BECKHOFF New Automation Technology

Documentation | EN

TwinSAFE User

Tool to modify the user administration of a TwinSAFE Logic

2025-03-31 | Version: 1.4.0

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1 Notes on the documentation

1.1 Disclaimer

Beckhoff products are subject to continuous further development. We reserve the right to revise the documentation at any time and without notice. No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams, and descriptions in this documentation.

In this documentation, we define all permissible use cases whose properties and operating conditions we can guarantee. The use cases we define are fully tested and certified. Any other use cases not described in this documentation, require the approval of Beckhoff Automation GmbH & Co KG.

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1.1.2 Limitation of liability

All components in this product as described in the operating instructions are delivered in a specific configuration of hardware and software, depending on the application regulations. Modifications and changes to the hardware and/or software configuration that go beyond the documented options are prohibited and nullify the liability of Beckhoff Automation GmbH & Co. KG.

The following is excluded from the liability:

- Failure to observe these operating instructions
- Improper use
- Use of untrained personnel
- Use of unauthorized spare parts

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1.1.4 Third-party trademarks

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1.2 Version numbers of the documentation

Version	Comment
1.4.0	• Editorially revised • Cover page updated • Information on TwinSAFE Logic components with long type designations added to the chapter "Target system" • Chapter “Error codes” updated • Note added in chapter "EtherCAT Mailbox Gateway"
1.3.0	• Description target system extended • TwinSAFE User version v7 added
1.2.0	• Safety parameters updated • Confirmation added
1.1.0	• Note added for login behavior
1.0.0	• First released version
0.0.1	• First draft

Currentness

Check whether you are using the current and valid version of this document. The current version can be downloaded from the Beckhoff homepage at http://www.beckhoff.com/twinsafe. In case of doubt, contact Support and Service [▶ 9].

Origin of the document

This original documentation is written in German. All other languages are derived from the German original.

Product features

The valid product properties are always those specified in the current manual. Further information given on the product pages of the Beckhoff homepage, in emails or in other publications is not authoritative.

1.3 References

No.	Version	Title / description
[1] - [5]	/	Not used.
[6]	2006/42/EC	**Regulation (EU) 2023/1230 of the European Parliament and of the Council of 14 June 2023 on machinery and repealing Directive 2006/42/EC of the European Parliament and of the Council and Council Directive 73/361/EEC** This regulation, also known as the Machinery Regulation, defines requirements for placing machinery and machine-like components, such as safety components, on the market.
[7]	2017	**EN 61511-1:2017** The standard serves as a basic safety standard for functional safety in the process industry and is tailored to its safety-related systems.

1.4 Staff qualification

These operating instructions are intended exclusively for trained specialists in control technology and automation with the relevant knowledge.

The trained specialist personnel must ensure that the applications and use of the described product meet all safety requirements. This includes all applicable and valid laws, regulations, provisions and standards.

Trained specialists

Trained specialists have extensive technical knowledge from studies, apprenticeships or technical training. Understanding of control technology and automation is available. Trained specialists can:

- Independently identify, avoid and eliminate sources of hazard.
- Apply relevant standards and directives.
- Implement specifications from accident prevention regulations.
- Evaluate, prepare and set up the workplaces.
- Evaluate, optimize and execute work independently.

1.5 Safety and instruction

Read the contents that refer to the activities you have to perform with the product. Always read the chapter For your safety in the operating instructions.

Observe the warnings in the chapters so that you can handle and work with the product as intended and safely.

Explanation of symbols

Various symbols are used for a clear arrangement:

1. The numbering indicates an action that should be taken.
- The bullet point indicates an enumeration.

[…] The square brackets indicate cross-references to other text passages in the document.

[1] The number in square brackets indicates the numbering of a referenced document.

The signal words used in the documentation are classified below.

Signal words

Warning of personal injuries

⚠ DANGER

Hazard with high risk of death or serious injury.

⚠ WARNING

Hazard with medium risk of death or serious injury.

⚠ CAUTION

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

Warning of damage to property or environment

NOTICE

Notes

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.

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1.7 Notes on information security

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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/secguide.

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 For your safety

Read this chapter containing general safety information. In addition, always observe the safety instructions and warnings in these operating instructions for your own safety, the safety of other persons and the safety of the product.

When working with control and automation products, many dangers can result from careless or incorrect use. Work particularly thoroughly, not under time pressure and responsibly towards other people.

2.1 Duty of care

The operator must comply with all the requirements and notes specified in these operating instructions in order to fulfill his duty of care. This includes in particular that you

- read the entire documentation of the TwinSAFE component
- comply with the provisions defined in the chapter Limitation of liability [▶ 5].
- only operate the TwinSAFE component when it is in perfect working order.
- provide the operating instructions in a legible condition and complete at the place of use of the TwinSAFE component.

2.2 General safety instructions

Intended use

Any use of the TwinSAFE components that goes beyond the intended use described is not permitted.

Use in machines according to the Machinery Regulation and EN 61511

Only use the TwinSAFE component in machines that comply with the Machinery Directive and the EN 61511 standard for the process industry. This will ensure safe operation.

Refer to the documents [6] and [7] under References [▶ 7].

Authentication

Ensure that only authorized people can create or adjust the user administration.

Project stop when creating or changing a user

When a user is created or changed, a login is performed on the TwinSAFE Logic component. Please note that the execution of the current Safety project on the TwinSAFE Logic is stopped during these logins.

3 System description

3.1 General

The TwinSAFE User tool is a software for creating, changing and deleting a user on a TwinSAFE Logic component independently of the development environment. You can also read and manage user rights and define user passwords.

A list of the supported TwinSAFE Logic components can be found in the chapter Target system [▶ 14].

3.2 System limits

The software TwinSAFE User is delivered as an executable program library and is available for the operating systems Windows and Linux. This library can be integrated into applications. The various functions of the program library are controlled via appropriate command line options.

3.3 Overview

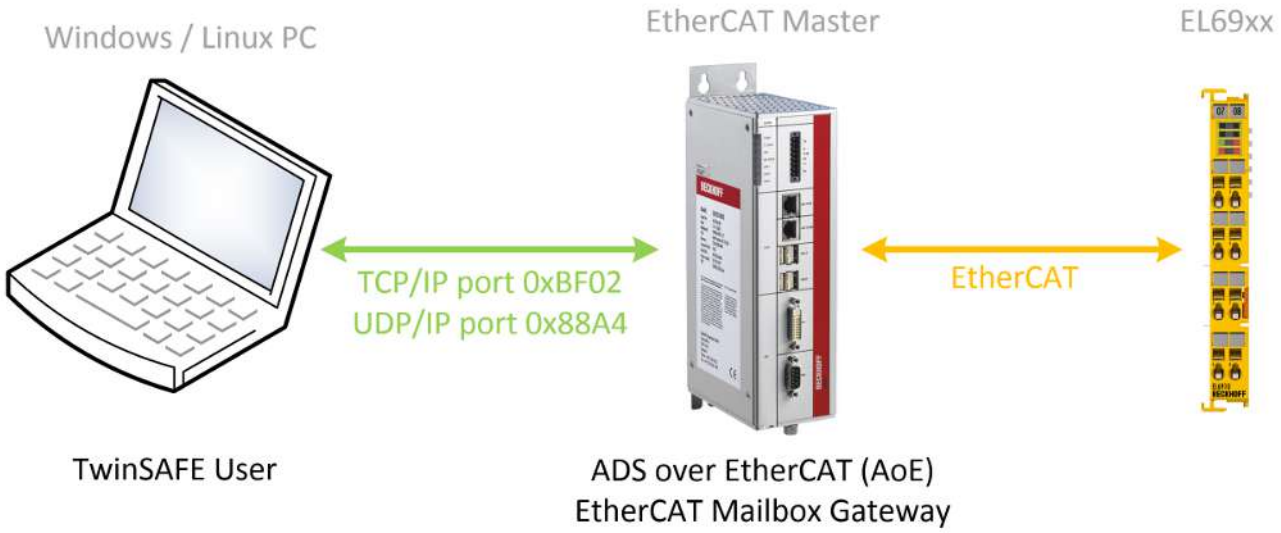


Fig. 1: TwinSAFE User Overview

4 Product description

4.1 Intended use

The TwinSAFE user is a program library for the user administration of TwinSAFE Logic components.

Operate the TwinSAFE User exclusively for the intended activities defined in this documentation, taking into account the prescribed values

⚠ WARNING

Improper use

Any use which exceeds the permissible written values or which does not observe other specifications from these operating instructions or other documents of the overall documentation is considered to be not in accordance with the intended use and is therefore prohibited.

This applies in particular to the use cases defined by Beckhoff Automation, which have been fully tested and certified and whose properties and operating conditions can be guaranteed. Use cases beyond this are regarded as inappropriate and require the approval of Beckhoff Automation.

Improper use will result in loss of safety and invalidation of certifications and approval.

4.2 System requirements

4.2.1 Operating System

To run the TwinSAFE User, the following system requirements must be met depending on the operating system.

4.2.1.1 Windows

No additional components are required for the operating system Windows 7 (32 bit).

The following table lists the different versions of the TwinSAFE User and the associated SHA checksums.

File name	Operating system	Version	SHA Checksum
TwinSAFE_User.exe	Win32	v5	SHA256: 8438b34b49e9149ba8ef0c6e06d3eb7b9820ecd9cca57ceb3893a6e8bbd90eda
		v7	SHA256: 157942661273d1005cf89b41d2908b51b835d9543f0d3e7a75a2baa7fcb12f9d

4.2.1.2 Linux

No additional components are required for the operating system Ubuntu 16.04.

The following table lists the different versions of the TwinSAFE User and the associated SHA checksums.

Filename	Operating system	Version	SHA Checksum
TwinSAFE_User.bin	Linux x86 64-Bit	v5	SHA256: 6365b18031705581519aef65e50c4af2a50a7987cc3a97d5fbd8278036a5dc76
		v7	SHA256: 493977c42d42fb2bb482657c1b2b0af16cb26fb450f4e2db42a60df0b8dd4493
TwinSAFE_User-i386.bin	Linux x86 32-Bit	v5	SHA256: d5a9d7971611f39107430862741280e1389ed22b32d34a1c118887237170b731
		v7	SHA256: 5866d701d12a7ab500a922f8b42c1210cde023bb0667e6ba6fd30579ab4a1222

4.2.2 Target system

The following table lists the supported TwinSAFE Logic components:

Product designation	SW version
EL6900	05 or newer (production as of week 02/2014) The argument of the newmode command line parameter is always specified here with 0x7C, as extended rights management is not available in the EL6900. This value corresponds to the user rights on the EL6900.
EL6910	01 or newer
EK1960	01 or newer
EL1918	01 or newer
EL2911	01 or newer
EP1957-0022	01 or newer
EJ6910	01 or newer
EJ1914	01 or newer
EJ1918	01 or newer
EJ2914	01 or newer
EJ2918	01 or newer
EJ1957	01 or newer

The components listed in the table above are directly supported in the current version of the TwinSAFE User.

Implementation of new TwinSAFE Logic components

If a new TwinSAFE Logic component is available that is not directly supported in the current version of the TwinSAFE User, it can be implemented using an additional configuration file.

To implement a new logic component, create an additional file "custom_terminals.csv" in the directory of the TwinSAFE User execution file. You can then fill these in the following syntax so that new components can be supported (lines 1 and 2 are fixed).

For TwinSAFE Logic components with long type designations, only use the first 15 characters of the designation in the csv file.

Using the example of a new logic component ELxxxx, which is based on the TwinSAFE Logic EL6910, the file must be extended as shown in line 5.

File: custom_terminals.csv

```
1
class;type
EL6910;EL6910
EL6910;EP1957-0022
EL6910;ELxxxx
```

Furthermore, you will always find an updated version of this configuration file on the Beckhoff website when new components are introduced without direct support from the TwinSAFE User.

4.2.3 Communication with the TwinSAFE Logic component

The software TwinSAFE User supports the following protocols for modifying the user administration on a TwinSAFE Logic component.

- ADS over EtherCAT (AoE)
- EtherCAT Mailbox Gateway

For successful communication with the TwinSAFE Logic component, the TwinSAFE User must be able to establish a connection with the EtherCAT master existing in the system. The following system requirements must be fulfilled for this:

4.2.3.1 ADS over EtherCAT (AoE)

Configure the EtherCAT master to accept AoE connections (according to ETG.1020) on port 0xBF02 (TCP/IP).

4.2.3.2 EtherCAT Mailbox Gateway

Configure the EtherCAT master to accept packets from the EtherCAT Mailbox Gateway (according to ETG.8200) on port 0x88A4 (UDP/IP).

For further information about the configuration of the EtherCAT Mailbox Gateway refer to chapter EtherCAT Mailbox Gateway.

4.3 Functioning

The tool TwinSAFE User is used to create, delete or modify a user on a TwinSAFE Logic component independently from the TwinCAT development environment.

The necessary data packets are transferred to the corresponding component via the existing EtherCAT master in the system. The functions of the TwinSAFE User are controlled via command line parameters.

4.3.1 Communication

The following parameters must be used to control communication.

Command line parameters	Description
--gw <IPv4 address>	Specification of the IPv4 address of the EtherCAT mailbox gateway or, in AoE mode, the IPv4 address of the EtherCAT master. As of version v5, the EtherCAT master can also be addressed via the host name in AoE mode.
--ams <NetId>	Specification of the AmsNetID, if ADS over EtherCAT (AoE) is to be used.
--localams <NetId>	if --ams is used the local AMSNetID can be specified. If the parameter is not used, the AmsNetID is formed from its own IP address + ".1.1".

4.3.2 Authentication

The following parameters must be used to authenticate a user on the TwinSAFE Logic.

Command line parameters	Description
--user <user name>	Name of the user with the appropriate rights to perform the desired function.
--pass <password>	Password of the user.

User management

Each TwinSAFE Logic component has its own user administration. Only users registered in the TwinSAFE Logic component can perform certain functions.

4.3.3 EtherCAT slave address

In order to be able to uniquely identify the TwinSAFE Logic component, the EtherCAT slave address must be specified.

Command line parameters	Description
--slave <EtherCAT address of the EtherCAT slave>	Specification of the EtherCAT slave address of the TwinSAFE Logic component.

4.3.4 Reading the user administration

The *list* command can be used to read out the user management currently available on the TwinSAFE Logic component. For this, the command line parameters --gw/--ams and --slave must be specified together with --list.

Command line parameters	Description
--list <*.csv file>	Retrieving the list of all users existing on the TwinSAFE Logic

Example

```
C:\>TwinSAFE_User.exe --gw 192.168.1.253 --slave 1001 --list output.csv
```

Structure of the csv format

The first line contains the version number of the used csv format and the second line the headings separated by a semicolon. In the next lines follows the respective user ID and the user separated by semicolons.

```
1
id;username
1;Administrator
2;JohnDoe
```

4.3.5 Add new user

A new user is added, in addition to the parameters described above, the --newuser, --newpass and --newmode parameters are specified.

Command line parameters	Description
--newuser <user name>	Username of the new user
--newpass <user password>	Password of the new user
--newmode <user rights>	User rights of the new user (given as 32-bit value in hexadecimal representation e.g. 0x0000007C) see also List of all available parameters [▶ 18]

Example

```
C:\>TwinSAFE_User.exe --gw 192.168.1.253 --user Administrator --pass TwinSAFE --slave 1001 --newuser
JohnDoe --newpass TwinCAT --newmode 0x7C
```

4.3.6 Delete user

A new user is deleted, in which only the --newuser parameter is specified in addition to the parameters described above.

Command line parameters	Description
--newuser <user name>	Username of the user to be deleted
--newpass <>	must not be specified
--newmode <>	must not be specified

Example

```
C:\>TwinSAFE_User.exe --gw 192.168.1.253 --user Administrator --pass TwinSAFE --slave 1001 --newuser
JohnDoe
```

4.3.7 Change user password

A user password is changed in which the parameters --newuser and --newpass are specified in addition to the parameters described above.

Command line parameters	Description
--newuser <user name>	Username of the user
--newpass <user password>	New password of the user
--newmode <>	must not be specified

Example

```
C:\>TwinSAFE_User.exe --gw 192.168.1.253 --user Administrator --pass TwinSAFE --slave 1001 --newuser
JohnDoe --newpass TwinSAFE
```

4.3.8 Change user rights

The user rights are changed by specifying the --newuser and --newmode parameters in addition to the parameters described above.

Command line parameters	Description
--newuser <user name>	Username of the user
--newpass <>	must not be specified
--newmode <user rights>	New rights of the user (given as 32-bit value in hexadecimal representation e.g. 0x0000007C) see also List of all available parameters [▶ 18]

Example

```
C:\>TwinSAFE_User.exe --gw 192.168.1.253 --user Administrator --pass TwinSAFE --slave 1001 --newuser
JohnDoe --newmode 0x78
```

4.4 List of all available parameters

Command line parameters	Description
--help	Displays the help screen
--gw <IPv4 address>	Specification of the IPv4 address of the EtherCAT mailbox gateway or, in AoE mode, the IPv4 address of the EtherCAT master
--ams <NetId>	Specification of the AmsNetID, if ADS over EtherCAT (AoE) is to be used.
--localams <local AMS Net ID>	When using --ams, the local AMSNetID can be specified here. If the parameter is not used, the AmsNetID is formed from own IP address + ".1.1".
--user <user name>	Name of the user. Typically, this is the *Administrator* user.
--pass <password>	Password of the administrator.
--slave <EtherCat address of the EtherCAT slave>	Specification of the EtherCAT slave address of the TwinSAFE Logic component.
--list <file name>	Together with the command parameters gw and slave: Saves the user management list as a CSV list in the specified file.
--newuser <user name>	User name of the user to be created or changed.
--newpass <user password>	Password of the user to be created or changed.
--newmode <user rights>	User rights (specified as 32-bit value in hex representation, e.g. 0x0000007C - see following table)

Arguments of the --newmode command

The following table contains information about the individual user rights and their bit offset within the 32-bit value used together with the --newmode command.

Bit offset	User right
0	reserved (0)
1	Creating or changing a user
2	Changing the user password
3	Download the TwinSAFE Logic program
4	Download the TwinSAFE Logic mapping data
5	Download the TwinSAFE Logic parameter data
6	Download the TwinSAFE Logic info data
8-15	reserved (0)
16	Customizing TwinSAFE groups
17-31	reserved (0)

EL6900

With the EL6900, the argument of the command line parameter --newmode must always be specified with 0x7C. This corresponds to the user rights of an EL6900 user.

4.5 Safety parameters

The tool TwinSAFE User is not safety relevant. It is classified as "T1" according to IEC 61508-3 / IEC 61131-6 as it does not generate outputs that directly or indirectly contribute to the executable code (including data) of the safety related system.

4.6 Error codes

The following error codes apply to the TwinSAFE User:

Error code	Return value	Meaning	Possible causes
ERR_NONE	(0)	No error.	• The action has been carried out successfully.
ERR_INVALID_PARAMETER	(1)	Invalid call parameter.	• The command line parameter was incorrect.
ERR_CORRUPT_FILE	(2)	The file does not exist or is corrupted.	• The project file is corrupted or the specified path is invalid.
ERR_AUTHENTICATION_ FAILED	(3)	The login has failed.	• The specified user name or password is invalid on the TwinSAFE Logic component.
ERR_SLAVE_NOT_FOUND	(4)	Unknown EtherCAT slave.	• No slave could be found for the specified EtherCAT address.
ERR_CORRUPT_ COMMUNICATION	(5)	Error during the data transmission.	• The communication connection was disconnected or timeout.

5 EtherCAT Mailbox Gateway

The EtherCAT Mailbox Gateway is required for access to TwinSAFE Logic components if ADS cannot be used for communication.

NOTICE

Avoid parallel access

Do not access the CoE data and the TwinSAFE User in parallel when using the Mailbox Gateway. The data may interfere with each other and errors may occur in the data transmission. The command is canceled.

Check the result and resend the command if necessary.

The following description shows examples of the settings you have to make to be able to communicate via the EtherCAT Mailbox Gateway.

For larger EtherCAT networks, it may be necessary to increase the number of permitted connections for the EtherCAT Mailbox Gateway in order to avoid communication problems or timeout messages.

The configuration for using the EtherCAT Mailbox Gateway consists of a TwinSAFE User PC, on which the TwinSAFE User is installed, and a TwinCAT PC, which serves as a gateway for forwarding the requests from the TwinSAFE User PC to the EtherCAT network and to the TwinSAFE Logic components.

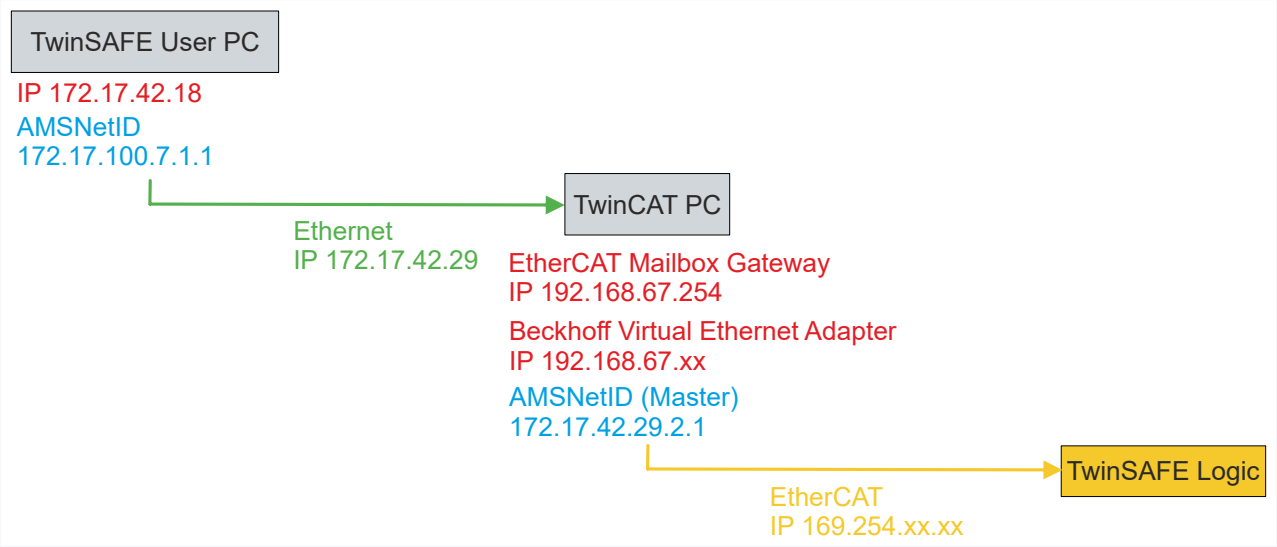


Fig. 2: EtherCAT Mailbox Gateway

5.1 Setting of the EtherCAT Mailbox Gateway

The EtherCAT Mailbox Gateway is activated via the advanced settings of the EtherCAT master. These can be found when selecting the EtherCAT master in the TwinCAT tree structure under the "EtherCAT" tab.

The settings for the EtherCAT Mailbox Gateway are summarized under the entry "EoE Support". Proceed as follows:

1. Enable "Virtual Ethernet Switch"
2. Enable "Connect to TCP/IP Stack"
3. Enable "IP Enable Router"
4. Enable "EtherCAT Mailbox Gateway"
5. Select IP address that is outside the previous networks
6. Restart TwinCAT PC

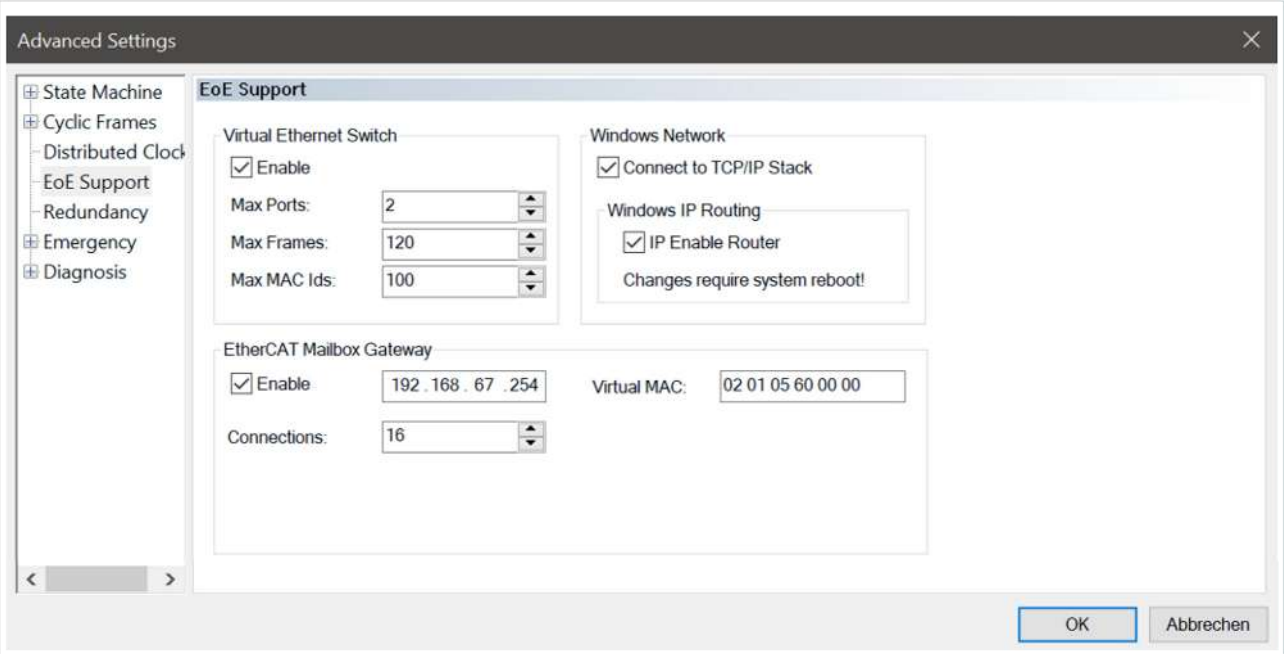


Fig. 3: EoE Support

NOTICE

Increase the number of connections

For larger EtherCAT networks, it may be necessary to increase the number of permitted connections for the EtherCAT Mailbox Gateway in order to avoid communication problems or timeout messages.

You can set the number of connections using the box marked in the following figure.

Fig. 4: EtherCAT Mailbox Gateway Connections

Check the correctness of the settings with the ping command locally on the TwinCAT computer. In this sample, the command is as follows:

```
ping 192.168.67.254
```

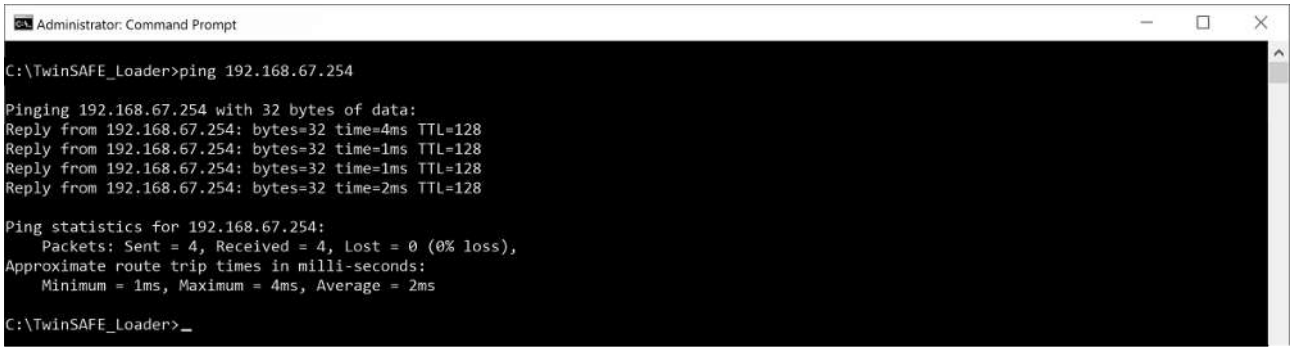
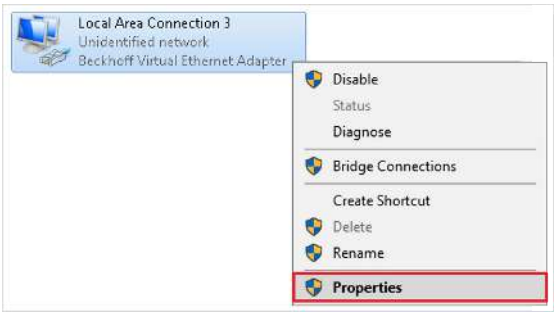


Fig. 5: Command "ping 192.168.67.254"

5.2 Beckhoff Virtual Ethernet Adapter

If the "ping" command has not yet returned a positive result, it is possible that configuration of the Beckhoff Virtual Ethernet Adapter is required first.

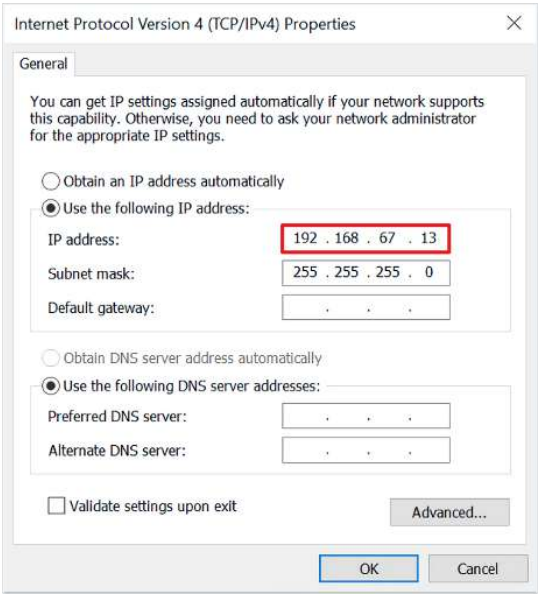
Proceed as follows:



1. Open network settings
2. Open context menu of the Beckhoff Virtual Ehternet Adapter
3. Select "Properties"

Virtual Ethernet Adapter

If there is no Virtual Ethernet Adapter in the system, you have the possibility to add an EoE device under TwinCAT, such as EL6601. Under the extended EtherCAT settings of this device you activate the Virtual Ethernet Port via EoE.



4. Select "Internet Protocol Version 4 (TCP/IPv4)"
5. Open "Properties"

In the properties of this network adapter you set a fixed IP address that is within the network range of the EtherCAT Mailbox Gateway.

In the figure, the IP address 192.168.67.13 with the subnet mask 255.255.255.0 is set as an example.

```
ping 192.168.67.254
```

6. Execute the ping command locally on the TwinCAT computer

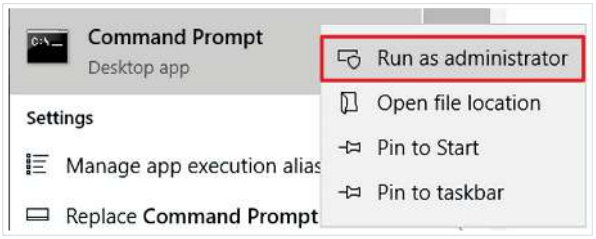
Use the "ping" command to check whether the settings you made earlier are correct.

5.3 Adding a route

After all settings have been made on the TwinCAT PC and the local execution of the "ping" command has been successful, add an IP route on the TwinSAFE User PC.

Adding the route is done using the "route add" command in the command line of a Windows command prompt.

Proceed as follows:



1. Start Windows command prompt as administrator

2. Add route using the following command

```
route add 192.168.67.0 mask 255.255.255.0 172.17.42.29
```

Fig. 6: Command "route add"

If the route creation was successful, the command returns an "OK!".

You can call up the current routes using the command "route print 192.168.*".

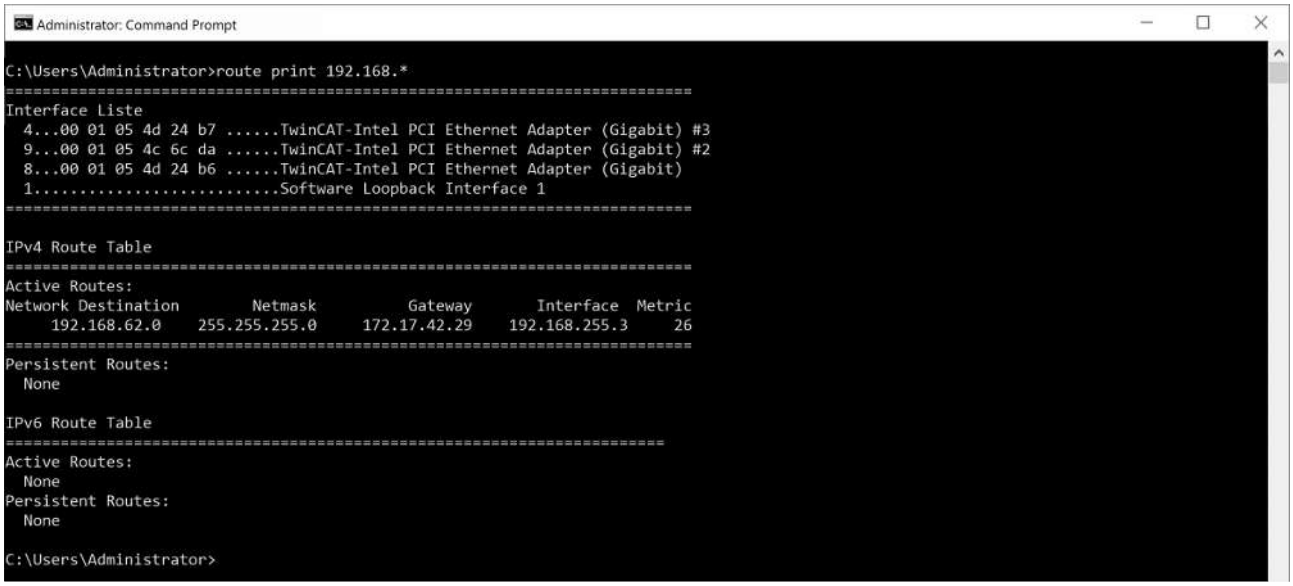


Fig. 7: Output of the "route print" command

To check whether the route was added successfully, send a ping command on the TwinSAFE User PC to the IP address of the EtherCAT Mailbox Gateway.

```
ping 192.168.67.254
```

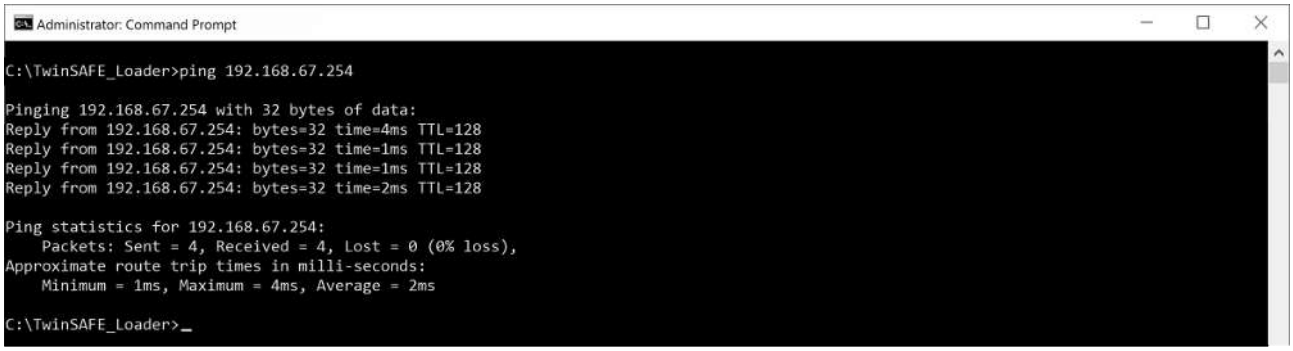


Fig. 8: Command "ping 192.168.67.254"

A positive response from the ping command is a prerequisite for using the Mailbox Gateway in the TwinSAFE User.

6 Appendix

6.1 Confirmation

KONFORMITÄTSBESTÄTIGUNG
LETTER OF CONFIRMATION

TwinSAFE User

Hersteller:
Manufacturer:

Beckhoff Automation GmbH & Co. KG

Hülshorstweg 20
D-33415 Verl

Prüf- und Zertifizierungsstelle:
Test- and certification body:

TÜV SÜD RAIL GmbH
Rail Automation
Barthstraße 16
D-80339 München

1. Allgemein / General

TwinSAFE User ist ein PC-basiertes Tool, um einen Benutzer auf einer TwinSAFE Logik-Komponente unabhängig von der Entwicklungsumgebung TwinCAT anzulegen, zu löschen oder zu verändern. Die dafür nötigen Datenpakete werden über den im System vorhandenen EtherCAT-Master an die entsprechende Komponente übertragen. Die Funktionen des TwinSAFE User werden über Kommandozeilenparameter gesteuert.

TwinSAFE User is a PC-based tool to create, edit or delete a user on a TwinSAFE logic component independent from the development environment TwinCAT. The required data packages are transferred to the relevant components over the EtherCAT master, which is available in the system. The functionalities of TwinSAFE User are controlled by command line parameters.

Version / Version

TwinSAFE User Version v7:

- **Linux x86 64-Bit** (TwinSAFE_User.bin):
  SHA256: `493977c42d42fb2bb482657c1b2b0af16cb26fb450f4e2db42a60df0b8dd4493`
- **Linux x86 32-Bit** (TwinSAFE_User-i386.bin):
  SHA256: `5866d701d12a7ab500a922f8b42c1210cde023bb0667e6ba6fd30579ab4a1222`
- **Win32** (TwinSAFE_user.exe):
  SHA256: `157942661273d1005cf89b41d2908b51b835d9543f0d3e7a75a2baa7fcb12f9d`

2. Prüfgrundlagen / Test bases

- EN 61508-1: 2010
- EN 61508-3: 2010 (Offline-Softwarewerkzeug Klasse T1 / software off-line support tool class T1)

3. Zusammenfassung / Summary

Gegen den Einsatz des Tools **TwinSAFE User** der Fa. Beckhoff Automation GmbH & Co. KG sprechen von Seiten TÜV SÜD Rail GmbH, Rail Automation, keine sicherheitstechnischen Bedenken.

TÜV SÜD Rail GmbH, Rail Automation, has no doubts as to the safety-related issues of the use of the tool **TwinSAFE User**.

TÜV SÜD Rail GmbH
July 19th, 2019

Digital unterschrieben von Guido Neumann
Datum: 2019.07.19 10:57:09 +02'00'

G. Neumann

Digital unterschrieben von Franz Seika
Datum: 2019.07.19 09:18:30 +02'00'

F. Seika

Dieser Bericht wurde auf Grundlage einer TÜV-internen technischen Beurteilung erstellt.
Dieser enthält das Ergebnis einer einmaligen Untersuchung an dem zur Prüfung vorgelegten Erzeugnis.

This Report was create on basis of a TÜV internal Review Report. It includes the result of a previous examination of the product submitted for examination.

Table of figures

Trademark statements

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