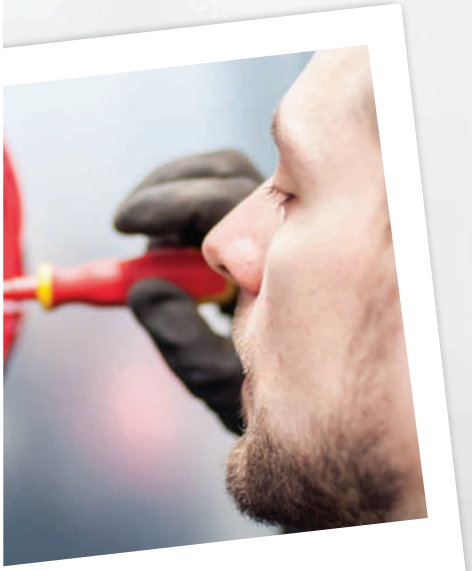
easyE4

# The fastest path to success









Powering Business Worldwide

# easyE4 control relay

## More time for the really important things

Whether it's about temperature control in the food industry, simple control tasks in the machine building sector or lighting control in buildings—the easyE4 from the Moeller™ series, Eaton's next generation of control relays, makes implementing control tasks even easier, more convenient and faster. Experience the many advantages of this new technology, which allows you to free up valuable time for what's really important.



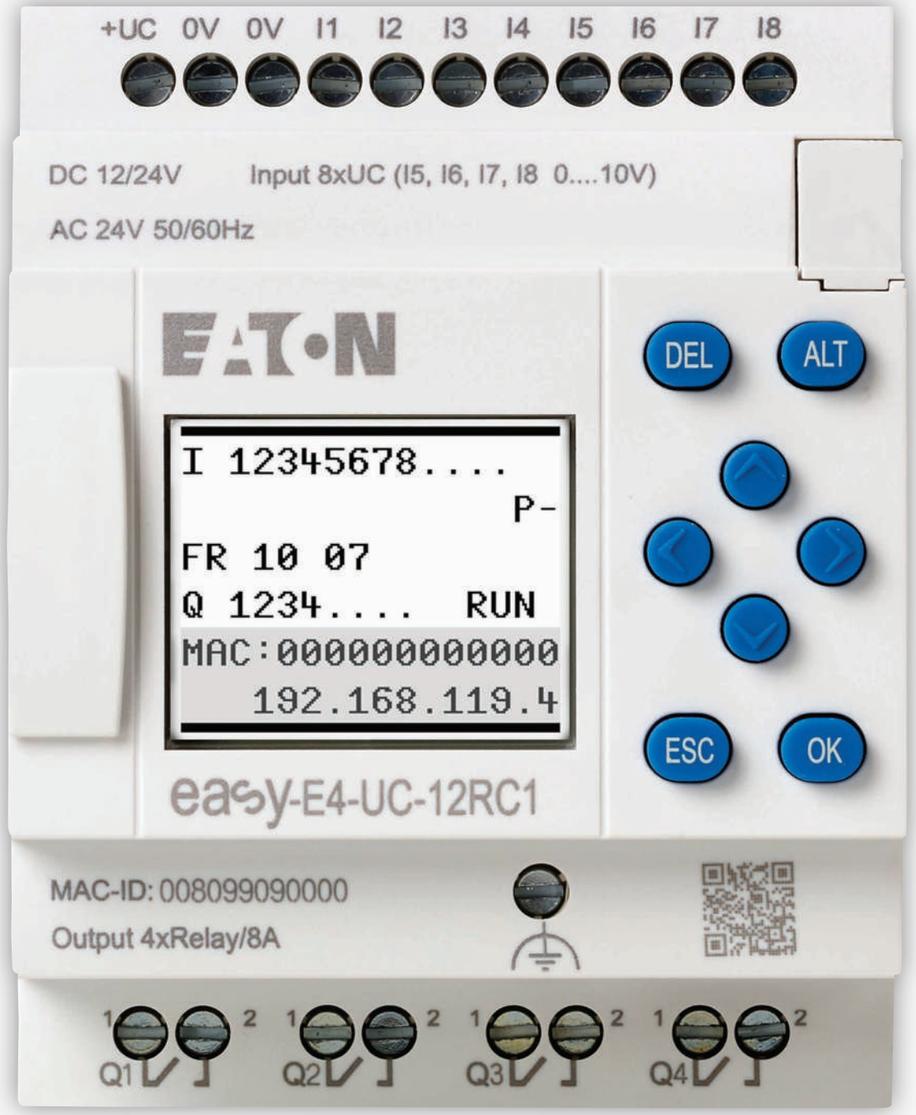

Offering maximum flexibility, with **up to 11 local expansion modules per base unit**.

**Mixed connection of AC/DC/UC modules** allows flexibility in the application.

The **188 available inputs/outputs in one easyE4 system** provide coverage for a broad range of applications.

The virtually **unlimited combination options** of base units and expansion modules make the handling of the easyE4 devices extremely easy.

The **Ethernet connection** enables a wide range of enhanced communication options.




**Four programming languages** are available: easySoft speaks your language!

**Interrupt features** enable fast event recognition and rapid response times.

The devices are **suitable for global use** and come with all the necessary approvals.

**Various visualization options** are available, via the integrated displays, web server as well as the Ethernet options.

**DCF77 synchronization as well as Ethernet services** enable highly precise date and time indication.

# From planning to maintenance
## Consistently simple

**The easyE4 supports you every step of the way**—starting with the planning phase, thanks to the optimized size of the assortment. Enjoy greater flexibility, more transparency and time savings that will allow you to devote yourself to other tasks.



### Multifunctionality ensures simplified planning

The easy relay takes on various command and control tasks in a single device:

- Logic functions
- Timing relay and counter functions
- Time switch functions
- Arithmetic functions
- PID controller
- Operating and display functions.

This simplifies the planning process:

- Up to 11 expansions can be connected
- The AC, DC and UC expansions can be used together in any combination (12/24 V DC, 24 V AC, 100-240 V AC)

### Programming options that are suited to your needs

The easyE4 offers flexible programming options, either directly on the device, or via the easySoft software:

- Circuit diagrams can be created directly on the base unit, using the input keypad and text display
- Programming the devices is highly user-friendly, thanks to the four available programming languages
- The display texts, background colors and start graphics can be individually designed, for example, by adding your company's own graphics.






### Everything at a glance during maintenance

The various available display options allow you to gain a quick and comprehensive overview of your projects:

- A base-unit display that's easy to use
- Remote visualization and access are also possible, for example via a smartphone or tablet
- Easy data logging of operating states and evaluation of events




### Installation and commissioning made easy

The number of inputs/outputs can be easily extended with the addition of expansion modules:

- The expansion modules are connected via a unique plug connector.
- It is easy to install programming on brand-new devices via the SD card. This considerably simplifies, for example, the commissioning of series production.

### Quick and easy implementation during operation

The full advantages of this powerful control relay reveal themselves during operation:

- Rapid response times of less than 2 milliseconds
- DCF77 synchronization for high accuracy in time-dependent applications
- Rapid detection of the operating states of both the base units and the expansion modules thanks to the integrated display
- The application-specific parameters can be manually adjusted directly on the device



# easySoft 7

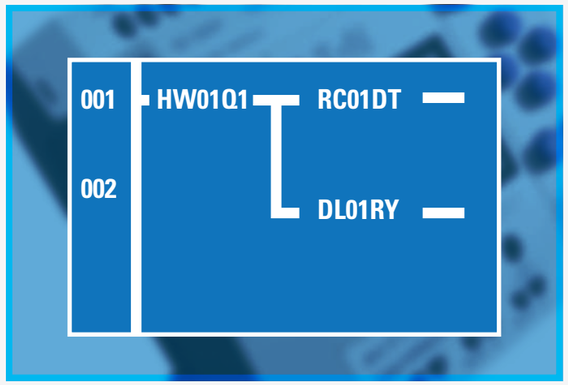
## Simple, intuitive and convenient



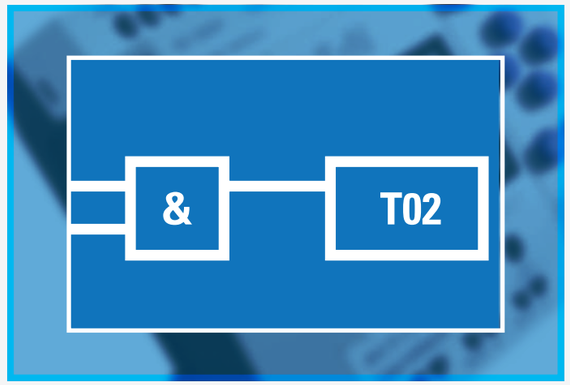

**With the user-friendly easySoft software, programming the devices is quick and easy.** Circuit diagrams can be easily created and adapted via a PC or directly on the device. The easy-to-navigate selection menus, as well as the simulation, online communications and documentation options, make easySoft the ideal companion for the easyE4 devices. Four different programming languages are available (ST, FBD, LD, EDP)—in other words, the right programming environment for all of your needs.

- **Ladder diagram (LD)** for transferring existing easySoft programs
- **easy programming (EDP)** enables the creation and adaptation of programs on the devices
- **Function block diagram (FBD)** provides a quick overview of the various features
- **Structured text (ST) for professionals,** to facilitate efficient programming

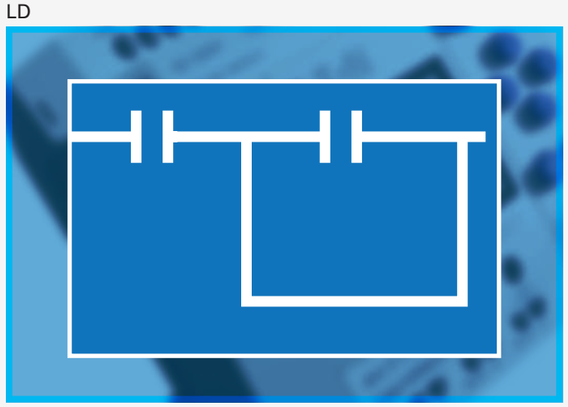
EDP




FBD




LD



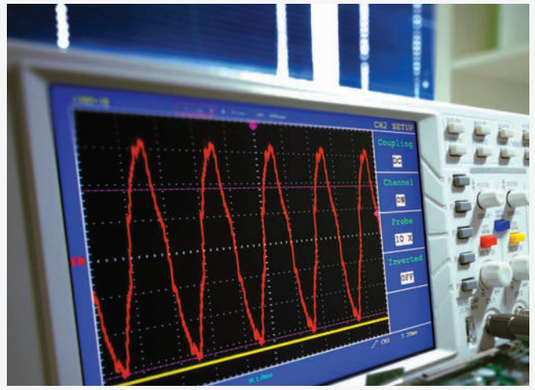
ST

```
EN  := TRUE,
T1  := FALSE,
T2  := TRUE,
T3  := FALSE,
T4  := FALSE,
```

- The **multi-level password protection** protects your application and process know-how against unauthorized access.
- **Unique IDs for each easyE4 and program** ensure that the correct programs are uploaded to the intended hardware (pairing).

Download easySoft

Video Tutorials



- The **integrated oscilloscope feature** can be used both in simulation mode and during operation
- **Direct analysis of switching operations,** based on the curve characteristics
- Pre-set analytics allow **quick commissioning**

**The system is backward compatible**

- With easySoft 7, existing programs that were created for the easy series 500/700/800 can simply be transferred
- Automatic conversion of visualizations from the previous easy series to the new easyE4



# Visualization for every need

## Simply versatile

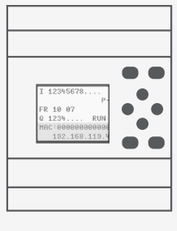
**The easyE4 also offers a variety of visualization options to optimally adapt the solution to your individual needs and requirements.** Texts and data can be easily displayed or changed using the easyE4 base unit display. Thanks to the integrated web server, the data can also be accessed via all Internet-enabled devices, such as smartphones or tablets. In addition, visualization through HMIs is also possible. The access to the data can be individually defined.

- The **web server** is **password protected**
- An **individual user list** ensures secure remote access to the web browser.
- **Efficient service and maintenance,** thanks to the reliable online services in easySoft.
- **Automatic email notifications** will promptly inform you of any deviations to ensure maximum availability of your application.



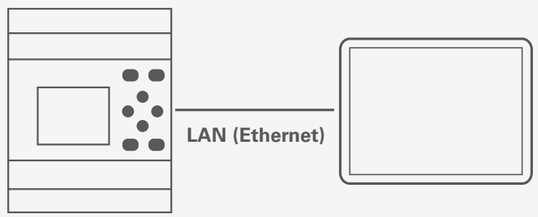

### easyE4 display

Use the display of the basic unit for convenient visualization on site.



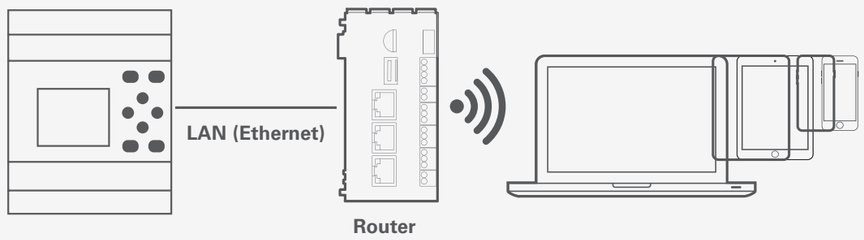
### Visualization via Ethernet

Any HMI, like an XV100, can be connected to the easyE4, for example via Modbus TCP.




### Wireless visualization

Any standard browser can access the easyE4 web server via a WLAN router, a repeater or dLan.




### Data protection at a glance

The growth in the potential of mobile data use has also led to an increase in the requirements for data security. Eaton ensures that all current data protection regulations are observed and that your data are protected against any unauthorized access. For more information regarding cyber security, see: www.eaton.com/cybersecurity



Download white paper



# easyE4 solutions

## Ready for the future



*"I'm getting the advice and support I need to implement cutting-edge system solutions."*

### The optimal design of your system architecture

**LEVEL 1:**
**Eaton 'easy' stand-alone solution**

The easyE4 allows for a wide range of clever applications of varying complexity. The control of simple tasks is performed by the base unit via the integrated inputs/outputs. The system can be tailored to the task at hand by means of the existing expansions. To this end, various expansion modules are available, which can be connected via a simple plug connector.

**LEVEL 2**
**Eaton 'easy' system solution**

For more complex tasks, additional devices can be connected to the base unit and the expansions via the network. Via the Ethernet and NET interfaces, up to eight easyE4 devices can communicate with each other within the same network cluster.

For larger networks, the easyE4 series offers the possibility of operating up to ten clusters—each with eight individual easyE4 devices—in parallel.

With the Modbus TCP protocol, it is even possible to use Eaton's XC300 as the central master-level control system for the easyE4 devices. And by connecting an Eaton HMI (e.g. the XV300), even the most demanding visualizations can be realized.

### Successful entry to IIOT

**LEVEL 3**
**Eaton 'easy' system solution with connection to the cloud**

Industry 4.0 is already a reality in many companies. In addition to enhancements in data availability, it also facilitates process optimization along the entire value chain. Implementation requires intelligent, networked system components—also known as the Industrial Internet of Things (IIoT).

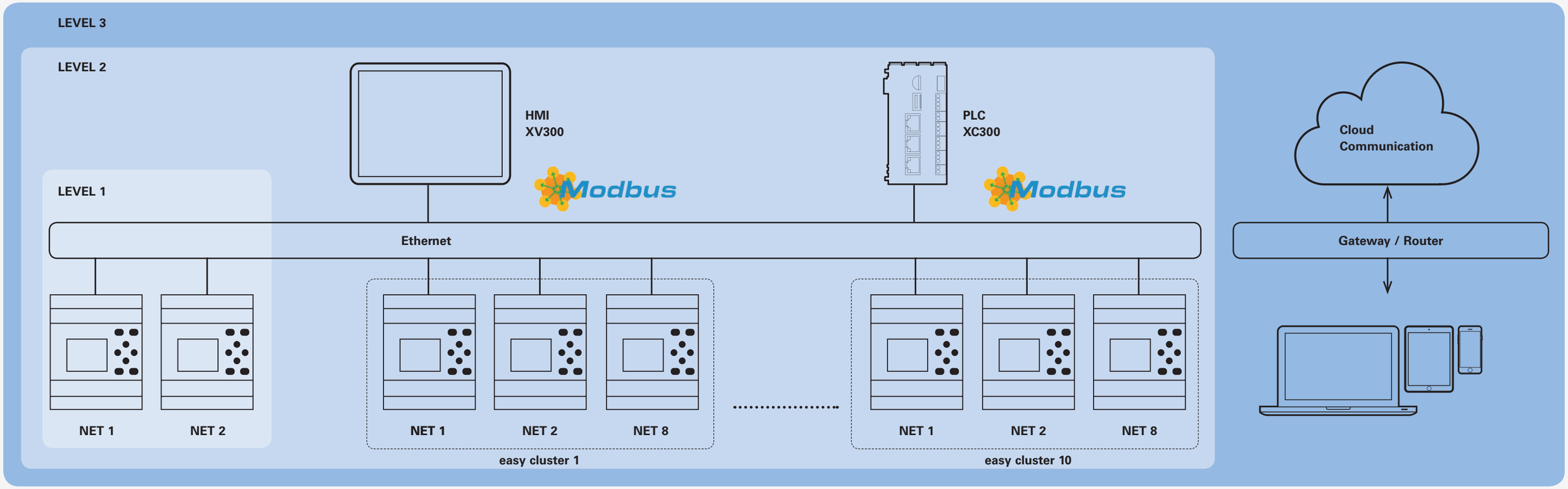
easyE4 enables integration into IIoT architectures via the built-in Ethernet interface. You can therefore transfer your data to the cloud via a router and then access it whenever you need it, from anywhere in the world.

### Implementation of Industry 4.0

Industry 4.0 represents the fourth industrial revolution: Modern information and communication technologies have already made their way into production processes, where they facilitate the communication between humans, machines, plants, logistics, and products. In our white paper you will find more information about this exciting topic and how Eaton can help you with implementation.
www.eaton.eu/en/iw/iot




Download WhitePaper



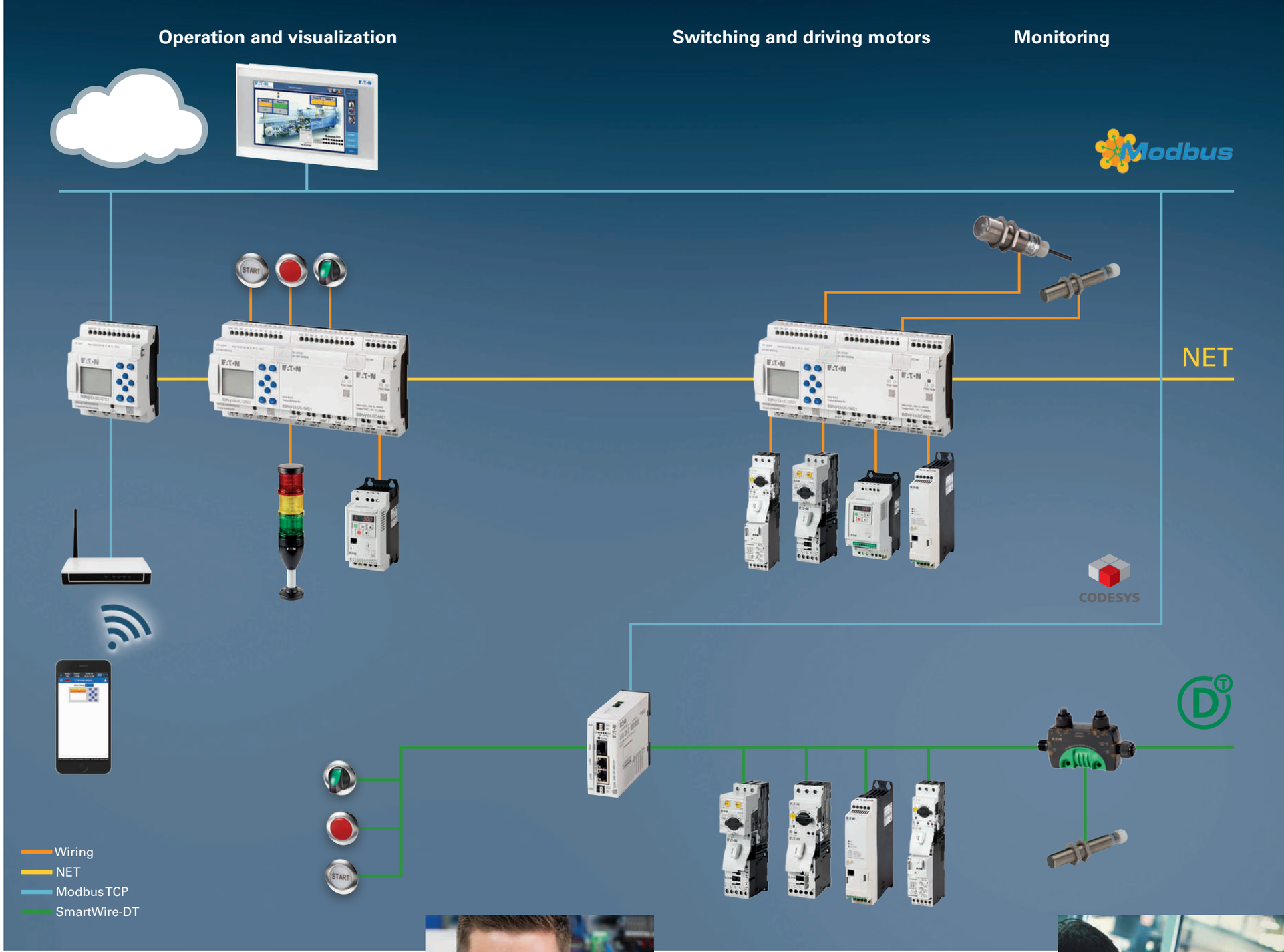
# Implementing system architectures with Eaton's easyE4

**The easyE4 control relays can be used within many different projects meeting your requirements for a flexible, modular system. If used in conjunction with the other components from the Eaton portfolio, such as our pilot devices or motor starters, the devices allow you to implement integrated system architectures that can be easily expanded.**

Our example shows three different areas of application: Operation and visualization, motor start and controls, and sensor technology. The easyE4 control relay serves as an important interface between the individual components of the system architecture.

Since the in-/outputs in the easyE4 system can be easily extended, it is possible to integrate a wide variety of devices, such as those from our RMQ-Titan range. In addition, you can also connect motor starters, variable speed starters or sensors to the easyE4. The devices within each easyE4 network (cluster) communicate via NET. The XV100, which can be easily connected via Modbus TCP, is used for visualization.

A Modbus gateway is used to integrate additional modules, such as those from our SmartWire-DT range. Modbus TCP is also used to transmit the system-level data, which can then be visualized on a master-level control system using Codesys. With the easyE4, the operating status of the entire application can also be conveniently displayed on any mobile device.




**Flexible visualization options**

In addition to HMI visualization via Modbus TCP, the easyE4's integrated web server also makes it possible to display the application content on tablets and smartphones. The web server is accessed by means of a wireless router. A number of built-in functions ensure secure access to the server.



**Tailor-made programming options**

From easy device programming (EDP) to the ladder diagram (LD), the function block diagram (FBD), and structured text (ST) for more advanced users — easySoft gives users the option to select their preferred programming language. This not only provides flexibility but also saves time.

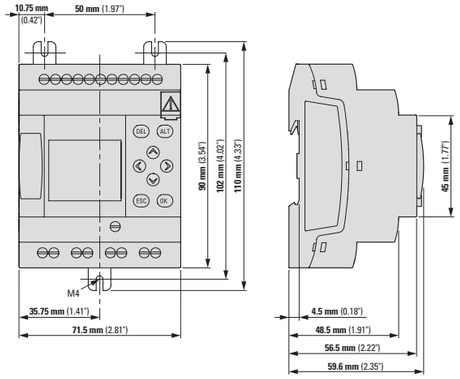


# Technical data

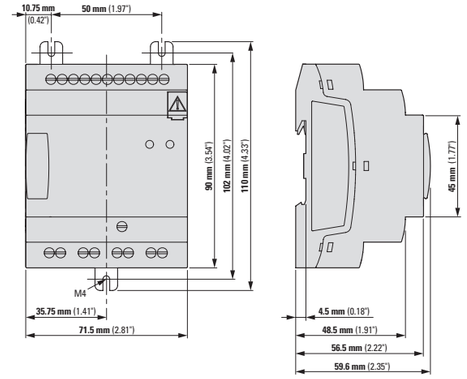
| Typ | EASY-E4-UC-12RC1 | EASY-E4-UC-12RCX1 | EASY-E4-UC-8RE1 | EASY-E4-UC-16RE1 | EASY-E4-DC-6AE1 | EASY-E4-DC-12TC1 | EASY-E4-DC-12TCX1 | EASY-E4-DC-8TE1 | EASY-E4-DC-16TE1 |
|---|---|---|---|---|---|---|---|---|---|
| Article no. | 197211 | 197212 | 197217 | 197218 | 197223 | 197213 | 197214 | 197219 | 197220 |
| Type of device | Base unit | Base unit | Expansion unit | Expansion unit | Expansion unit | Base unit | Base unit | Expansion unit | Expansion unit |
| **Inputs** | | | | | | | | | |
| digital | 8 | 8 | 4 | 8 | - | 8 | 8 | 4 | 8 |
| can be used as analog inputs | 4 | 4 | - | - | 6 | 4 | 4 | - | - |
| **Outputs** | | | | | | | | | |
| Transistor | - | - | - | - | - | 4 | 4 | 4 | 8 |
| Relay | 4 | 4 | 4 | 8 | - | - | - | - | - |
| can be used as analog outputs | - | - | - | - | 2 | - | - | | - |
| Display | with Display | without Display | without Display | without Display | without Display | with Display | without Display | without Display | without Display |
| Rated operational voltage | 12/24 V DC, 24 V AC | | | | 24 V DC | | | | |
| Operating ambient temperature (°C) | -25 - +55 | | | | -25 - +55 | | | | |
| Dimensions (L x H x D) | 71.5 x 90 x 58 | | 35.5 x 90 x 58 | 71.5 x 90 x 58 | 35.5 x 90 x 58 | 71.5 x 90 x 58 | | 35.5 x 90 x 58 | 71.5 x 90 x 58 |
| Weight (kg) | 0.2 | | 0.2 | 0.2 | 0.2 | 0.2 | | 0.2 | 0.2 |
| Degree of protection | IP20 | | | | | | | | |
| Standards | EN 61000-6-2, EN 61000-6-3, IEC 60068-2-6, IEC 60068-2-27, IEC 60068-2-30, IEC 61131-2, EN 61010, EN 50178, cULus acc. to UL 61010, CSA C22.2 No.61010 | | | | | | | | |

# Dimensions

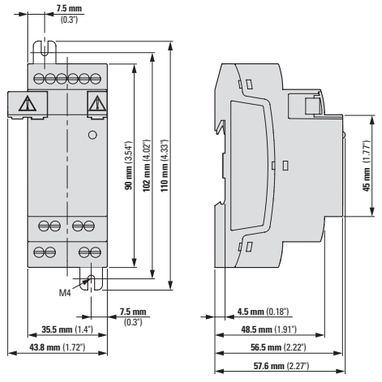
Basic device with display



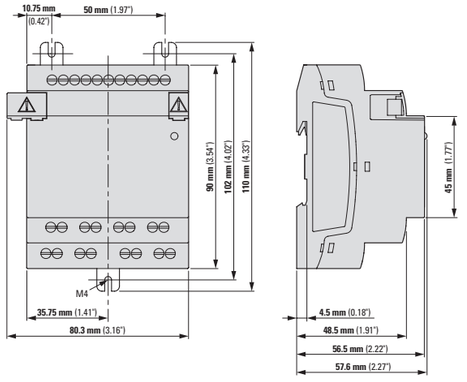

Basic device without display




Slim expansion module




Large expansion module






# Ordering data

## easyE4 Basic devices

| Inscription | Input | | Output | | Features | | | Power supply | Typ Article no. |
|---|---|---|---|---|---|---|---|---|---|
| | digital | digital analog | Transistor | Relay (8 A) | Display + Keypad | Realtime clock | Ethernet | | |
| Basis device 12/24 V DC,24 V AC, Display, Keypad Screw Terminal | 4 | 4 | - | 4 | • | • | • | 12/ 24 V DC 24 V AC | EASY-E4-UC-12RC1 197211 |
| Basis device 12/24 V DC,24 V AC Screw Terminal | 4 | 4 | - | 4 | - | • | • | 12/ 24 V DC 24 V AC | EASY-E4-UC-12RCX1 197212 |
| Basis device 24 V DC, Display, Keypad, Screw Terminal | 4 | 4 | 4 | - | • | • | • | 24 V DC | EASY-E4-DC-12TC1 197213 |
| Basic device 24 V DC Screw Terminal | 4 | 4 | 4 | - | - | • | • | 24 V DC | EASY-E4-DC-12TCX1 197214 |
| Basis device 100 - 240 V AC/DC Display, Keypad Screw Terminal | 8 | - | - | 4 | • | • | • | 100- 240 V AC/DC | EASY-E4-AC-12RC1 197215 |
| Basis device 100-240 V AC/DC Screw Terminal | 8 | - | - | 4 | - | • | • | 100- 240 V AC/DC | EASY-E4-AC-12RCX1 197216 |

## Expansion devices

| Inscription | Input | | Output | | | Power supply | Typ Article-No. |
|---|---|---|---|---|---|---|---|
| | digital | analog | Relay (5 A) | Transistor | analog | | |
| Digital Input/ Output 12/24 V DC, 24 V AC Screw Terminal | 4 | - | 4 | - | - | 12/ 24 V DC 24 V AC | EASY-E4-UC-8RE1 197217 |
| Digital Input/ Output 12/24 V DC, 24 V AC Screw Terminal | 8 | - | 8 | - | - | 12/ 24 V DC 24 V AC | EASY-E4-UC-16RE1 197218 |
| Transistor Input/ Output, 0.5 A Screw Terminal | 4 | - | - | 4 | - | 24 V DC | EASY-E4-DC-8TE1 197219 |
| Transistor Input/ Output, 0.5 A Screw Terminal | 8 | - | - | 8 | - | 24 V DC | EASY-E4-DC-16TE1 197220 |
| Digital Input/ Output 100/110/230/ 240 V AC Screw Terminal | 4 | - | 4 | - | - | 100-240 V AC/DC | EASY-E4-AC-8RE1 197221 |
| Digital Input/ Output 100/110/230/ 240 V AC Screw Terminal | 8 | - | 8 | - | - | 100-240 V AC/DC | EASY-E4-AC-16RE1 197222 |
| Analog Input/ Output; 0 - 10 V / 0/4 - 20mA, 12 bit, each channel configurable Screw Terminal | - | 4 | - | - | 2 | 24 V DC | EASY-E4-DC-6AE1 197223 |
| Temperature Input, 2 and 3 Wire, Pt100/1000/Ni1000, 12 bit, * [°C] or [°F], scalling, 12 bit, in 0,1 °, in 1°, 0 - 4095, 0 - 65535, Screw Terminal | - | 4 | - | - | - | 24 V DC | EASY-E4-DC-4PE1 197224 |

* Measurement range selectable PT100, PT1000 -100°C...+200°C / -148°F...392°F, -100°C...+400°C / -148°F...752°F, -100°C...+800°C / -148°F..1472°F; Ni1000 -50°C...+100°C / -58°F...212°F, -50°C...+250°C / -58°F..482°F

## Software

| Inscription | Typ Article no. |
|---|---|
| Programming software easySoft easyE range | EASYSOFT-SWLIC 197226 |

## Accessories

| Inscription | Connector | Caps | Typ Article no. |
|---|---|---|---|
| Spare parts package easyConnect | 3 | 3 | EASY-E4-CONNECT1 197225 |

## easyE4 Startersets

| Inscription | Typ Article no. |
|---|---|
| Basic device UC, patch cable, easySoft license code, easyE4 flyer | EASY-BOX-E4-UC1 197227 |
| Basic device DC, patch cable, easySoft license code, easyE4 flyer | EASY-BOX-E4-DC1 197228 |
| Basic device AC, patch cable, easySoft license code, easyE4 flyer | EASY-BOX-E4-AC1 197229 |

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We power businesses with reliable, efficient and safe electrical power management solutions. Combined with our personal service, support and bold thinking, we are answering tomorrow's needs today. Follow the charge with Eaton. **Visit eaton.eu.**

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March 2019

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