New Control relays easyE4

Product Line: Machine Operation & Control (MOC)
Place: Bonn
Date: May 2019

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Game changer easyE4

MORE TIME FOR THE REALLY IMPORTANT THINGS

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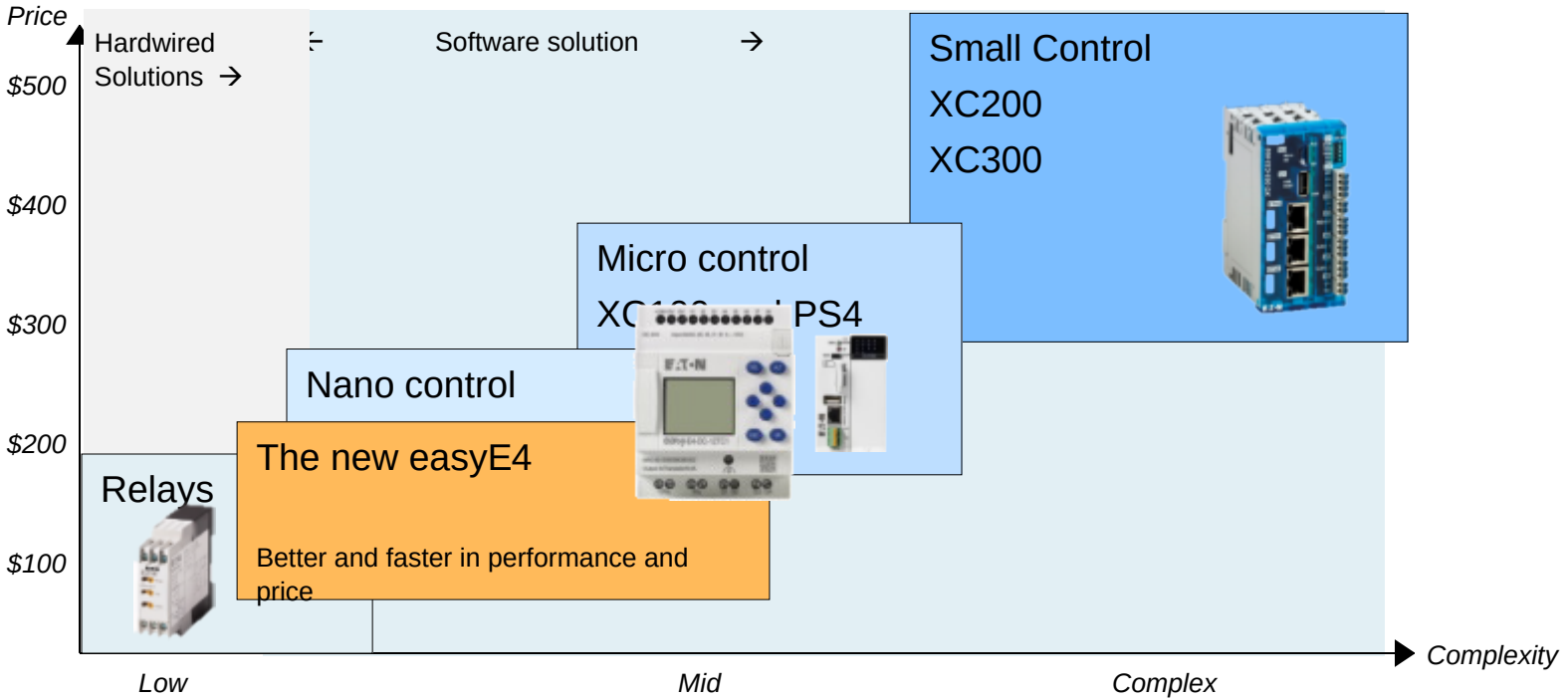
The new easyE4

Positioning existing to new



increased employability and performance

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The new easyE4

Product range

Low Voltage
UC Relay

24V AC
12V / 24V
-15% / +10%

8I / 4R | 8I / 4R | 4I / 4R | 8I / 8R

From 46 devices back to 14

Low Voltage
AC Relay

100 -240 V AC/DC
-15% / +10%

8I / 4R | 8I / 4R | 4I / 4R | 8I / 8R

easy

- Integration of the new devices
- Lots of new function blocks
- Integration of new programming languages
- Webserver integration

Low Voltage
DC Transistor

24V DC
-15% / +10%

8I / 4T | 8I / 4T | 8I / 8T | 4I / 4T | 4IA / 2QA | 4 Temperature inputs

Where to Play
Product Portfolio and Roadmap

Technical Features - Overview

Display/Keys
- Values
- Remote display
- Operating status

Inputs
- 4 digital/ fast reaction
- 4 analog/digital
- 4 temperature (PT/Ni)
- Interrupt
- DCF77 time sync

Memory card
- Program + comments
- Start picture
- Data logging

Outputs
- 4 Relay or Transistor
- 2 Analog
- PWM
- Impuls

Ethernet
- Programming
- Net
- Modbus TCP
- Web-Server access

Extension modules
- Up to 11 extensions per base unit
- Mix any extension with any base unit

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Hardware

Connecting terminals basic device

4 Digital- or fast/interrupt inputs

4 Digital- or analog

Power voltage input

4 Digital outputs (T or R)

Huge amount of needed in- and outputs

Digital

96 digital inputs + 92 digital outputs or,

Analog

48 analog inputs + 22 analog 0utputs (12 BIT resolution)

Or just mixed the units to your needs

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The new easyE4

Features extension modules

No limitations for I/O mixes

- **Any** extension can be combined with any base unit
- Mixes of AC, DC & UC extensions per base unit are possible

Up to 11 extensions per base unit

- Width: Base unit + 11 big extensions: 864 mm
- Width: Base unit + 11 small extensions: 424 mm

New connector

- Connect the base devices and extensions from the front, exchanging products without sliding over other modules

Existing extensions

- Digital
  - 8I / 8R and 4I / 4R UC version
  - 8I / 8T and 4I / 4T DC version
- Analog
  - 4IA / 2QA DC version (12 bit, 0-10V & 0-20 mA / 4-20 mA)
  - 4 temperature inputs (12 bit PT100, PT1000, Ni1000)

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Features SD-Card

Start program
- One start program can be defined – the easy automatically copy the start program while starting from the micro SD-card, the current program will be overwritten

Data Logging
- Circular logger (After using the maximum memory space the oldest entries will be overwritten)
- File logger (Transcript until the max memory is reached)

Storage for multiple programs
- Storage of multiple programs including the comments on one card

Start picture
- User can save a start picture as jpeg which will be shown during start-up

Micro SD Card
- Micro SD cards with 128Mb up to 32Gb (SD and SDHC, FAT12/16/32, Class 2 or 4) Available as accessory

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The new easyE4

Features User interface

Characters

- 16x6 letters

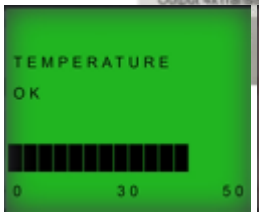
Versatile display

- The display can visualize text, values, semi graphics (bar graphs) and parameters
- The graphical user interface can be designed individually with the easySoft 7

Value display
Bit display
Running text
Bar graph
Static text
Rolling text
Date and time display
Value entry
Timing relay value display
Latching button

Backlight

- Three background colors (red, green and white)
- The background colors can be used to indicated the operating status or alarms
- Brightness can be adjusted



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The new easyE4

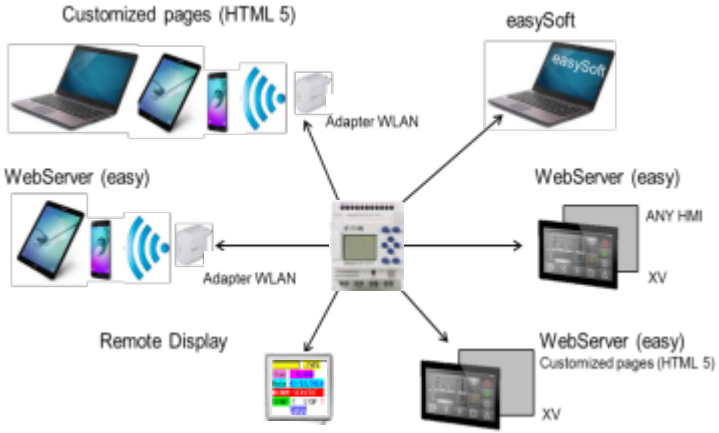
Features Ethernet

New Ethernet connectivity
- Programming via EasySoft 7
- Net – communication network between easy's

ModBus TCP
- To communicate with other devices

Ethernet standard
- Can be used with all standard Ethernet products, like switches, routers
- Internet connection enables new visualization options like HTML5 pages
  - Visualization devices can be connected via LAN or Wireless

Webserver functionality
- Three options:
  - Remote display can be configured by the user in the EasySoft
  - The easy can host webpages and communicate with external webpages and providing and receiving data from the external webpage, like a cloud dashboard



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The new easyE4

Features easySoftV7

Four programming languages
- EDP, LD, FBD, **ST**

User function blocks
- Code can be reused
- Different programming languages can be mixed

New function blocks
- WT- Weekly timer
- YT- Year time switch
- AL- Alarm function block
- DL- Data logger

Watchdog
- Monitoring of cycle time to protect for delays or endless loops

Additional
- Customized start-up logo
- Subprograms for a better overview (not in EDP)
- Interrupt functional blocks (not in EDP)

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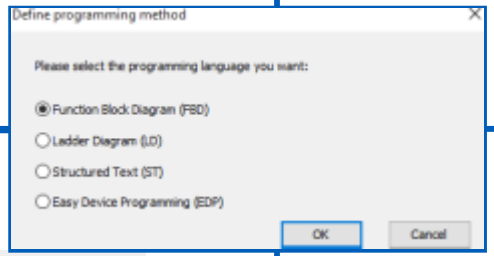
The new easyE4

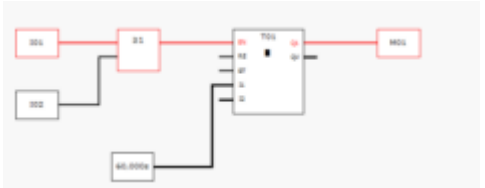
Highlight a little the special functions in Software

Technical Features – Programming languages

Easy Device Programing (EDP)

todays easy programming language



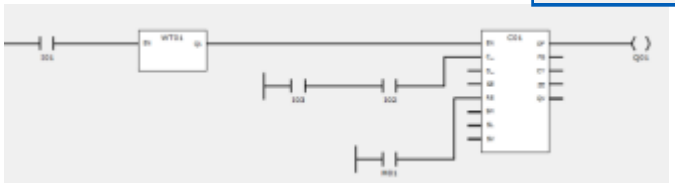


Function Block Diagram (FBD)

combine predefined function blocks

Ladder Diagram (LD)

schematic of wiring diagrams



Structured Text (ST)

implementing loops & cases

```
IF M02 = TRUE THEN
    T01 (
        EN := I05 ,
        RE := I11,
        ST := ,
        I1 := T#25ms,
        I2 := T#70ms,
        Q1 := Q01> ,
        QV =>
    );
END_IF;

FOR MB01 := 1 TO 10 BY
    Q01 := I04;
```

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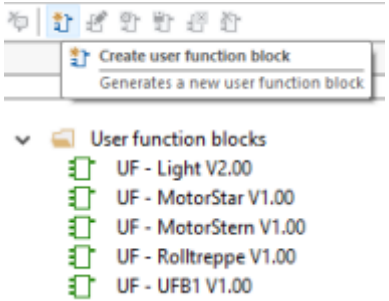
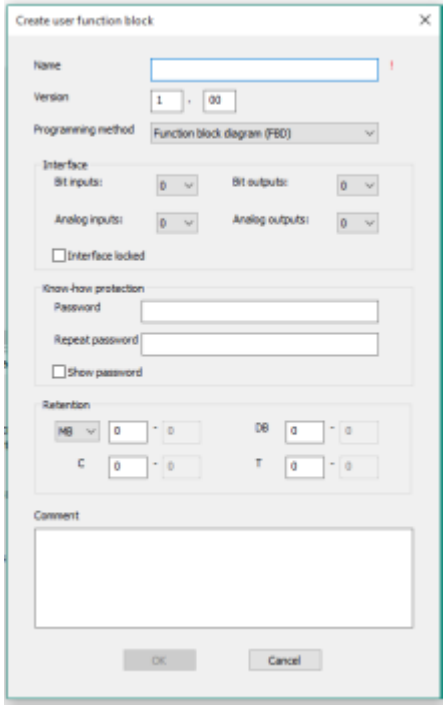
Create your own function block

Technical Features – User function block

- The user creates the code for this subprogram and can reuse it as often as they want
- The user function blocks are added to the library
- Different programming languages can be mixed by writing the user function block in a different programming language than the main program





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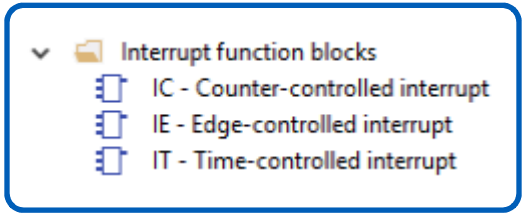
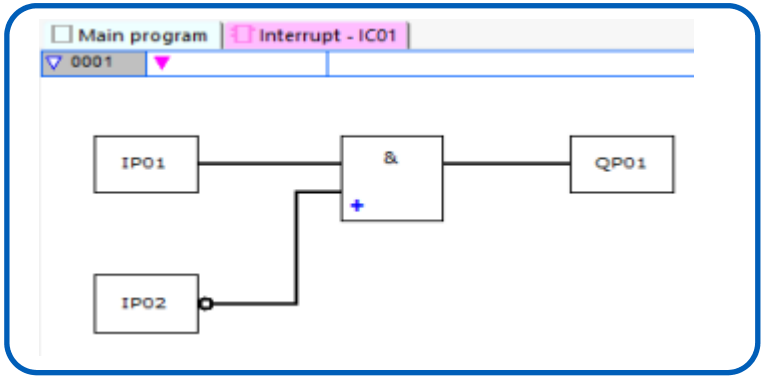
Interrupt explained

- 3 new interrupt function blocks (Counter, Timer & Edge)
- The interrupt function blocks open a new interrupt routine tab where the interrupt routine can be programmed





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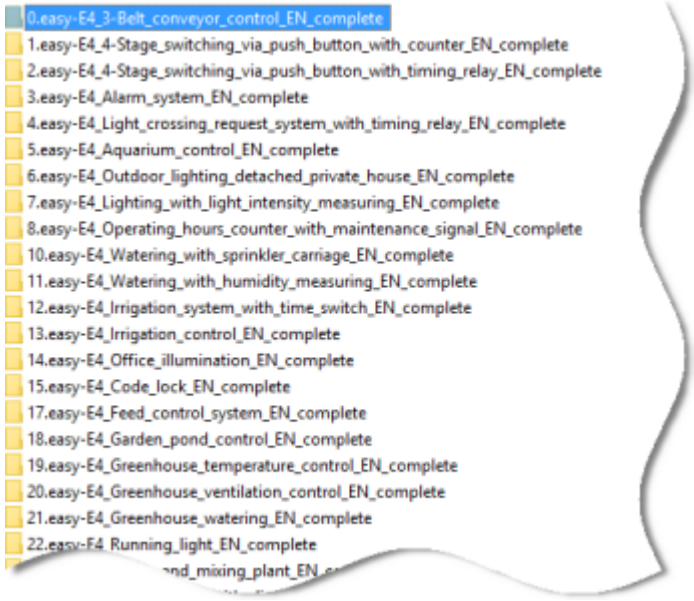
The new easyE4
Application Notes

- More than 30 easy applications as examples available
- Available for download on new easyE4 web page
- Every example consists of
  - description
  - wiring diagram
  - easySoft project



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Application Notes – example: “Belt conveyor control”

3-Belt Conveyor Control

Task definition

easy is required to control 3 conveyor belts.

Start is used to switch on the system and Stop to switch it off.
With Start switched on, the conveyor belts start up with a delay of two seconds (belt 1->2->3), as soon as an object is detected in front of the Conveyor start proximity switch. Each conveyor belt is on for 10 seconds after activation. If no object is reported at the Conveyor start proximity switch within this time, the conveyor belts switch off automatically with a 10-second delay (belt 1->2->3).
The daily unit quantity of transported parts is counted at the end of conveyor belt 3 at the Belt 3 proximity switch. The monitored quantity is also retained in the event of a power failure. The daily quantity value is cleared at the end of the day (23:59 pm).

If a fault occurs when the conveyor system is

Device class used
easy-E4

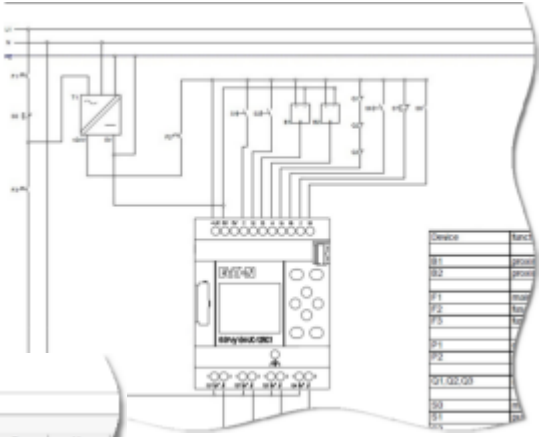
Wiring

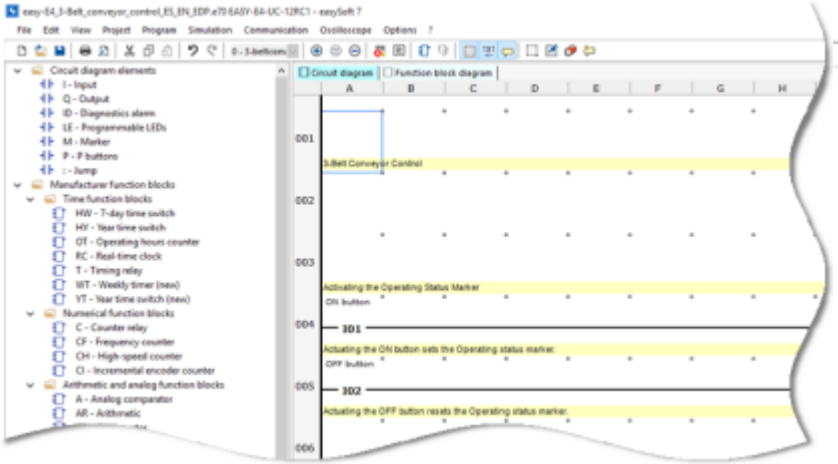
Inputs

I01	Start button
I02	Stop button
I03	Conveyor start proximity switch
I04	Belt 3 proximity switch
I05	Motor protection 1-3 aux. contact
I06	Run empty button
I07	Emergency-stop button
I08	Fault reset button

Outputs

Q01	Belt 1 motor
Q02	Belt 2 motor
Q03	Belt 3 motor
Q04	Fault indicator light





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Application example – Material Handling (MOEM)

Conveyor control

Application description

This application is to control a conveyor belt system. Conveyor control with two motors 3phs, original design used, no controller but simple aux. switches for contactors and timer relays.

Estimated cost control components € 218,00

Value proposition

SOME NEEDS:

- Lower the cost
- Synchronize conveyor control
- Must be simply expandable
- Predictive maintenance

Outcome:

- Less control components need aux switch and expensive time relays, easyE4 approx. € 90 euro
- Synchronization of the belt is easy to realize due to Software
- Expandable up to 11 modules local
- Counting of operating hours makes it possible to plan maintenance

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Application example – greenhouse (MOEM)

“Simple” greenhouse control

Application description

This application controls the lights and pumps which filter and purify the water, manual handling is required, like status information and alarms via mobile phone

.

Estimated cost for control components + Ethernet communication Module € 187,00

Value proposition

SOME NEEDS:

- Switching UV daylights and tube lights
- Pump control
- Alarms not only on-site but also via mobile phone
- Manual / Auto Switch

Outcome:

- The “onboard DCF77 clock” is perfectly made to control and switch the UV-daylight on needed times and follow the summer to wintertime changes.
- Alarm text can be displayed on the easy but also via the WEB browser to a mobile phone
- Program changes can easily be made on the device
- Price estimation easyE4 € 135,00

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Application example – Silo control

“Simple” silo control

Application description

This application is to measure the level of the two tanks, to adjust the temperature and to control the pumps of the silos.

Estimated cost control components € 320,00

Value proposition

SOME NEEDS:

- Synchronize the pump control
- Implementation of dependency of single components
- Visualization of errors and error messages on the display
- Cost reduction

Outcome:

- One base device and a temperature module replace the application → cost 155€ (cost reduction of over 50%)
- Central control for level monitoring and synchronized pump control
- Various communication options and the integrated WebServer for a sophisticated visualization

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The new easyE4
Technical summary

Faster & safer wiring
Mix AC, DC &UC
Push In clamps

Automatic clock
DCF 77

Fast & flexible programming
User library
FUP, KOP, ST
Micro SD card slot
Easy Soft 7
Upwards compatible programs

Higher Flexibility
Mix AC, DC &UC
188 I/O's

Allow big system setups
188 I/O's

Modern communication options
Direct BM com.
ModBus TCP
Webserver
Integrated Ethernet
(Easy) Net
SSL Email function
DCF 77

Reaction time like micro control
Interrupt

Data logging
Micro SD card slot

Compact assortment
Mix AC, DC &UC
14 types

State of the art visualization & customization
Webserver
Integrated Ethernet
Start with firm logo
SSL Email function
Start with firm logo
Color display

Easy entry in automation systems
User library
FUP, KOP, ST
Easy Soft 7

Investment protection
Upwards compatible programs
High pw standards
Link SW ID & HW ID
5x more memory

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The new easyE4
Summary

Ethernet allows a variety of communication options.

easySoft speaks your programming language **Four to choose from!**

DCF77 radio signal evaluation and Ethernet services ensure second-precise date and time information.

188 in-/outputs within one easyE4 system covers a wide range of applications.

Various display and visualization options through integrated display, web server, Ethernet options.

Up to 11 local expansion modules on one base unit allow maximum flexibility.

Large voltage variety in a compact range.

Unrestricted combination possibilities of basic devices with expansion modules enable the simplest handling.

Worldwide use due to all current approvals.

Interrupt functions enable fast event detection and short response times.

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The new easyE4

Final word

ASK YOUR SUPPLIER FOR THE SPECIAL

unbeatable easyE4 STARTER PACKAGE DEAL

include the free software

An offer you can't refuse

easy

THINGS

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The new easyE4

Sneak Preview

- UC & DC devices
- Analog extension
- EasySoft V7.0

Today

- AC devices
- PT100/1000 Temperature Module
- EasySoft V7.1 with new function blocks

April 2019

- Push-In terminals for the entire portfolio
- Nano Remote Display
- EasySoft V7.2 with more new function blocks

Fall 2019

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