

Operating Instructions | EN

XTS Starter Kit with NCT Functionality

Linear product transport

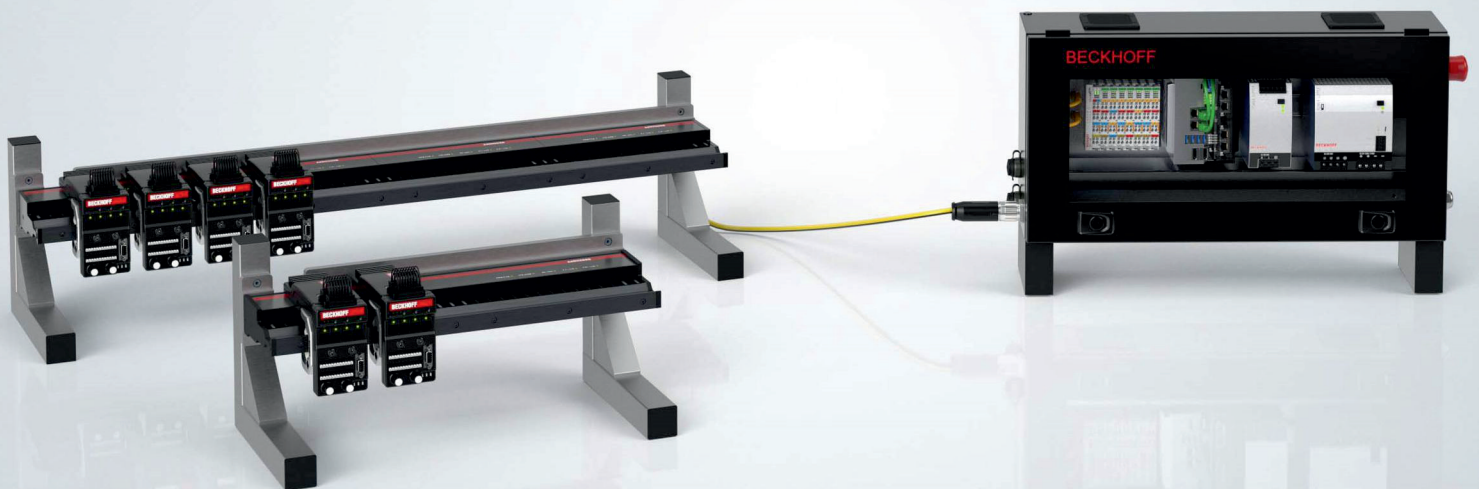


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1 Documentation notes

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.

1.1.1 Trademarks

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The use by third parties of other brand names or trademarks contained in this documentation may lead to an infringement of the rights of the respective trademark owner.

1.1.2 Patents

The EtherCAT technology is protected by patent rights through the following registrations and patents with the relevant applications and registrations in various other countries:

- EP1590927
- EP1789857
- EP1456722
- EP2137893
- DE102015105702



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

1.1.3 Limitation of liability

All components of this product described in the original operating instructions are delivered in a hardware and software configuration, depending on the application requirements. Modifications and changes to the hardware 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 comply with this documentation
- Improper use
- Use of untrained personnel
- Use of unauthorized spare parts

1.1.4 Copyright

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The copying, distribution and utilization of this document as well as the communication of its contents to others without express authorization is prohibited. Offenders will be held liable for the payment of damages.

We reserve all rights in the event of registration of patents, utility models and designs.

1.2 Version numbers



Provision of revision levels

On request we can send you a list of revision levels for changes to the documentation.

✉ motion-documentation@beckhoff.com

Origin of the document

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

Product features

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

1.3 Scope of the documentation

In addition to this documentation, the following documents are part of the complete documentation:

Translation of the original manual | XTS

Description of the mechanical and electrical parameters as well as all necessary information for the assembly of the XTS system.

Manual | TF5850

Description of the basic software package for the use and integration of the XTS in the TwinCAT 3 environment.

1.4 Staff qualification

This documentation is aimed at trained specialists working in control technology and automation who have knowledge of the applicable and required standards and directives.

Specialists must have knowledge of drive technology and electrical equipment as well as knowledge of safe working on electrical systems and machines. This includes knowledge of proper setup and preparation of the workplace as well as securing the working environment for other persons.

The documentation published at the time must be used for each installation and commissioning. The products must be used in compliance with all safety requirements, including all applicable laws, regulations, provisions and standards.

Instructed person

Instructed persons have a clearly defined task area and have been informed about the work to be carried out. Instructed persons are familiar with:

- the necessary protective measures and protective devices
- the intended use and risks that can arise from use other than for the intended purpose

Trained person

Trained persons meet the requirements for instructed persons. Trained persons have additionally received training from the machine builder or vendor:

- machine-specific or
- plant-specific

Trained specialists

Trained specialists have received specific technical training and have specific technical knowledge and experience. Trained specialists can:

- apply relevant standards and directives
- assess tasks that they have been assigned
- recognize possible hazards
- prepare and set up workplaces

Qualified electricians

Qualified electricians have comprehensive technical knowledge gained from a course of study, an apprenticeship or technical training. They have an understanding of control technology and automation. They are familiar with relevant standards and directives. Qualified electricians can:

- independently recognize, avoid and eliminate sources of danger
- implement specifications from the accident prevention regulations
- assess the work environment
- independently optimize and carry out their work

1.5 Safety and instruction

Read the contents that are related to the activities you will perform with the product. Always read the For your safety chapter in the documentation. Observe the warning notes in the chapters so that you can handle the product and work with it properly and safely.

1.6 Explanation of symbols

Various symbols are used for a clear arrangement:

- ▶ The triangle indicates instructions that you should execute.
- The bullet point indicates an enumeration.
- [...] The square brackets indicate cross-references to other text passages in the document.
- [1] The number in the square brackets refers to the position in the adjacent figure.
- [+] The plus sign in square brackets indicates ordering options and accessories.

In order to make it easier for you to find text passages, pictograms and signal words are used in warning notices:

DANGER

Failure to comply will result in serious or fatal injuries.

WARNING

Failure to comply may result in serious or fatal injuries.

CAUTION

Failure to comply may result in minor or moderate injuries.

NOTICE

Notes are used for important information on the product. The possible consequences of failure to observe these include:

- Product malfunctions
- Damage to the product
- Damage to the environment



Information

This symbol indicates information, tips, and notes for handling the product or the software.



Examples

This symbol shows examples of how to use the product or software.



Required tool

This symbol indicates a tool that is required for the following steps.

**Required accessories [⊕]**

This symbol shows the accessories required for the following steps. The accessories are not included in the scope of delivery and can be ordered from Beckhoff.

**Assembly material required**

This symbol shows the assembly material required for the following steps. The assembly material is not included in the scope of delivery and must be purchased separately.

**QR codes**

This symbol shows a QR code that you can scan to watch videos or animations. Internet access is required in order to use it.


1.7 Beckhoff Services

Beckhoff and its international partner companies offer comprehensive support and service.

 www.beckhoff.com/en-en/support/global-availability/

1.7.1 Support services

The Beckhoff Support offers technical advice on the use of individual Beckhoff products and system planning. The support engineers offer you competent assistance, for comprehension questions as well as for commissioning.

 +49 5246 963-157

 support@beckhoff.com

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1.7.2 Training offerings

Training in Germany takes place at the Beckhoff branches or, after consultation, at the customer's premises. Beckhoff offers both face-to-face and online training courses.


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 training@beckhoff.com

 www.beckhoff.com/en-en/support/training-offerings/

1.7.3 Service offerings

The Beckhoff service experts support you worldwide in all areas of after-sales service.


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1.7.4 Headquarters Germany


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 www.beckhoff.com/en-en/

A detailed overview of the Beckhoff locations worldwide can be found at:

 www.beckhoff.com/en-en/company/global-presence/

1.7.5 Downloadfinder

In the Download finder you will find configuration files, technical documentation and application reports to download.

 www.beckhoff.com/documentations

2 For your safety

Read this chapter containing general safety information. The chapters in these operating instructions also contain warning notices. Always observe the safety 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 General safety instructions

This chapter provides you with instructions on safety when handling the product. This product is not capable of stand-alone operation and is therefore categorized as an incomplete machine. The product must be installed in a machine or plant by the machine manufacturer. Read the documentation prepared by the machine manufacturer.

2.1.1 Before operation

Danger from magnetic fields

The magnetic fields of some of the components of the XTS are dangerous to:

- people fitted with cardiac pacemakers
- persons with magnetically conducting implants
- implanted and external defibrillators
- magnetic data storage devices, chip cards with magnetic strips and other electronic devices

Maintain a safety distance to all magnetic parts and prevent direct contact between magnetic parts and parts that are sensitive to interference.

Observe the requirements of BGV B 11 for electromagnetic fields (Germany) and applicable national regulations in other countries.

Use output voltages SELV / PELV

Operate all electronic modules and components in the drive system only with a SELV (Safety Extra Low Voltage) or PELV (Protective Extra Low Voltage) output voltage.

Keep the surroundings clean

Keep your workplace and the surrounding area clean. Ensure safe working.

Secure the control cabinet

When working on machines, secure the control cabinet against inadvertent power-up.

Do not use damaged components

Observe the specifications in the technical data during storage, transport and operation. Do not use damaged components.

Check safety pictograms

Check whether the designated pictograms are on the product. Replace missing or illegible stickers.

Observe tightening torques

Install connections and components in compliance with the specified tightening torques and check them regularly.

Earth electrical components or modules correctly

Do not touch electrical components or modules unless you are wearing protective ESD clothing. Only walk on conductive floors.

Only use original packaging for further processing

When shipping, transporting, storing and packing, use the original packaging or conductive materials.

2.1.2 During operation

Observe the GND concept

Special conditions need to be observed for the grounding of the XTS. In every case, read the chapter: Grounding of the power supply.

Do not work on live electrical parts

Ensure that the protective conductor is connected properly. Never disconnect electrical connections while they are live. Only work on the XTS when the voltage has dropped to < 10 V. Disconnect all components from the mains and secure against reconnection.

Do not touch hot surfaces

Check cooling of the surfaces with a thermometer. Do not touch the components during operation. Allow the components to cool down for at least 15 minutes after switching off.

Avoid overheating

Operate the components according to the technical specifications. Refer here to the chapter: "Technical data". Provide for adequate cooling and switch the components off immediately if the temperature is too high.

Do not touch any moving or rotating components

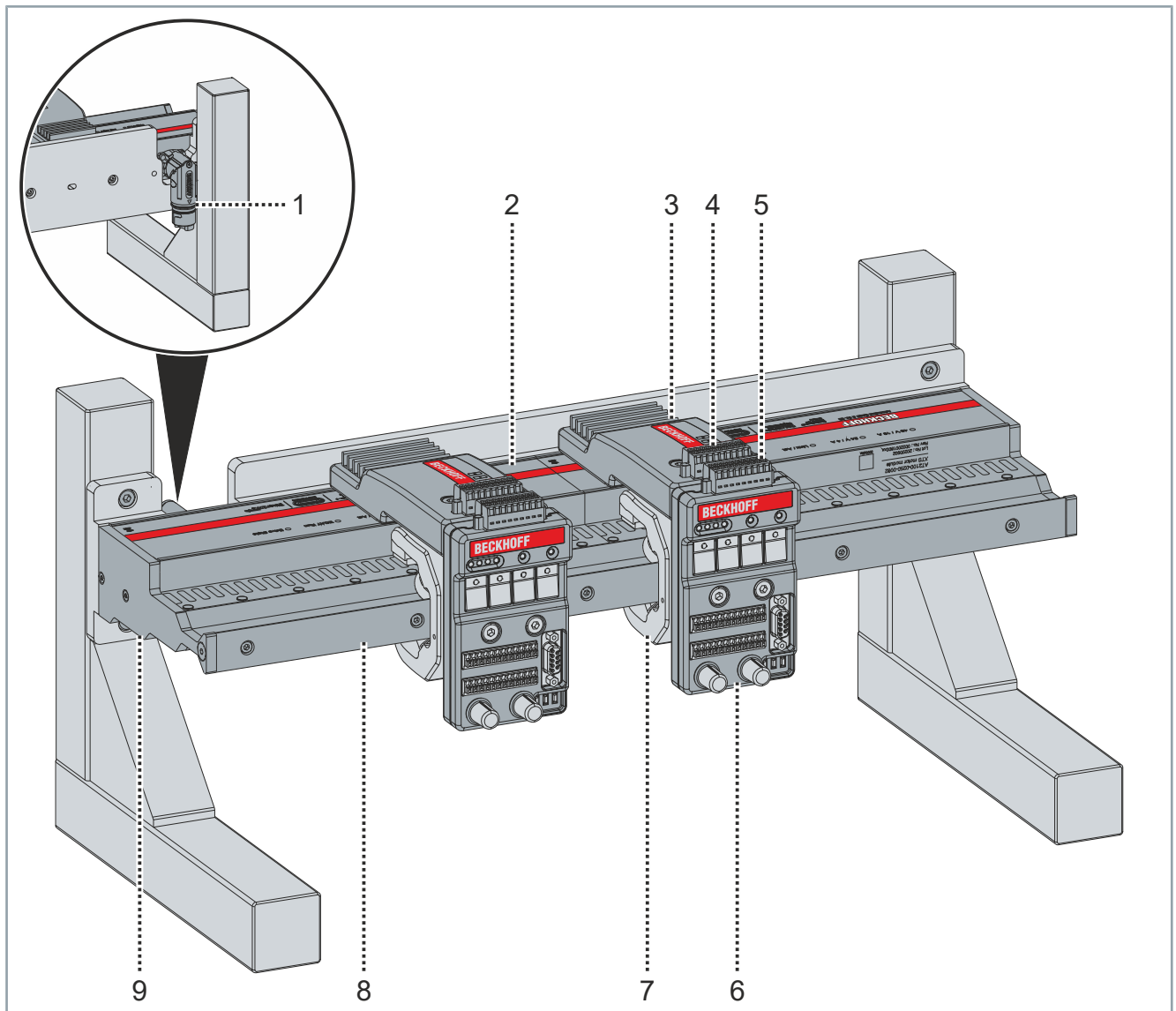
Do not touch any moving or rotating components. Fasten all parts or components on the machine or plant.

2.1.3 After operation

De-energize and switch off components before working on them

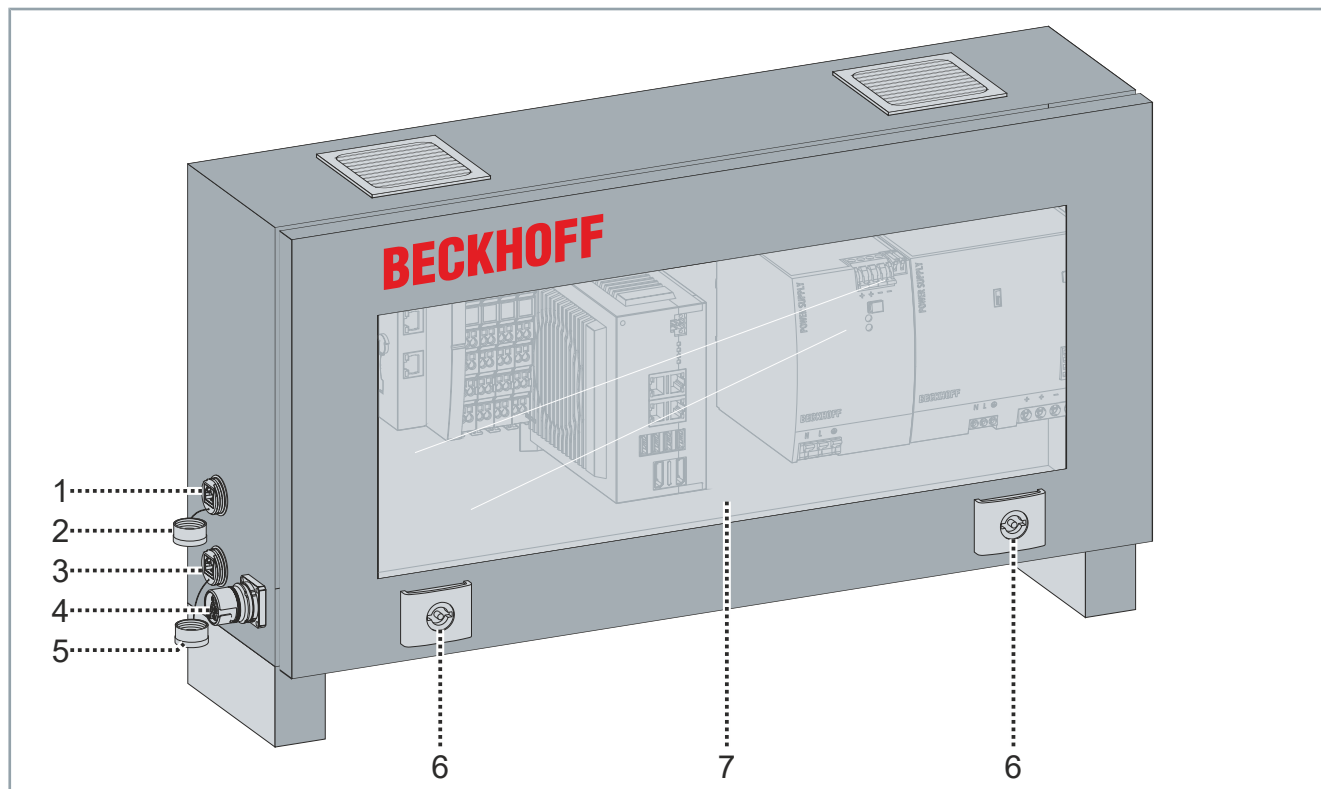
Carry out a voltage test and check all safety-relevant devices for functionality. Secure the working environment and the control cabinet against inadvertent power-up. See chapter: Decommissioning.

3 Product overview



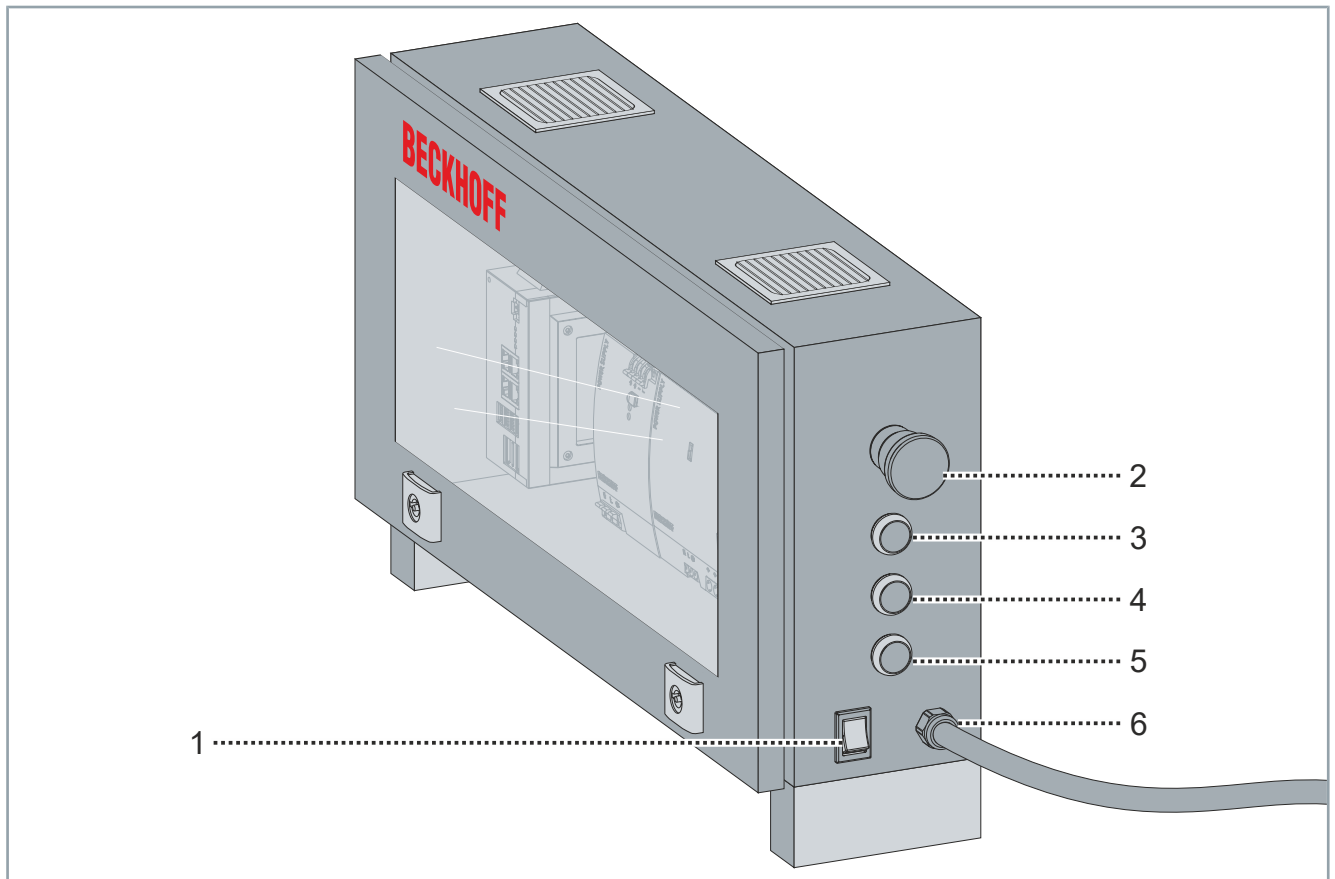
Position	Designation
1	Connector
2	Straight motor module with integrated NCT functionality
3	Basic electronics
4	2 x 9 connection strip basic electronics
5	2 x 9 connection strip test board
6	Test board
7	Mover
8	Guide rail
9	End cap

3.1 Control cabinet part 1



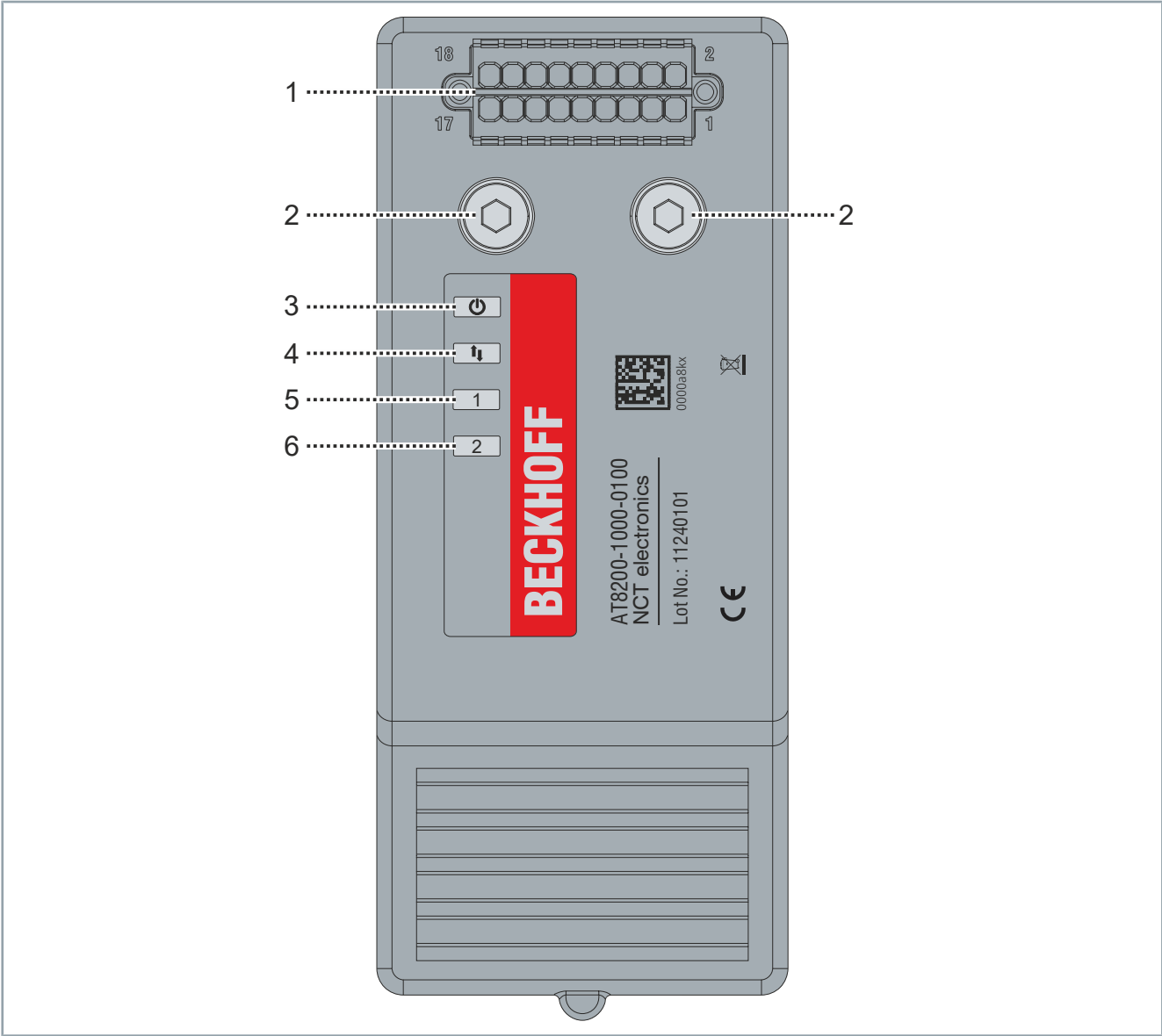
Position	Designation
1	RJ45 connector for data line
2	Cap for RJ45 connector
3	RJ45 connector for additional I/Os
4	Connector for connecting cable
5	Cap for RJ45 connector
6	Locking control cabinet door
7	Window in control cabinet door

3.2 Control cabinet part 2



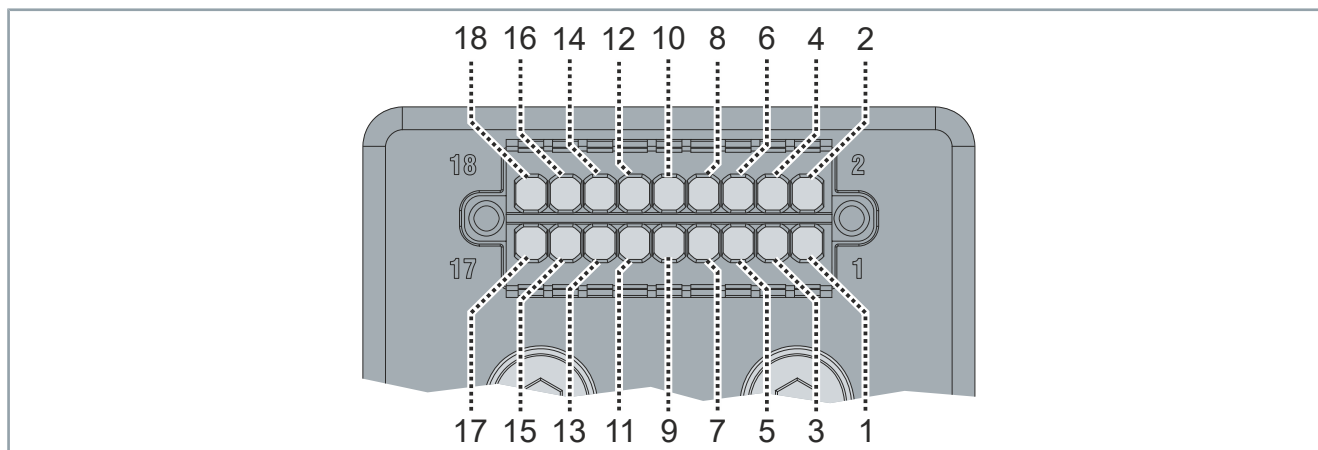
Position	Designation
1	On/off switch
2	Emergency stop button
3	Start button
4	Stop button
5	Reset button
6	Power supply

3.3 NCT electronics



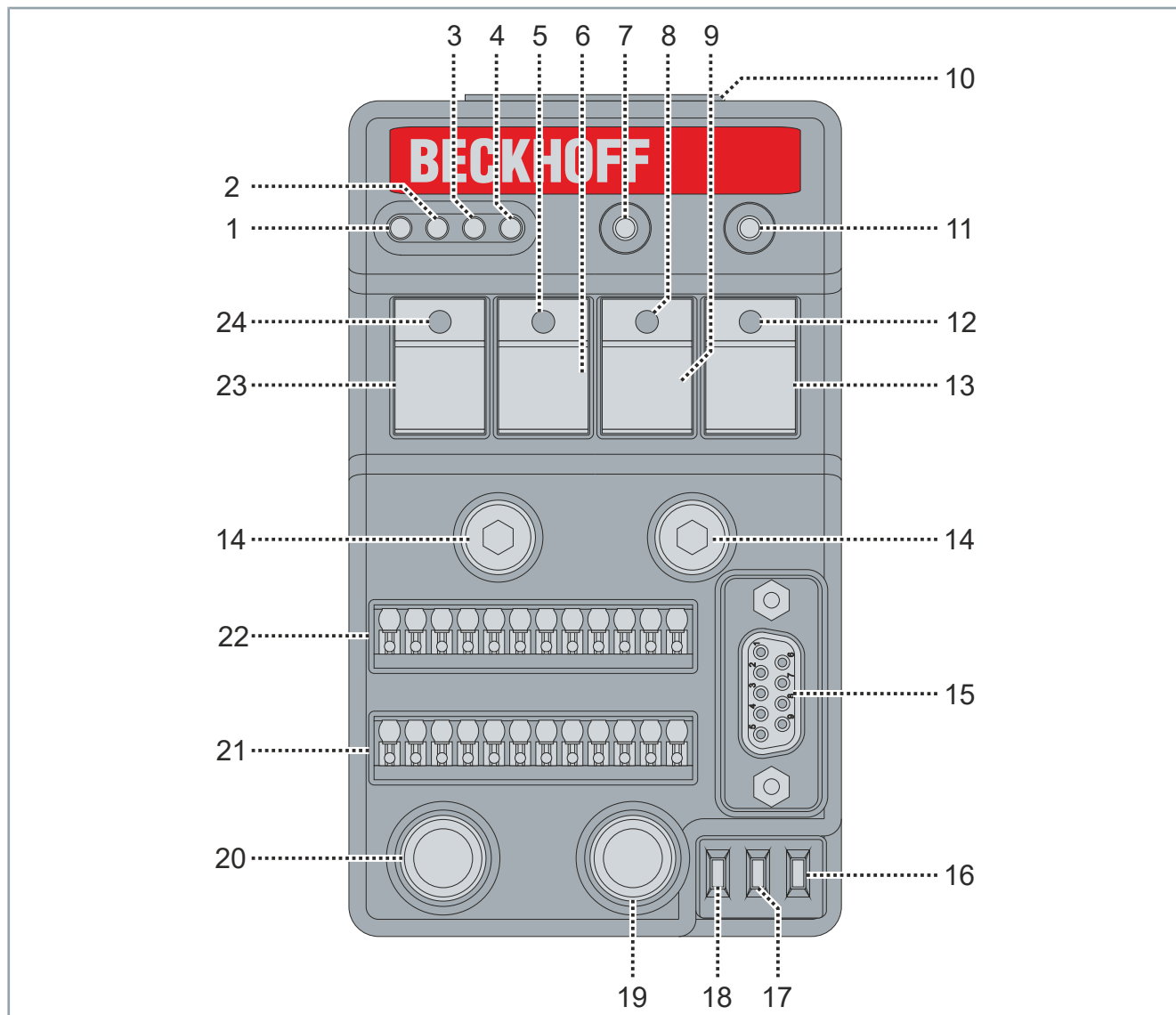
Position	Designation
1	2 x 9 NCT electronics connection strip
2	Fastening screw M6 x 25
3	Power LED
4	Communication LED
5	LED 1, test board in operation
6	LED 2, application-specific. <i>Not yet occupied.</i>

3.3.1 2 x 9 NCT electronics connection strip



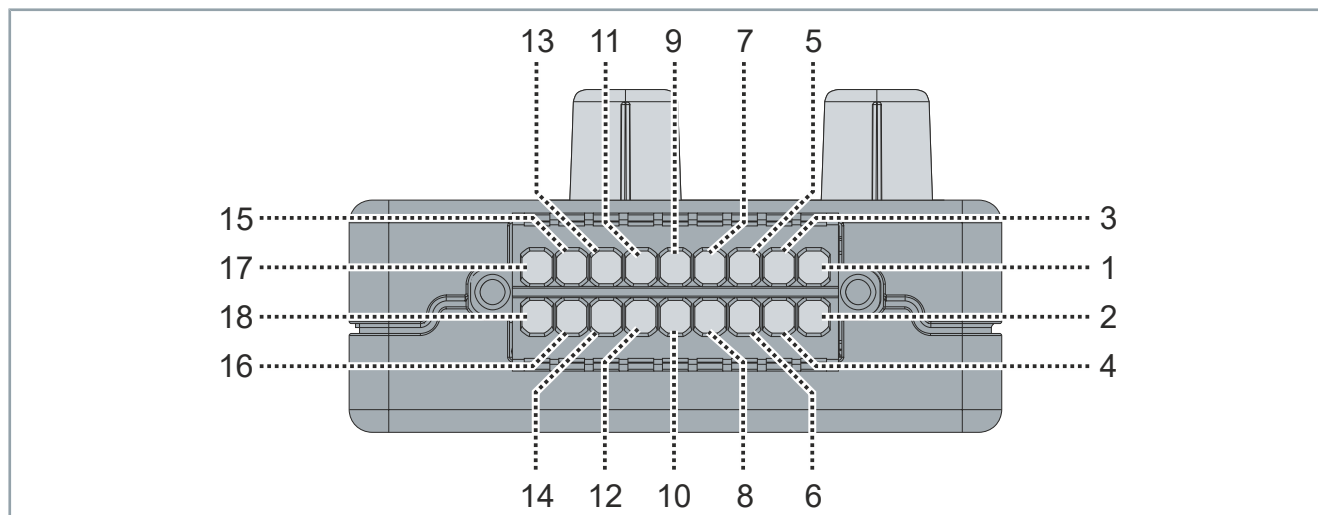
Position	Designation
1	Digital input 1
2	Digital input 3 / analog input 1
3	Digital input 2
4	Digital input 4 / analog input 2
5	Digital output 1
6	Digital output 3
7	Digital output 2
8	Digital output 4
9	<i>Not yet occupied.</i>
10	<i>Not yet occupied.</i>
11	<i>Not yet occupied.</i>
12	<i>Not yet occupied.</i>
13	Ground
14	24 V
15	PWM output 1
16	Ground
17	PWM output 2
18	PWM output 3

3.4 Test board



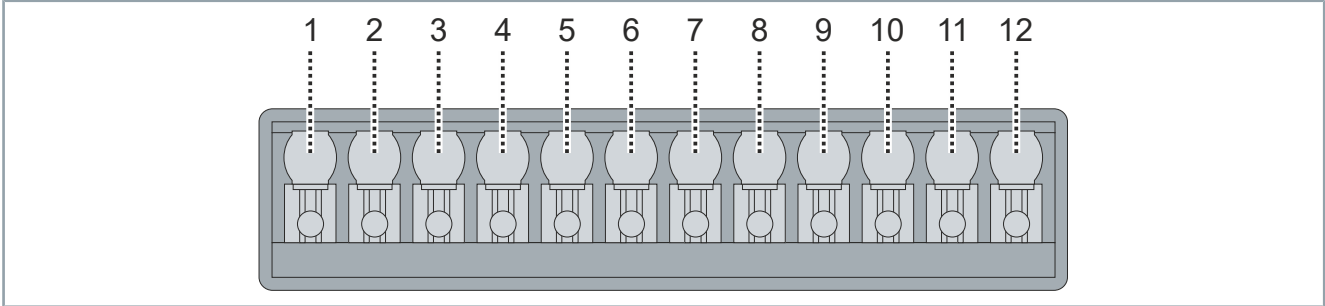
Position	Designation
1	LED 1: digital output 1
2	LED 2: digital output 2
3	LED 3: digital output 3
4	LED 4: digital output 4
5	LED button 2: button feedback 2
6	Button 2: digital input 2
7	LED 24 V
8	LED button 3: button feedback 3
9	Button 3: digital input 3
10	2 x 9 connection strip test board
11	RGB LED: PWM outputs
12	LED button 4: button feedback 4
13	Button 4: digital input 4
14	Fastening screw M6 x 20
15	<i>Not yet occupied.</i>
16	Switch 3: 5 V RS232 ON/OFF. Lower position: ON
17	Switch 2: digital input 3 or analog input 1. Lower position: potentiometer on
18	Switch 1: digital input 4 or analog input 2. Lower position: potentiometer on
19	Potentiometer 2: 0 to 10 V potentiometer, analog input 2
20	Potentiometer 1: 0 to 10 V potentiometer, analog input 1
21	Connection strip 2
22	Connection strip 1
23	Button 1: digital input 1
24	LED button 1: button feedback 1

3.4.1 2 x 9 connection strip test board



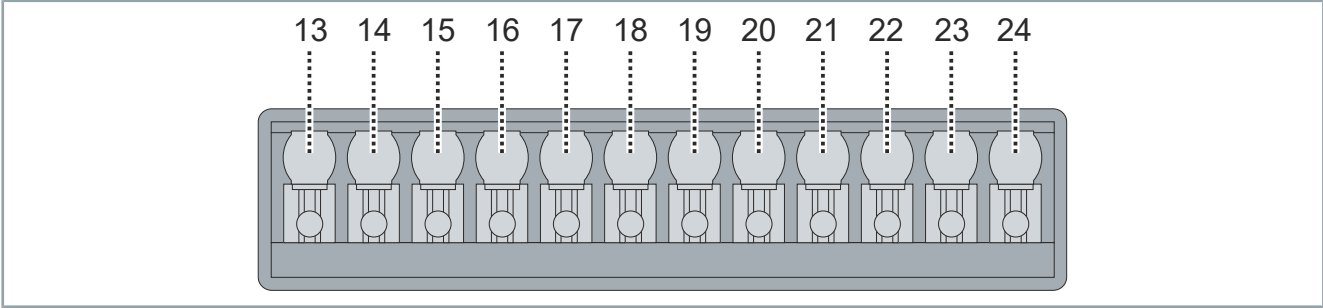
Position	Designation
1	Digital input 1
2	Digital input 3 / analog input 1
3	Digital input 2
4	Digital input 1 / analog input 2
5	Digital output 1
6	Digital output 3
7	Digital output 2
8	Digital output 4
9	<i>Not yet occupied.</i>
10	<i>Not yet occupied.</i>
11	<i>Not yet occupied.</i>
12	<i>Not yet occupied.</i>
13	Ground
14	24 V
15	PWM output 1
16	Ground
17	PWM output 2
18	PWM output 3

3.4.2 Connection strip 1 test board



Position	Designation
1	24 V
2	24 V
3	Ground
4	Ground
5	Digital output 1
6	Digital output 2
7	Digital output 3
8	Digital output 4
9	Ground
10	PWM output 1
11	PWM output 2
12	PWM output 3

3.4.3 Connection strip 2 test board

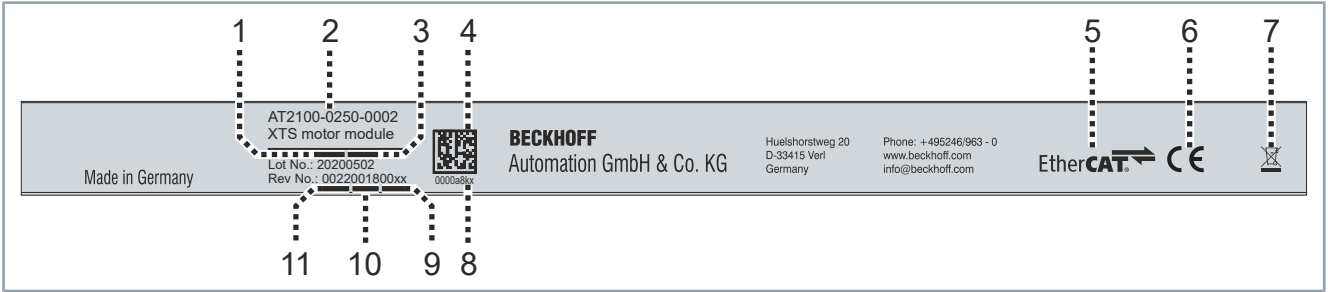


Position	Designation
13	Potentiometer 2
14	Potentiometer 1
15	Digital input 1
16	Digital input 2
17	Digital input 3
18	Digital input 4
19	24 V
20	Not yet occupied.
21	Not yet occupied.
22	5 V
23	Not yet occupied.
24	Not yet occupied.

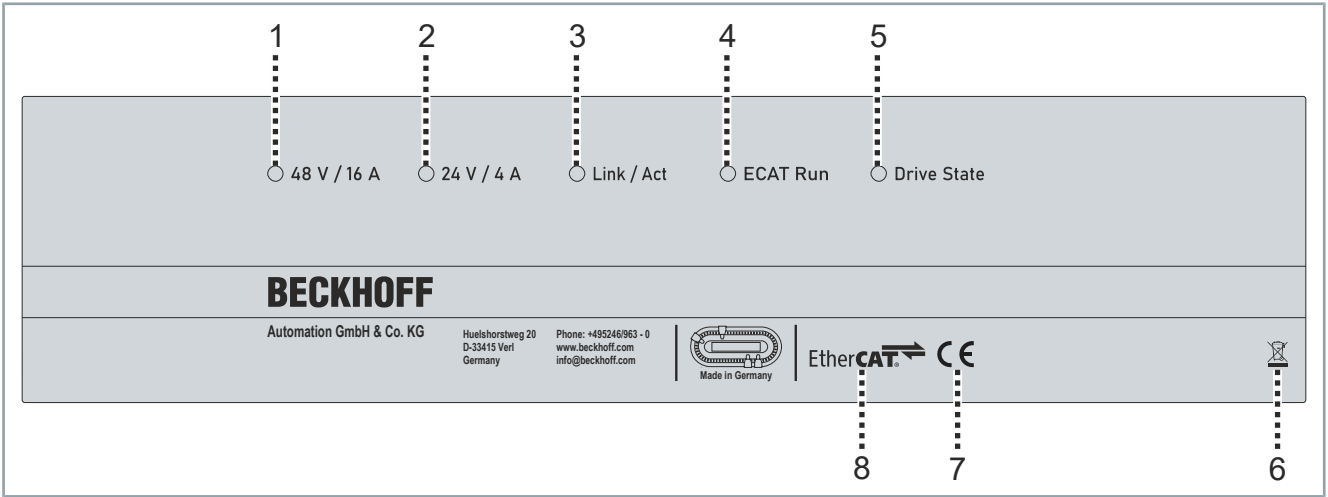
3.5 Name plate

3.5.1 Motor module

The name plate of motor modules with integrated NCT functionality is divided into two parts.

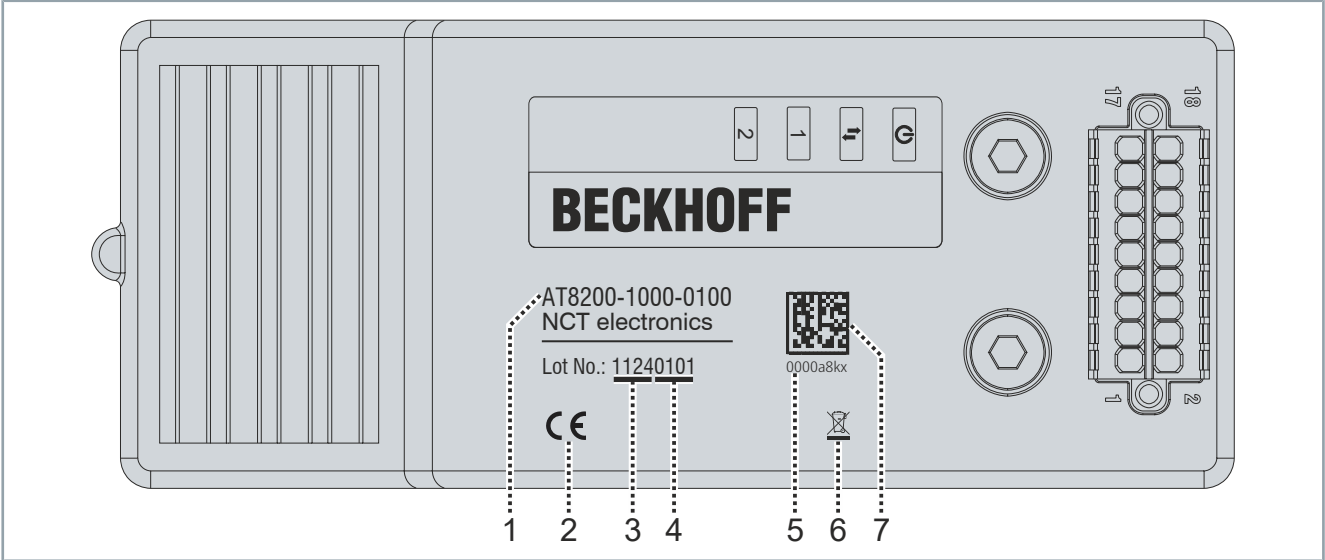


Position	Designation
1	Date of manufacture - week/year
2	Product designation
3	Firmware and hardware revision
4	DataMatrix code
5	EtherCAT marking
6	CE conformity
7	WEEE compliance
8	BTN number
9	XML sensor PCB revision number
10	XML revision number NCT board
11	XML motor PCB revision number



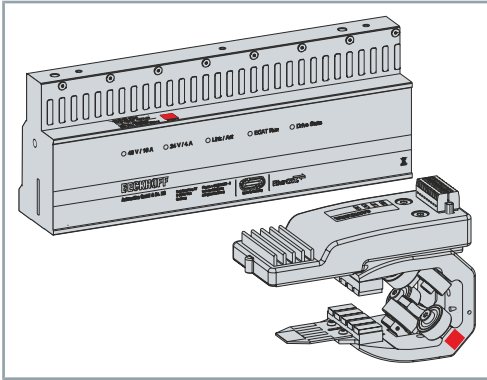
Position	Designation
1	48 V 16 A power supply status LED
2	24 V 4 A power supply status LED
3	Link / Act status LED
4	Status LED ECAT Run
5	Drive State status LED
6	WEEE compliance
7	CE conformity
8	EtherCAT marking

3.5.2 NCT electronics, basic electronics



Position	Designation
1	Product designation
2	CE conformity
3	Date of manufacture - week/year
4	Firmware and hardware revision
5	BTN number
6	WEEE compliance
7	DataMatrix code

3.6 DataMatrix code



The DataMatrix code can be found on all movers and modules. If there is no Beckhoff Traceability Number (BTN) under the DataMatrix code, you can read it out via the DataMatrix code.

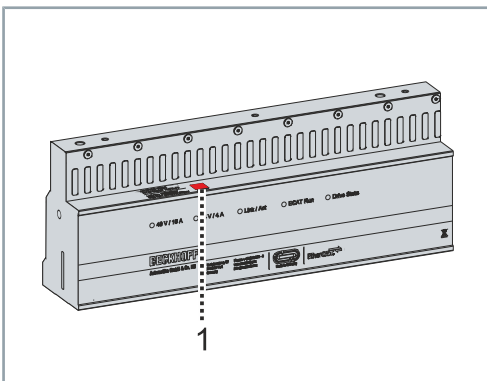
For example, you can read the DataMatrix code with the camera of your smartphone or tablet.

Internet access is not required to use the app and to read out these DataMatrix codes.

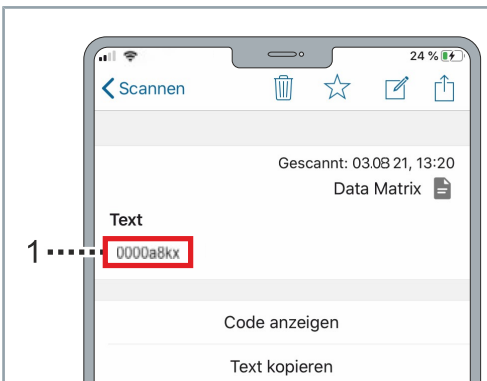


Example scan on a straight module

This example shows how to read the BTN on a smartphone screen after a scan.



- Scan the DataMatrix code [1]



- Read the BTN [1] from the screen of your end device via the camera or the reader app

3.7 Type key

3.7.1 XTS starter kit with NCT functionality

AT2100–001x	Explanation
AT	<i>Product area</i> <ul style="list-style-type: none">• AT = drive technology
2100	<i>Product type</i> <ul style="list-style-type: none">• 2100 = starter kit
001	<i>System type</i> <ul style="list-style-type: none">• 001 = open end
x	<i>Product length</i> <ul style="list-style-type: none">• 1 = 500 mm• 2 = 1000 mm

3.7.2 Motor module

AT21xx–0250	Explanation
AT	<i>Product area</i> <ul style="list-style-type: none">• AT = drive technology
2	<i>Product type</i> <ul style="list-style-type: none">• 2 = module
1	<i>Module type</i> <ul style="list-style-type: none">• 1 = with integrated NCT functionality
xx	<i>Module variants</i> <ul style="list-style-type: none">• 00 = straight• 02 = straight, with connector for power supply
0250	<i>Module length</i> <ul style="list-style-type: none">• 0250 = 250 mm

3.7.3 Mover

AT8300-1x00	Explanation
AT	<i>Product area</i> • AT = drive technology
8300	<i>Product type</i> • 8300 = Mover with NCT electronics fitted
1x00/	<i>Base mover</i> • 0 = AT9014-1070-0550 • 1 = AT9014-1070-1550

NCT electronics

AT 8200–1000	Explanation
AT	<i>Product area</i> • AT = drive technology
8200	<i>Product type</i> • 8200 = NCT electronics, basic electronics
1000	<i>Suitable for base movers</i> • 1000 = AT9014-1070-x550

Base mover

AT9014-1070-x550	Explanation
AT	<i>Product area</i> • AT = drive technology
90	<i>Product type</i> • 90 = mover
14	<i>Roll variant</i> • 14 = 6 rollers, 2 of which are spring-loaded
10	<i>Mover type</i> • 10 = suitable for mounting the NCT electronics
70	<i>Length of the mover</i> • 70 = 70 mm
x	<i>Identifier of the magnetic plate set</i> • 0 = standard • 1 = mover 1
5	<i>Number of poles of the magnetic plate set</i> • 5 = 5 poles
50	<i>Length of the magnetic plate set</i> • 50 = 50 mm

3.8 Product characteristics

Permanent magnets	The permanent magnets used are made of a hard magnetic material. The permanent magnets develop high forces even in small designs. They enable the precise and highly dynamic positioning of the movers.
Scalable travel path	The number of installed modules is variable. The length of the travel path can be adapted to any application.
Rail system	The best combination of several rail systems and movers can be selected for each application.
Armature short circuit brake	In the case of an emergency stop the movers can optionally be decelerated by means of an armature short-circuit.
Integrated power electronics	The entire power electronics is integrated in the modules. A 24 V _{DC} control voltage and a 48 V _{DC} load voltage are required to supply the modules.
Software-based control	The XTS is controlled by a software-based cascade control. The control loop structure is stored in the XTS drivers and is calculated cyclically on the control IPC. No additional drive software is required.
Programming according to IEC 61131-3	The standardized <i>Motion Control</i> function blocks according to the PLC Open standard <i>IEC 61131-3</i> are available for the programming of the XTS.

3.9 Intended use

The XTS may be operated exclusively for the activities foreseen and defined in this documentation, taking into account the prescribed environmental conditions.

The components must be installed in electrical systems or machines and may only be put into operation as integrated components of the system or machine.

All components of the XTS are intended only to be programmed and commissioned with the help of the Beckhoff TwinCAT automation software.



Read the entire drive system documentation:

- This translation of the original instructions
- Translation of the original instructions for the control computer

3.9.1 Improper use

Any use exceeding the permissible values specified in the Technical data is considered improper and therefore prohibited.

The Standard XTS is not suitable for use in the following areas:

- in ATEX zones without a suitable housing
- in areas with aggressive environments, for example aggressive gases or chemicals

The relevant standards and directives for EMC interference emissions must be complied with in residential areas.

4 Technical data

Below you will find definitions of terms, environmental conditions and operating specifications as well as technical data.

4.1 Definition

All details relate to an ambient temperature of 25 °C. The data can have a tolerance of +/- 10 %.

4.1.1 Technical terms

Nominal force F_0 [N]

Nominal force that a mover can continuously apply.

Force constant K_F [N/A]

Specification of how much force [N] the mover generates with a certain mover current.

$$F_0 = I_{0\text{Mover}} \cdot K_F$$

Voltage constant K_E [Vs/m]

Induced motor EMF related to 1 m/s as a peak sine value on a motor coil.

Thermal time constant t_{TH} [min]

Specification of the heating time of the cold module when loaded with the nominal force until 63 % of the maximum overtemperature is reached. This temperature rise happens in a much shorter time when the motor is loaded with the peak current.

Absolute accuracy [mm]

Specification of the difference between an expected set position and the mean value of the actual position resulting from approaching the set position from different directions (multi-directional). The absolute accuracy is valid within a module and is defined as the difference between the set position and the actual position of the positioning system.

Standstill repeatability [mm]

Specification of how accurately the system positions when approaching a position from the same direction (unidirectional). The standstill repeatability is to be evaluated as the average difference between the actual position and the set position and is the most important measure for the assessment of a positioning system. It defines the variance around the mean value with a large number of positionings.

The variance of the positions is illustrated by the Gauss distribution or normal distribution. The standstill repeatability is defined by three standard deviations (3σ) with a probability of 99.74 %.

Synchronization accuracy [mm]

Specification of the fluctuations that the system exhibits in the position / following error during a position-controlled movement at a constant set velocity. The synchronization accuracy depends on the mechanical rigidity, the applied load on the movers, the controller settings, the set velocity and also any mechanical offset between the modules.

4.2 XTS starter kits with NCT functionality



On the Beckhoff website you will find more information about:

- Energy transfer
- Data transmission
- digital inputs
- digital outputs
- analog inputs
- analog outputs
- Communication points
- mechanical data



NCT electronics

-  [Direct link to XTS NCT electronics, basic electronics](#)

Mover with NCT electronics fitted

-  [Direct link to the XTS mover with NCT electronics](#)
-  [Direct link to the XTS mover with NCT electronics and Mover 1 functionality](#)

Motor module with integrated NCT functionality

-  [Direct link to the XTS motor module with NCT technology](#)
-  [Direct link to the XTS motor module with NCT technology and connector](#)

General information about the XTS NCT functionality

-  [Direct link to XTS NCT technology](#)

4.3 Dimensional drawings



Dimensional drawings and 3D models online

You have the possibility to download the dimensional drawings and 3D models of the individual components from the Beckhoff website:

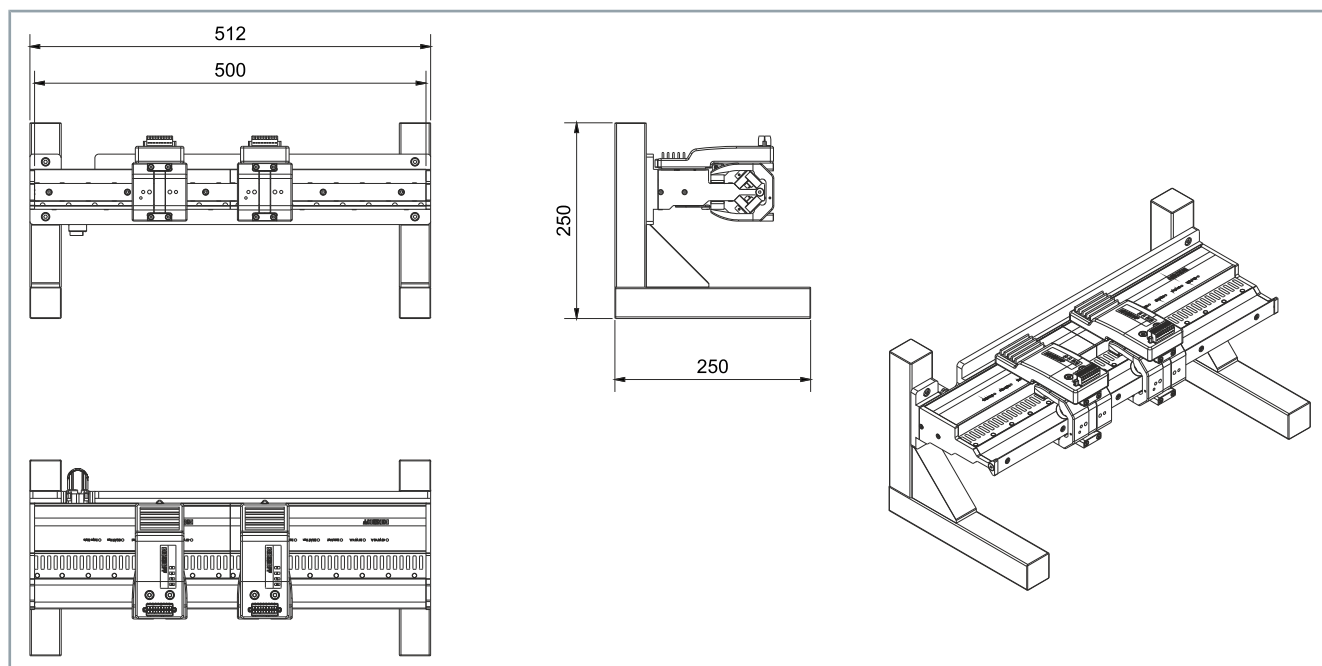
 www.beckhoff.com/de-de/support/downloadfinder

4.3.1 XTS starter kits

AT2100-0011-0001

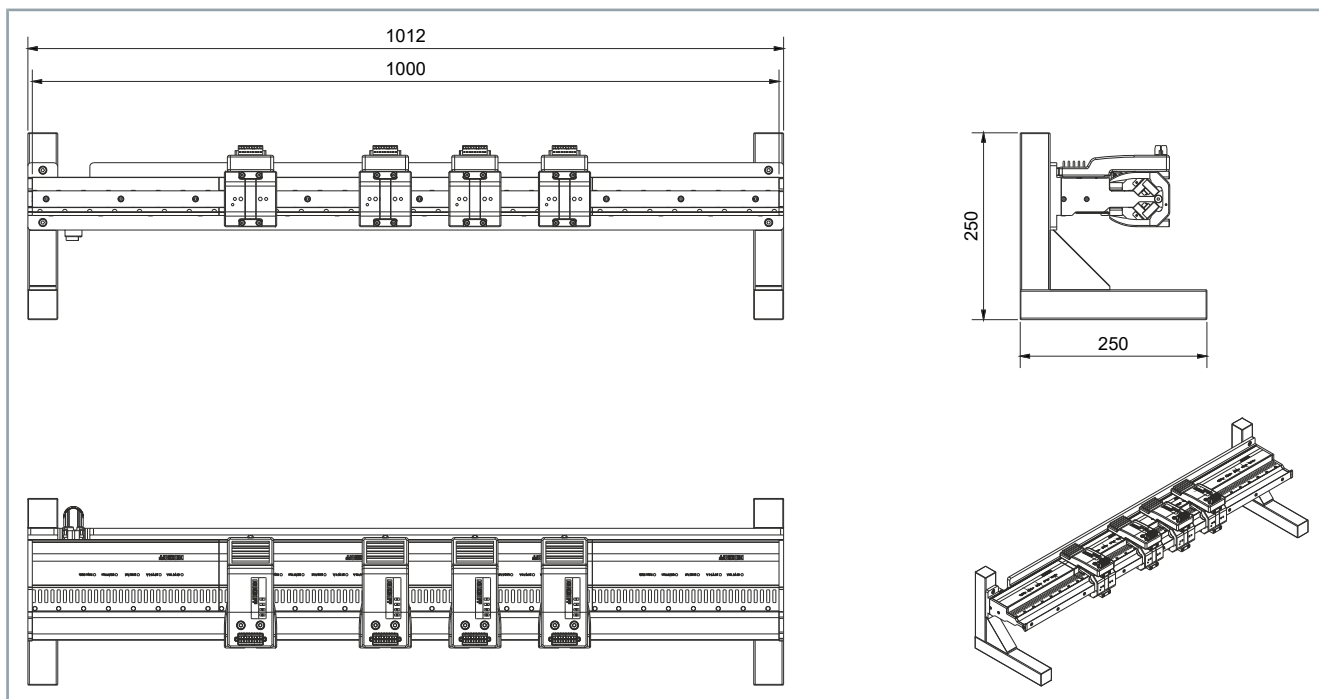
All figures in millimeters

- XTS starter kit with NCT functionality
- 500 mm
- open end



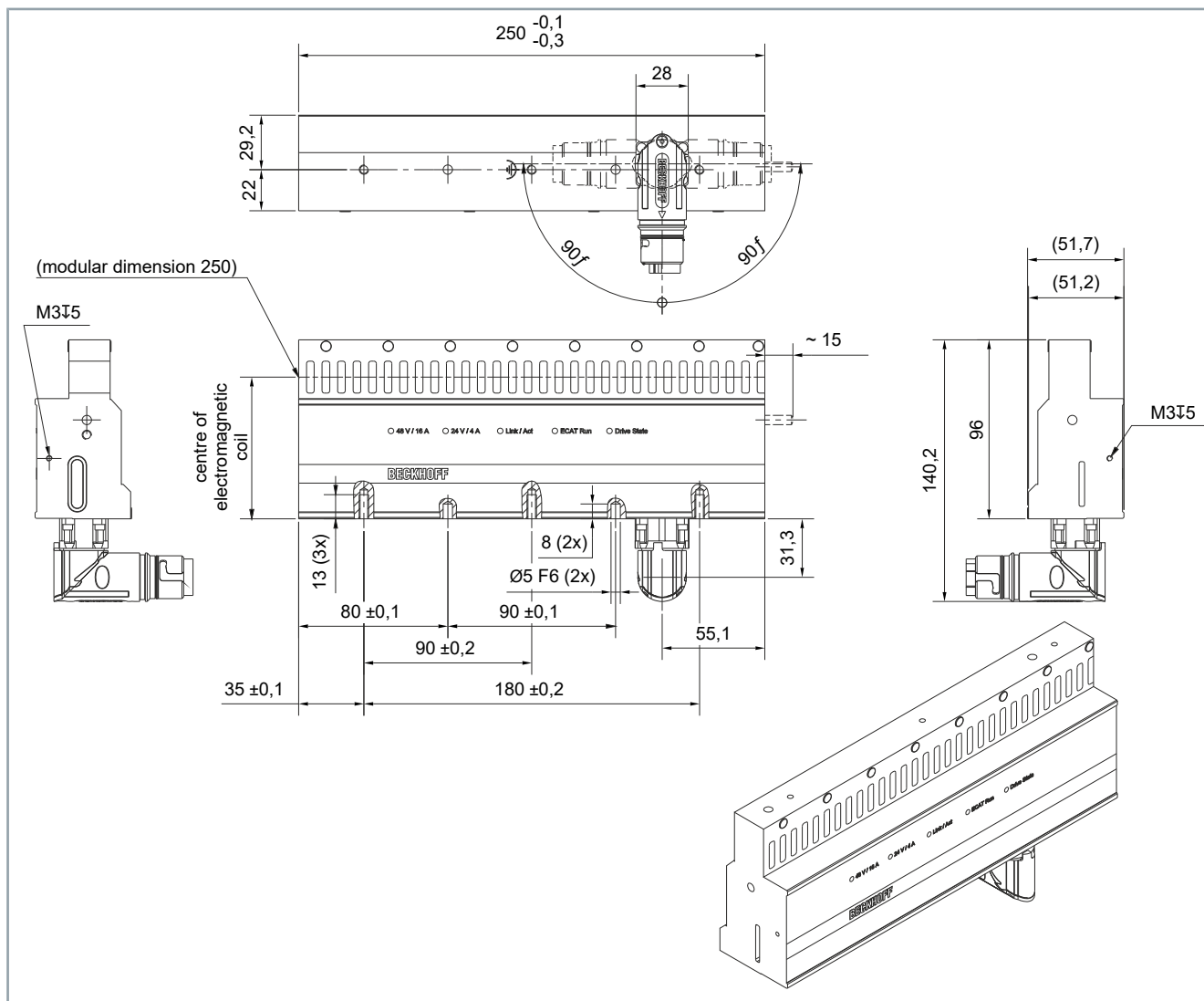
AT2100-0012-0001

- XTS starter kit with NCT functionality
- 1000 mm
- open end



AT2102-0250

- Straight
- 250 mm
- with integrated NCT functionality
- with connector, direction of rotation to feedback system

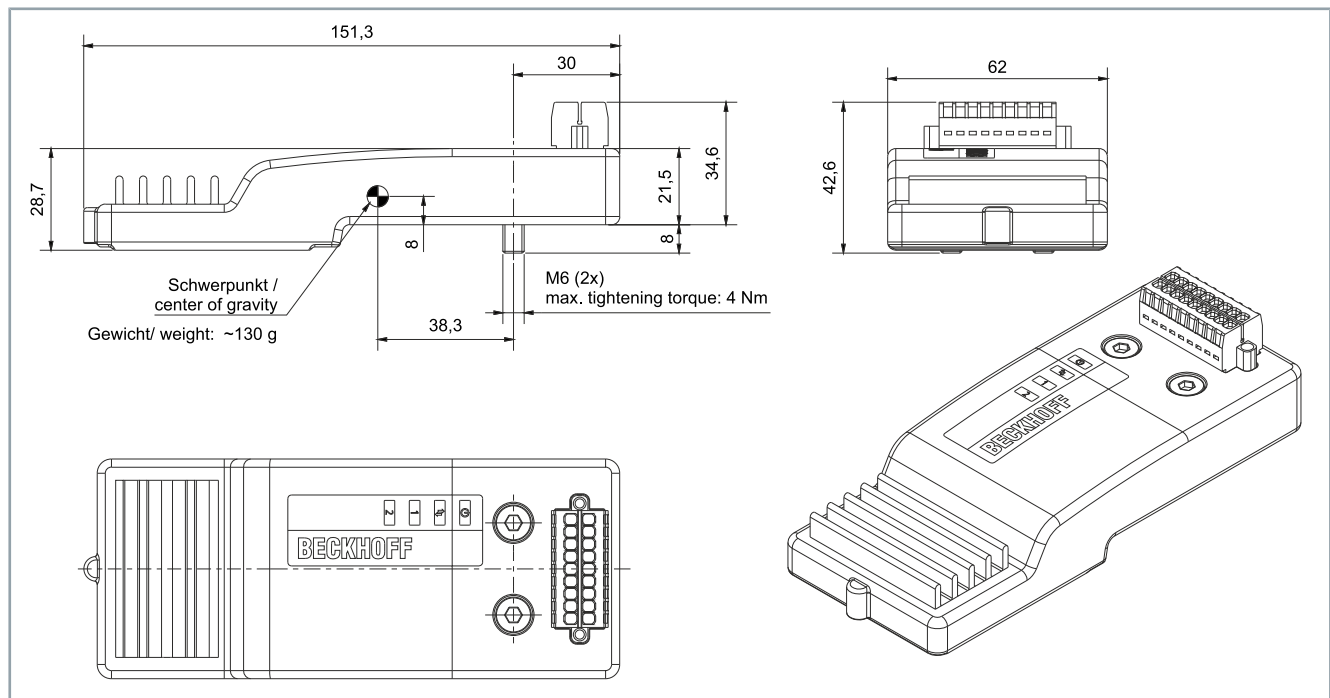


4.3.3 NCT electronics

AT8200-1000-0100

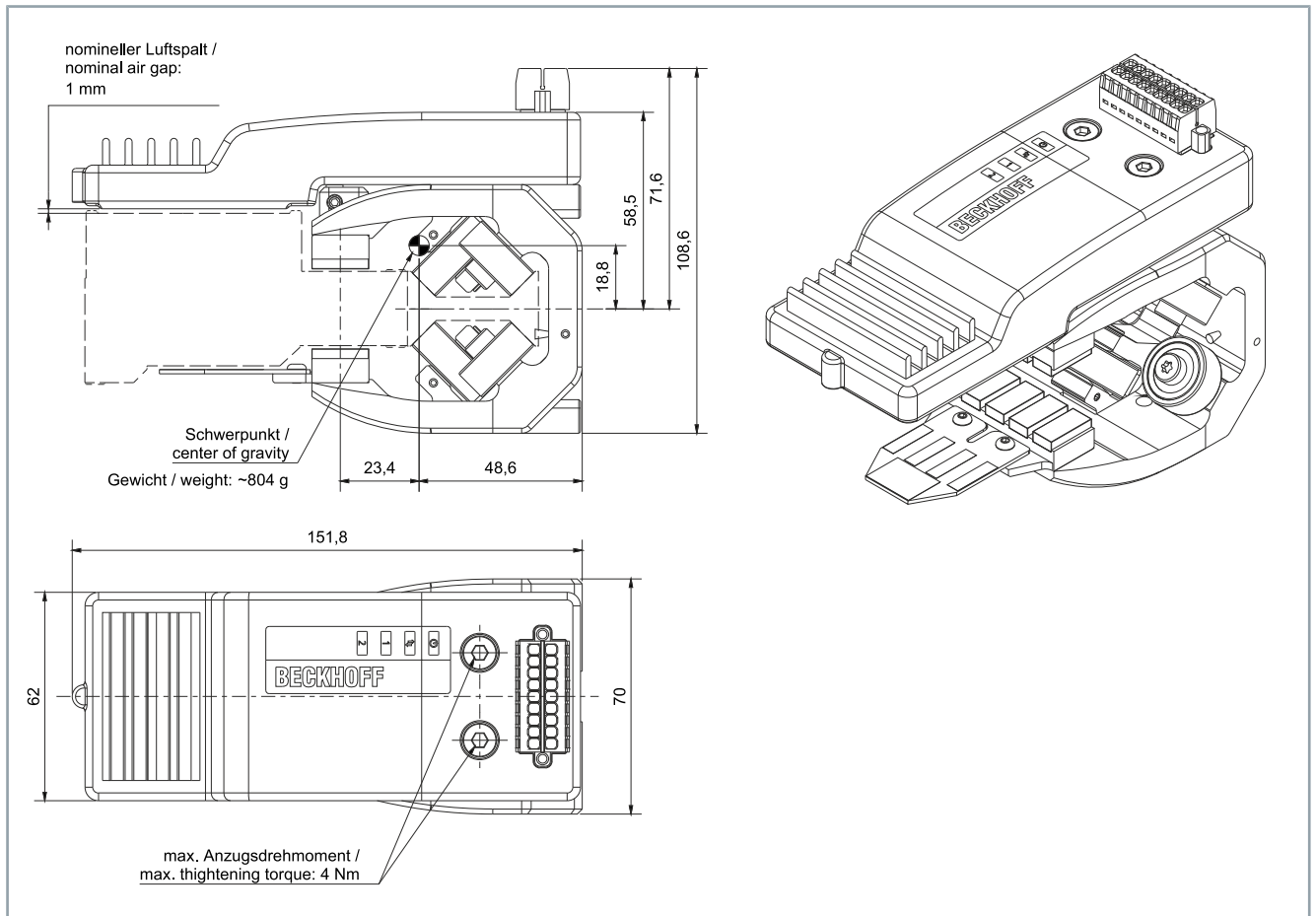
All figures in millimeters

- NCT electronics, basic electronics
- without mover



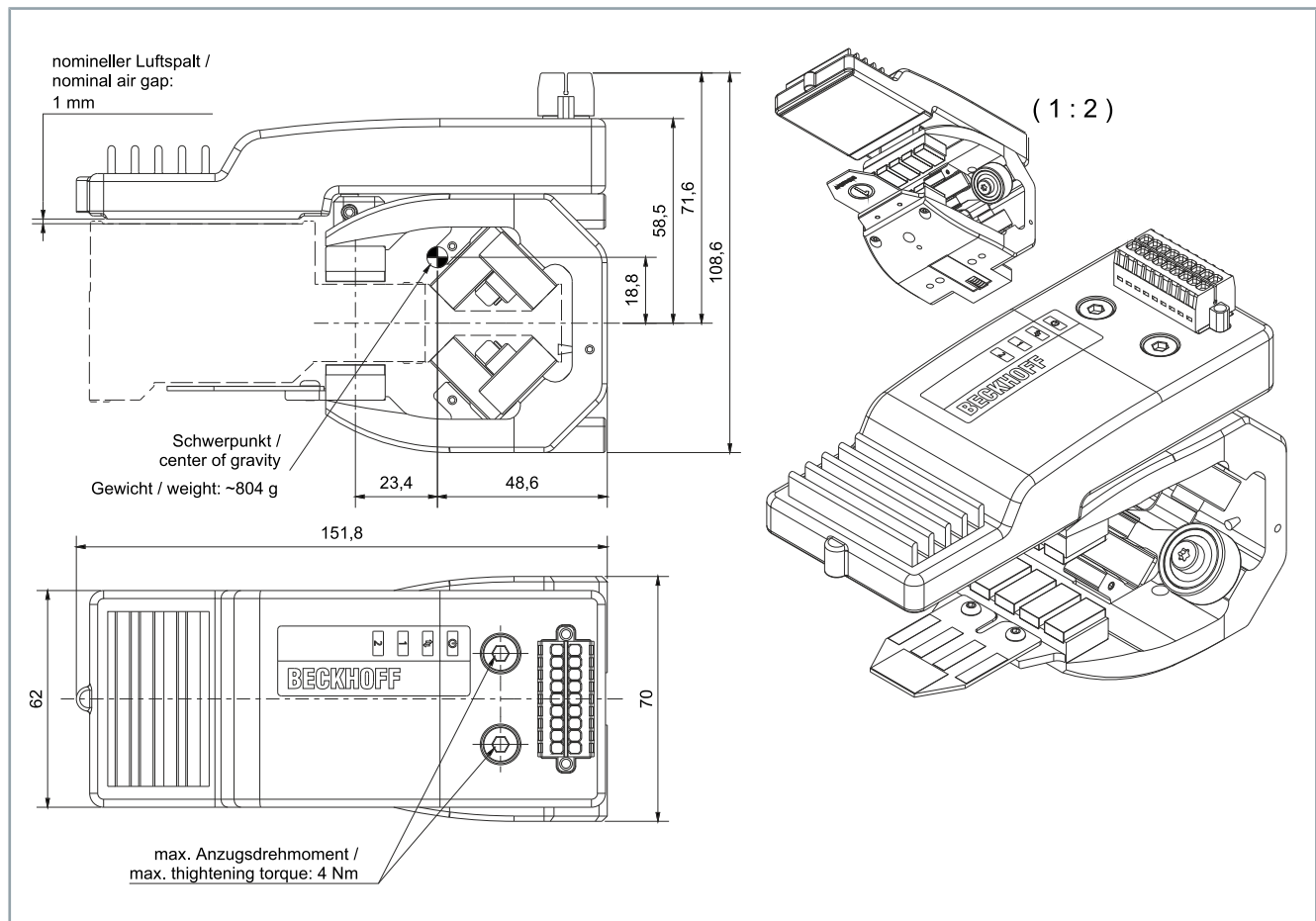
AT8300-1100-0100

- NCT electronics, basic electronics mounted on mover
AT9014-1070-0550



AT8300-1200-0100

- NCT electronics, basic electronics mounted on mover
AT9014-1070-1550

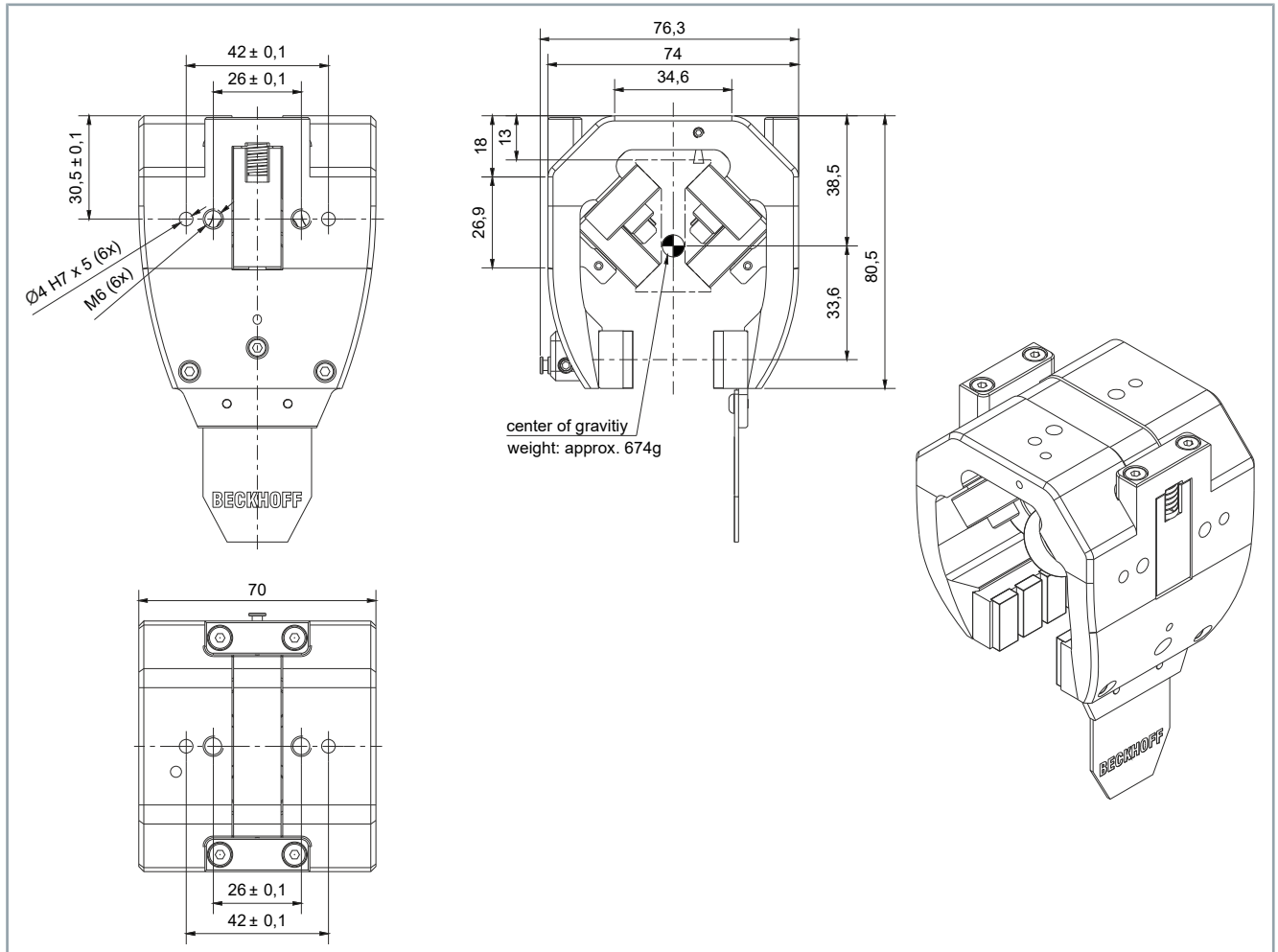


4.3.4 Mover

AT9014-1070-0550

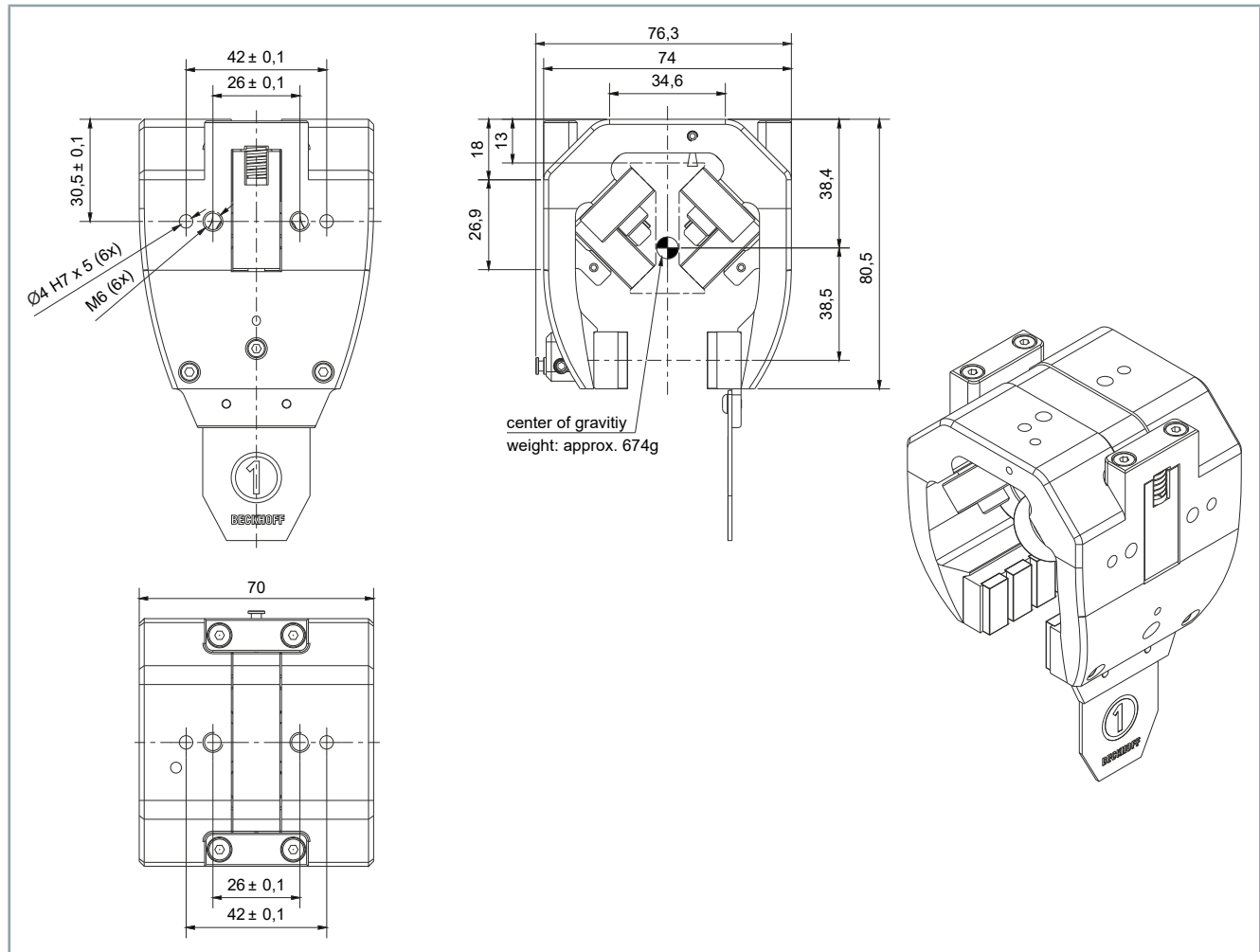
All figures in millimeters

- Mover, 70 mm
- 6 guide rollers, 2 of which are spring-loaded
- with height adjustment for NCT electronics, basic electronics



AT9014-1070-1550

- Mover, 70 mm
- 6 guide rollers, 2 of which are spring-loaded
- with height adjustment for NCT electronics, basic electronics



5 Commissioning

After unpacking the XTS starter kit with NCT technology, you must remove the transport securing devices on the movers and connect the cables.

5.1 Preparation



Required tool

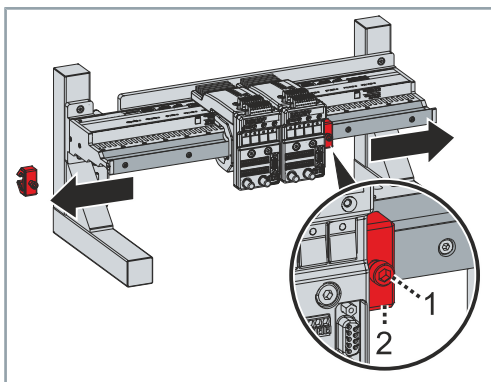
- Suitable torque wrench
- Allen key 2 mm
- Allen key 3 mm
- Allen key 4 mm
- Slotted screwdriver
- Feeler gauge with 0.7 to 1 mm feeler gauge blades



Required accessories [✓]

- Assembly tool for B23 connectors

5.2 Remove the transport securing device



- Loosen screw [1]
- Remove the transport securing device [2] to the side

5.3 Connect the connection cable

The connection cable connects the modules to the control cabinet.

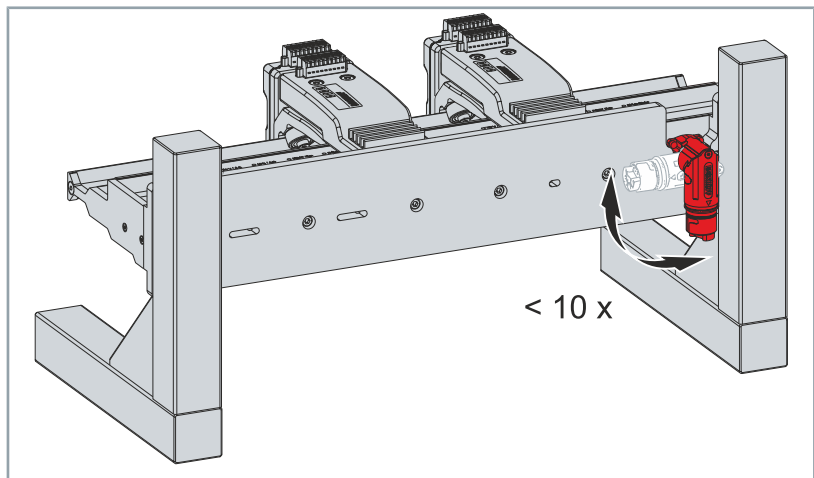
5.3.1 Module

NOTICE

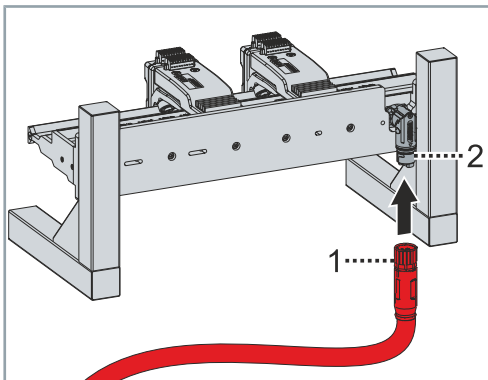
Limited number of turns

The connector may be rotated up to ten times through 180° to bring it into a safe latching position.

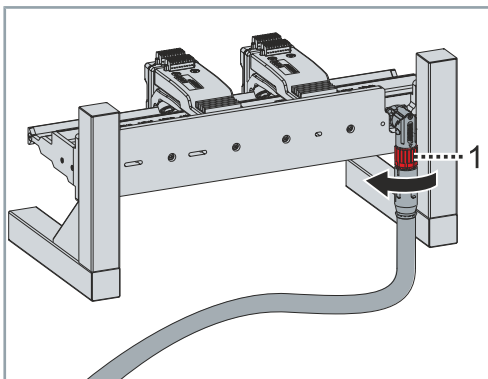
If you turn the connector more than ten times, the cables inside and the latching mechanism of the connector may be damaged and the connector may no longer be placed in a safe latching position.



The connector of the module may be rotated by 90° a maximum of ten times.

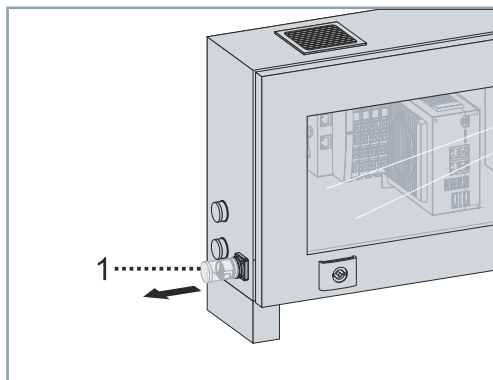


- Plug the connector [1] of the connection cable to the connector [2] of the module

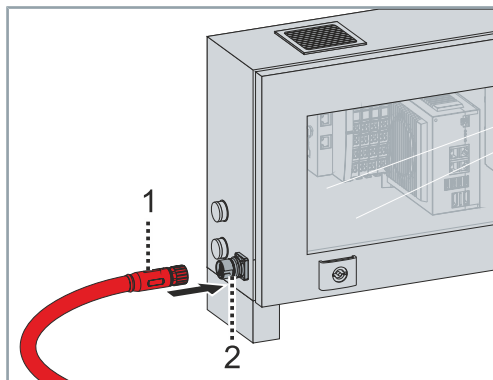


- Tighten the connector [1] with assembly tool [+]

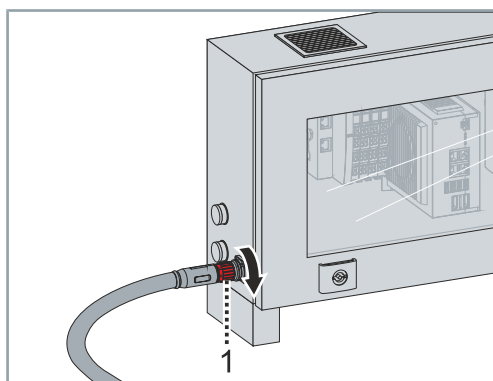
5.3.2 Control cabinet



- Remove cap [1]



- Plug the connector [1] of the connection cable into the connector [2] of the control cabinet



- Tighten the connector [1] with assembly tool [+]

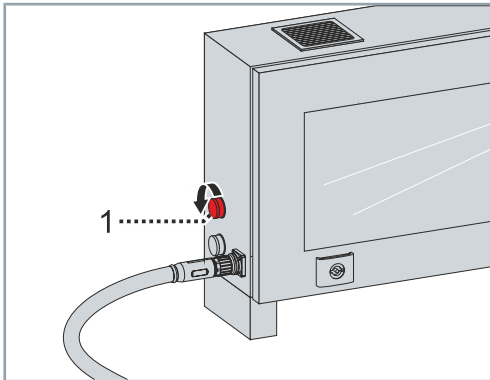
5.4 Connect data line

The data line connects the control cabinet with your PC or your laptop.

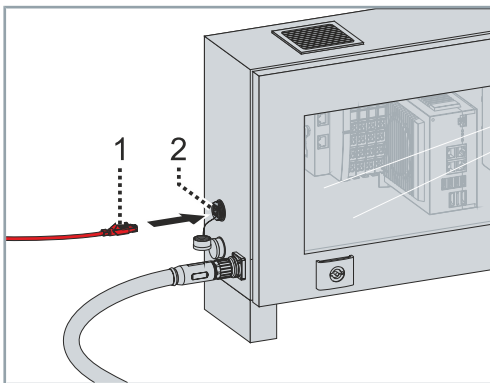
5.4.1 Control cabinet



The cap for connecting the data line is attached to the connector with a wire and remains on the control cabinet.

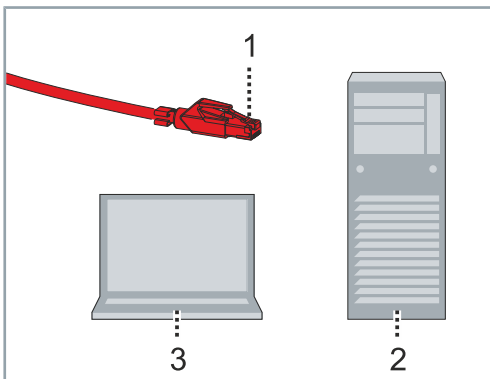


► Open cap [1]



► Connect the connector [1] of the data line to the connector [2] in the control cabinet

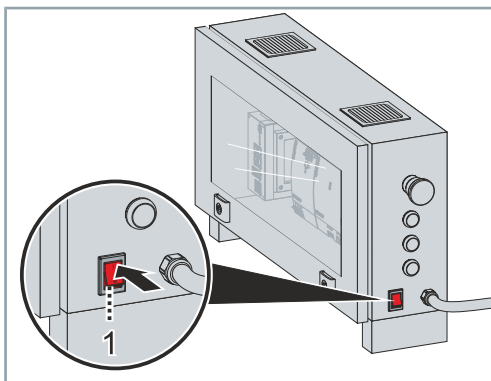
5.4.2 PC or laptop



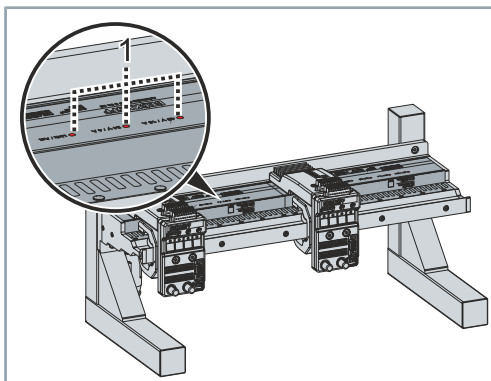
► Plug the connector [1] of the data line into the corresponding port of your PC [2] or laptop [3]

5.5 System test

- ▶ Connecting the starter set to the mains



- ▶ Switch on starter kit at control cabinet [1]



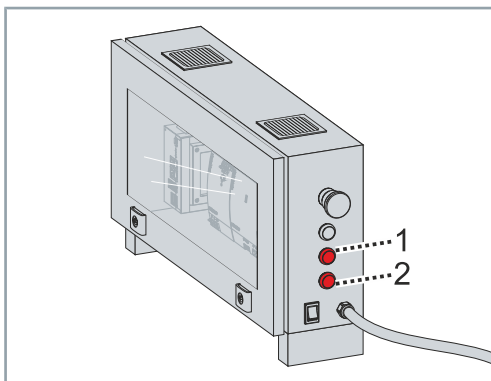
The following LEDs [1] must light up:

- Link / Act
- 48 V / 16 A
- 24 V / 4 A

If the LEDs do not light up:

- ▶ Check cables and connectors
- ▶ Check the power supply units and fuses for voltage
- ▶ Contact the Support/Applications Department

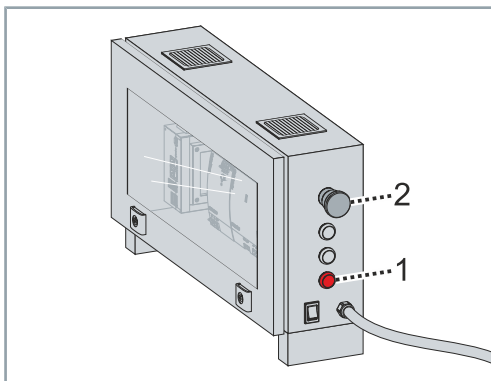
5.6 Start system



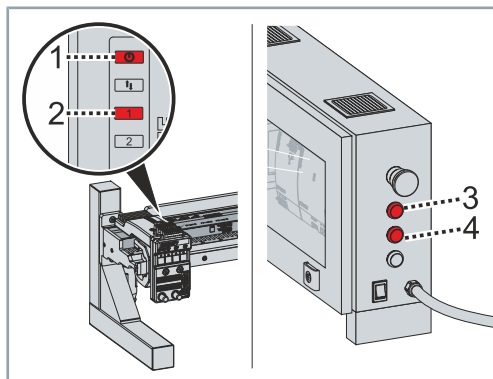
After the starter kit has been connected and switched on:

The *Stop* button [1] on the control cabinet lights up red continuously.

The *Reset* button [2] must flash blue.

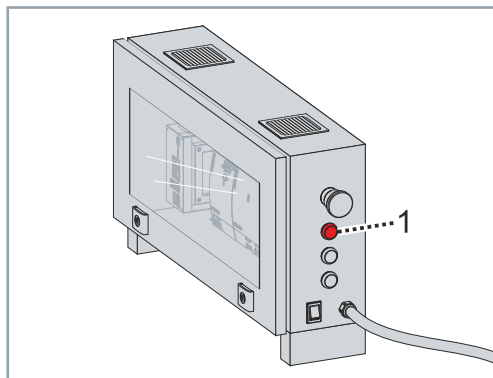


- ▶ Press *Reset* button [1]
- ▶ Ensure that the *Emergency stop* button is unlocked

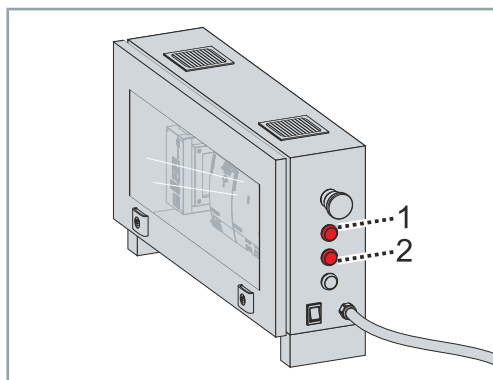


The *Power* LED [1] on the NCT electronics light up continuously.
The LED 1 [2] on the NCT electronics must flash continuously.
The *Start* button [3] on the control cabinet must flash green.
The *Stop* button [4] on the control cabinet must go out.

► Press the *Start* button [1]



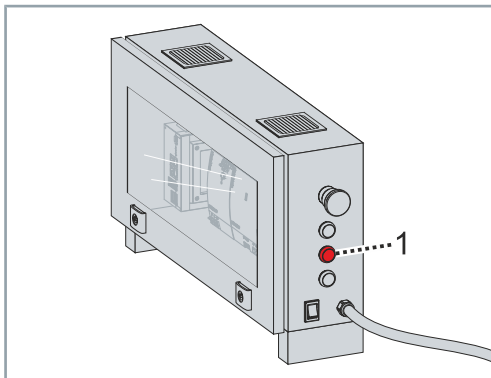
The *Stop* button [1] on the control cabinet must flash red.
The *Start* button [2] on the control cabinet must light up green continuously.
The system is in operation.



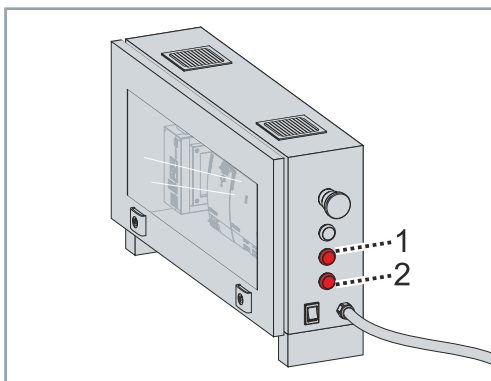
5.7 Stop system

The system can be stopped with the *Stop* button or with the *Emergency stop* button.

5.7.1 Stop button

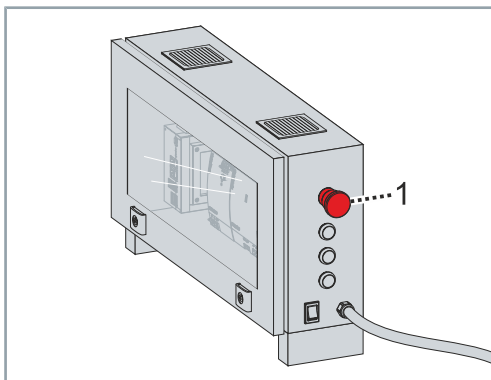


► Press the *Stop* button [1]

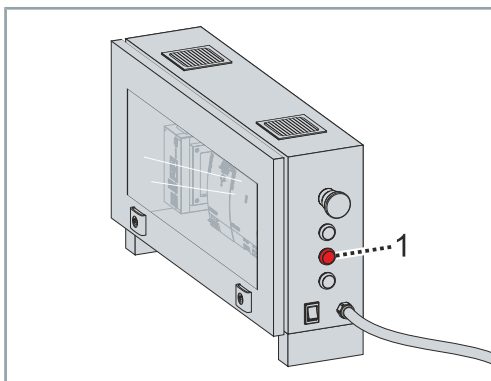


The *Stop* button [1] must light up red continuously.
The *Reset* button [2] must flash blue.

5.7.2 Emergency stop button



► Press the *Emergency stop* button [1]

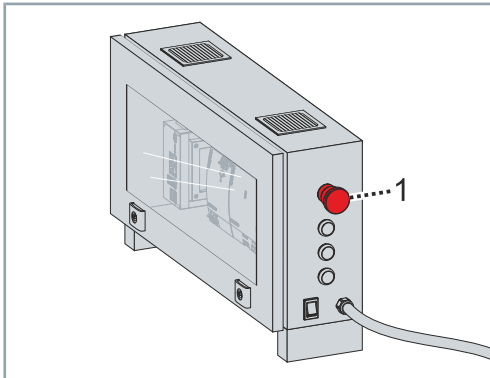


The *Stop* button [1] must light up red continuously.

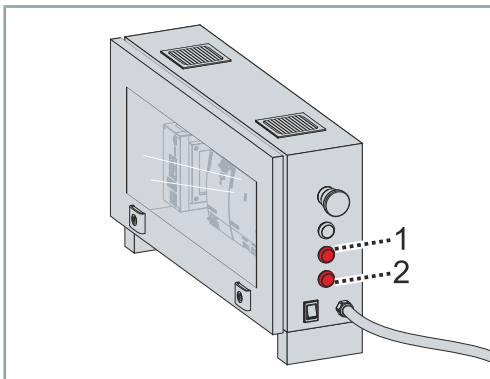
Unlock

If the system is stopped with the *Emergency stop* button, the *Emergency stop* button must be unlocked to restart the system.

- Unlock the *Emergency stop* button [1]



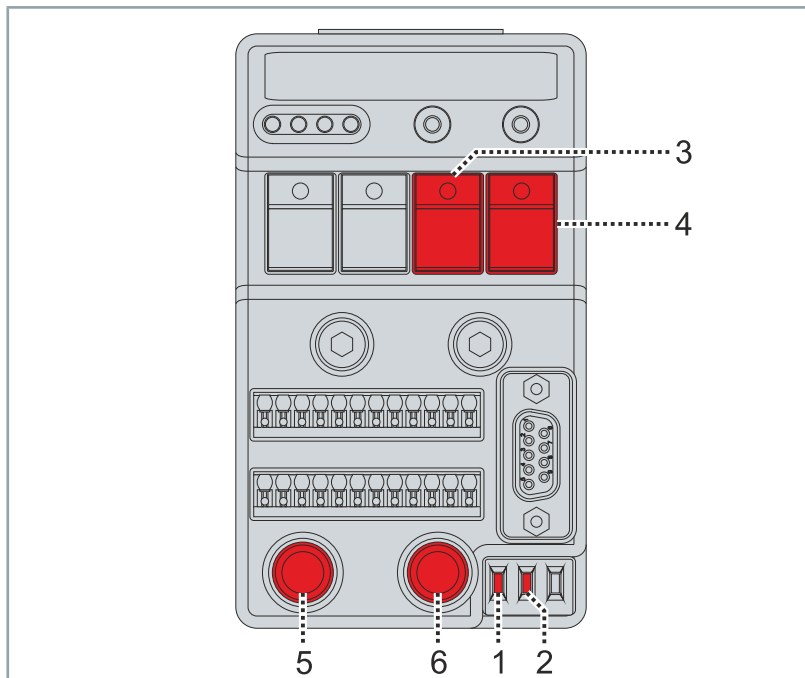
The *Stop* button [1] must light up red continuously.
The *Reset* button [2] must flash blue.



6 Functionality of the test board

After commissioning, you can use the functions of the test board. Further information on the test boards can be found in chapter "Test board", [Page 22].

6.1 Digital or analog input



The position of the switches [1] and [2] on the test board determines whether the digital inputs [3] and [4] or the analog inputs [5] and [6] are enabled.

The following positions of the switches are possible:

Version	Explanation
Switch [1] up	<ul style="list-style-type: none"> • Digital input 4 enabled: button 4 [4] with function • Analog input 2 disabled: potentiometer 2 [6] without function
Switch [1] down	<ul style="list-style-type: none"> • Digital input 4 disabled: button 4 [4] without function • Analog input 2 enabled: potentiometer 2 [6] with function
Switch [2] up	<ul style="list-style-type: none"> • Digital input 3 enabled: button 3 [3] with function • Analog input 1 disabled: potentiometer 1 [5] without function
Switch [2] down	<ul style="list-style-type: none"> • Digital input 3 disabled: button 3 [3] without function • Analog input 1 enabled: potentiometer 1 [5] with function

6.2 Push button

Briefly pressing the button causes the corresponding LED to light up.

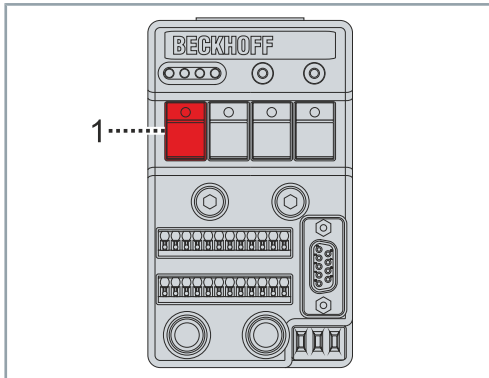


Note the position of the switches

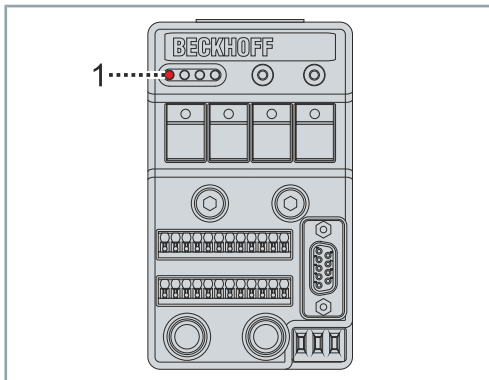
Make sure that the switches are in the up position if you want to use all the push buttons.

When a switch is in the lower position, the digital input is without function and the push button cannot light the corresponding LED.

6.2.1 Button 1 - digital input 1

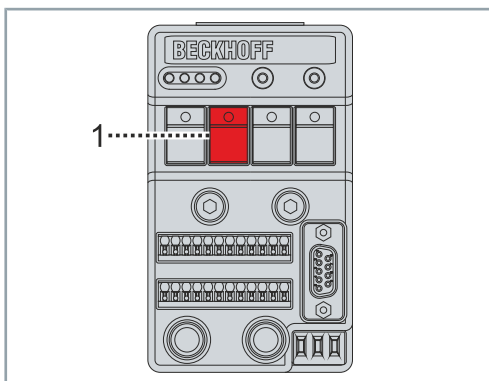


► Press button 1 [1]

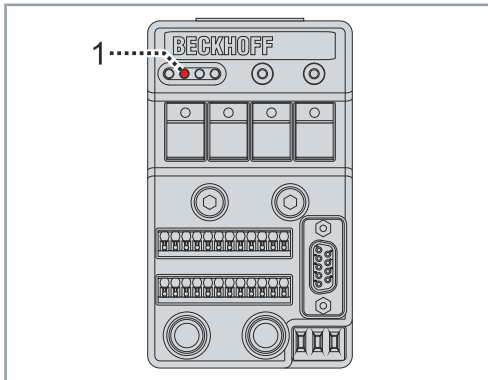


The LED 1 Digital output 1 [1] lights up.

6.2.2 Button 2 - digital input 2

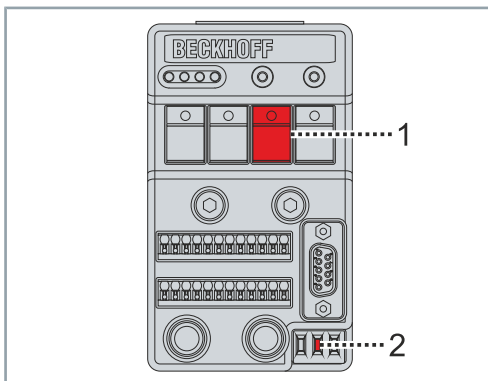


► Press button 2 [1]

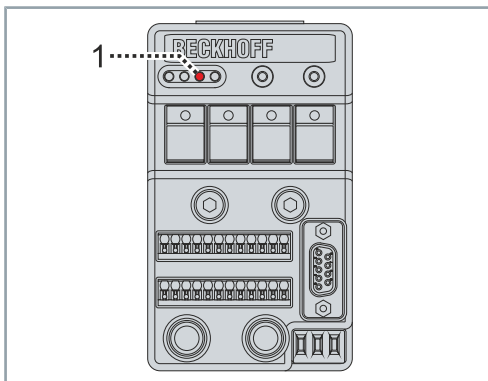


The LED 2 Digital output 2 [1] lights up.

6.2.3 Button 3 - digital input 3

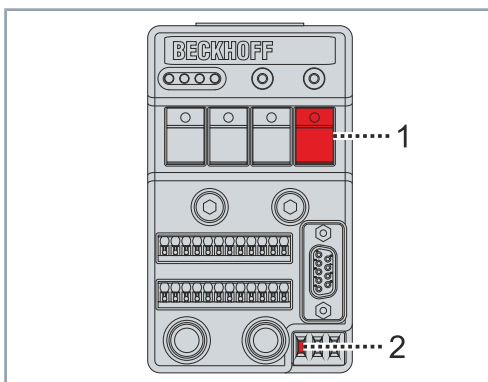


- Press button 3 [1]
- Make sure that the switch [2] is in the upper position

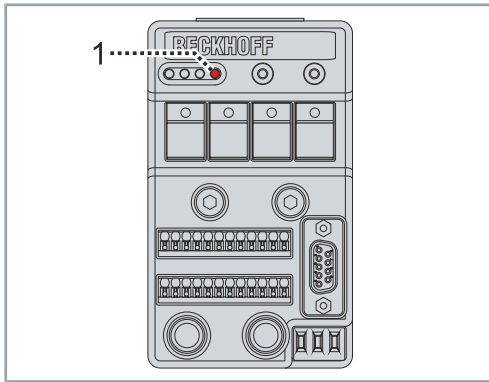


The LED 3 Digital output 3 [1] lights up.

6.2.4 Button 4 - digital input 4



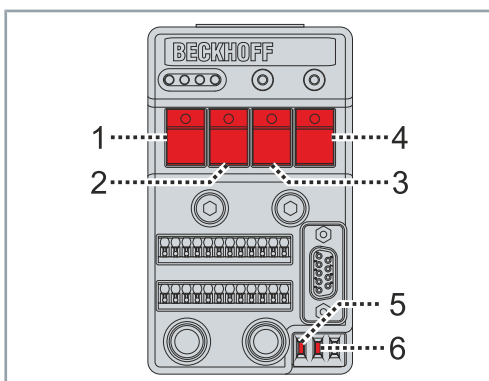
- Press button 4 [1]
- Make sure that the switch [2] is in the upper position



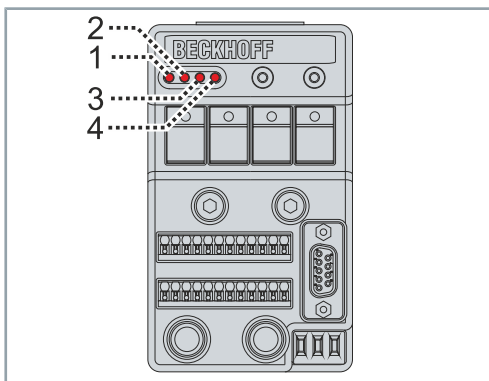
The *LED 4 Digital output 4* [1] lights up.

6.2.5 Button 1 to 4

You have the possibility to set the four LEDs into a chaser mode.

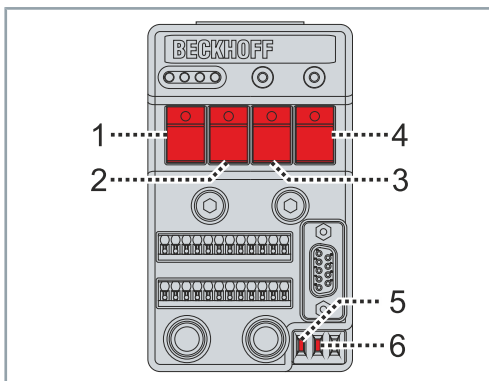


- Keep keys [1] to [4] pressed for five seconds
- Make sure that the switches [5] and [6] are in the upper position

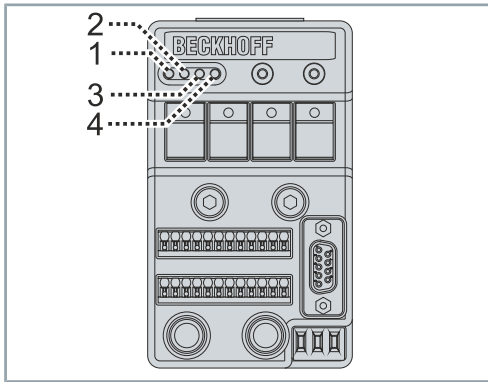


LEDs [1] to [4] are in chaser mode.

6.2.5.1 Exit chaser mode



- Keep keys [1] to [4] pressed for five seconds
- Make sure that the switches [5] and [6] are in the upper position



LEDs [1] to [4] are off.

6.3 Potentiometer

The potentiometers control the RGB LED of the PWM outputs.



Color saturation

The potentiometers convert the HSV color values into RGB colors. By default, the color saturation S of the RGB PWM outputs is preset to a value of 1 and can only be changed via an adjustment in the PLC.



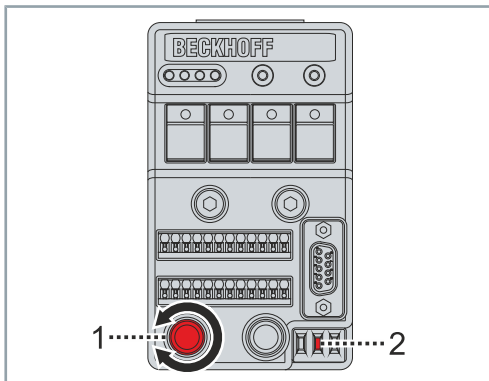
Note the position of the switches

Make sure that the switches are in the lower position if you want to use all potentiometers.

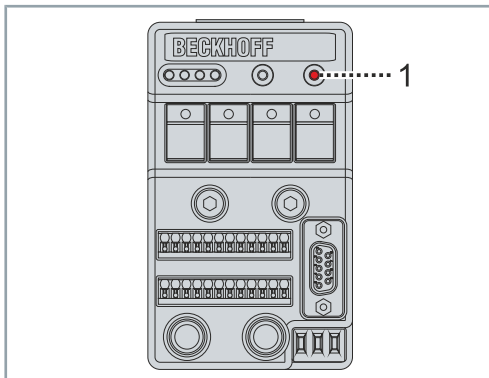
When a switch is in the lower position, the analog input is without function and the potentiometer cannot perform the corresponding function for the RGB PWM outputs.

6.3.1 Potentiometer 1 - analog input 1

With potentiometer 1 the color value H for the RGB LED can be set.



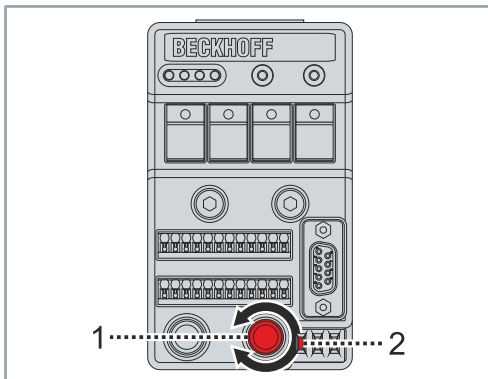
- Turn potentiometer 1 [1] to set the color of the RGB LED
- Make sure that the switch [2] is in the lower position



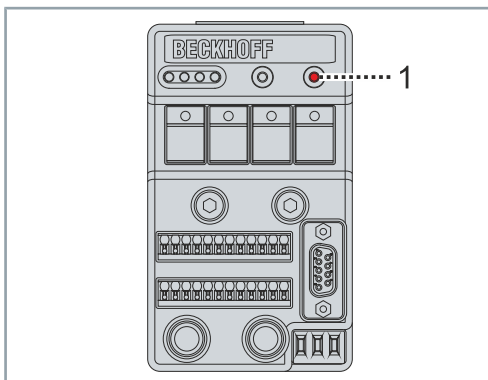
The RGB LED [1] lights up in the set color.

6.3.2 Potentiometer 2 - analog input 2

With potentiometer 2 the brightness V for the RGB LED can be adjusted.



- Turn potentiometer 2 [1] to adjust the brightness of the RGB LED
- Make sure that the switch [2] is in the lower position



The RGB LED [1] lights up in the set brightness.

7 Assembly and disassembly

7.1 Mover


The pre-assembled movers can be removed and inserted.



Example XTS starter kit with open end

The removal and insertion of the movers is exemplified by an XTS starter kit with open end.

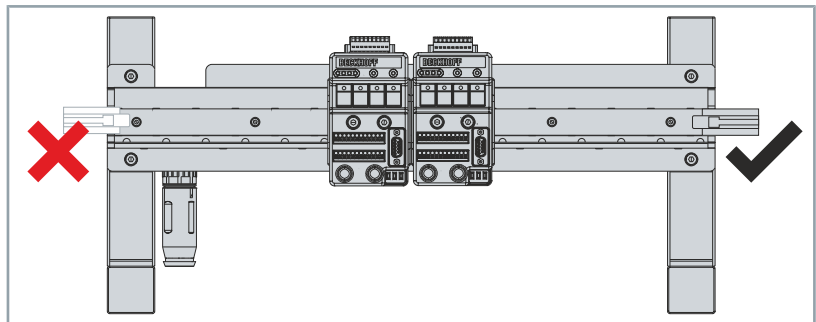
The rail on support [+] ZK9001-0000 is available for removing and inserting the movers on a circulating system. For more information, refer to the original operating instructions XTS | linear product transport:

 [Direct link to the XTS original operating instructions](#)

7.1.1 Rail on support

The rail on support supplied must be mounted for inserting and removing the movers.

Position



The rail on support may only be mounted on the motor module without connectors.

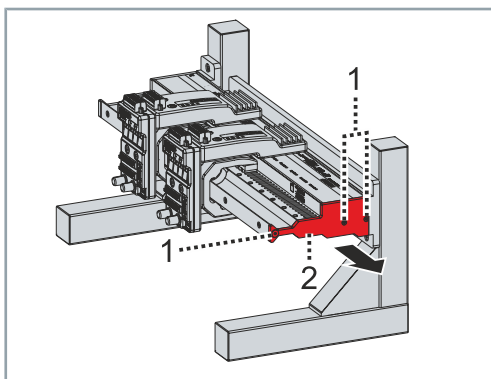
NOTICE

Installing the rail on support correctly

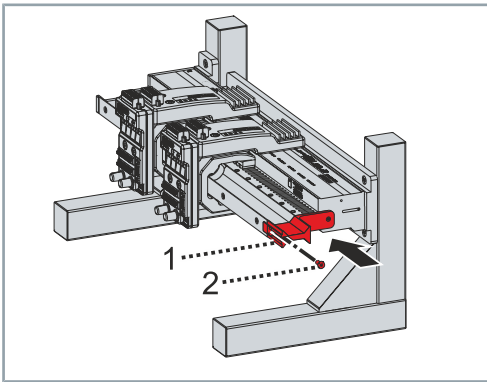
If the rail on support is mounted on the motor module with connectors, there is an offset between the rail on support and the guide rail.

If you mount the rail on support on the motor module with connector, damage to the mover and the guide rail may result.

Assembly

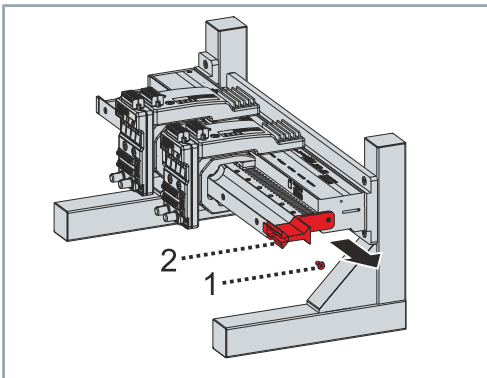


- Remove screws [1]
- Remove end cap [2]

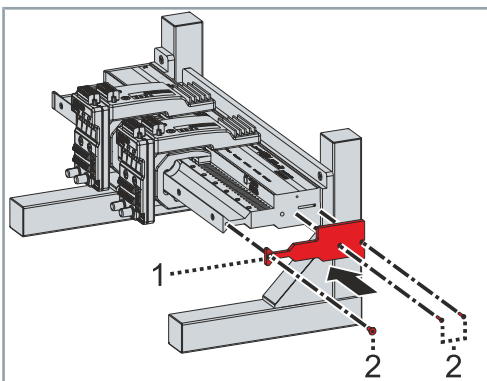


- Insert rail on support [1]
- Insert screw [2] and hand-tighten it
- Note the position of the rail on support

Disassembly



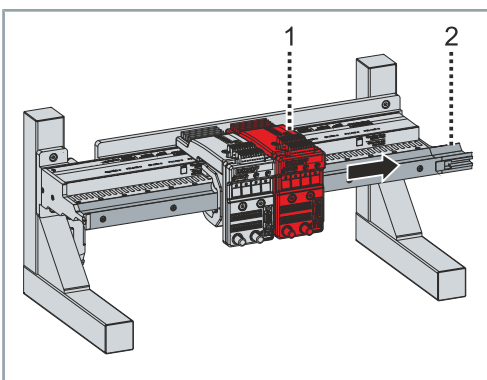
- Remove screw [1]
- Remove rail on support [2]



- Insert end cap [1]
- Insert and tighten the screws [2]
- Observe tightening torques:

Components	Tightening torque [Nm]
Screw, M5 x 12	2
Screws, M3 x 14	1

7.1.2 Removing



- Remove the mover [1] via the rail on support [2]

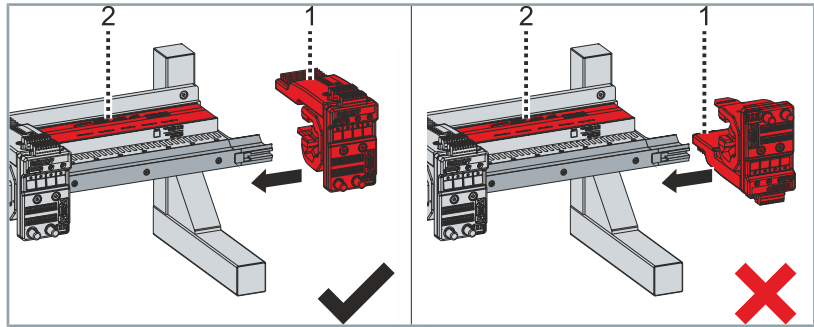
7.1.3 Inserting

NOTICE

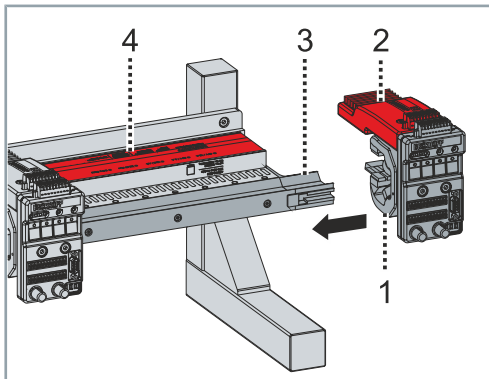
Observe the order of the movers

A change in the order of movers or a different number of movers on the system requires an adjustment to the project.

Mover alignment



The NCT electronics [1] must be located on the side of the name plate [2] when the mover is inserted.



- ▶ Insert mover [1] with the NCT electronics [2] via the rail on support [3]
- ▶ Observe correct alignment of the NCT electronics [2] to the name plate [4]

7.2 NCT electronics

The NCT electronics are pre-mounted on the mover with two screws. The air gap between the NCT electronics and the modules is preset accordingly.

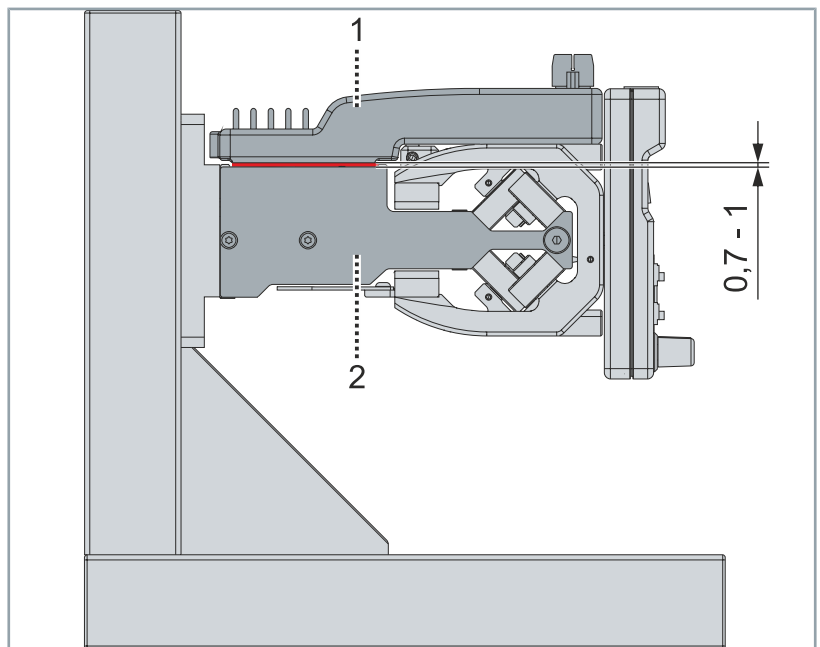
NOTICE

Checking the air gap

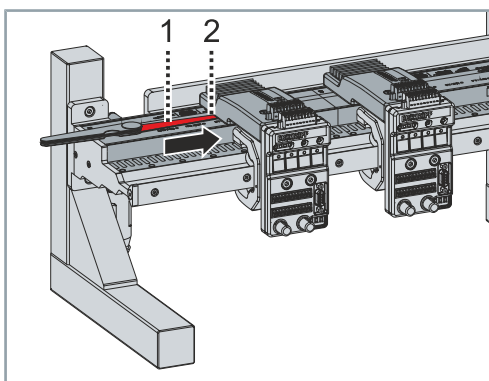
The air gap must be checked if a mover is inserted that is not included in the scope of delivery or if you have mounted the NCT electronics on a mover.

If the air gap is not set correctly, there may be problems with energy transfer and data transmission.

7.2.1 Checking the air gap



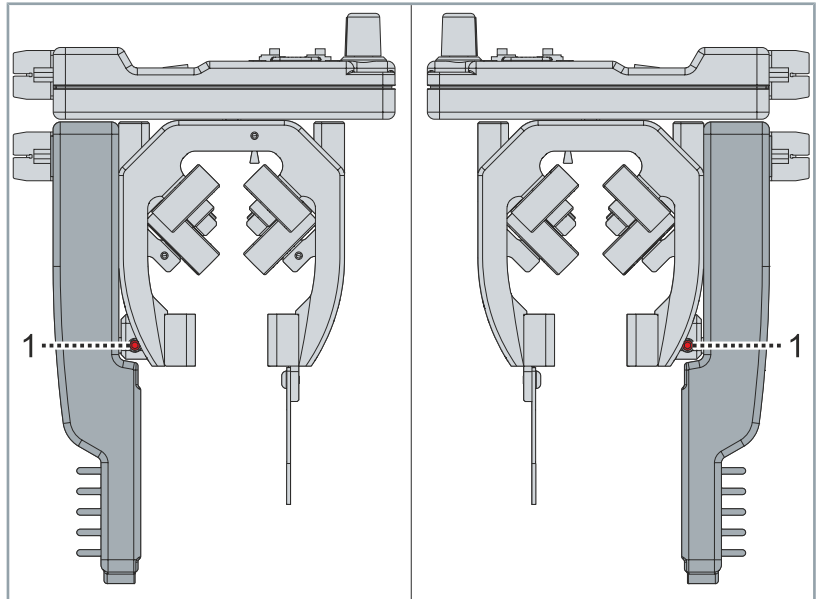
The air gap between the mounted NCT electronics [1] and the motor module [2] is preset to 1 mm ex factory. The air gap may be reduced to a minimum of 0.7 mm.



- Insert the feeler gauge blade [1] into the air gap [2] between the NCT electronics and the module

The air gap must be adjusted if the feeler gauge blade cannot be inserted into the air gap.

7.2.2 Adjust air gap



On both sides of the mover there is a set screw [1] for adjusting the position of the NCT electronics. The air gap between the NCT electronics and the module can be adjusted using the two set screws.

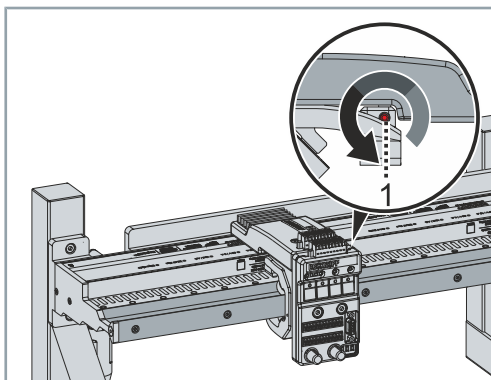
Reduce air gap

NOTICE

Air gap must be at least 0.7 mm

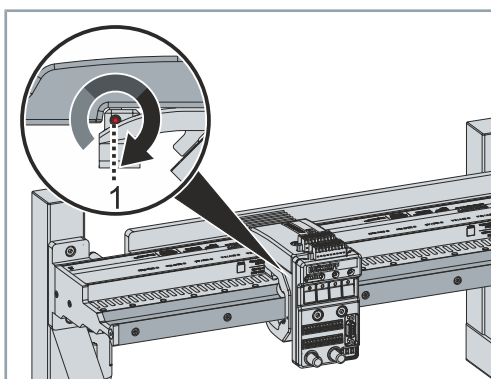
To check the air gap, the mover must be on the guide rail. The air gap must be at least 0.7 mm.

If the air gap is too small, damage to the mover and the system may result.



- Loosen set screw [1]

Rotation	Changing the air gap [mm]
1/4	0.1



- Tighten set screw [1] on the opposite side accordingly
- Check the air gap

If the air gap is not yet set correctly:

- Loosen and tighten the set screws again

OR

- Increasing the air gap

Further information can be found in chapter "Increasing the air gap", [Page 65].

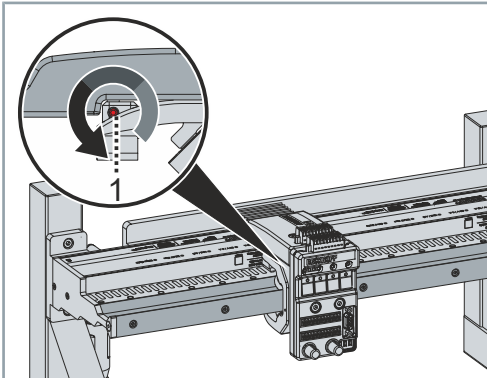
Increasing the air gap

NOTICE

The air gap must not exceed 1 mm

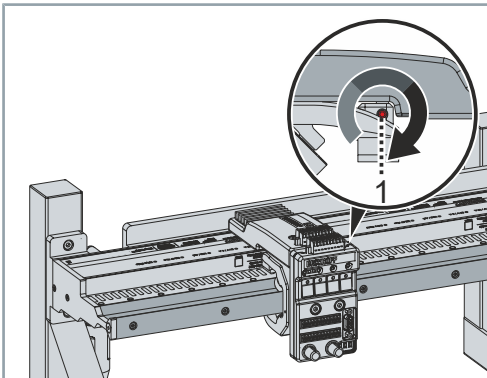
To check the air gap, the mover must be on the guide rail. The air gap must not exceed 1 mm.

If the air gap is too large, the data transmission between the NCT electronics on the mover and the motor modules may be disturbed and the functions may not be executed correctly.



- Loosen set screw [1]

Rotation	Changing the air gap [mm]
1/4	0.1



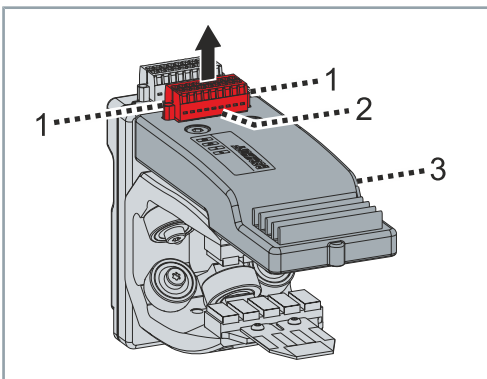
- Tighten set screw [1] on the opposite side accordingly
- Check the air gap

If the air gap is not yet set correctly:

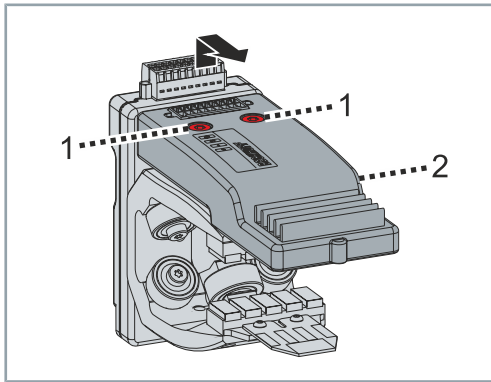
- Loosen and tighten the set screws again
- OR
- Reduce the air gap

Further information can be found in chapter "Reduce air gap", [Page 64].

7.2.3 Disassembly



- Loosen screws [1] on the connector of the cable bridge
- Pull off the connector [2] of the cable bridge from the NCT electronics [3]



- ▶ Remove screws [1]
- ▶ Lift and remove the NCT electronics [2] in the area of the connector

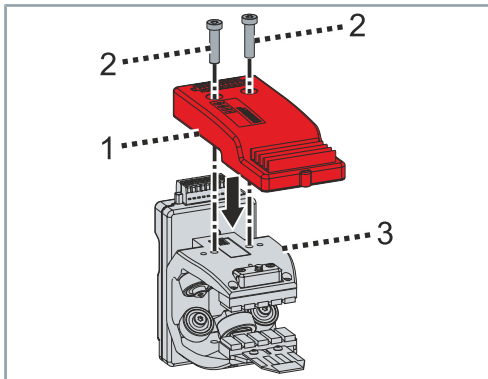
7.2.4 Assembly

NOTICE

Note mover type

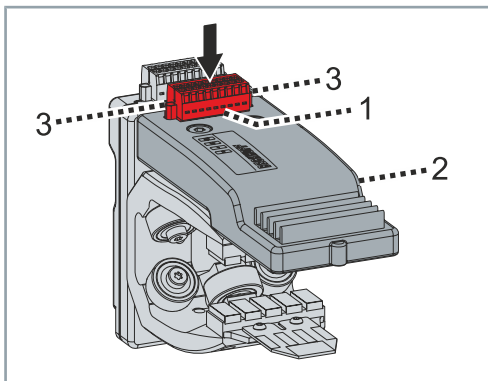
The NCT electronics may only be attached to mover AT9014-1070-x550. All other movers are not suitable for mounting the NCT electronics.

If you mount the NCT electronics on other movers, damage to movers and modules may result.



- Tighten the NCT electronics [1] to the mover [3] with screws [2]
- Observe tightening torques:

Components	Tightening torque [Nm]
Screws, M6 x 25	4

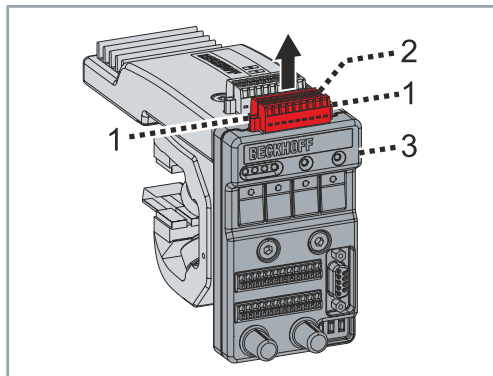


- Plug the connector [1] of the cable bridge into the connection strip of the NCT electronics [2]
- Tighten screws [3] on the cable bridge

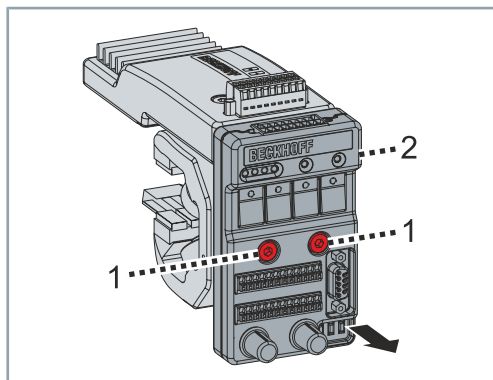
7.3 Test board

The test board is pre-mounted on the mover with two screws.

7.3.1 Disassembly



- Loosen screws [1] on the connector of the cable bridge
- Pull off the connector [2] of the cable bridge at the test board [3]



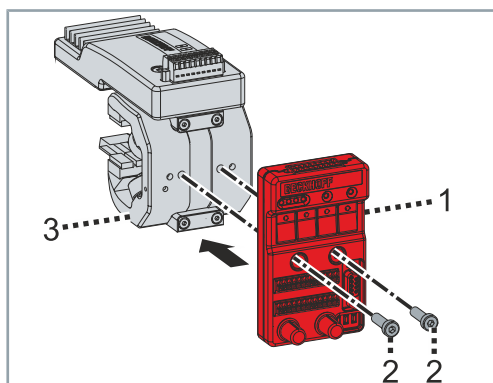
- Remove screws [1]
- Remove test board [2]

7.3.2 Assembly

NOTICE

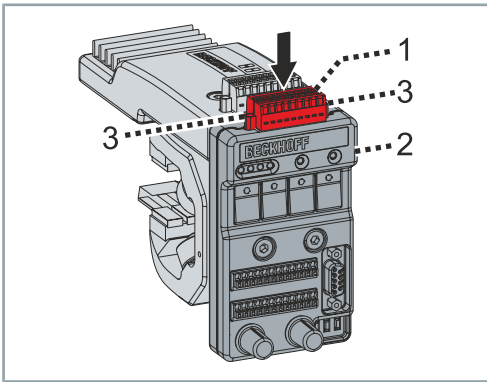
Note mover type

The test board may only be attached to AT9014-1070-x550 movers. All other movers are not suitable for mounting the NCT electronics.



- Screw the test board [1] to the mover [3] with screws [2]
- Observe tightening torques:

Components	Tightening torque [Nm]
Screws, M6 x 20	4



- Plug the connector [1] of the cable bridge into the connection strip of the test board [2]
- Tighten screws [3] on the cable bridge

8 Decommissioning

Disassembly may only be carried out by qualified and trained personnel.

Further information can be found in chapter Staff qualification.

When disposing of electronic waste, make sure that you dispose of it in accordance with the regulations applicable in your country. Read and follow the instructions for proper disposal.

8.1 Disassembly

WARNING

Risk of injury when disassembling the movers

Permanent magnets are installed in the magnetic plate sets of the movers. Be careful when disassembling the magnetic plate sets. Make sure that the magnetic plate sets do not magnetically attract one another with your hands in-between.

If you don't take care during the disassembly, opposite magnetic plate sets may attract each other without warning and injure your hands.



Do not remove components from the products

Only

Beckhoff Automation GmbH & Co. KG is permitted to remove components.

Contact Beckhoff Service for further information.

✉ service@beckhoff.com

Removal of the components

- ▶ Remove cables and electrical connections
- ▶ Loosen the fixing screws of the guide rails and the modules
- ▶ Remove the modules from the machine one after the other
- ▶ Transport the XTS components to the workplace or put them into storage

8.2 Disposal

Depending on your application and the products used, ensure the professional disposal of the respective components:

Cast iron and metal

Dispose of cast and metal parts as scrap metal for recycling.

Cardboard, wood and foam polystyrene

Dispose of packaging materials made of cardboard, wood or foam polystyrene in accordance with the regulations.

Plastics and hard plastics

You can recycle parts made of plastic and hard plastic via the recycling depot or re-use them depending on the component designations and markings.

Oils and lubricants

Dispose of oils and lubricants in separate containers. Hand over the containers at the used oil collection station.

Batteries and rechargeable batteries

Batteries and rechargeable batteries may also be marked with the crossed-out trash can symbol. You must separate these components from the waste and are legally obliged to return used batteries and rechargeable batteries within the EU. Observe the relevant provisions outside the area of validity of the EU Directive 2006/66/EC.



Electronic components

Products marked with a crossed-out waste bin must not be disposed of with general waste. Electronic components and device are considered as waste electrical and electronic equipment for disposal. Observe the national regulations for the disposal of old electrical and electronic equipment.

8.2.1 Returning to the vendor

In accordance with the WEEE-2012/19/EU directives, you can return used devices and accessories for professional disposal. The transport costs are borne by the sender.

Send the used devices with the note "For disposal" to:


Beckhoff Automation GmbH & Co. KG
"Service" Building
Stahlstrasse 31
D-33415 Verl

In addition, you have the option to contact a local certified specialist company for the disposal of used electrical and electronic appliances. Dispose of the old components in accordance with the regulations applicable in your country.

9 Circuit diagram

0	1	2	3	4	5	6	7	8	9
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BECKHL_P8_v2



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New Automation Technology

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telefax : +49 (0)5246 / 963-379
e-mail : see project manager@beckhoff.de

Company / customer Project description Job number Commission		XTS starter kit with NCT functionality	
Manufacturer (company) Beckhoff Automation GmbH & Co. KG Hülshorstweg 20 D-33415 Verl / Germany			
Manufacturer (order number) 			
Project name XTS starter kit with NCT functionality			
make 			
Typ XTS starter kit with NCT functionality			
Place of installation 			
Manufacturing date 2022			
project manager 			
Special feature 			
Date of creation 22.06.2022 from MatthiasD			
Modification date 07.12.2022 from MatthiasD			
		Number of pages 51	

change	date	name	first	date	User	date	22.06.2022	XTS starter kit with NCT functionality	Title sheet	=CONTENTS&EAB/1	page	1

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=CONTENTS									
&EAB									
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XTS starter kit with NCT functionality									
Replacement of									
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User									
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Parts list									
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Structuring principles, wiring diagram structure									
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0123456789

BECKH_P8_02

Structuring principles, reference identification

The reference identification consists of 3 identification blocks

e.g. :
=P1+S1-KM1

Identification block 3 (identification of the equipment (here motor contactor 1))

Identification block 2 (location of the equipment (here control cabinet 1))

Identification block 1 (higher-level assignment / function identifier (here system pos.P1))

change

date

name

date

User

MAD

date

22.06.2022

XTS starter kit with NCT functionality

Replacement of

Replaced by

Legend

RECHOFF

=LEGEND

&ETL

3

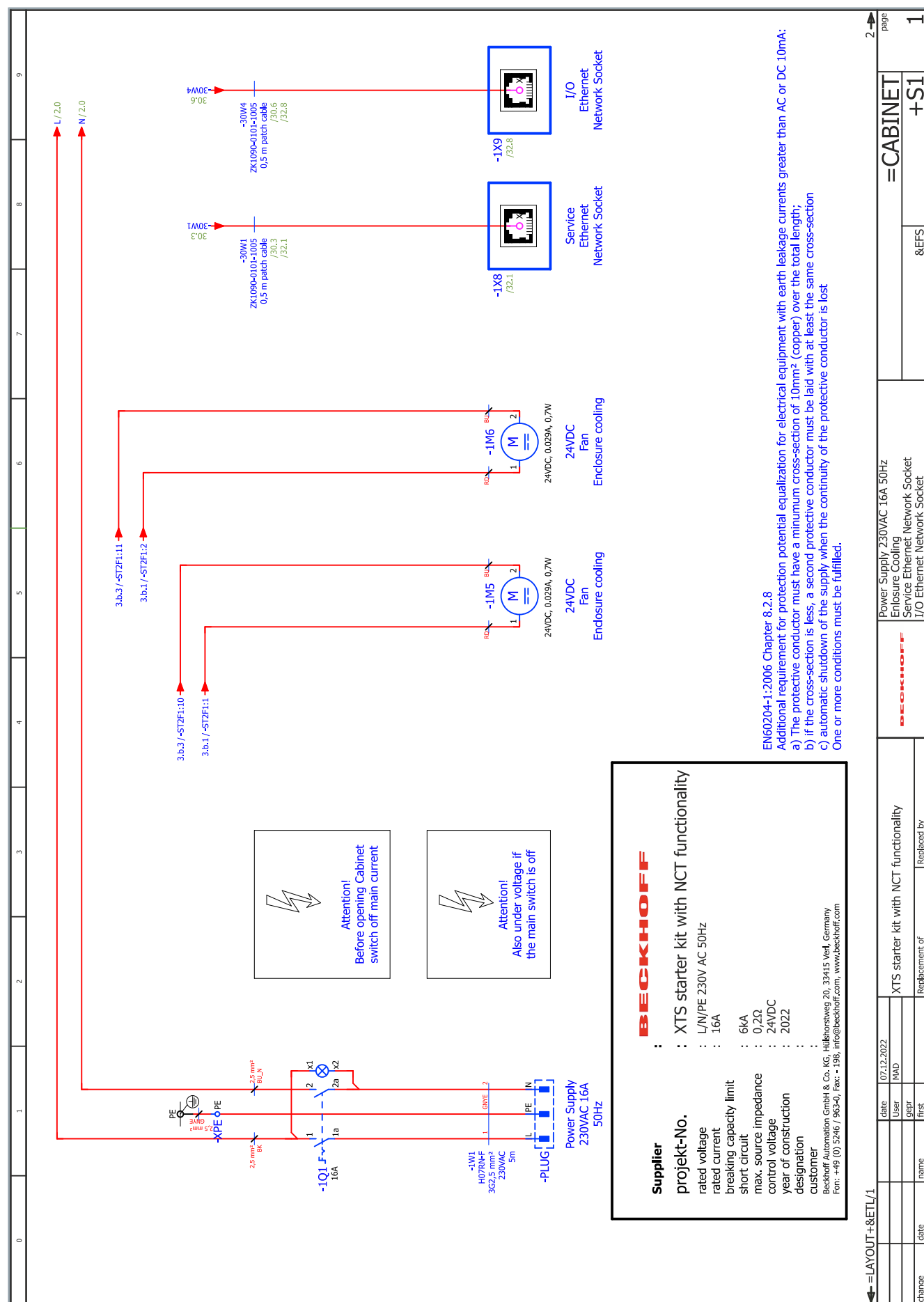
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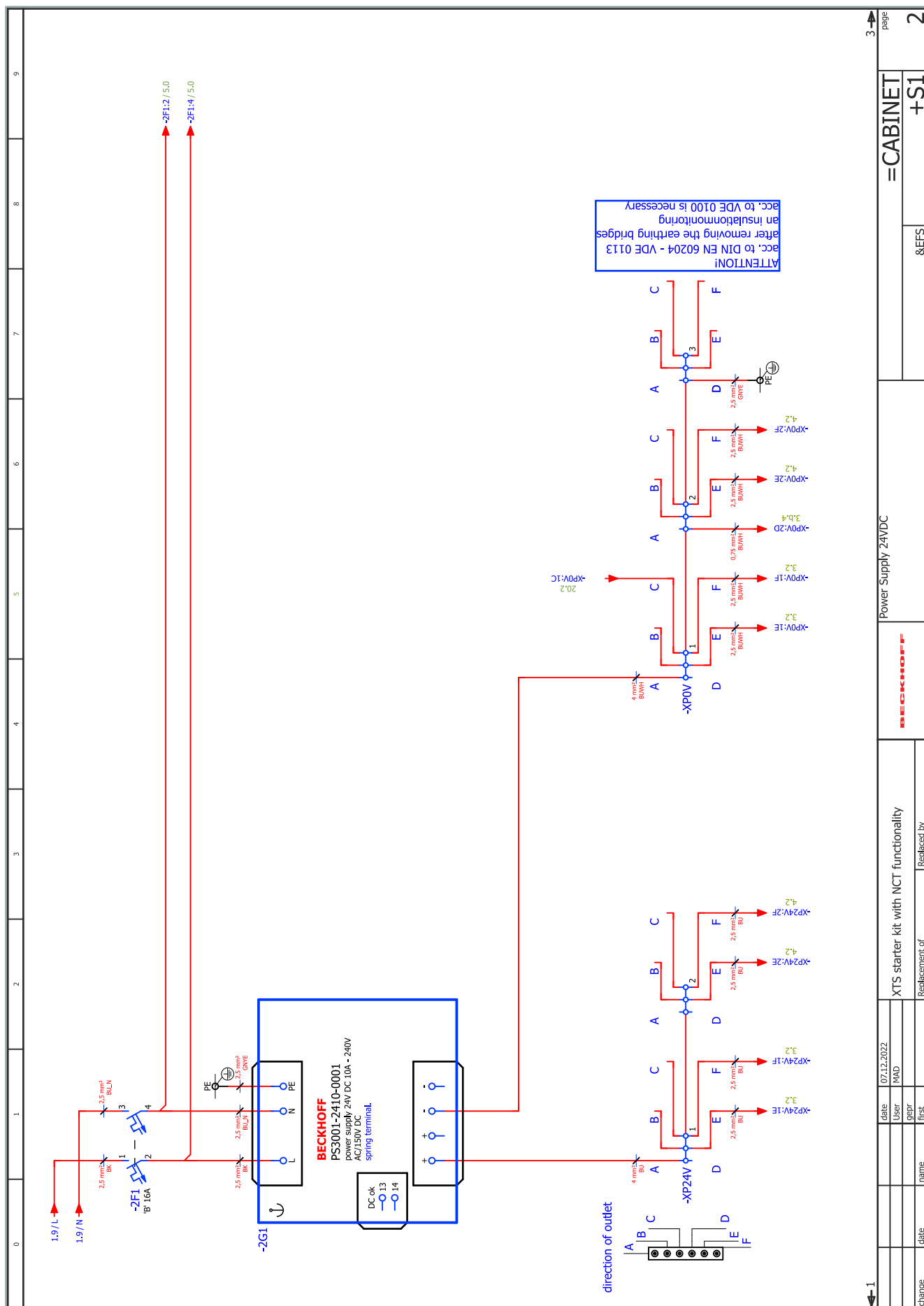
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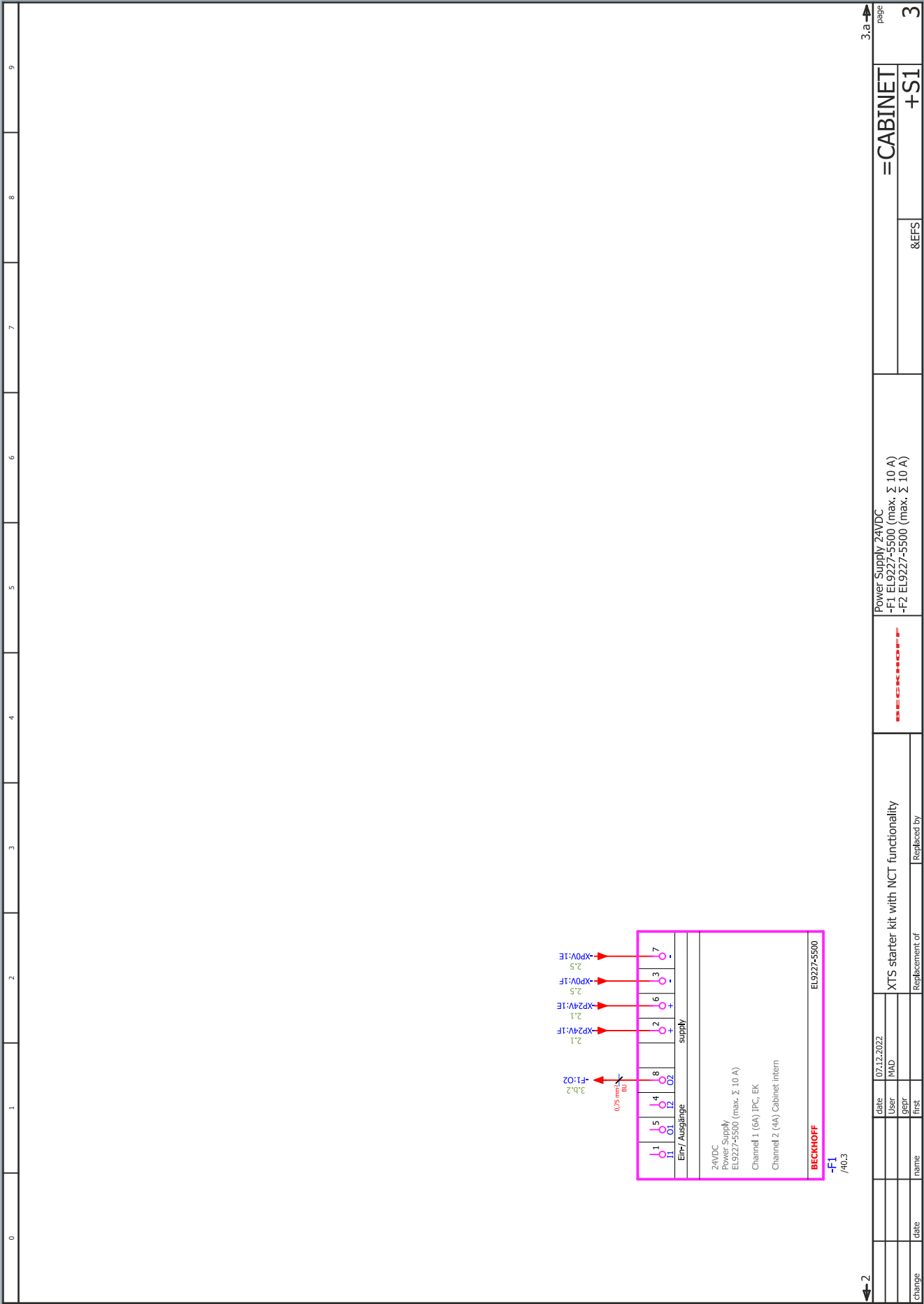
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Marking block 3 (-kind of operating resources)																			
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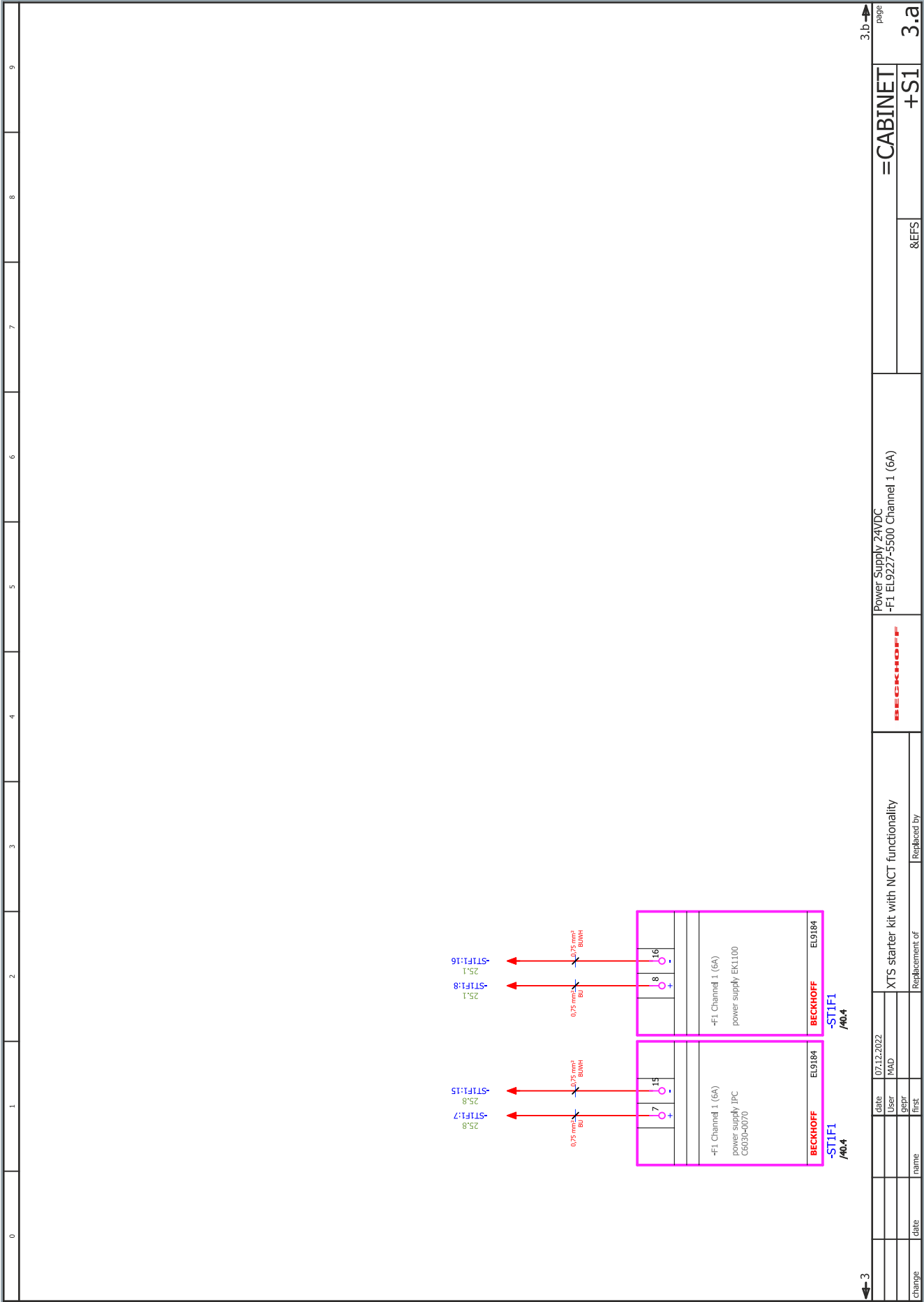
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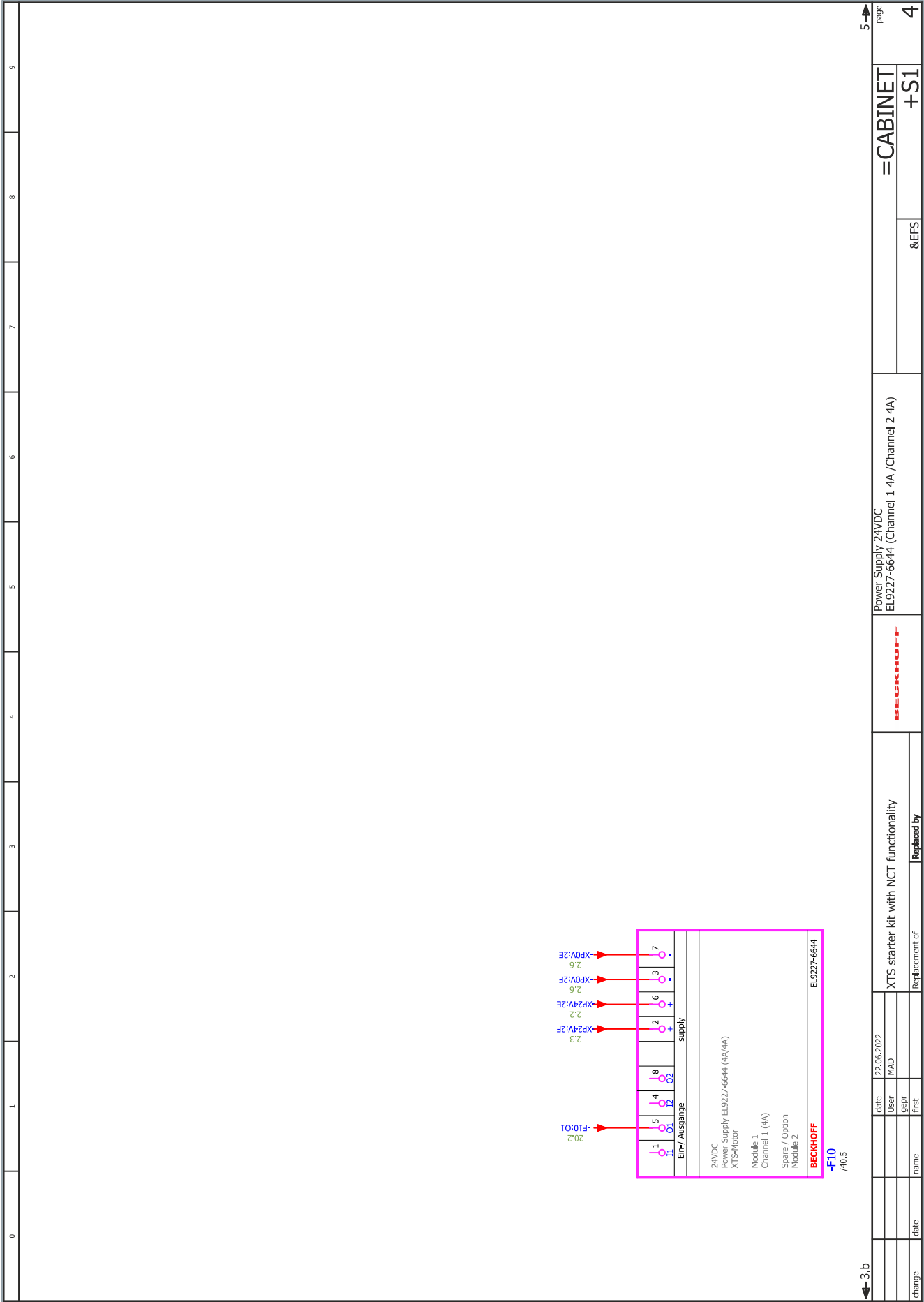


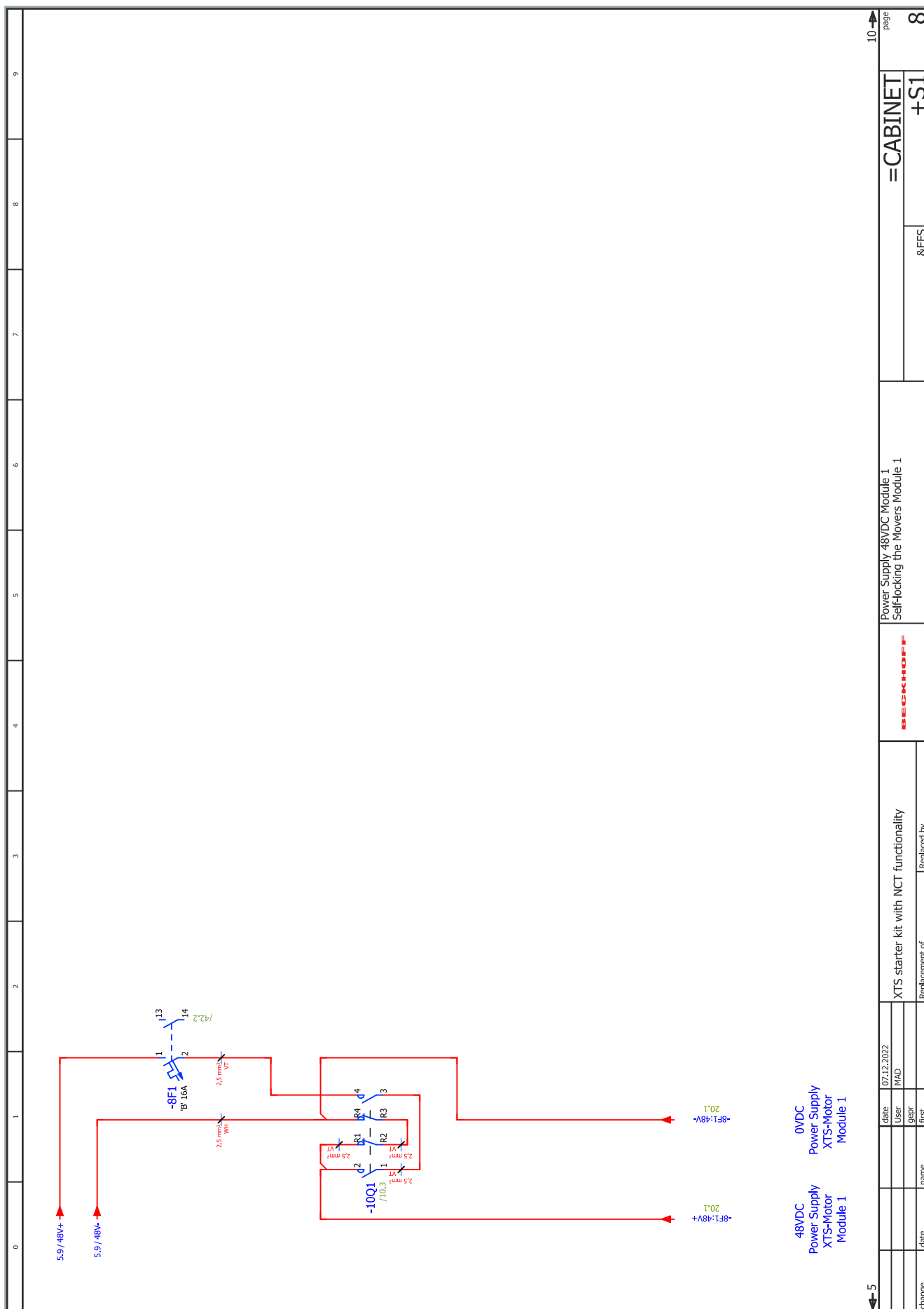




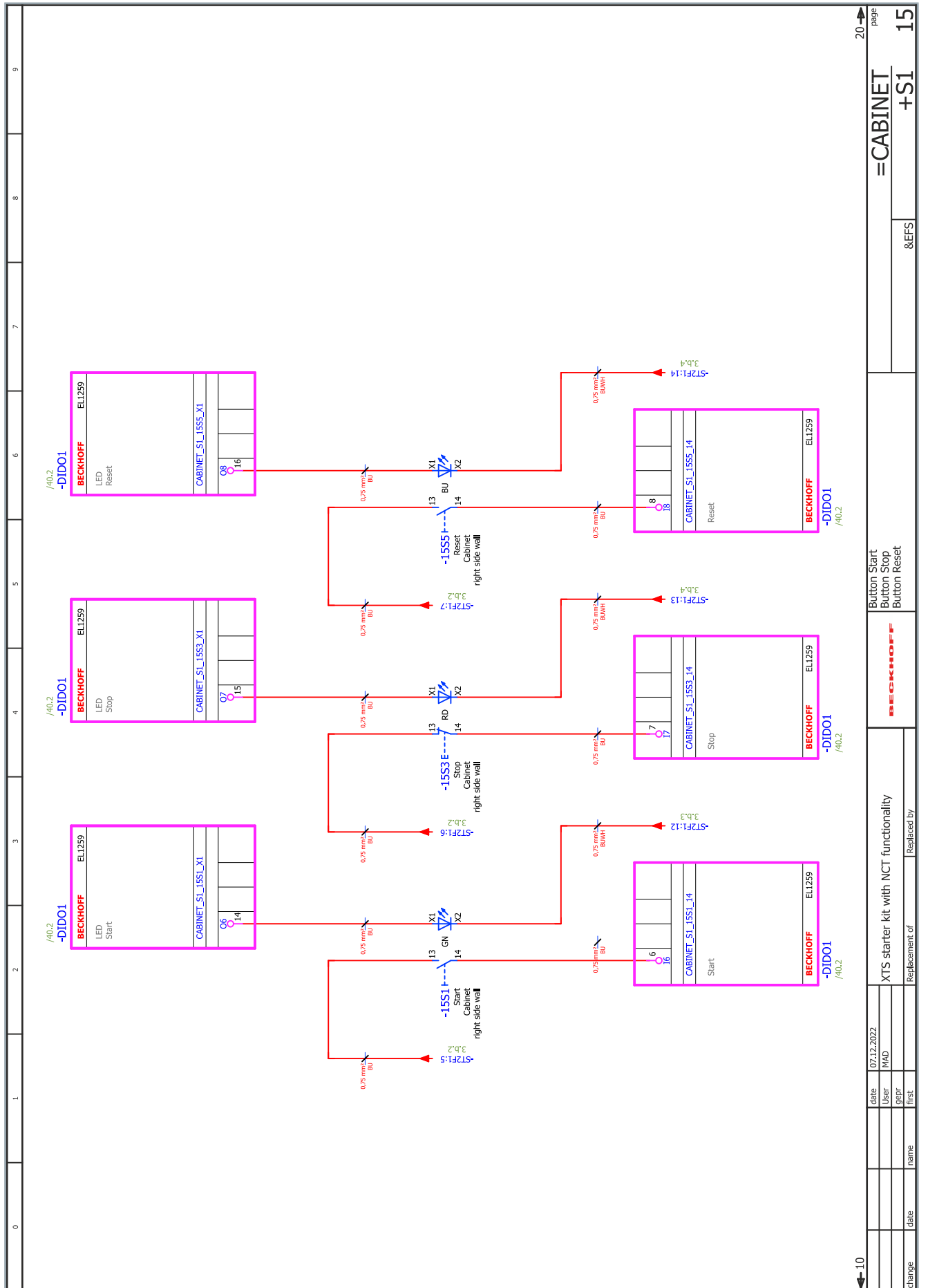


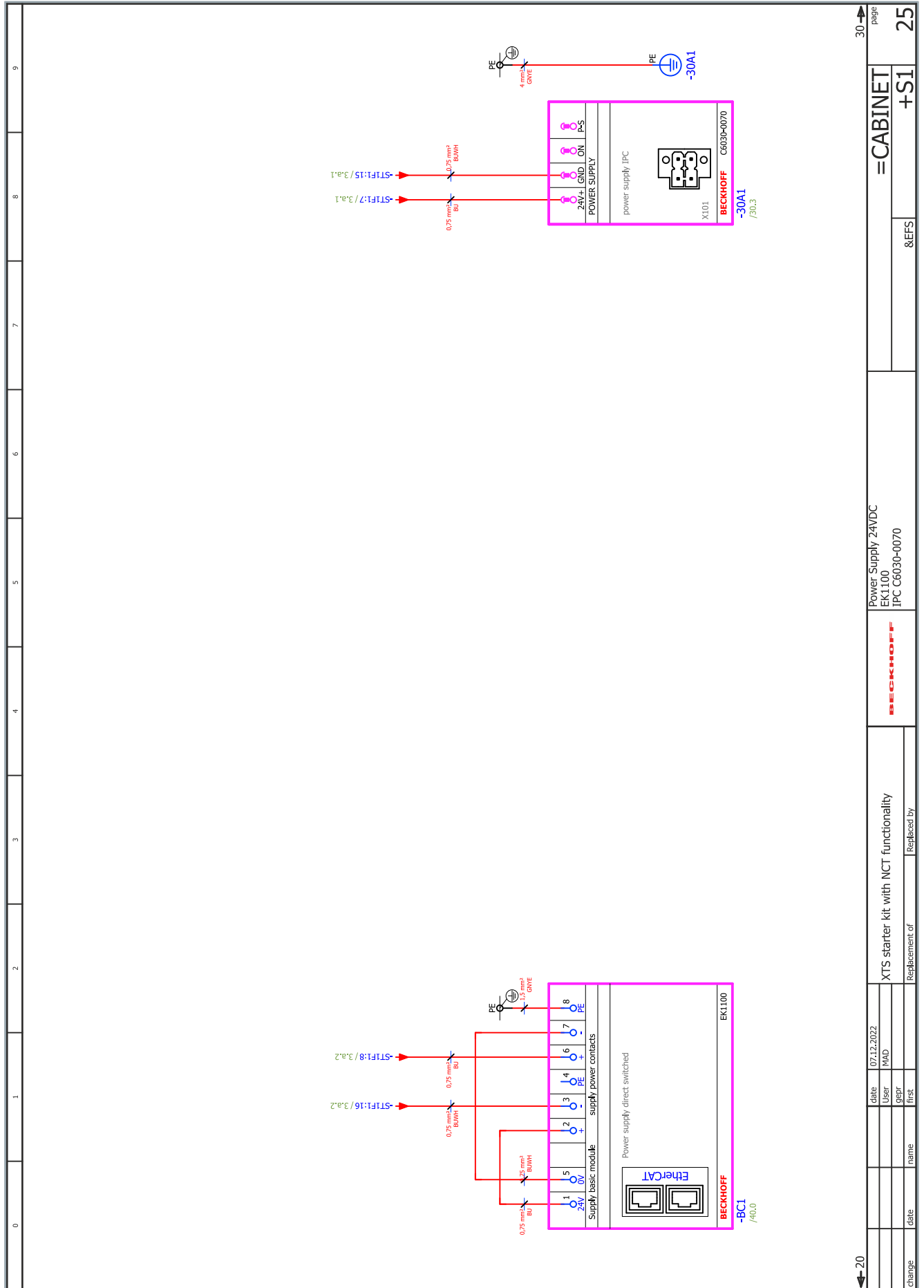


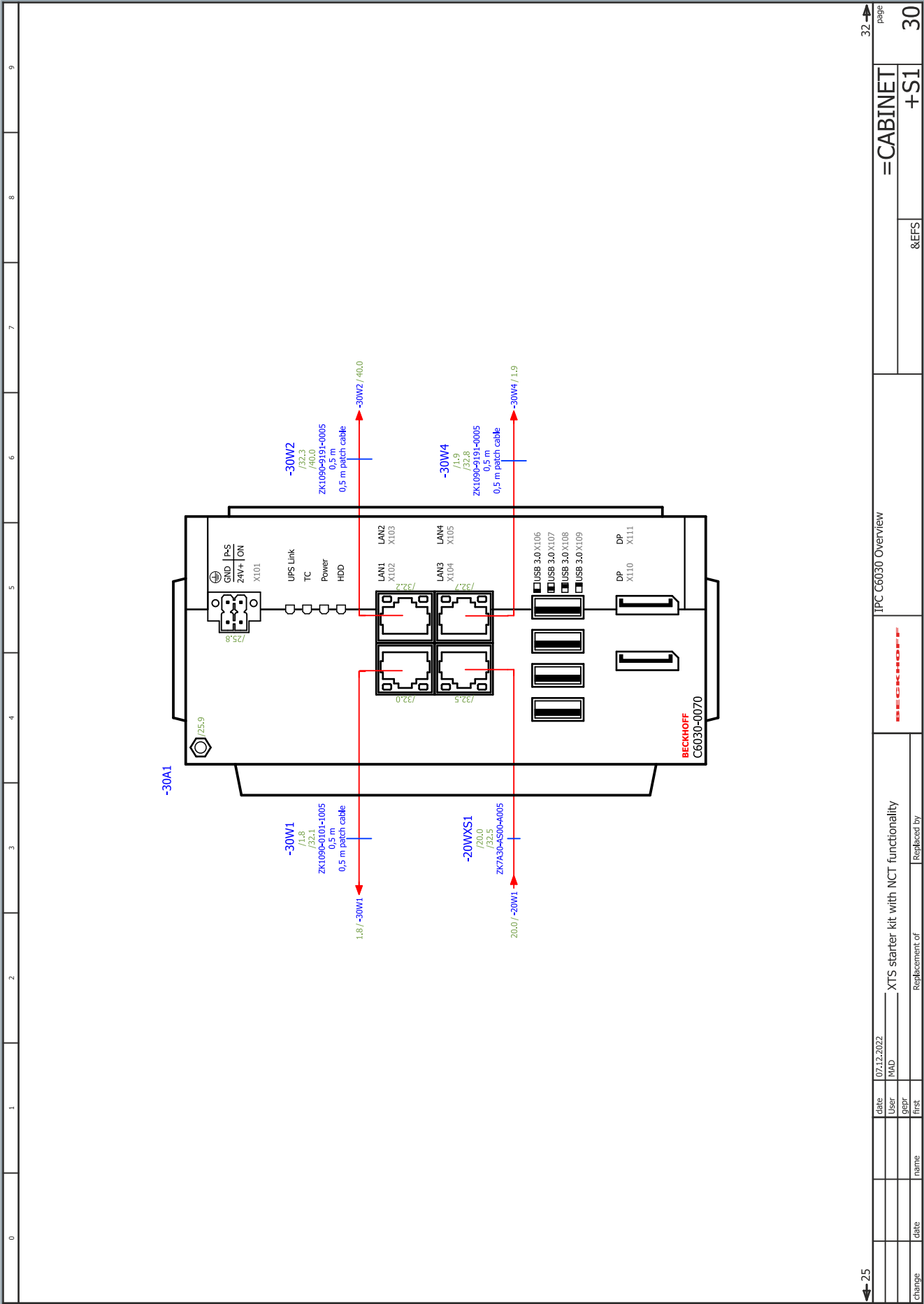


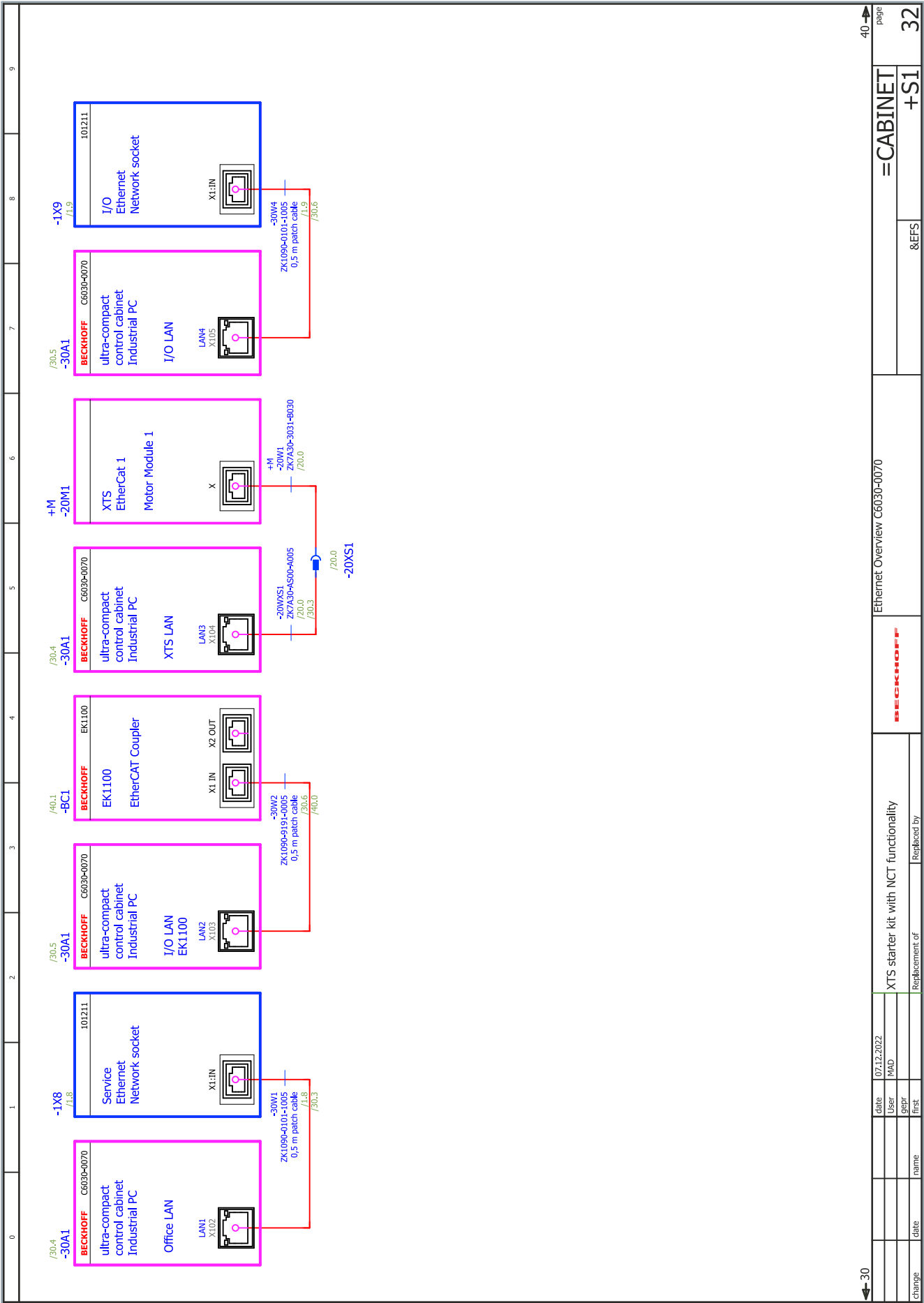


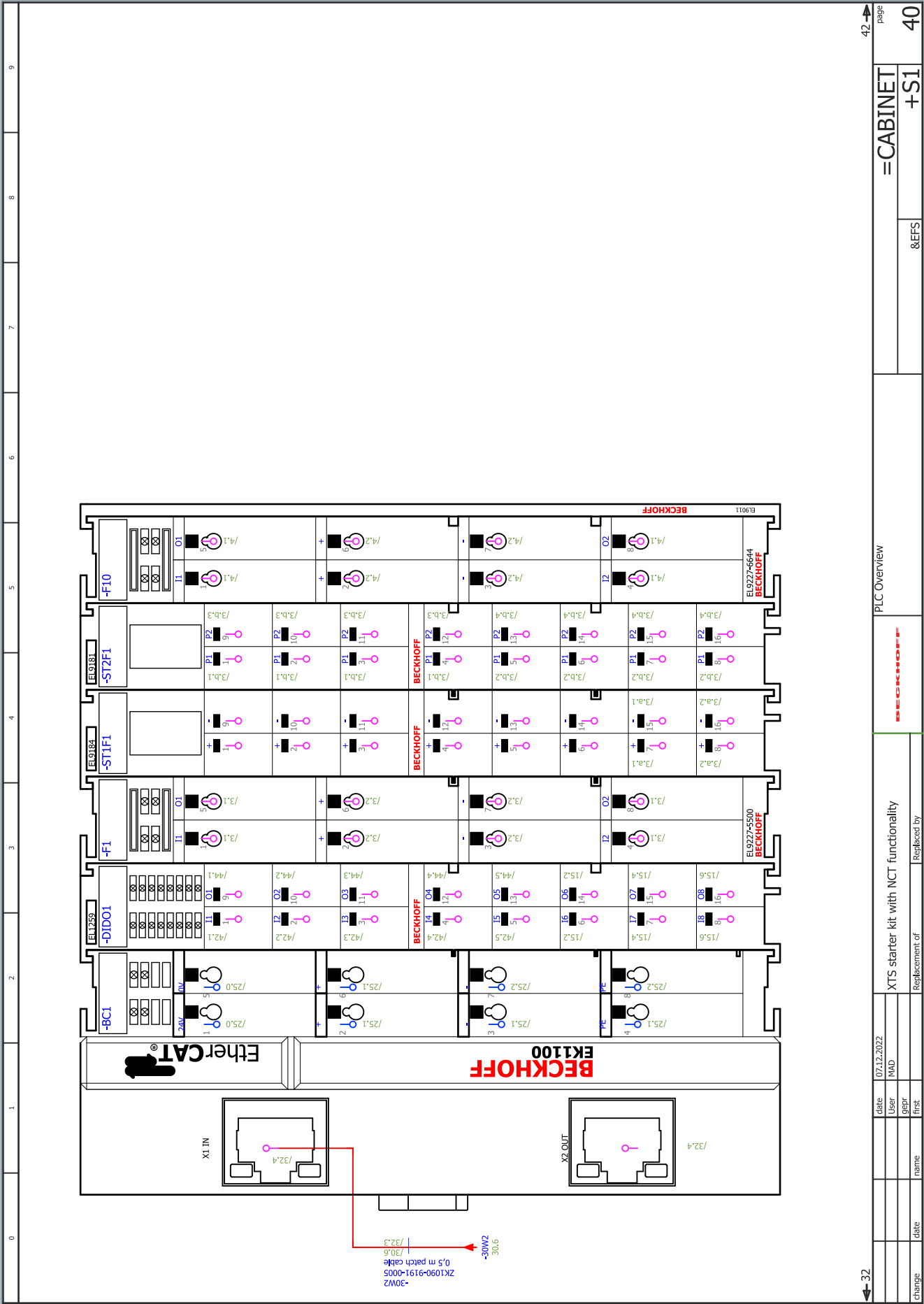


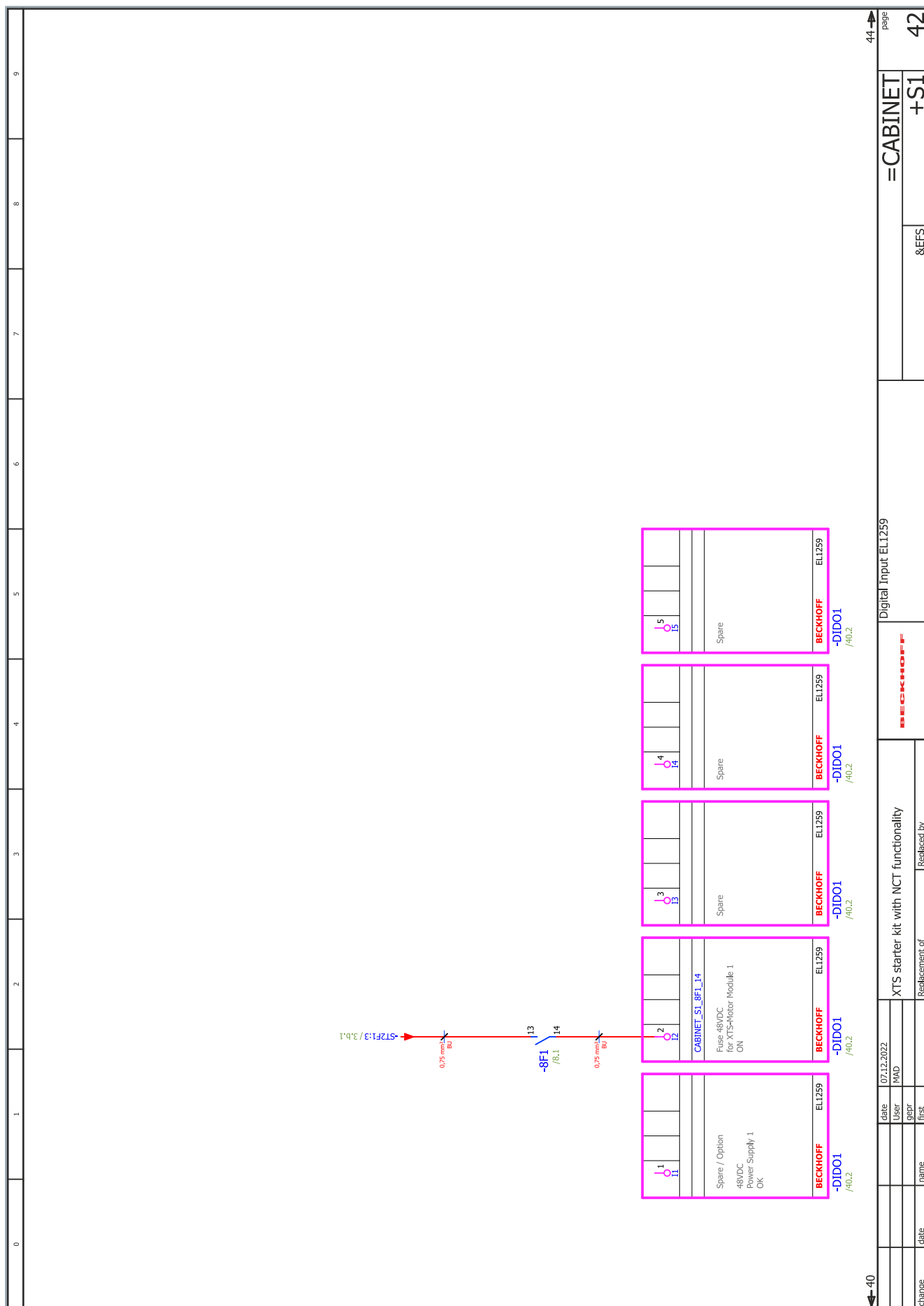


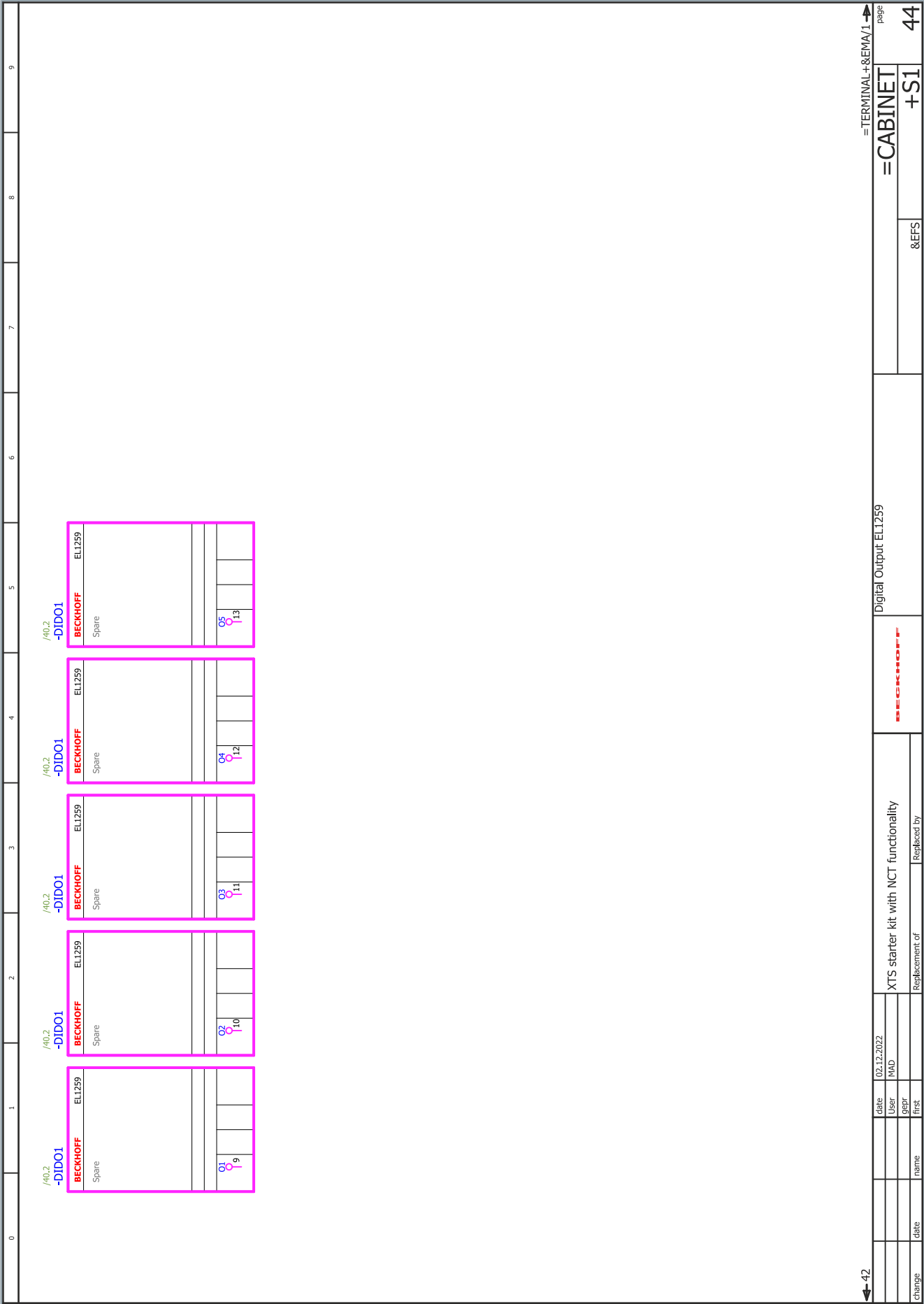












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terminal diagram									
BECKH_P8_Dyn_v2									
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=CABINET+S1-XP0V									
function text									
cable name									
=CABINET+S1-20WXS1									
cable type									
ZK7A30-AS00-A005									
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=CABINET+S1-F1									
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terminal diagram

BECKH_P8_Dyn_v2

[illegible][illegible]

BECKH_P8_Dyn_v3

Cable name =CABINET+S1-1W1	cable type H07RN-F		no. of conductors 3G		cross-section 2,5	cable length 5		function text
function text	X-Ref	Target designation from	Connection point	conductor	Target designation to	Connection point	X-Ref	function text
	=CABINET+S1&EFS/1.1	=CABINET+S1-IQ1	1a	1	=CABINET+S1-PLUG	L	=CABINET+S1&EFS/1.1	
	=CABINET+S1&EFS/1.1	=CABINET+S1-IQ1	2a	2	=CABINET+S1-PLUG	N	=CABINET+S1&EFS/1.1	
	=CABINET+S1&EFS/1.1	=CABINET+S1-IQ1	x2	2	=CABINET+S1-PLUG	N	=CABINET+S1&EFS/1.1	
Power Supply 230VAC 16A 50Hz	=CABINET+S1&EFS/1.1	=CABINET+S1-XPE	PE	GNYE	=CABINET+S1-PLUG	PE	=CABINET+S1&EFS/1.1	

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Cable diagram

BECKH_P8_Dyn_v3

Cable name	cable type		no. of conductors		cross-section	cable length	function text
=CABINET+S1-30W2		ZK1090-9191-0005				0,5	
function text	X-Ref	Target designation from	Connection point	conductor	Target designation to	Connection point	function text
	=CABINET+S1&EFS/30.5	=CABINET+S1-30A1	X103:1		=CABINET+S1-BC1	X1 IN	
						=CABINET+S1&EFS/40.1	

← 3

change	date	name	date	User	MAD	gepr	first	Replaced by	XTS starter kit with NCT functionality	REDACTED	cable diagram =CABINET+S1-30W2	=CABLE	8EMB	page
			07.12.2022											4

5 →

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Cable diagram

BECKH_P8_Dyn_v3

<div>Cable name</div> <div>=CABINET+S1-30W4</div>	<div>cable type</div> <div>ZK1090-9191-0005</div>	<div>no. of conductors</div>	<div>cross-section</div>	<div>cable length</div> <div>0,5</div>	<div>function text</div>
<div>function text</div>	<div>X-Ref</div> <div>=CABINET+S1&EFS/32.8</div>	<div>Target designation from</div> <div>=CABINET+S1-1X9</div>	<div>conductor</div>	<div>Connection point</div> <div>X105:1</div>	<div>function text</div>
	<div>X1:IN</div>	<div>=CABINET+S1-30A1</div>	<div>X105:1</div>	<div>=CABINET+S1&EFS/30.5</div>	

4

6

07.12.2022

User

MAD

name

date

first

last

grpr

XTS starter kit with NCT functionality

Replenishment of

Replaced by

RECKHOFF

cable diagram =CABINET+S1-30W4

=CABLE

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page

6

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Cable diagram									
BECKHL_P8_Dyn_v3									
Cable name =CABINET+S1-20WXS1		cable type ZK7A30-AS00-A005		no. of conductors		cross-section		cable length	
function text		X-Ref	Target designation from	Connection point	conductor	Target designation to	Connection point	X-Ref	function text
		=CABINET+S1&EFS/2.4	=CABINET+S1-XP0V	1	BK	=CABINET+S1-20XS1	9	=CABINET+S1&EFS/20.2	Motor Module 1 with Power Supply XTS Power Supply 1 24VDC / 48VDC EtherCAT
		=CABINET+S1&EFS/8.1	=CABINET+S1-10Q1	2	BN	=CABINET+S1-20XS1	8	=CABINET+S1&EFS/20.2	=
0VDC Power Supply XTS-Motor Module 1		=CABINET+S1&EFS/8.1	=CABINET+S1-10Q1	R4	BU	=CABINET+S1-20XS1	7	=CABINET+S1&EFS/20.1	=
		=CABINET+S1&EFS/20.1	PE		GNVE	=CABINET+S1-20XS1	5	=CABINET+S1&EFS/20.1	=
		=CABINET+S1&EFS/4.1	=CABINET+S1-F10	5	RD	=CABINET+S1-20XS1	6	=CABINET+S1&EFS/20.1	=
		=CABINET+S1&EFS/30.4	=CABINET+S1-30A1	X104:1		=CABINET+S1-20XS1		=CABINET+S1&EFS/32.5	=
7 →									
page				=CABLE					
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← 5									
change		date	name	XTS starter kit with NCT functionality		cable diagram =CABINET+S1-20WXS1		=CABLE	
		07.12.2022	MAD						
		User							
		gepr							
		first		Replaced by					

Cable diagram

BECKH_P8_Dyn_V3

Cable name =CABINET+M-20W1	Cable type ZK7A30-3031-B030		no. of conductors		cross-section	cable length		function text Motor Module 1 with Power Supply XTS Power Supply 1 24VDC / 48VDC EtherCAT
	X-Ref	Target designation from	Connection point	conductor		Connection point	X-Ref	
Motor Module 1 with Power Supply XTS Power Supply 1 24VDC / 48VDC EtherCAT	=CABINET+S1&EFS/20.2	=CABINET+S1+20XS1	9	BK	=CABINET+M-20M1	9	=CABINET+S1&EFS/20.2	
=	=CABINET+S1&EFS/20.2	=CABINET+S1+20XS1	8	BN	=CABINET+M-20M1	8	=CABINET+S1&EFS/20.2	
=	=CABINET+S1&EFS/20.1	=CABINET+S1+20XS1	3	BU	=CABINET+M-20M1	3	=CABINET+S1&EFS/20.1	
=	=CABINET+S1&EFS/20.1	=CABINET+S1+20XS1	7	BU	=CABINET+M-20M1	7	=CABINET+S1&EFS/20.1	
=	=CABINET+S1&EFS/20.1	=CABINET+S1+20XS1	5	GNVE	=CABINET+M-20M1	5	=CABINET+S1&EFS/20.1	
=	=CABINET+S1&EFS/20.1	=CABINET+S1+20XS1	4	OG	=CABINET+M-20M1	4	=CABINET+S1&EFS/20.1	
=	=CABINET+S1&EFS/20.1	=CABINET+S1+20XS1	6	RD	=CABINET+M-20M1	6	=CABINET+S1&EFS/20.1	
=	=CABINET+S1&EFS/20.0	=CABINET+S1+20XS1	2	WH	=CABINET+M-20M1	2	=CABINET+S1&EFS/20.0	
=	=CABINET+S1&EFS/20.0	=CABINET+S1+20XS1	1	YE	=CABINET+M-20M1	1	=CABINET+S1&EFS/20.0	Motor Module 1 with Power Supply XTS Power Supply 1 24VDC / 48VDC EtherCAT
=	=CABINET+S1&EFS/32.5	=CABINET+S1+20XS1			=CABINET+M-20M1	X	=CABINET+S1&EFS/32.6	

6

=COMPONENTS&EPB/1

page

=CABLE

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cable diagram =CABINET+M-20W1

RECHOFF

XTS starter kit with NCT functionality

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BECKH_P8_Dyn_v2

parts list / piece list

designation (BMK) Schematic / position	quantity QTY	designation	type number ordering number	manufacturer supplier	article number function text	pos
=CABINET+S1-ST1F1 =CABINET+S1&EFS/40.4	1	potential distribution terminal, 8 x 24V DC, 8 x 0V DC	EL9184 EL9184	Beckhoff Automation	BEC.EL9184	
=CABINET+S1-ST2F1 =CABINET+S1&EFS/40.4	1	Potenzialverteilungsklemme, 8 x 2 Potenziale	EL9181 EL9181	Beckhoff Automation	BEC.EL9181	
=CABINET+S1-ST10 =CABINET+S1&EFS/40.6	1	neutral Bus end cap	EL9011 EL9011	Beckhoff Automation	BEC.EL9011	
=CABINET+S1-1W1 =CABINET+S1&EFS/1.1	1	Anschlußleitung RN-F 3G2,5mm² schwarz Länge: 5m m. Zentralstecker	059.272 059.272	Jäger direkt	JAE.059.272	
=CABINET+S1-30W1 =CABINET+S1&EFS/32.1	1	cable for the K-bus extension with two RJ-45-plugs at both ends, red Ethernet cable STP, 0,5m	ZK1090-0101-1005 ZK1090-0101-1005	Beckhoff Automation	BEC.ZK1090-0101-1005	
=CABINET+S1-30W2 =CABINET+S1&EFS/32.3	1	ZK1090-9191-1010 EtherCAT Patchkabel 1,0m Konfektioniert: 2x RJ45-Stecker, PUR, AWG22	ZK1090-9191-1010 ZK1090-9191-1010	Beckhoff Automation	BEC.ZK1090-9191-1010	
=CABINET+S1-30W4 =CABINET+S1&EFS/32.8	1	Kabel für die K-Bus-Verlängerung mit zwei RJ-45-Steckern an beiden Enden, rot Ethernet-Kabel STP, 1,0 m	ZK1090-0101-1010 ZK1090-0101-1010	Beckhoff Automation	BEC.ZK1090-0101-1010	
=CABINET+S1-20WXS1 =CABINET+S1&EFS/32.5	1	Ethernet-Kabel STP, 1,0 m	ZK7A30-A500-A005 ZK7A30-A500-A005	Beckhoff Automation	BEC.ZK7A30-A500-A005	
=CABINET+S1-1X8 =CABINET+S1&EFS/1.8	1	RJ45 built-in socket (socket/socket) Ethernet interface, with captive screw-on protective cover	101211 101211	Arnold Elektromechan.	AEB.101211	
=CABINET+S1-1X9 =CABINET+S1&EFS/1.9	1	RJ45 built-in socket (socket/socket) Ethernet interface, with captive screw-on protective cover	101211 CLIPFIX 35	Arnold Elektromechan.	AEB.101211 PHO.3022218	
=CABINET+S1-XP0V =CABINET+S1&EFS/2.4	1	quick-fit end bracket f. TS 35 width: 9,5mm gray	3022218	Phoenix Contact	PHO.3022218	
=CABINET+S1-XP0V =CABINET+S1&EFS/2.4	1	terminal strip label holder, height adjustable f. end bracket CLIPFIX 15, CLIPFIX 35 and CLIPFIX 35-5	KLM 3 0811969	Phoenix Contact	PHO.0811969	
=CABINET+S1-XP0V =CABINET+S1&EFS/2.4	3	2,5mm² push-in connection Brücke • FBS 2-5,	PT 2,5-3L 3210499	Phoenix Contact	PHO.3210499	
=CABINET+S1-XP0V =CABINET+S1&EFS/2.4	2	2-pol. Farbe: rot	FBS 2-5 3030161	Phoenix Contact	PHO.3030161	
=CABINET+S1-XP0V =CABINET+S1&EFS/2.4	1	Abschlussdeckel - D-PT 2,5-3L Farbe: grau	D-PT 2,5-3L 3211647	Phoenix Contact	PHO.3211647	
=CABINET+S1-XP24V =CABINET+S1&EFS/2.1	1	quick-fit end bracket f. TS 35 width: 9,5mm gray	CLIPFIX 35 3022218	Phoenix Contact	PHO.3022218	
=CABINET+S1-XP24V =CABINET+S1&EFS/2.1	1	terminal strip label holder, height adjustable f. end bracket CLIPFIX 15, CLIPFIX 35 and CLIPFIX 35-5	KLM 3 0811969	Phoenix Contact	PHO.0811969	
=CABINET+S1-XP24V =CABINET+S1&EFS/2.1	2	2,5mm² push-in connection	PT 2,5-3L 3210499	Phoenix Contact	PHO.3210499	

Parts list

REKROFF

XTS starter kit with NCT functionality

Replacement of

Replaced by

=COMPONENTS

&EPB

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BECKHL_P8_Dyn_v2									
PLC-diagram									
structure- & pagedescription function text									
channel	address	position					target ID	function definition	
=CABINET+S1-30A1									
C6030-0070									
		=CABINET+S1/30.3						=CABINET+S1-ST1F1	PLC conn. point, PLC CPS (+)
		=CABINET+S1/25.8	power supply IPC					=CABINET+S1-ST1F1	PLC conn. point, PLC CPS (-)
		=CABINET+S1/25.8							PLC connection point, DI
		=CABINET+S1/25.9							PLC connection point, DO
		=CABINET+S1/30.4							Network / bus cable
		=CABINET+S1/30.5							Network / bus cable
		=CABINET+S1/30.4							Network / bus cable
		=CABINET+S1/30.5							Network / bus cable
		=CABINET+S1/30.4							Network / bus cable
		=CABINET+S1/30.5							Network / bus cable
		=CABINET+S1/30.5							Network / bus cable
		=CABINET+S1/30.4							PLC connection point,
		=CABINET+S1/30.5							PLC connection point,

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XTS starter kit with NCT functionality

Replacement of

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PLC diagram

BECKHOFF

=PLC

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0	1	2	3	4	5	6	7	8	9
BECKH_P8_Dyn_v2									
PLC-diagram									
structure- & pagedescription function text									
channel	address	position					target ID	function definition	
=CABINET+S1-DIDO1 EL1259									
Channel 1.Input event time 1		=CABINET+S1/40.2						PLC connection point, DI	
Channel 2.Input event time 1		=CABINET+S1/42.1	Spare / Option 48VDC Power Supply 1 OK				=CABINET+S1-9F1	PLC connection point, DI	
Channel 3.Input event time 1		=CABINET+S1/42.2	Fuse 48VDC for XTS-Motor Module 1 ON					PLC connection point, DI	
Channel 4.Input event time 1		=CABINET+S1/42.3	Spare					PLC connection point, DI	
Channel 5.Input event time 1		=CABINET+S1/42.4	Spare					PLC connection point, DI	
Channel 6.Input event time 1		=CABINET+S1/42.5	Spare					PLC connection point, DI	
Channel 7.Input event time 1		=CABINET+S1/15.2	Start				=CABINET+S1-1551	PLC connection point, DI	
Channel 8.Input event time 1		=CABINET+S1/15.4	Stop				=CABINET+S1-1553	PLC connection point, DI	
Channel 1.Output event time 1		=CABINET+S1/15.6	Reset				=CABINET+S1-1555	PLC connection point, DI	
Channel 2.Output event time 1		=CABINET+S1/44.1	Spare					PLC connection point, DO	
Channel 3.Output event time 1		=CABINET+S1/44.2	Spare					PLC connection point, DO	
Channel 4.Output event time 1		=CABINET+S1/44.3	Spare					PLC connection point, DO	
Channel 5.Output event time 1		=CABINET+S1/44.4	Spare					PLC connection point, DO	
Channel 6.Output event time 1		=CABINET+S1/44.5	Spare					PLC connection point, DO	
Channel 7.Output event time 1		=CABINET+S1/15.2	LED Start				=CABINET+S1-1551	PLC connection point, DO	
Channel 8.Output event time 1		=CABINET+S1/15.4	LED Stop				=CABINET+S1-1553	PLC connection point, DO	
Channel 1.Output event time 1		=CABINET+S1/15.6	LED Reset				=CABINET+S1-1555	PLC connection point, DO	

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XTS starter kit with NCT functionality

Replaced by

PLC diagram

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BECKHL_P8_Dyn_v2									
PLC-diagram									
=CABINET+S1-ST2F1									
EL9181									
channel	address	position	structure- & pagedescription function text				target ID	function definition	
		=CABINET+S1/4b.4	-FI Channel 2 (4A) 24VDC Power Supply Cabinet intern				=CABINET+S1-IM5	PLC connection point, general	
		=CABINET+S1/3.b.1					=CABINET+S1-IM6	PLC connection point, general	
		=CABINET+S1/3.b.1					=CABINET+S1-8F1	PLC connection point, general	
		=CABINET+S1/3.b.1					=CABINET+S1-10S1	PLC connection point, general	
		=CABINET+S1/3.b.2					=CABINET+S1-15S1	PLC connection point, general	
		=CABINET+S1/3.b.2					=CABINET+S1-15S3	PLC connection point, general	
		=CABINET+S1/3.b.2					=CABINET+S1-15S5	PLC connection point, general	
		=CABINET+S1/3.b.2					=CABINET+S1-F1	PLC connection point, general	
		=CABINET+S1/3.b.3					=CABINET+S1-IM5	PLC connection point, general	
		=CABINET+S1/3.b.3					=CABINET+S1-IM6	PLC connection point, general	
		=CABINET+S1/3.b.3					=CABINET+S1-15S1	PLC connection point, general	
		=CABINET+S1/3.b.4					=CABINET+S1-15S3	PLC connection point, general	
		=CABINET+S1/3.b.4					=CABINET+S1-15S5	PLC connection point, general	
		=CABINET+S1/3.b.4					=CABINET+S1-10Q1	PLC connection point, general	
		=CABINET+S1/3.b.4					=CABINET+S1-XP0V	PLC connection point, general	

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		07.12.2022		XTS starter kit with NCT functionality		PLC diagram		=PLC	
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gepr				Replacement of				8EFP	
date		name							

0	1	2	3	4	5	6	7	8	9
PLC-diagram									
BECKH_P8_Dyn_v2									
channel	address	position	structure- & pagedescription function text				target ID	function definition	
=CABINET+S1-1X8									
101211									
=CABINET+S1/1.8									
=CABINET+S1/1.8									
=CABINET+S1/32.1									
Network / bus cable									
Network / bus cable									

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change

date

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XTS starter kit with NCT functionality

Replacement of

Replaced by

PLC diagram

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=PLC

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PLC-diagram

channel	address	position	structure- & pagedescription function text	target ID	function definition
=CABINET+S1-1X9					
101211		=CABINET+S1/1.9			
		=CABINET+S1/1.9			
		=CABINET+S1/32.8		=CABINET+S1-30A1	Network / bus cable
					Network / bus cable

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date		02.12.2022	
User		MAD	
geogr			
change	date	XTS starter kit with NCT functionality	
	name		
first		Replacement of	
		Replaced by	
		BECKHOFF	
		PLC diagram	
		=PLC	
		&EFP	
		page	
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More Information:

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