELC-ACPGMXFR	Program transfer module for ELC controllers
ELC-ACCOVER	Plate mount for specialty modules, qty. 10
ELCSTARTKIT1	ELC Starter Kit (includes ECL-PA10AADT, ELC-PS01, ELC-GP04, ELC-CBPCELC3, ELC-CBPCGP3, ELCSoft, ELCSoft GP)
ELC-COENETM	10/100 Ethernet Module, need ELC-PV, ModbusTCP, P-P, for use with ELC-PV only
ELC-CODNETM	DeviceNet™ Module, need ELC-PV, Scanner, Poll, CC, COS, BS, for use with ELC-PV only
ELC-COPBDP	Profibus DP Slave Module
ELC-CODNET	DeviceNet™ Slave Module
ELC-485APTR	RS-485 Easy Connect Adapter, DB9, RJ-12, 2-Pin Connections to RS-485
ELC-MC01	Motion Control, 1 Axis Module (Up to 8 Modules per Controller)

Eaton Corporation is a diversified power management company ranked among the largest Fortune 500 companies. The electrical group is Eaton's largest division and is a global leader in electrical control, power distribution, power quality, automation, and monitoring products and services. Eaton's global electrical brands, including Cutler-Hammer®, MGE Office Protection Systems®, Powerware®, Holec®, MEM®, Santak and Moeller, provide customer-driven PowerChain Management® solutions to serve the power system needs of the industrial, institutional, government, utility, commercial, residential, IT, mission critical and OEM markets worldwide.

PowerChain Management solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle. With Eaton's distribution, generation and power quality equipment; full-scale engineering services; and information management systems, the power system is positioned to deliver powerful results: greater reliability, operating cost efficiencies, effective use of capital, enhanced safety, and risk mitigation.

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