

easyE4 Firmware up to V1.42



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Original Release Notes

is the German-language edition of this document.

Translation of the original Release Notes

All versions of this document that are not in German are translations of the original Release Notes.

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1 easyE4 Firmware V1.42

1.1 Supported devices

These release notes refer to the firmware updates from V1.12 to V1.42 for the following base unit devices of the easyE4 product range:

- EASY-E4-UC-12RC1
- EASY-E4-UC-12RCX1
- EASY-E4-DC-12TC1
- EASY-E4-DC-12TCX1
- EASY-E4-AC-12RC1
- EASY-E4-AC-12RCX1

➔ The latest firmware update offers several new features and bugfixes. We recommend to all users of easyE4 base unit devices with an older firmware version to migrate to the new version.

➔ This firmware version is only applicable for devices with hardware version below 8.

1 easyE4 Firmware V1.42

1.2 Updating the firmware

As of OS version V1.10, in addition to the base devices, the operating system and firmware for the expansions of the easyE4 series can also be updated. The process varies for base devices and expansions.

Update the firmware with a microSD memory card. Basically, the firmware of the base devices can also be overwritten with an older firmware from the microSD memory card.

Updates for the operating system are made available by Eaton Industries GmbH, Bonn in the Download Center - Software under Firmware Updates as *.zip files.

Download Center - Software

[http://www.eaton.eu/software/Firmware Updates/easy](http://www.eaton.eu/software/Firmware%20Updates/easy)

[http://www.eaton.eu/software/OS Updates/easy](http://www.eaton.eu/software/OS%20Updates/easy)

In addition to the *.fw file, which contains the firmware update, a configuration file (*.ini) is also stored in the same folder (ROOT) for the base device. This configuration file uses appropriate entries to control the update behavior of the base devices.

You can also configure your program for series production with this configuration file as well.

No configuration file is needed for expansion devices.

➔ No update is made if the operating system of the easyE4 base device is already at the status of the requested update.

Observe the documents belonging to the update in the download center.

Check the integrity of the firmware update ZIP file

The integrity of the firmware update ZIP file can be checked using a separate hash file which can be found on the Download Center in the column "txt":

Category search

1. Select the category!

Software

Libraries

Wizard

Driver

OS Updates

Device Description Files

Application Samples

Archive

Download center

+++ New product version

Located updates or full versions for download

Name	Size	Date	Preview	txt	pdf
easyE4 - Base unit devices OS Update V1.30	2063 KB	06/25/2021			
easyE4 - Base unit devices OS Update V1.23	1011 KB	01/18/2021			
easyE4 - Base unit devices OS Update V1.22	1255 KB	06/09/2020			

Firmware update files on the Eaton download server

For instance the respective hash file for V1.30 of the base unit firmware is named „easyE4_V1_30_ZIP_sha256_hash.txt“. This file contains the original hash for the ZIP-file. To calculate the hash value of the ZIP-file on your system you can utilize a standard tool to calculate SHA256 hashes. On a Windows 10 system the tool „certutil.exe“ can be used:

```
certutil.exe -hashfile <ZIP-file> SHA256 > my_hash.txt
```

or for the V1.30 firmware update:

```
certutil.exe -hashfile easyE4_UPDATE_OS_V130.zip SHA256 > my_hash.txt
```

The file *my_hash.txt* now contains the hash value of the ZIP file on your system. This value can be compared to the hash file from the Eaton Download Center, e.g. *easyE4_V1_30_ZIP_sha256_hash.txt*. The ZIP file on your system is identical to the ZIP file from the Eaton Download Center if the two hash values are identical.

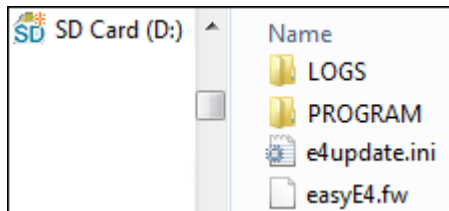
1.2.1 Firmware update base device

All Base Devices can be updated with a newer firmware.

Which generation your easyE4 device belongs to is displayed in the device menu and during online communication with the easyE4 basic device in the *easySoft communication view/HW Info tab*.

If there is a program on the base device, the program will be left unchanged when the operating system is updated. Retentive data will remain unchanged as well.

- ▶ Download the operating system you want on your computer.
- ▶ Connect an empty microSD memory card (FAT format) to your computer.
- ▶ Use your PC to unpack the downloaded operating system to the ROOT of the microSD memory card.



MicroSD memory card content of bootloader version 1.01

Depending on the bootloader version on the base device, the following files are unpacked and required for the firmware update:

Unpacked files	Bootloader version1.00	Bootloader version1.01
Operating system file „EASYE4.FW“	√	√
Configuration file "e4update.ini"	–	√

Which bootloader version is on the device is displayed during online communication with the easyE4 basic device in *easySoft communication view/register HW-Info*.

Bootloader version 1.01 check relevant parameters of INI file

Check the corresponding parameters in the configuration file "e4update.ini" and change them if necessary. As of firmware version V1.12, the following values are set by default:

forceupdate= 1 (default) (dominant entry)

and

update= 1 (default)

forceupdate	updateonce	
0	0	There will be no update.
0	1	The update is executed once (default).
1	0	The update from the microSD memory card is always executed.
1	1	

1 easyE4 Firmware V1.42

➔ If the update is executed, the entry for updateonce in the configuration file is automatically set to 0. Thus, the firmware is updated once with the default settings.

For further updates of microSD memory card the configuration file "e4update.ini" must be adjusted manually and forceupdate=1 must be set.

- ▶ Switch off the easyE4 base device.
- ▶ Insert the microSD memory card with the new operating system into the microSD card holder and slide the holder into the device

➔ Make sure that the power is stable and that the device is not turned off while the operating system is being updated (if it is, the operating system may be corrupted). Then run the operating system update again.

- ▶ Switch on the easyE4.

Bootloader version 1.01: The configuration in the "e4update.ini" file is queried in the easyE4 bootloader and a compatibility check is run. If the firmware in the device and on the microSD memory card is the same, no update is performed.

Bootloader version 1.00: The firmware is transferred from the microSD memory card to the base device.

If the device can be updated, a message is shown accordingly on the display or the LED POW/RUN/STATUS displays the update process.

- The LED POW/RUN/Status flashes quickly, the system is searching for the operating system on the microSD memory card.
- The LED POW/RUN/Status flashes slowly and rhythmically, the update is running.

At the end of the process the new firmware will boot.

➔ You can go to *INFORMATIONSYSTEM* to see what the current operating system version is.

- ▶ Switch off the supply voltage.
- ▶ Remove the microSD memory card with the operating system from the device.

➔ If the firmware transferred from the microSD memory card is older than the firmware set in the project, the project cannot start. The project may contain functions that the currently transferred firmware does not have.

Bootloader version 1.01:

If you do not remove the microSD memory card, the parameters in the configuration file "e4update.ini" will be evaluated each time the device is switched on and the firmware will be updated if necessary.

Bootloader version 1.00:

If you do not remove the microSD memory card, the program will only start after the firmware has been transferred from the microSD memory card.

1.2.2 Firmware update expansion device

An expansion device update must run via the device menu of a easyE4 base device.

Extension devices of the first generation easyE4 (with firmware version 1.00) cannot be updated because there is no bootloader physically present in these devices. Which version of the firmware is on the device is displayed during online communication in the *easySoft communication view/register HW-Info*.

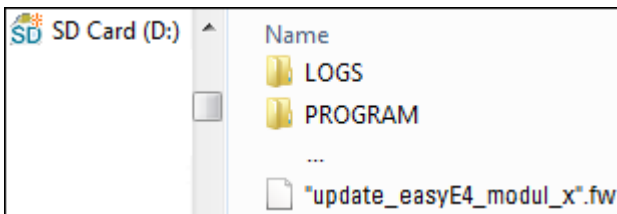
You can reach the device menu through one of the following options:

- a base device with display
- in the communication view of the easySoft 7 under Display\Display + keys
- a remote display with the web server.

An update must be run separately for each expansion device.

Just as with an update for base devices, this requires that the required unzipped operating system file "*.FW" is stored on the microSD memory card.

- ▶ Download the operating system you want on your computer.
- ▶ Connect an empty microSD memory card (FAT format) to your computer.
- ▶ Use your PC to unpack the downloaded operating system to the ROOT of the microSD memory card.



The unzipped file must be an operating system file that matches the easyE4 expansion device (*.FW).



No entry is required in a configuration file for an update.

To update the firmware, the easyE4 expansion device must be connected to the base device with the EASY-E4-CONNECT1 plug connector.

The number of the easyE4 expansion is determined based on the position after the base devices in the assembly block, starting with 1 from the left. The maximum number 11 can be assigned to an expansion in the block.

An update must be carried out separately for each expansion device.

1 easyE4 Firmware V1.42

1.2.3 Update an expansion device via base device with display

Take the following steps to update an expansion from a base device with display:

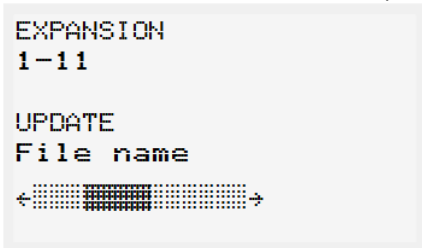
Extension devices of the first generation easyE4 (with firmware version 1.00) cannot be updated because there is no bootloader physically present in these devices.

To update an extension device via a base device with display, proceed as follows:

- ▶ Go to the main menu.
- ▶ Open the menu path *SYSTEM OPTIONS\UPDATE\EXPANSION*.



- ▶ Select the number of the easyE4 expansion in the block; 1 to 11 are possible.



- ▶ Select the corresponding operating system file.
- ▶ Press the OK button to select.

A confirmation prompt is displayed.

- ▶ You can return to the previous menu by selecting "No".
 - ▶ The update starts immediately by selecting "Yes".
- "Update" flashes in the display.

After the update has ended, the display returns to the menu *SYSTEM OPTIONS\UPDATE\EXPANSION*.

Repeat the process for other easyE4 expansion devices.



You can only view the hardware information (HW info), i.e. which firmware version is on the easyE4 expansion device, via the easySoft 7.

To do so, in the Communication view, connect to your easyE4 block. In the workspace Configuration, the FW version is displayed in the HW info.

1.3 Legal disclaimer

All the information in this release notes has been prepared to the best of our knowledge and in accordance with the state of the art. However, this does not exclude the possibility of there being errors or inaccuracies. We assume no liability for the correctness and completeness of this information. In particular, this information does not guarantee any particular properties.

It is assumed that the user of this manual is thoroughly familiar with the information found in the manuals for incorporating the control relay into automation processes. Hazards posed by the control relay cannot be ruled out if the safety instructions are not observed – especially if the control relay is installed and commissioned by inadequately qualified personnel or if it is used improperly. Eaton assumes no liability for any damages resulting from cases such as these

1 easyE4 Firmware V1.42

1.4 New features in easyE4 firmware V1.42

This firmware version offers some new features listed here.

1.4.1 Web Client

1.4.1.1 Compatibility of web client with recent versions of web browsers when using https

Due to changes in the web framework Chromium used in the web browsers Google Chrome and Microsoft Edge, the web client of easyE4 in FW version 1.41 was not working reliably. The web client of version 1.42 is now compatible with current web browsers (Google Chrome version - 109.0.5414.75, Microsoft Edge version - 109.0.1518.55).

1.4.1.2 Eye icon in password field

Eye icon to display and hide the password field values: The user can reveal the password by clicking on the eye icon provided in the password field in the web client.

1.5 Important changes in easyE4 Firmware up to V1.42

This firmware version features the following important changes and improvements compared to the previous version V1.41.

1.5.1 FB IC - Counter-controlled Interrupt

Fixed an issue with function block IC where the count direction input was not handled properly. When I5 to I8 were used as count direction inputs in modes "counter with external direction control" and "incremental counter" the function block was counting the wrong direction.

Fixed an issue where FB IC interrupt routine was called continuously in frequency counter modes after the precondition was met.

1.5.2 FB SC - Synchronize time via NET

Fixed an issue with function block SC where the enable input EN was not working properly.

1.5.3 FB MC - Modbus TCP acyclic request

Fixed an issue where marker words were reset to 0 after the device reboot when marker words of the retentive region are mapped in read function codes of FB MC.

1.5.4 FB AC - Astronomic Clock

Fixed an issue where sunset and sunrise calculations lose 1 minute at time of crossing midnight with offset enabled.

The behavior of the output Q1 was changed when the calculated sunrise and sunset times are the same. Output Q1 is set to True in this case.

1.5.5 FB YT - Year Time switch

Fixed an issue where invalid dates are shown during FB-YT configuration using the device display.

1.5.6 FB AV - Average Calculation

Fixed two display issues in EDP editor at the device menu where the contact AVxxE1 was interchanged with AVxxN0 and the contact AVxxT_ was interchanged with AVxxRE.

1.5.7 FB RE - Recipe - Data Sets

Fixed an issue where the function block outputs were altering without a new rising edge at trigger input T_.

1 easyE4 Firmware V1.42

1.5.8 FB MR - Master reset

Fixed an issue with the rising edge detection of function block MR, where the master reset was done when the function block was enabled and T_ has been set already (no rising edge).

1.5.9 RTD connection problem in RUN

Fixed a rare issue where the remote display could only be connected in STOP. If the cycle time of the user program is below 10 ms before activating RTD, then it is now automatically set to 10 ms to facilitate a stable RTD connection. Nevertheless, if a cycle time below 10 ms is needed, customer can utilize function block ST to lower the cycle time.

1.5.9.1 Known limitations under high system load

In some cases, users see connection problems with easyE RTD to easyE4 when using a user program with a high load. In these cases, it helps to use the function block ST to set the cycle time to a value 5ms bigger than the current cycle time.

E.g.: *cycle time without using FB ST: 19ms → use FB ST with 24ms or more*

1.5.10 Web Client

1.5.10.1 Stability of web client connections when using Apple Safari

Improvements in the stability of web client connections. Adjustment of web client to current Apple Safari (Safari version - 16.2) for better connectivity stability.

Remark: When connecting from Safari to easyE4 for the first time, the full functionality will be available after about 30 seconds.

1.5.10.2 Known limitation under high system load

In some cases, users see connection problems from the web client to easyE4 when using a user program with a high load. In these cases, it helps to use the function block ST to set the cycle time to a value 5ms bigger than the current cycle time.

E.g.: *cycle time without using FB ST: 19ms → use FB ST with 24ms or more*

1.5.10.3 Special characters - email groups, Device name, Domain name and email Username

Improved handling of special characters in email groups, Device name, Domain name and email Username

1.5.10.4 Diagnostic Buffer

Missing language translations for messages are added.

Fixed issue where Operating Time since reset and Timestamp of Diagnostic messages were not matching to that of easySoft.

1.5.10.5 Email Server IP address change

Fixed issue where the email server IP address were displayed wrong value in web client after changing it.

1.5.10.6 Sidebar Menu

Fixed issue where menu entries were out of the reserved range in several languages.

1.5.10.7 Device Time

Fixed issue where changing device time was not accepting the new time.

1.5.10.8 Updating Circle

Fixed issue where the updating circle was blocking the usage of the web client.

1.5.10.9 Language Translations

Missing language translations were added.

2 Release notes of previous firmware versions

2.1 V1.41

2.1.1 New features in easyE4 firmware V1.41

This new firmware version offers several new features which are listed shortly here. For a detailed description refer to the updated easyE4 manual. The new features are generally only available if the firmware is used in combination with easySoft V7.40 or higher.

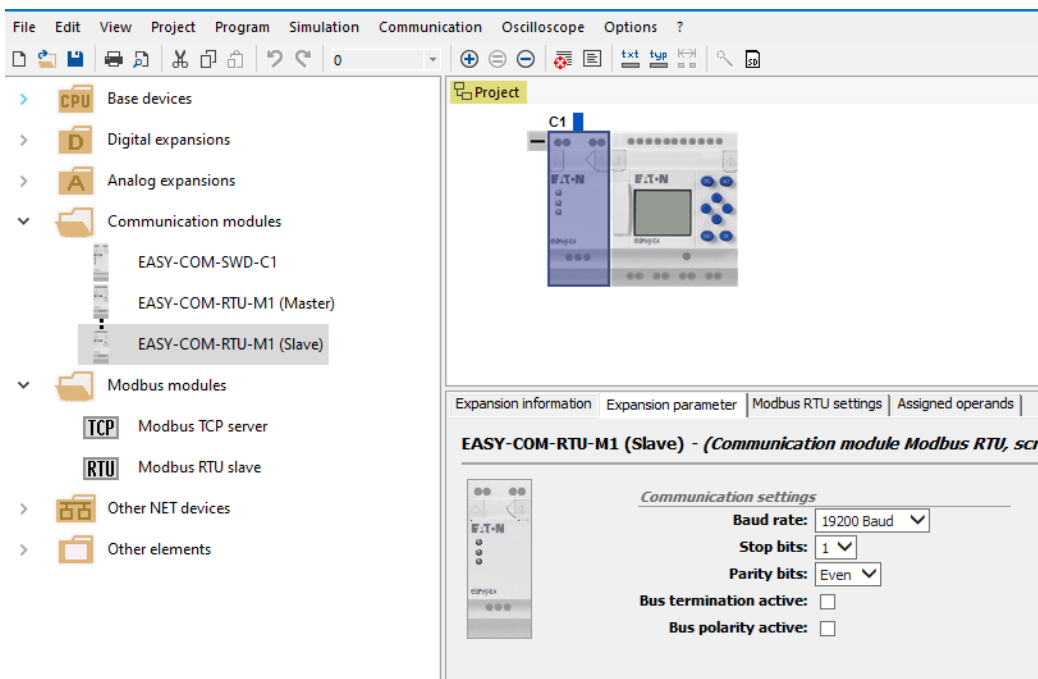
2.1.1.1 Modbus RTU support

The new version of the firmware offers the possibility to connect the new product

EASY-COM-RTU-M1

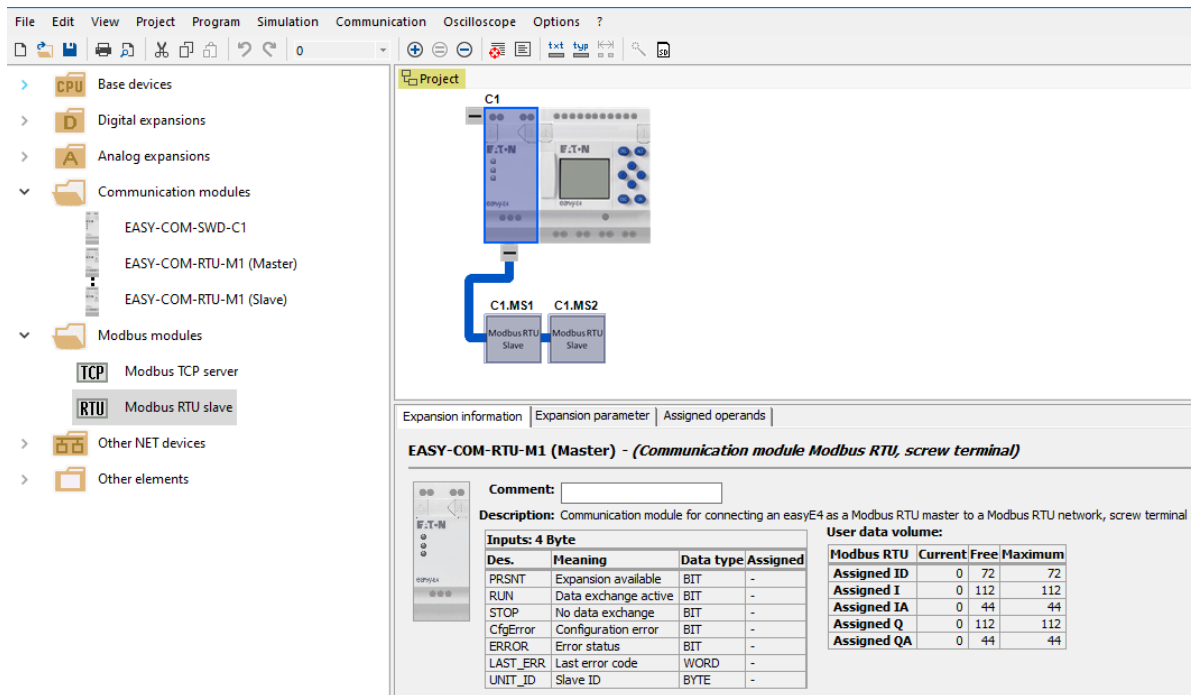
to the communication module interface on the left side of the base unit. EASY-COM-RTU-M1 is a Modbus RTU device which can be configured to act as Modbus RTU master/client or as Modbus RTU slave/server. This allows the easyE4 product family to connect with existing Modbus RTU based devices in the market.

The Modbus RTU network can be configured through a rich user interface in easySoft V7.40 (see below screenshot).



Configuration of a Modbus network in easySoft V7.40

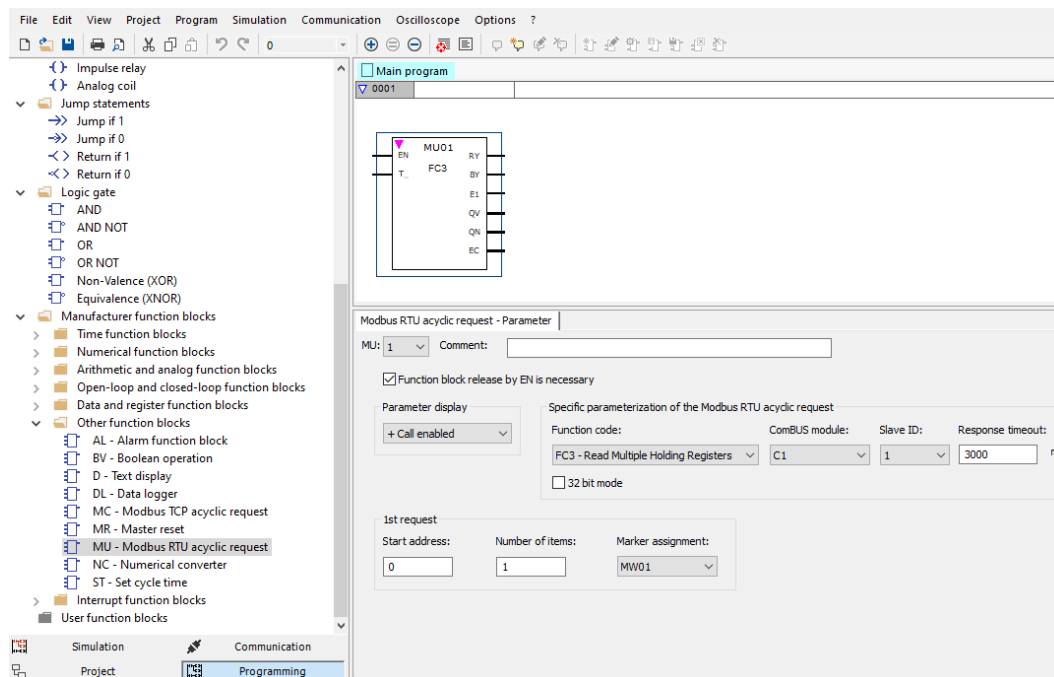
The easySoft Modbus RTU configurator allows the assignment and mapping of easy digital I/O operands, analog I/O operands and diagnostic alarms to periodical Modbus requests. Easy markers can be addressed and acyclic transferred by using the new MU function block. For further information please refer to the manual.



Configuration of a Modbus communication module as Modbus Master/Client in easySoft V7.40

2.1.1.2 Function Block FB MU

This firmware update supports a new function block FB MU (Modbus RTU). This function block can be used with Modbus RTU module configured in Master mode. The function block provides functionality to setup acyclic communication with underlying Modbus RTU slaves or server devices.



Configuration of FB MU in easySoft V7.40

2 Release notes of previous firmware versions

2.1.1.3 Modbus TCP client

This firmware updates the existing Modbus TCP Client functionality by introduction of new features which can be configured in easySoft V7.40:

- byte order: big-endian, little-endian, twisted mode,
- automatic decrement on register addresses to support legacy register offsets,
- 32-bit support for FB MC.

2.1.1.4 Modbus TCP server

The firmware updates the existing Modbus TCP Server functionality by supporting new function code FC5, FC15 and FC23. The firmware also supports additional Modbus Register map supported by Modbus RTU. Further details can be found in the manual.

2.1.1.5 32-bit support for EASY-COM-SWD-C1

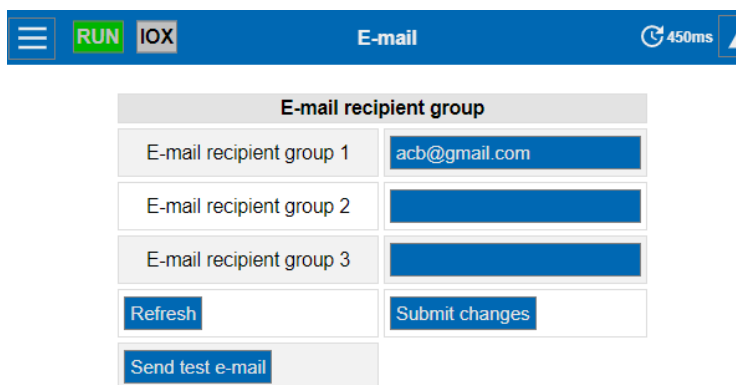
The interface to the communication module EASY-COM-SWD-C1, which acts as a SWD coordinator device, was enhanced by support for 32-bit cyclic data.

This feature can only be used in combination with the firmware version V1.10 of the EASY-COM-SWD-C1.

2.1.1.6 Web client / JSON-API

Web client: Send test email

The easyE4 web client now features the possibility to send a test email using the email view of the web Client. This feature is useful to test the email server settings.



E-mail recipient group	
E-mail recipient group 1	<input type="text" value="acb@gmail.com"/>
E-mail recipient group 2	<input type="text"/>
E-mail recipient group 3	<input type="text"/>

Example on how to send test an email from the web client

JSON-API: Send test email

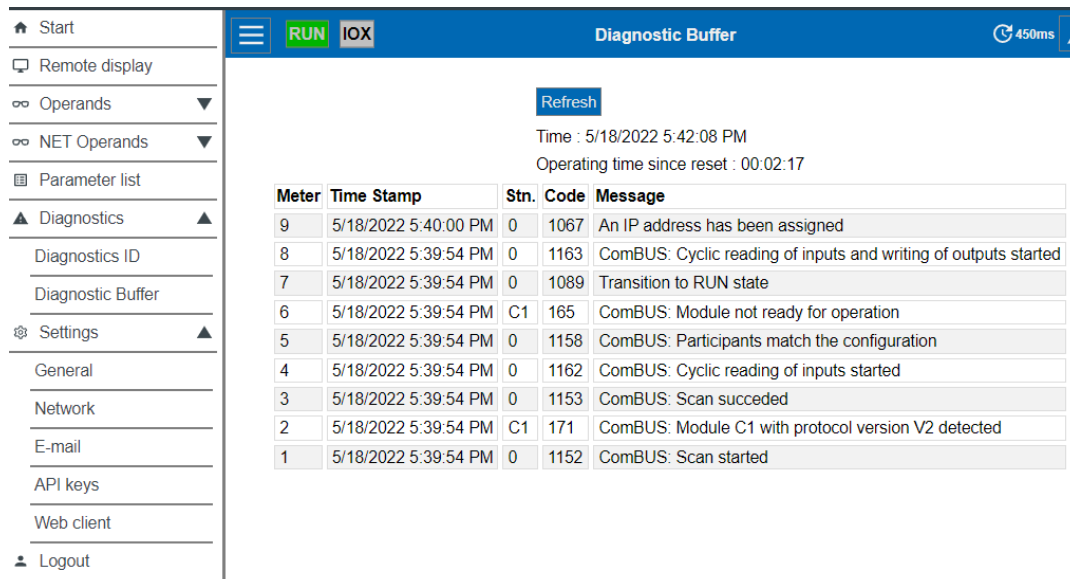
In addition to the web client also the easyE4 JSON-API features the new web service *emailtest* to send a test email. An example for a respective web service call is:

<https://192.168.0.1/api/set/email?op=emailtest>

This new functionality is only usable for web user „admin“.

Web client: diagnostic buffer view

The easyE4 web client now features the possibility to read the easyE4 diagnostic messages from the device. In the web client menu one can navigate to "Diagnostics" -> "Diagnostic Buffer" to get a table of diagnostic messages from the device.



Meter	Time Stamp	Stn.	Code	Message
9	5/18/2022 5:40:00 PM	0	1067	An IP address has been assigned
8	5/18/2022 5:39:54 PM	0	1163	ComBUS: Cyclic reading of inputs and writing of outputs started
7	5/18/2022 5:39:54 PM	0	1089	Transition to RUN state
6	5/18/2022 5:39:54 PM	C1	165	ComBUS: Module not ready for operation
5	5/18/2022 5:39:54 PM	0	1158	ComBUS: Participants match the configuration
4	5/18/2022 5:39:54 PM	0	1162	ComBUS: Cyclic reading of inputs started
3	5/18/2022 5:39:54 PM	0	1153	ComBUS: Scan succeeded
2	5/18/2022 5:39:54 PM	C1	171	ComBUS: Module C1 with protocol version V2 detected
1	5/18/2022 5:39:54 PM	0	1152	ComBUS: Scan started

Example Diagnostic Buffer page in the web client

JSON-API: Read diagnostic buffer

In addition to the web client also the easyE4 JSON-API features the new web service *ENHDIAG* to get list of the diagnostic entries from the device. An example for a respective web service call is:

<https://192.168.0.1/api/get/data?elm=ENHDIAG>

Web client: Start web client in device language

The firmware update provides a new web client feature to automatically start the web client in the selected device language. This setting will be overwritten if the user selects a different language in the web client itself.

2 Release notes of previous firmware versions

JSON-API: Read device language

In addition to the web client also the easyE4 JSON-API features the new web service *DEVLANG* to get current language of the device. An example for a respective web service call is:

```
https://192.168.0.1/api/get/data?elm=DEVLANG
```

Web client: define the email server settings

The easyE4 web client now features the possibility to set the email server settings. If logged in as user admin the email settings page offers one input field for email server settings (see below screenshot).

Remark: The From field can only be edited if the user program was created with easySoft 7.40 or later.

E-mail	
Format	DNS
IP/DNS mail server	testsmtpserver
Sender domain	hmail.com
Encryption	SSL/TLS
From	
Mail server port	0
Refresh	Submit changes

Example on how to set email server settings in the web client

JSON-API: define the email server settings

In addition to the web client also the easyE4 JSON-API features the new web service *emailserver* to change the email server settings. An example for a respective web service call is:

```
https://192.168.0.1/api/set/email?op=emailserver&v1=1&v2=10.0.10.200&v3=easyE4%3E&v4=465&v5=2&v6=eaton%20%22%3Ctest%3E%40xmail%2Ecom
```

where the parameters are defined like this:

- v1: email server format –
 - 1=IP,
 - 2=DNS
- v2: IP/DNS mail server,
- v3: Sender domain,
- v4: Port number,
- v5: Encryption
 - 1=Unencrypted
 - 2=STARTTLS
 - 3=SSL/TLS
- v6: Sender (From)

This new functionality is only usable for web user „admin“, if the user program is prepared with easySoft 7.40 or above.

Web client: define the email server authentication

The easyE4 web client now features the possibility to set the email server authentication settings. If logged in as user admin the email settings page offers one input field for email server authentication settings – username and password (see below screenshot).

Username/Password	
User	<input type="text"/>
Password	<input type="password"/>
Confirm Password	<input type="password"/>
<input type="button" value="Refresh"/>	<input type="button" value="Submit changes"/>

Example on how to set email server authentication settings in the web client

Note: This feature in the web client should only be used with activated encryption for the web server since the password is transferred in plain text.

JSON-API: define the email server authentication settings

In addition to the web client also the easyE4 JSON-API features the new web service *emailauth* to change the email server settings. An example for a respective web service call is:

```
https://192.168.0.1/api/set/email?op=emailauth&v1=abc@gmail.com&v2=password
```

2 Release notes of previous firmware versions

where the parameters are defined like this:

- v1: email server account username,
- v2: email server account password.

Note: This web service should only be used with activated encryption for the web server since the password is transferred in plain text.

This new functionality is only usable for web user „admin“, if the user program is prepared with easySoft 7.40 or above.

2.1.1.7 New email setting “Sender (From)”

In addition to the existing email server settings the user can define the new and optional attribute “Sender (From)” in the easySoft 7.40. This setting can be useful, if the login name of the email server is not a valid email address. In this case the “Sender” field contains the login name, i.e. not a valid email address, which might be rejected by some email servers. Here the field “Sender (From)” overrides the login name and can be used to define a valid sender text.

Mail server settings

☐ IP address: []

☒ DNS name: smtp.myserver.com

Sender domain: easyE4

E-mail service port: 587

Login name: my_loginname

Login password: []

Sender (From): validaddress@myserver.com

Connection security: STARTTLS

example for the use of the Sender attribute in easySoft 7.40

2.1.1.8 New diagnostic operand ID18 – SD card present

The diagnostic operand ID18 will be set when SD card is present. It will be reset when the SD card is disconnected.

2.1.1.9 Manual trigger of SNTP synchronization

The time synchronization with the configured SNTP server can be triggered manually via easySoft V7.40 now.

2.1.2 Important changes in easyE4 firmware V1.41

This firmware version features the following important changes and improvements compared to the previous version V1.31.

2.1.2.1 Improvement for loading program from SD card

In some rare cases loading a project from SD card has failed. If this program was loaded back to easySoft, an error message was shown that a CRC error has been encountered. This issue was solved within this update.

2.1.2.2 Password protection of device menus

Fixed an issue where some device menus were password protected even though the corresponding security zone was not configured in the project settings.

2.1.2.3 Input drop at power down

Fixed an issue at power down in some installations where digital inputs were set to 0 before the program was stopped, and the device has switched off.

2.1.2.4 Analog input values at AC devices

At AC devices the analog inputs at IA01 to IA04 were set with values >0, even though the AC devices do not feature local analog inputs.

2.1.2.5 No automatic start with many SWD participants

In rare cases a setup with EASY-COM-SWD-C1 and a high number of SWD participants was not started automatically at power-on. This issue has been fixed with this version.

2.1.2.6 FB MC and retentive data

Retentive data could have been deleted in user programs using both features: retentive data and at least one instance of the function block MC (Modbus TCP client). This issue has been fixed with this version.

In addition to this list the new version includes several minor improvements.

2 Release notes of previous firmware versions

2.2 V1.31

2.2.1 New features in easyE4 firmware V1.31

This new firmware version offers new features which are listed here.

2.2.1.1 Support for easyE RTD FW update v1.1.0.0

This firmware update supports the new firmware update v1.1.0.0 of the easy Remote Touch Display. If you want to use this firmware update of easyE RTD, please update easyE4 to V1.31.

The support of sending to information of the LCD backlight color of the easyE4 was added.

2.2.2 Important changes in easyE4 firmware V1.31

This firmware version features the following important changes and improvements compared to the previous version V1.30.

2.2.2.1 DCF77 radio clock support

Fixed an issue where a high load of the user program interfered with DCF77 functionality. The new firmware version provides a more stable DCF77 functionality when connecting the DCF77 signal to a digital input of the base unit.

2.2.2.2 ComBUS SWD support

Fixed an issue with the usage of the EASY-COM-SWD-C1 module. It is now possible to run the module continuously for more than 38 days.

In addition to this list the new version includes several minor improvements.

2.3 V1.30

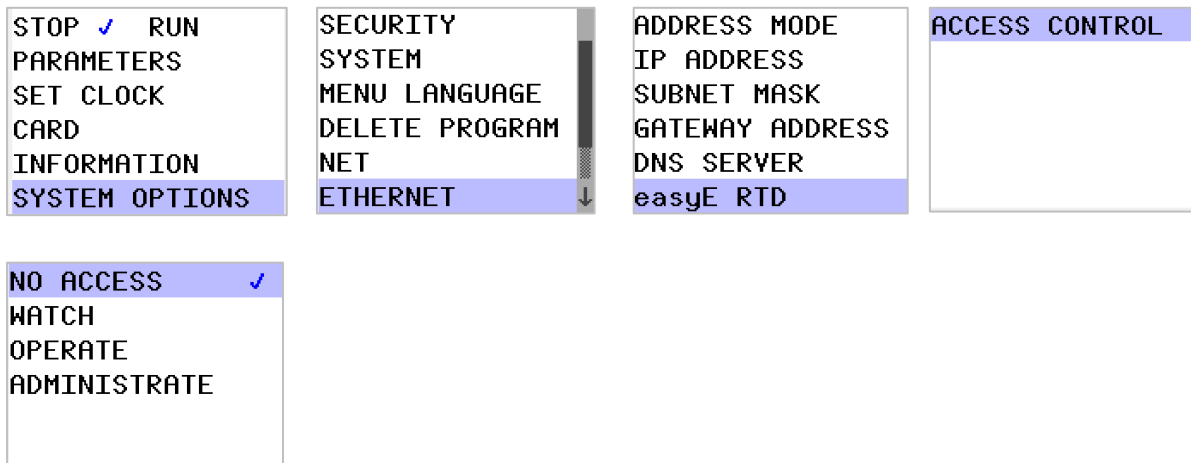
2.3.1 New features in easyE4 firmware V1.30

2 Release notes of previous firmware versions

This new firmware version offers several new features which are only named here. For a detailed description refer to the updated easyE4 manual. The new features are generally only available if the firmware is used in combination with easySoft V7.30 or higher.

2.3.1.1 Remote Touch Display support (EASY-RTD-DC-43-03B1-00)

The support for the new remote touch display (RTD) EASY-RTD-DC-43-03B1-00 has been added. By default, the support for the remote display is deactivated. It can be activated in easySoft V7.30 or in the device menu "easyE RTD".



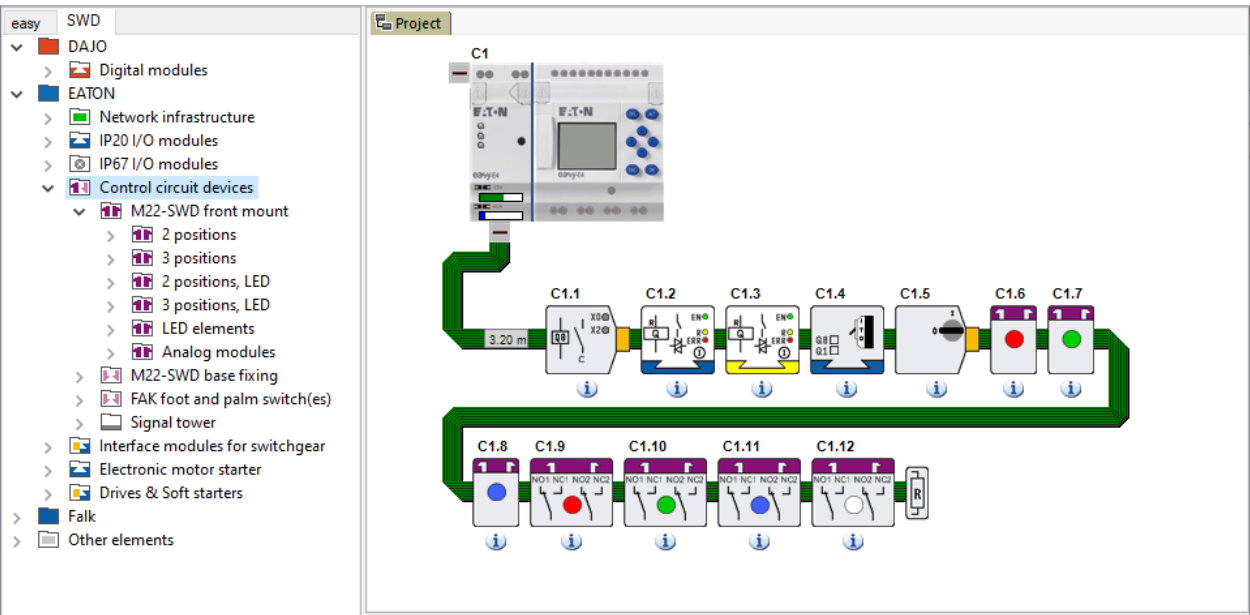
Step-by-step menu entries to activate easyE RTD

2.3.1.2 Smartwire Coordinator support

Starting with hardware version 5 the easyE4 base unit features a new interface for communication modules on the left side of the device. This version of the firmware offers the possibility to connect the new product EASY-COM-SWD-C1 to the new interface. EASY-COM-SWD-C1 is a SmartWire (SWD) coordinator and unites the easyE4 product family with the existing SWD product family with more than 70 existing devices on the market today.

The SWD network can be configured through a rich user interface in easySoft V7.30 (see below screenshot).

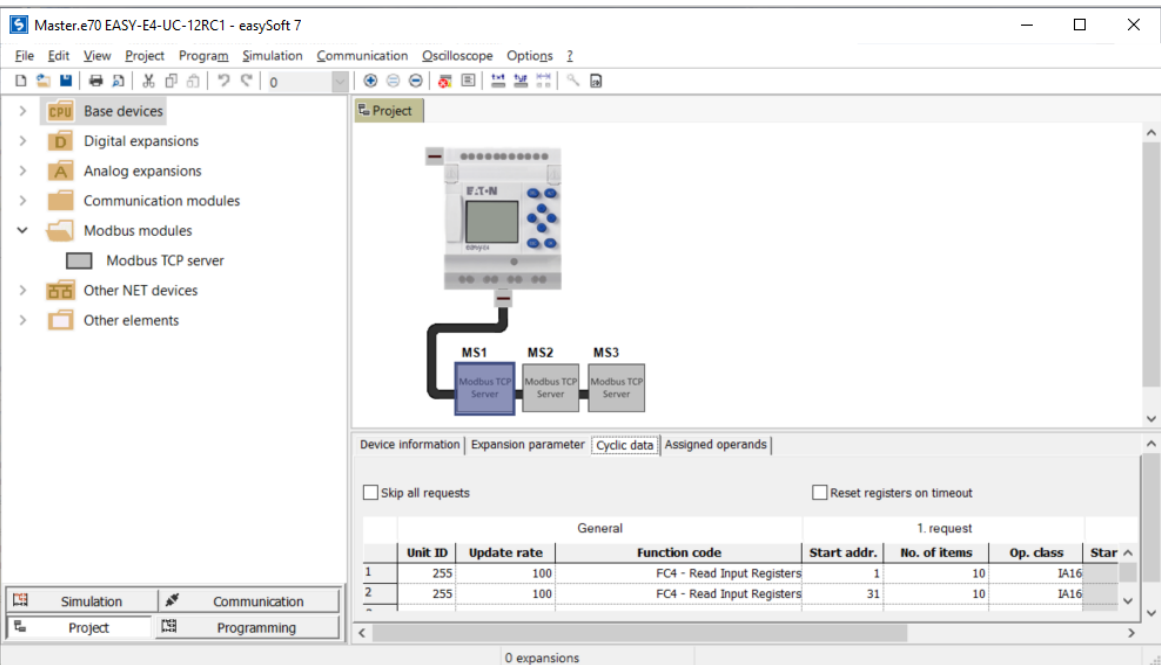
2 Release notes of previous firmware versions



Configuration of a SWD network in easySoft V7.30

2.3.1.3 Modbus/TCP client

In this firmware Modbus/TCP client functionality has been added. It allows communication with a total up to four Modbus/TCP slaves or servers. The easySoft Modbus configurator allows the assignment and mapping of easy digital I/O operands, analog I/O operands and diagnostic alarms to periodical Modbus requests. Easy markers can be addressed and acyclic transferred by using the new MC function block. For further information please refer to the manual.



Modbus/TCP Client configuration in easySoft V7.30

2.3.1.4 Three additional languages

The easyE4 device menu and the easyE4 web client support three additional languages: Serbian (SRB), Croatian (HRV) and Slovenian (SVN). Overall the easyE4 now support 16 languages.

2.3.1.5 Email: support for more cipher suites

The easyE4 already features the possibility to send emails based on system events or the function block alarm. With this firmware version additional encryption algorithms (TLS cipher suites) were introduced to support even more email (SMTP) servers.

Until version V1.23 the following TLS cipher suites were supported:

- TLS_RSA_WITH_AES_128_CBC_SHA,
- TLS_RSA_WITH_AES_256_GCM_SHA384.

With V1.30 these additional TLS cipher suites are included:

- TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA,
- TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256,
- TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA,
- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA,
- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256,
- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA.

The selection of the cipher suites is done automatically between easyE4 and the connected email server. In case the email server does not support any of the above cipher suites the connection attempt by the easyE4 will be rejected by the email server. To overcome this problem, it is recommended to install one of the above cipher suites on the email server.

2.3.1.6 Webserver: support for more cipher suites

Additional encryption algorithms (TLS cipher suites) are added to the webserver of the easyE4 to enhance the options when using https especially with JSON-API based applications.

Until version V1.23 the following TLS cipher suite was supported by the easyE4 webserver:

- TLS_RSA_WITH_AES_128_CBC_SHA.

With V1.30 these additional TLS cipher suites are included:

- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256,
- TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA.

The selection of the cipher suites is done automatically between easyE4 and the connected https client, e.g. a web browser. For an optimal support of the web client we recommend the use of Google Chrome or Microsoft Edge. At the time of publication of this firmware these browsers support at least one of the above cipher suites.

2.3.1.7 Webserver: better support for browser-based usage of JSON API

Since version V1.20 the easyE4 webserver features the JSON-API (see www.eaton.eu/easy-jsonapi) which can be used to create customer-specific applications like smartphone apps, web-

2 Release notes of previous firmware versions

browser based applications or connect the easyE4 to a Node-RED instance (see <https://flows.nodered.org/node/node-red-contrib-eaton-easye4>).

To better facilitate web-browser based applications the http header of the easyE4 webserver was enhanced by the following lines:

```
Access-Control-Allow-Origin: *
Access-Control-Allow-Methods: GET, HEAD, POST
Access-Control-Allow-Headers: Content-Type, Authorization, Content
```

2.3.1.8 New Modes for FB A

Two new modes were added for FB A (analog value comparator):

1. GE: greater than/equal to ($I1 \geq I2$)
2. LE: less than/equal to ($I1 \leq I2$)

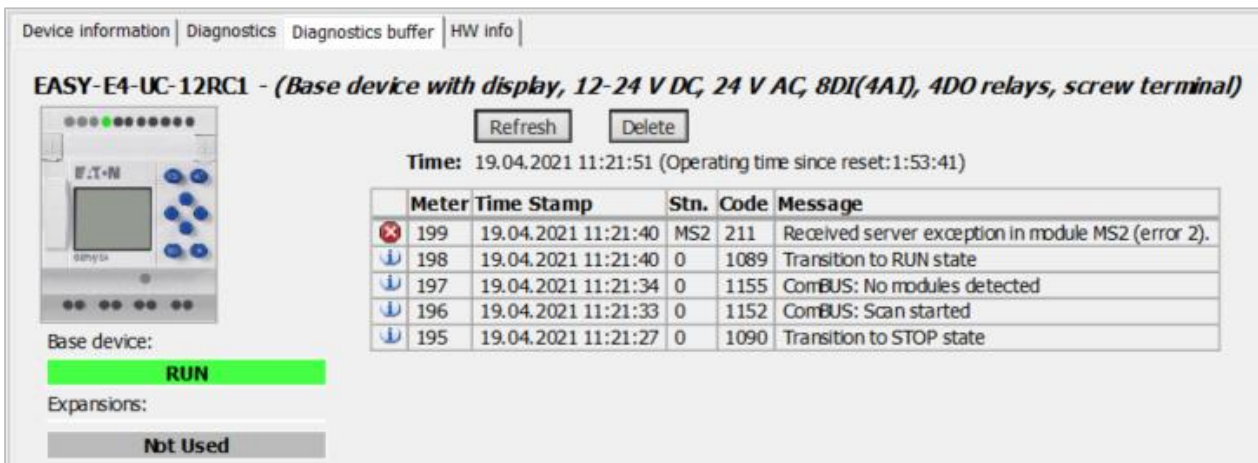
2.3.1.9 Display Backlight Color

The display backlight color can now be set with the LE operands LE04 to LE06:

- LE04: Red
- LE05: Green
- LE06: White

2.3.1.10 Enhanced diagnostic messages with detailed information

The diagnostic messages do have an enhanced text format now:



The screenshot shows the 'Diagnostics' tab in the easySoft V7.30 interface. It displays a list of diagnostic messages for the device 'EASY-E4-UC-12RC1'. The messages are organized in a table with columns: Meter, Time Stamp, Stn., Code, and Message. The messages include transitions to RUN and STOP states, and ComBUS scan results.

Meter	Time Stamp	Stn.	Code	Message
199	19.04.2021 11:21:40	MS2	211	Received server exception in module MS2 (error 2).
198	19.04.2021 11:21:40	0	1089	Transition to RUN state
197	19.04.2021 11:21:34	0	1155	ComBUS: No modules detected
196	19.04.2021 11:21:33	0	1152	ComBUS: Scan started
195	19.04.2021 11:21:27	0	1090	Transition to STOP state

List of diagnostic messages in easySoft V7.30

For more details please refer to the manual.

2.3.2 Important changes in easyE4 firmware V1.30

This firmware version features the following important changes and improvements compared to the previous version V1.23.

2.3.2.1 Webserver / Webclient

Fixed a remote display issue with the D FB when color olive green (color code: 63) was used.

2.3.2.2 Wiring Test

Even without a loaded project, wiring test can now be started with connected IO extensions.

2.3.2.3 Information on Device Type

Fixed an issue where in some cases the wrong base unit device type was shown in the device menu or the easySoft.

2.3.2.4 SD card

Fixed an issue with loading projects with big file size from device to SD card and from SD card to device. Loading these projects from or to SD card could result in an error message and a connection break-off with easySoft.

2.3.2.5 FB D

Fixed two issues with the element "timing relay value entry".

1. Value was reset when the sign was changed from '+' to '-'.
2. When MDs or QAs were chosen as operand, entering the value could fail.

2.3.2.6 FB DL

Fixed an issue with the logged time. When a log event was triggered exactly at the change from 59 seconds to 0 seconds the logged time could be wrong.

2.3.2.7 FB YT

Fixed two issues:

1. Wrong ON/OFF values when the mode was changed in the parameter editor at the device.
2. Wrong ON/OFF values in mode "Easter rule"

In addition to this list the new version includes several minor improvements.

2 Release notes of previous firmware versions

2.4 V1.23

2.4.1 Important changes in easyE4 firmware V1.23

This firmware version features the following important changes and improvements compared to the previous version V1.22.

2.4.1.1 Device type detection

This version improves the device type detection to avoid occasional terminations of the user program download to the device.

2.5 V1.22

2.5.1 New features in easyE4 Firmware V1.22

2.5.1.1 Web-Client: define the email recipient groups

The easyE4 web client now features the possibility to set the email recipient groups. If logged in as user admin the email settings page offers one input field for each of the three email recipient groups (see below screenshot).

Example on how to set email recipient groups in the web client

2.5.1.2 JSON-API: define the email recipient groups

In addition to the web client also the easyE4 JSON-API features the new web service *emailgroups* to change the email recipient groups. An example for a respective web service call is:

```
https://192.168.0.1/api/set/email/?op=emailgroups&v1="email1@server1.com;email2@server1.com"&v2="email1@server2.com;email1@server3.com"&v3="email1@server4.com"
```

where the parameters are defined like this:

- v1: email recipient group 1,
- v2: email recipient group 2,
- v3: email recipient group 3.



An empty parameter v1, v2 or v3 will delete the respective email recipient group

This new functionality is only usable for web user „admin“, if the user program is prepared with easySoft 7.20 or below.

2 Release notes of previous firmware versions

2.5.2 Important changes in easyE4 Firmware V1.22

This firmware version features the following important changes and improvements compared to the previous version V1.21.

2.5.2.1 easySoft7 Online communication

Fixed an issue with uploading an user program of size 16kB or larger from the device to easySoft7.

2.5.2.2 Modbus/TCP Server

Fixed an issue when two Modbus/TCP clients connect simultaneously to easyE4: after downloading a user program to the device the Modbus/TCP server is now restarted properly.

2.5.2.3 FB D

Fixed an issue with the scaling of 32-bit values.

2.5.2.4 UFs

- Improved online view for values of an UF in the easySoft7 online mode
- Improved detection of endless loops in UFs
- The maximum usable index in marker bit arrays was increased to 512.

2.5.2.5 Email

Improved compatibility when using the email providers web.de or gmx.de.

In addition to this list the new version includes several minor improvements.

2.6 V1.21

2.6.1 New features in easyE4 Firmware V1.21

2.6.1.1 GALILEO format for date and time retrieved via Modbus/TCP server

The easyE4 Modbus/TCP server now offers the system time and date in GALILEO format through the registers 5006 to 5009. This facilitates easier integration on easyE4 devices with GALILEO touch panels.

	high byte	low byte
register	minutes	seconds
5006	(0..59)	(0..59)
register	unused	hours
5007		(0..23)
register	month	day
5008	(1..12)	(1..31)
register	year	
5009	(e.g.. 2020)	

In addition to this new feature the established format for time and date is still supported through the Modbus/TCP registers 5000 to 5005.

To read both formats the Modbus/TCP function code 0x03 (Read Holding Register) should be used.

2.6.1.2 Set date and time via Modbus/TCP server

The Modbus/TCP server now offers the possibility to set date and time of the easyE4. For this the following function codes can be used:

- 0x06 (write single register)
- 0x10 (write mutiple register)

To change date and time atomically in one request we recommend to use the function code „write multiple register“, in which a consistent group of registers should be used, e.g.:

- 5000 to 5005: date and time in easyE4 format
- 5006 to 5009: date and time in GALILEO format
- 5006 and 5007: Only time in GALILEO format
- 5008 and 5009: Only date in GALILEO format

As a prerequisite to use this feature the easySoft7 project needs an activated setting “Enable I/O and clock data reading” in the Modbus section of the project settings.

2 Release notes of previous firmware versions

Remark for GALILEO users



It is beneficial to not set the easyE4 system time cyclically. Therefore, we recommend to not set the GALILEO bit 11.1 in the 1st word of the system variable control permanently.

2.6.2 Important changes in easyE4 Firmware V1.21

This firmware version features the following important changes and improvements compared to the previous version V1.20.

2.6.2.1 SNTP

- Fixed an issue when synchronizing the system time using SNTP: In leap years the calculated day in the year was set to one day before the correct day.

2.6.2.2 Webserver / Webclient

- Improve connection speed between webclient and webserver when using an encrypted connection (https) and certain browsers, e.g. Google Chrome.

2.6.2.3 SD card

- Fixed an issue when using the option "Card start" in the system settings of the easySoft7 project. We recommend all users of the firmware version V1.20, who want to utilize this option, to update to this firmware version to avoid this issue

In addition to this list the new version includes several minor improvements.

2.7 V1.20

2.7.1 New features in easyE4 firmware V1.20

This new firmware version offers several new features which are only named here. For a detailed description refer to the updated easyE4 manual.

2.7.1.1 Support for new base unit types with push-in clamps

The following new base unit devices are supported:

- EASY-E4-UC-12RC1P
- EASY-E4-UC-12RCX1P
- EASY-E4-DC-12TC1P
- EASY-E4-DC-12TCX1P
- EASY-E4-AC-12RC1P
- EASY-E4-AC-12RCX1P

2.7.1.2 Web Client

- Users of the parameter list in the web client can change the values of word or bit constants which are wired to function block inputs. The respective access control can be (de-)activated for each of the two web users separately in the easySoft project through the setting "parameter".
- Improved usability of the parameter list.
- The easyNET views offer direct links to web client login pages of connected easyNET stations.

2.7.1.3 JSON API

Several new web services have been added to the web API. For a detailed description we refer to the online documentation at www.eaton.eu/easy-jsonapi

- Added write access to FB word inputs wired as a constant.
- Added write access to FB binary inputs wired as a constant.
- Added write access to FB timer inputs wired as a constant.
- Added a function to persistently save changes to FB inputs wired as a constant.
- Added read access to FB timer inputs wired as a constant.
- Change of JSON format response for single value request. These values are no longer transferred in base64 format but as decimal values.
- Improvement to not allow invalid values while writing to markers or network markers via JSON API.

2.7.1.4 E-Mail

- Change of the use of the two e-mail settings "sender domain" and "dns name":
- "dns name": contains the full qualified domain name of the e-mail/SMTP server, e.g. *smtp.gmail.com*.

2 Release notes of previous firmware versions

- "sender domain": Used in the domain field of the SMTP protocol for sending e-mails. Some e-mail/SMTP servers request a special setting in the SMTP domain field. Can be left empty with most e-mail/SMTP servers. If left empty "easyE4" will be used as the default entry.
- Added new cipher suit "TLS_RSA_WITH_AES_256_GCM_SHA384" to support sending emails to certain email providers like mail.de.

2.7.2 Important changes in easyE4 firmware V1.20

This firmware version features the following important changes and improvements compared to the previous version V1.12.

2.7.2.1 Ethernet communication

- Fixed an issue where the device is not responding via Ethernet under certain load conditions. We recommend all users of Modbus/TCP, easyNET or the easyE4 webserver to update to this firmware version to avoid this issue.
- Improved behavior in case of Ethernet jumbo frames.
- Improved communication with easySoft 7.x.

2.7.2.2 Function blocks

FB Display

- Fixed issues where the element "value entry" of function block D (text display) is not working properly.
- Fixed an issue where the elements "value display" and "value entry" of function block D (text display) show wrong characters.
- Fixed an issue where the value entry field did not work with FB AC parameters.
- Fixed an issue where wrong characters were displayed for time entries (\pm H:M) when a value limit was reached.

FB PO

Fixed a minor issue with function block PO (pulse output) where the behavior is different to easy800 under exceptional circumstances.

FB YT

Fixed issues where the mode "Easter rule" of function block YT (year time switch) was not working properly.

2.7.2.3 Web Client

- Fixed an issue where the parameter list could only display function block inputs and outputs of function blocks with instance number of 9 or lower.

2.7.2.4 Miscellaneous

- Fixed an issue where the supply voltage type AC was not detected properly at device startup.
- Fixed an issue where deleting a large number of log files from SD card leads to a display fault.

In addition to this list the new version includes several minor improvements.

2.8 V1.12

2.8.1 New features in version V1.12

This new firmware version offers several new features which are only named here. For a detailed description refer to the updated easyE4 manual. The new features are generally only available if the firmware is used in combination with easySoft V7.10 or higher.

2.8.1.1 Support for two Modbus/TCP clients

This update enables the Modbus/TCP server of easyE4 to communicate with two Modbus/TCP clients simultaneously. When using two Modbus/TCP connections concurrently the response time for single request will increase as compared to a single connection

2.8.1.2 JSON API

The JSON API supports an additional authentication technique for http: "Bearer Authentication". A detailed description is available at JSON-API online documentation:

<http://www.eaton.eu/easy-jsonapi>.

The JSON-API offers a new web service to retrieve the geo location of easyE4. Geo location is defined by using the function block AC.

2.8.2 Important changes in version V1.12

This firmware version features the following important changes and improvements compared to the previous version V1.10.

2.8.2.1 IOX-Bus for extension modules

With certain cycle times of the user program the communication to the extension modules was delayed. We recommend all users of extension modules to update to this firmware version.

2.8.2.2 Emails

Combined use of function blocks PW or PO and system emails will now work as expected. We recommend all users of function blocks PW and PO to update to this firmware version.

2.8.2.3 Input signals after restart

In some rare cases the devices EASY-E4-AC-12RC1 and EASY-E4-AC-12RCX1 had falsely detect the input signals with 0/LOW instead of 1/HIGH right after the start of the device. This issue was solved within this update.

2.8.2.4 Modbus/TCP

The easyE4 Modbus/TCP is returning an error code during the download of a user program to the device from easySoft. No data is sent back to the Modbus/TCP Client during download anymore to avoid sending invalid data.

2.8.2.5 JSON-API

The API-keys are stored persistently after creating them in the web client. We recommend all users of the JSON-API to update to this firmware version.

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2.8.2.6 FB DL data logger

Log files are stored to the SD card more frequently. After switching off the device during a running program, you will find more current log entries in the log files than before.

Change in the evaluation of the delta trigger for analog inputs: The current value is compared to the value of the last program cycle, not the last saving of the log file.

2.8.2.7 SD card

Formatting of SD cards in the device is possible also if the existing file system on the card is not FAT32.

2.8.2.8 Function block Display (FB D)

The inputs of the function block astronomical clock (FB AC) can be used in value entry fields of FB D.

Several value input fields for marker words can be used on one screen as expected.

In some rare cases the change of values in FB D was not possible. This issue is solved with this update.

2.8.2.9 E-Mail

Support for more e-mail providers, e.g. freenet.de

Small improvements when sending the system e-mails for the event „program deleted“.

2.8.2.10 Web-Client

The web client parameter list is supported in Firefox web browsers on Android devices.

Input popup windows can now be closed with RETURN and ESC.

2.8.2.11 Diagnostics

The diagnostic ID 13 is no longer active in a device with no user program.

2.8.2.12 DHCP

When using the easyE4 base device with DHCP network settings the communication is no longer interrupted unnecessarily after a program download.

2.8.2.13 Real Time Clock behaviour

Improved detection of invalid time and date formats during the power-on phase for cases where the buffer capacitor of the real-time clock module is nearly discharged.

2.8.3 Important changes in version V1.12

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Eaton is dedicated to ensuring that reliable, efficient and safe power supply is available when it is needed most. With vast of energy management across different industries, experts at Eaton deliver customized, integrated solutions to solve our customer' most critical challenges.

Our focus is on delivering the right solution for the Application. But decision makers demand more than just Innovative products. They turn to Eaton for an unwavering Commitment to personal support that makes customer Success a top priority.

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