BECKHOFF New Automation Technology

Operating Instructions | EN

XTS Starter Kit with NCT Functionality

Linear product transport



Table of contents

1	Doc	umenta	tion notes	6
	1.1	Discla	aimer	6
		1.1.1	Trademarks	6
		1.1.2	Patents	6
		1.1.3	Limitation of liability	7
		1.1.4	Copyright	7
	1.2	Versi	on numbers	8
	1.3	Scope	e of the documentation	8
	1.4	Staff	qualification	9
	1.5	Safet	y and instruction	11
	1.6	Expla	nation of symbols	11
	1.7	Beckl	noff Services	13
		1.7.1	Support services	13
		1.7.2	Training offerings	13
		1.7.3	Service offerings	13
		1.7.4	Headquarters Germany	
		1.7.5	Downloadfinder	14
2	For	vour sa	fety	15
_	2.1	-	ral safety instructions	
	۷.۱	2.1.1	Before operation	
		2.1.1	During operation	
		2.1.2	After operation	
			·	
3			erview	
	3.1		ol cabinet part 1	
	3.2		ol cabinet part 2	
	3.3		electronics	
		3.3.1	2 x 9 NCT electronics connection strip	
	3.4		poard	
		3.4.1	2 x 9 connection strip test board	
		3.4.2	Connection strip 1 test board	
		3.4.3	Connection strip 2 test board	
	3.5	Name	e plate	
		3.5.1	Motor module	
		3.5.2	NCT electronics, basic electronics	
	3.6		Matrix code	
	3.7	Туре	key	
		3.7.1	XTS starter kit with NCT functionality	30
		3.7.2	Motor module	30
		3.7.3	Mover	31
	3.8	Produ	uct characteristics	32
	3.9	Intend	ded use	33
		3.9.1	Improper use	33
4	Tec	hnical d	ata	34
	4.1		ition	

Table of contents

		4.1.1	Technical terms	34
	4.2	XTS	starter kits with NCT functionality	3
	4.3	Dime	nsional drawings	36
		4.3.1	XTS starter kits	36
		4.3.2	Modules	38
		4.3.3	NCT electronics	40
		4.3.4	Mover	43
5	Con	nmissio	ning	45
	5.1	Prepa	aration	45
	5.2	Remo	ove the transport securing device	48
	5.3	Conn	ect the connection cable	46
		5.3.1	Module	46
		5.3.2	Control cabinet	47
	5.4	Conn	ect data line	48
		5.4.1	Control cabinet	48
		5.4.2	PC or laptop	48
	5.5	Syste	em test	49
	5.6	Start	system	49
	5.7		system	
		5.7.1	Stop button	
		5.7.2	Emergency stop button	5′
6	Fun	ctionali	ty of the test board	50
	6.1		al or analog input	
	6.2	ŭ	button	
	0	6.2.1	Button 1 - digital input 1	
		6.2.2	Button 2 - digital input 2	
		6.2.3	Button 3 - digital input 3	
		6.2.4	Button 4 - digital input 4	
		6.2.5	Button 1 to 4	
	6.3		ntiometer	
	0.0	6.3.1	Potentiometer 1 - analog input 1	
		6.3.2	Potentiometer 2 - analog input 2	
7	A		and disassembly	
1	7.1	_	er	
	7.1	7.1.1	Rail on support	
		7.1.1	Removing	
		7.1.2	Inserting	
	7.2		electronics	
	1.2	7.2.1		
		7.2.1	Checking the air gap	
		7.2.2	Adjust air gap	
			Disassembly	
	7.3	7.2.4	Assemblyboard	
	1.3			
		7.3.1	Disassembly	
		7.3.2	Assembly	00

Table of contents

8	Dec	ommiss	sioning	70
	8.1	Disas	sembly	70
	8.2	Dispo	osal	71
		8.2.1	Returning to the vendor	71
9	Circ	uit diag	ram	72
	Inde	ex		124

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.

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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.

M

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 fa-

- · 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:

A DANGER

Failure to comply will result in serious or fatal injuries.

A WARNING

Failure to comply may result in serious or fatal injuries.

A 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.

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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.

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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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1.7.3 Service offerings

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1.7.4 Headquarters Germany

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

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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

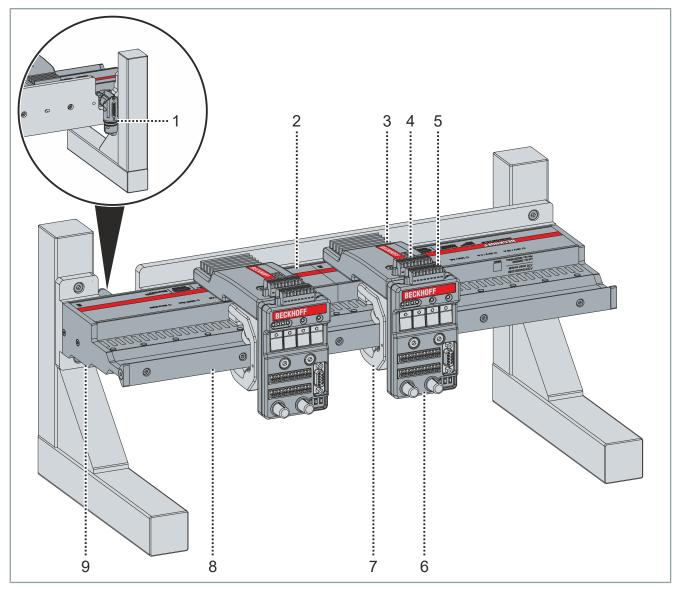
Do not touch any moving or rotating components. Fasten all parts or components on the machine or plant.

2.1.3 After operation

De-energize and switch off components before working on them

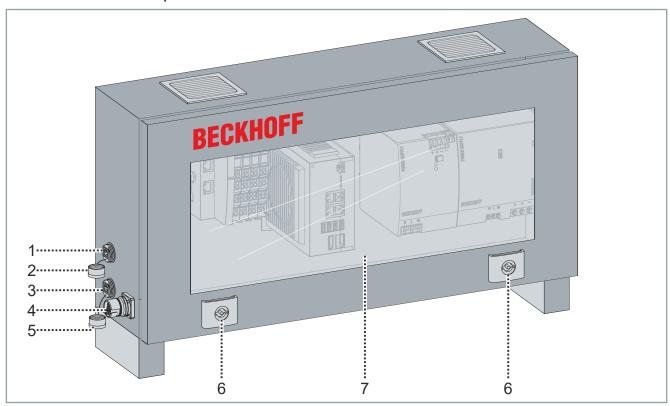
Carry out a voltage test and check all safety-relevant devices for functionality. Secure the working environment and the control cabinet against inadvertent power-up. See chapter: Decommissioning.

3 Product overview



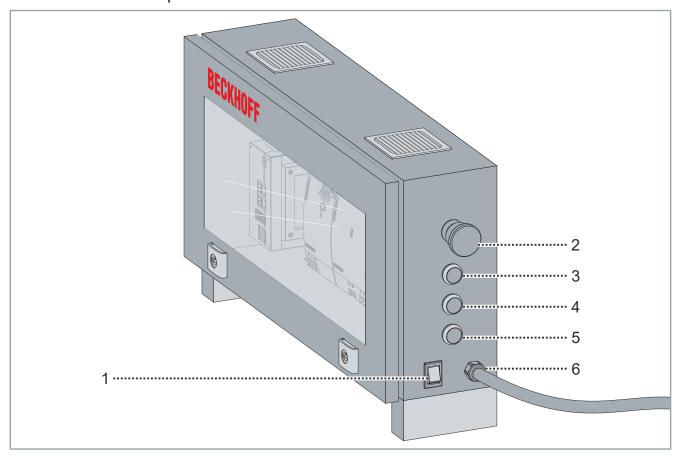
Position	Designation
1	Connector
2	Straight motor module with integrated NCT functionality
3	Basic electronics
4	2 x 9 connection strip basic electronics
5	2 x 9 connection strip test board
6	Test board
7	Mover
8	Guide rail
9	End cap

3.1 Control cabinet part 1



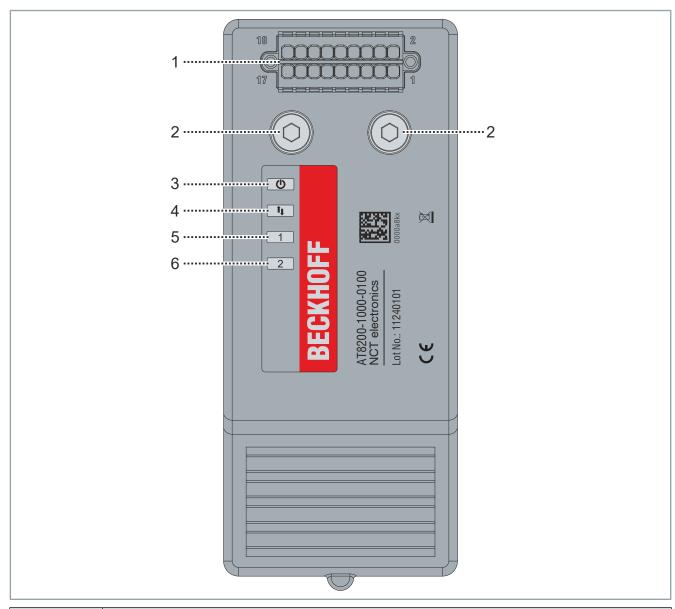
Position	Designation
1	RJ45 connector for data line
2	Cap for RJ45 connector
3	RJ45 connector for additional I/Os
4	Connector for connecting cable
5	Cap for RJ45 connector
6	Locking control cabinet door
7	Window in control cabinet door

3.2 Control cabinet part 2



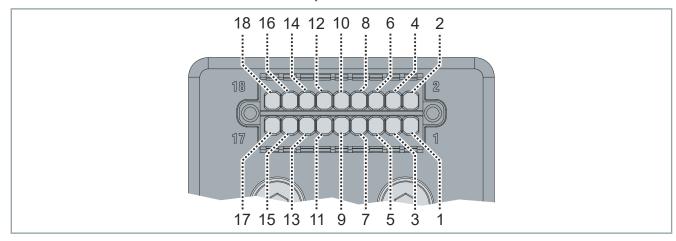
Position	Designation
1	On/off switch
2	Emergency stop button
3	Start button
4	Stop button
5	Reset button
6	Power supply

3.3 NCT electronics



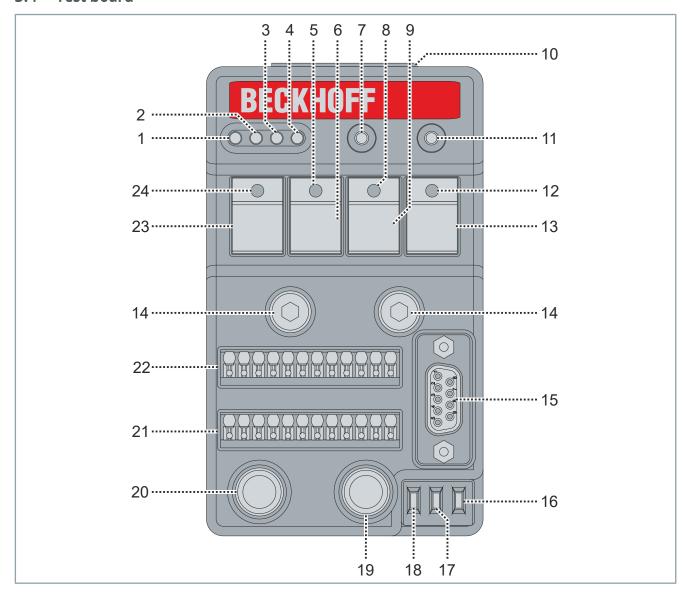
Position	Designation
1	2 x 9 NCT electronics connection strip
2	Fastening screw M6 x 25
3	Power LED
4	Communication LED
5	LED 1, test board in operation
6	LED 2, application-specific. Not yet occupied.

3.3.1 2 x 9 NCT electronics connection strip



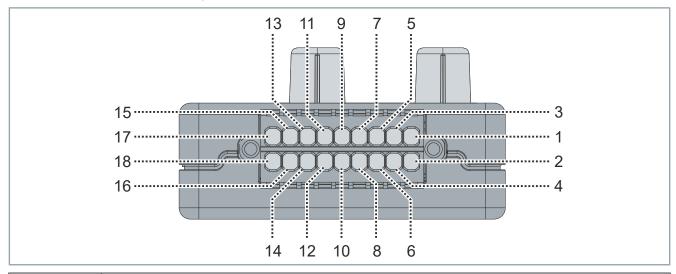
Position	Designation
1	Digital input 1
2	Digital input 3 / analog input 1
3	Digital input 2
4	Digital input 4 / analog input 2
5	Digital output 1
6	Digital output 3
7	Digital output 2
8	Digital output 4
9	Not yet occupied.
10	Not yet occupied.
11	Not yet occupied.
12	Not yet occupied.
13	Ground
14	24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

3.4 Test board



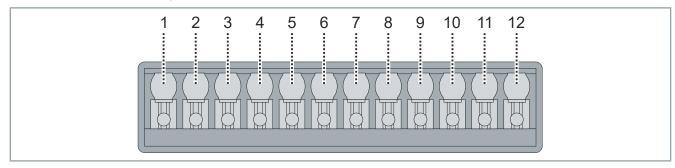
Designation
LED 1: digital output 1
LED 2: digital output 2
LED 3: digital output 3
LED 4: digital output 4
LED button 2: button feedback 2
Button 2: digital input 2
LED 24 V
LED button 3: button feedback 3
Button 3: digital input 3
2 x 9 connection strip test board
RGB LED: PWM outputs
LED button 4: button feedback 4
Button 4: digital input 4
Fastening screw M6 x 20
Not yet occupied.
Switch 3: 5 V RS232 ON/OFF. Lower position: ON
Switch 2: digital input 3 or analog input 1. Lower position: potentiometer on
Switch 1: digital input 4 or analog input 2. Lower position: potentiometer on
Potentiometer 2: 0 to 10 V potentiometer, analog input 2
Potentiometer 1: 0 to 10 V potentiometer, analog input 1
Connection strip 2
Connection strip 1
Button 1: digital input 1
LED button 1: button feedback 1

3.4.1 2 x 9 connection strip test board



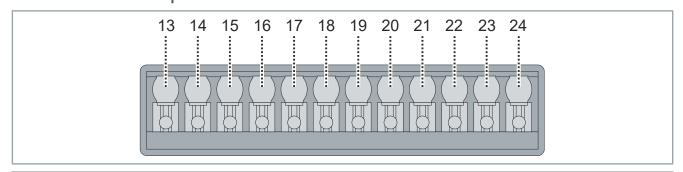
Position	Designation
1	Digital input 1
2	Digital input 3 / analog input 1
3	Digital input 2
4	Digital input 1 / analog input 2
5	Digital output 1
6	Digital output 3
7	Digital output 2
8	Digital output 4
9	Not yet occupied.
10	Not yet occupied.
11	Not yet occupied.
12	Not yet occupied.
13	Ground
14	24 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.

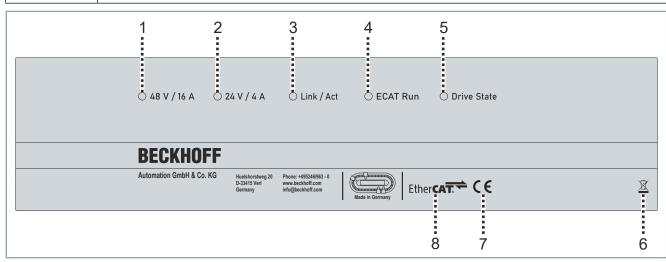
3.5 Name plate

3.5.1 Motor module

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

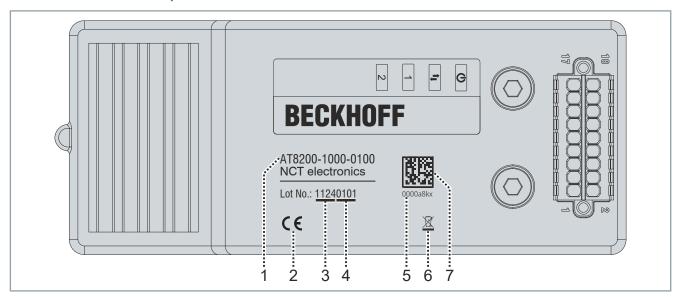


Position	Designation
1	Date of manufacture - week/year
2	Product designation
3	Firmware and hardware revision
4	DataMatrix code
5	EtherCAT marking
6	CE conformity
7	WEEE compliance
8	BTN number
9	XML sensor PCB revision number
10	XML revision number NCT board
11	XML motor PCB revision number



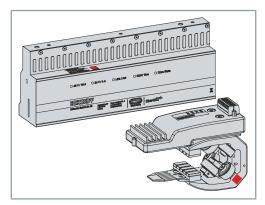
Position	Designation
1	48 V 16 A power supply status LED
2	24 V 4 A power supply status LED
3	Link / Act status LED
4	Status LED ECAT Run
5	Drive State status LED
6	WEEE compliance
7	CE conformity
8	EtherCAT marking

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.

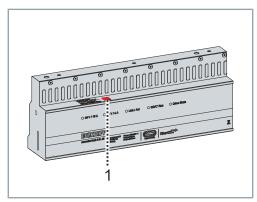
For example, you can read the DataMatrix code with the camera of your smartphone or tablet.

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	Product area
	• AT = drive technology
2100	Product type
	• 2100 = starter kit
001	System type
	• 001 = open end
х	Product length
	• 1 = 500 mm
	• 2 = 1000 mm

3.7.2 Motor module

AT21xx-0250	Explanation
AT	Product area
	AT = drive technology
2	Product type
	• 2 = module
1	Module type
	• 1 = with integrated NCT functionality
xx	Module variants
	• 00 = straight
	• 02 = straight, with connector for power supply
0250	Module length
	• 0250 = 250 mm

3.7.3 Mover

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

NCT electronics

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

Base mover

AT9014-1070-x550	Explanation	
AT	Product area	
	• AT = drive technology	
90	Product type	
	• 90 = mover	
14	Roll variant	
	• 14 = 6 rollers, 2 of which are spring-loaded	
10	Mover type	
	• 10 = suitable for mounting the NCT electronics	
70	Length of the mover	
	• 70 = 70 mm	
х	Identifier of the magnetic plate set	
	• 0 = standard	
	• 1 = mover 1	
5	Number of poles of the magnetic plate set	
	• 5 = 5 poles	
50	Length of the magnetic plate set	
	• 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 $V_{\rm DC}$ control voltage and a 48 $V_{\rm DC}$ 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 *Motion Control* function blocks according to the PLC Open standard *IEC 61131-3* 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 $^{\circ}$ C. The data can have a tolerance of +/- 10 %.

4.1.1 Technical terms

Nominal force F₀ [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.

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

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

(

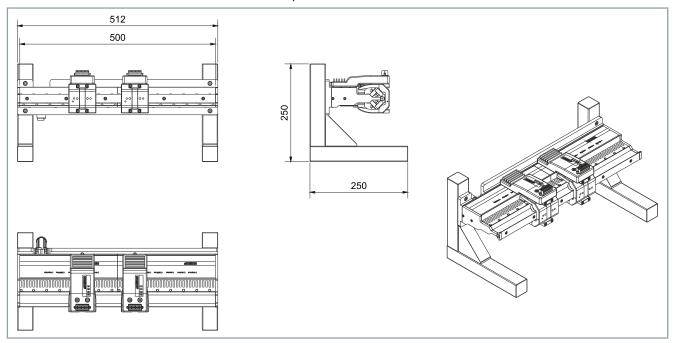
www.beckhoff.com/de-de/support/downloadfinder

XTS starter kits 4.3.1

AT2100-0011-0001

All figures in millimeters

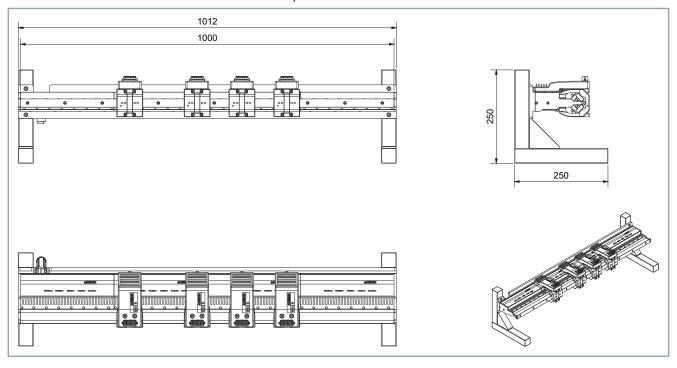
- · XTS starter kit with NCT functionality
- 500 mm
- · open end



36

AT2100-0012-0001

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

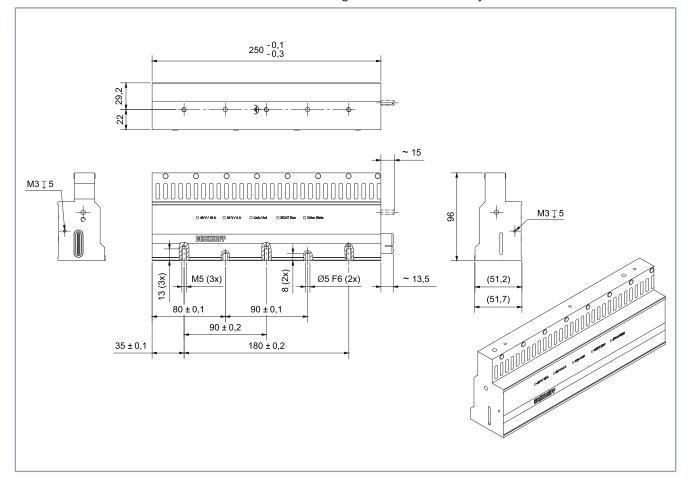


4.3.2 Modules

AT2100-0250

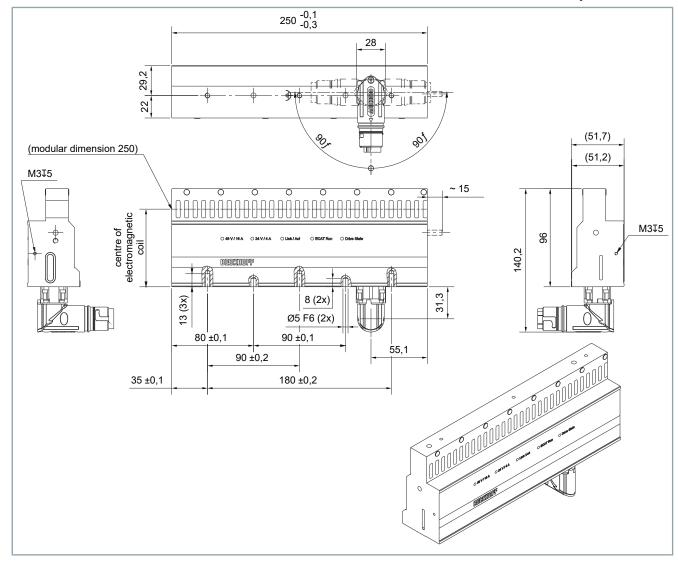
All figures in millimeters

- Straight
- 250 mm
- · with integrated NCT functionality



AT2102-0250

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

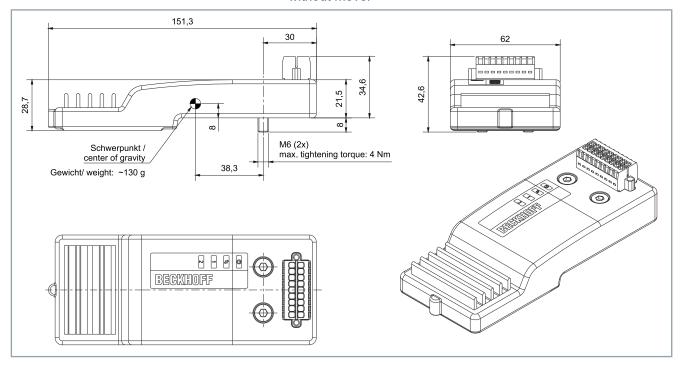


4.3.3 NCT electronics

AT8200-1000-0100

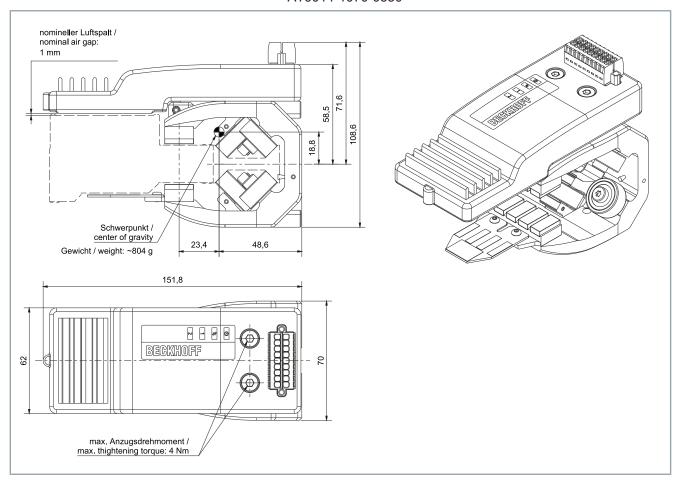
All figures in millimeters

- NCT electronics, basic electronics
- · without mover



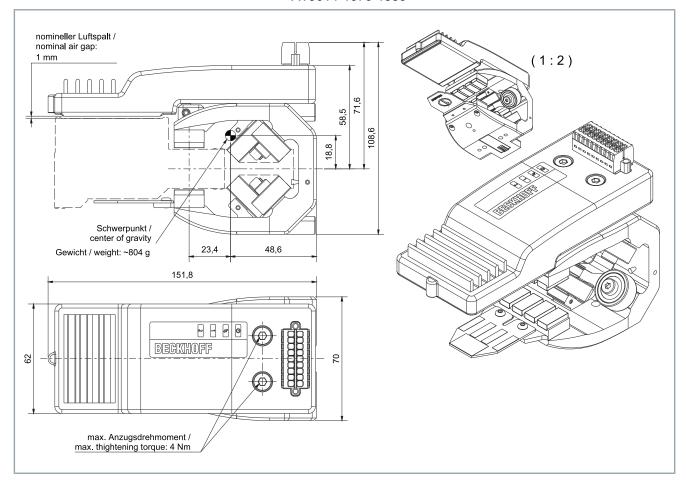
AT8300-1100-0100

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



AT8300-1200-0100

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

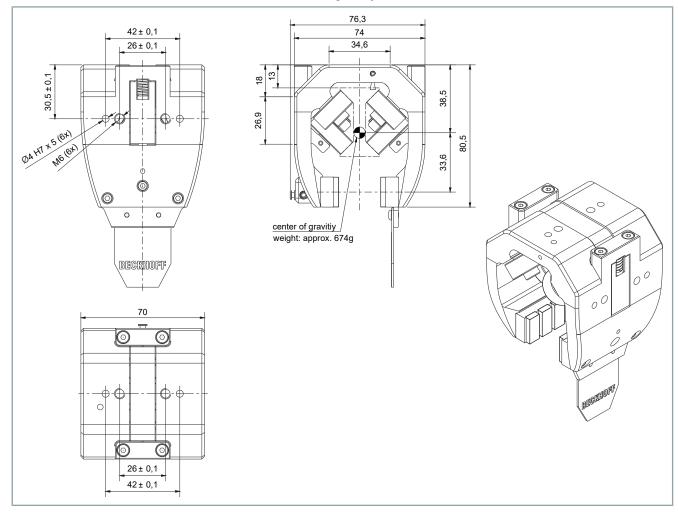


4.3.4 Mover

AT9014-1070-0550

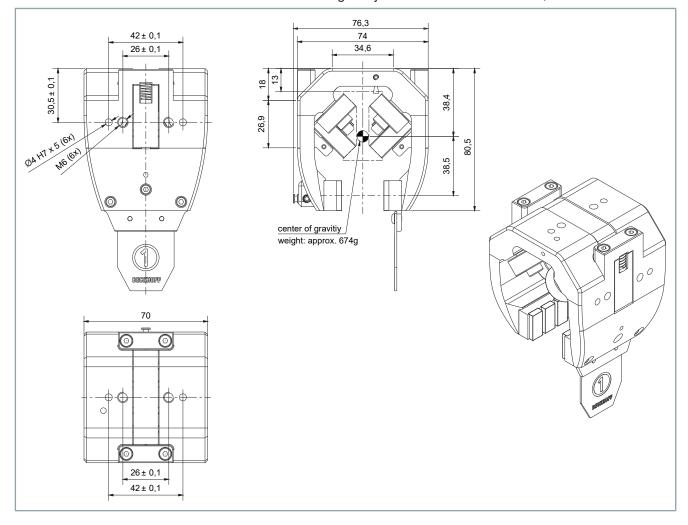
All figures in millimeters

- 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

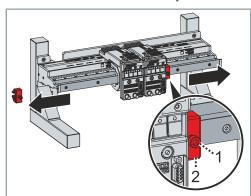
- · Suitable torque wrench
- · Allen key 2 mm
- · Allen key 3 mm
- Allen key 4 mm
- · Slotted screwdriver
- Feeler gauge with 0.7 to 1 mm feeler gauge blades



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

Connect the connection cable 5.3

The connection cable connects the modules to the control cabinet.

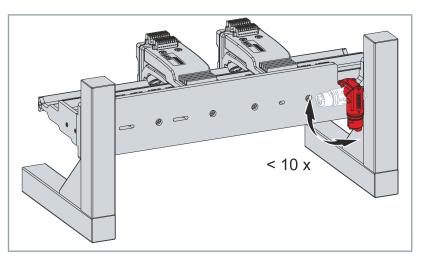
Module 5.3.1

NOTICE

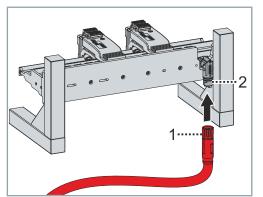
Limited number of turns

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

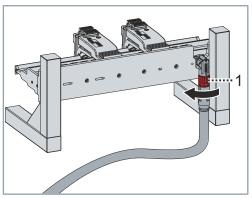
If you turn the connector more than ten times, the cables inside and the latching mechanism of the connector may be damaged and the connector may no longer be placed in a safe latching position.



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



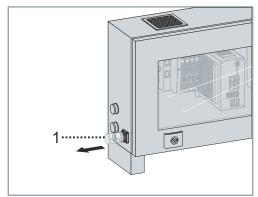
▶ Plug the connector [1] of the connection cable to the connector [2] of the module



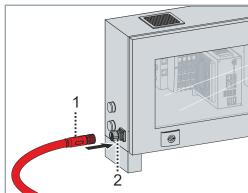
46

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

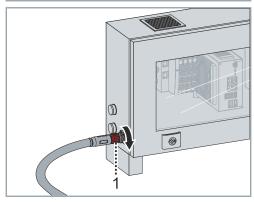
5.3.2 Control cabinet



► 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 [+]

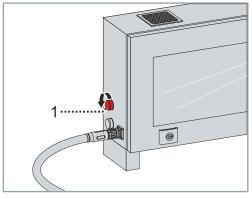
5.4 Connect data line

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

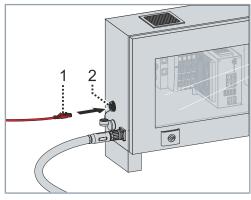
5.4.1 Control cabinet



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

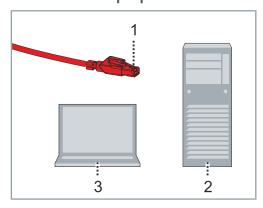


▶ Open cap [1]



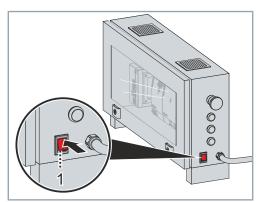
► Connect the connector [1] of the data line to the connector [2] in the control cabinet

5.4.2 PC or laptop

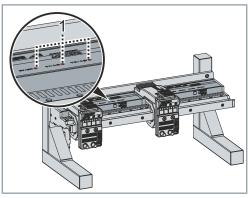


▶ Plug the connector [1] of the data line into the corresponding port of your PC [2] or laptop [3]

5.5 System test



- ► Connecting the starter set to the mains
- ► Switch on starter kit at control cabinet [1]



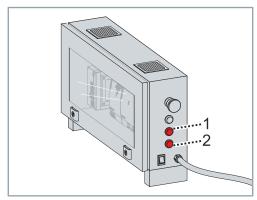
The following LEDs [1] must light up:

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

If the LEDs do not light up:

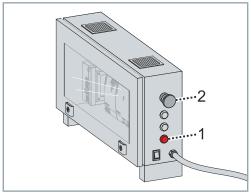
- ► Check cables and connectors
- ► Check the power supply units and fuses for voltage
- ► Contact the Support/Applications Department

5.6 Start system



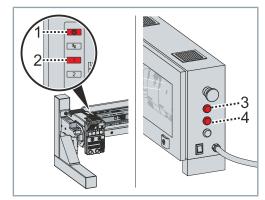
After the starter kit has been connected and switched on:

The *Stop* button [1] on the control cabinet lights up red continuously. The *Reset* button [2] must flash blue.

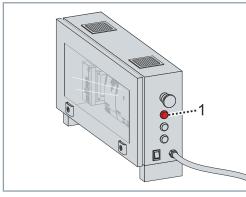


- ► Press *Reset* button [1]
- ▶ Ensure that the *Emergency stop* button is unlocked

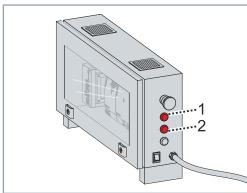
Commissioning



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.

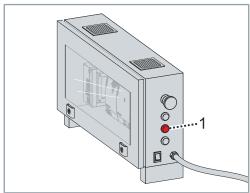
The *Start* button [2] on the control cabinet must light up green continuously.

The system is in operation.

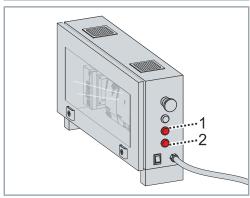
5.7 Stop system

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

Stop button 5.7.1

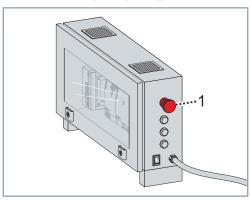


► Press the *Stop* button [1]

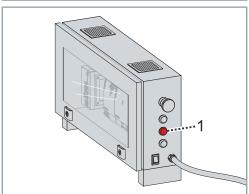


The Stop button [1] must light up red continuously. The Reset button [2] must flash blue.

Emergency stop button 5.7.2



▶ Press the *Emergency stop* button [1]

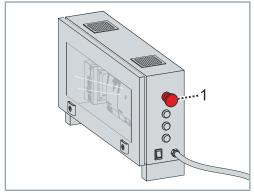


Version: 1.4.1

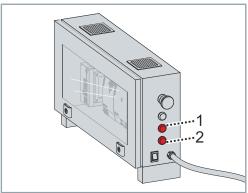
The Stop button [1] must light up red continuously.

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]

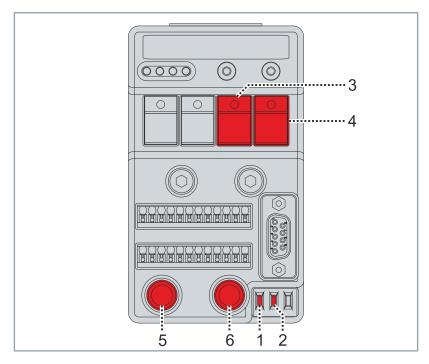


The *Stop* button [1] must light up red continuously. The *Reset* button [2] must flash blue.

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	Digital input 4 enabled: button 4 [4] with function
	Analog input 2 disabled: potentiometer 2 [6] without function
Switch [1] down	Digital input 4 disabled: button 4 [4] without function
	 Analog input 2 enabled: potentiometer 2 [6] with function
Switch [2] up	Digital input 3 enabled: button 3 [3] with function
	Analog input 1 disabled: potentiometer 1 [5] without function
Switch [2] down	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.

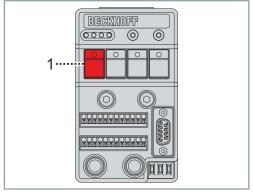


Note the position of the switches

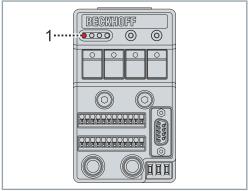
Make sure that the switches are in the up position if you want to use all the push buttons.

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

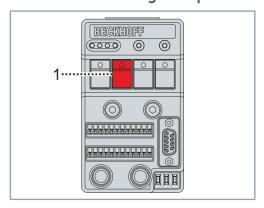


▶ Press button 1 [1]

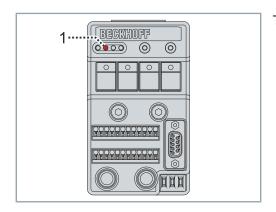


The LED 1 Digital output 1 [1] lights up.

6.2.2 Button 2 - digital input 2

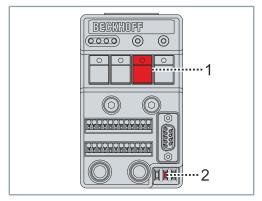


▶ Press button 2 [1]

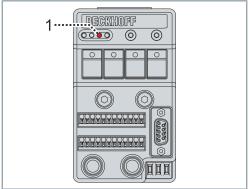


The LED 2 Digital output 2 [1] lights up.

6.2.3 Button 3 - digital input 3

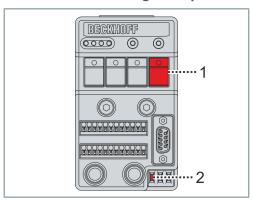


- ▶ Press button 3 [1]
- ▶ Make sure that the switch [2] is in the upper position



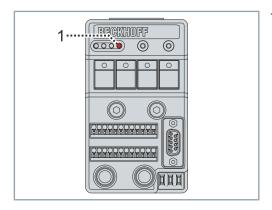
The LED 3 Digital output 3 [1] lights up.

6.2.4 Button 4 - digital input 4



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

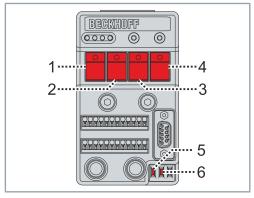
Functionality of the test board



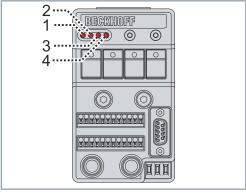
The LED 4 Digital output 4 [1] lights up.

6.2.5 Button 1 to 4

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

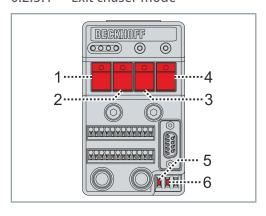


- ► Keep keys [1] to [4] pressed for five seconds
- ▶ Make sure that the switches [5] and [6] are in the upper position

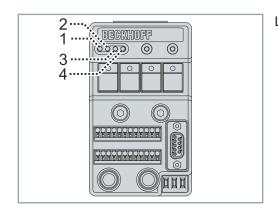


LEDs [1] to [4] are in chaser mode.

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.



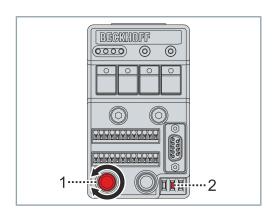
Note the position of the switches

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

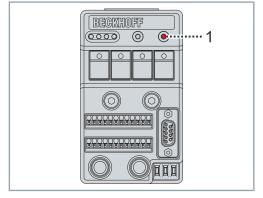
When a switch is in the lower position, the analog input is without function and the potentiometer cannot perform the corresponding function for the RGB PWM outputs.

6.3.1 Potentiometer 1 - analog input 1

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



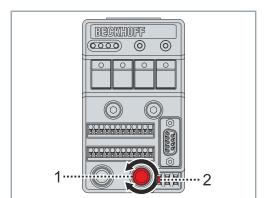
- ▶ Turn potentiometer 1 [1] to set the color of the RGB LED
- ▶ Make sure that the switch [2] is in the lower position



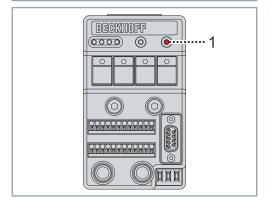
The RGB LED [1] lights up in the set color.

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:

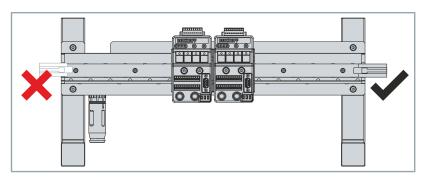
(

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.

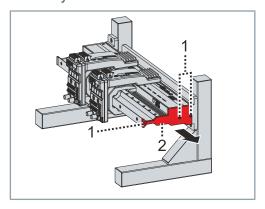
NOTICE

Installing the rail on support correctly

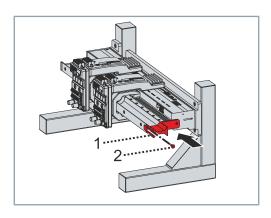
If the rail on support is mounted on the motor module with connectors, there is an offset between the rail on support and the guide rail.

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

Assembly

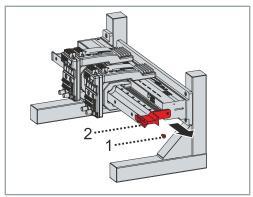


- ► Remove screws [1]
- ► Remove end cap [2]

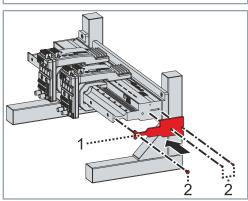


- ► Insert rail on support [1]
- ▶ Insert screw [2] and hand-tighten it
- ▶ Note the position of the rail on support

Disassembly



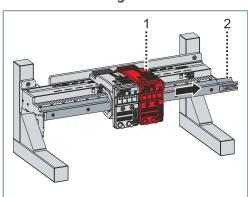
- ► Remove screw [1]
- ► Remove rail on support [2]



- ► 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]

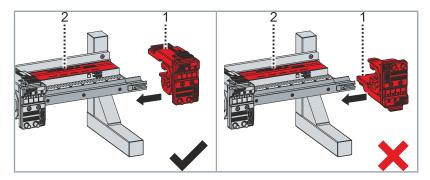
7.1.3 Inserting

NOTICE

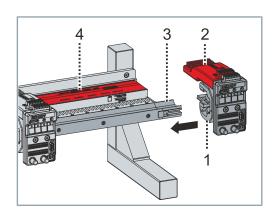
Observe the order of the movers

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.

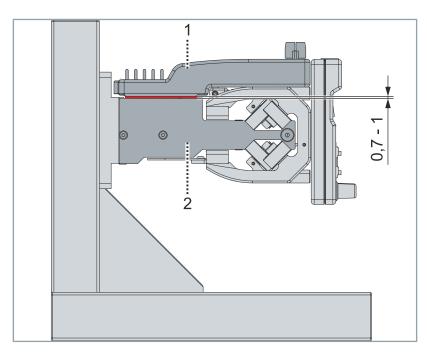
NOTICE

Checking the air gap

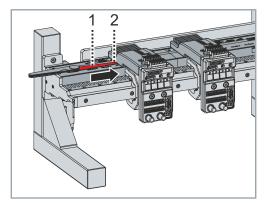
The air gap must be checked if a mover is inserted that is not included in the scope of delivery or if you have mounted the NCT electronics on a mover.

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.

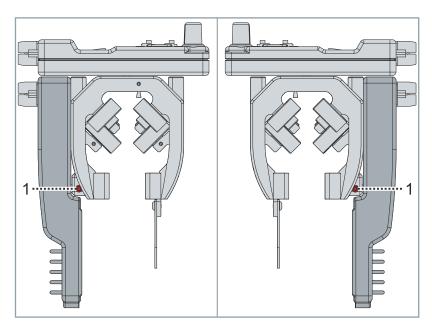


Version: 1.4.1

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.

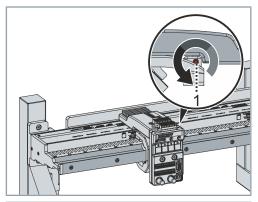
Reduce air gap

NOTICE

Air gap must be at least 0.7 mm

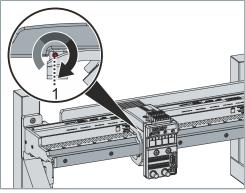
To check the air gap, the mover must be on the guide rail. The air gap must be at least 0.7 mm.

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].

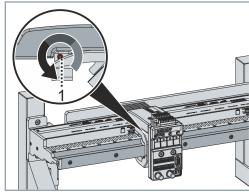
Increasing the air gap

NOTICE

The air gap must not exceed 1 mm

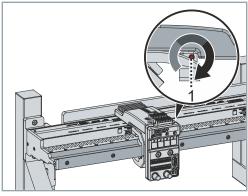
To check the air gap, the mover must be on the guide rail. The air gap must not exceed 1 mm.

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:

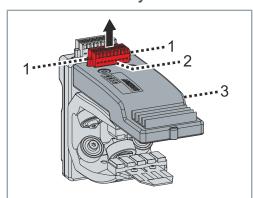
► Loosen and tighten the set screws again

OR

► Reduce the air gap

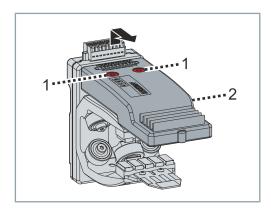
Further information can be found in chapter "Reduce air gap", [Page 64].

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]

Assembly and disassembly



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

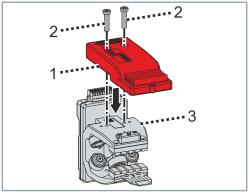
7.2.4 Assembly

NOTICE

Note mover type

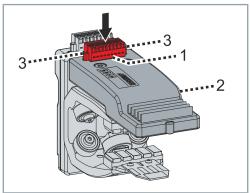
The NCT electronics may only be attached to mover *AT9014-1070-x550*. All other movers are not suitable for mounting the NCT electronics.

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

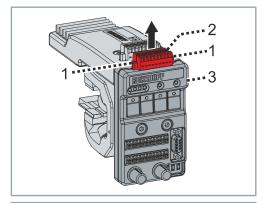


- ▶ Plug the connector [1] of the cable bridge into the connection strip of the NCT electronics [2]
- ► Tighten screws [3] on the cable bridge

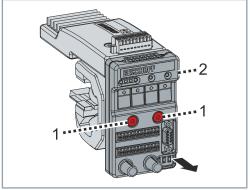
7.3 Test board

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]



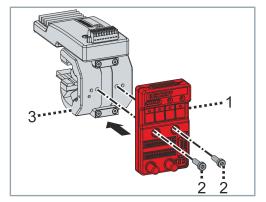
- ► Remove screws [1]
- ► Remove test board [2]

7.3.2 Assembly

NOTICE

Note mover type

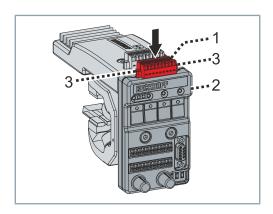
The test board may only be attached to AT9014-1070-x550 movers. All other movers are not suitable for mounting the NCT electronics.



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

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

Assembly and disassembly



- ▶ 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

A 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.

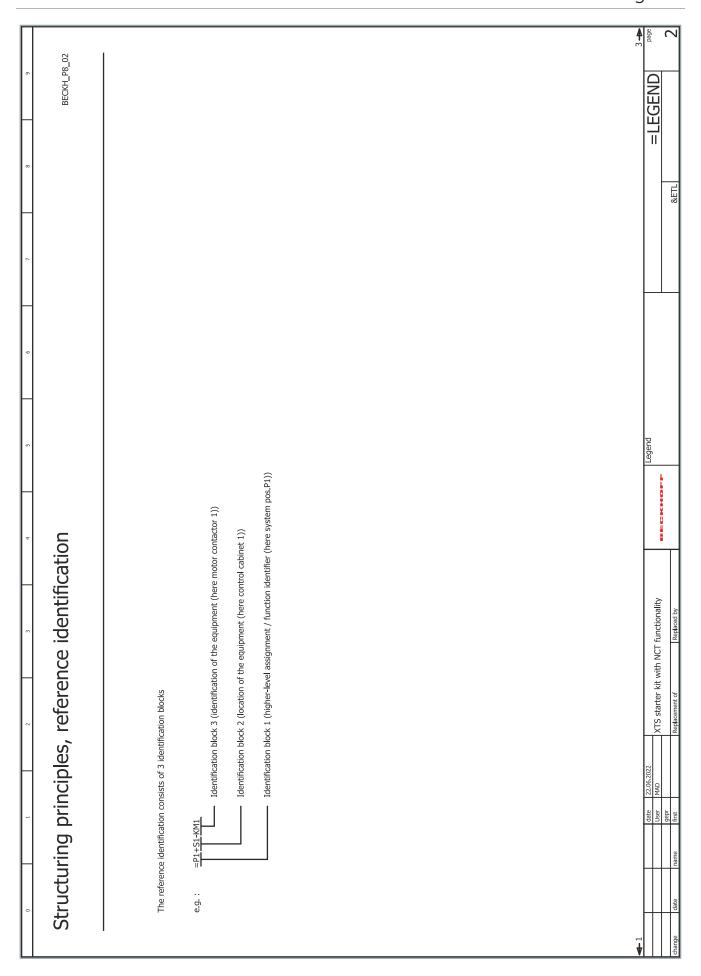
9 Circuit diagram

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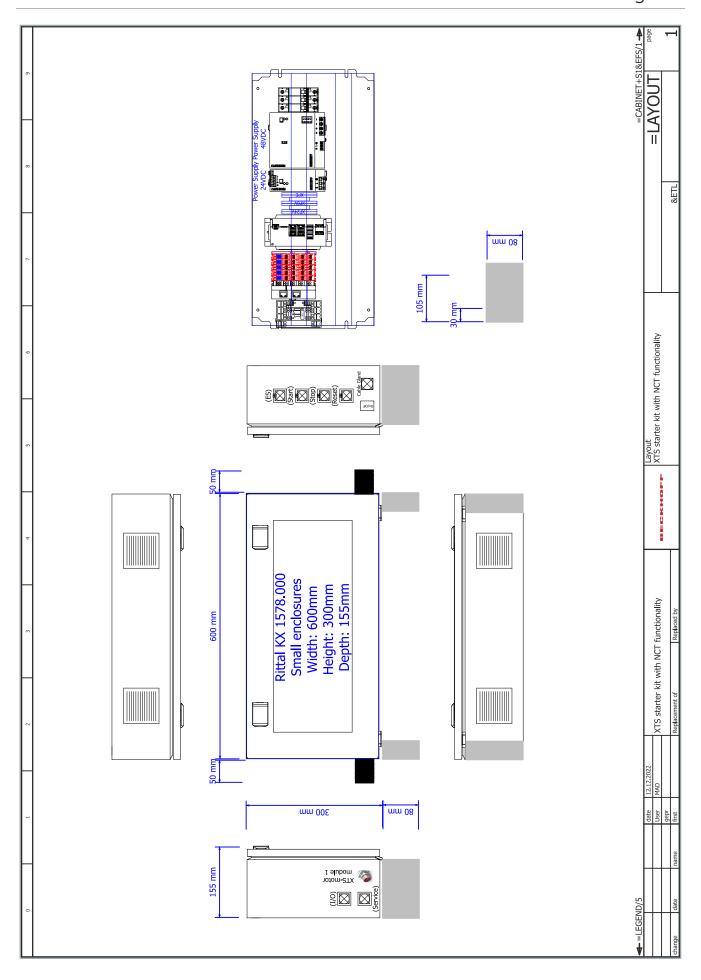
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&EMA= Electrical engineering Connection documents	Terminal diagram
&EMB= Electrical engineering Cabling documents Piping documents	Cable diagram
&EPB = Electrical engineering Parts list	Parts list / piece list
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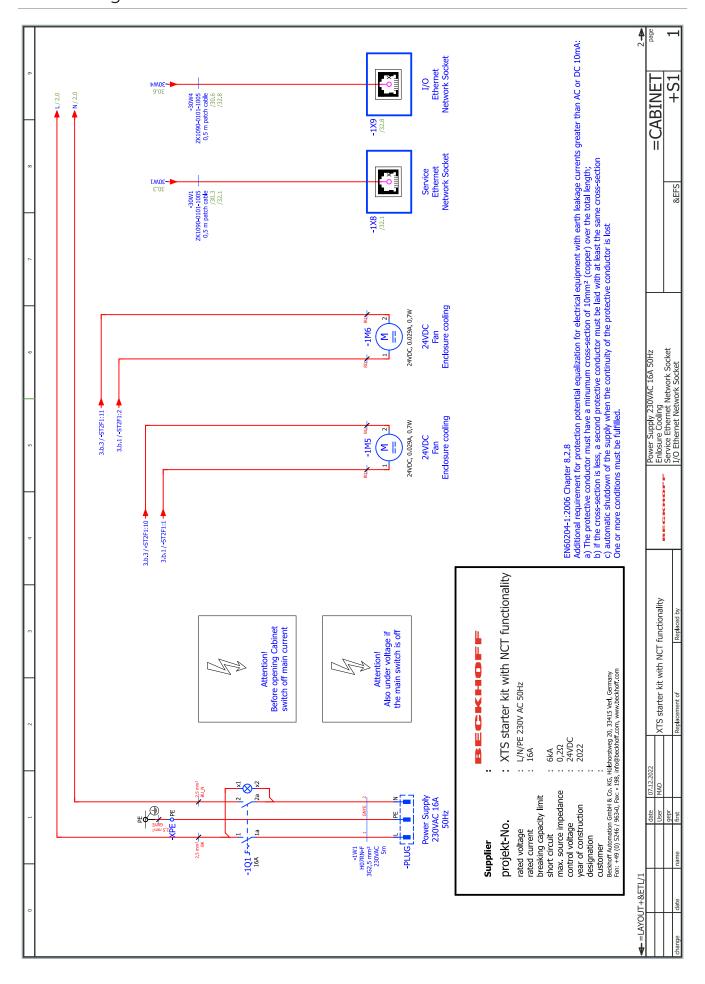


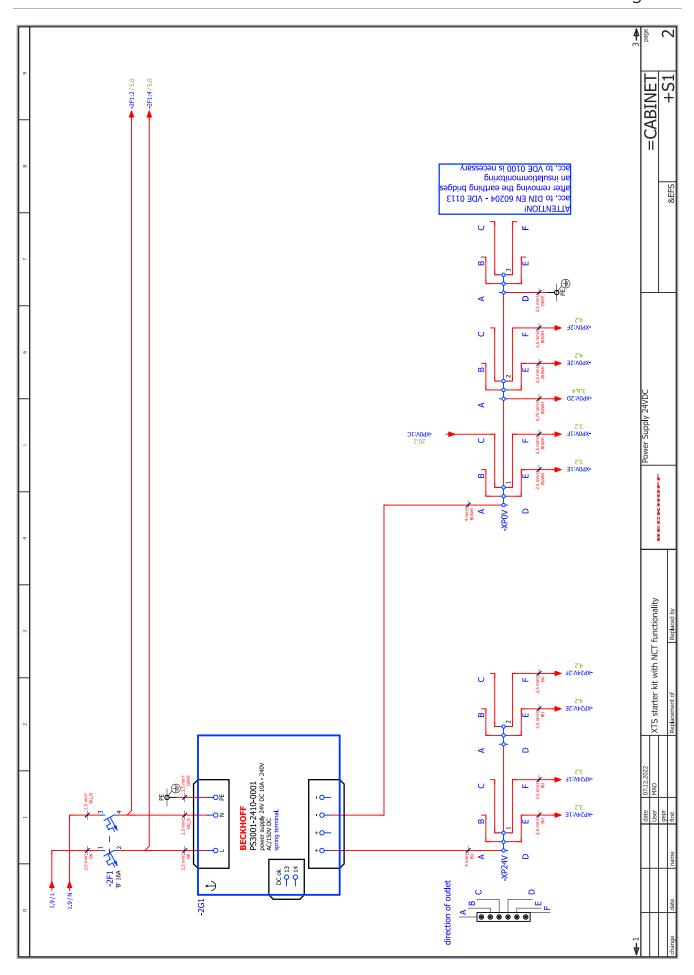
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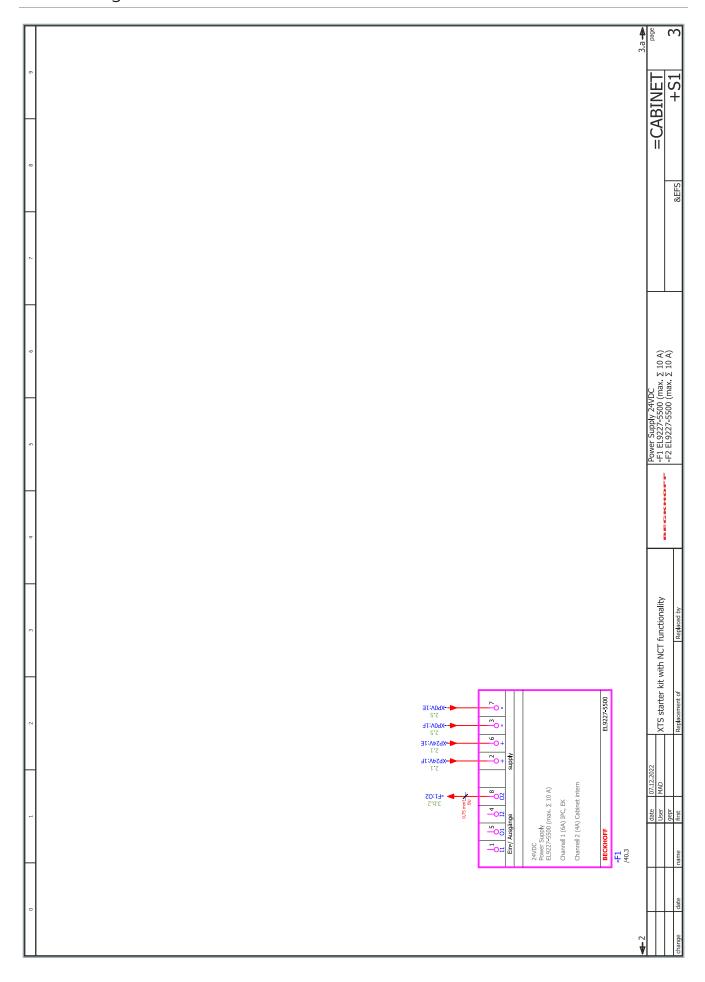
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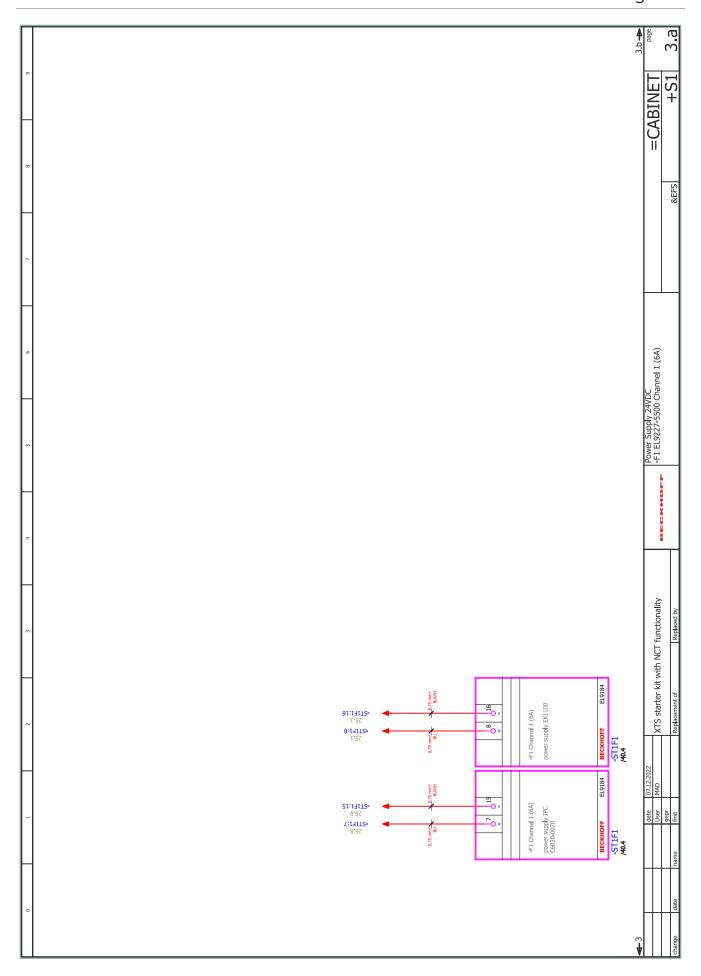
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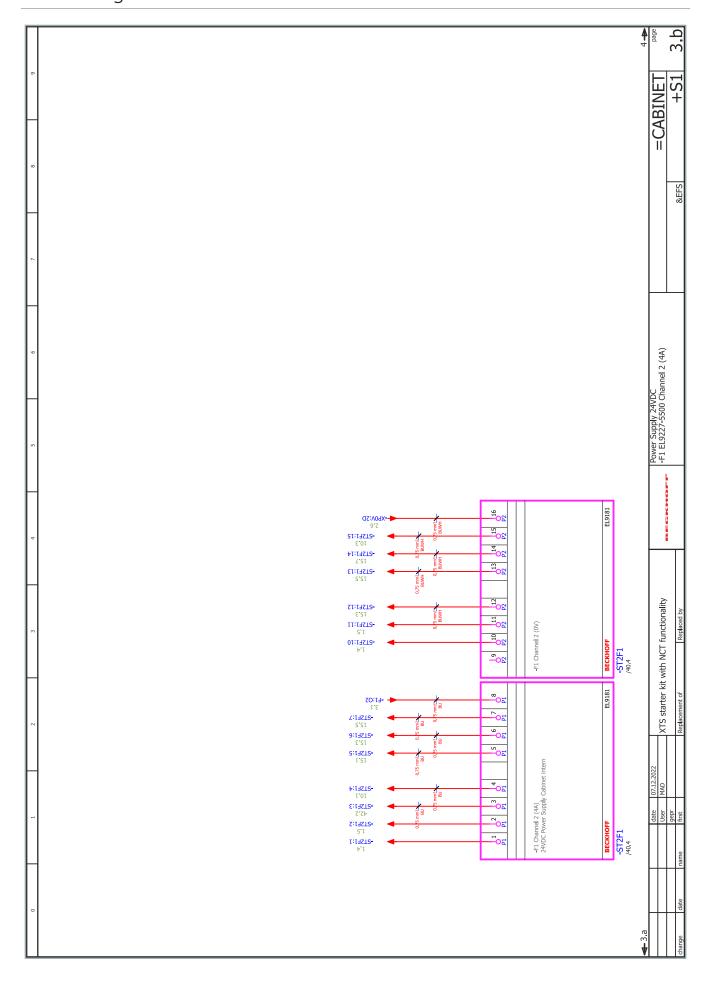


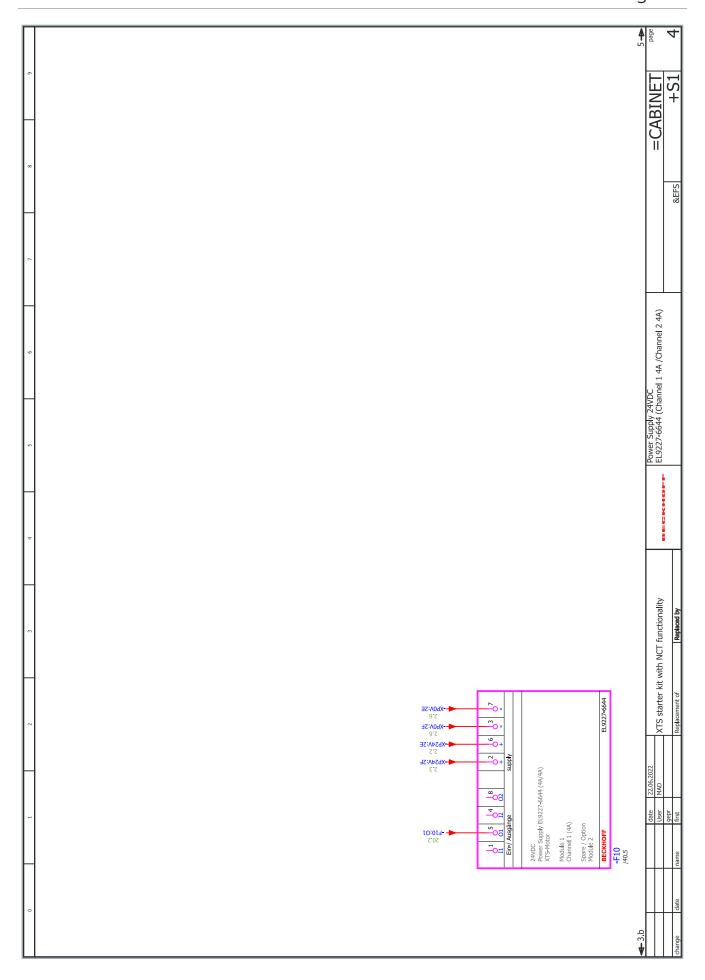


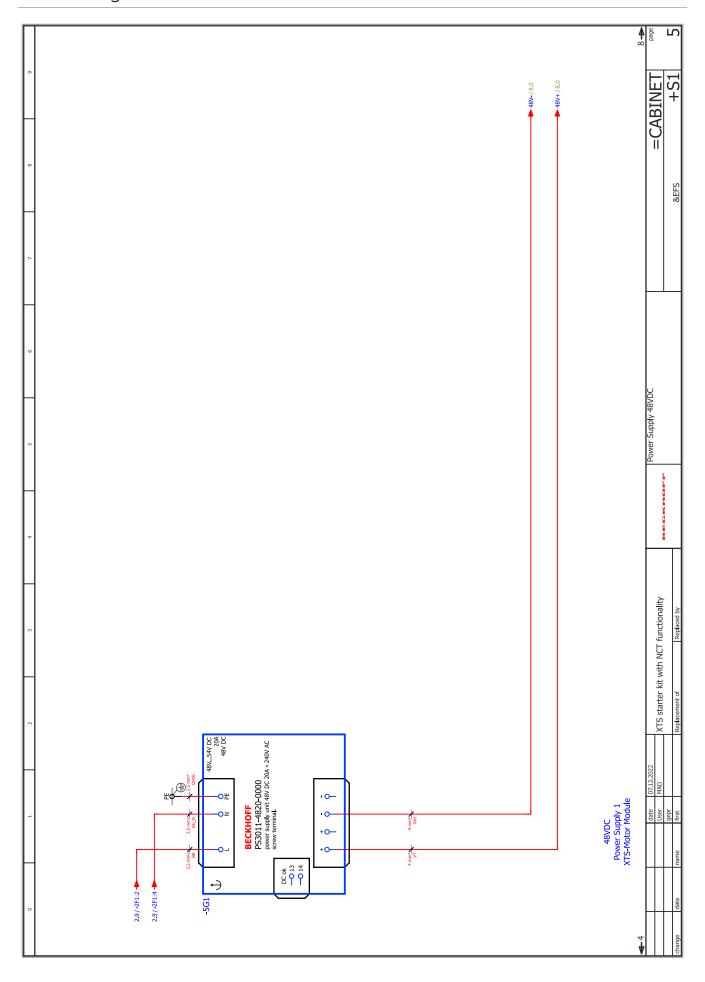


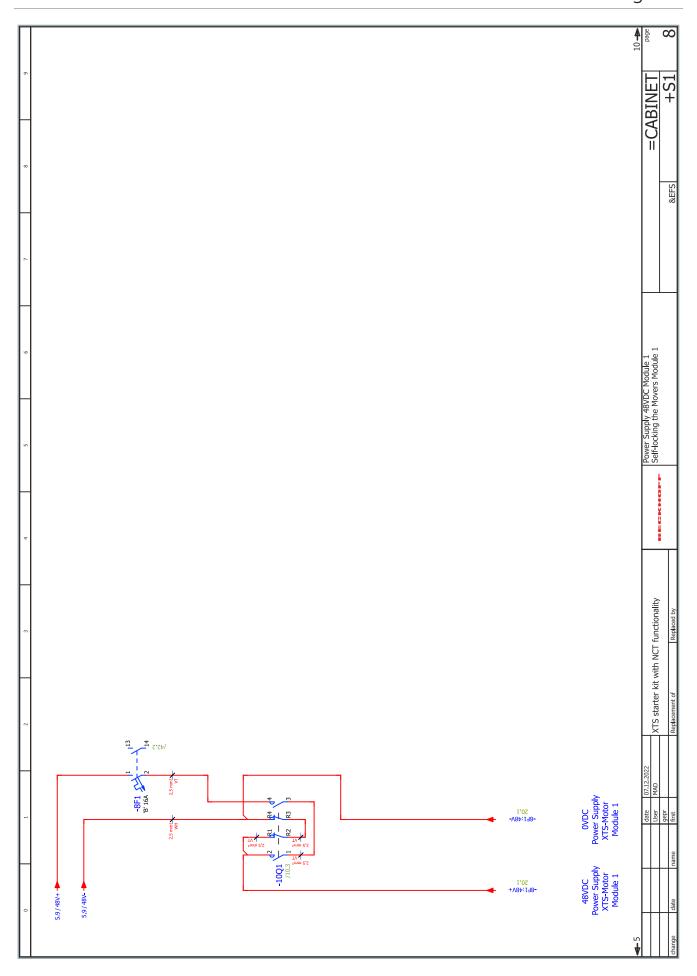


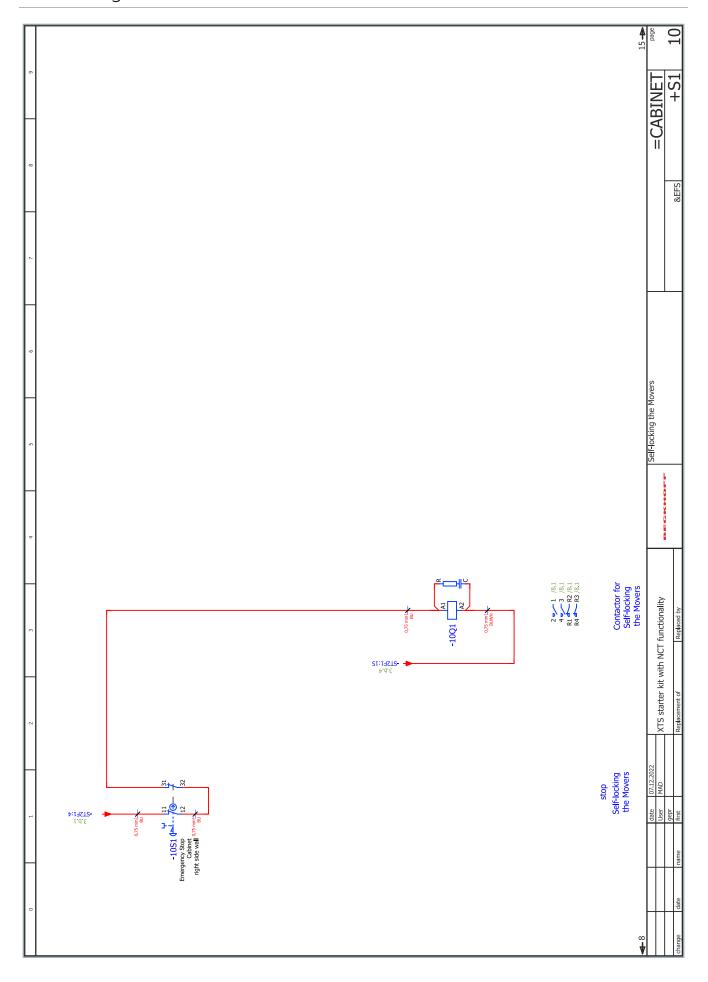


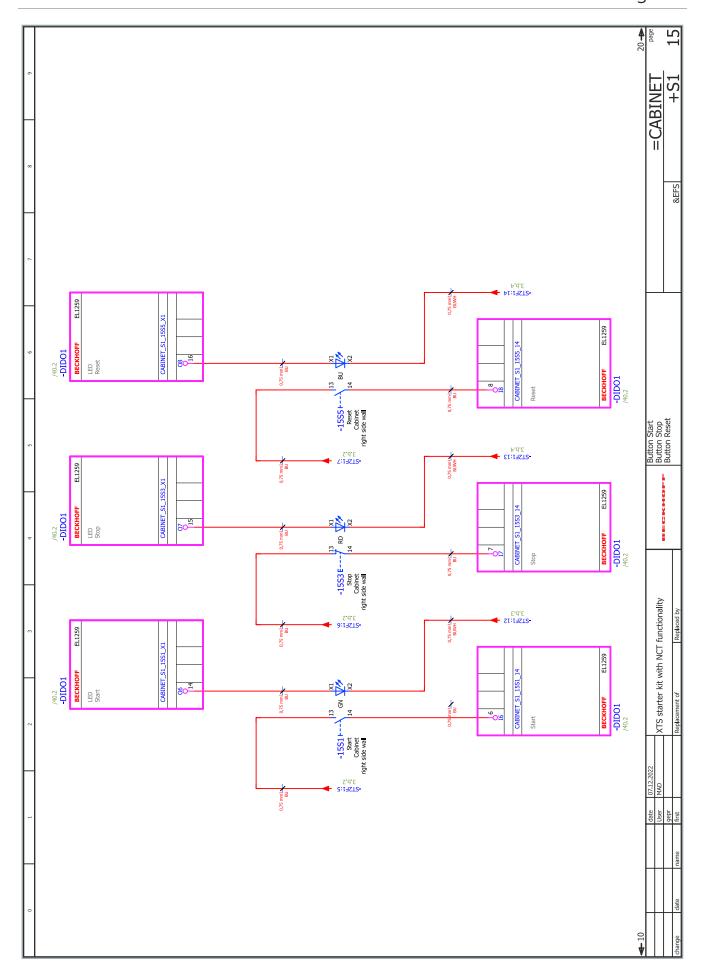


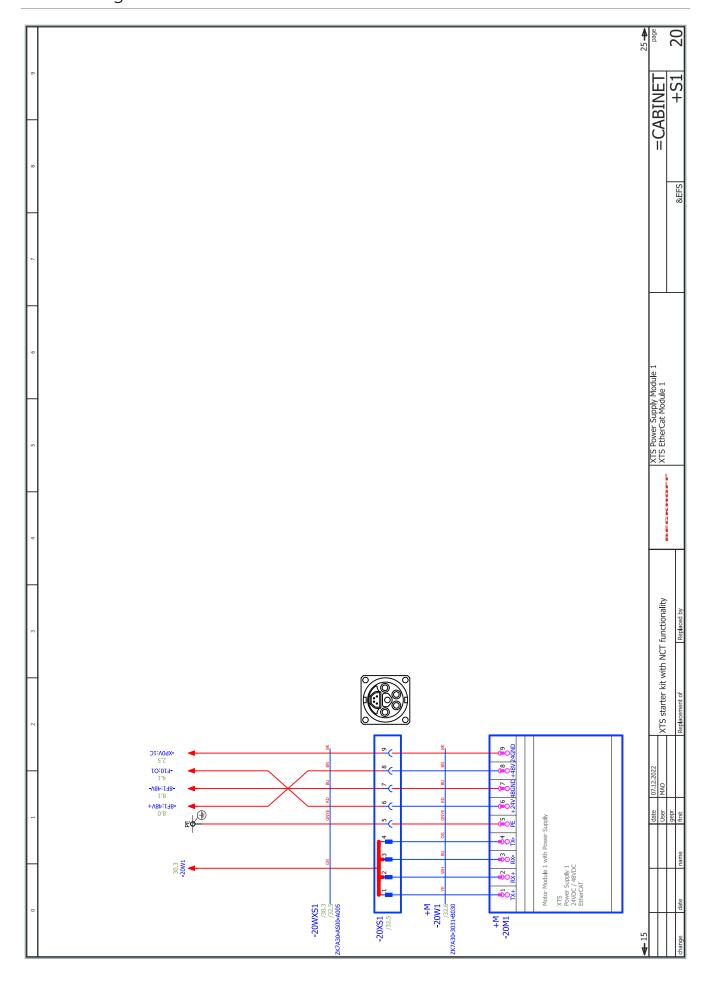


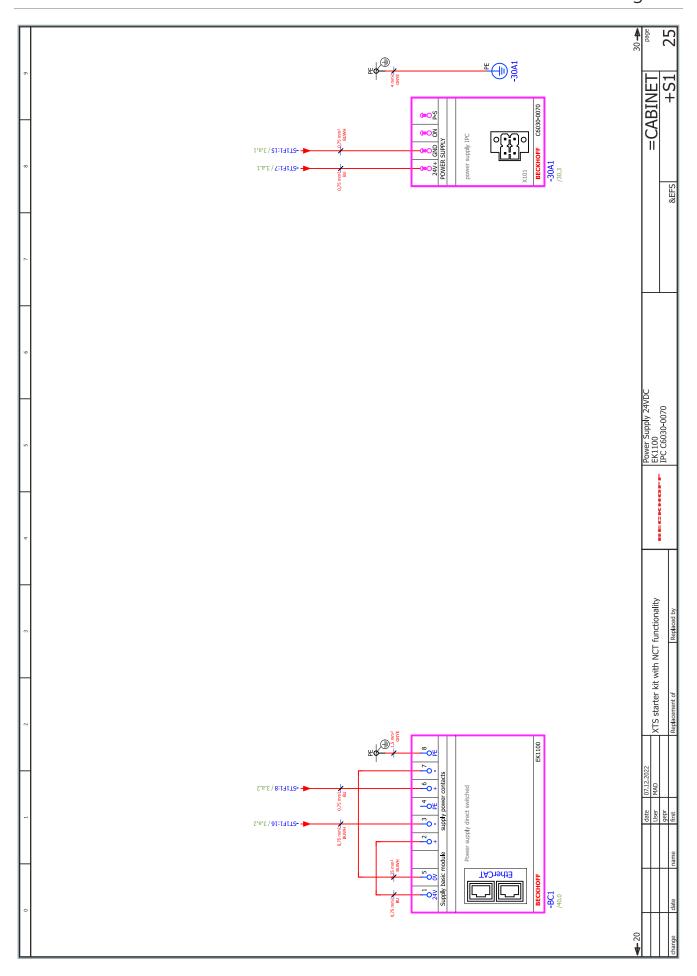


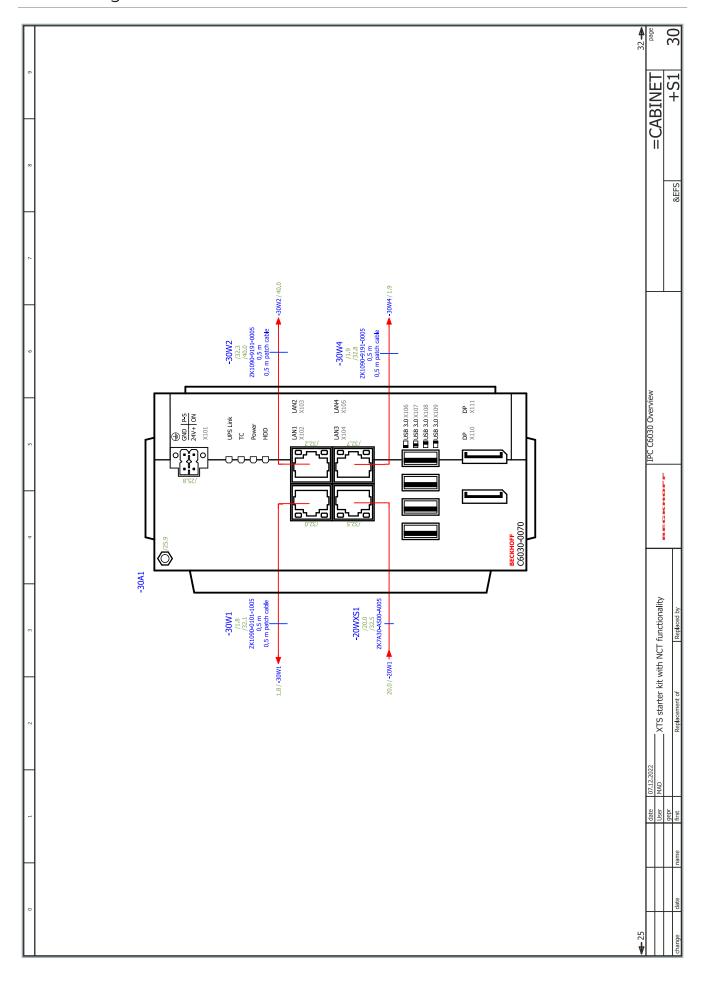


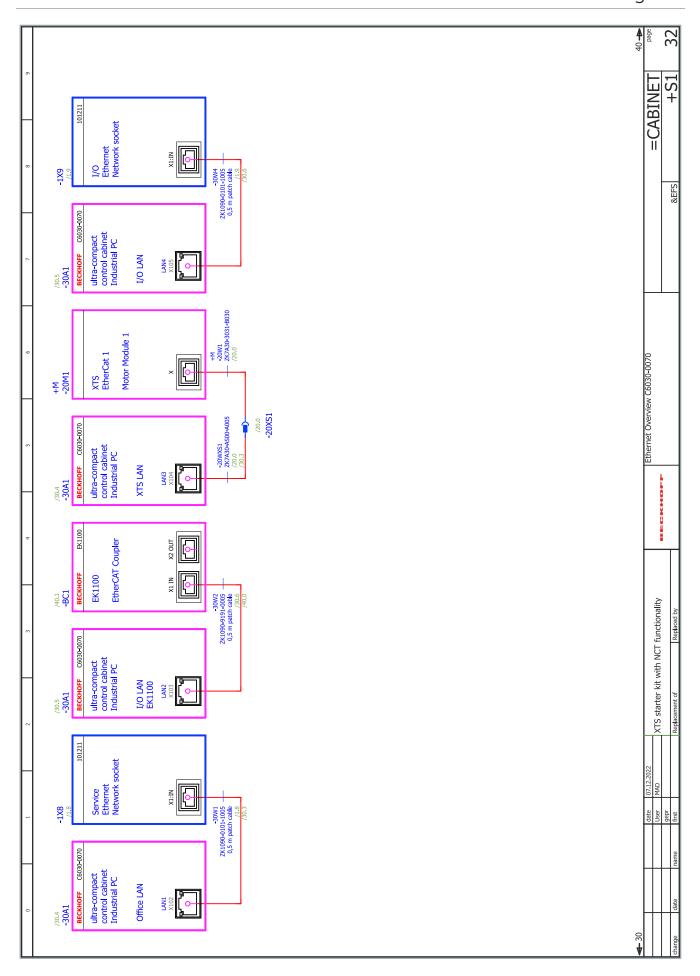




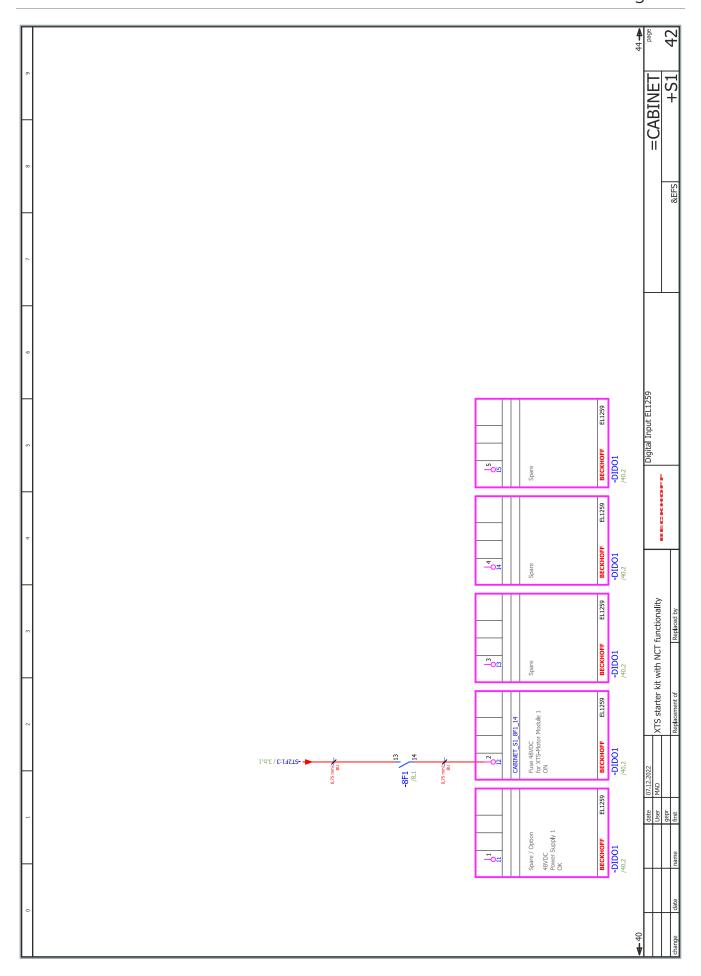


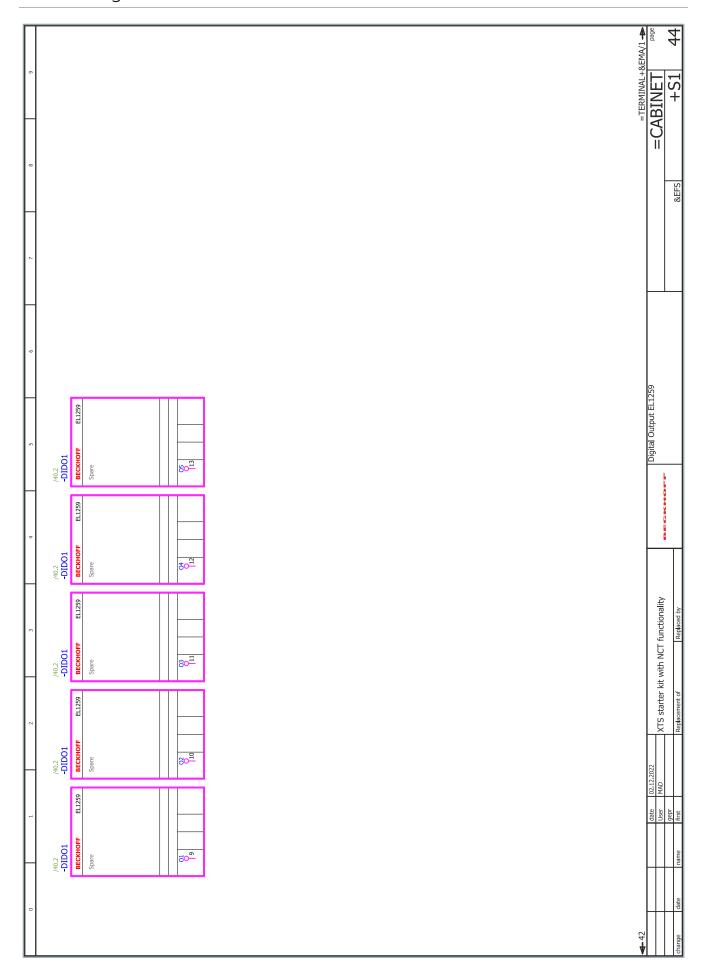












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	terminal diagram	cable name =CABINET+S1-Z0WXS1	connection Connection	connection CABINET+SI-20WXS1 Connection	connection CABINET+S1-200XS1 Consulted testion Consulted te	connection CABINET+SI-200XS1 Consuler designation Cable type CABINET+SI-201X Cable type Cable type CABINET+SI-201X Cable type CABINET+SI-201X Cable type Cable type CABINET+SI-201X Cable type CABINET+SI-201X Cable type Cable type CABINET+SI-201X Cable type C	CABINET+S1-20MXS1 Caple name Caple type Caple name Caple nam	CABINET+S1-200X	CABINET+S1-50MX21 Connection Capie and C	CABINET+S1-700V Connection Cable Hame Cabinet+S1-700	Connection Con

BECKH_P8_Dyn_v2		page / column	=CABINET+S1&EFS/2.1	t ty column to the column to	=CADINE 1+310cF3/2.2	
	cable name	cable type				
		connection	+			
	strip =CABINET+S1-XP24V	target design	=CABINET+S1-2G1			
	strip ET+S1.	jumper	<u> </u>	Ц		
	NET st	terminal		,	7	
	ZABI	connection	9	7	2 0	
	cable name	caple type	=CABINET+S1-F1	=CABINET+S1-F1	=CABINET+51-F10 =CABINET+51-F10	
				H	+	
Ε		1				
terminal diagram		function text				
ermin						
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				1,1 page	
BECKH_P8_Dyn_v2		page / column	=CABINET+S1&EFS/1.1	=CABLE&EMB/1 →	
					II
	cable name	cable type			
	1-XPE	target design	PE	terminal diagram =CABINET+S1-XPE	
	strip =CABINET+S1-XPE	jumper terminal connection	PE PE	terminal diagram =	
		target designation to	=CABINET+S1-PLUG		_
	cable name =CABINET+S1-1W1	cable type	GNYE		
					Ī
terminal diagram		function text	Power Supply 230VAC 16A 50Hz	date 07.12.2022	I
te			Pow	₩	

П					_	_		
6	BECKH_P8_Dyn_v2	page of cable diagram	=CABLE&EMB/2	=CABLE&EMB/3	=CABLE&EMB/4	=CABLE&EMB/5	=CABLE&EMB/6	=CABLE&EMB/7
		function text		Service Ethernet Network Socket			Motor Module 1 with Power Supply XTS Power Supply 1 24VDC / 48VDC EtherCAT	Motor Module 1 with Power Supply XTS Power Supply 1 24VDC / 48VDC EtherCAT
7		length [m]	2	0,5	6,0	0,5		
9		cross-section [mm]	2,5					
		cores used	4	1	1	1	9	10
		all cores	36					
9		cable type	H07RN-F	ZK1090-0101-1005	ZK1090-9191-0005	ZK1090-9191-0005	ZK7A30-AS00-A005	ZK7A30-3031-B030
7		target (by)	=CABINET+S1-PLUG	=CABINET+S1-30A1	=CABINET+S1-BC1	=CABINET+S1-30A1	=CABINET+S1-20XS1	=CABINET+M-20M1
4	/iew	source (of)	=CABINET+S1-XPE;=CABINET+S1-1Q1	=CABINET+S1-1X8	=CABINET+S1-30A1	=CABINET+S1-1X9	modes alterative has not assert that a cause of missing the assert that	=CABINET+S1-20XS1
0	cable overview	cable name	=CABINET+S1-1W1	=CABINET+S1-30W1	=CABINET+S1-30W2	=CABINET+S1-30W4	=CABINET+S1-20WXS1	=CABINET+M-20W1

						<u>م</u>
t						
function te	function text					
length 5	X-Ref	CABINET+S1&EFS/1.1	CABINET+S1&EFS/1.1	CABINET+S1&EFS/1.1	CABINET +SI &HFS/1.1	
cable	uo					
cross-section 2,5	Target designation to	=CABINET+S1-PLUG	=CABINET+S1-PLUG	=CABINET+S1-PLUG	-CABINET+SI-PIUG	
no. of conductors	conductor	1	2	2	GNAE	
		=CABINET+S1-1Q1	=CABINET+S1-1Q1	=CABINET+S1-1Q1	=CABINET+SI-XPE	
cabl		-	_	_	=CABINET+S1REFS/1.1	
Cable name =CABINET+S1-1W1	function text				er Suppy 230VAC 16A 50Hz	
	cable type no. of conductors HO7RN-F 3G	Cable type No. of conductors Cross-section Cable length Sd 2,5 5 5 5 5 5 5 5 5 5	V1 Cable Lype no. of conductors cross-section cable length V1 HO7RN-F 3G 2,5 5 X-Ref Target designation from point point account year systems Connection point point account point point account to a confinent size to a co	V1 HO7RN-F 3G 2,5 5 5 X-Ref Target designation from conductor Connection point conductor Target designation from conductor Conductor conductor Target designation from point conductor In conductor conductor In conductor conductor In conductor conductor In conductor con	V1 And PARN-F no. of conductors cross-section cable length X-Ref Target designation from conductor Connection point conductor Target designation from point conductor X-Ref X-Ref = CABINET+51:AFF5/1.1 = CABINET+51-PLIQ L = CABINET+51-REFS/1.1 = CABINET+51-PLIQ N = CABINET+51-REFS/1.1 = CABINET+51-REFS/1.1 = CABINET+51-PLIQ N = CABINET+51-REFS/1.1 = CABINET+51-REFS/1.1	

BECKH_P8_Dyn_v3	function text Service Ethernet Network Socket	function text	
	cable length 0,5	=CABINET+S1&EFS/30.4	
	cable	Connection point X102:1	
	cross-section	=CABINET+51-30A1	
	no. of conductors	Connection conductor x1::IN	
	cable type ZK1090-0101-1005	ion from	
	cabl ZK1090-	=CABINET+518EFS/32.1 =CABINET+51-1X8	
Cable diagram	Cable name =CABINET+S1-30W1	function text	
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BECKH_P8_Dyn_v3	e e		=CARI F	してして
	function text	function text	"	
	ıgth	X-Ref =CABINET+S1&EFS/40.1		
	cable length 0,5	Connection point x1 IN =CABI	ET+S1-30W2	
	cross-section	Target designation to =CABINET+S1-BC1	cable diagram =CABINET+S1-30W2	
	no. of conductors	Connection conductor point X103:1		
	cable type n ZK1090-9191-0005 n	from (والمراجعة المادية الما	th NOT freedings of the
	cab ZK1090	X-Ref Target designation =CABINET+S1&EFS/30.5 =CABINET+S1-30A1		NTO paragon line
Cable diagram	Cable name =CABINET+S1-30W2	function text	date 07.12.2022	
Cable			₩ ₩	_

			4	
BECKH_P8_Dyn_v3	×t			
	function text	function text		
		18EF5/30.5		
	cable length 0,5	tion X-Ref 1 =CABINET+51&EF5/30.5		
		n to Connection X105:1		
	cross-section	=CABINET+S1-30A1		
	no. of conductors	Connection conductor point XI:IN XI:IN III		
		lon from		
	cable type ZK1090-9191-0005	=CABINET+S18EFS/32.8 = CABINET+S1-1X		
п	30W4			
Cable diagram	Cable name =CABINET+S1-30W4	function text		
Cab			4	7

cable length Motor Module 1 with Power Supply XTS Power Supply 1 24VDC / 48VDC EtherCAT	ction X-Ref function text	=CABINET+S18EFS/20.2 Motor Module 1 with Power Supply XTS Power Supply 1 24VDC / 48VDC EtherCAT	18EFS/20.2 =	7/20.1 =	11		
		ABINET+S1&EFS/20.2 Motor 48VDC					
caple	ction	\ \delta	=CABINET+S1&EFS/20.2	=CABINET+S1&EFS/20.1	=CABINET+S1&EFS/20.1	=CABINET+S1&EFS/20.1	=CABINET+S1&EFS/32.5
	Connection		80	7	5	9	- "
cross-section	Target designation to	=CABINET+S1-20XS1	=CABINET+S1-20XS1	=CABINET+S1-20XS1	=CABINET+S1-20XS1	=CABINET+S1-20XS1	=CABINET+S1-20XS1
nductors	conductor	**************************************	BN BN	ng B	GNYE	DZ	
no. of co	Connection		2	R4		52	X104:1
cable type A30-AS00-A005	Target designation from	=CABINET+S1-XP0V	=CABINET+S1-10Q1	=CABINET+S1-10Q1	PE	=CABINET+S1-F10	=CABINET+S1-30A1
cabl ZK7A30-	X-Ref	=CABINET+S1&EFS/2.4	=CABINET+S1&EFS/8.1	=CABINET+S1&EFS/8.1	=CABINET+S1&EFS/20.1	=CABINET+S1&EFS/4.1	=CABINET+S1&EFS/30.4
Cable name =CABINET+S1-20WXS1	function text			Power Supply XTS-Motor Module 1			
	ZK7A30-AS00-A005	ZK7A30-AS00-A005 X-Ref Target designation from	X-Ref Target designation from	XRef Target designation from =CABINET+SI8EFS/2.4 =CABINET+SI8EFS/8.1 =CABINET+SI-1001	X-Ref Target designation from	X-Ref Target designation from	XYS1

f conductors ction conductor BK BN BN BU BU BU CANYE COG COG COG COG COG COG COG COG COG C
no. of conductors
no. of conductors
Connection Conductor 9 BK = 8 BN = 3 BU = 7 BU = 5 GNYE = 6 RD =
8 BN 8 BN 3 BU 7 BU 6 A OG
8 BN 3 BU 7 BU 5 GNYE 6 RD
3 BU 7 BU 6 GNYE 6 RD 6 RD
7 BU 5 GNYE 4 OG 6 RD
5 GNYE 4 OG 6 RD
6 RD
6 RD
2 WH =CABINET+M-20M1
=CABINET+S1-20XS1 1 YE =CABINET+M-20M1

parts list / piece list	ojece	list			BECKH_I	BECKH_P8_Dyn_v2
designation (BMK)	quantity QTY	quantity designation QTY	type number ordering number	manufacturer supplier	article number function text	sod
=CABINET+S1-30A1 =CABINET+S1&EFS/30.3		ultra-compact control cabinet Industrial PC #basis	C6030-0070 C6030-0070	Beckhoff Automation	BEC.C6030-0070	
=CABINET+S1-BC1 =CABINET+S1&EFS/40.0	1	EtherCAT coupler for E-Bus Terminals (ELxxxx)	EK1100 EK1100	Beckhoff Automation	BEC.EK1100	
=CABINET+S1-DIDO1 =CABINET+S1&EFS/40.2	17		EL1259 EL1259	Beckhoff Automation	BEC.EL1259	
=CABINET+S1-F1		2-Kanal Elektronische Überstromklemme	EL9227-5500	Beckhoff Automation	BEC.EL9227-5500	Ц
=CABINET+S1&EFS/40.3 =CABINET+S1-F10	 	24V DC max. 10A adjustable extended functionalities 2-Kanal Elektronische Überstromschutzklemme	EL9227-5300 EL9227-6644	Beckhoff Automation	BEC.EL9227-6644	\vdash
=CABINET+S1&EFS/40.5		24V DC 4A/ 4A erweiterte Funktionen	EL9227-6644			
=CABINET+S1-2F1 =CABINET+S18FES/2.1	1	Circuit breaker 6kA 2-pole 'B' 16A	5SY6216-6 5SY6216-6	Siemens	SIE.5SY6216-6	
=CABINET+S1-8F1	17	mini circuit breaker 10kA 1-pole 'B' 16A	5SY4116-6 5SY4116-6	Siemens	SIE.5SY4116-6	
=CABINET+S1-8F1 =CABINET+S1&EFS/8.1	17	Auxiliary switch 1NO 1NC for circuit breaker 5SY	5ST3010 5ST3010	Siemens	SIE.5ST3010	
=CABINET+S1-2G1 =CABINET+S18EFS/2.0		power supply 24V DC 10A - 240V AC/150V DC sortion terminal.	PS3001-2410-0001 PS3001-2410-0001	Beckhoff Automation	BEC.PS3001-2410-0001	
=CABINET+S1-5G1	-	power supply unit 48V DC 20A - 240V AC screw terminal.	PS3011-4820-0000	Beckhoff Automation	BEC.PS3011-4820-0000	Ш
=CABINET+S1&EFS/5.0	+		PS3011-4820-0000			-
=CABINET+S1-1M5 =CABINET+S1&EFS/1.5	1	DC axial fan, 80x80x25mm 24v DC 0,7W	8414NGL 8414NGL	EBM-Papst	PAP.8414NGL 24VDC Fan Endosure cooling	
=CABINET+S1-1M5	=		LZ32-4	EBM-Papst	PAP.LZ32-4	Ш
=CABINET+S1&EFS/1.5			LZ32-4		п	-
=CABINET+S1-1M6 =CABINET+S1&EFS/1.6		DC axial fan, 80x80x25mm 24v DC 0,7W	8414NGL 8414NGL	EBM-Papst	PAP.8414NGL	
=CABINET+S1-1M6	П		1232-4	EBM-Papst	PAP.LZ32-4	
=CABINET+S1ACT91.0			331.325.50.01	Jäger direkt	JAE.331.325.50.01	
=CABINET+S1&EFS/1.1	<u> </u>		331.325.50.01			-
=CABINET+S1-1Q1 =CABINET+S1&EFS/1.1	1		1835.3112 1835.3112	Marquardt	MRQ.1835.3112	
=CABINET+S1-10Q1	1	Leistungsschütz BG S0 24VDC 11kW 4-pol. 2S 2Ö u. HS 1S 1Ö	3RT2526-2BB40	Siemens	SIE.3RT2526-2BB40	
=CABINET+S1&EFS/10.3	+	Cage Clamp-connection	3RT2526-2BB40	i		-
=CABINE I +S1-10Q1 =CABINET+S1&EFS/10.3		K. element 24-48VAL 24-70VDC, BG SU BG SO	3R12926-1CB00 3RT2926-1CB00	Siemens	SIE.3K 2926-1CB00	┚┃
4 =CABLE&EMB/7	date 02.12	02.12.2022	Parts list		STINENUCMOUT	OT!
		XTS starter kit with NCT functionality				7

BECKH_P8_D COMPONENTS							
	parts list / p	jece	list			BECKH_I	_P8_Dyn_v2
CARRINET 15,15153 Londed sevent, ope dany 10,20-011 1,010,2011 Rode Needle 1,011,2014 CARRINET 15,15153 1 monthle adopted 12,24 1,012,504 Mode 1,012,2014 CARRINET 15,15153 1 monthle adopted 12,24 1,025,504 Mode 1,012,2014 CARRINET 15,15153 1 monthle adopted 12,24 1,025,504 Mode 1,022,503 CARRINET 15,15153 1 monthle adopted 12,24 1,025,504 Mode 1,022,503 CARRINET 15,15153 1 monthle adopted 12,24 1,025,504 Mode 1,022,503 CARRINET 15,15153 1 monthle adopted 12,24 1,025,504 Mode 1,022,503 CARRINET 15,15153 1 monthle adopted 12,24 1,025,504 Mode 1,022,503 CARRINET 15,15153 1 monthle adopted 12,24 1,025,504 Mode 1,022,503 CARRINET 15,1525 1 monthle adopted 12,24 1,025,504 Mode 1,022,503 CARRINET 15,1525 1 monthle adopted 12,24 1,025,504 Mode	designation (BMK) Schematic / position	quantit _y	/ designation	type number ordering number	manufacturer supplier	article number function text	sod
COMMET 1541-155 1	=CABINET+S1-10S1	2	Contact element, cage clamp M22-CK01	M22-CK01	Moeller	MOE.216385	
COMBITE 5451-155 1 Amonto patter 1004A Amonto patter 1004A	=CABINET+S1&EFS/10.1	\downarrow	1NC front fastening	216385		Emergency Stop Cabinet right side wall	1
CASINET + 51-1051 1 control positive NCD-A NCD-A No.24 No.22-105 No.24 No.24 <td>=CABINET+S1-10S1 =CABINFT+S1%FFS/10 1</td> <td></td> <td></td> <td>M22S-PV 225528</td> <td>Moeller</td> <td>MOE.225528</td> <td></td>	=CABINET+S1-10S1 =CABINFT+S1%FFS/10 1			M22S-PV 225528	Moeller	MOE.225528	
	-CABINET+S18er3/10.1	-	mounting adapter M22-A	M22-A	Modilar	MOE 216374	F
CAMINT + 251-1551 10 tout out out out out out out out out ou	=CABINET+S1&EFS/10.1	-	front mounting	216374	NOCIO NOCIONAL DE LA CONTRACTOR DE LA CO		
CORDINET SERIESTS Temperature of the process o	=CABINET+S1-15S1	1	mounting adapter M22-A	M22-A	Moeller	MOE.216374	
CABINET 1-551-1551 100 total channet, cope data (N2CORD) 100 total channet (N2CORD) 100 to	=CABINET+S1&EFS/15.2		front mounting	216374		Start Cabinet right side wall	
CABINETT-55-11-555 10 book for the table of the control of the	=CABINET+S1-15S1	1	contact element, cage clamp M22-CK10	M22-CK10	Moeller	MOE.216384	
CARDINET 1-51-1555 1	=CABINET+S1&EFS/15.2	\downarrow	1NO front fastening	216384	:	11	Ŧ
1 EP demont Cape Clarb Not2-CIED-C NI22-CIED-C NI2	=CABINET+S1-15S1 =CABINET+S1&EFS/15.2	Π	label notder M225-5 I-X without label	M225-5T-X 216392	Moe ll er	MOE.216392 =	
1 Manufactor D.2-Du C. Front state-friend mt. 20-Du-C	=CABINET+S1-15S1	1	LED element Cage Clamp M22-CLED-G	M22-CLED-G	Moeller	MOE.216571	
1 Illuminated push-button NI22-OL-G NOGler NOGLES NOGLES	=CABINET+S1&EFS/15.2		green 12-30V DC front attachment	216571		11	
1 Front mounting adapter W32-4 Front mounting adapter W32-4 Front mounting adapter W32-4 Front mounting adapter W32-4 Front mounting adapter W32-6 Front mounting adapter W3	=CABINET+S1-15S1		illuminated push-button M22-DL-G	M22-DL-G 216927	Moeller	MOE.216927 =	
1 Contact element, cage clamp N22-CX01 N022-CX01 N024-CX01 N024-CX0	=CABINET+S1-15S3	-	mounting adapter M22-A	M22-A	Moeller	MOE.216374	
1 Contact element, cage clamp N22-CX01 N22-CX01 Noclier	=CABINET+S1&EFS/15.4		front mounting	216374		Stop Cabinet right side wall	
1100 1100	=CABINET+S1-15S3	1	Contact element, cage clamp M22-CK01	M22-CK01	Moeller	MOE.216385	
1 Bibel holder NZS-STX NOES-STX NOE	=CABINET+S1&EFS/15.4		1NC front fastening	216385		П	
1 4 4 4 4 4 4 4 4 4	=CABINET+S1-15S3	1	label holder M22S-ST-X	M225-ST-X	Moeller	MOE.216392	
1 Inch-demont age damp M22-CIED-R M22-CIED-R M02-CIED-R M02-	=CABINET+S1&EFS/15.4	\downarrow	without label	216392		11	-
The control defined push-button M22-DL-R M22-DL-R M022-DL-R M064 M064 M062 1692	=CABINET+S1-15S3	-	led-element cage clamp M22-CLED-R	M22-CLED-R	Moe ll er	MOE.216570	
1 Huminated push-button N22-DLR M22-DLR M22-DLR M22-DLR M22-DLR M22-DLR M22-DLR M22-DLR M22-DLR M22-AT M	=CABINET+S1&EFS/15.4	_	red 12-30V DC front attachment	216570		11	7
Ted Ted	=CABINET+S1-15S3	H	illuminated push-button M22-DL-R	M22-DL-R	Moe ll er	MOE.216925	
1 Triouting adaptar right of the following adaptar right with NCT functionality and be a seed to the following adaptar right of the following adaptar right with NCT functionality and be a seed to following adaptar right with NCT functionality adaptar right with NCT functionality adaptar right adaptar rig	=CABINET+SI&EFS/15.4		red M32-A	216925	Moollos	E COSTO DOM	-
1	-CABINET+S1*FEC/15 6	⊣	front mounting	716374	D. D	Reset Cabinet right side wall	
1.00 front fastering 1.00 front fastering 216.384 216.392	=CABINET+S1-15S5	-	contact element, cage clamp M22-CK10	M22-CK10	Moeller	MOE.216384	
Auch Londor Mode Mode Mode Mode Mode Mode Mode Mode	=CABINET+S1&EFS/15.6		1NO front fastening	216384		II	
4 without label without label 216392 =	=CABINET+S1-15S5	1	label holder M22S-ST-X	M225-ST-X	Moeller	MOE.216392	
1 LED element Cage Clamp M22-CLED-W M22-CLED-W Moeller MOE216569 2 white 12-30 DC front attachment 216569 3 white 12-30 DC front attachment M0E2-DL-B Moeller M0E216931 4 blue	=CABINET+S1&EFS/15.6	-	without label	216392		П	
216569 white 12-30V DC front attachment 216569 =	=CABINET+S1-15S5	1	LED element Cage Clamp M22-CLED-W	M22-CLED-W	Moeller	MOE.216569	
1 illuminated push-button M22-DL-8 M064 M06216931 M06216931 M064 M06216931	=CABINET+S1&EFS/15.6	_	white 12-30V DC front attachment	216569		п	Ŧ
07.12.2022 XTS starter kit with NCT functionality Parts list	=CABINET+S1-15S5 =CABINET+S1&EFS/15.6		illuminated push-button MZZ-DL-6 blue	M22-DL-8 216931	Moeller	MOE.216931 =	
O7.122.2022 NAD XTS starter kit with NCT functionality Derivative Parts list Derivative Part							
MAD X I S Starter Kit with IVC Tunctionality BECKHOFF		П		Parts list		=COMPONEN	STI
		Т		BECKHOFF			<u> </u>

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parts list / piece list	ece	list			BECKH_P8	BECKH_P8_Dyn_v2
designation (BMK) Schematic / position	quantity QTY	quantity designation QTY	type number ordering number	manufacturer supplier	article number function text	sod
=CABINET+S1-ST1F1 =CABINET+S1&EFS/40.4	17	potential distribution terminal, 8 x 24V DC, 8 x 0V DC	EL9184 EL9184	Beckhoff Automation	BEC.EL9184	
=CABINET+S1-ST2F1 =CABINET+51&EF5/40.4	11	Potenziałvertellungsklemme, 8 x 2 Potenziałe neutral	EL9181 EL9181	Beckhoff Automation	BEC.EL9181	
=CABINET+S1-ST10	1	deo	EL9011 EL9011	Beckhoff Automation	BEC.EL9011	
=CABINET+S1-1W1	-1	nm² schwarz	059.272	Jäger direkt	JAE.059.272	
=CABINET+S1&EFS/1.1 =CABINET+S1-30W1	1	Länge: 5m m. Zentralstecker cable for the K-bus extension with two RJ-45-plugs at both ends, red	US9.27.2 ZK1090-0101-1005	Beckhoff Automation	BEC.ZK1090-0101-1005	-
=CABINET+S1&EFS/32.1		Ethernet cable STP, 0,5m	ZK1090-0101-1005			
=CABINET+S1-30W2	1	ZK1090-9191-1010 EtherCAT Patchkabel 1.0m	ZK1090-9191-1010	Beckhoff Automation	BEC.ZK1090-9191-1010	
=CABINET+S1&EF5/32.3 =CABINET+S1-30W4	-	Konfektioniert: 2x RJ45-Stecker, PUR, AWG22 Kabel für die K-Bus-Verlängerung mit zwei RJ-45-Steckern an beiden Enden, rot	ZK1090-0101-1010	Beckhoff Automation	BEC.ZK1090-0101-1010	F
=CABINET+S1&EFS/32.8		Ethernet-Kabel STP, 1,0 m	ZK1090-0101-1010			
=CABINET+S1-20WXS1 =CABINET+518EFS/32.5	1		ZK7A30-AS00-A005 ZK7A30-AS00-A005	Beckhoff Automation	BEC.ZK7A30-AS00-A005	
=CABINET+S1-1X8	-1		101211	Arnold Elektromechan.	AEB.101211	
=CABINET+S1&EFS/1.8		Ethernet interface, with captive screw-on protective cover	101211	T. T.	770707 644	-
=CABINE1+51-1X9 =CABINET+51&FF5/1.9		KJ45 bullifin socket (socket/socket) Fthemet interface with cantive corew-on protective cover	101211 101211	Arnold Elektromechan.	AEB.101211	
=CABINET+S1-XP0V		quick-fit end bracket f. TS 35	CLIPFIX 35	Phoenix Contact	PHO.3022218	
=CABINET+S1&EFS/2.4		width: 9,5mm gray	3022218			
=CABINET+S1-XP0V	1	terminal strip label holder, height adjustable	KLM 3	Phoenix Contact	PHO.0811969	
=CABINET+S1&EFS/2.4		f. end bracket CLIPFIX 15, CLIPFIX 35 and CLIPFIX 35-5	0811969			-
=CABINET+S1-XP0V	ю		PT 2,5-3L	Phoenix Contact	PHO.3210499	
=CABINFT+S1-XP0V	2	2,5mm² pusn-in connection Brücke - FBS 2-5,	PES 2-5	Phoenix Contact	PHO.3030161	F
=CABINET+S1&EFS/2.4	ı		3030161			
=CABINET+S1-XP0V	1	Abschlussdeckel - D-PT 2,5-3L	D-PT 2,5-3L	Phoenix Contact	PHO.3211647	
=CABINET+S1&EFS/2.4			3211647			
=CABINET+S1-XP24V	П	et f. TS 35	CLIPFIX 35	Phoenix Contact	PHO.3022218	
=CABINET+S1&EFS/2.1			3022218			-
=CABINET+S1-XP24V	-		KLM 3	Phoenix Contact	PHO.0811969	
=CABINET+S1&EFS/2.1 =CABINET+S1-XP24V	,	f. end bracket CLIPFIX 15, CLIPFIX 35 and CLIPFIX 35-5	US11909 PT 2.5-31	Phoenix Contact	PHO.3210499	-
=CABINET+S18EFS/2.1	7	2,5mm² push-in connection	3210499			
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=CABINET+S1-XPE 5		Schutzleiterklemme PT 2,5-QUATTRO-PE (4 Anschlüsse)		Phoenix Contact	PHO.3209594	
=CABINET+S1&EFS/1.1	2,5mi				11	
=CABINET+S1-XPE		Abschlussplatte für ST 2,5-QUATTRO D-ST 2,5-QUATTRO		Phoenix Contact	PHO.3030514	
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=CABINET+M-20W1 1	T	\vdash		Beckhoff Automation	BEC.ZK7A30-3031-B030	
		ZK7A30-3031-B030			Motor Module 1 with Power Supply XTS Power Supply 1 24VDC / 48VDC EtherCAT	DC / 48VDC EtherCAT
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6	3 Dvn v2	finition			oint, DI	PLC CPS (+)	PLC CPS (-)	oint, DI	oint, DO	PLC CPS (+)	PLC CPS (-)	oint, DO
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8		target ID				=CABINET+S1-XP24V	=CABINET+S1-XP0V			VET+S1-XP24V	=CABINET+S1-XP0V	VET+S1-ST2F1
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2		position		NET+51/40 3	=CABINET+S1/3.1	NET+S1/3.2	NET+S1/3.2	NET+S1/3.1	NET+S1/3.1	NET+S1/3.2	NET+S1/3.2	NET+S1/3.1
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	PLC-diagram	channel	=CABINET+S1-F1	72/-5500	Channel 1.In	Channel 1.	Channel 1.In	Channel 2.In	Channel 1.0	Channel 2.0	Channel 2 Out	Channel 2.0
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	target ID			=CABINET+S1-XP24V	=CABINET+S1-XP0V		ABINET+S1-20)	ABINET+S1-XP.	=CABINET+S1-XP0V			
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	position		-51/40.5	-51/4.2	-51/4.2	-51/4.1	-51/4.1	-51/4.2	-51/4.2	51/41		
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Iram		-S1-F1		ŀ							5	
PLC-diagram	channel	=CABINET+S1-F10 EL9227-6644	Channel 1 In	Thannel 1.In	Channel 1.In	Channel 2.In	Channel 1.0ut	Channel 2.0ut	Channel 2.0ut	hamed 2.Out	+	
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	target ID fu			PLC	PLC	PLC	PLC	PIC	Τ	=CABINET+S1-BC1 PLC		PLC	PLC	PLC	PLC		=CABINE1+S1-30A1 PLC	
	iption																	
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	position		=CABINET+S1/40.4	=CABINET+S1/40.4	=CABINET+S1/40.4	ABINET+S1/40.4	=CABINET+S1/40.4	ABINET+S1/40.4	ABINET+S1/3 a 1	=CABINET+S1/3.a.2	ABINET+S1/40.4	ABINET+S1/40.4	=CABINET+S1/40.4	=CABINET+S1/40.4	ABINET+S1/40.4	ABINET+S1/40.4	=CABINE1+S1/3.a.1	BINET+S1/3.a.2
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1 1 1 1 1 1 1 1 1 1	Position Structure & pagedescription Carpor 10 1 1 1 1 1 1 1 1 1	liagral NET+S1-	address	position Position	### Structure— & pag Function function Function -F1 Channel 2 (04) Power Supply Cabinet intern -F1 Channel 3		### target ID CABINET-15-1M5	BECKH_P8_Dyn_v2 function definition PLC connection point, general
	Content of the Cont	agrar ET+S1-	2F1	CABINET+51/40.4	function -F1 Channel 2 (4A) 24VDC Power Supply Cabinet intern -F1 Channel 2 (0V)	text	CABINET-51-1M5	Function definition function definition PLC connection point, general
Part		e ET+S1-	2F1	CABINET+51/40.4	structure- & pag function -F1 Channel 2 (4A) 24VDC Power Supply Cabinet intern -F1 Channel 2 (0V)	text text	CABINET-SI-IM5	Function definition Function definition Function point, general PLC connection point, general
	Pacific Paci	IET+S1-		= CABINET+51/40.4 = CABINET+51/40.4 = CABINET+51/3.b.1 = CABINET+51/3.b.1 = CABINET+51/3.b.1 = CABINET+51/3.b.2 = CABINET+51/3.b.2 = CABINET+51/3.b.2 = CABINET+51/3.b.2 = CABINET+51/3.b.3 = CABINET+51/3.b.3 = CABINET+51/3.b.3 = CABINET+51/3.b.3 = CABINET+51/3.b.4	Function -F1 Channel 2 (4A) 24VDC Power Supply Cabinet intern -F1 Channel 2 (0V)	text	### CABINET+S1-1MS = CABINET+S1-1M6 = CABINET+S1-1M6 = CABINET+S1-1S1 = CABINET+S1-1S2 = CABINET+S1-1S2 = CABINET+S1-1S2 = CABINET+S1-1S5 = CABINET+S1-1M6 = C	function definition PLC connection point, general
		ET+S1-		=CABINET+51/40.4 =CABINET+51/3.b.1 =CABINET+51/3.b.1 =CABINET+51/3.b.1 =CABINET+51/3.b.1 =CABINET+51/3.b.2 =CABINET+51/3.b.2 =CABINET+51/3.b.2 =CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4	-F1 Channel 2 (4A) 24VDC Power Supply Cabinet intern-F1 Channel 2 (0V)		=CABINET+51-1M5 =CABINET+51-1M6 =CABINET+51-1051	PLC connection point, general PLC co
COUNTY				=CABINET+51/40.4 =CABINET+51/3.b.1 =CABINET+51/3.b.1 =CABINET+51/3.b.1 =CABINET+51/3.b.2 =CABINET+51/3.b.2 =CABINET+51/3.b.2 =CABINET+51/3.b.2 =CABINET+51/3.b.2 =CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4	-F1 Channel 2 (4A) 24VDC Power Supply Cabinet Intern-F1 Channel 2 (0V)		= CABINET+51-1M5 = CABINET+51-1M6 = CABINET+51-153 = CABI	PLC connection point, general PLC co
CAMERY 1-201.341 AT CHORNED 3 (AN) AND CHORNED 5 (AND CHORNED	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1			= CABINET+51/3.b.1 = CABINET+51/3.b.1 = CABINET+51/3.b.1 = CABINET+51/3.b.2 = CABINET+51/3.b.2 = CABINET+51/3.b.2 = CABINET+51/3.b.2 = CABINET+51/3.b.2 = CABINET+51/3.b.3 = CABINET+51/3.b.3 = CABINET+51/3.b.3 = CABINET+51/3.b.4	-F1 Channel 2 (4A) 24VDC Power Supply Cabinet intern-F1 Channel 2 (0V)		= CABINET-51-1M5 = CABINET-51-1M6 = CABINET-51-1251 = CABINET-51-1253 = CABINET-51-1	PLC connection point, general PLC co
Colonity 15-20 Colo				= CABNET+5/13.b.1 = CABNET+5/13.b.1 = CABNET+5/13.b.2 = CABNET+5/13.b.2 = CABNET+5/13.b.2 = CABNET+5/13.b.3 = CABNET+5/13.b.4 = CABNET+5/13.b.4 = CABNET+5/13.b.4 = CABNET+5/13.b.4	-F1 Channel 2 (0V)		= CABINET+51-1/95 = CABINET+51-1/55 = CABINET+51	PLC connection point, general PLC connection plus PLC co
Colonie 1-6,10,11 Colo	County Color Coun			= CABNET+51/3.0.1 = CABNET+51/3.0.2 = CABNET+51/3.0.2 = CABNET+51/3.0.2 = CABNET+51/3.0.2 = CABNET+51/3.0.3 = CABNET+51/3.0.3 = CABNET+51/3.0.3 = CABNET+51/3.0.3 = CABNET+51/3.0.4 = CABNET+51/3.0.4 = CABNET+51/3.0.4 = CABNET+51/3.0.4 = CABNET+51/3.0.4 = CABNET+51/3.0.4	-F1 Channel 2 (0V)		= CABINET+S1-15S1 = CABINET+S1-15S2 = CABINET+S1	The Connection point, general PLC connection point, general
Content Cont	CASSISTICATION CASS			=CABINET+51/3.b.2 =CABINET+51/3.b.2 =CABINET+51/3.b.2 =CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4	-F1 Channel 2 (0V)		= CARINET+SI-15S1 = CARINET+SI-15S2 = CARINET+SI-14S5 = CARINET+SI-14S5 = CARINET+SI-14S5 = CARINET+SI-15S1 = CARINET+SI-15S2 = CARINET+SI	PLC connection point, general PLC co
CORNERT 50.23-3 CORNERT 50	CADIMITY CASIMITY C			=CABINET+51/3.b.2 =CABINET+51/3.b.2 =CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4	-F1 Channel 2 (0V)		= CABINET+SI-15S3 = CABINET+SI	PLC connection point, general PLC co
C-CORNIETT-51(2)-2-2 C-CORNIETT-51(2)-2 C-CORNIE	Content for the American Content for the Ame			=CABINET+SI/3.b.2 =CABINET+SI/3.b.2 =CABINET+SI/3.b.3 =CABINET+SI/3.b.3 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4	-F1 Channel 2 (0V)		= CABINET+SI-15SS = CABINET+SI-1MS = CABINET+SI-1M6 = CABINET+SI-13SS = CABINET+SI-10QI = CABINET+SI-10QI = CABINET+SI-1QQI	PLC connection point, general PLC co
COUNTED SECTION COUNTED SE	Content (NLD)			=CABINET+SI/3.b.2 =CABINET+SI/3.b.3 =CABINET+SI/3.b.3 =CABINET+SI/3.b.3 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4	-F1 Channel 2 (0v)		= CABINET+S1-F1 = CABINET+S1-10Q1 = CABINET+S1-15S3 = CABINET+S1-15S3 = CABINET+S1-15S3 = CABINET+S1-15S3 = CABINET+S1-10Q1 = CABINET+S1-10Q1 = CABINET+S1-10Q1 = CABINET+S1-10Q1 = CABINET+S1-10Q1 = CABINET+S1-10Q1 = CABINET+S1-F1	PLC connection point, general PLC co
CORRECTIONAL CORR	CADIMITY STATE CADI			=CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4	-F1 Channel 2 (0V)		=CABINET+S1-1MS =CABINET+S1-1S3 =CABINET+S1-1S21 =CABINET+S1-1S21 =CABINET+S1-1S21 =CABINET+S1-1S21 =CABINET+S1-10Q1	PLC connection point, general PLC co
COORDITION COO	COUNTY FOR TAX COUN			=CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4			= CABINET+SI-IM5 = CABINET+SI-1M6 = CABINET+SI-15SI = CABINET+SI-1M6	PLC connection point, general PLC co
COUNTY				=CABINET+51/3.b.3 =CABINET+51/3.b.3 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4			= CABINET+51-1703 = CABINET+51-1553 = CABINET+51-1553 = CABINET+51-1553 = CABINET+51-1553 = CABINET+51-1553 = CABINET+51-1553	The Connection point, general PLC co
Coloner 1502.204				=CABINET+SI/3.b.3 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4 =CABINET+SI/3.b.4			= CABINET+51-1501 = CABINET+51-1501 = CABINET+51-1001 = CABINET+51-1001 = CABINET+51-1001	The connection point, general PLC co
CORNET 15 (12.0				= CABINET+51/3.0.3 = CABINET+51/3.0.4 = CABINET+51/3.0.4 = CABINET+51/3.0.4 = CABINET+51/3.0.4			=CABINET+51-1531 =CABINET+51-1621 =CABINET+51-1021 =CABINET+51-1021	PLC connection point, general PLC connection point, general PLC connection point, general PLC connection point, general
4-00MRT 55/13-84 4-00MRT 55/	COUNTY 1-53/Dat COUNTY 1-5			=CABINET+51/3.0.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4 =CABINET+51/3.b.4			=CABINET+51-1555 =CABINET+51-1001 =CABINET+51-1001	PLC connection point, general PLC connection point, general PLC connection point, general PLC connection point, general
4-00MRT-53/13-64	COMMET 451/224 COMM			=CABINET+51/3.0-4 =CABINET+51/3.0-4 =CABINET+51/3.0-4			=CABINET+51-359	PLC connection point, general PLC connection point, general PLC connection point, general
#COMMET-54,15.64 #CCOMMETON DOTAL grown #COMMET-54,15.64 #CCOMMETON DOTAL grown #COMMET-54,15.64 #CCOMMETON DOTAL grown #CCOMMETON D	#CMBMET-55/2b.4 #CMBMET-55/2b.4 #CMBMET-55/2007 #CMBMET-55			=CABINET+SI/3.b.4			=CABINET+51-1001	PLC connection point, general
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Index

A		Alignment	62
Air gap	63	Inserting	62
Increasing	65	Removing	61
Reducing	64	· ·	
Setting	64	N	
Analog input	53	<u> </u>	27
A maiog input	00	Name plate	21
D		NCT electronics	00
В		Product overview	20
BTN number			
Modules	29	P	
Mover	29	Pictograms	11
		Potentiometer	58
С		Potentiometer 1 - analog input 1	58
Сар		Potentiometer 2 - analog input 2	59
Connection cable	47	Product overview	17
Data line	48	Control cabinet	18, 19
Chaser mode	56	NCT electronics	20
		Starter kit	17
Circuit diagram	72		22
Connection cable	46	Test board	22
Control cabinet	47	Push button	- 4
Module	46	Button 1 - digital input 1	54
Connector		Button 2 - digital input 2	54
Turns	46	Button 3 - digital input 3	55
Control cabinet		Button 4 - digital input 4	55
Product overview	18, 19		
		R	
D		Rail on support	60
Data line		Disassembly	61
Control cabinet	48	Installation	61
	48	RGB LED	01
Laptop		Brightness	59
PC	48		58
DataMatrix code	29	Color	50
Digital input	53		
Dimensional drawings	36	S	
Disposal	71	Safety	15
		Hot surfaces	16
E		Intended use	33
Emergency stop button	51	Moving or rotating components	16
End cap		Overheating	16
Disassembly	60	Protective conductor	16
Installation	61	Security	
matananon	01	De-energized and voltage-free condition	16
		Earthing	16
G		General safety instructions	15
General safety instructions	15	Magnetic fields	15
I		Safety pictograms	16
Instruction	11	Secure the control cabinet	15
Intended use	33	SELV / PELV	15
intended dise	33	Tightening torques	16
		Signal words	11
L		Starter kit	
LEDs	49	Product overview	17
		Support	13
M		Symbols	11
Module with connector		System	
Turns	46	Starting	49
Mover	60	Stop	51
1410 4 01	00	System test	49

T	
Target group	9
Test board	
Disassembly	68
Installation	68
Product overview	22
Transport securing device	45
Turns	46
Type key	30



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