EUCHNER

Application

EKS2 - Setting Date and Time - BECKHOFF TwinCAT 3

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Contents

1. About this document

1.1. Version

Version	Date	Change/addition	Chapter
01-06/26	06/2026	Prepared	All

1.2. Scope

This document describes setting the date and time in the EKS2 using an acyclical command.

1.3. Target group

Design engineers and installation planners for safety devices on machines as well as setup and servicing staff possessing the following expertise:

- specialist knowledge in handling safety components
- expertise in the installation, setup, programming and diagnostics of programmable logic controllers (PLC) and bus systems
- knowledge about the applicable EMC regulations
- knowledge about the applicable regulations on operational safety and accident prevention.

1.4. Supplementary documents

The overall documentation for this application consists of the following documents:

Document title (document number)	Contents
Operating instructions (MAN20001715)	Transponder-coded Electronic-Key-System EKS2
Possibly enclosed data sheets	Item-specific information about deviations or additions

1.5. Notice

This document is based on the operating instructions for the EKS2. You can refer to the operating instructions for technical details and more information.

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2. Components/modules used

2.1. EUCHNER

Description	Order number / item
Evaluation unit/read unit EKS2	170904 / EKS2-E-PN-M-H1-170904
	170915 / EKS2-R-I1A1-B1-170915
Electronic-Key EKS2	168433 / EKS2-K-K-B-D2-BK-168433
	168434 / EKS2-K-K-B-D2-BU-168434
	168435 / EKS2-K-K-B-D2-GN-168435
	168438 / EKS2-K-K-B-D2-OG-168438
	168432 / EKS2-K-K-B-D2-RD-168432
	168437 / EKS2-K-K-B-D2-WH-168437
	168436 / EKS2-K-K-B-D2-YE-168436

TIP!

More information and downloads for the aforementioned EUCHNER products can be found at www.euchner.com. Simply enter the order number in the search box.

2.2. Others

Description	Order number / item
CX2030-M930	CX2030-M930

2.3. Software

Description	Version
TwinCAT	v3.1.4024.62

3. Functional description

3.1. General

The function block sets the date and time in evaluation unit EKS2 using an acyclical command. The block then reads back the values and compares them with the described setpoints.

The set time information supports the following functions:

- The EKS2 evaluates the expiry date stored on the Electronic-Key.
- The log and the error log represent events with the correct time stamp.

4. Setting date and time in the control system

This application uses a Windows-based industrial OC. The Windows operating system manages the date and time. Other BECKHOFF control systems are not part of this application. This application therefore does not describe setting the date and time for these control systems.

5. Using the BECKHOFF library

The library provides templates for simple integration of the EKS2 into the application.

The Applications area under the Downloads area at www.euchner.com contains the EKS2 library.

5.1. Installation of the library

1. Open the *Library Repository* on the *PLC* tab.
2. Then load the library from the corresponding directory using the *Install...* function.

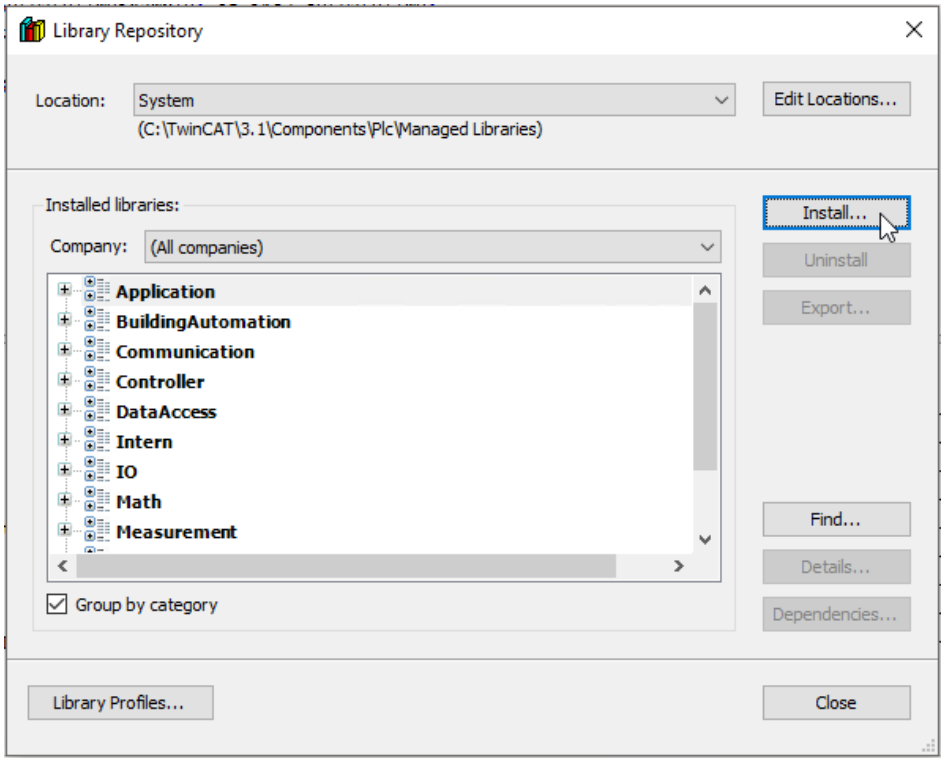

Fig. 1: Installing library

	NOTICE As soon as the library is installed, it is displayed in (Miscellaneous).

3. In the *Solution Explorer*, right-click to add the library to the project via *References –> Add library...*.

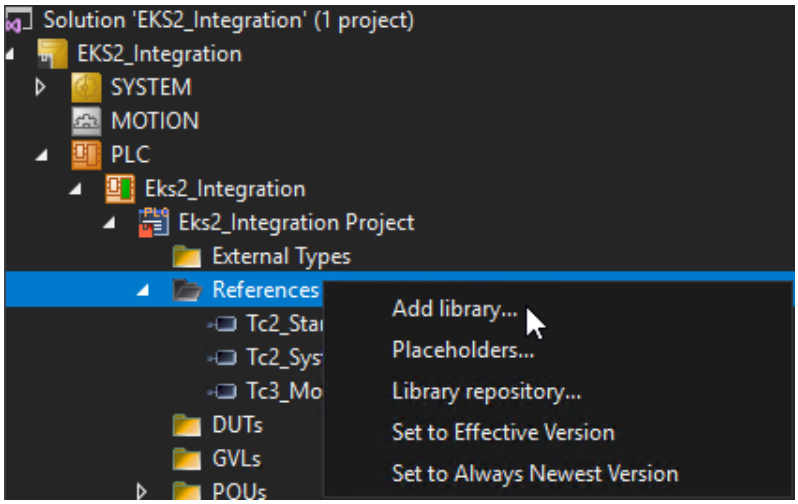

Fig. 2: Adding library to the project

4. Select the library provided by EUCHNER.

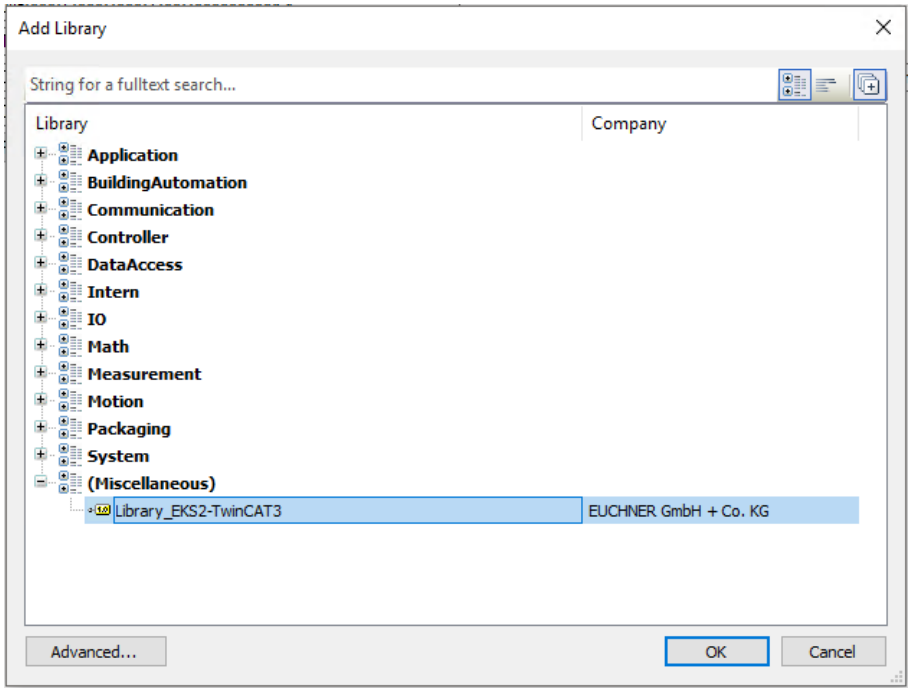

Fig. 3: Library selection

ⓘ	**IMPORTANT!** Evaluation units EKS2 from **version 1.2.0** support the library.

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5.2. Description of the block interface and calling the library

5.2.1. Parameters of the FB_EKS2_SetDateTime block

The following table describes the parameters of the *FB_EKS2_SetDateTime* block.

Variable	Use	Data type	Description
systemDateTimeNetId	INPUT	T_AmsNetID	AMS NetID of the system.
eks2AdsRdWrNetId	INPUT	T_AmsNetID	AMS NetID of the PROFINET controller
eks2AdsRdWrPort	INPUT	T_AmsPort	AMS port of the EKS2
setDateTime	INPUT	Bool	Activates the request to set the date and time. The date and time are set on every HIGH signal.
dateTimeCmpValid	OUTPUT	Bool	Comparison between written and read values successful.
dateTimeCmpErr	OUTPUT	Bool	Comparison between written and read values failed.
rdDateTime	OUTPUT	DT	Date and time information read from the EKS2.
adsRdWrErr	OUTPUT	Bool	Error bit for the RDWR block used in block.
adsRdWrErrId	OUTPUT	UDINT	Error ID for the RDWR block used in the block.

Table 1: Parameters for the block

NOTICE

The ADS tab in the EKS2 settings displays the required information for the input variables *eks2AdsRdWrNetId* and *eks2AdsRdWrPort*.

5.2.2. Calling the FB_EKS2_SetDateTime block

Call the *FB_EKS2_SetDateTime* function block and parameterize it in accordance with the application. Use a separate block instance for each EKS2 device.

The library provides the prepared *ST_EKS2_SetDateTime* structure. The structure contains the inputs and outputs already including the associated data types. Using the structure is recommended.

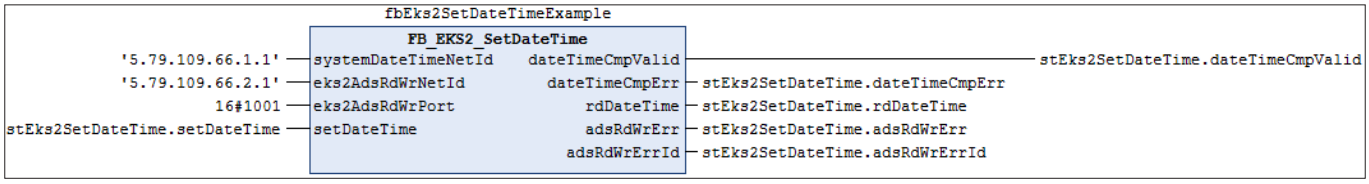

Fig. 4: Parameterized function block

NOTICE

The *setDateTime* input reacts only to a rising edge.

NOTICE

The date and time must be set again each time the evaluation unit is restarted.

5.3. Web server

An entry of the *DateTime 0x8000* category appears on the *LOG* tab of the EKS2 web server after successful execution of the acyclical command. The *LOG* tab and the *ERROR LOG* tab then enable events and error messages to be allocated to specific times and traced.

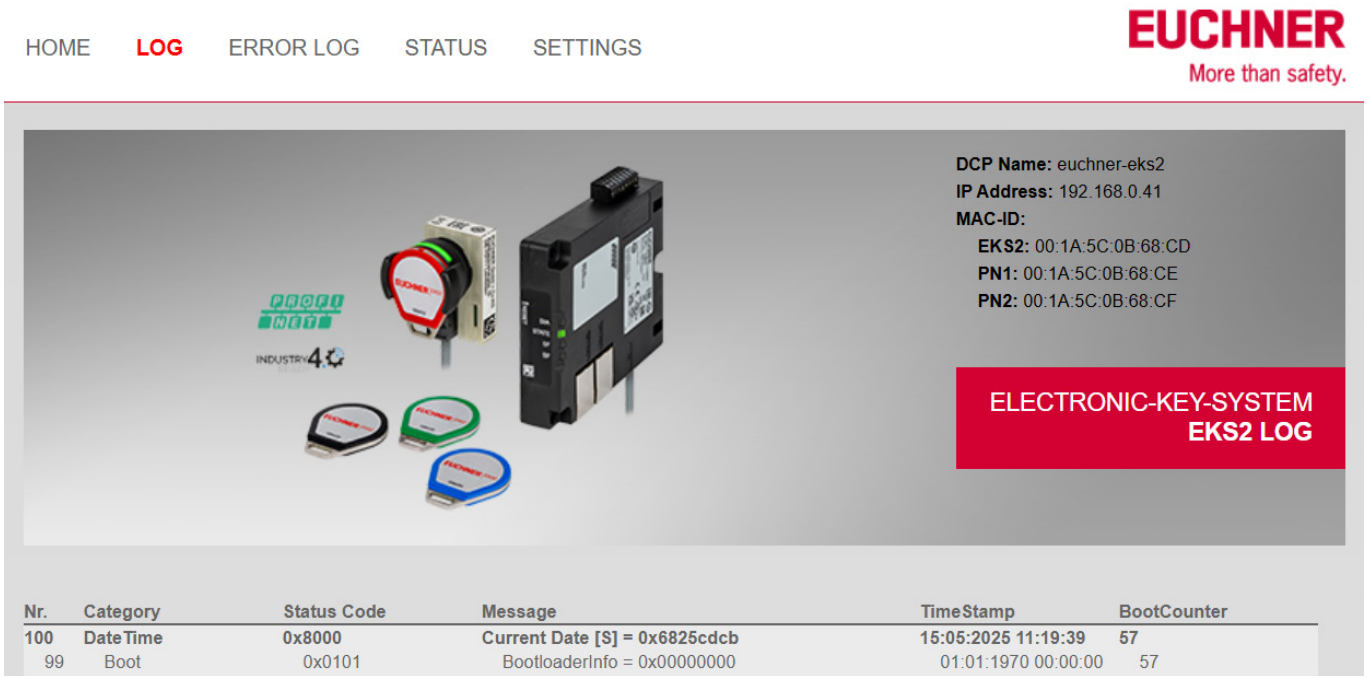

Fig. 5: Web server of the evaluation unit EKS2 (*LOG*)

The *STATUS* tab displays the current date and time of the evaluation unit EKS2.

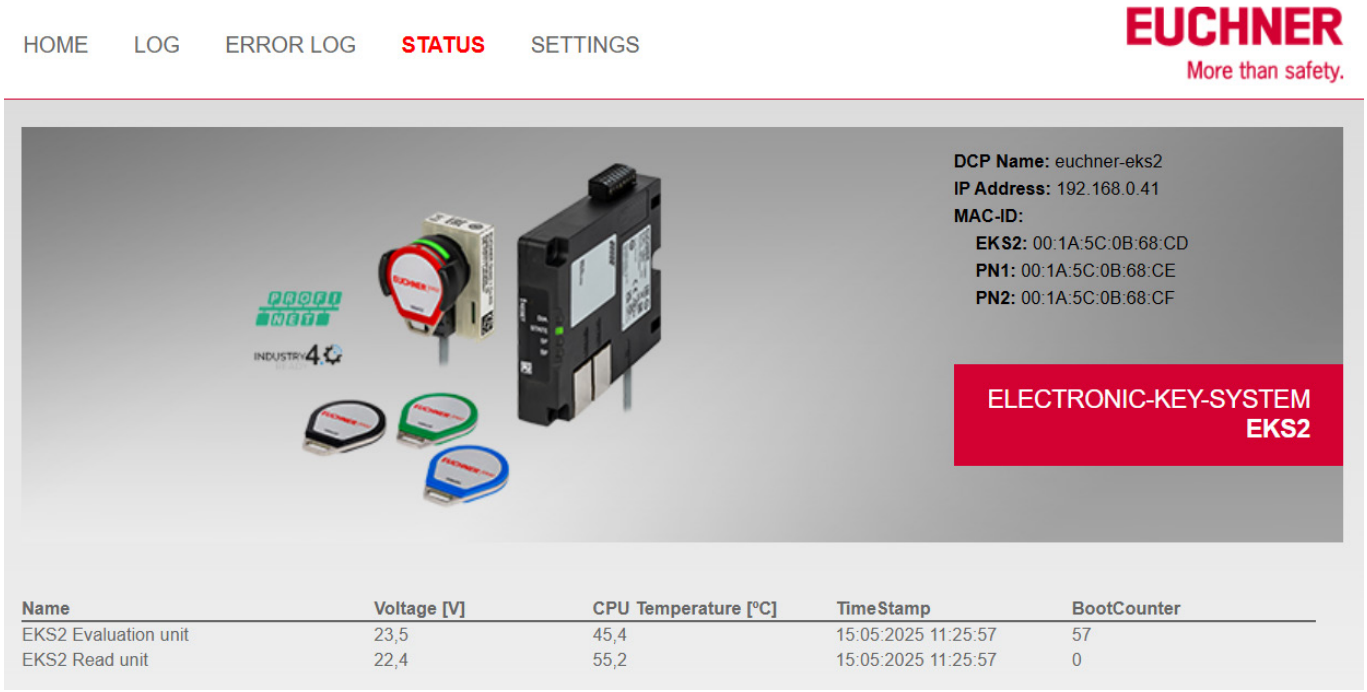

Fig. 6: Web server of the evaluation unit EKS2 (*STATUS*)

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6. Important notice – please observe carefully!

This document is intended for a design engineer who possesses the requisite knowledge in safety engineering and knows the applicable standards, e.g. through training for qualification as a safety engineer. Only with the appropriate qualification is it possible to integrate the example provided into a complete safety chain.

The example represents only part of a complete safety chain and does not fulfill any safety function on its own. In order to fulfill a safety function, the energy switch-off function for the danger zone and the software must also be considered in the safety evaluation, for example.

The applications provided are only examples for solving certain safety tasks for protecting safety doors. The examples cannot be comprehensive due to the application-dependent and individual protection goals within a machine/installation.

If questions concerning this example remain open, please contact us directly.

According to the Machinery Directive 2006/42/EC, the design engineer of a machine or installation has the obligation to perform a risk assessment and take measures to reduce the risk. While doing this, the engineer must comply with the applicable national and international safety standards. Standards generally represent the current state-of-the-art. Therefore, the design engineer should continuously inform himself about changes in the standards and adapt his considerations to them. Relevant standards for functional safety include EN ISO 13849 and EN 62061. This application must be regarded only as assistance for the considerations about safety measures.

The design engineer of a machine/installation has the obligation to assess the safety engineering himself. The examples must not be used for an assessment, because only a small excerpt of a complete safety function was considered in terms of safety engineering here.

In order to be able to use the safety switch applications correctly on safety doors, it is indispensable to observe the standards EN ISO 13849-1, EN ISO 14119 and all relevant C-standards for the respective machine type. Under no circumstances does this document replace the engineer's own risk assessment, and it cannot serve as the basis for a fault assessment.

In particular in relation to a fault exclusion, it must be noted that a fault can be excluded only by the machine's or installation's design engineer and this action requires justification. A general fault exclusion is not possible. More information about fault exclusion can be found in EN ISO 13849-2.

Changes to products or within assemblies from third-party suppliers used in this example can lead to the function no longer being ensured or the safety assessment having to be adapted. In any event, the information in the operating instructions on the part of EUCHNER, as well as on the part of third-party suppliers, must be used as the basis before this application is integrated into an overall safety function. If contradictions should arise between the operating instructions and this document, please contact us directly.

Use of brand names and company names

All brand names and company names stated are the property of the related manufacturer. They are used only for the clear identification of compatible peripheral devices and operating environments in relation to our products.

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