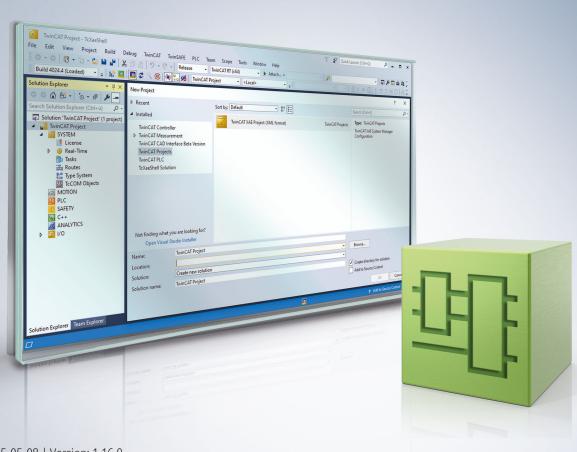
BECKHOFF New Automation Technology

Manual | EN

TE1000

TwinCAT 3 | PLC Library: Tc2_EIB



2025-05-08 | Version: 1.16.0



Table of contents

| 1 | Fore | word | | 5 |
|---|-------|----------|-------------------------|----|
| | 1.1 | Notes of | on the documentation | 5 |
| | 1.2 | For you | ur safety | 6 |
| | 1.3 | Notes of | on information security | 7 |
| 2 | Intro | duction | | 8 |
| 3 | EIB . | | | 9 |
| 4 | Prog | grammin | g | 10 |
| | 4.1 | | oup filter | |
| | 4.2 | POUs. | | 10 |
| | | 4.2.1 | Function blocks details | 13 |
| | | 4.2.2 | KL6301 | 14 |
| | | 4.2.3 | KL6301_EX | 16 |
| | | 4.2.4 | Read | 18 |
| | | 4.2.5 | Send | 30 |
| | | 4.2.6 | Functions | 69 |
| | | 4.2.7 | Error codes | 70 |
| | 4.3 | DUTs | | 72 |
| | | 4.3.1 | Enums | 72 |
| | | 4.3.2 | Structure | 74 |
| | 4.4 | Integra | tion into TwinCAT | 76 |
| | | 4.4.1 | KL6301 with CX5120 | 76 |
| 5 | App | endix | | 82 |
| | 5 1 | Suppor | t and Service | 82 |





1 Foreword

1.1 Notes on the documentation

This description is intended exclusively for trained specialists in control and automation technology who are familiar with the applicable national standards.

The documentation and the following notes and explanations must be complied with when installing and commissioning the components.

The trained specialists must always use the current valid documentation.

The trained specialists must ensure that the application and use of the products described is in line with all safety requirements, including all relevant laws, regulations, guidelines, and standards.

Disclaimer

The documentation has been compiled with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without notice.

Claims to modify products that have already been supplied may not be made on the basis of the data, diagrams, and descriptions in this documentation.

Trademarks

Beckhoff®, TwinCAT®, TwinCAT/BSD®, TC/BSD®, EtherCAT®, EtherCAT G®, EtherCAT G10®, EtherCAT P®, Safety over EtherCAT®, TwinSAFE®, XFC®, XTS®, and XPlanar® are registered and licensed trademarks of Beckhoff Automation GmbH.

If third parties make use of the designations or trademarks contained in this publication for their own purposes, this could infringe upon the rights of the owners of the said designations.



EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany

Copyright

© Beckhoff Automation GmbH & Co. KG, Germany.

The distribution and reproduction of this document, as well as the use and communication of its contents without express authorization, are prohibited.

Offenders will be held liable for the payment of damages. All rights reserved in the event that a patent, utility model, or design are registered.

Third-party trademarks

Trademarks of third parties may be used in this documentation. You can find the trademark notices here: https://www.beckhoff.com/trademarks.



1.2 For your safety

Safety regulations

Read the following explanations for your safety.

Always observe and follow product-specific safety instructions, which you may find at the appropriate places in this document.

Exclusion of liability

All the components are supplied in particular hardware and software configurations which are appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co. KG.

Personnel qualification

This description is only intended for trained specialists in control, automation, and drive technology who are familiar with the applicable national standards.

Signal words

The signal words used in the documentation are classified below. In order to prevent injury and damage to persons and property, read and follow the safety and warning notices.

Personal injury warnings

A DANGER

Hazard with high risk of death or serious injury.

A WARNING

Hazard with medium risk of death or serious injury.

A CAUTION

There is a low-risk hazard that could result in medium or minor injury.

Warning of damage to property or environment

NOTICE

The environment, equipment, or data may be damaged.

Information on handling the product



This information includes, for example:

recommendations for action, assistance or further information on the product.



1.3 Notes on information security

The products of Beckhoff Automation GmbH & Co. KG (Beckhoff), insofar as they can be accessed online, are equipped with security functions that support the secure operation of plants, systems, machines and networks. Despite the security functions, the creation, implementation and constant updating of a holistic security concept for the operation are necessary to protect the respective plant, system, machine and networks against cyber threats. The products sold by Beckhoff are only part of the overall security concept. The customer is responsible for preventing unauthorized access by third parties to its equipment, systems, machines and networks. The latter should be connected to the corporate network or the Internet only if appropriate protective measures have been set up.

In addition, the recommendations from Beckhoff regarding appropriate protective measures should be observed. Further information regarding information security and industrial security can be found in our https://www.beckhoff.com/secquide.

Beckhoff products and solutions undergo continuous further development. This also applies to security functions. In light of this continuous further development, Beckhoff expressly recommends that the products are kept up to date at all times and that updates are installed for the products once they have been made available. Using outdated or unsupported product versions can increase the risk of cyber threats.

To stay informed about information security for Beckhoff products, subscribe to the RSS feed at https://www.beckhoff.com/secinfo.



2 Introduction

The Tc2_EIB library is a TwinCAT PLC library for data exchange with EIB devices.

This library should only be used in conjunction with a KL6301 (EIB master terminal).

The user of this library requires basic knowledge of the following:

- TwinCAT XAE
- · PC and network knowledge
- Structure and properties of the Beckhoff Embedded PC and its Bus Terminal system
- · Technology of EIB devices
- · Relevant safety regulations for building technical equipment

This software library is intended for building automation system partners of Beckhoff Automation GmbH & Co. KG. The system partners operate in the field of building automation and are concerned with the installation, commissioning, expansion, maintenance and service of measurement, control and regulating systems for the technical equipment of buildings.

The Tc2 EIB library is usable on all hardware platforms that support TwinCAT 3.1 or higher.

Hardware documentation in the Beckhoff information system:

https://infosys.beckhoff.com/content/1033/kl6301/index.html



3 EIB

Working with the EIB bus terminal requires function blocks, which are described in this documentation.

Three different modes are available from firmware version B1 and library V3, which can be enabled in the KL6301 function block.

Mode 0: 4 filters with 64 group addresses each (compatible with firmware B0). Acknowledgement with ACK to group addresses within the filters.

Mode 1: 8 filters with 32 group addresses each. Acknowledgement with ACK to group addresses within the filters.

Mode 2: 8 filters with 32 group addresses each, but inverted. Data reception only from group addresses outside the filters. Acknowledgement with ACK to group addresses outside the filters.

Mode 100: Reception of all telegrams of each group address (monitor function). No data transmission possible. No acknowledgement with ACK.

Sending

The KL6301 sends data individually. This means that a Data variable sent to the KL6301 is sent to the EIB network individually. Subsequent EIB data can only be transferred to the KL6301 after a successful transfer. Two types of EIB telegrams can be sent:

- · WRITE_GROUP for writing data to other EIB devices
- · READ GROUP REQ for requesting data from other EIB devices

Receiving

The KL6301 has a maximum of 8 filter addresses. These filters filter the EIB group addresses. Only EIB telegrams entered in the filter are visible in the process image and are acknowledged.

A filter may contain up to 64 group addresses. With 4 filters multiplied with 64 entries a total of 256 group addresses are available. With 8 filters multiplied with 32 entries a total of 256 group addresses are available. The system is configured via a function block. The group addresses are loaded and are immediately active when the bus terminal is initialized.

At least one filter has to be parameterized. The data type is not significant for the filter setting.

Monitor function

No filters must be set if mode 100 is enabled. The filters EIB_GROUP_FILTER are simply left empty and not written.



4 Programming

4.1 EIB group filter

The EIB group filters have to be parameterized before the KL6301 can enter data exchange mode. The filters are required for all data with a group address sent to the KL6301. Each group telegram that is also included in the filters is acknowledged and entered in the process data, i.e. it is visible in the function blocks. The KL6301 discards EIB telegrams with group addresses that are not included in the filter.

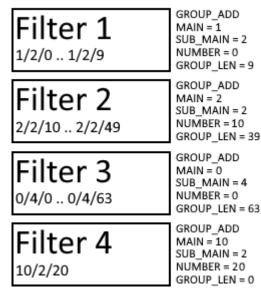
Example

Filter 1 Group address 1/2/0 Length: 20

All EIB telegrams with group address 1/2/0 - 1/2/19 pass the filter

At least one filter must always be activated.

The selected mode determines the number and length of the group filters. The length specification starts at 0, which corresponds to exactly one entry.



Changes for Firmware B1 and library version V3

With firmware version B1 and TwinCAT library Tc2_EIB (V3) instead of **4 filters also 8 filters** can be parameterized. But the maximum length of each filter is reduced from 64 to 32 entries per filter group. So the maximum of all group filters to be received is constant with 256.

4.2 POUs

General

| Contents | Description |
|----------------------|-----------------------------|
| <u>KL6301 [▶ 14]</u> | Communication with a KL6301 |
| KL6301 EX [▶ 16] | Communication with a KL6301 |



Read

| Function blocks | Description |
|----------------------------------|---|
| EIB_2OCTET_FLOAT_REC [▶ 18] | Receiving of 2-byte Float EIB data and conversion to REAL |
| EIB 2OCTET SIGN REC [▶ 19] | Receiving of 2-byte Sign EIB data and conversion to INT |
| EIB_2OCTET_UNSIGN_REC [▶ 20] | Receiving of 2-byte Unsign EIB data and conversion to UINT |
| EIB 3BIT CONTROL REC [▶ 20] | Receiving of a "3 Bit Controlled" data type |
| EIB_4OCTET_FLOAT_REC_[▶ 21] | Receiving of 4-byte Float EIB data and conversion to REAL |
| EIB_4OCTET_SIGN_REC [▶ 22] | Receiving of 4-byte Sign EIB data and conversion to DINT |
| EIB 4OCTET UNSIGN REC [▶ 22] | Receiving of 4-byte Unsign EIB data and conversion to UDINT |
| EIB 8BIT SIGN REC [▶ 23] | Receiving of 8 BIT EIB data and conversion to INT |
| EIB 8BIT UNSIGN REC [▶ 24] | Receiving of 8 BIT EIB data and conversion to BYTE |
| EIB ALL DATA TYPES REC [▶ 25] | Receives any EIB data |
| EIB ALL DATA TYPES REC EX [▶ 25] | Receives any EIB data |
| EIB_BIT_CONTROL_REC [▶ 26] | Receiving of a "1 Bit Controlled" data type |
| EIB BIT REC [▶ 27] | Receiving of 1 BIT EIB data and conversion to BOOL |
| EIB DATE REC [▶ 28] | Receiving a date |
| EIB TIME REC [▶ 28] | Receiving a time |



Send

| Function blocks | Description |
|----------------------------------|---|
| EIB 2OCTET FLOAT SEND [▶ 30] | Sending a REAL value (conversion to 2 byte Float EIB) |
| EIB 2OCTET FLOAT SEND EX [▶ 32] | Sending a REAL value (conversion to 2 byte Float EIB) |
| EIB 2OCTET SIGN SEND [▶ 33] | Sending an INT value (conversion to 2 byte Sign EIB) |
| EIB 2OCTET SIGN SEND EX [▶ 34] | Sending an INT value (conversion to 2 byte Sign EIB) |
| EIB_2OCTET_UNSIGN_SEND [▶ 35] | Sending an UINT value (conversion to 2 byte Unsign EIB) |
| EIB_2OCTET_UNSIGN_SEND_EX [▶ 37] | Sending an UINT value (conversion to 2 byte Unsign EIB) |
| EIB 3BIT CONTROL SEND [▶ 38] | Sending a "3 bit Controlled" data type |
| EIB 3BIT CONTROL SEND EX [▶ 39] | Sending a "3 bit Controlled" data type |
| EIB_4OCTET_FLOAT_SEND [▶ 40] | Sending a REAL value (conversion to 4 byte Float EIB) |
| EIB_4OCTET_FLOAT_SEND_EX [▶ 42] | Sending a REAL value (conversion to 4 byte Float EIB) |
| EIB_4OCTET_SIGN_SEND [▶ 43] | Sending a DINT value (conversion to 4 byte Sign EIB) |
| EIB_4OCTET_SIGN_SEND_EX [▶ 44] | Sending a DINT value (conversion to 4 byte Sign EIB) |
| EIB_4OCTET_UNSIGN_SEND [▶ 45] | Sending a UDINT value (conversion to 4 byte Unsign EIB) |
| EIB_4OCTET_UNSIGN_SEND_EX [▶ 47] | Sending a UDINT value (conversion to 4 byte Unsign EIB) |
| EIB 8BIT SIGN SEND [▶ 48] | Sending an INT value (conversion to 1 byte Sign EIB) |
| EIB 8BIT SIGN SEND EX [▶ 49] | Sending an INT value (conversion to 1 byte Sign EIB) |
| EIB_8BIT_UNSIGN_SEND [▶ 51] | Sending a BYTE value (conversion to 1 byte Unsign EIB) |
| EIB 8BIT UNSIGN SEND EX [▶ 52] | Sending a BYTE value (conversion to 1 byte Unsign EIB) |
| EIB ALL DATA TYPES SEND [▶ 54] | Sending any EIB data |
| EIB BIT CONTROL SEND [▶ 56] | Sending a "1 bit Controlled" data type |
| EIB BIT CONTROL SEND EX [▶ 58] | Sending a "1 bit Controlled" data type |
| EIB BIT SEND [▶ 59] | Sending a BOOL value |
| EIB BIT SEND EX [▶ 60] | Sending a BOOL value |
| EIB BIT SEND MANUAL [▶ 61] | Sending a BOOL value |
| EIB DATE SEND [▶ 62] | Sending a date |
| EIB DATE SEND EX [▶ 63] | Sending a date |
| EIB READ SEND [▶ 65] | Sending a Read_Group_Req |
| EIB TIME SEND [▶ 66] | Sending a time |
| EIB TIME SEND EX [▶ 67] | Sending a time |

Functions

| Function blocks | Description |
|-----------------|--|
| <u> </u> | Conversion of a 2-stage group address to a 3-stage group address |
| | Conversion of a 3-stage group address to a 2-stage group address |



4.2.1 Function blocks details

| Description | _Rec | _Send | | | | |
|---------------------------|-------------------|-------------------|-------------|--------------------------|-----------------------|-------------|
| | | _Send | First Cycle | Delta, min. Send Time | Polling | Auto/manual |
| EIB_BIT | <u>yes [▶ 27]</u> | <u>yes [▶ 59]</u> | no | 200 msec | no | Auto |
| EIB_BIT_EX | no | <u>yes [▶ 60]</u> | yes | 1 sec, variable | 10 sec, variable | Auto/manual |
| EIB_BIT_MAN UAL | no | <u>yes [▶ 61]</u> | no | no | no | Manual |
| EIB_BIT_CON TROL | <u>yes [▶ 26]</u> | <u>yes [▶ 56]</u> | no | 200 msec | no | Auto |
| EIB_3BIT_CO NTROL | | <u>yes [▶ 38]</u> | no | 200 msec | no | Auto |
| EIB_8BIT_SIG N | <u>yes [▶ 23]</u> | <u>yes [▶ 48]</u> | no | 1 sec | no | Auto |
| EIB_8BIT_SIG N_EX | no | <u>yes [▶ 49]</u> | yes | 1 sec, variable | 500 msec, variable | Auto/manual |
| EIB_8BIT_UN SIGN | <u>yes [▶ 24]</u> | <u>yes [▶ 51]</u> | no | 1 sec | no | Auto |
| EIB_8BIT_UN SIGN_EX | no | <u>yes [▶ 52]</u> | yes | 1 sec, variable | 500 msec, variable | Auto/manual |
| EIB_2OCTET _SIGN | <u>yes [▶ 19]</u> | <u>yes [▶ 33]</u> | no | 1 sec | no | Auto |
| EIB_2OCTET _SIGN_EX | no | <u>yes [▶ 34]</u> | yes | 1 sec, variable | 500 msec, variable | Auto/manual |
| EIB_2OCTET _UNSIGN | <u>yes [▶ 20]</u> | <u>yes [▶ 35]</u> | no | 1 sec | no | Auto |
| EIB_2OCTET _UNSIGN_EX | no | <u>yes [▶ 37]</u> | yes | 1 sec, variable | 500 msec, variable | Auto/manual |
| EIB_2OCTET _FLOAT | <u>yes [▶ 18]</u> | <u>yes [▶ 30]</u> | no | 1 sec | no | Auto |
| EIB_2OCTET _FLOAT_EX | no | <u>yes [▶ 32]</u> | yes | 1 sec, variable | 500 msec, variable | Auto/manual |
| EIB_TIME | <u>yes [▶ 28]</u> | <u>yes [▶ 66]</u> | yes | no | 5 min | Auto |
| EIB_DATE | <u>yes [▶ 28]</u> | <u>yes [▶ 62]</u> | yes | no | 5 min | Auto |
| EIB_4OCTET _SIGN | <u>yes [▶ 22]</u> | <u>yes [▶ 43]</u> | no | 1 sec | no | Auto |
| EIB_4OCTET _SIGN_EX | no | yes [▶ 44] | yes | 1 sec, variable | 500 msec, variable | Auto/manual |
| EIB_4OCTET _UNSIGN | <u>yes [▶ 22]</u> | <u>yes [▶ 45]</u> | no | 1 sec | no | Auto |
| EIB_4OCTET _FLOAT | <u>yes [▶ 21]</u> | yes [▶ 40] | no | 1 sec | no | Auto |
| EIB_4OCTET _FLOAT_EX | no | <u>yes [▶ 42]</u> | yes | 1 sec, variable | 10 min, variable | Auto/manual |
| EIB_READ | no | yes [▶ 65] | no | no | no | Manual |
| A_TYPES | <u>yes [▶ 25]</u> | yes [▶_54] | no | 1 sec, variable | 100 msec, variable | Auto/manual |
| EIB_ALL_DAT A_TYPES_EX | <u>yes [▶ 25]</u> | no | no | no | no | no |

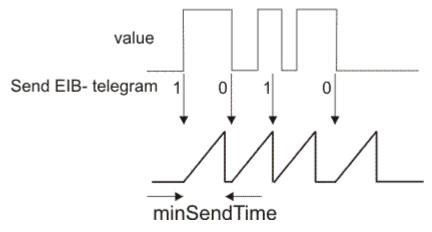
_Rec: yes - receiving is supported, no - receiving is not supported

_Send: yes - sending is supported, no - sending is not supported



First Cycle: An EIB telegram is sent when the function block is called for the first time.

Delta, min. Send Time: An EIB telegram is only sent when the data is changed. The parameter "min. Send Time" is used to activate a "send filter". It does not extend the response time for the first relative change in input, but is active for subsequent changes. The "min. Send Time" describes the minimum time that must be waited between the sending of two telegrams. The "min. Send Time" reduces bus communication and ensures that send instructions from other function blocks can also transmit their EIB telegrams.



Polling: The data are automatically sent at the specified interval, even if the data did not change

Auto/Manual: Auto - Data is sent automatically when the function block is called, Manual - Data is only sent when requested by the function block.

4.2.2 KL6301



This function block deals with the KL6301 EIB Bus Terminal communication. It is used for configuring the KL6301 and for starting the data exchange with the EIB network.



Restrictions



- Only one call per instance
- · Call must be made once per PLC cycle
- Instance must be called in the same PLC task as the send and receive blocks assigned to it
- · Maximum 64 instances per PLC project allowed

Inputs

```
VAR_INPUT
bActivate : BOOL;
idx : INT := 1;
EIB_PHYS_ADDR : EIB_PHYS_ADDR;
EIB_GROUP_FILTER : ARRAY [1..8] OF EIB_GROUP_FILTER;
iMode : INT;
tTimeout : TIME := T#5s;
END VAR
```



| Name | Туре | Description |
|-----------------|-------------------------|--|
| bActivate | BOOL | Activates the function block that configures the KL6301 and then activates the data exchange. If FALSE, any tasks that are still running will be completed and the data exchange will be terminated. If the outputs <i>bActive</i> and <i>bReady</i> are then FALSE, the function block can be reactivated. |
| idx | INT | If more than one bus terminal per PLC program is used, each KL6301 must have a unique idx number. Valid values from 164. |
| EIB_PHYS_ADDR | EIB PHYS ADDR [▶ 75] | Physical EIB address. The default address is 1.2.3. This address must be unique in the EIB network! |
| EIB_GROUP_FILTE | | Group address filter. A maximum of 8 filters are possible. |
| K | EIB GROUP FILTER [▶ 75] | |
| iMode | INT | 0 - For firmware B0 and higher - 4 filters with 64 entries each 1 - For firmware B1 and higher - 8 filters with 32 entries each 2 - For firmware B3 and higher - 8 filters, each with 32 inverted entries. In the case of cross communication within the KNX/EIB network of telegrams that are not connected with the KL6301, care must be taken to ensure that these group addresses are contained in the filter so that the terminal does not send an ACK. 100 - For Firmware B1 and higher - Monitor function, all group address telegrams are received. The telegrams are not acknowledged (no ACK is sent). Sending is disabled in this mode. |
| tTimeout | TIME | Time allowed for a transmit function block to transmit an EIB telegram before a timeout is signaled. |

***** Inputs/outputs

VAR_IN_OUT KL6301_IN : ARRAY [1..24] OF BYTE; KL6301_OUT : ARRAY [1..24] OF BYTE; END_VAR

| Name | Туре | Description |
|------------|---------------|---|
| KL6301_IN | ARRAY OF BYTE | Is linked with the KL6301 input addresses. |
| KL6301_OUT | ARRAY OF BYTE | Is linked with the KL6301 output addresses. |

Outputs

VAR_OUTPUT

bActive : BOOL;

bReady : BOOL;

bError : BOOL;

iErrorId : EIB_Error_Code;

str_Data_Rec : EIB_REC;

END_VAR

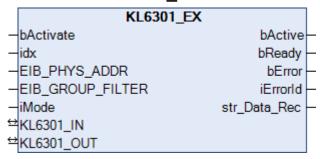
| Name | Туре | Description |
|--------------|-----------------------|--|
| bActive | BOOL | The function block was activated. |
| bReady | BOOL | The function block is ready for sending and receiving data. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorId</i> variable. |
| iErrorld | | iErrorld: The output issues an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |
| str_Data_Rec | <u>EIB REC [▶ 76]</u> | Connected with the send and receive function blocks. |



Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.3 KL6301_EX



This function block deals with the KL6301 EIB Bus Terminal communication. It is used for configuring the KL6301 and for starting the data exchange with the EIB network.

BETA: ETS support for search and LED flashing.



Restrictions



- · Only one call per instance
- · Call must be made once per PLC cycle
- Instance must be called in the same PLC task as the send and receive blocks assigned to it
- · Maximum 64 instances per PLC project allowed

Inputs

```
VAR_INPUT
bActivate : BOOL;
idx : INT := 1;
EIB_PHYS_ADDR : EIB_PHYS_ADDR;
EIB_GROUP_FILTER : ARRAY [1..8] OF EIB_GROUP_FILTER;
iMode : INT;
END_VAR
```



| Name | Туре | Description |
|-----------------|-------------------------------------|--|
| bActivate | BOOL | Activates the function block that configures the KL6301 and then activates the data exchange. If FALSE, any tasks that are still running will be completed and the data exchange will be terminated. If the outputs <i>bActive</i> and <i>bReady</i> are then FALSE, the function block can be reactivated. |
| idx | INT | If more than one bus terminal per PLC program is used, each KL6301 must have a unique idx number. Valid values from 164. |
| EIB_PHYS_ADDR | EIB PHYS ADDR [▶ 75] | Physical EIB address. The default address is 1.2.3. This address must be unique in the EIB network! |
| EIB_GROUP_FILTE | ARRAY OF EIB GROUP FILTER [▶ 75] | Group address filter. A maximum of 8 filters are possible. |
| iMode | INT | 0 - For firmware B0 and higher - 4 filters with 64 entries each 1 - For firmware B1 and higher - 8 filters with 32 entries each 2 - For firmware B3 and higher - 8 filters, each with 32 inverted entries. In the case of cross communication within the KNX/EIB network of telegrams that are not connected with the KL6301, care must be taken to ensure that these group addresses are contained in the filter so that the terminal does not send an ACK. 100 - For Firmware B1 and higher - Monitor function, all group address telegrams are received. The telegrams are not acknowledged (no ACK is sent). Sending is disabled in this mode. |

▼/ Inputs/outputs

VAR_IN_OUT
KL6301_IN : ARRAY [1..24] OF BYTE;
KL6301_OUT : ARRAY [1..24] OF BYTE; END VAR

| Name | Туре | Description |
|------------|---------------|---|
| KL6301_IN | ARRAY OF BYTE | Is linked with the KL6301 input addresses. |
| KL6301_OUT | ARRAY OF BYTE | Is linked with the KL6301 output addresses. |

Outputs

VAR_OUTPUT
bActive : BOOL;
bReady : BOOL;
bError : BOOL;
iErrorId : EIB_Error_Code;
str_Data_Rec : EIB_REC;
END_VAR

| Name | Туре | Description |
|--------------|-----------------------|--|
| bActive | BOOL | The function block was activated. |
| bReady | BOOL | The function block is ready for sending and receiving data. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorId</i> variable. |
| iErrorld | | iErrorld: The output issues an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |
| str_Data_Rec | <u>EIB_REC [▶ 76]</u> | Connected with the send and receive function blocks. |



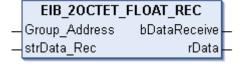
Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4022.29 | Tc2_EIB from v3.3.9.0 |

4.2.4 Read

| Function blocks | Description |
|----------------------------------|---|
| EIB_2OCTET_FLOAT_REC_[▶ 18] | Receiving of 2-byte Float EIB data and conversion to REAL |
| EIB 2OCTET SIGN REC [▶ 19] | Receiving of 2-byte Sign EIB data and conversion to INT |
| EIB_2OCTET_UNSIGN_REC [▶ 20] | Receiving of 2-byte Unsign EIB data and conversion to UINT |
| EIB 3BIT CONTROL REC [▶ 20] | Receiving of a "3 Bit Controlled" data type |
| EIB_4OCTET_FLOAT_REC [▶ 21] | Receiving of 4-byte Float EIB data and conversion to REAL |
| EIB 4OCTET SIGN REC [▶ 22] | Receiving of 4-byte Sign EIB data and conversion to DINT |
| EIB 4OCTET UNSIGN REC [▶ 22] | Receiving of 4-byte Unsign EIB data and conversion to UDINT |
| EIB 8BIT SIGN REC [▶ 23] | Receiving of 8 BIT EIB data and conversion to INT |
| EIB 8BIT UNSIGN REC [▶ 24] | Receiving of 8 BIT EIB data and conversion to BYTE |
| EIB ALL DATA TYPES REC [▶ 25] | Receives any EIB data |
| EIB ALL DATA TYPES REC EX [▶ 25] | Receives any EIB data |
| EIB BIT CONTROL REC [▶ 26] | Receiving of a "1 Bit Controlled" data type |
| EIB BIT REC [▶ 27] | Receiving of 1 BIT EIB data and conversion to BOOL |
| EIB DATE REC [▶ 28] | Receiving a date |
| EIB TIME REC [▶ 28] | Receiving a time |

4.2.4.1 EIB_2OCTET_FLOAT_REC



This function block receives 2 bytes of float EIB data on the set group address and converts them into an IEC61131-3 REAL variable.

Inputs

VAR_INPUT
Group_Address : EIB_GROUP_ADDR;
strData_Rec : EIB_REC;
END VAR

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [▶ 14] must be linked. |



Outputs

VAR OUTPUT

bDataReceive : BOOL; rData : REAL; ND VAR

END_VAR

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| rData | REAL | Contains the user data of the received EIB telegram. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.2 EIB_2OCTET_SIGN_REC

```
EIB_20CTET_SIGN_REC
 Group_Address
               bDataReceive
_strData_Rec
                        iData
```

This function block receives 2 bytes of sign EIB data on the set group address and converts them into an IEC61131-3 INT variable.

Inputs

VAR INPUT Group Address : EIB GROUP ADDR; strData Rec : EIB REC; END_VAR

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [▶ <u>14]</u> must be linked. |

Outputs

VAR OUTPUT bDataReceive : BOOL; : INT; iData END_VAR

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| iData | INT | Contains the user data of the received EIB telegram. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.4.3 EIB_2OCTET_UNSIGN_REC

```
EIB_2OCTET_UNSIGN_REC

— Group_Address bDataReceive —
strData_Rec uiData
```

This function block receives 2 bytes of unsign EIB data on the set group address and converts them into an IEC61131-3 UINT variable.

Inputs

```
VAR_INPUT
Group_Address : EIB_GROUP_ADDR;
strData_Rec : EIB_REC;
END_VAR
```

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [<u>▶ 14]</u> must be linked. |

Outputs

```
VAR_OUTPUT
bDataReceive : BOOL;
uiData : UINT;
END_VAR
```

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| uiData | UINT | Contains the user data of the received EIB telegram. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.4 EIB_3BIT_CONTROL_REC

```
EIB_3BIT_CONTROL_REC

— Group_Address bDataReceive —
strData_Rec bControl —
byRange —
```

This function block receives 4 bits of EIB data on the set group address and converts them into an IEC61131-3 BOOL variable and a BYTE variable.

Inputs

```
VAR_INPUT
Group_Address: EIB_GROUP_ADDR;
strData_Rec : EIB_REC;
END VAR
```



| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [> <u>14</u>] must be linked. |

Outputs

VAR OUTPUT

bDataReceive : BOOL; bControl : BOOL; byRange : BYTE; ND VAR

END VAR

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| byControl | BOOL | Valid values (TRUE/FALSE) |
| ByRange | BYTE | Valid values (000b111b) |

Allocation of the 4 bits to the variables bControl and byRange.

| bControl | byRange.2 | byRange.1 | byRange.0 | |
|----------|-----------|-----------|-----------|--|
|----------|-----------|-----------|-----------|--|

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

EIB_4OCTET_FLOAT_REC 4.2.4.5

```
EIB_40CTET_FLOAT_REC
— Group_Address
                  bDataReceive
_strData_Rec
                         rData
```

This function block receives 4 bytes of float EIB data on the set group address and converts them into an IEC61131-3 REAL variable.

Inputs

VAR INPUT Group_Address : EIB_GROUP_ADDR; strData_Rec : EIB_REC; END_VAR

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() |
| | | [▶ <u>14]</u> must be linked. |

Outputs

VAR OUTPUT bDataReceive : BOOL; rData

: REAL; END_VAR



| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| rData | REAL | Contains the user data of the received EIB telegram. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.6 EIB_4OCTET_SIGN_REC

```
EIB_40CTET_SIGN_REC

— Group_Address bDataReceive —

_ strData_Rec uiData
```

This function block receives 4 bytes of sign EIB data on the set group address and converts them into an IEC61131-3 DINT variable.

Inputs

```
VAR_INPUT
   Group_Address : EIB_GROUP_ADDR;
   strData_Rec : EIB_REC;
END VAR
```

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB_GROUP_ADDR [▶ 74] | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [> <u>14</u>] must be linked. |

Outputs

VAR_OUTPUT
bDataReceive : BOOL;
uiData : DINT;
END_VAR

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| uiData | DINT | Contains the user data of the received EIB telegram. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.7 EIB_4OCTET_UNSIGN_REC



This function block receives 4 bytes of unsign EIB data on the set group address and converts them into an IEC61131-3 UDINT variable.



Inputs

VAR INPUT

Group_Address : EIB_GROUP_ADDR;

strData_Rec : EIB_REC;

END_VAR

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() |
| | | [▶ <u>14]</u> must be linked. |

Outputs

VAR OUTPUT

bDataReceive : BOOL;

uiData : UDINT; END VAR

| Name | Туре | Description |
|--------------|-------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| uiData | UDINT | Contains the user data of the received EIB telegram. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.8 EIB_8BIT_SIGN_REC

```
EIB_8BIT_SIGN_REC
                  bDataReceive
 Group_Address
Scaling_Mode
                         iData -
_strData_Rec
```

This function block receives 8 bits of EIB data on the set group address and converts them into an IEC61131-3 INT variable. In addition the value may be converted automatically.

Inputs

VAR INPUT

Group Address : EIB GROUP ADDR;

Scaling_Mode : INT; strData_Rec : EIB_REC;

END VAR

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address from which the data were sent. This group address must be entered in the filters! |
| Scaling_Mode | INT | 0 - The 8-bit value is output as a % value 0100% 1 - The 8-bit value is output as degrees (angle) 0360° 2 - The 8-bit value is output as a byte value 0255 |
| strData_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [▶ 14] must be linked. |



Outputs

VAR OUTPUT

bDataReceive : BOOL; iData : INT; END_VAR

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| iData | INT | Scaled value, see <i>Scaling_Mode</i> (-1, an invalid scaling mode was entered). |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.9 EIB_8BIT_UNSIGN_REC

EIB_8BIT_UNSIGN_REC

— Group_Address bDataReceive —
— strData_Rec byData —

This function block receives 8 bits of EIB data on the set group address and converts them into an IEC61131-3 BYTE variable.

Inputs

VAR_INPUT
 Group_Address : EIB_GROUP_ADDR;
 strData_Rec : EIB_REC;
END_VAR

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() |
| | | [▶ <u>14]</u> must be linked. |

Outputs

VAR_OUTPUT
bDataReceive : BOOL;
byData : BYTE;
END VAR

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| byData | BYTE | Contains the user data of the received EIB telegram. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.4.10 EIB_ALL_DATA_TYPES_REC

```
EIB_ALL_DATA_TYPES_REC

-Group_Address bDataReceive -
-strData_Rec EIB_Data_Receive -
EIB_Data_Len -
bEIB_READ -
```

This function block receives variable EIB data sizes on the set group address and outputs the raw data as a byte ARRAY.

Inputs

```
VAR_INPUT
  Group_Address : EIB_GROUP_ADDR;
  strData_Rec : EIB_REC;
END_VAR
```

| Name | Туре | Description |
|---------------|------|---|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | | The data structure with which the function block <u>KL6301()</u> [▶ <u>14]</u> must be linked. |

Outputs

```
VAR_OUTPUT
bDataReceive : BOOL;
EIB_Data_Receive : ARRAY [1..14] OF BYTE;
EIB_Data_Len : USINT;
bEIB_READ : BOOL;
END_VAR
```

| Name | Туре | Description |
|------------------|---------------|--|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| EIB_Data_Receive | ARRAY OF BYTE | Contains the user data of the received EIB telegram. |
| EIB_Data_Len | USINT | Contains the user data length of the receiving EIB telegram. |
| | | Data < 8 bits specified length 1 |
| | | Data >=) 8 bits specified length +1 |
| | | Example: If you receive 1 bit of data, the length in EIB_Data_Len is 1. If you receive 2 bytes of data, the length in EIB_Data_Len is 3. |
| bEIB_READ | BOOL | TRUE = EIB read command. FALSE = normal EIB telegram (from v3.3.5.0). |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.11 EIB_ALL_DATA_TYPES_REC_EX

```
EIB_ALL_DATA_TYPES_REC_EX
--strData_Rec bDataReceive -
Group_Address -
EIB_Data_Receive -
EIB_Data_Len -
```



This function block receives variable EIB data for all group addresses and outputs the raw data as a byte array.

Inputs

```
VAR_INPUT
strData_Rec : EIB_REC;
END VAR
```

| Name | Туре | Description |
|-------------|-----------------------|---|
| strData_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() |
| | | [▶ <u>14]</u> must be linked. |

Outputs

VAR_OUTPUT
bDataReceive : BOOL;
Group_Address : EIB_GROUP_ADDR;
EIB_Data_Receive : ARRAY [1..14] OF BYTE;
EIB_Data_Len : USINT;
END VAR

| Name | Туре | Description |
|------------------|-----------------------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| Group_Address | EIB_GROUP_ADDR [▶ 74] | Group address from which the data were sent. This group address must be entered in the filters! |
| EIB_Data_Receive | ARRAY OF BYTE | Contains the user data of the received EIB telegram. |
| EIB_Data_Len | USINT | Contains the user data length of the receiving EIB telegram. / Data < 8 bits specified length 1, / Data >=) 8 bits specified length +1 / Example: If you receive 1 bit of data, the length in EIB_Data_Len is 1. If you receive 2 bytes of data, the length in EIB_Data_Len is 3. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.12 EIB_BIT_CONTROL_REC

```
EIB_BIT_CONTROL_REC

— Group_Address bDataReceive —

— strData_Rec bControl —

bValue —
```

This function block receives 2 bits of EIB data on the set group address and converts them into two IEC61131-3 BOOL variables.

Inputs

VAR_INPUT
 Group_Address : EIB_GROUP_ADDR;
 strData_Rec : EIB_REC;
END VAR

| Name | Туре | Description |
|---------------|----------------|--|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | EIB REC [▶ 76] | The data structure with which the function block <u>KL6301()</u> [> 14] must be linked. |



Outputs

VAR OUTPUT

bDataReceive : BOOL; bControl : BOOL; bValue : BOOL; END_VAR

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| bControl | BOOL | Valid values (TRUE/FALSE) |
| bValue | BOOL | Valid values (TRUE/FALSE) |

Allocation of the 2 bits to the variables bControl and bValue.

| bControl | bValue |
|----------|--------|
| | |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.13 EIB_BIT_REC

```
EIB_BIT_REC

— Group_Address bDataReceive —
— strData_Rec bData
```

This function block receives 1 bit of EIB data on the set group address and converts them into an IEC61131-3 BOOL variable.

Inputs

```
VAR_INPUT
Group_Address: EIB_GROUP_ADDR;
strData_Rec : EIB_REC;
END_VAR
```

| Name | Туре | Description |
|---------------|------|---|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | | The data structure with which the function block <u>KL6301()</u> [▶ <u>14]</u> must be linked. |

Outputs

END_VAR

VAR_OUTPUT

bDataReceive : BOOL;

bData : BOOL;

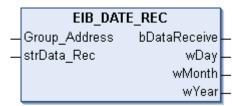
| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| bData | BOOL | Valid values (TRUE/FALSE) |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.4.14 **EIB_DATE_REC**



This function block receives 3 bytes of EIB data on the set group address and converts them into three IEC61131-3 WORD variables.

Inputs

```
VAR_INPUT
Group_Address: EIB_GROUP_ADDR;
strData_Rec : EIB_REC;
END VAR
```

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() |
| | | [▶ <u>14]</u> must be linked. |

Outputs

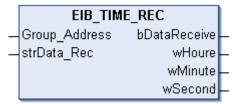
```
VAR_OUTPUT
bDataReceive : BOOL;
wDay : WORD;
wMonth : WORD;
wYear : WORD;
```

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| wDay | WORD | Date, days [131] |
| wMonth | WORD | Date, month [112] |
| wYear | WORD | Date, year [099] |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.4.15 EIB_TIME_REC



This function block receives 3 bytes of EIB data on the set group address and converts them into three IEC61131-3 WORD variables.



Inputs

```
VAR_INPUT
   Group_Address : EIB_GROUP_ADDR;
   strData_Rec : EIB_REC;
END_VAR
```

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | | Group address from which the data were sent. This group address must be entered in the filters! |
| strData_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() |
| | | [▶ <u>14]</u> must be linked. |

Outputs

```
VAR_OUTPUT
bDataReceive : BOOL;
wHoure : WORD;
wMinute : WORD;
wSecond : WORD;
END_VAR
```

| Name | Туре | Description |
|--------------|------|---|
| bDataReceive | BOOL | This bit is set to FALSE for exactly one cycle when an EIB telegram with the group address is received. |
| wHoure | WORD | Time, in hours [023] |
| wMinute | WORD | Time, in minutes [059] |
| wSecond | WORD | Time, in seconds [059] |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.5 Send

| Function blocks | Description |
|----------------------------------|---|
| EIB 2OCTET FLOAT SEND [▶ 30] | Sending a REAL value (conversion to 2 byte Float EIB) |
| EIB_2OCTET_FLOAT_SEND_EX [▶ 32] | Sending a REAL value (conversion to 2 byte Float EIB) |
| EIB 2OCTET SIGN SEND [▶ 33] | Sending an INT value (conversion to 2 byte Sign EIB) |
| EIB 2OCTET SIGN SEND EX [▶ 34] | Sending an INT value (conversion to 2 byte Sign EIB) |
| EIB_2OCTET_UNSIGN_SEND [▶ 35] | Sending an UINT value (conversion to 2 byte Unsign EIB) |
| EIB 2OCTET UNSIGN SEND EX [▶ 37] | Sending an UINT value (conversion to 2 byte Unsign EIB) |
| EIB_3BIT_CONTROL_SEND [▶ 38] | Sending a "3 bit Controlled" data type |
| EIB 3BIT CONTROL SEND EX [▶ 39] | Sending a "3 bit Controlled" data type |
| EIB_4OCTET_FLOAT_SEND [▶ 40] | Sending a REAL value (conversion to 4 byte Float EIB) |
| EIB_4OCTET_FLOAT_SEND_EX [▶ 42] | Sending a REAL value (conversion to 4 byte Float EIB) |
| EIB_4OCTET_SIGN_SEND [▶ 43] | Sending a DINT value (conversion to 4 byte Sign EIB) |
| EIB 4OCTET SIGN SEND EX [▶ 44] | Sending a DINT value (conversion to 4 byte Sign EIB) |
| EIB 4OCTET UNSIGN SEND [▶ 45] | Sending a UDINT value (conversion to 4 byte Unsign EIB) |
| EIB 4OCTET UNSIGN SEND EX [▶ 47] | Sending a UDINT value (conversion to 4 byte Unsign EIB) |
| EIB 8BIT SIGN SEND [▶ 48] | Sending an INT value (conversion to 1 byte Sign EIB) |
| EIB 8BIT SIGN SEND EX [▶ 49] | Sending an INT value (conversion to 1 byte Sign EIB) |
| EIB 8BIT UNSIGN SEND [▶ 51] | Sending a BYTE value (conversion to 1 byte Unsign EIB) |
| EIB_8BIT_UNSIGN_SEND_EX [▶ 52] | Sending a BYTE value (conversion to 1 byte Unsign EIB) |
| EIB ALL DATA TYPES SEND [> 54] | Sending any EIB data |
| EIB BIT CONTROL SEND [▶ 56] | Sending a "1 bit Controlled" data type |
| EIB BIT CONTROL SEND EX [▶ 58] | Sending a "1 bit Controlled" data type |
| EIB BIT SEND [▶ 59] | Sending a BOOL value |
| EIB BIT SEND EX [▶ 60] | Sending a BOOL value |
| EIB BIT SEND MANUAL [• 61] | Sending a BOOL value |
| EIB DATE SEND [▶ 62] | Sending a date |
| EIB DATE SEND EX [▶ 63] | Sending a date |
| EIB READ SEND [▶ 65] | Sending a Read_Group_Req |
| EIB_TIME_SEND [▶ 66] | Sending a time |
| EIB TIME SEND EX [▶ 67] | Sending a time |

4.2.5.1 EIB_2OCTET_FLOAT_SEND

| | EIB_20CTET_FL0 | AT_SEND | |
|---|----------------|------------|---|
| _ | Group_Address | bError - | L |
| _ | rData | iErrorID - | H |
| _ | str_Rec | | |



This function block sends a 2-byte float EIB value to the set group address. An IEC61131-3 REAL value is available as input value. The data are only transferred if there is a change. If the value changes again within 1 second, new data are only sent to the EIB device after another second has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR_INPUT

Group_Address : EIB_GROUP_ADDR;

rData : REAL;
str_Rec : EIB_REC;
END VAR

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address from which the data were sent. This group address must be entered in the filters! |
| rData | REAL | The data value in REAL. This is automatically converted to an EIB 20CTET FLOAT value. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() |
| | | [▶ <u>14]</u> must be linked. |

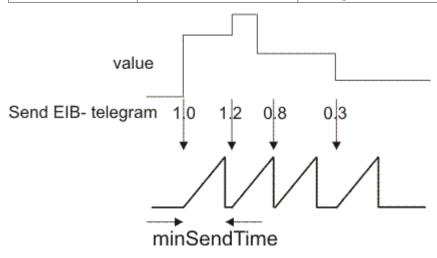
Outputs

VAR_OUTPUT : BOOL;

iErrorID : EIB ERROR CODE;

END VAR

| Name | Туре | Description |
|----------|------|---|
| bError | | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | | This output outputs an error code in the event of an error. bError goes TRUE at the same time. |



Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.5.2 EIB_2OCTET_FLOAT_SEND_EX

```
EIB_2OCTET_FLOAT_SEND_EX

-bStart bBusy-
iMode bError -
-CyclePolling iErrorld -
-MinSendTime
-Group_Address
-rData
-str_Rec
-bEnableReadReq
```

This function block sends a 2-byte float EIB value to the set group address. An IEC61131-3 REAL value is available as input value. The data can be sent in Manual, Polling or OnChange mode (*iMode*).

Inputs

VAR_INPUT

bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
rData : REAL;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR

| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | The function block is activated by a positive edge at this input. |
| iMode | INT | 0 - With a positive edge at <i>bStart</i> , an EIB telegram is sent. If the output <i>bBusy</i> is FALSE again, the command is processed. 1 - Polling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> . 2 - OnChange mode: If <i>bStart</i> is TRUE, an EIB telegram is automatically sent when the data changes. <i>MinSendTime</i> can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> or automatically when the data changes. The minimum interval between two EIB messages is set with <i>MinSendTime</i> . |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address from which the data were sent. This group address must be entered in the filters! |
| rData | REAL | Contains the user data of the received EIB telegram. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [> 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |



Outputs

VAR OUTPUT

bBusy : BOOL; bError : BOOL;

iErrorID : EIB_ERROR_CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.3 EIB_2OCTET_SIGN_SEND

```
EIB_2OCTET_SIGN_SEND

— Group_Address bError —
iData iErrorID —
_ str_Rec
```

This function block sends a 2-byte sign EIB value to the set group address. An IEC61131-3 INT value is available as input value. The data are only transferred if there is a change. If the value changes again within 1 second, new data are only sent to the EIB device after another second has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR_INPUT
 Group_Address : EIB_GROUP_ADDR;
 iData : INT;
 str_Rec : EIB_REC;

END VAR

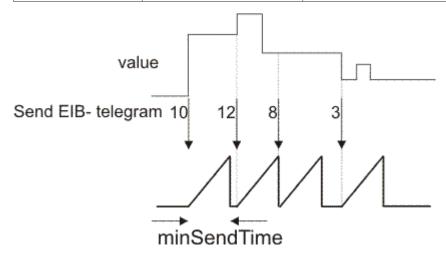
| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| iData | INT | The data value in INT is automatically converted to an EIB 20CTET SIGN value. |
| str_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [▶ <u>14]</u> must be linked. |

Outputs

VAR_OUTPUT
bError : BOOL;
iErrorID : EIB_ERROR_CODE;
END VAR



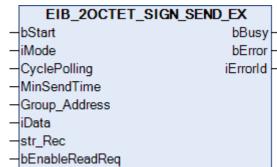
| Name | Туре | Description |
|----------|-----------------------|---|
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |



Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.4 EIB_2OCTET_SIGN_SEND_EX



This function block sends a 2-byte sign EIB value to the set group address. An IEC61131-3 INT value is available as the input value. The data can be sent in Manual, Polling or OnChange depending on the set mode (*iMode*).

Inputs

```
VAR_INPUT

bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
iData : INT;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR
```



| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | Activates the function block. The function block starts operating depending on the set mode (see <i>iMode</i>). |
| iMode | INT | 0 - With a positive edge at <i>bStart</i> , an EIB telegram is sent. If the output <i>bBusy</i> is FALSE again, the command is processed. 1 - Polling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> . 2 - OnChange mode: If <i>bStart</i> is TRUE, an EIB telegram is automatically sent when the data changes. <i>MinSendTime</i> can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> or automatically when the data changes. The minimum interval between two EIB messages is set with <i>MinSendTime</i> . |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| iData | INT | The data value in INT is automatically converted to an EIB 20CTET SIGN value. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [▶ 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |

Outputs

VAR OUTPUT

bBusy : BOOL; bError : BOOL;

iErrorID : EIB_ERROR_CODE;

END_VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4022.29 | Tc2_EIB from v3.3.9.0 |

4.2.5.5 EIB_2OCTET_UNSIGN_SEND





This function block sends a 2-byte unsign EIB value to the set group address. An IEC61131-3 UINT value is available as input value. The data are only transferred if there is a change. If the value changes again within 1 second, new data are only sent to the EIB device after another second has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR_INPUT

Group_Address : EIB_GROUP_ADDR;

uiData : UINT; str_Rec : EIB_REC;

END VAR

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | | Group address to which the data are sent. This group address must be entered in the filters! |
| uiData | UINT | The data value in UINT is automatically converted to an EIB 20CTET UNSIGN value. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() |
| | | [▶ <u>14]</u> must be linked. |

Outputs

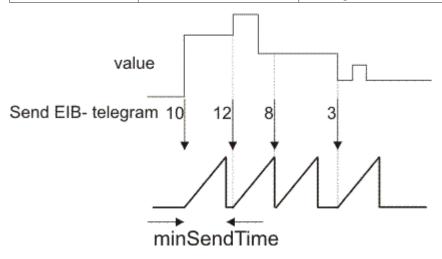
VAR_OUTPUT

bError : BOOL;

iErrorID : EIB ERROR CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bError | | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |



Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.5.6 EIB_2OCTET_UNSIGN_SEND_EX

| | | 7 |
|---|---------------------------|---|
| | EIB_20CTET_UNSIGN_SEND_EX | |
| _ | bStart bBusy | H |
| _ | iMode bError | H |
| _ | CyclePolling iErrorld | H |
| _ | MinSendTime | |
| _ | Group_Address | |
| _ | uiData | |
| _ | str_Rec | |
| - | bEnableReadReq | |

This function block sends a 2-byte Unsign EIB value to the set group address. An IEC61131-3 UINT value is available as input value. The data can be sent in Manual, Polling or OnChange depending on the set mode (*iMode*).

Inputs

VAR_INPUT

bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
uiData : UINT;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR

| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | Activates the function block. The function block starts operating depending on the set mode (see <i>iMode</i>). |
| iMode | INT | 0 - With a positive edge at bStart, an EIB telegram is sent. If the output bBusy is FALSE again, the command is processed. 1 - Polling mode: If bStart is TRUE, EIB telegrams are sent at intervals of CyclePolling. 2 - OnChange mode: If bStart is TRUE, an EIB telegram is automatically sent when the data changes. MinSendTime can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If bStart is TRUE, EIB telegrams are sent at intervals of CyclePolling or automatically when the data changes. The minimum interval between two EIB messages is set with MinSendTime. |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| uiData | UINT | The data value in UINT is automatically converted to an EIB 20CTET UNSIGN value. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() [▶ 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |



VAR OUTPUT

bBusy : BOOL; bError : BOOL;

iErrorID : EIB_ERROR_CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. bError goes TRUE at the same time. |

Requirements

| Development environment | required TC3 PLC library |
|---------------------------|--------------------------|
| TwinCAT from v3.1.4024.52 | Tc2_EIB from v3.4.2.0 |

4.2.5.7 EIB_3BIT_CONTROL_SEND

```
EIB_3BIT_CONTROL_SEND

— Group_Address bError —
bControl iErrorID —
byRange
— str_Rec
```

This function block sends a 4-bit EIB value to the set group address. An IEC61131-3 BOOL and a BYTE value are available as input value. The data are only transferred if there is a change in one of the two data types. If the value changes again within 200 milliseconds, new data are only sent to the EIB device after another 200 millisecond has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR_INPUT
Group_Address : EIB_GROUP_ADDR;

bControl : BOOL; byRange : BYTE; str_Rec : EIB_REC;

END_VAR

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | | Group address to which the data are sent. This group address must be entered in the filters! |
| bControl | BOOL | Value range TRUE/FALSE |
| byRange | BYTE | Value range 000b111b |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [• 14] must be linked. |

Outputs

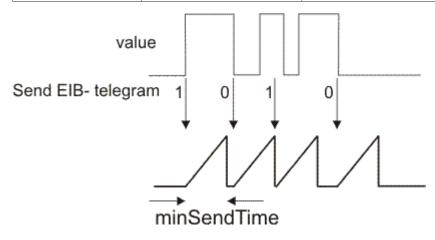
VAR_OUTPUT bError : BOOL;

iErrorID : EIB ERROR CODE;

END_VAR

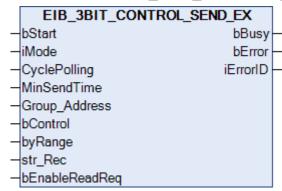


| Name | Туре | Description |
|----------|-----------------------|---|
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. bError goes TRUE at the same time. |



| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.8 EIB_3BIT_CONTROL_SEND_EX



This function block sends a 4-bit EIB value to the set group address. An IEC61131-3 BOOL and a BYTE value are available as input value. The data can be sent in Manual, Polling or OnChange depending on the set mode (*iMode*).

Inputs

```
VAR_INPUT
bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
bControl : BOOL;
byRange : BYTE;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR
```



| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | Activates the function block. The function block starts operating depending on the set mode (see <i>iMode</i>). |
| iMode | INT | 0 - With a positive edge at <i>bStart</i> , an EIB telegram is sent. If the output <i>bBusy</i> is FALSE again, the command is processed. 1 - Polling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> . 2 - OnChange mode: If <i>bStart</i> is TRUE, an EIB telegram is automatically sent when the data changes. <i>MinSendTime</i> can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> or automatically when the data changes. The minimum interval between two EIB messages is set with <i>MinSendTime</i> . |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| bControl | BOOL | Value range TRUE/FALSE |
| byRange | BYTE | Value range 000b111b |
| str_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [> 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |

VAR OUTPUT

bBusy : BOOL; bError : BOOL; iErrorID : EIB_ERROR_CODE;

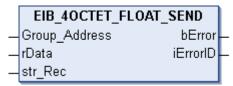
END_VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. bError goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4024.57 | Tc2_EIB from v3.4.3.0 |

EIB_4OCTET_FLOAT_SEND 4.2.5.9





This function block sends a 4-byte float EIB value to the set group address. An IEC61131-3 REAL value is available as input value. The data are only transferred if there is a change. If the value changes again within 1 second, new data are only sent to the EIB device after another second has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR_INPUT

Group Address : EIB GROUP ADDR;

rData : REAL; str_Rec : EIB_REC;

END VAR

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| rData | REAL | The data value in REAL. This is automatically converted to an EIB 20CTET FLOAT value. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [• 14] must be linked. |

Outputs

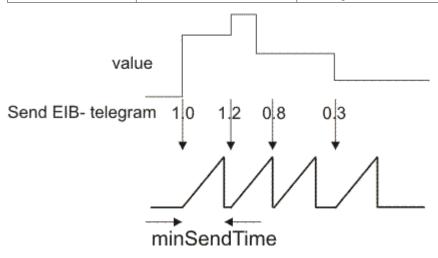
VAR_OUTPUT

bError : BOOL;

iErrorID : EIB ERROR CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |



Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.5.10 EIB_4OCTET_FLOAT_SEND_EX

```
EIB_4OCTET_FLOAT_SEND_EX

-bStart bBusy -

iMode bError -

-CyclePolling iErrorld -

-MinSendTime

-Group_Address

-rData

-str_Rec

-bEnableReadReq
```

This function block sends a 4-byte float EIB value to the set group address. An IEC61131-3 REAL value is available as input value. The data can be sent in Manual, Polling or OnChange mode (*iMode*).

Inputs

VAR_INPUT

bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#10m;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
rData : REAL;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR

| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | Activates the function block. The function block starts operating depending on the set mode (see <i>iMode</i>). |
| iMode | INT | 0 - With a positive edge at <i>bStart</i> , an EIB telegram is sent. If the output <i>bBusy</i> is FALSE again, the command is processed. 1 - Polling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> . 2 - OnChange mode: If <i>bStart</i> is TRUE, an EIB telegram is automatically sent when the data changes. <i>MinSendTime</i> can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> or automatically when the data changes. The minimum interval between two EIB messages is set with <i>MinSendTime</i> . |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| rData | REAL | Contains the user data of the received EIB telegram. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [> 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |



VAR OUTPUT

bBusy : BOOL; bError : BOOL;

iErrorID : EIB_ERROR_CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. bError goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.11 EIB_4OCTET_SIGN_SEND

```
EIB 4OCTET SIGN SEND
Group Address
uiData
                      iErrorID -
str_Rec
```

This function block sends a 4-byte sign EIB value to the set group address. An IEC61131-3 DINT value is available as input value. The data are only transferred if there is a change. If the value changes again within 1 second, new data are only sent to the EIB device after another second has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR INPUT Group_Address : EIB_GROUP_ADDR; : DINT; : EIB_REC; iData

str Rec

END VAR

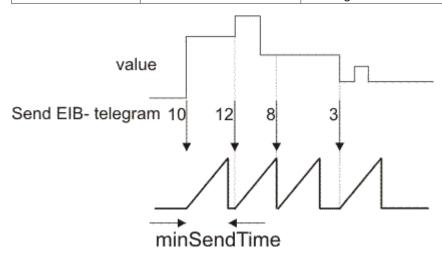
| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| uiData | DINT | The data value in DINT is automatically converted to an EIB 4OCTET SIGN value. |
| str_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [▶ <u>14]</u> must be linked. |

Outputs

VAR OUTPUT bError : BOOL; iErrorID : EIB_ERROR_CODE; END VAR

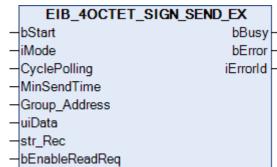


| Name | Туре | Description |
|----------|-----------------------|---|
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. bError goes TRUE at the same time. |



| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.12 EIB_4OCTET_SIGN_SEND_EX



This function block sends a 4-byte sign EIB value to the set group address. An IEC61131-3 DINT value is available as input value. The data can be sent in Manual, Polling or OnChange mode (*iMode*).

Inputs

```
VAR_INPUT
bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
uiData : DINT;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END VAR
```



| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | The function block is activated by a positive edge at this input. |
| iMode | INT | 0 - With a positive edge at bStart, an EIB telegram is sent. If the output bBusy is FALSE again, the command is processed. 1 - Polling mode: If bStart is TRUE, EIB telegrams are sent at intervals of CyclePolling. 2 - OnChange mode: If bStart is TRUE, an EIB telegram is automatically sent when the data changes. MinSendTime can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If bStart is TRUE, EIB telegrams are sent at intervals of CyclePolling or automatically when the data changes. The minimum interval between two EIB messages is set with MinSendTime. |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| uiData | DINT | The data value in DINT is automatically converted to an EIB 4OCTET SIGN value. |
| str_Rec | EIB REC [▶ 76] | The data structure with which the function block <u>KL6301()</u> |
| | | [▶ <u>14]</u> must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |

VAR OUTPUT

bBusy : BOOL; bError : BOOL;

iErrorID : EIB_ERROR_CODE;

END_VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.13 EIB_4OCTET_UNSIGN_SEND





This function block sends a 4-byte unsign EIB value to the set group address. An IEC61131-3 UDINT value is available as input value. The data are only transferred if there is a change. If the value changes again within 1 second, new data are only sent to the EIB device after another second has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR_INPUT

Group_Address : EIB_GROUP_ADDR;

uiData : UDINT; str_Rec : EIB_REC;

END VAR

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | EIB_GROUP_ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| uiData | UDINT | The data value in UDINT is automatically converted to an EIB 4OCTET UNSIGN value. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [\rightarrow 14] must be linked. |

Outputs

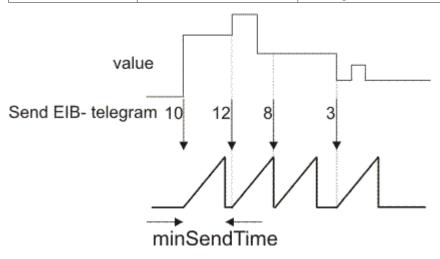
VAR_OUTPUT

bError : BOOL;

iErrorID : EIB ERROR CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bError | | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |



Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.5.14 EIB_4OCTET_UNSIGN_SEND_EX

```
EIB_4OCTET_UNSIGN_SEND_EX

-bStart bBusy -

-iMode bError -

-CyclePolling iErrorID -

-MinSendTime

-Group_Address

-uiData

-str_Rec

-bEnableReadReq
```

This function block sends a 4-byte Unsign EIB value to the set group address. An IEC61131-3 UDINT value is available as input value. The data can be sent in Manual, Polling or OnChange depending on the set mode (*iMode*).

Inputs

VAR_INPUT

bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
uiData : UDINT;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR

| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | The function block is activated by a positive edge at this input. |
| iMode | INT | 0 - With a positive edge at <i>bStart</i> , an EIB telegram is sent. If the output <i>bBusy</i> is FALSE again, the command is processed. 1 - Polling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> . 2 - OnChange mode: If <i>bStart</i> is TRUE, an EIB telegram is automatically sent when the data changes. <i>MinSendTime</i> can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> or automatically when the data changes. The minimum interval between two EIB messages is set with <i>MinSendTime</i> . |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| uiData | UDINT | The data value in UDINT is automatically converted to an EIB 4OCTET UNSIGN value. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() [▶ 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |



VAR OUTPUT

bBusy : BOOL; bError : BOOL;

iErrorID : EIB_ERROR_CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4024.57 | Tc2_EIB from v3.4.3.0 |

4.2.5.15 EIB_8BIT_SIGN_SEND

```
EIB 8BIT SIGN SEND
Group Address
                        bError
iData
                       iErrorID -
Scaling_Mode
str_Rec
```

This function block sends a 8-bit EIB value to the set group address. An IEC61131-3 INT value is available as input value. Scaling Mode can be used to scale the input data value. The data are only transferred if there is a change in the data value. If the value changes again within 1 second, new data are only sent to the EIB device after "minSendTime" has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR INPUT Group_Address : EIB_GROUP_ADDR; iData : INT;
Scaling_Mode : INT;
str_Rec : EIB_REC;
ND VAR

END VAR

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| iData | INT | Data to be sent. Value range depending on Scaling_Mode. |
| Scaling_Mode | INT | 0 - 0100 [%] 1 - 0360 [°] 2 - 0255 |
| str_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [> <u>14</u>] must be linked. |

Outputs

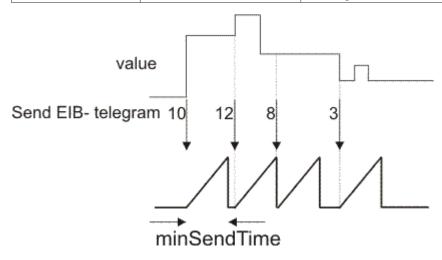
VAR OUTPUT bError : BOOL;

iErrorID : EIB_ERROR_CODE;

END_VAR



| Name | Туре | Description |
|----------|-----------------------|---|
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |



| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.16 EIB_8BIT_SIGN_SEND_EX

```
EIB_8BIT_SIGN_SEND_EX

-bStart bBusy-
iMode bError -

- CyclePolling iErrorld -

iData -

Scaling_Mode -

MinSendTime -

Group_Address -

str_Rec -

bEnableReadReq
```

This function block sends a 8-bit EIB value to the set group address. An IEC61131-3 INT value is available as input value. *Scaling_Mode* can be used to scale the input data value. The data can be sent in Manual, Polling or OnChange mode (*iMode*).

Inputs

```
VAR_INPUT
bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
iData : INT;
Scaling_Mode : INT;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR
```



| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | The function block is activated by a positive edge at this input. |
| iMode | INT | 0 - With a positive edge at bStart, an EIB telegram is sent. If the output bBusy is FALSE again, the command is processed. 1 - Polling mode: If bStart is TRUE, EIB telegrams are sent at intervals of CyclePolling. 2 - OnChange mode: If bStart is TRUE, an EIB telegram is automatically sent when the data changes. MinSendTime can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If bStart is TRUE, EIB telegrams are sent at intervals of CyclePolling or automatically when the data changes. The minimum interval between two EIB messages is set with MinSendTime. |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| iData | INT | Data to be sent. Value range depending on Scaling_Mode. |
| Scaling_Mode | INT | 0 - 0100 [%] 1 - 0360 [°] 2 - 0255 |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| str_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block KL6301() [▶ 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |

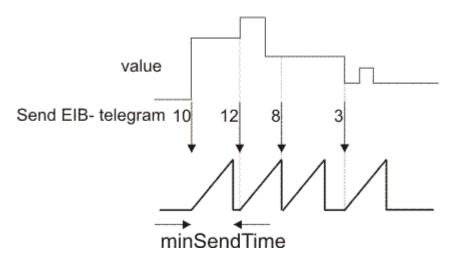
VAR_OUTPUT

bBusy : BOOL;
bError : BOOL;
iErrorID : EIB_ERROR_CODE;
END_VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

OnChange mode:





| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.17 EIB_8BIT_UNSIGN_SEND

```
EIB_8BIT_UNSIGN_SEND

— Group_Address bError —
byData iErrorID —
str_Rec
```

This function block sends a 8-bit EIB value to the set group address. An IEC61131-3 byte value is available as input value. The data are only transferred if there is a change in the data value. If the value changes again within 1 second, new data are only sent to the EIB device after "minSendTime" has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR_INPUT
Group_Address : EIB_GROUP_ADDR;
byData : BYTE;
str_Rec : EIB_REC;
END_VAR

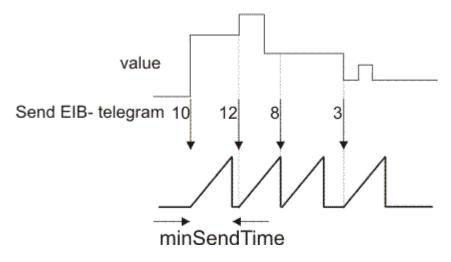
| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB_GROUP_ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| byData | BYTE | Data to be sent. Value range 0x000xFF. |
| str_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [• 14] must be linked. |

Outputs

VAR_OUTPUT
bError : BOOL;
iErrorID : EIB_ERROR_CODE;
END_VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |





| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.18 EIB_8BIT_UNSIGN_SEND_EX

```
EIB_8BIT_UNSIGN_SEND_EX
-bStart bBusy-
iMode bError -
CyclePolling iErrorld -
byData
-MinSendTime
-Group_Address
-str_Rec
-bEnableReadReq
```

This function block sends a 8-bit EIB value to the set group address. An IEC61131-3 byte value is available as input value. The data can be sent in Manual, Polling or OnChange mode (*iMode*).

Inputs

```
VAR_INPUT

bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
byData : BYTE;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR
```



| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | The function block is activated by a positive edge at this input. |
| iMode | INT | 0 - With a positive edge at bStart, an EIB telegram is sent. If the output bBusy is FALSE again, the command is processed. 1 - Polling mode: If bStart is TRUE, EIB telegrams are sent at intervals of CyclePolling. 2 - OnChange mode: If bStart is TRUE, an EIB telegram is automatically sent when the data changes. MinSendTime can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If bStart is TRUE, EIB telegrams are sent at intervals of CyclePolling or automatically when the data changes. The minimum interval between two EIB messages is set with MinSendTime. |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| byData | BYTE | Data to be sent. Value range 0x000xFF. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| str_Rec | <u>EIB_REC_[▶_76]</u> | The data structure with which the function block <u>KL6301()</u> [▶ 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |

VAR_OUTPUT

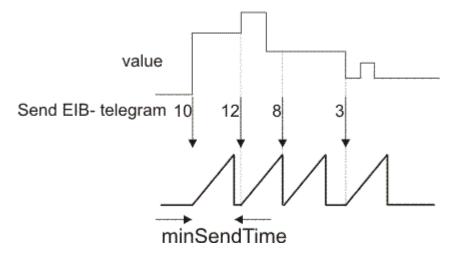
bBusy : BOOL; bError : BOOL; iErrorID : EIB_ERROR_CODE;

END_VAR

| Name | Туре | Description |
|----------|------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

OnChange mode:





| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.19 EIB_ALL_DATA_TYPES_SEND

```
EIB_ALL_DATA_TYPES_SEND

-bStart bBusy-
iMode bError -
-CyclePolling iErrorld -
DATA
-EIB_Data_Len
-PRIORITY
-MinSendTime
-Group_Address
-str_Rec
-bReadCommand
```

This function block sends a freely selectable EIB value to the set group address. An IEC61131-3 byte ARRAY variable is available as input value. The data are sent depending on the set mode.

Inputs

```
VAR_INPUT

bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#100ms;
DATA : ARRAY [1..14] OF BYTE;
EIB_Data_Len : USINT := 1;
PRIORITY : EIB_PRIORITY := EIB_PRIORITY_LOW;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
str_Rec : EIB_REC;
bReadCommand : BOOL;
END_VAR
```



| Name | Туре | Description |
|---------------|-----------------------|---|
| bStart | BOOL | If the mode is set to 0, an EIB telegram with positive edge is sent to <i>bStart</i> . |
| iMode | INT | 0 - Manual (Fig. 1) 1 - Polling (Fig. 2) 2 - OnChange (Fig. 3) |
| CyclePolling | TIME | If mode 1 is selected, an EIB telegram is sent at the set time, even if the data values have not changed. |
| DATA | ARRAY OF BYTE | EIB data values. |
| EIB_Data_Len | USINT | Length of EIB data, EIB values >=) 1 byte calculate the length +1, EIB values < 1 byte set length equal to 1 |
| PRIORITY | EIB PRIORITY [▶ 74] | EIB priority, Low, High, Alarm. |
| MinSendTime | TIME | If mode 2 is selected, data are only transferred in the event of a change. <i>MinSendTime</i> defines the minimum time between two EIB telegrams. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| str_Rec | EIB REC [▶ 76] | The data structure with which the function block <u>KL6301()</u> [• 14] must be linked. |
| bReadCommand | BOOL | A response can be sent to an EIB READ COMMAND. |

VAR OUTPUT

bBusy : BOOL; bError : BOOL; iErrorID : EIB_ERROR_CODE; END_VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. bError goes TRUE at the same time. |

Transfer mode

Mode 0 manual

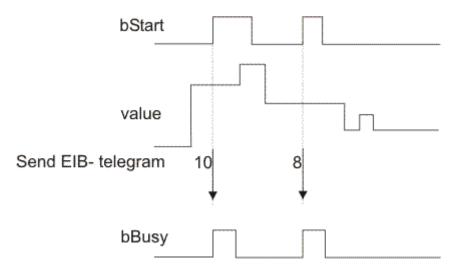




Figure 1

Mode 1 Polling

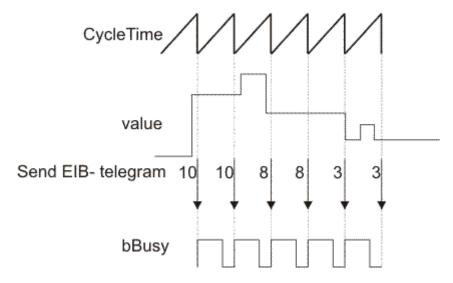


Figure 2

Mode 2 OnChange

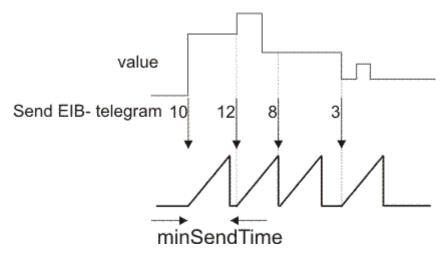


Abbildung 3

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.20 EIB_BIT_CONTROL_SEND





This function block sends a 2-bit EIB value to the set group address. Two IEC61131-3 BOOL variables are available as input values. The data are only transferred if there is a change in one of the two data types. If the value changes again within 200 milliseconds, new data are only sent to the EIB device after another 200 millisecond has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR_INPUT
Group Address : EIB GROUP ADDR;

bControl : BOOL; bValue : BOOL; str_Rec : EIB_REC;

END_VAR

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB_GROUP_ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| bControl | BOOL | Value range TRUE/FALSE. |
| bValue | BOOL | Value range TRUE/FALSE. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [14] must be linked. |

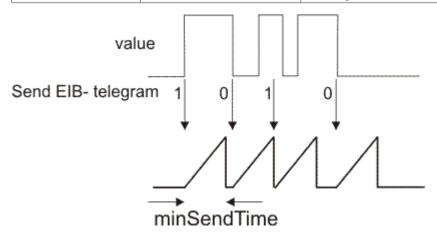
Outputs

VAR_OUTPUT : BOOL;

iErrorID : EIB_ERROR_CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. bError goes TRUE at the same time. |



Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.5.21 EIB_BIT_CONTROL_SEND_EX

```
EIB_BIT_CONTROL_SEND_EX

-bStart bBusy -
iMode bError -
-CyclePolling iErrorID -
-MinSendTime
-Group_Address
-bControl
-bValue
-str_Rec
-bEnableReadReq
```

This function block sends a 2-bit EIB value to the set group address. Two IEC61131-3 BOOL variables are available as input values. The data can be sent in Manual, Polling or OnChange depending on the set mode (*iMode*).

Inputs

VAR_INPUT
bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
bControl : BOOL;

bControl : BOOL; bValue : BOOL; str_Rec : EIB_REC; bEnableReadReq : BOOL;

END_VAR

| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | The function block is activated by a positive edge at this input. |
| iMode | INT | 0 - With a positive edge at <i>bStart</i> , an EIB telegram is sent. If the output <i>bBusy</i> is FALSE again, the command is processed. 1 - Polling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> . 2 - OnChange mode: If <i>bStart</i> is TRUE, an EIB telegram is automatically sent when the data changes. <i>MinSendTime</i> can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> or automatically when the data changes. The minimum interval between two EIB messages is set with <i>MinSendTime</i> . |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| bControl | BOOL | Value range TRUE/FALSE. |
| bValue | BOOL | Value range TRUE/FALSE. |
| str_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [▶ 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |



VAR OUTPUT

bBusy : BOOL; bError : BOOL;

iErrorID : EIB_ERROR_CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until <i>bBusy</i> is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. bError goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.22 **EIB_BIT_SEND**



This function block sends a 1-bit EIB value to the set group address. An IEC61131-3 BOOL variable is available as input value. The data are only transferred if there is a change in the data value. If the value changes again within 200 milliseconds, new data are only sent to the EIB device after another 200 millisecond has passed (see diagram). No new EIB telegram is sent if the value changes within the "min. send time" but falls back to the old, already sent value within the "min. send time".

Inputs

VAR_INPUT

Group_Address : EIB_GROUP_ADDR;

bData : BOOL; str_Rec : EIB_REC;

END VAR

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| bData | BOOL | Value range TRUE/FALSE. |
| str_Rec | <u>EIB_REC_[▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [• 14] must be linked. |

Outputs

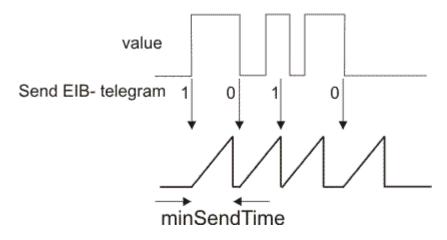
VAR_OUTPUT : BOOL;

iErrorID : EIB_ERROR_CODE;

END VAR

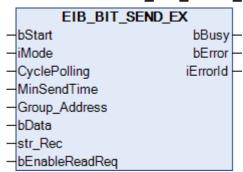
| Name | Туре | Description |
|----------|------|---|
| bError | | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |





| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.23 EIB_BIT_SEND_EX



This function block sends a Bool value to the set group address. The data can be sent in Manual, Polling or OnChange mode (*iMode*).

Inputs

```
VAR_INPUT

bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#10s;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
bData : BOOL;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR
```



| Name | Туре | Description |
|----------------|-----------------------|---|
| bStart | BOOL | Activates the function block. The function block starts operating depending on the set mode (see <i>iMode</i>). |
| iMode | INT | 0 - With a positive edge at <i>bStart</i> , an EIB telegram is sent. If the output <i>bBusy</i> is FALSE again, the command is processed. 1 - Polling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> . 2 - OnChange mode: If <i>bStart</i> is TRUE, an EIB telegram is automatically sent when the data changes. <i>MinSendTime</i> can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> or automatically when the data changes. The minimum interval between two EIB messages is set with <i>MinSendTime</i> . |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address from which the data were sent. This group address must be entered in the filters! |
| bData | BOOL | Value range TRUE/FALSE. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [> 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |

VAR_OUTPUT

bBusy : BOOL; bError : BOOL; iErrorID : EIB_ERROR_CODE;

END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until <i>bBusy</i> is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB_ERROR_CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.24 EIB_BIT_SEND_MANUAL





This function block sends a 1-bit EIB value to the set group address. An IEC61131-3 BOOL variable is available as input value. The data is sent when *bSend* has a positive edge. *bBusy* is set as long the function block is active. *bBusy* is set to FALSE once the EIB command was sent or if an error occurs. An error is indicated by setting the *bError* variable. The error code is indicated in the *iErrorID*.

Inputs

```
VAR_INPUT
Group_Address: EIB_GROUP_ADDR;
bSend: BOOL;
bData: BOOL;
str_Rec: EIB_REC;
END_VAR
```

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| bSend | BOOL | Positive edge sends EIB telegram |
| bData | BOOL | Value range TRUE/FALSE. |
| str_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [> 14] must be linked. |

Outputs

```
VAR_OUTPUT
bBusy : BOOL;
bError : BOOL;
iErrorID : EIB_ERROR_CODE;
END VAR
```

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until <i>bBusy</i> is FALSE again. |
| bError | | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.25 EIB_DATE_SEND

```
EIB_DATE_SEND

— Group_Address bError —

— wDay iErrorID —

— wMonth

— wYear

— str_Rec
```

This function block sends a 3-byte EIB value to the set group address. Three IEC61131-3 word variables are available as input values. The data are sent when the block is called for the first time the and then every 5 minutes.

Inputs

```
VAR_INPUT
Group_Address: EIB_GROUP_ADDR;
wDay: WORD;
```



wMonth : WORD;
wYear : WORD;
str_Rec : EIB_REC;
END_VAR

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB_GROUP_ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| wDay | WORD | Value range 131. |
| wMonth | WORD | Value range 112. |
| wYear | WORD | Value range 099. If a value greater 2000 entered, 2000 is automatically subtracted. For the year 2005, for example, only the 5 is transferred to the EIB node. |
| str_Rec | <u>EIB_REC_[▶_76]</u> | The data structure with which the function block <u>KL6301()</u> [> 14] must be linked. |

Outputs

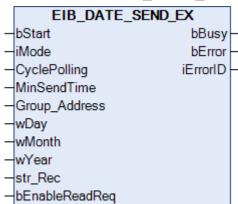
VAR_OUTPUT
bError : BOOL;
iErrorID : EIB_ERROR_CODE;
END VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bError | | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.26 EIB_DATE_SEND_EX



This function block sends a 3-byte EIB value to the set group address. Three IEC61131-3 word variables are available as input values. The data can be sent in Manual, Polling or OnChange depending on the set mode (*iMode*).

Inputs

VAR_INPUT
bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
wDay : WORD;



wMonth : WORD;
wYear : WORD;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;

END_VAR

| Name | Туре | Description |
|----------------|-----------------------|--|
| bStart | BOOL | The function block is activated by a positive edge at this input. |
| iMode | INT | 0 - With a positive edge at <i>bStart</i> , an EIB telegram is sent. If the output <i>bBusy</i> is FALSE again, the command is processed. 1 - Polling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> . 2 - OnChange mode: If <i>bStart</i> is TRUE, an EIB telegram is automatically sent when the data changes. <i>MinSendTime</i> can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> or automatically when the data changes. The minimum |
| | | interval between two EIB messages is set with MinSendTime. |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB_GROUP_ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| wDay | WORD | Value range 131. |
| wMonth | WORD | Value range 112. |
| wYear | WORD | Value range 099. If a value greater 2000 entered, 2000 is automatically subtracted. For the year 2005, for example, only the 5 is transferred to the EIB node. |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() [▶ 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |

Outputs

VAR OUTPUT

bBusy : BOOL; bError : BOOL; iErrorID : EIB_ERROR_CODE; END_VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until <i>bBusy</i> is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4024.57 | Tc2_EIB from v3.4.3.0 |



EIB_READ_SEND 4.2.5.27

| | EIB_READ_SEND | | |
|---|---------------|----------|---|
| _ | Group_Address | bError_ | _ |
| | bRead | iErrorID | _ |
| _ | str_Rec | bBusy | _ |

This function block sends a Read_Group_Req to the set group address. For receiving a Read_Group_Res the group address filter of the KL6301 has to be parameterized accordingly.

Inputs

VAR INPUT

Group_Address : EIB_GROUP_ADDR;

bRead : BOOL; str_Rec : EIB_REC; ND VAR

END_VAR

| Name | Туре | Description |
|---------------|-----------------------|---|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| bRead | BOOL | Positive edge starts the function block and sends a Read_Group_Req to the EIB device. To receive a response, the group address must be entered in the filter! |
| str_Rec | <u>EIB_REC [▶ 76]</u> | The data structure with which the function block KL6301() [▶ 14] must be linked. |

Outputs

VAR OUTPUT

bError

: BOOL;
: EIB_ERROR_CODE;
: BOOL; $\verb"iErrorID"$

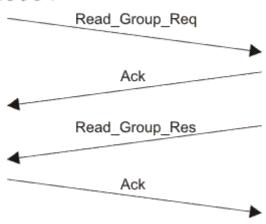
bBusy

END VAR

| Name | Туре | Description |
|----------|-----------------------|--|
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB_ERROR_CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |
| bBusy | | The function block is in operation as long as <i>bBusy</i> is set, i.e. TRUE. Please wait until <i>bBusy</i> changes to FALSE. |

EIB KL6301

EIB Device





| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.5.28 EIB_TIME_SEND

```
EIB_TIME_SEND

— Group_Address bError —

— wHoure iErrorID —

— wMinute

— wSecond

— str_Rec
```

This function block sends a 3-byte EIB value to the set group address. Three IEC61131-3 word variables are available as input values. The data are sent when the block is called for the first time the and then every 5 minutes.

Inputs

```
VAR_INPUT

Group_Address : EIB_GROUP_ADDR;

wHoure : WORD;

wMinute : WORD;

wSecond : WORD;

str_Rec : EIB_REC;

END_VAR
```

| Name | Туре | Description |
|---------------|-----------------------|--|
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| wHoure | WORD | Value range 023. |
| wMinute | WORD | Value range 059. |
| wSecond | WORD | Value range 059. |
| str_Rec | EIB REC [▶ 76] | The data structure with which the function block <u>KL6301()</u> [▶ 14] must be linked. |

Outputs

```
VAR_OUTPUT
bError : BOOL;
iErrorID : EIB_ERROR_CODE;
END VAR
```

| Name | Туре | Description |
|----------|-----------------------|---|
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.5.29 EIB_TIME_SEND_EX

```
EIB_TIME_SEND_EX

-bStart bBusy-
iMode bError -

- CyclePolling iErrorID -

- MinSendTime

- Group_Address

- wHour

- wMinute

- wSecond

- str_Rec

- bEnableReadReq
```

This function block sends a 3-byte EIB value to the set group address. Three IEC61131-3 word variables are available as input values. The data can be sent in Manual, Polling or OnChange depending on the set mode (*iMode*).

Inputs

```
VAR_INPUT
bStart : BOOL;
iMode : INT;
CyclePolling : TIME := t#500ms;
MinSendTime : TIME := t#1s;
Group_Address : EIB_GROUP_ADDR;
wDay : WORD;
wMonth : WORD;
wYear : WORD;
str_Rec : EIB_REC;
bEnableReadReq : BOOL;
END_VAR
```



| Name | Туре | Description |
|----------------|-----------------------|--|
| bStart | BOOL | The function block is activated by a positive edge at this input. |
| iMode | INT | 0 - With a positive edge at <i>bStart</i> , an EIB telegram is sent. If the output <i>bBusy</i> is FALSE again, the command is processed. 1 - Polling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> . 2 - OnChange mode: If <i>bStart</i> is TRUE, an EIB telegram is automatically sent when the data changes. <i>MinSendTime</i> can be used to parameterize the minimum interval between two EIB messages, in order to avoid excessive EIB network load. 3 - OnChangePolling mode: If <i>bStart</i> is TRUE, EIB telegrams are sent at intervals of <i>CyclePolling</i> or automatically when the data changes. The minimum interval between two EIB messages is set with <i>MinSendTime</i> . |
| CyclePolling | TIME | Polling time for <i>iMode</i> = 1 (polling mode). The minimum time is 200 ms. |
| MinSendTime | TIME | Minimum interval time, which has to elapse before a telegram is sent in OnChange mode. The minimum time is 200 ms. |
| Group_Address | EIB GROUP ADDR [▶ 74] | Group address to which the data are sent. This group address must be entered in the filters! |
| wHour | WORD | Value range 023. |
| wMinute | WORD | Value range 059. |
| wSecond | WORD | Value range 059. |
| str_Rec | <u>EIB REC [▶ 76]</u> | The data structure with which the function block <u>KL6301()</u> [▶ 14] must be linked. |
| bEnableReadReq | BOOL | Enables the execution of read commands. |

VAR_OUTPUT
bBusy : BOOL;
bError : BOOL;
iErrorID : EIB_ERROR_CODE;
END_VAR

| Name | Туре | Description |
|----------|-----------------------|---|
| bBusy | BOOL | The function block is active. Wait for new functions, until bBusy is FALSE again. |
| bError | BOOL | This output goes TRUE as soon as an error occurs. This error is described via the <i>iErrorID</i> variable. |
| iErrorID | EIB ERROR CODE [▶ 72] | This output outputs an error code in the event of an error. <i>bError</i> goes TRUE at the same time. |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4024.57 | Tc2 EIB from v3.4.3.0 |



4.2.6 Functions

| Function blocks | Description |
|-----------------|--|
| <u> </u> | Conversion of a 2-stage group address to a 3-stage group address |
| | Conversion of a 3-stage group address to a 2-stage group address |

4.2.6.1 F_CONV_2GROUP_TO_3GROUP

```
F_CONV_2GROUP_TO_3GROUP

—IN F_CONV_2GROUP_TO_3GROUP_
```

Conversion of a 2-stage group address to a 3-stage group address.

Inputs

```
VAR_INPUT
IN : EIB_GROUP_ADDR_2GROUP;
END VAR
```

| Name | Туре | Description |
|---------------|---------------------|-----------------------|
| Group_Address | EIB GROUP ADDR 2GRO | 2-stage group address |
| | <u>UP [▶ 75]</u> | |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.2.6.2 F_CONV_3GROUP_TO_2GROUP

```
F_CONV_3GROUP_TO_2GROUP
IN F_CONV_3GROUP_TO_2GROUP_
```

Conversion of a 3-stage group address to a 2-stage group address.

Inputs

```
VAR_INPUT
IN : EIB_GROUP_ADDR;
END_VAR
```

| Name | Туре | Description |
|------|-----------------------|-----------------------|
| IN | EIB GROUP ADDR [▶ 74] | 3-stage group address |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.2.7 Error codes



| Value (hex) | Value (dec) | Value (enum) | Description |
|-------------|----------------|--|--|
| 0x0000 | 0 | NO_EIB_ERROR | No error. |
| 0x0001 | 1 | WRONG_EIB_PHYS_ADDR | Outdated, no longer used. |
| 0x0002 | 2 | WRONG_EIB_GROUP_ADDR | The input variable EIB_GROUP_FILTER.GROUP_ADDR is faulty. Check GROUP_ADDR of your filters. MAIN must be less than 16, SUB_MAIN less than 8. |
| 0x0003 | 3 | WRONG_EIB_GROUP_LEN | The input variable EIB_GROUP_FILTER.GROUP_LEN is faulty. Incorrect filter length. Check the mode and the length of the filters. |
| 0x0004 | 4 | WRONG_EIB_NO_FILTER | No filter detected. Check your filter in EIB_GROUP_FILTER and the mode. |
| 0x0005 | 5 | WRONG_EIB_IDX_RANGE | The input variable idx has an incorrect value. |
| 0x000A | 10 | WRONG_EIB_FIRMWARE | The mode is not supported with this firmware. |
| 0x000B | 11 | WRONG_EIB_MODE | Unsupported mode during parameterization. Check <i>iMode</i> . Permitted values are 0, 1 and 100. |
| 0x000C | 12 | WRONG_MODE | The input variable <i>iMode</i> has an incorrect value. |
| 0x000E | 14 | WRONG_EIB_FIRMWARE_B1_NECES SARY | Firmware B1 or higher required. |
| 0x000F | 15 | WRONG_EIB_FIRMWARE_B3_NECES SARY | Firmware B3 or higher required. |
| 0x0014 | 20 | WRONG_EIB_DATA_LEN | Expected data length of the EIB telegram is wrong. Telegram is discarded. Check the EIB group addresses and/or the data type used. |
| 0x0015 | 21 | ERROR_EIB_SERVICE_NOT_SUPPORT | A EIB telegram is not supported. |
| 0x001E | 30 | KL6301_TP_TOGGLE_ERROR | Terminal did not respond for one second. Check the connection with the KL6301. Is it still busy with data exchange? |
| 0x001F | 31 | TIME_OUT | The terminal fails to respond during parameterization. Check the connection with the KL6301. |
| 0x0020 | 32 | KL6301_NO_RESPONSE_FROM_TER MINAL | No connection to KL6301. Either terminal not available or mapping incorrect. |
| 0x0028 | 40 | ERROR_SEND_8BIT_WRONG_Scaling _Mode | Incorrect or unsupported Scaling mode. |
| 0x0064 | 100 | ERROR_EIB_PHY_ADDR_NOT_SUPPORT | Physical addressing not permitted. |
| 0x0065 | 101 | ERROR_EIB_WRITE_DATA | Outdated. No longer used. |
| 0x0066 | 102 | MONITOR_MODE_LEN_IS_NOT_OK_ MUST_0 | For Monitor mode the filter length must be 0. |
| 0x0067 | 103 | MONITOR_MODE_ADDR_IS_NOT_OK _MUST_0 | For Monitor mode the addresses must be 0. |
| 0x0068 | 104 | WATCHDOG_ERROR_NO_SEND | Data transfer not possible. The group address for which the data transfer has failed can be found in the local variable "NotSendGroup" of function block KL6301. |
| 0x0BBB | 3003 | ERROR_EIB_NO_ACK | No ACK received. |
| 0xFAFB | 64251 | ERROR_EIB_NO_COM_TO_TP | No communication with the EIB hardware. |
| 0x0FCC | 4044 | ERROR_TP_TEMP_WARNING | Temperature in KL6301 exceeded. |
| 0x17CC | 6092 | ERROR_TP_PROTOCOL_ERROR | Protocol error in EIB hardware. |



| Value (hex) | Value (dec) | Value (enum) | Description |
|----------------|----------------|----------------------------|--|
| 0x27CC | 10188 | ERROR_TP_TRANSMITTER_ERROR | Protocol error in EIB hardware. |
| 0x47CC | 18380 | ERROR_TP_RECEIVE_ERROR | Protocol error in EIB hardware. |
| 0x87CC | 34764 | ERROR_TP_SLAVE_COLLISION | Too many collisions in the EIB hardware. Reduce the EIB load. |

4.3 DUTs

4.3.1 Enums

| Data types | Description |
|-----------------------|-----------------------|
| EIB ERROR CODE [▶ 72] | Error Messages |
| EIB PRIORITY [▶ 74] | EIB telegram priority |

4.3.1.1 EIB_ERROR_CODE

Library error messages.

```
TYPE EIB ERROR CODE :
   NO EIB ERROR
                                                              := 1,
:= 2,
   WRONG_EIB_PHYS_ADDR
  WRONG EIB GROUP ADDR
   WRONG EIB GROUP LEN
                                                             := 3,
  WRONG_EIB_NO_FILTER
WRONG_EIB_IDX_RANGE
                                                              := 4,
                                                             := 5,
                                                            := 10,
   WRONG_EIB_FIRMWARE
                                                              := 11,
   WRONG EIB MODE
   WRONG MODE
                                                            := 12,
   WRONG_EIB_FIRMWARE_B1_NECESSARY := 14,
WRONG_EIB_FIRMWARE_B3_NECESSARY := 15,
  TIME_OUT := 31, KL6301_NO_RESPONSE_FROM_TERMINAL := 32,
  TIME OUT
   ERROR SEND 8BIT WRONG Scaling Mode := 40,
   ERROR EIB PHY ADDR NOT SUPPORT := 100,
ERROR EIB WRITE DATA := 101,
  MONITOR MODE LEN IS NOT OK MUST 0 := 102, MONITOR MODE ADDR IS NOT OK MUST 0 := 103,
  MONITOR MODE ADDR IS NOT OK MUST 0 := 103,
WATCHDOG ERROR NO SEND := 104,
ERROR EIB NO ACK := 16#0BBB,
ERROR EIB NO COM TO TP := 16#FAFB,
ERROR TP TEMP WARNING := 16#0FCC,
ERROR TP PROTOCOL ERROR := 16#17CC,
ERROR TP TRANSMITTER ERROR := 16#27CC,
ERROR TP RECEIVE ERROR := 16#47CC,
ERROR TP SLAVE COLLISION := 16#87CC
END TYPE
```



| Name | Description |
|--|---|
| NO_EIB_ERROR | No error. |
| WRONG_EIB_PHYS_ADDR. | Outdated, no longer used. |
| WRONG_EIB_GROUP_ADD R | The input variable <i>EIB_GROUP_FILTER.GROUP_ADDR</i> is faulty. Check <i>GROUP_ADDR</i> of your filters. MAIN must be less than 16, <i>SUB_MAIN</i> less than 8. |
| WRONG_EIB_GROUP_LEN | The input variable <i>EIB_GROUP_FILTER.GROUP_LEN</i> is faulty. Incorrect filter length. Check the mode and the length of the filters. |
| WRONG_EIB_NO_FILTER | No filter detected. Check your filter in <i>EIB_GROUP_FILTER</i> and the mode. |
| WRONG_EIB_IDX_RANGE | The input variable <i>idx</i> has an incorrect value. |
| WRONG_EIB_FIRMWARE | The mode is not supported with this firmware. |
| WRONG_EIB_MODE | Unsupported mode during parameterization. Check <i>iMode</i> . Permitted values are 0, 1 and 100. |
| WRONG_MODE | The input variable <i>iMode</i> has an incorrect value. |
| WRONG_EIB_FIRMWARE_ B1_NECESSARY | Firmware B1 or higher required. |
| WRONG_EIB_FIRMWARE_ B3_NECESSARY | Firmware B3 or higher required. |
| WRONG_EIB_DATA_LEN | Expected data length of the EIB telegram does not match. Telegram is discarded. Check the EIB group addresses and/or the data type used. |
| ERROR_EIB_SERVICE_NO T_SUPPORT | A EIB telegram is not supported. |
| KL6301_TP_TOGGLE_ERR OR | Terminal did not respond for 1 second. Check the connection with the KL6301. Is it still busy with data exchange? |
| TIME_OUT | The terminal fails to respond during parameterization. Check the connection with the KL6301. |
| KL6301_NO_RESPONSE_F ROM_TERMINAL | No connection to KL6301. Either the terminal does not exist or the mapping is wrong. |
| ERROR_SEND_8BIT_WRO NG_Scaling_Mode | Incorrect or unsupported Scaling mode. |
| ERROR_EIB_PHY_ADDR_N OT_SUPPORT | Physical addressing not permitted. |
| ERROR_EIB_WRITE_DATA | Outdated, no longer used. |
| MONITOR_MODE_LEN_IS_ NOT_OK_MUST_0 | For Monitor mode the filter length must be 0. |
| MONITOR_MODE_ADDR_IS _NOT_OK_MUST_0 | For Monitor mode the addresses must be 0. |
| WATCHDOG_ERROR_NO_ SEND | Data transfer not possible. The group address for which the data transfer has failed can be found in the local variable "NotSendGroup" of function block KL6301. |
| ERROR_EIB_NO_ACK | No ACK received. |
| ERROR_EIB_NO_COM_TO _TP | No communication with the EIB hardware. |
| ERROR_TP_TEMP_WARNI NG | Temperature in KL6301 exceeded. |
| ERROR_TP_PROTOCOL_E RROR | Protocol error in EIB hardware. |
| ERROR_TP_TRANSMITTER _ERROR | Protocol error in EIB hardware. |
| ERROR_TP_RECEIVE_ERR | Protocol error in EIB hardware. |
| ERROR_TP_SLAVE_COLLI SION | Too many collisions in the EIB hardware. Reduce the EIB load. |



Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.3.1.2 EIB_PRIORITY

EIB telegram priority

```
TYPE EIB_PRIORITY :
(
EIB_PRIORITY_LOW := 1,
EIB_PRIORITY_HIGH := 2,
EIB_PRIORITY_ALARM := 3
)
END_TYPE
```

| Name | Description |
|--------------------|----------------|
| EIB_PRIORITY_LOW | Priority low |
| EIB_PRIORITY_HIGH | Priority high |
| EIB_PRIORITY_ALARM | Priority alarm |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.3.2 Structure

| Data types | Description |
|------------------------------|--|
| EIB GROUP ADDR [▶ 74] | 3-stage group address |
| EIB GROUP ADDR 2GROUP [▶ 75] | 2-stage group address |
| EIB_GROUP_FILTER [▶ 75] | Group filter |
| EIB PHYS ADDR [▶ 75] | Physical address |
| EIB_REC [▶ 76] | Links the send and receive blocks with the block <i>KL6301</i> |

4.3.2.1 EIB_GROUP_ADDR

3-stage group address

```
TYPE EIB_GROUP_ADDR:
STRUCT
MAIN: BYTE;
SUB_MAIN: BYTE;
NUMBER: BYTE;
END_STRUCT
END_TYPE
```

| Name | Description |
|----------|-------------------------------|
| MAIN | Main group (value range 031) |
| SUB_MAIN | Middle group (value range 07) |
| NUMBER | Subgroup (value range 0255) |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.3.2.2 EIB_GROUP_ADDR_2GROUP

2-stage group address

```
TYPE EIB_GROUP_ADDR_2GROUP:
STRUCT
MAIN: BYTE;
SUB_MAIN: WORD;
END_STRUCT
END_TYPE
```

| Name | Description |
|----------|------------------------------|
| MAIN | Main group (value range 015) |
| SUB_MAIN | Subgroup (value range 02048) |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.3.2.3 EIB_GROUP_FILTER

Group filter

```
TYPE EIB_GROUP_FILTER:
STRUCT
GROUP_ADDR: EIB_GROUP_ADDR;
GROUP_LEN: WORD;
END_STRUCT
END_TYPE
```

| Name | Description |
|------------|---|
| GROUP_ADDR | Group address (see EIB GROUP ADDR [▶ 74]) |
| GROUP_LEN | iMode 0 - 063, iMode 1 - 031 |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.3.2.4 EIB_PHYS_ADDR

Physical address

```
TYPE EIB_PHYS_ADDR:
STRUCT

Area : BYTE := 1;
Line : BYTE := 2;
Device : BYTE := 3;
END_STRUCT
END_TYPE
```

| Name | Description |
|--------|-------------|
| Area | 015 |
| Line | 015 |
| Device | 0255 |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |



4.3.2.5 EIB REC

Links the send and receive function blocks with the function block KL6301.

```
TYPE EIB REC :
  Rec_Group
Rec_Len
                 : EIB_GROUP_ADDR;
                  : INT;
             : INT := 1;
  Rec_Idx
  Rec Data
                  : ARRAY[1..15] OF BYTE;
  Rec bWriteBusy : BOOL;
  Rec_bReadBusy : BOOL;
                 : BOOL;
: BOOL;
  Rec bReady
  Rec bError
  Rec_iErrorID : EIB_Error_Code;
pStr_Send : PVOID;
  Rec_Data_rec : BOOL;
  Rec Typ
                  : EIB Read Typ;
END STRUCT
END TYPE
```

| Name | Description | |
|----------------|---|--|
| Rec_Group | Group address (see EIB_GROUP_ADDR) | |
| Rec_Len | Length | |
| Rec_ldx | Index | |
| Rec_Data | Data bytes | |
| Rec_bWriteBusy | Data is written | |
| Rec_bReadBusy | Data is read | |
| Rec_bReady | Ready | |
| Rec_bError | This output goes TRUE as soon as an error occurs. This error is described via the Rec_iErrorID variable. | |
| Rec_iErrorID | This output outputs an error code in the event of an error (see EIB_ERROR_CODE). bError goes TRUE at the same time. | |
| pStr_Send | Pointer to the data to be sent. | |
| Rec_Data_rec | Signals reception of data. | |
| Rec Typ | Type of telegram. | |

Requirements

| Development environment | PLC library to include |
|---------------------------|------------------------|
| TwinCAT from v3.1.4020.14 | Tc2_EIB from 3.3.4.0 |

4.4 Integration into TwinCAT

4.4.1 KL6301 with CX5120

This example shows how to write a simple PLC program for EIB in TwinCAT and how to link it with the hardware. The task is to change the state of a switching output with a button.

Example: https://infosys.beckhoff.com/content/1033/tcplclib_tc2_eib/Resources/6165821835.zip



The TwinCAT project is available for download as *.zip file. This must first be unpacked locally so that the archive (*.tnzip file) is available for import into the TwinCAT project.

Hardware

Setting up the components

- 1x CX5120 Embedded PC
- 1x KL1104 four-channel digital input terminal (for the Set/Reset function)



- 1x KL6301 EIB terminal
- · 1x KL9010 end terminal

Set up the hardware and the EIB components as described in the associated documentation.

This example assumes that a Set button was connected to the first KL1104 input and a Reset button to the second, and that the EIB group address of the switching output is known.

Software

Creation of the PLC program

Create a new "TwinCAT XAE Project" and create a "Standard PLC Project". Add the Tc2_EIB library to the PLC project at "References".

Create a global variable list with the name GVL EIB and create the following variables:

```
VAR_GLOBAL

bSet

bReset

arrkL6301_IN

arrkL6301_OUT

stDataRec

END VAR

AT %I*: BOOL;

BYTE;

BOOL;

BYTE;

BOOL;

BOO
```

| Name | Туре | Description |
|---------------|-----------------------|---|
| bSet | BOOL | Input variable for the Set button. |
| bReset | BOOL | Input variable for the Reset button. |
| arrKL6301_IN | BYTE | Input variable for the EIB terminal. |
| arrKL6301_OUT | BYTE | Output variable for the EIB terminal. |
| stDataRec | <u>EIB_REC [▶ 76]</u> | Structure for the communication with EIB. |

All EIB function blocks must be called in the same task.

In the MAIN program (ST), call the function block <u>KL6301</u> [▶ 14] and create the following variables.

```
PROGRAM MAIN

VAR

fbKL6301 : KL6301;
iStep : INT;

END VAR
```

In the program part, the KL6301 is initially assigned a physical address and the filter for receiving EIB telegrams is configured. For more information see KL6301 [▶ 14].

```
0: // Initialising of the physical EIB address; has to be unique in the network
    fbKL6301.EIB PHYS ADDR.Area := 2; //EIB Address 2.3.4
    fbKL6301.EIB PHYS ADDR.Line := 3;
    fbKL6301.EIB_PHYS_ADDR.Device := 4;
// Configuration of filters for the group addresses
// Filter 1 1/1/0 LEN 63
    fbkL6301.EIB_GROUP_FILTER[1].GROUP_ADDR.MAIN:=1;
fbkL6301.EIB_GROUP_FILTER[1].GROUP_ADDR.SUB_MAIN:=1;
    fbKL6301.EIB GROUP FILTER[1].GROUP ADDR.NUMBER:=0;
    fbKL6301.EIB GROUP FILTER[1].GROUP LEN:=63;
// Filter 2 1/2/\overline{0} LEN \overline{63}
    fbKL6301.EIB_GROUP_FILTER[2].GROUP_ADDR.MAIN:=1;
     fbKL6301.EIB_GROUP_FILTER[2].GROUP_ADDR.SUB_MAIN:=2;
    fbKL6301.EIB GROUP FILTER[2].GROUP ADDR.NUMBER:=0;
    fbKL6301.EIB GROUP FILTER[2].GROUP LEN:=63;
//Filter 3 1/4/0 LEN 63
    fbKL6301.EIB GROUP FILTER[3].GROUP ADDR.MAIN:=1;
    fbkL6301.EIB_GROUP_FILTER[3].GROUP_ADDR.SUB_MAIN:=4;
fbkL6301.EIB_GROUP_FILTER[3].GROUP_ADDR.NUMBER:=0;
    fbkL6301.EIB_GROUP_FILTER[3].GROUP_LEN:=63;
    //Filter 4 3/1/0 LEN 63
    fbKL6301.EIB GROUP FILTER[4].GROUP ADDR.MAIN:=3;
    fbkL6301.EIB_GROUP_FILTER[4].GROUP_ADDR.SUB_MAIN:=1;
fbkL6301.EIB_GROUP_FILTER[4].GROUP_ADDR.NUMBER:=0;
    fbKL6301.EIB_GROUP_FILTER[4].GROUP_LEN:=63;
// bActivate: activates the configuration of the KL6301 and enables the further data exchange
  fbKL6301.bActivate :=TRUE;
```



```
IF fbKL6301.bReady THEN
        IF NOT fbKL6301.bError THEN
            iStep:=1; // EIB functionblock is now ready to send and receive
            iStep:=100; // EIB ERROR
        END IF
    END_IF
           // EIB functionblock is now ready to send and receive
1:
100:
             // optional error handling EIB ERROR
END CASE
//Call communication function block
fbKL6301(
    iMode:= 0, // 4 filter with 64 entries each
    KL6301 IN:= GVL EIB.arrKL6301 in,
    KL6301 OUT:= GVL EIB.arrKL6301 out,
    str Data Rec => GVL EIB.stDataRec);
//Call programs for reading and sending
EIB Send Prg();
EIB_Rec_Prg();
```

Create an EIB program called EIB_Send_Prg() (CFC), in which the function block <u>EIB_BIT_SEND [▶ 59]</u> is called.

Link the local variable *bData* with the global variables *bSet* and *bReset*, then with the input *bData* of the send block. Link the global variable *stDataRec* with *st_Rec*.

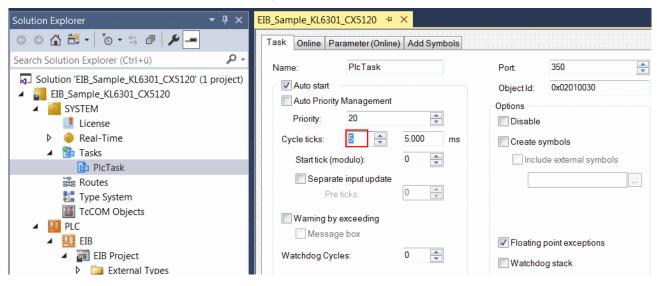


Create an EIB program called EIB_Rec_Prg() (CFC), in which the function block <u>EIB BIT REC [▶ 27]</u> is called. In the sample, the pressing of a button is read by the function block. Link the global variable *stDataRec* with *st Rec*.



Go to the task configuration and give the task a lower cycle time of 5 ms, for example.

Further conditions can be found in the description of the function block KL6301 [14].





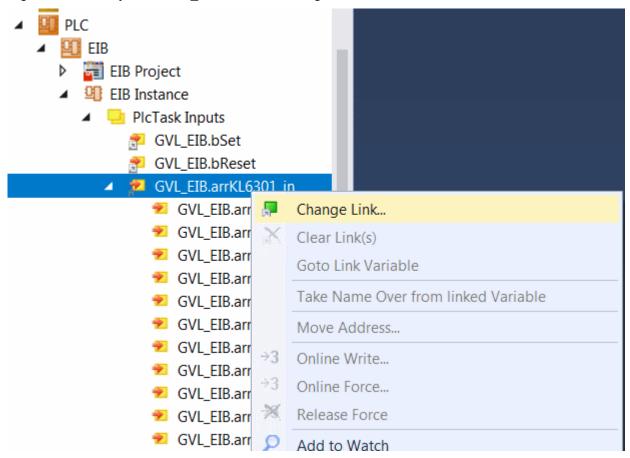
I/O configuration

Select the CX as target system and initiate a search for its hardware. In the project instance within the PLC section, you can see that the input and output variables are assigned to the task.

Now link the global variables with the inputs and outputs of the bus terminals.

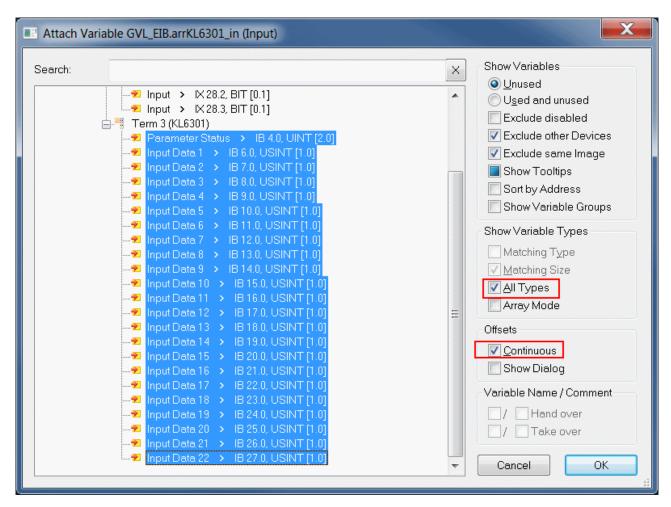
The linking of the EIB variables is described in detail below.

Right-click the array arrKL6301_in and select "Change Link".



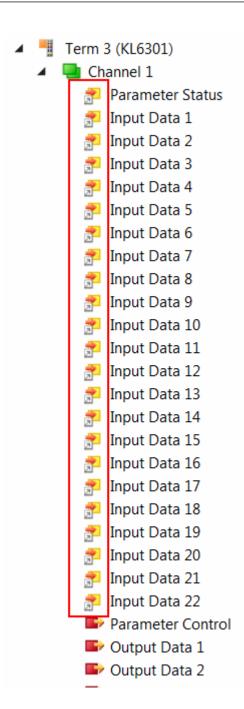
Under "I/O Configuration" select the terminal, select "All Types" and "Continuous", then select "ParameterStatus", "InputData1" to "InputData22" with the left mouse button and the >SHIFT< key. Then click "OK".





You can now check the link. To do this go onto the KL6301 and open it. All terminal data should now show a small arrow. If that is the case, then proceed in exactly the same way with the outputs.







5 Appendix

5.1 Support and Service

Beckhoff and their partners around the world offer comprehensive support and service, making available fast and competent assistance with all questions related to Beckhoff products and system solutions.

Download finder

Our <u>download finder</u> contains all the files that we offer you for downloading. You will find application reports, technical documentation, technical drawings, configuration files and much more.

The downloads are available in various formats.

Beckhoff's branch offices and representatives

Please contact your Beckhoff branch office or representative for <u>local support and service</u> on Beckhoff products!

The addresses of Beckhoff's branch offices and representatives round the world can be found on our internet page: www.beckhoff.com

You will also find further documentation for Beckhoff components there.

Beckhoff Support

Support offers you comprehensive technical assistance, helping you not only with the application of individual Beckhoff products, but also with other, wide-ranging services:

- support
- · design, programming and commissioning of complex automation systems
- · and extensive training program for Beckhoff system components

Hotline: +49 5246 963-157 e-mail: support@beckhoff.com

Beckhoff Service

The Beckhoff Service Center supports you in all matters of after-sales service:

- · on-site service
- · repair service
- · spare parts service
- · hotline service

Hotline: +49 5246 963-460 e-mail: service@beckhoff.com

Beckhoff Headquarters

Beckhoff Automation GmbH & Co. KG

Huelshorstweg 20 33415 Verl Germany

Phone: +49 5246 963-0
e-mail: info@beckhoff.com
web: www.beckhoff.com



More Information: www.beckhoff.com/te1000

Beckhoff Automation GmbH & Co. KG Hülshorstweg 20 33415 Verl Germany Phone: +49 5246 9630 info@beckhoff.com www.beckhoff.com

