BERGHOF

PIONEERING AUTOMATION TECHNOLOGY

PRODUCT CATALOG
BERGHOF AUTOMATION AND CONTROL SOLUTIONS

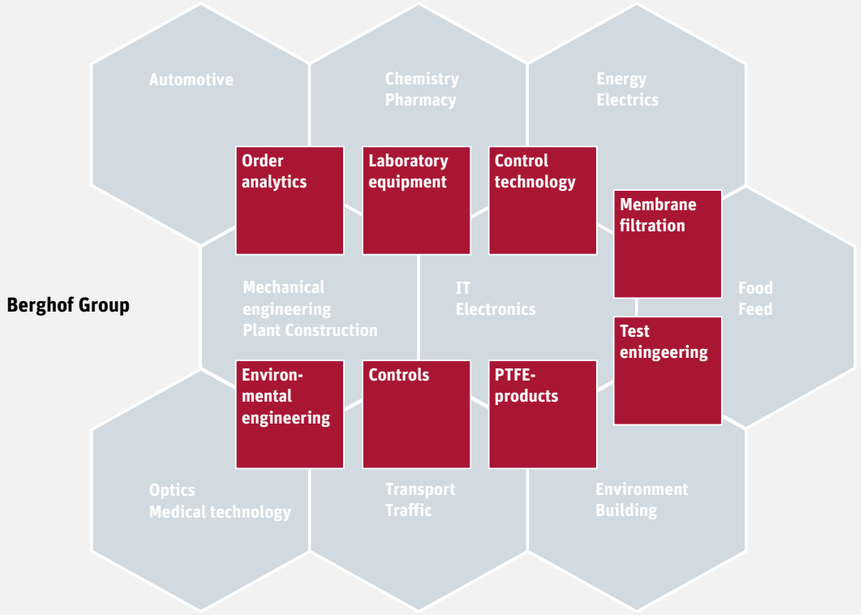
- → Control systems / PLC
- → Touch panels
- → Motion
- → Industrial PCs
- → Sector-specific products
- → Customized products
- → Applications

ISSUE: SPS IPC DRIVES 2018

BERGHOF **GROUP**

AS A LEARNING, GROWING COMPANY AND NETWORK OF STRONG PARTNERS, WE COMBINE BERGHOF KNOWLEDGE, TECHNOLOGIES AND RESOURCES IN FIRST-CLASS PERFORMANCE

BERGHOF **YOUR INNOVATION HUB**



Berghof Automation & Control Solutions is a continuously growing business unit of the Berghof Group, a family-owned company that has been developing and producing advanced technologies at the highest level in Germany for over 50 years. In order to guarantee optimum quality at all times, we have not outsourced the entire process chain - from brainstorming and development to careful product testing and certification - but have brought it together at our headquarter in Eningen, Germany.

Founded in 1966 by Prof. Dr. Georg Zundel as a research institute, the Berghof company quickly made a name for itself as one of the most renowned physical-technical institutes in Germany. Following the successful transformation into a technology company, the Berghof Group now supplies the market with an extraordinary variety of technologies and products, all in keeping with the common leitmotif „Your Innovtion Hub". The group comprises the business units Berghof Automation, Berghof Analytics and Environmental Engineering, Berghof Membrane Technology, Berghof Products & Instruments and Berghof Fluoroplastic Technology.

Mutual transfer of knowledge, the sensible use of synergies between the individual business areas, long-term cooperation and versatility - all these are the fertile ground for value-adding innovations. That's why Berghof cultivates a relationship based on partnership when dealing with each other and, above all, with its customers. About half of all employees of the Berghof Group are employees of the company Berghof Automation, distributed among the following business units Automation & Control Solutions, Process Management and Testing.

BERGHOF **AUTOMATION & CONTROL SOLUTIONS** FOR CHALLENGING PROJECTS IN MACHINE AND PLANT CONSTRUCTION AND FOR WORLDWIDE INITIAL EQUIPPING

The strong partner at your side

Berghof Automation & Control Solutions – is an independent business unit that implements customized individual solutions on the basis of a highly flexible standard portfolio by means of a highly specialized team. This generates maximum fulfilment of needs with maximum qualitative product safety.

And for customers this offers even more: all products benefit from every tailor-made solution through its integration into the standard, so that all customers - even when using the standard portfolio - benefit from the innovative ideas of the entire industry.

Berghof control solutions have proven themselves in a wide variety of industries across all sectors. Machine tools, special machines, the food industry, mining, oil & gas, crane systems or agriculture - the usability of Berghof controls and components is individually tested in each case.

For example, Berghof components withstand extreme weather and operating conditions in shipping, on offshore platforms and in underground mining. This special heavy-duty line demonstrates Berghof's indestructible control technology on a daily basis, which can be optimally operated even in exceptional temperatures and heavy soiling and guarantees perfect function.

But Berghof's portfolio is not only represented at extremes. The products demonstrate their 24/7 usability in intralogistics as well. Thanks to the flexible system, Berghof is able to ideally adapt the automation, networking and visualization of all material flows to logistics requirements.

Industry 4.0 is not just a buzzword for Berghof - it is a living reality. Numerous customers rely on the broad communication capabilities of our products and network these with superimposed systems or Smartphones to keep the process optimally in view at all times.

Berghof Automation & Control Solutions accomplishes this with highly qualified and optimally coordinated teams, sophisticated process flows, close coordination of all process flows with short decision-making paths and implementation times, and all this with in-house production. The basis of all activities is the wealth of experience and expertise gained from countless projects with know-how in operational processes and product requirements in a wide range of industries in almost all fields of application.

In order to be able to guarantee such a high standard, Berghof places high demands on both itself and its suppliers in terms of quality, reliability and interpersonal cooperation. The goal: an all-round successful project - from the task definition to software migration or product integration, from commissioning to maintenance. According to the motto:
Berghof will take care of it for you.

In use across the board

Repeatable and scalable solutions based on a proven product portfolio despite the diversity of requirements and applications in different industries - this calls for an equally flexible manufacturer. With products from Berghof, you can rely on valuable experience from over 40 years in automation technology with special product solutions and almost all application areas. We focus on the well-being of our customers: **custom-made products** on the basis of a qualitatively mature, high-quality portfolio and know-how, which is constantly expanded via specially established knowledge databases.

The result: We already meet special market and application requirements in our product standard.

Harsh environmental conditions, integration into superimposed systems, guaranteed availability of spare parts according to specifications, special communication protocols, safe operation, protection of your implementation from unauthorised persons, predictive maintenance, remote access, easy service - our interest is always in the functioning system as a whole tailored to the respective individual requirements. Longevity, reliability and a maximum MTBF are kept in mind as well as the possibility of expandability and renewal of the running system.

Your advantage: The Berghof portfolio continuously integrates the innovative, trend-setting accents from all applications into the standardized complete solutions.

The Berghof automation experts work with you in partnership to create a solution tailored to your process sequences and support your needs during integration, commissioning and maintenance. Reliable and competent support throughout the entire lifecycle is of course a matter for us, and can be provided at any time without break if required. In addition to our control technology, we also supply automation software tailored to your needs.

Shortening the time-to-market is becoming the most important competitive factor to survive in the industry environment. Our suitable system solutions help you to optimize your processes flexibly.

As diverse as the industries are, as diverse are the possible applications of Berghof products. **Made in Germany.**

Flexible automation solutions for all industries:

01 Intralogistics, **02** Mining, **03** Oil & Gas, **04** Marine, **05** Machine tools,
06 Crane systems, **07** Agriculture, **08** Special machines

BERGHOF **INDUSTRIES & APPLICATIONS**

01

02

03

04

05

06

07

08

CODESYS offers you as a user numerous advantages

The experts at Berghof know from many years of experience that compatibility and openness are particularly important criteria for customers. This is why Berghof Automation & Control Solutions has been consistently relying on the open automation software CODESYS for many years.

CODESYS convinces by its unique flexibility and functionality and belongs rightly to one of the most frequently used programming tools worldwide. The IEC 61131-3 programming software „CODESYS Development System" forms the basis for this. This programming language improves the life cycle of the software and significantly facilitates requirements analysis, design, construction, testing, validation, installation, operation and maintenance. CODESYS allows the programming languages IL, LD, FBD, ST, AS and CFC. This makes it easy to implement applications with complex, distributed architectures.

As an internationally proven engineering tool, CODESYS has meanwhile established itself as a worldwide standard for a large number of manufacturers. But there are big differences in the application.
Berghof Automation & Control Solutions uses the **open standard of CODESYS**, which offers you numerous advantages as a user. Linux is used as the platform for our controllers, so that a wide variety of software modules can be easily combined.

Your advantages with the Berghof solution:

- No need for proprietary sotions - Use of 3S Standard - Solutions and Functions
- CODESYS is free of charge - one-time purchase of the company target license further standard updates of 3S are free of charge
- Simple up- and downgrading between the different CODESYS versions as required
- No restrictions for devices to be used
- No restrictions when using third-party libraries
- Very easy changeover from other standard V3 platforms to the Berghof system
- Unrestricted use of the software available in the CODESYS Store
- Compatibility with various plug-ins and extensions

CODESYS **AN OPTIMAL BASIS**

The Berghof CODESYS standard offers a variety of free software options:

- Unit-related analog inputs without necessary conversion
- Application protection through binding to hardware
- Configurable bootlogo, weblogo & operator buttons
- Operating hours counter
- CODESYS Security Manager for Encryption and Certificates
- DHCP client for automatic IP configuration
- HTTPS Webconfig
- Internal diagnostic memory (diagnostic log for offline error analysis)
- IP configuration via display menu
- Configuration option 2nd IP address on Ethernet interfaces
- Multi-Touch function
- Screenshot function
- Target visualization
- Temperature sensor
- Web-based configuration interface
- Additional Fonts
- Time zone support including summer/ winter time
- Certificate-based security
- CODESYS Runtime License

Benefit from our extensive experience with CODESYS. We offer you numerous supports for the software.

- Consulting and conception for automation requirements
- Creation of the software application
- Porting CODESYS versions to each other and migrating other PLC platforms to CODESYS
- Optimization of realizations with CODESYS
- Training courses/workshops on software in general or specially tailored to your needs, for example on system operation or service

Professional support close to you

We‘re always close. Represented by qualified and certified Solution Partners, we offer optimal support for all tasks worldwide. Our partner companies are proven experts in special technologies and industries with excellent product and system know-how as well as many years of experience in the use of Berghof technology. They prove this knowledge not only through their daily work on complex projects and market presence, but also through close cooperation with our specialists at the head office.

In addition to the basic requirements regarding experience and further training as well as the fulfilment of our value claim regarding quality, reaction time or sustainability, we attach great importance to the quality of:

- **Consulting -** development of the ideal solution using the know-how of Berghof and the partner network
- **Offers -** prompt, detailed responding to your request and reliable
- **Projects -** processing based on your specifications, in cooperation with our specialist departments
- **Deliveries -** coordinated consultations for shorter delivery times
- **Service** - a maximum of support

Starting with the project concept, through product selection, application creation, customizing support, to well-founded training programs or after-sales support, the Solution Partners offer the competent support and know-how of Berghof automation technology - and all of that at your place.

A global network of automation experts - not only on the level of standard products, but also in problem solving. For you as a customer this means bundled knowledge across borders, with faster implementation and project realization at a high level.

Berghof Automation & Control Solutions ensures this high level of quality through systematic training and development with con-stant information and workshops with exchange of information for all partner of the affiliate program.

Each of our partners must prove themselves to be excellent in their discipline by being accepted into our program. The guarantee for this level of reliability: the Partner Logo.

BERGHOF **CERTIFIED PARTNER**

Benefit from:

- our partner network
- at your site
- an excellent consultation
- in the service of your tasks
- with a direct line to the specialist department

BERGHOF

Automation

Certified Partner

PIONEERING AUTOMATION TECHNOLOGY

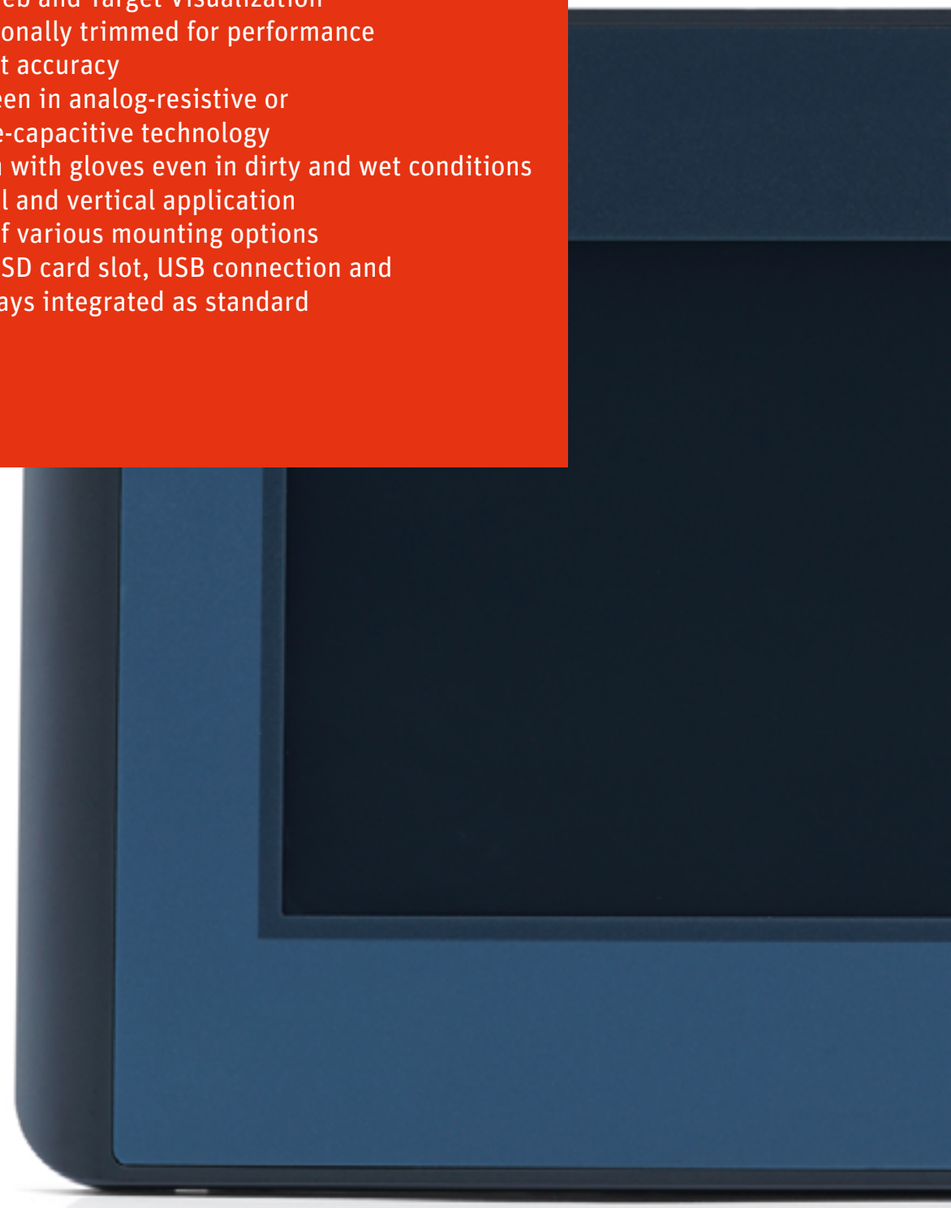
TOUCH PANELS
B-PRIMIS ET-PRO
B-PRIMIS ET-PRIME

B-PRIMIS **ET - TOUCH PANELS**

BERGHOF AUTOMATION AND CONTROL SOLUTIONS

- → Exceptionally high-quality design, only available from Berghof
- → Bright and brilliant displays
- → HTML 5 Web and Target Visualization
- → Unconditionally trimmed for performance
- → High input accuracy
- → Touchscreen in analog-resistive or projective-capacitive technology
- → Operation with gloves even in dirty and wet conditions
- → Horizontal and vertical application
- → Support of various mounting options
- → Ethernet, SD card slot, USB connection and LED displays integrated as standard

Touch panels



B-PRIMIS **ET**

Extra-class touch panels

The Panel Series B-Primis continues the successful previous generation with new possibilities, including its hereditary traits and with respect for the already existing characteristics. With the PRO series resistive touch panels are available, the PRIME series includes operator terminals in capacitive design. The devices already show their inside on the outside: With a high-quality frame, B-Primis PRO impress at every installation location and characterise the exclusivity of the machine, whereas B-Primis PRIME shines without a frame - a novelty in the market. Products with clean front are a matter of course for us. High-performance hardware ensures smooth operation and a data-secure connection to attached systems. Ethernet as communication interface as well as USB host and SD card slot are not common in this class, but allow a multitude of supporting functions and are integrated in the Berghof standard. The devices can be easily connected to other control components such as the Berghof CC- or MC- system or control systems from other manufacturers due to the unconditional compliance with general regulations.

Touch panel on request without logo, in your corporate design or completely customized

Protection up to IP65, matched components offer operation even with water and dirt on it

Mounting brackets in various designs, already integrated depending on model

Maintenance-free units in fanless standard design, available with approvals for worldwide use

FullHD, widescreen, wide viewing angle 85° - selected details of the B-Primis PRIME

System integration ideally implemented via standardized interfaces and matched software

B-PRIMIS **ET-PRO**

Exceptionally clean
by means of continuous, nicheless clean front without edges

Robust throughout
due to a multi-layer front foil construction with high resistance to many chemicals and a particularly torsion-resistant design of the mechanics in the metal housing

Easy and safe to assemble
due to integrated retaining clamps, tool-less / snap-in installation; as well as overload, short-circuit, reverse polarity and overvoltage-proof design, wiring errors are no danger

Logical in commissioning
including a central service welcome page, which starts without further installation effort and offers the possibility to set all required configurations directly on the device

Wide range of applications
thanks to approval in the „Basic electromagnetic environment“ according to EN 61326-1/ Residential, small business, laboratory, etc.

Performance in plenty
through the use of state of the art components with 800 MHz ARM®CPU A9 single core (optional dual or quad core) and up to 4GB RAM / 512MB Flash / 64bit Bus onboard

Impressive visualization
by means of bright and brilliant displays (> 400 Cd/m2) and also centrally adjustable brightness from the control system

Sovereign in use
due to the universally applicable HTML 5 web browser, target visualization via VNC protocol

Well thought-out equipment
with possible application update via USB, connection of a control mouse and display LEDs

Environmentally friendly across the board
through energy-saving components and software functions as well as appropriate packaging

B-PRIMIS **ET-PRIME**

Professional future
from the combination of performance and properties

Powerful supplement
of the B-Primis ET-PRO, of course with continuation of its features

Uniquely designed
without frame, which means full flexibility in installation

Brilliant in display
due to a high-class display with 85° viewing angle in all directions and particularly clear colour reproduction

Strong appearance
through chemically hardened glass in the extraordinarily stable 2mm version

Optimal image
with widescreen resolutions and up to Full-HD at 1920x1080 pixels

Outstanding operation
also with gloves on a surface exposed to water and dirt

Versatile preparation
thanks to Multi-Touch and enabled gesture control

Variable in use
with panel mounting as well as prepared for narrow cut operating housings also with support arm and lift system

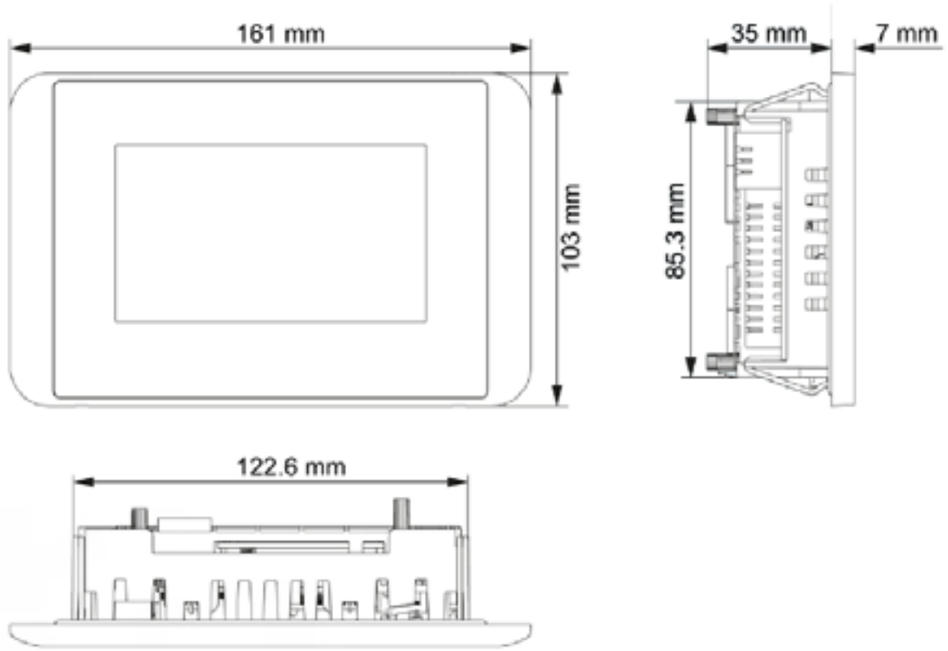
Environmentally friendly across the board
through energy-saving components and software functions as well as appropriate packaging

B-PRIMIS **ET-PRIME**

B-PRIMIS **ET-PRO 4,3“**
INFORMATION **TECHNICAL DATA**

B-Primis ET-PRO 4,3“	Specification	
Description	**ET-PRO 4,3“ S01**	**ET-PRO 4,3“ S02**
Order number	**S-01010202-0101**	**S-01010202-0201**
Dimensions WxHxD [mm]	161 x 103 x 42	
Display diagonals/resolution	4,3“ display / 480 x 272 (WQVGA)	
Touch operation	Resistive	
Colours	TFT: 16,7 M (24 Bit/Pixels)	
Weight	approx. 450 g	
Mounting	Integrated securing clips	
Certification	CE (EN 61131-2) / CB Scheme (IEC 61010-2-201) / $_{c}UL_{us}$ (UL 61010-2-201)	
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core	
RAM / Flash storage	512 MB RAM / 512 MB Flash	
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	
Visualization	Target Visu (VNC Client)	Target Visu (VNC Client), Web Visu (Web Client, HTML5)
Additional features	1x host USB 2.0 / USB plug type A	
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection	
Current consumption	Typ. 0,3 A, max. 1,2 A at +24V	
Operating conditions Transport / Storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C Relative humidity: max. 85%, non-condensing	
EMC, protection type		
Emitted Interface	EN 55011 class B group 1	
Immunity to interface	EN 61131-2	
Protection class	III	
Insulation strength	EN 61131-2	
Protection type	IP20, front IP54 (IP65 only with twist locks catches tightend)	
Vibration	Sinusoidal (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)	
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea	

B-PRIMIS **ET-PRO 4,3“**
INFORMATION **DIMENSIONS**

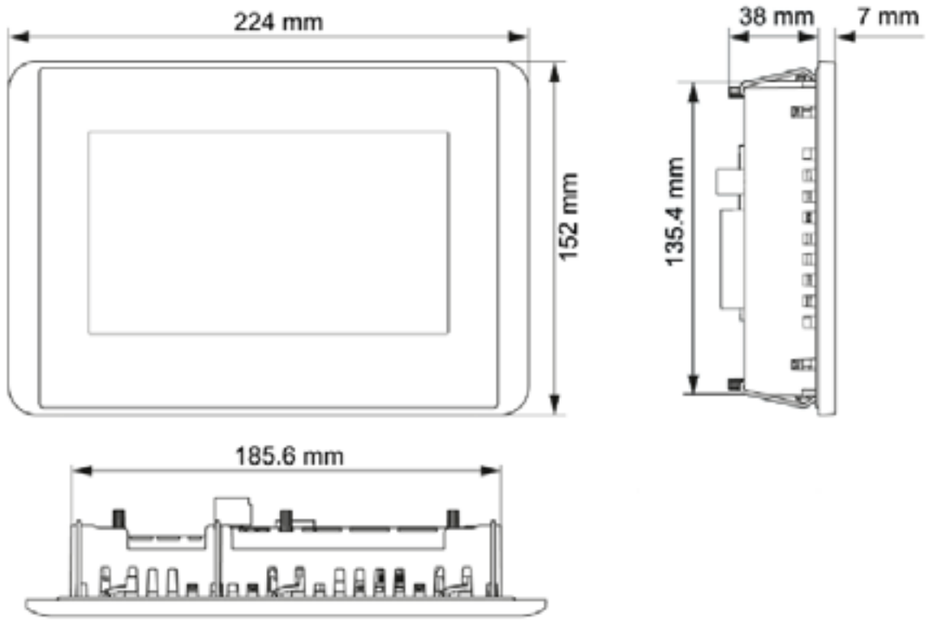


Dimension drawing B-Primis ET-PRO 4,3“

B-PRIMIS **ET-PRO 7“**
INFORMATION **TECHNICAL DATA**

B-Primis ET-PRO 7“	Specification	
Description	**ET-PRO 7“ S01**	**ET-PRO 7“ S02**
Order number	**S-01010202-0104**	**S-01010202-0204**
Dimensions WxHxD [mm]	222 x 152 x 45	
Display diagonals/resolution	7“ display / 800 x 480 (WVGA)	
Touch operation	Resistive	
Colours	TFT: 16,7 M (24 Bit/Pixels)	
Weight	approx. 600 g	
Mounting	Integrated securing clips	
Certification	CE (EN 61131-2) / CB Scheme (IEC 61010-2-201) / $_{c}UL_{us}$ (UL 61010-2-201)	
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core	
RAM / Flash storage	512 MB RAM / 512 MB Flash	
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	
Visualization	Target Visu (VNC Client)	Target Visu (VNC Client), Web Visu (Web Client, HTML5)
Additional features	1x host USB 2.0 / USB plug type A	
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection	
Current consumption	Typ. 0,3 A, max. 1,2 A at +24V	
Operating conditions Transport / Storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C Relative humidity: max. 85%, non-condensing	
EMC, protection type		
Emitted Interface	EN 55011 class B group 1	
Immunity to interface	EN 61131-2	
Protection class	III	
Insulation strength	EN 61131-2	
Protection type	IP20, front IP54 (IP65 only with twist locks catches tightend)	
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)	
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea	

B-PRIMIS **ET-PRO 7“**
INFORMATION **DIMENSIONS**

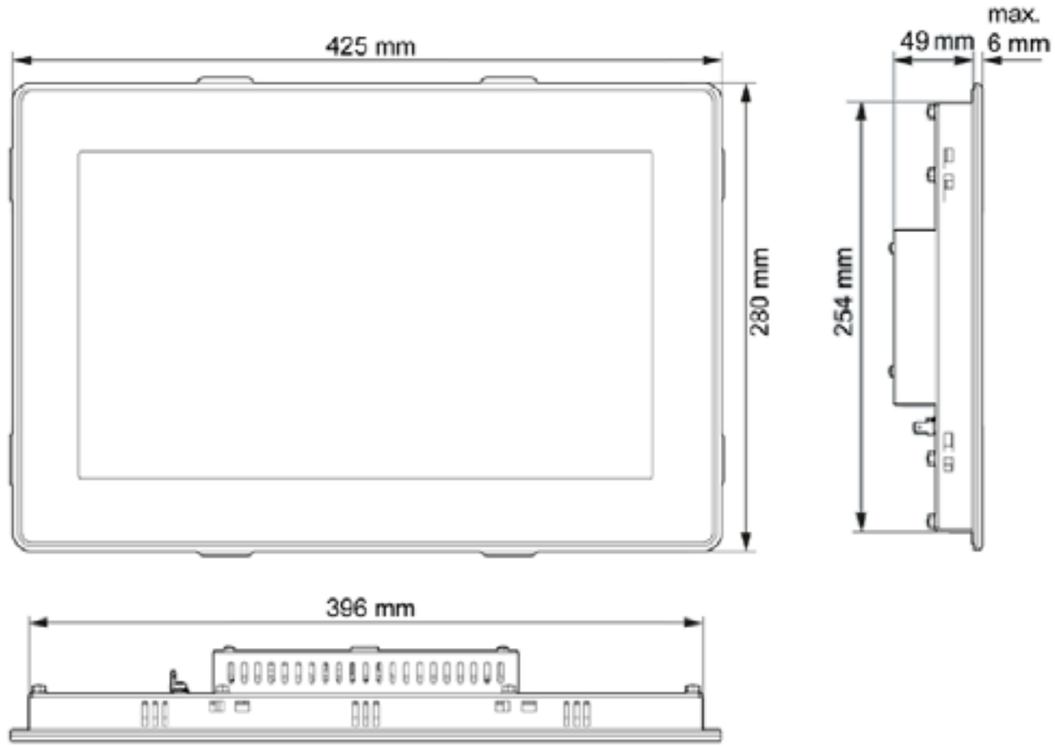


Dimension drawing B-Primis ET-PRO 7“

B-PRIMIS **ET-PRO 15,6“**
INFORMATION **TECHNICAL DATA**

B-Primis ET-PRO 15“	Specification	
Description	**ET-PRO 15“ S01**	**ET-PRO 15“ S02**
Order number	**S-01010202-0108**	**S-01010202-0208**
Dimensions WxHxD [mm]	425 x 280 x 55	
Display diagonals/resolution	15,6“ display / 1366 x 768 (WXGA)	
Touch operation	Resistive	
Colours	TFT: 16,7 M (24 Bit/Pixels)	
Weight	approx. 3 kg	
Mounting	Integrated securing clips	
Certification	CE (EN 61131-2) / CB Scheme (IEC 61010-2-201) / $_{c}UL_{us}$ (UL 61010-2-201)	
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core	
RAM / Flash storage	512 MB RAM / 512 MB Flash	
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	
Visualisization	Target Visu (VNC Client)	Target Visu (VNC Client), Web Visu (Web Client, HTML5)
Additional features	1x host USB 2.0 / USB plug type A	
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection	
Current consumption	Typ. 0,3 A, max. 1,2 A at +24V	
Operating conditions Transport / Storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C Relative humidity: max. 85%, non-condensing	
EMC, protection type		
Emitted Interface	EN 55011 class B group 1	
Immunity to interface	EN 61131-2	
Protection class	III	
Insulation strength	EN 61131-2	
Protection type	IP20, front IP54 (IP65 only with twist locks catches tightend)	
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)	
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea	

B-PRIMIS **ET-PRO 15,6“**
INFORMATION **DIMENSIONS**

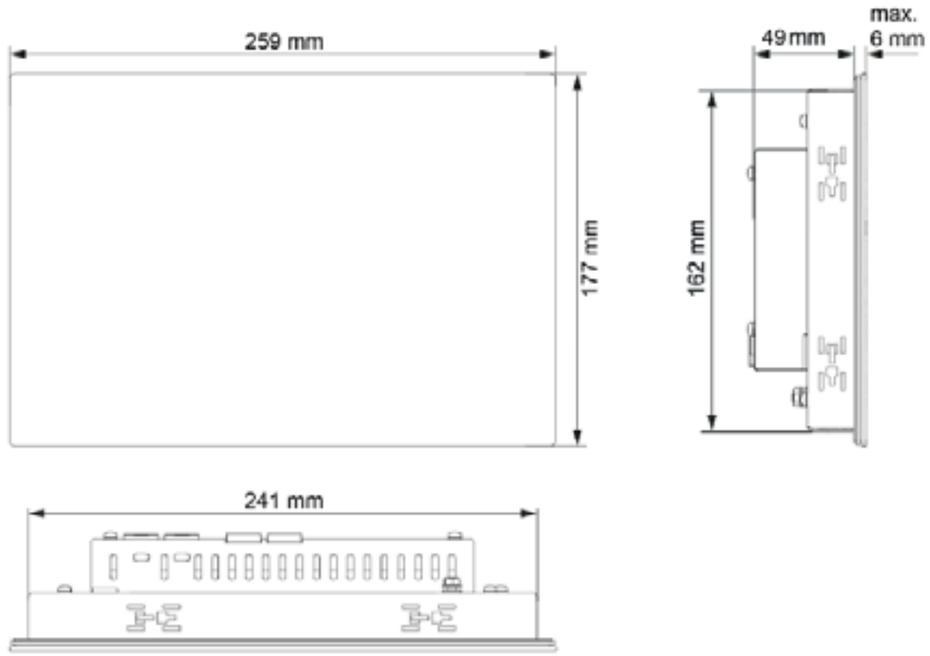


Dimension drawing B-Primis ET-PRO 15“

B-PRIMIS **ET-PRIME 10,1“**
INFORMATION **TECHNICAL DATA**

B-Primis ET-PRIME 10,1“	Specification	
Description	**ET-PRIME 10,1“ S01**	**ET-PRIME 10,1“ S02**
Order number	**S-01010203-0105**	**S-01010203-0205**
Dimensions WxHxD [mm]	259 x 177 x 55	
Display	WXGA	
Display diagonals	10,1“	
Resolution	1280 x 800 Pixels	
Colours	TFT: 16,7 M (24 Bit/Pixel)	
Weight	approx. 2,5 kg	
Mounting	Removable securing clips	
Certification	According to product standards EN 61010-2-201, EN 61131-2	
CPU	i.MX6 800 MHz / Single Core	
RAM / Flash storage	512 MB RAM / 2 GB Flash	
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	
Visualization	Target Visu (VNC Client)	Target Visu (VNC Client), Web Visu (Web Client, HTML5)
Additional features	1x host USB 2.0 / USB plug type A	
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection	
Current consumption	Typ. 0,3 A, max. 1,2 A at +24V	
Operating conditions Transport / Storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C Relative humidity: max. 85%, non-condensing	
EMC, protection type		
Emitted Interface	EN 55011 class B group 1	
Immunity to interface	EN 61131-2	
Protection class	III	
Insulation strength	EN 61131-2	
Protection type	IP20, front IP54 (IP65 only with twist locks catches tightend)	
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)	
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea	

B-PRIMIS **ET-PRIME 10,1“**
INFORMATION **DIMENSIONS**

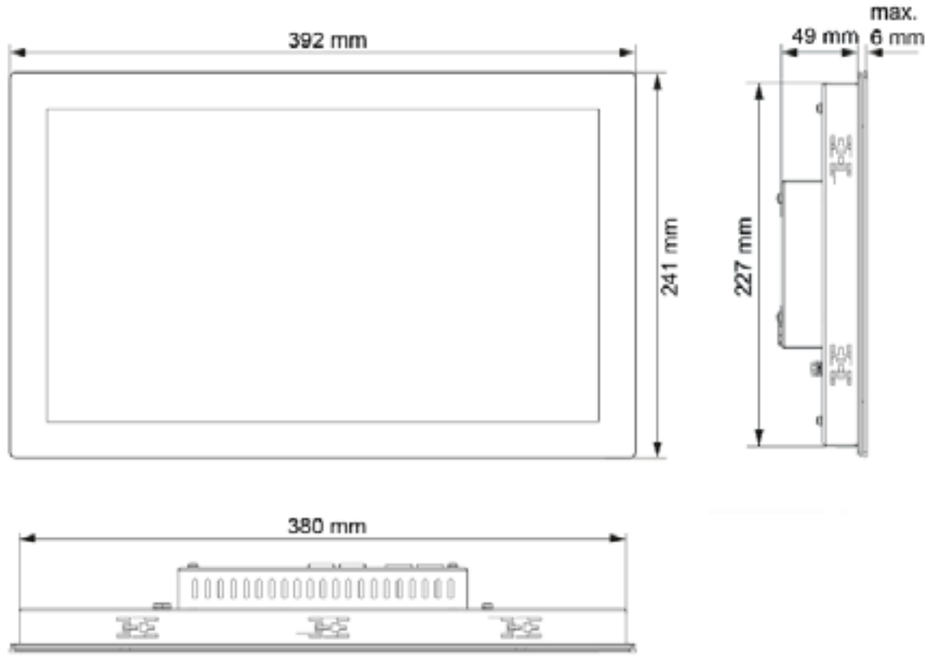


Dimension drawing B-Primis ET-PRIME 10,1“

B-PRIMIS **ET-PRIME 15,6“**
INFORMATION **TECHNICAL DATA**

B-Primis ET-PRIME 15,6“	Specification	
Description	**ET-PRIME 15,6“ S01**	**ET-PRIME 15,6“ S02**
Order number	**S-01010203-0108**	**S-01010203-0208**
Dimensions WxHxD [mm]	392 x 241 x 55	
Display	WXGA	
Display diagonals	15,6“	
Resolution	1920 x 1080 Pixels	
Colours	TFT: 16,7 M (24 Bit/Pixels)	
Weight	approx. 3 kg	
Mounting	Removable securing clips	
Certification	According to product standards EN 61010-2-201, EN 61131-2	
CPU	i.MX6 800 MHz / Single Core	
RAM / Flash storage	512 MB RAM / 2GB Flash	
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	
Visualization	Target Visu (VNC Client)	Target Visu (VNC Client), Web Visu (Web Client, HTML5)
Additional features	1x Host USB 2.0 / USB-Stecker Typ A	
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection	
Current consumption	Typ. 0,3 A, max. 1,2 A at +24V	
Operating conditions Transport / Storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C Relative humidity: max. 85%, non-condensing	
EMC, protection type		
Emitted Interface	EN 55011 class B group 1	
Immunity to interface	EN 61131-2	
Protection class	III	
Insulation strength	EN 61131-2	
Protection type	IP20, front IP54 (IP65 only with twist locks catches tightend)	
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)	
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea	

B-PRIMIS **ET-PRIME 15,6“**
INFORMATION **DIMENSIONS**



Dimension drawing B-Primis ET-PRIME 15,6“

PIONEERING AUTOMATION TECHNOLOGY

COMPACT CODESYS CONTROL SYSTEM

B-FORTIS CC-LITE
B-FORTIS CC-SLIM
B-FORTIS CC-PRIME
B-FORTIS CC I/O-EXPANSION MODULES

B-FORTIS **CC - COMPACT CONTROL SYSTEM**

BERGHOF AUTOMATION AND CONTROL SOLUTIONS

- → High number of integrated features from long experience of customized system solutions
- → Hardware versions without limits, adapted on request
- → Very robust, components with proven high quality
- → Service concept: replacement within seconds
- → Standard SD card slot and USB connection
- → Integrated web server and target visualization
- → Up- and downwards compatible software management
- → Uncomplicated licensing of third-party software components
- → Battery-buffered, maintenance-free real-time clock
- → Power consumption reduced by up to 30% compared to previous generations

Compact CODESYS Control System

B-FORTIS **CC**

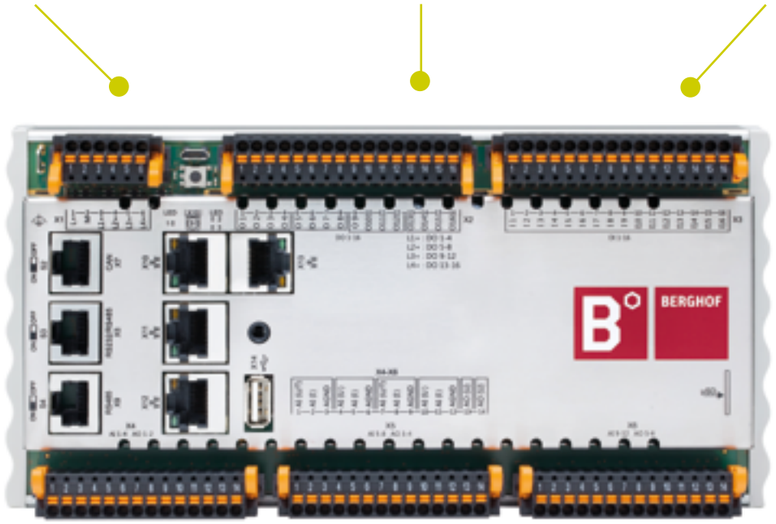
Compact CODESYS PLC in All-In-One-Design

The award-winning B-Fortis CC series meets every requirement for compact CODESYS high-performance controllers. It replaces numerous individual components with a function-integrated device. With on-board peripherals and countless technological functions, you save additional investments in additional modules. Compared to modular product solutions, you do not only save on logistics costs, for example, B-Fortis CC, as an integrated unit, increases functional reliability with faster data communication and easy project planning and programming. There are no functional limitations with the help of a layout tailored to your requirements. Three versions are sufficient to meet all requirements. If this is not enough, expansion modules are available. Furthermore, the devices can be easily combined with other control components such as the standardized Berghof MC or ET system. Extensive effort has been put on the equipment also with the inner values: for example, the devices can only be exchanged by changing the SD card - which is just one outstanding example of many possibilities.

Powerful compact CODESYS control platform

Modules in fanless standard design, available with approvals for worldwide use

Simple programming according to IEC61131



Maximum product density with integration of many interfaces and indicator

Standard plug, safe in connection, with ejection technology, compatible across various manufacturers

Very robust versions with up to 1mm stainless steel housing

B-FORTIS **CC-LITE**

Unsurpassed ratio
from performance to price

Performance in plenty
through the use of state of the art components

Unrivaled upgrade capability
open to any idea, e.g. replacing the single core with a dual or quad core processor

Ideal as central controller
for remote units or applications such as Motion

Highly flexible connection
thanks to the realization of countless communication channels using full bandwidths

Sophisticated handling
with service and update concepts, tool-free installation and much more.

Impressive basic equipment
which at this point only allows a rudimentary excerpt:

- Overload, short-circuit, reverse polarity and overvoltage proof, wiring faults without danger
- Living area approval
- Application update via USB
- Application protection via tamper-proof HW identification
- Reduction of the PLC cycle time optionally up to 500 µs
- Versatile fonts
- VNC + HTML5 web browser universally applicable
- OpenVPN

Environmentally friendly across the board
through energy-saving components and software functions as well as appropriate packaging

B-FORTIS **CC-SLIM**

Powerful supplement
of the B-Fortis CC-LITE, of course with continuation of its features

Superior hardware concept
not only by mere interface expansion, but beyond that by its designs, for example with independent Ethernet interfaces

Safe application
thanks to practical solutions for practical use:

- remanent hardware memory independent of the battery
- Integrated temperature sensor monitoring, e.g. for the control cabinet
- potential-separated interfaces, etc.

Can be used across industries
by means of adaptations to specific markets, e.g. I/O with N circuit

Extended basic equipment
with features that are additive to the B-Fortis CC-LITE (exemplary excerpt):

- Inputs configurable to counter and encoder
- Operating buttons for resetting / stopping/ starting the PLC application
- switchable terminating resistors of the interfaces integrated
- External two-stage HW-Watchdog
- Analog inputs PT100/ PT1000 capable
- Separate power supply of the digital outputs in groups
- serial 9bit Multi-Drop Mode
- Operating hours counter

Vocal
due to buzzer and optional sound chip for mp3 playback

B-FORTIS **CC-PRIME**

Extraordinary completion
of the portfolio of compact controllers, including the capabilities of B-Fortis CC-LITE and CC-SLIM

Unsurpassed versatility
thanks to various expansion stages, due to sophisticated design easily supplemented by required variants on request

Maximum performance
with sufficient room for interfaces and functions in a minimum of space

Sufficiently dimensioned
with RAM, Flash and Retain and room for more

Reduced costs and time requirements
proven by numerous special customer executions and the use of always uniform standard components and development templates

Easy to configure, error-reducing, easy to install, easy to service
due to always the same form factor and uniform interface arrangements

Unique basic equipment
in addition on the features of the B-Fortis CC-SLIM (exemplary excerpt):

- Interrupt / event inputs integrated
- Ethernet switch included as standard
- Current capability of the digital outputs optionally up to 1A
- suitable for multimaster operation

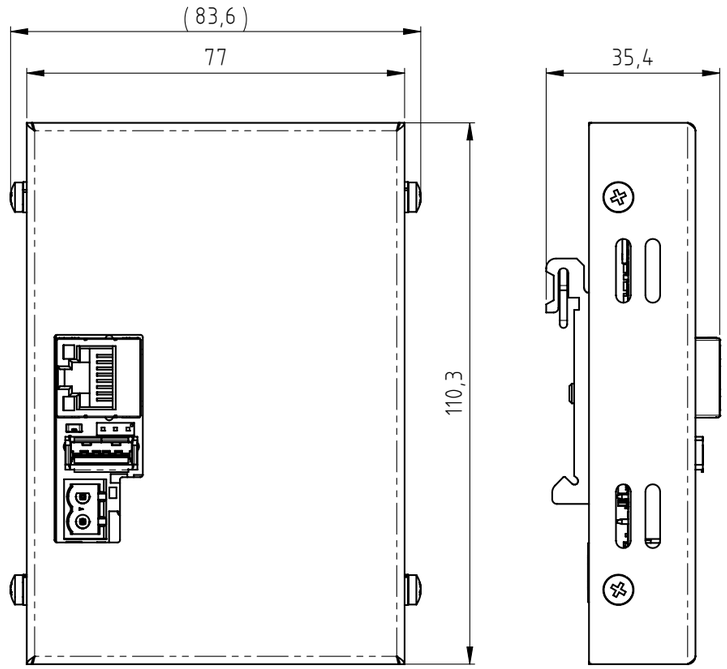
Optimally analyzed
through mature implementation of status LED`s

Widely positioned application
with the extremes, e.g. from harsh outdoor use to building automation with the BACnet network protocol

B-FORTIS **CC-LITE**
INFORMATION **TECHNICAL DATA**

B-Fortis CC-LITE	Specification		
Description	**CC-LITE S01**	**CC-LITE S02**	**CC-LITE S03**
Order number	**S-01020101-0100**	**S-01020101-0200**	**S-01020101-0300**
Dimensions WxHxD [mm]	83,6 x 110,3 x 35,4		
Weight	approx. 250 g		
Mounting	Rail mounting NS 35/7,5 EN 50022		
Development environment	CODESYS V3 (IEC 61131-3)		
CPU	800 MHz ARM® CPU		
RAM /Flash / Retain storage	256 MB RAM / 256 MB Flash	256 MB RAM / 512 MB Flash	256 MB RAM / 2 GB Flash
	Retain substituted by CODESYS Persistence Manager		
Certification	According to product standards EN 61010-2-201, EN 61131-2		
Communication interfaces	1x Ethernet, 10/100 Base, RJ45		
Protocols	Optional: EtherCat Master, Modbus TCP M/S, SNMP, OPCuA, J1939, Ethernet/IP, PROFINET, BACnet		
Visualization	CODESYS Web and Target Visu (VNC Client)		
Additional features	1x host USB 2.0 / USB plug type A		
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection		
Current consumption	Typ. 0,1 A, max. 0,2 A bei +24V DC		
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C Relative humidity: max. 85%, non-condensing		
EMC, protection type			
Emitted interference	EN 55011 class B group 1		
Immunity to interference	EN 61131-2		
Protection class	III		
Insulation strength	EN 61131-2		
Protection type	IP20, front IP54 (IP65 only with twist locks catches tightend)		
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)		
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea		

B-FORTIS **CC-LITE**
INFORMATION **DIMENSIONS**

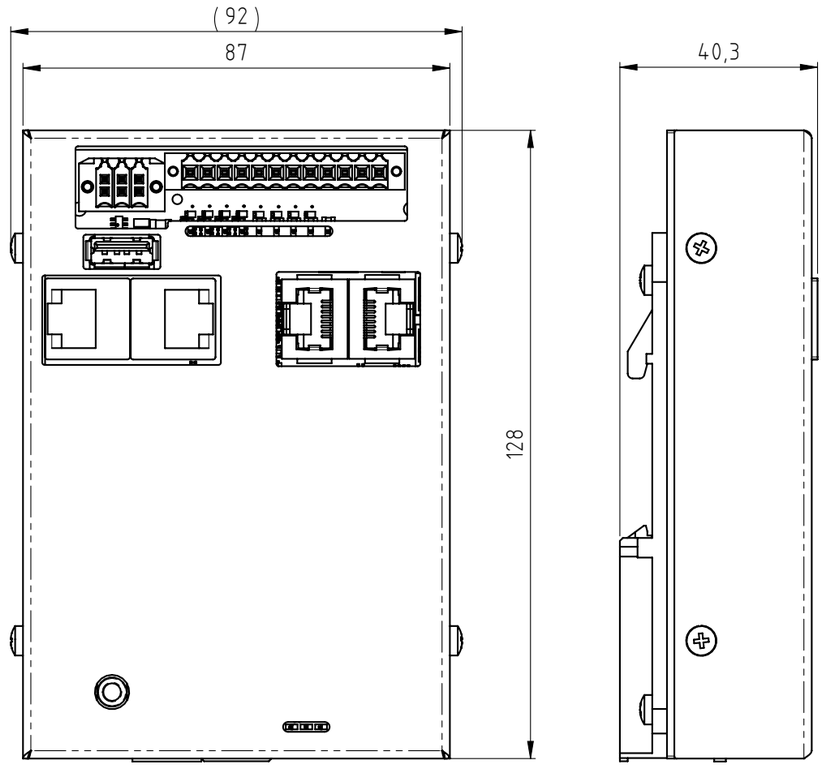


Dimension drawing B-Fortis CC-LITE

B-FORTIS **CC-SLIM**
INFORMATION **TECHNICAL DATA**

B-Fortis CC-SLIM	Specification				
Description	CC-SLIM S01	CC-SLIM S02	CC-SLIM S03	CC-SLIM S04	CC-SLIM S05
Order number	**S-01020102-0100**	**S-01020102-0200**	**S-01020102-0300**	**S-01020102-0400**	**S-01020102-0500**
Dimensions WxHxD [mm]	92 x 128 x 40,3				
Weight	approx. 550 g				
Mounting	Rail mounting NS 35/7,5 EN 50022				
Development environment	CODESYS V3 (IEC 61131-3)				
CPU	800 MHz ARM® CPU Cortex™- A9 single Core				
RAM /Flash / Retain storage	256 MB RAM / 256 MB Flash / 100 kB FRAM				
Certification	CE (EN 61131-2) / CB Scheme (IEC 61010-2-201) / cULus (UL 61010-2-201)				
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45
	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45
	-	-	1x CAN Bus, RJ45	1x CAN Bus, RJ45	2x CAN Bus, RJ45
	-	-	-	1x RS232/485 combo, RJ45	1x RS232/485 combo, RJ45
Protocols	Standard: EtherCat Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S, SNMP, OPCuA, J1939, Ethernet/IP, PROFINET, BACnet				
Visualization	CODESYS Web and Target Visu (VNC Client)				
Additional features	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A
	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered
	-	-	1x MicroSD-Card slot	1x MicroSD-Card slot	1x MicroSD-Card slot
Digital I/O`s	4x digital input, 4x digital output (0,5 A)				
Analogue I/O´s	-	4 x universal analogue Input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4 x universal analogue Input (-10V..+10V, 2x PT100/PT1000) Resolution: 24Bit	4 x universal analogue Input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4 x universal analogue Input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection				
Current consumption	Typ. 0,3 A, max. 1,2 A at +24V DC				
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C Relative humidity: max. 85%, non-condensing				
EMC, protection type					
Emitted interference	EN 55011 class B group 1				
Immunity to interference	EN 61131-2				
Protection class	III				
Insulation strength	EN 61131-2				
Protection type	IP20, front IP54 (IP65 only with twist locks catches tightend)				
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)				
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea				

B-FORTIS **CC-SLIM**
INFORMATION **DIMENSIONS**



Dimension drawing B-Fortis CC-SLIM

B-Fortis CC-PRIME	Specification			
Description	CC-PRIME S01	CC-PRIME S02	CC-PRIME S03	CC-PRIME S04
Order number	**S-01020103-0100**	**S-01020103-0200**	**S-01020103-0300**	**S-01020103-0400**
Dimensions WxHxD [mm]	212 x 105 x 46,5			
Weight	approx. 750 g			
Mounting	Rail mounting NS 35/7,5 EN 50022			
Certification	CE (EN 61131-2) / $_{c}$UL$_{us}$ (UL 61010-2-201)			
Development environment	CODESYS V3 (IEC61131-3)			
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core			
RAM /Flash /Retain storage	256 MB RAM /256 MB Flash /100 KB FRAM			
Communication interfaces	1x Ethernet, 10/100 Base with 3x RJ45 (integrated switch)	1x Ethernet, 10/100 Base with 3x RJ45 (integrated switch)	1x Ethernet, 10/100 Base with 3x RJ45 (integrated switch)	1x Ethernet, 10/100 Base with 3x RJ45 (integrated switch)
	1x EtherCAT , RJ45	1x EtherCAT , RJ45	1x EtherCAT , RJ45	1x EtherCAT , RJ45
	-	1x CAN Bus, RJ45 (opto-isolated)	1x CAN Bus, RJ45 (opto-isolated)	1x CAN Bus, RJ45 (opto-isolated)
	-	-	-	2x RS485, RJ45 (opto-isolated, 1x to-gether with RS232)
Protocols	Standard: EtherCat Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S, SNMP, OPCuA, J1939, Ethernet/IP, PROFINET, BACnet			
Visualization	Target Visu (VNC Server), Web Visu (Web Server, HTML 5)			
Additional featurs	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A
	-	-	1x MicroSD-Card Slot (SDHC standard up to 32 GB)	1x MicroSD-Card Slot (SDHC standard up to 32 GB)
	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered
Digital I/O`s	8x digital input	12x digital input	16x digital input	16x digital input
	8x digital output (0,5 A)	12x digital output (0,5 A)	16x digital output (0,5 A)	16x digital output (0,5 A)
Analogue I/O`s (-10 V..+10V, -20mA..+20mA, 6x PT100/Pt1000)	4x analog input Resolution: 24 Bit	4x analog input Resolution: 24 Bit	4x analog input Resolution: 24 Bit	8x analog input Resolution: 24 Bit
	2x analog input Resolution: 12 Bit	2x analog input Resolution: 12 Bit	2x analog input Resolution: 12 Bit	4x analog input Resolution: 12 Bit

B-FORTIS **CC-PRIME**
INFORMATION **TECHNICAL DATA**

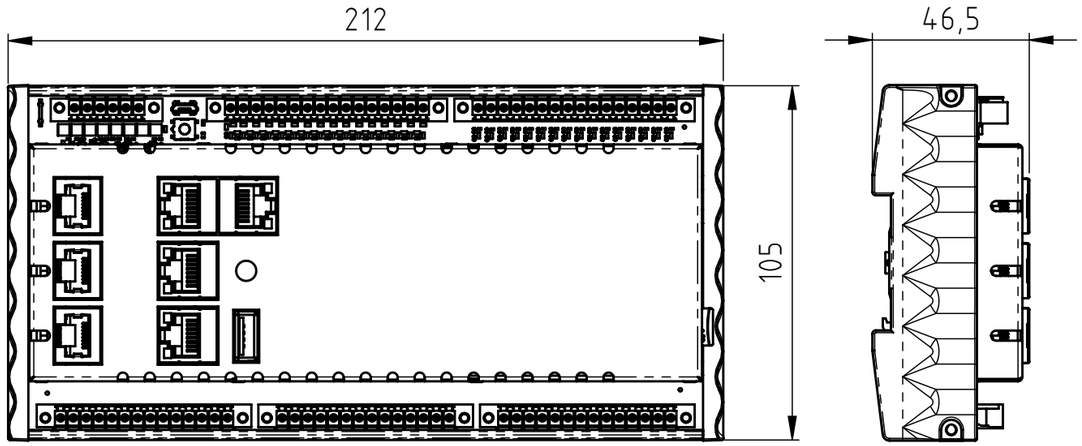
B-Fortis CC-PRIME	Specification			
Description	CC-PRIME S01	CC-PRIME S02	CC-PRIME S03	CC-PRIME S04
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection			
Current consumption Module	Typ. 0,3 A, max. 1,0 A at +24 VDC			
Current consumption dig. Outputs	according to outputload, continuous 4x max. 2 A			
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C			
	Relative humidity: max. 85%, non-condensing			
EMC, protection type				
Emitted interference	EN 55011 class B group 1			
Immunity to interference	EN 61131-2			
Protection class	III			
Insulation strength	EN 61131-2			
Protection type	IP20			
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)			
Schock resistance	15 G (approx. 150 m/s^2), 10 ms duration, half-sine (EN 60068-2-27) test: Ea			

B-Fortis CC-PRIME	Specification			
Description	**CC-PRIME S05**	**CC-PRIME S06**	**CC-PRIME S07**	**CC-PRIME S08**
Order number	**S-01020103-0500**	**S-01020103-0600**	**S-01020103-0700**	**S-01020103-0800**
Dimensions WxHxD [mm]	212 x 105 x 46,5			
Weight	approx. 750 g			
Mounting	Rail mounting NS 35/7,5 EN 50022			
Certification	CE (EN 61131-2) / $_{c}$UL$_{us}$ (UL 61010-2-201)			
Development environment	CODESYS V3 (IEC61131-3)			
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core			
RAM /Flash /Retain storage	256 MB RAM /256 MB Flash /100 KB FRAM	256 MB RAM /256 MB Flash /100 KB FRAM	256 MB RAM /256 MB Flash /100 KB FRAM	1 GB RAM /1GB Flash /100 KB FRAM
Communication interfaces	1x Ethernet, 10/100 Base mit 3x RJ45 (integrated switch)	1x Ethernet, 10/100 Base mit 3x RJ45 (integrated switch)	1x Ethernet, 10/100 Base mit 3x RJ45 (integrated switch)	1x Ethernet, 10/100 Base mit 3x RJ45 (integrated switch)
	1x EtherCAT , RJ45	1x EtherCAT , RJ45	1x EtherCAT , RJ45	1x EtherCAT , RJ45
	1x CAN Bus, RJ45 (opto-isolated)	1x CAN Bus, RJ45 (opto-isolated)	1x CAN Bus, RJ45 (opto-isolated)	1x CAN Bus, RJ45 (opto-isolated)
	2x RS485, RJ45 (opto-isolated, 1x together with RS232)	2x RS485, RJ45 (opto-isolated, 1x together with RS232)	2x RS485, RJ45 (opto-isolated, 1x together with RS232)	2x RS485, RJ45 (opto-isolated, 1x together with RS232 without Bias resistance, with 5V on pin7)
	1x RS232, RJ45 (opto-isolated together with RS485)	1x RS232, RJ45 (opto-isolated together with RS485)	1x RS232, RJ45 (opto-isolated together with RS485)	1x RS232, RJ45 (opto-isolated together with RS485)
Protocols	Standard: EtherCat Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S, SNMP, OPCuA, J1939, Ethernet/IP, PROFINET, BACnet			
Visualization	Target Visu (VNC Server), Web Visu (Web Server, HTML 5)			
Additional features	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A
	1x MicroSD-Card slot (SDHC standard up to 32 GB)	1x MicroSD-Card slot (SDHC standard up to 32 GB)	1x MicroSD-Card slot (SDHC standard up to 32 GB)	1x MicroSD-Card slot (SDHC standard up to 32 GB)
	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered
Digital I/O`s	16x digital Input			
	16x digital Output (0,5 A)			

B-FORTIS **CC-PRIME**
INFORMATION **TECHNICAL DATA**

B-Fortis CC-PRIME	Specification			
Description	**CC-PRIME S05**	**CC-PRIME S06**	**CC-PRIME S07**	**CC-PRIME S08**
Analogue I/O`s (-10 V..+10V, -20mA..+20mA, 6x PT100/Pt1000)	12x analog Input Resolution: 24 Bit	-	4x analog Input Resolution: 24 Bit	12x analog Input Resolution: 24 Bit
	6x analog Output Resolution: 12 Bit	-	2x analog Output Resolution: 12 Bit	6x analog Output Resolution: 12 Bit
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection			
Current consumption Module	Typ. 0,3 A, max. 1,0 A at +24 VDC			
Current consumption dig. Outputs	according to outputload, continuous 4x max. 2 A			
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C			
	Relative humidity: max. 85%, non-condensing			
EMC, protection type				
Emitted interference	EN 55011 classe B group 1			
Immunity to interference	EN 61131-2			
Protection class	III			
Insulation strength	EN 61131-2			
Protection type	IP20			
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)			
Schock resistance	15 G (approx. 150 m/s^2), 10 ms duration, half-sine (EN 60068-2-27) test: Ea			

B-FORTIS **CC-PRIME**
INFORMATION **DIMENSIONS**



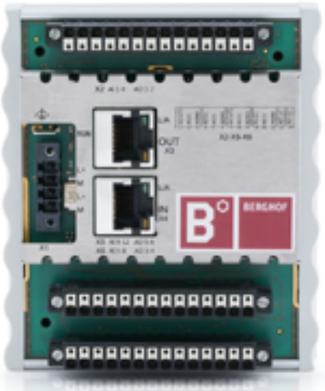
Dimension drawing B-Fortis CC-PRIME

B-FORTIS **CC-EXPANSION MODULES**

B-Fortis CC-DIO 16/16

Remote EtherCAT digital I/O extension with integrated bus coupler

- Compact EtherCAT I/O extension
- Integrated bus coupler
- Integrated extender
- Connection with Ethernet cables up to 100m
- 16 digital inputs
- 16 digital outputs



B-Fortis CC-AIO 12/6

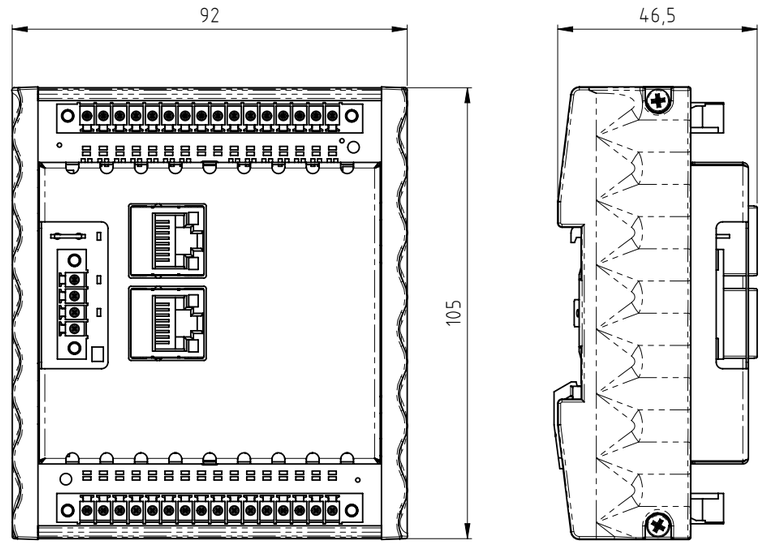
Remote EtherCAT analog I/O expansion with integrated bus coupler

- Compact EtherCAT I/O extension
- Integrated bus coupler
- Integrated extender
- Connection with Ethernet cables up to 100m
- Inputs adjustable to voltage, current or temperature
- Simple configuration
- 12 analog multifunction inputs
- 6 analog voltage outputs

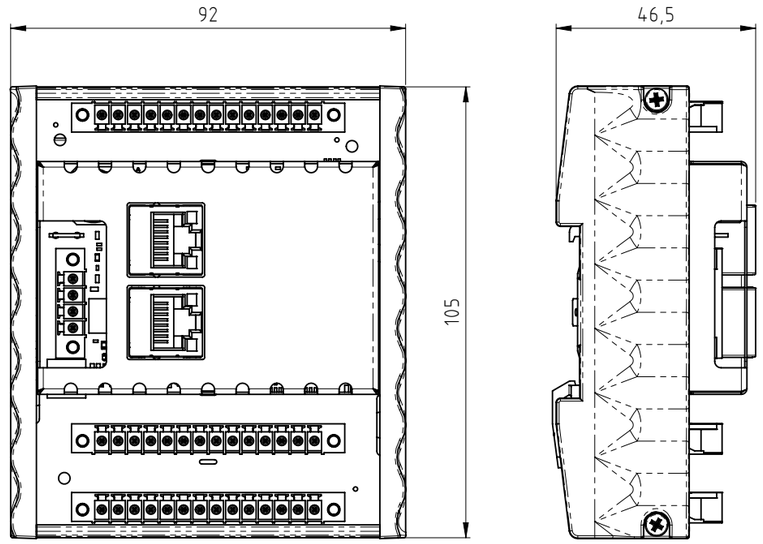
B-FORTIS **CC-EXPANSION MODULES**
INFORMATION **TECHNICAL DATA**

B-Fortis CC-EXPANSION MODULES	Specification		
Description	**CC-DIO 16/16 P**	**CC-DIO 16/16 N**	**CC-AIO 12/6**
Order number	**S-01020201-0100**	**S-01020201-0200**	**S-01020202-0100**
Dimensions WxHxD [mm]	92 x 105 x 46,5		
Weight	approx. 200 g		
Mounting	Rail mounting NS 35/7,5 EN 50022		
Development environment	CODESYS V3 (IEC 61131-3)		
Certification	CE (EN 61131-2) / cULus (UL 61010-2-201)		
Communication interfaces	1x EtherCAT In, RJ45 (integrated bus coupler)		
	1x EtherCAT Out, RJ45 (integrated bus coupler)		
Protokolle	EtherCAT Slave		
Digital I/O´s	16x digital input 16x digital output positive switching	16x digital Input 16x digital output negative switching	-
Analogue I/O´s	-	-	12 x universal analog input (-10V..+10V, -20mA..+20mA, 6x PT100/PT1000) Resolution: 24 Bit 6 x analog output (0V..+10V) Resolution: 12 Bit
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection		
Current consumption Module	Typ. 0,05 A, max. 0,25 A at +24V DC		
Current consumption dig. Outputs	according to outputload, continuous 4x max.	according to outputload, continuous 4x max.	-
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C Relative humidity: max. 85%, non-condensing		
EMC, protection type			
Emitted interference	EN 55011 class B group 1		
Immunity to interference	EN 61131-2		
Protection class	III		
Insulation strength	EN 61131-2		
Protection type	IP20, front IP54 (IP65 only with twist locks catches tightend)		
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)		
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea		

B-FORTIS **CC-EXPANSION MODULES**
INFORMATION **DIMENSIONS**



Dimension drawing B-Fortis CC-DIO 16/16



Dimension drawing B-Fortis CC-AIO 12/6

PIONEERING AUTOMATION TECHNOLOGY

MODULAR CODESYS CONTROL SYSTEM

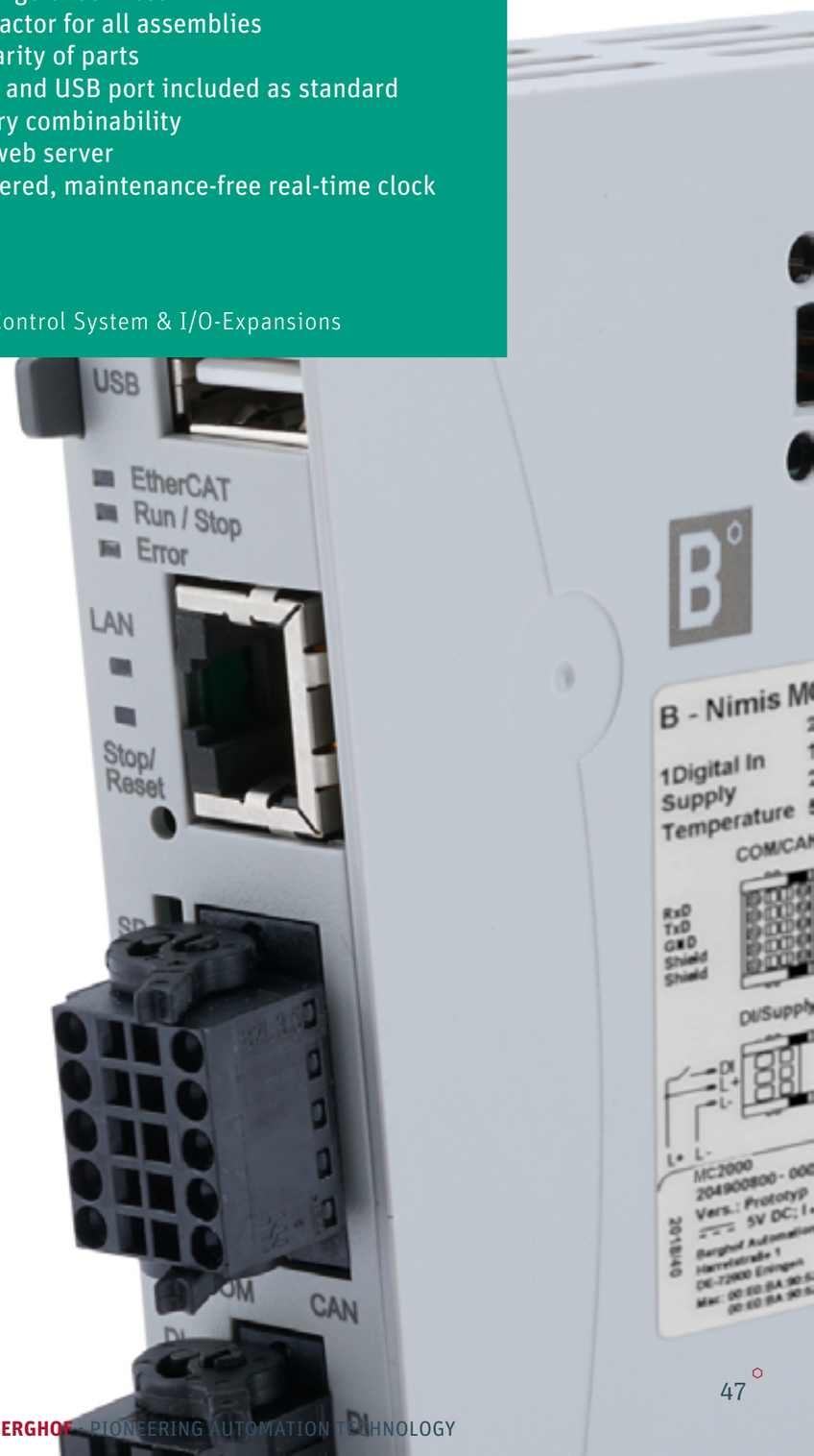
B-NIMIS MC-CLASSIC
B-NIMIS MC-PRO
B-NIMIS MC I/O-EXPANSIONS

B-NIMIS **MC-MODULAR CONTROL SYSTEM**

BERGHOF AUTOMATION AND CONTROL SOLUTIONS

- → Complete range of services
- → Same form factor for all assemblies
- → Universal parity of parts
- → SD card slot and USB port included as standard
- → Extraordinary combinability
- → Integrated web server
- → Battery-buffered, maintenance-free real-time clock

Modular CODESYS Control System & I/O-Expansions



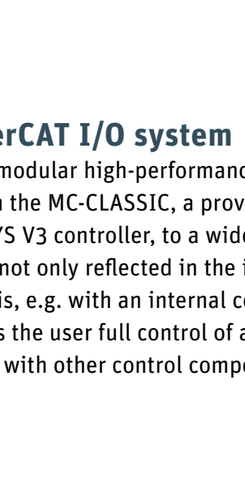
Modular CODESYS PLC with EtherCAT I/O system

With the B-Nimis MC series, Berghof offers a modular high-performance control system. The available modules allow almost all requirements to be met, from the MC-CLASSIC, a proven controller with CODESYS V2.3 or V3, through MC-PRO, a high-performance CODESYS V3 controller, to a wide range of expansion modules. The uncompromising adherence to general standards is not only reflected in the interfaces and connectable options, even internal mechanisms are oriented towards this, e.g. with an internal communication system based on EtherCAT® as a consistently uniform concept. This allows the user full control of all influencing variables. Furthermore, the devices can be easily installed and combined with other control components such as the standardised Berghof Primis or Fortis system.

Security system for protected internal communication

Labelling fields for system identification

Simple programming according to IEC-61131



Modules in fanless standard design with various status displays assigned to the respective connection point

Maximum communication through integration of many interfaces

Comprehensive modular CODESYS control platform

Protected modules with shield connection

Standard plug, secure connection, with eject mechanism

B-NIMIS **MC**

Unsurpassed flexibility
thanks to modular expandability and any division within the system control, open for all fieldbuses

Versatile use
with small and always the same form factor, only minor restrictions in project planning, designed for mounting on standard rails

Performance in abundance
through the use of state of the art components

Comprehensively operated
through support of CODESYS V2.3 and V3

Secure communication
via internal bus system, between the modules with guaranteed vibration-proof connection

Highly protected
through an integrated EMC concept with cable shielding and internal earthing

Optimally evaluated, analysed or exchanged
thanks to storage or backup of data or project planning on the SD card of the PLC

Sophisticated support
with various conversions, e.g. interrupt input on the controller or reverse polarity protection

Reduced costs
due to the comprehensive use of always the same standard components such as plugs, shields, etc.

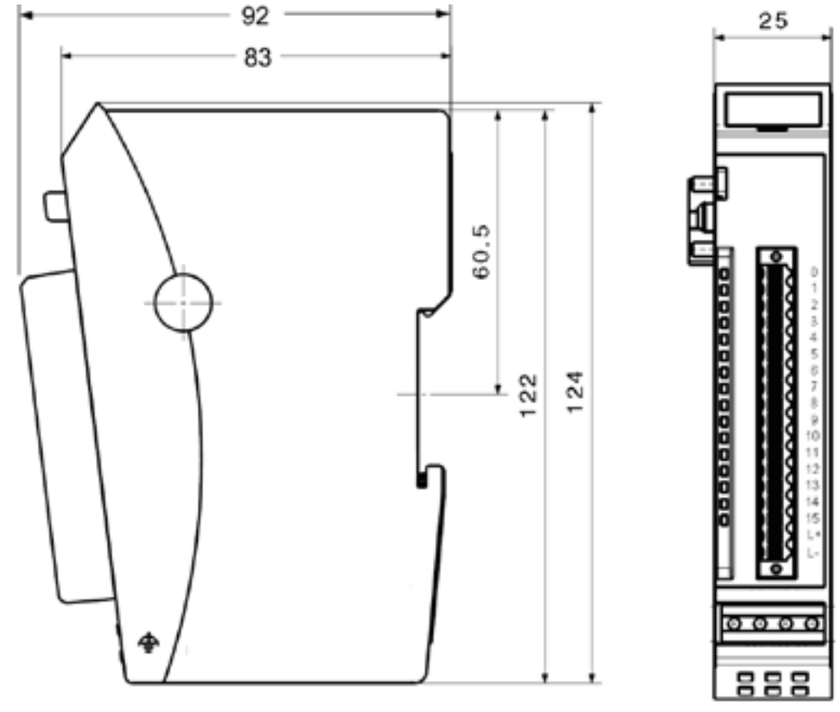
Ideally updated
using the standard USB interface

B-NIMIS **MC**
INFORMATION **TECHNICAL DATA**

B-Nimis MC	Specification		Specification
Description	**MC-CLASSIC S01**	**MC-CLASSIC S02**	**B-Nimis MC-PRO**
Order number	**S-01030101-0100**	**S-01030101-0200**	**S-01030102-0100**
Dimensions WxHxD [mm]	25 x 124 x 83	25 x 124 x 83	25 x 124 x 83
Weight	approx. 150 g		approx. 150 g
Mounting	Rail mounting NS 35/7,5 EN 50022		Rail mounting NS 35/7,5 EN 50022
Certification	CE (EN 61131-2) / $_{c}$UL$_{us}$ (UL 508)		CE (EN 61131-2) / $_{c}$UL$_{us}$ (UL 508)
Development environment	CODESYS V2.3 (IEC61131-3)	CODESYS V3 (IEC61131-3)	CODESYS V3 (IEC61131-3)
CPU	Freescale PowerPC, 400 MHz		1 GHz Arm® Cortex A9
RAM /Flash /Retain storage	128 MB RAM /64 MB Flash /24 KB Retain		256 MB RAM /256 MB Flash / Retain substitution via CODESYS Persistence Manager
Communication interfaces	1x Ethernet, 10/100 Base T, RJ45		1x Ethernet, 10/100 Base, RJ45
	1x EtherCAT LVDS		1x EtherCAT, LVDS
	1x CAN Bus, 2x5 pol. plug (galvanically isolated with RS232 together)		1x CAN Bus, 2x5 pol. plug (galvanically isolated with RS232 together)
	1x RS232, 2x5 pol. plug (galvanically isolated with CAN together)		1x RS232, 2x5 pol. (galvanically isolated with CAN together)
Protocols	Standard: EtherCat Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S		Standard: EtherCat Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S, SNMP, PROFINET Slave, J1939, OPCuA, Ethernet/IP
Visualization	TargetVisu (VNC Server), WebVisu (WebServer, Java)	TargetVisu (VNC Server), WebVisu (WebServer,HTML5)	TargetVisu (VNC Server), WebVisu (WebServer, HTML5)
Additional features	1x host USB Rev. 1.1 / USB plug type A		1x host USB 2.0 / USB plug type A
	1x SD-Card slot (SD standard up to 2GB)		1x SD-Card slot (SDHC up to 32GB)
	1x RTC, battery buffered		1x RTC, battery buffered
Digital I/O`s	1x digital Input		1x digital interrupt-input
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection		+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection
Current consumption	Typ. 0,3A, max. 0,3 A at +24 VDC		Typ. 0,3A, max. 0,3 A at +24 VDC
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C to 55 °C / transport -20 °C to +70 °C Relative humidity: max. 85%, non-condensing		Ambient temperature: operational: 0 °C bis 55 °C / transport -20 °C bis +70 °C Relative humidity: max. 85%, non-condensing

B-NIMIS **MC**
INFORMATION **TECHNICAL DATA/DIMENSIONS**

B-Nimis MC		
Description	**MC-CLASSIC S01/S02**	**B-Nimis MC-PRO**
EMC, protection type		
Emitted interference	EN 61000-6-4, industrial sector	EN 61000-6-4, industrial sector
Immunity to interference	EN 61000-6-2, industrial sector	EN 61000-6-2, industrial sector
Protection class	III	III
Insulation strength	SELV (U_w < 30 V) according EN 61131-2	SELV (U_w < 30 V) according EN 61131-2
Protection type	IP20	IP20



Dimension drawing B-Nimis MC-System
* valid for all MC- and SC-modules

B-NIMIS **MC-EXPANSION MODULES**

B-Nimis MC-XR01

8 analog I/O´s, 8 digital outputs, 8 digital inputs which can also be used as encoder and counter inputs.

B-Nimis MC-XR02

8 digital outputs, 8 digital inputs which can also be used as encoder and counter inputs.

B-Nimis MC-DI/DO 16/16

16 digital outputs and 16 digital inputs.

B-Nimis MC-DI32 1ms

32 digital inputs.

B-NIMIS **MC-EXPANSION MODULES**
INFORMATION **TECHNICAL DATA**

B-Nimis MC-EXPANSION MODULES				
Description	**MC-XR01**	**MC-XR02**	**MC-DI/DO 16/16**	**MC-DI 32 1ms**
Order number	**S-01030207-0100**	**S-01030207-0200**	**S-01030201-0400**	**S-01030201-0200**
Dimensions WxHxD [mm]	25 x 124 x 92			
Weight	ca. 150 g			
Mounting	Rail mounting NS 35/7,5 EN 50022			
Certification	CE (EN 61131-2) / $_{c}$UL$_{us}$ (UL 61010-2-201)			
Development environment	CODESYS V3 (IEC61131-3)			
Communication interfaces	1x EtherCAT, LVDS			
Protocols	EtherCAT Slave			
Digitale I/O´s	8x digital in- or output (4x capture input) 8x digital input (configurable as up/down counter or quadrature encoder)	8x digital in- or output (4x capture input) 8x digital input (2x up/down counters and 2x quadrature encoders)	16x digital input 16x digital output	32x digital input
	1ms / 0,5A max. 10 kHz counter frequency per counting input (results in a counting frequency of 40 kHz for quadrature encoders)		1ms / 0,5A	1 ms
Analogue I/O`s	4x analog input voltage 4x universal analog in-/output	-	-	-
	- 10..10V | -20..20mA	-	-	-
	Resolution inputs: 22 Bit Resolution outputs: 16 Bit	-	-	-
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection			
Current consumption I/O´s	Protection depending on I/O load max. 12 A			
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -25 °C bis +75 °C Relative humidity: max. 95%, non-condensing			
EMC, protection type				
Emitted interference	EN 61000-6-4, Industrial sector			
Immunity to interference	EN 61000-6-4, Industrial sector			
Protection class	III			
Insulation strength	EN 61131-2			
Protection type	IP20			
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)			
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea			

B-NIMIS **MC-EXPANSION MODULES**

B-Nimis MC-DI 16 1ms
16 digital inputs.

B-Nimis MC-DO 16 0,5A
16 digital outputs.

B-Nimis MC-Relais NO 24V
8 relay outputs 24 Volt.

B-Nimis MC-Relais NO 230VAC
8 relay outputs 230 Volt.

B-NIMIS **MC-EXPANSION MODULES**
INFORMATION **TECHNICAL DATA**

B-Nimis MC-EXPANSION MODULES				
Description	**MC-DI 16 1ms**	**MC-DO 16 0,5A**	**MC-Relais No 24V**	**MC-Relais No 230VAC**
Order number	**S-01030201-0100**	**S-01030201-0300**	**S-01030205-0100**	**S-01030205-0200**
Dimensions WxHxD [mm]	25 x 124 x 92			
Weight	approx. 150 g			
Mounting	Rail mounting NS 35/7,5 EN 50022			
Certification	CE (EN 61131-2) / $_{c}$UL$_{us}$ (UL 61010-2-201)			
Development environment	CODESYS V3 (IEC61131-3)			
Communication interfaces	1x EtherCAT, LVDS			
Protocols	EtherCAT Slave			
Digital I/O´s	16x digitai input	16x digital output	8x relay output NO (lockable)	
	1 ms	0,5 A	Switching voltage: max. 24VAC / 24 VDC	Switching voltage: max. 230VAC / 24VDC
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection			
Current consumption I/O´s	Protection depending on I/O load max. 12 A			
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55°C / transport -25 °C bis +75 °C Relative humidity: max. 95%, non-condensing			
EMC, protection type				
Emitted interference	EN 61000-6-4, industrial sector			
Immunity to interference	EN 61000-6-4, industrial sector			
Protection class	III			
Insulation strength	EN 61131-2			
Protection type	IP20			
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)			
Schock resistance	15 G (approx. 150 m/s^2), 10 ms duration, half-sine (EN 60068-2-27) test: Ea			

B-NIMIS **MC-EXPANSION MODULES**

B-Nimis MC-COM2

Extends a MC-CLASSIC/-PRO control by a 2 port switch, RS232, RS485 and a 2nd CAN interface.

B-Nimis MC-Counter/Posi 2 5V

The module has two identically structured channels. Each channel has a connection for an incremental encoder as well as 4 digital inputs, 1 digital output and an analog output.

B-Nimis MC-AI4/8-U 13 Bit CoE*

8 analog voltage inputs
0(-10)...10V; -5...5V; -2.5...2.5V

B-Nimis MC-AI4-I 12 Bit CoE*

4 analog inputs for current signals. The measuring range for each channel can be set to
0 ... 20 mA or 4 ... 20 mA can be set.

* CoE = CANopen over EtherCAT®

B-NIMIS **MC-EXPANSION MODULES**
INFORMATION **TECHNICAL DATA**

B-Nimis MC-EXPANSION MODULES				
Description	**MC-COM2**	**MC-Counter/Posi 2 5V**	**MC-AI4/8-U 13 Bit CoE**	**MC-AI4-I 12 Bit CoE**
Order number	**S-01030203-0400**	**S-01030206-0100**	**S-01030202-0300**	**S-01030202-0100**
Dimensions WxHxD [mm]	25 x 124 x 83	25 x 124 x 92	25 x 124 x 92	25 x 124 x 92
Weight	approx. 150 g			
Mounting	Rail mounting NS 35/7,5 EN 50022			
Certification	CE (EN 61131-2) / $_{c}$UL$_{us}$ (UL 61010-2-201)			
Development environment	CODESYS V3 (IEC61131-3)			
Communication interfaces	2x 10/100 Mbit per RJ45 1x RS232 / RS485 switchable (opto-decoupled) 1x CANBus-interface (opto-decoupled)	1x EtherCAT, LVDS		
Protocols	CANopen	EtherCAT Slave		
Digital I/O´s	-	8x digital inputs 2x digital outputs 2x counter inputs (A, B, Ref)	-	-
	-	1ms 2,0A Encodertype: RS422, 24 VDC max. 200 KHz	-	-
Analogue I/O´s	-	2x analog output voltage: -10...10V Resolution: 12 Bit	4x differential or 8x single ended analog inputs voltage: 0(-10)...10V; -5...5V; -2,5...2,5V Resolution: 13 Bit	4x analog input voltage: 0(4)...20mA Resolution: 12 Bit
Supply voltage	Via MC-CLASSIC/ -Pro Typ. 0,3A	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection		
Current consumption	Typ. 0,3A	Typ. 0,15A, max. 0,2A at + 24 VDC	Typ. 0,2 A, max. 0,2 A at +24 VDC	
Current consumption I/O´s	-	Protection depending on I/O load max. 12 A	-	
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -25 °C bis +75 °C Relative humidity: max. 95%, non-condensing			
EMC, protection type				
Emitted interference	EN 61000-6-4, industrial sector			
Immunity to interference	EN 61000-6-4, industrial sector			
Protection class	III			
Insulation strength	EN 61131-2			
Protection type	IP20			
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)			
Schock resistance	15 G (approx. 150 m/s^2), 10 ms duration, half-sine (EN 60068-2-27) test: Ea			

B-NIMIS **MC-EXPANSION MODULES**

B-Nimis MC-AO4-U/I 16 Bit CoE*

4 analog outputs, each channel can be set unipolar or bipolar and output either voltage or current.
0(-10)...10V; 0(4)...20mA

B-Nimis MC-AI8-I 12 Bit CoE*

8 analog inputs for current signals. The measuring range for each channel can be set to
0 ... 20 mA or 4 ... 20 mA.

B-Nimis MC-AI8/16-U 13 Bit CoE*

16 analog voltage inputs. 0(-10)...10V; -5...5V; -2.5...2.5V

B-Nimis MC-Extender 2 Port

Extender is used to extend E-I/O blocks with additional EtherCAT devices which do not have the MC format. The Extender converts the transmission physics from LVDS (E-bus) to twisted Ethernet.

* CoE = CANopen over EtherCAT®

B-NIMIS **MC-EXPANSION MODULES**
INFORMATION **TECHNICAL DATA**

B-Nimis MC-EXPANSION MODULES				
Description	**MC-AO4-U/I 16 Bit CoE**	**MC-AI 8/16-U 13 Bit CoE**	**MC-AI8-I 12 Bit CoE**	**MC-Extender 2 Port**
Order number	**S-01030202-0500**	**S-01030202-0400**	**S-01030202-0200**	**S-01030203-0300**
Dimensions WxHxD [mm]	25 x 124 x 92	25 x 124 x 92	25 x 124 x 92	25 x 124 x 83
Weight	approx. 150 g			
Mounting	Rail mounting NS 35/7,5 EN 50022			
Certification	CE (EN 61131-2) / $_{c}$UL$_{us}$ (UL 61010-2-201)			
Development environment	CODESYS V3 (IEC61131-3)			
Communication interfaces	1x EtherCAT, LVDS	1x EtherCAT, LVDS	1x EtherCAT, LVDS	2x EtherCAT out, Rj45 1x EtherCAT, LVDS
Protocols	EtherCAT Slave			
Analogue I/O´s	4x universal analog output voltage: 0(-10)...10V 0(4)...20mA Resolution: 16 Bit	8x differential or 16x single ended analog inputs voltage: 0(-10)...10V; -5...5V; -2,5...2,5V Resolution: 13 Bit	8x analog inputs voltage 0(4)...20mA Resolution: 12 Bit	-
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection			via field bus
Current consumption	Typ. 0,2 A, max. 0,2 A at +24 VDC			Typ. 0,16 A for Out1 max. 0,21A for Out1+Out2
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -25 °C bis +75 °C Relative humidity: max. 95%, non-condensing			
EMC, protection type				
Emitted interference	EN 61000-6-4, industrial sector			
Immunity to interference	EN 61000-6-4, industrial sector			
Protection class	III			
Insulation strength	EN 61131-2			
Protection type	IP20			
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)			
Schock resistance	15 G (approx. 150 m/s^2), 10 ms duration, half-sine (EN 60068-2-27) test: Ea			

B-NIMIS **MC-EXPANSION MODULES**

B-Primis MC-AI8-Thermo 16 Bit CoE*

8 analog inputs for PT100(0), NI100(0) and thermocouples type J/K.

B-Primis MC-AI4-Thermo 16 Bit CoE*

4 analog inputs for PT100(0), NI100(0) and thermocouples type J/K.

Buskoppler 3A

MC bus coupler

E-I/O BK DI 16 / DO 16 1 ms / 0,5 A

MC bus coupler with 16 digital inputs and 16 digital outputs.

* CoE = CANopen over EtherCAT®

B-NIMIS **MC-EXPANSION MODULES**
INFORMATION **TECHNICAL DATA**

B-Nimis MC-EXPANSION MODULES				
Description	**MC-AI8-Thermo 16 Bit CoE**	**MC-AI4-Thermo 16 Bit CoE**	**MC-Buskoppler 3A**	**MC-BK Di 16/DO16**
Order number	**S-01030204-0100**	**S-01030204-0200**	**S-01030203-0100**	**S-01030203-0200**
Dimensions WxHxD [mm]	25 x 124 x 92	25 x 124 x 92	25 x 124 x 83	42 x 120 x 92
Weight	approx. 150 g			
Mounting	Rail mounting NS 35/7,5 EN 50022			
Certification	CE (EN 61131-2) / $_{c}$UL$_{us}$ (UL 61010-2-201)			
Development environment	CODESYS V3 (IEC61131-3)			
Communication interfaces	1x EtherCAT, LVDS	1x EtherCAT, LVDS	1x EtherCAT In, Rj45 1x EtherCAT Out, RJ 45 1x EtherCAT, LVDS	1x EtherCAT In, Rj45 1x EtherCAT Out, RJ 45 1x EtherCAT, LVDS
Protocols	EtherCAT Slave			
Analogue I/O´s	4x Temperature input	8x Temperature output	-	
	PT100 / Ni100 or PT1000 / Ni1000 or Thermo / Typ J, K oder mV Resolution: 16 Bit		-	
Digital I/O´s	-	-	-	16x digital input 16x digital output 1ms / 0,5A
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection			
Current consumption	Typ. 0,15 A, max. 0,2 A at +24 VDC		Typ. 0,2 A, max. 0,2 A at +24 VDC	
Current consumption modules	-		max. 3 A (approx. 20 module)	max. 2 A (approx. 11 module)
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C bis 55 °C / transport -25 °C bis +75 °C Relative humidity: max. 95%, non-condensing			
EMC, protection type				
Emitted interference	EN 61000-6-4, industrial sector			
Immunity to interference	EN 61000-6-4, industrial sector			
Protection class	III			
Insulation strength	EN 61131-2			
Protection type	IP20			
Vibration	Sinusodial (EN 60068-2-6) test: Fc; 10 ... 150 Hz, 1 G (operation mode)			
Schock resistance	15 G (approx. 150 m/s^2), 10 ms duration, half-sine (EN 60068-2-27) test: Ea			

PIONEERING AUTOMATION TECHNOLOGY

CODESYS DIALOG CONTROL SYSTEM

B-PRIMIS DC-PRO

B-PRIMIS DC-PRIME

B-PRIMIS **DC-DIALOG CONTROL SYSTEM**

BERGHOF AUTOMATION AND CONTROL SOLUTIONS

- Exceptionally high-quality design, only available from Berghof
- Very robust, components with proven high quality
- Unconditionally trimmed for performance, equipped with plenty of RAM, flash and retain memory
- Highly luminous and brilliant displays with high input accuracy, can be used horizontally or vertically
- HTML5 Web and Target Visualization
- Touch screen in analog-resistive or projective-capacitive technology
- Operation with gloves even in dirty and wet conditions
- Uncomplicated licensing of third-party software components
- EtherCAT Master + CANopen Master as well as digital and analogue I/O already integrated as standard
- Battery-buffered, maintenance-free real-time clock
- Up- and downwards compatible software management

CODESYS Dialog Controller

B-PRIMIS **DC**

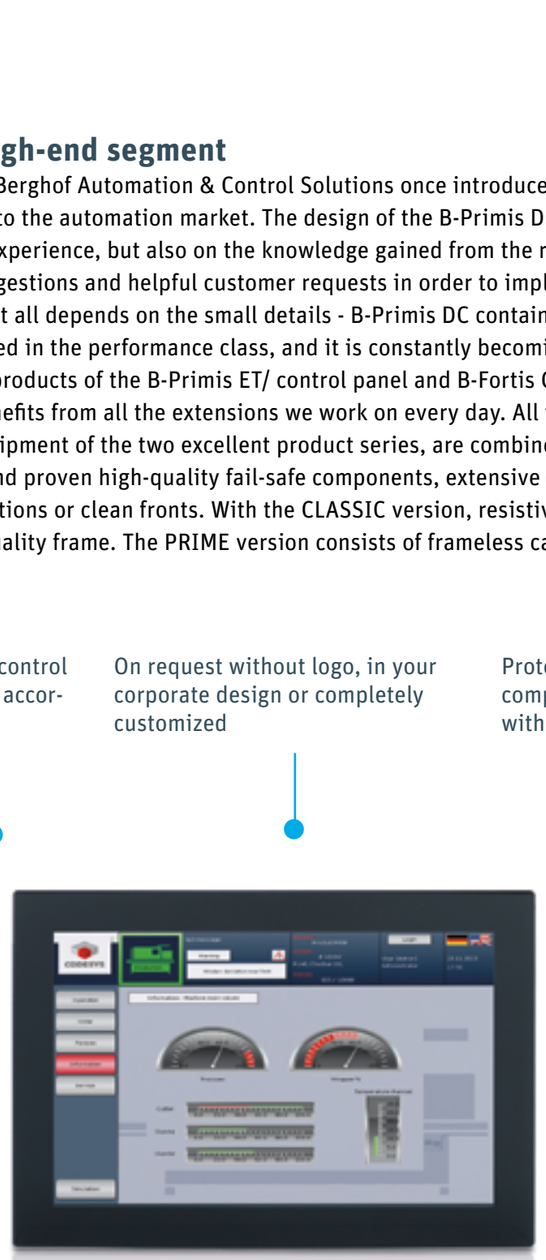
Display control in high-end segment

With the CANtrol DC series, Berghof Automation & Control Solutions once introduced the combination of controllers and HMI terminals into the automation market. The design of the B-Primis DC series display controller was based not only on this experience, but also on the knowledge gained from the realization of numerous projects with consistent suggestions and helpful customer requests in order to implement the respective application extraordinarily well. It all depends on the small details - B-Primis DC contains many features in the standard that are unparalleled in the performance class, and it is constantly becoming more and more. The device series combines the products of the B-Primis ET/ control panel and B-Fortis CC-SLIM/ compact control series and automatically benefits from all the extensions we work on every day. All functions and features, including the extensive basic equipment of the two excellent product series, are combined in the current HMI controller: extremely powerful and proven high-quality fail-safe components, extensive on-board peripherals, countless technological functions or clean fronts. With the CLASSIC version, resistive touch panels are available, equipped with a high-quality frame. The PRIME version consists of frameless capacitive displays.

Powerful compact CODESYS control platform, easy programming according to IEC61131

On request without logo, in your corporate design or completely customized

Protection up to IP65, matched components offer operation even with water and dirt



Maximum product density with integration of many interfaces and indicator LEDs

Maintenance-free units in fanless standard design, available with approvals for worldwide use

FullHD, widescreen, wide viewing angle 85° - selected details of the B-Primis PRIME

B-PRIMIS **DC-PRO**

Secure application
thanks to practical solutions for practical use:
- Remanent hardware memory independent of the battery of the real-time clock
- Integrated temperature sensor monitoring e.g. for the control cabinet
- Potential-separated interfaces, etc.

Environmentally friendly across the board
through energy-saving components and software functions as well as appropriate packaging

Exceptionally clean
by means of continuous, nicheless clean front without edges

Robust throughout
due to a multi-layer front foil construction with high resistance to many chemicals and a particularly torsion-resistant design of the mechanics in the metal housing

Easy and safe to assemble
due to integrated retaining clips and twist locks, tool-less / snap-in installation

Impressive in consideration
by means of bright and brilliant displays (> 400 Cd/m2) as well as brightness centrally adjustable from the control unit

Impressive basic equipment
which at this point only allows a rudimentary excerpt:
- Overload, short-circuit, reverse polarity and overvoltage proof, wiring faults without danger
- Living area approval
- Application update via USB
- Application protection via tamper-proof HW identification
- Downgrading of the PLC cycle time optionally up to 500µs
- Diverse fonts
- Three-wire measurement for compensation of line resistances
- OpenVPN
- VNC + HTML5 web browser universally applicable
- Inputs configurable to counter and encoder
- Operating buttons for resetting/ stopping/ starting the PLC application
- Switchable terminating resistors integrated to interfaces
- External two-stage HW watchdog
- Analog inputs PT100/PT1000 capable
- Separate power supply of the digital outputs in groups
- Serial 9bit Multi-Drop Mode
- Operating hours counter
- Buzzer and optional sound chip for mp3 playback

B-PRIMIS **DC-PRIME**

Professional future
from combinatorics of performance and properties

Powerful supplement
of the B-Primis DC-PRO, of course with continuation of its features

Uniquely engineered
without frame, which means full flexibility in installation

Brilliant visualization
due to a high-class display with 85° viewing angle in all directions and particularly clear colour reproduction

Strong appearance
through chemically hardened glass in the ext-raordinarily stable 2mm version

Optimal image
with widescreen resolutions and up to Full-HD at 1920x1080 pixels

Outstanding operation
also with gloves on a surface exposed to water and dirt

Versatile prepared
due to Multi-Touch and enabled gesture control

Variable in use
with panel mounting as well as prepared for narrow cut operating housings also with support arm and lift system

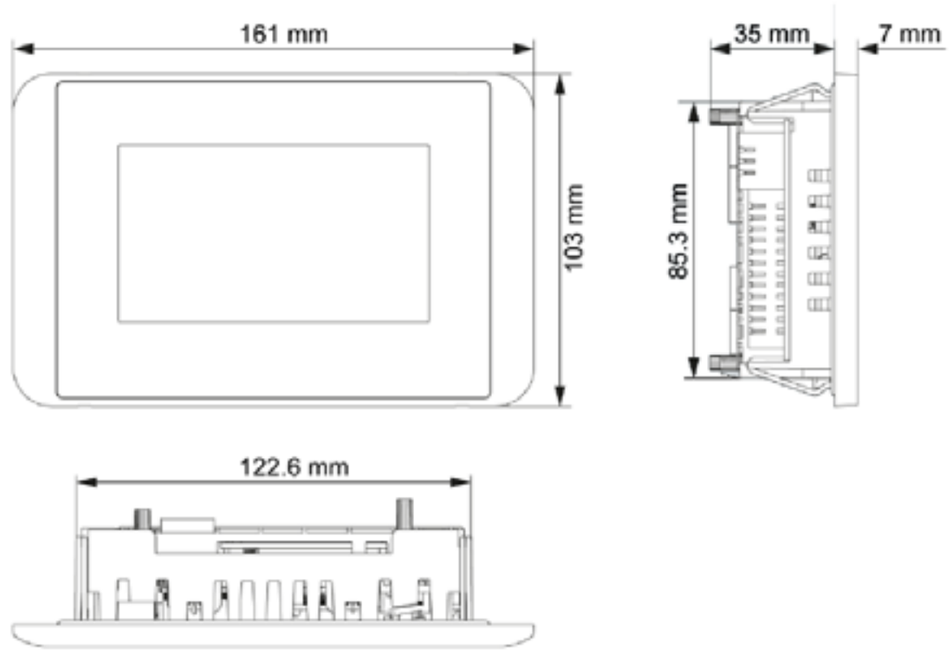
B-PRIMIS **DC-PRIME**

B-PRIMIS **DC-PRO 4,3“**
INFORMATION **TECHNICAL DATA**

B-Primis DC-PRO 4,3“	Specification				
Description	DC-Pro 4,3“ S01	DC-Pro 4,3“ S02	DC-Pro 4,3“ S03	DC-Pro 4,3“ S04	DC-Pro 4,3“ S05
Bestellnummer	**S-01010103-0101**	**S-01010103-0201**	**S-01010103-0301**	**S-01010103-0401**	**S-01010103-0501**
Dimensions WxHxD [mm]	161 x 103 x 42				
Display diagonals/resolution	4,3“ Display / 480 x 272 (WQVGA)				
Touch operation	Resistive				
Colours	TFT: 16,7 M (24 Bit/Pixels)				
Weight	approx. 450 g				
Mounting	Integrated securing clips				
Certification	CE (EN 61131-2) / CB Scheme (IEC 61010-2-201) / $_{c}$UL$_{us}$ (UL 61010-2-201)				
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core				
RAM / Flash / Retain storage	256 MB RAM / 256 MB Flash / 100 kb FRAM				
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45
	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45
	-	-	1x CAN Bus, RJ45	1x CAN Bus, RJ45	2x CAN Bus, RJ45
	-	-	-	1x RS232/485 Combo	1x RS232/485 Combo
Protocols	Standard: EtherCAT Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S, SNMP, OPC UA, J1939, Ethernet/IP, PROFINET, BACne				
Visualization	Target Visu (VNC Client), Web Visu (Web Client, HTML5)				
Additional features	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A
	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered
	-	-	1x Micro SD-Card slot up to 32 GB	1x Micro SD-Card slot up to 32 GB	1x Micro SD-Card slot up to 32 GB
Digital I/O´s	4x digital inputs, 4x digital outputs (0,5A)				
Analogue I/O´s	-	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit			
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection				
Current consumption modules	Typ. 0,3 A, max. 1,2 A at +24V				
Current consumption dig. outputs	depending on output load, in the long run max. 2A				
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C to 55 °C / transport -20 °C to +70 °C Relative humidity: max. 85%, non-condensing				

B-PRIMIS **DC-PRO 4,3“**
INFORMATION **TECHNICAL DATA/DIMENSIONS**

B-Primis DC-PRO 4,3“	Specification				
Description	DC-PRO 4,3“ S01	DC-PRO 4,3“ S02	DC-PRO 4,3“ S03	DC-PRO 4,3“ S04	DC-PRO 4,3“ S05
EMC, protection type					
Störaussendung	EN 55011 Klasse B Gruppe 1				
Störunempfindlichkeit	EN 61131-2				
Schutzklasse	III				
Isolationsfestigkeit	EN 61131-2				
Schutzart	IP20, Front IP54 (IP65 nur mit verspannten Drehriegeln)				
Vibration	Sinusförmig (EN 60068-2-6) Prüfung: Fc; 10 ... 150 Hz, 1 G (Operation Mode)				
Schockfestigkeit	15 G (ca. 150 m/s²), 10 ms Dauer, halbsinus (EN 60068-2-27) Prüfung: EA				



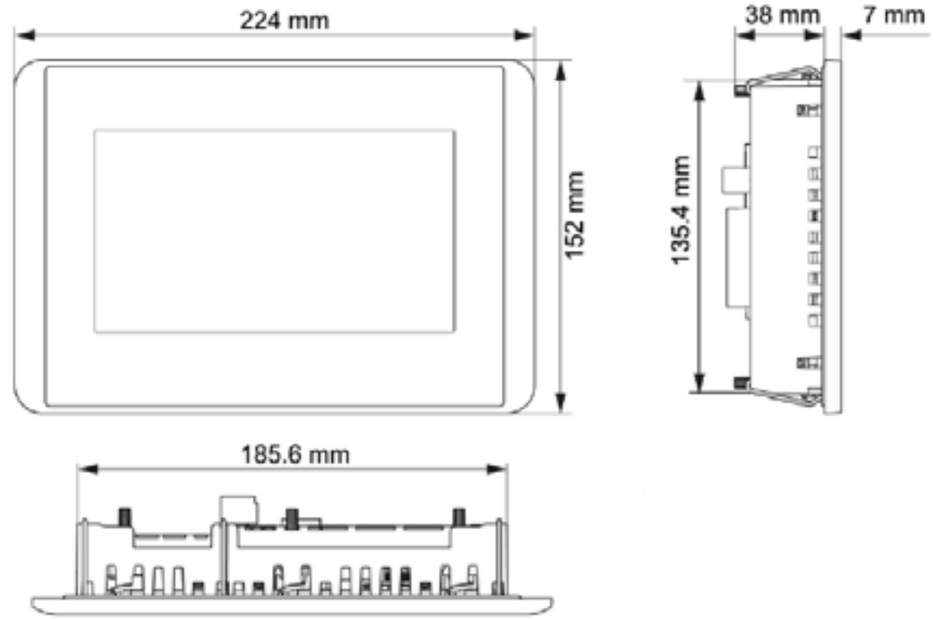
Dimension drawing B-Primis DC-PRO 4,3“

B-PRIMIS **DC-PRO 7“**
INFORMATION **TECHNICAL DATA**

B-Primis DC-PRO 7“	Specification				
Description	DC-PRO 7“ S01	DC-PRO 7“ S02	DC-PRO 7“ S03	DC-PRO 7“ S04	DC-PRO 7“ S05
Order number	**S-01010103-0104**	**S-01010103-0204**	**S-01010103-0304**	**S-01010103-0404**	**S-01010103-0504**
Dimensions WxHxD [mm]	224 x 152 x 45				
Display diagonals/ resolution	7“ Display / 800 x 480 (WVGA)				
Touch operation	Resistive				
Colours	TFT: 16,7 M (24 Bit/Pixels)				
Weight	approx. 600 g				
Mounting	Integrated securing clips				
Certification	CE (EN 61131-2) / CB Scheme (IEC 61010-2-201) / $_{c}UL_{us}$ (UL 61010-2-201)				
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core				
RAM / Flash / Retain storage	256 MB RAM / 256 MB Flash / 100 kb FRAM				
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45
	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45
	-	-	1x CAN Bus, RJ45	1x CAN Bus, RJ45	2x CAN Bus, RJ45
	-	-	-	1x RS232/485 Combo	1x RS232/485 Combo
Protocols	Standard: EtherCAT Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S, SNMP, OPC UA, J1939, Ethernet/IP, PROFINET, BACNet				
Visualization	Target Visu (VNC Client), Web Visu (Web Client, HTML5)				
Additional features	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A	1x host USB 2.0 / USB plug type A
	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered
	-	-	1x Micro SD-Card slot up to 32 GB	1x Micro SD-Card slot up to 32 GB	1x Micro SD-Card slot up to 32 GB
Digital I/O´s	4x digital input, 4x digital output (0,5A)				
Analogue I/O´s	-	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bi	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bi	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bi
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection				
Current consumption modules	Typ. 0,3 A, max. 1,2 A at +24V				
Current consumption dig. outputs	depending on output load, in the long run max. 2A				
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C to 55 °C / transport -20 °C to +70 °C Relative humidity: max. 85%, non-condensing				

B-PRIMIS **DC-PRO 7“**
INFORMATION **TECHNICAL DATA/DIMENSIONS**

B-Primis DC-PRO 7“	Specification				
Description	DC-PRO 7“ S01	DC-PRO 7“ S02	DC-PRO 7“ S03	DC-PRO 7“ S04	DC-PRO 7“ S05
EMC, protection type					
Emitted interference	EN 55011 class B group 1				
Immunity to interference	EN 61131-2				
Protection class	III				
Insulation strength	EN 61131-2				
Protection type	IP20, Front IP54 (IP65 only with twist locks catches tightened)				
Vibration	Sinusoidal (EN 60068-2-6) test: Fc;10 ... 150 Hz, 1 G (operation mode)				
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea				



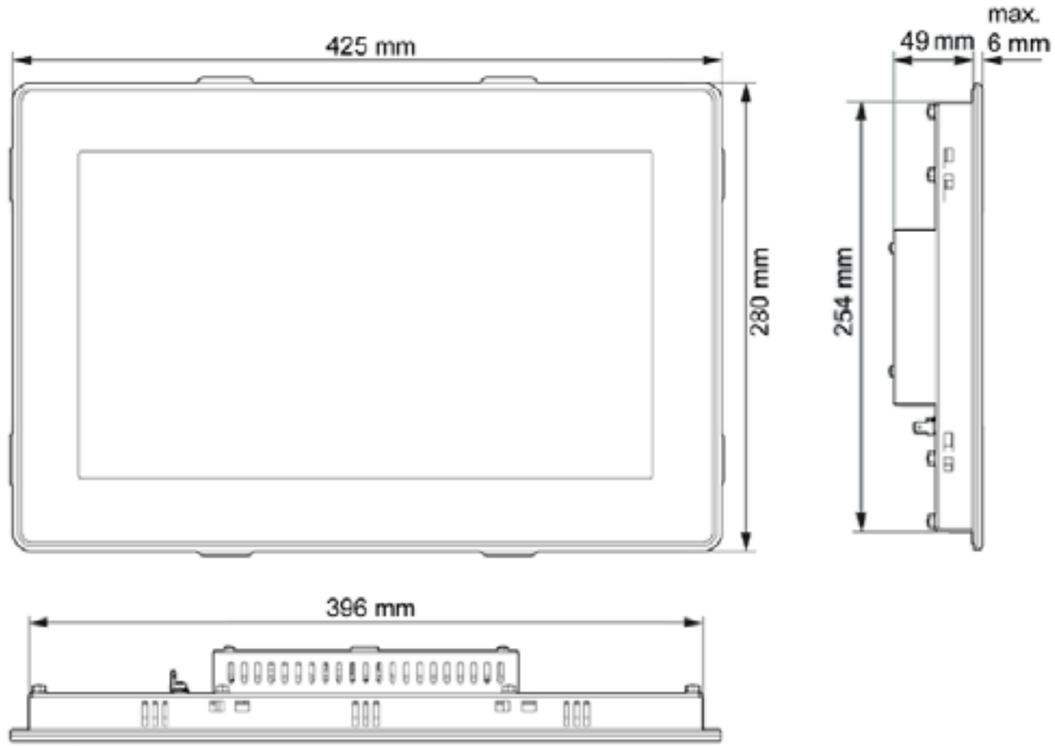
Dimension drawing B-Primis DC-PRO 7“

B-PRIMIS **DC-PRO 15,6“**
INFORMATION **TECHNICAL DATA**

B-Primis DC-PRO 15,6“	Specification				
Description	DC-PRO 15,6“ S01	DC-PRO 15,6“ S02	DC-PRO 15,6“ S03	DC-PRO 15,6“ S04	DC-PRO 15,6“ S05
Order number	**S-01010103-0104**	**S-01010103-0204**	**S-01010103-0304**	**S-01010103-0404**	**S-01010103-0504**
Dimensions WxHxD [mm]	425 x 280 x 55				
Display diagonals/ resolution	15,6“ Display / 1366 x 768 (WXGA)				
Touch operation	Resistive				
Colours	TFT: 16,7 M (24 Bit/Pixels)				
Weight	approx. 3 Kg				
Mounting	Integrated secure clips				
Certification	CE (EN 61131-2) / CB Scheme (IEC 61010-2-201) / $_{c}$UL$_{us}$ (UL 61010-2-201)				
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core				
RAM / Flash / Retain storage	512 MB RAM / 512 MB Flash / 100 kb FRAM	512 MB RAM / 512 MB Flash / 100 kb FRAM	512 MB RAM / 1 GB Flash / 100 kb FRAM	512 MB RAM / 2 GB Flash / 100 kb FRAM	512 MB RAM / 2 GB Flash / 100 kb FRAM
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45
	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45
	-	-	1x CAN Bus, RJ45	1x CAN Bus, RJ45	2x CAN Bus, RJ45
	-	-	-	1x RS232/485 combo	1x RS232/485 combo
Protocols	Standard: EtherCAT Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S, SNMP, OPC UA, J1939, Ethernet/IP, PROFINET, BACne				
Visualization	Target Visu (VNC Client), Web Visu (Web Client, HTML5)				
Additional features	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A
	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered
	-	-	1x Micro SD-Card slot up to 32 GB	1x Micro SD-Card slot up to 32 GB	1x Micro SD-Card slot up to 32 GB
Digital I/O´s	4x digital input, 4x digital output (0,5A)				
Analogue I/O´s	-	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection				
Current consumption modules	Typ. 0,8 A, max. 1,2 A at +24V				
Current consumption dig. outputs	depending on output load, in the long run max. 2A				
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C to 55 °C / transport -20 °C to +70 °C Relative humidity: max. 85%, non-condensing				

B-PRIMIS **DC-PRO 15,6“**
INFORMATION **TECHNICAL DATA/DIMENSIONS**

B-Primis DC-PRO 15,6“	Specification				
Description	DC-PRO 15,6“ S01	DC-PRO 15,6“ S02	DC-PRO 15,6“ S03	DC-PRO 15,6“ S04	DC-PRO 15,6“ S05
EMC, protection type					
Emitted interference	EN 61131-2				
Immunity to interference	EN 61131-2				
Protection class	III				
Insulation strentgh	EN 61131-2				
Protection type	IP20, front IP65				
Vibration	Sinusoidal (EN 60068-2-6) test: Fc;10 ... 150 Hz, 1 G (operation mode)				
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea				



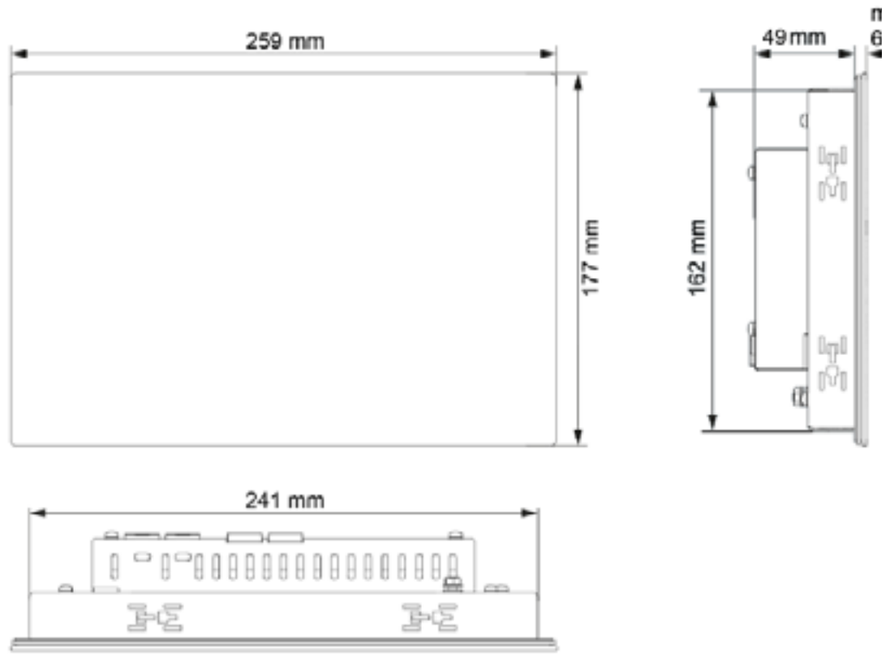
Dimension drawing B-Primis DC-CLASSIC 15,6“

B-PRIMIS **DC-PRIME 10,1“**
INFORMATION **TECHNICAL DATA**

B-Primis DC-PRIME 10,1“	Specification				
Description	DC-PRIME 10,1“ S01	DC-PRIME 10,1“ S02	DC-PRIME 10,1“ S03	DC-PRIME 10,1“ S04	DC-PRIME 10,1“ S05
Order number	**S-01010104-0105**	**S-01010104-0205**	**S-01010104-0305**	**S-01010104-0405**	**S-01010104-0505**
Dimensions WxHxD [mm]	259 x 177 x 55				
Display diagonals/ resolution	10,1“ Display / 1280 x 800 (WXGA)				
Touch operation	Capacitive				
Colours	TFT: 16,7 M (24 Bit/Pixels)				
Weight	approx. 2,5 Kg				
Mounting	Integrated secure clips				
Certification	CE (EN 61131-2) / CB Scheme (IEC 61010-2-201) / $_{c}$UL$_{us}$ (UL 61010-2-201)				
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core				
RAM / Flash / Retain storage	512 MB RAM / 512 MB Flash / 100 kb FRAM	512 MB RAM / 512 MB Flash / 100 kb FRAM	512 MB RAM / 1 GB Flash / 100 kb FRAM	512 MB RAM / 2 GB Flash / 100 kb FRAM	512 MB RAM / 2 GB Flash / 100 kb FRAM
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45
	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45
	-	-	1x CAN Bus, RJ45	1x CAN Bus, RJ45	2x CAN Bus, RJ45
	-	-	-	1x RS232/485 combo	1x RS232/485 combo
Protocols	Standard: EtherCAT Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S, SNMP, OPC UA, J1939, Ethernet/IP, PROFINET, BACNet				
Visualization	Target Visu (VNC Client), Web Visu (Web Client, HTML5)				
Additional features	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A
	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered
	-	-	1x Micro SD-Card slot up to 32 GB	1x Micro SD-Card slot up to 32 GB	1x Micro SD-Card slot up to 32 GB
Digital I/O´s	4x digital inputs, 4x digital outputs (0,5A)				
Analogue I/O´s	-	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection				
Current consumption modules	Typ. 0,8 A, max. 1,2 A at +24V				
Current consumption dig. outputs	depending on output load, in the long run max. 2A				
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C to 55 °C / transport -20 °C to +70 °C Relative humidity: max. 85%, non-condensing				

B-PRIMIS **DC-PRIME 10,1“**
INFORMATION **TECHNICAL DATA/DIMENSIONS**

B-Primis DC-PRIME 10,1“	Specification				
Description	DC-PRIME 10,1“ S01	D DC-PRIME 10,1“ S02	DC-PRIME 10,1“ S03	DC-PRIME 10,1“ S04	DC-PRIME 10,1“ S05
EMC, Protection type					
Emitted interference	EN 61131-2				
Immunity to interference	EN 61131-2				
Protection class	III				
Insulation strentgh	EN 61131-2; 500 V DC Prüfspannung				
Protection type	IP20, front IP44				
Vibration	Sinusoidal (EN 60068-2-6) test: Fc;10 ... 150 Hz, 1 G (operation mode)				
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea				



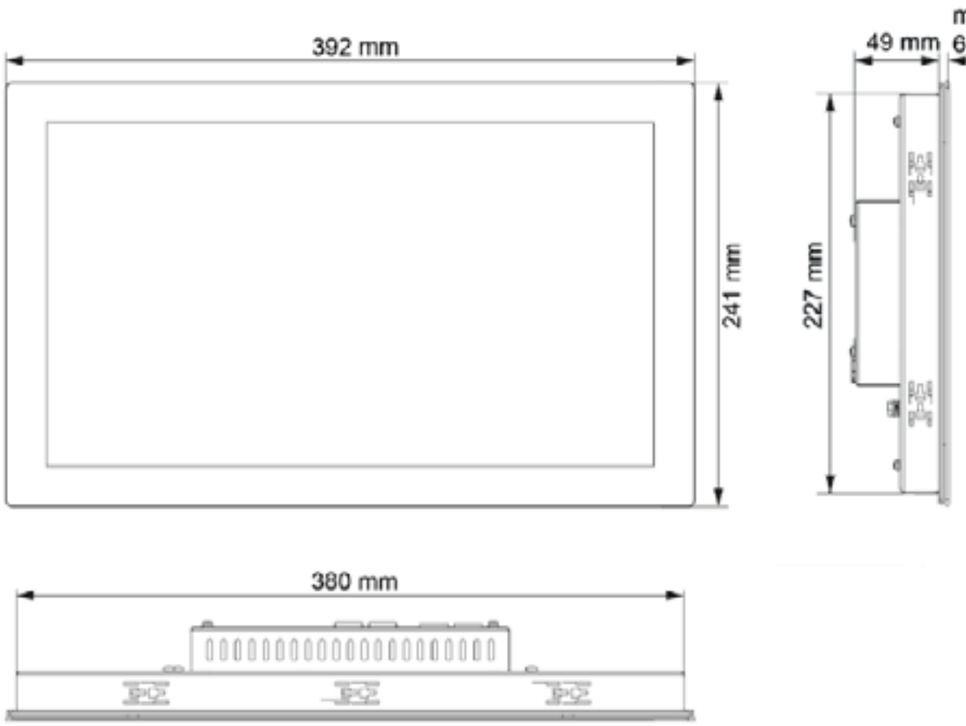
Dimension drawing B-Primis DC-PRIME 10,1“

B-PRIMIS **DC-PRIME 15,6“**
INFORMATION **TECHNICAL DATA**

B-Primis DC-PRIME 15,6“	Specification				
Description	DC-Prime 15,6“ S01	DC-Prime 15,6“ S02	DC-Prime 15,6“ S03	DC-Prime 15,6“ S04	DC-Prime 15,6“ S05
Order number	**S-01010104-0108**	**S-01010104-0208**	**S-01010104-0308**	**S-01010104-0408**	**S-01010104-0508**
Dimensions WxHxD [mm]	391 x 241 x 55				
Display diagonals/ resolution	15,6“ Display / 1920 x 1080 (WXGA)				
Touch operation	Capacitive				
Colours	TFT: 16,7 M (24 Bit/Pixels)				
Weight	approx. 3 Kg				
Mounting	Integrated secure clips				
Certification	CE (EN 61131-2) / CB Scheme (IEC 61010-2-201) / $_{c}$UL$_{us}$ (UL 61010-2-201)				
CPU	800 MHz Arm® CPU with Cortex™-A9 Single Core				
RAM / Flash / Retain storage	512 MB RAM / 512 MB Flash / 100 kb FRAM	512 MB RAM / 512 MB Flash / 100 kb FRAM	512 MB RAM / 1 GB Flash / 100 kb FRAM	512 MB RAM / 2 GB Flash / 100 kb FRAM	512 MB RAM / 2 GB Flash / 100 kb FRAM
Communication interfaces	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45	1x Ethernet, 10/100 Base, RJ45
	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45	1x EtherCAT, RJ45
	-	-	1x CAN Bus, RJ45	1x CAN Bus, RJ45	2x CAN Bus, RJ45
	-	-	-	1x RS232/485 combo	1x RS232/485 combo
Protocols	Standard: EtherCAT Master, CANopen Master Optional: Modbus RTU M/S, Modbus TCP M/S, SNMP, OPC UA, J1939, Ethernet/IP, PROFINET, BACNet				
Visualization	Target Visu (VNC Client), Web Visu (Web Client, HTML5)				
Additional features	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A	2x host USB 2.0 / USB plug type A
	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered	1x RTC, battery buffered
	-	-	1x Micro SD-Card Slot bis 32 GB	1x Micro SD-Card Slot bis 32 GB	1x Micro SD-Card Slot bis 32 GB
Digital I/O´s	4x digital Inputs, 4x digitaler outputs (0,5A)				
Analogue I/O´s	-	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit	4x universal analog input (-10V..+10V, 2x PT100/PT1000) Resolution: 24 Bit
Supply voltage	+24 VDC (-15% / +20%) SELV max. AC voltage component 5% with reverse voltage protection				
Current consumption modules	Typ. 0,8 A, max. 1,2 A at +24V				
Current consumption dig. outputs	depending on output load, in the long run max. 2A				
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C to 55 °C / transport -20 °C to +70 °C Relative humidity: max. 85%, non-condensing				

B-PRIMIS **DC-PRIME 15,6“**
INFORMATION **TECHNICAL DATA/DIMENSIONS**

B-Primis DC-Prime 15,6“	Specification				
Description	DC-PRIME 15,6“ S01	D DC-PRIME 15,6“ S02	DC-PRIME 15,6“ S03	DC-PRIME 15,6“ S04	DC-PRIME 15,6“ S05
EMC; protection type					
Emitted interference	EN 61131-2				
Immunity to interference	EN 61131-2				
Protection class	III				
Insulation strength	EN 61131-2; 500 V DC test voltage				
Protection type	IP20, Front IP44				
Vibration	Sinusoidal (EN 60068-2-6) test: Fc;10 ... 150 Hz, 1 G (operation mode)				
Schock resistance	15 G (approx. 150 m/s²), 10 ms duration, half-sine (EN 60068-2-27) test: Ea				



Dimension drawing B-Primis DC-PRIME 15,6“

PIONEERING AUTOMATION TECHNOLOGY

B-NIMIS SAFETY CONTROL SYSTEM
B-NIMIS **SC-1000**
B-NIMIS **SC I/O-EXPANSIONS**

B-NIMIS **SC-SAFETY CONTROL SYSTEM**

BERGHOF AUTOMATION AND CONTROL SOLUTIONS

- → Certified in compliance with the CODESYS standard
- → Can be combined with standard products
- → Fail Safe over EtherCAT (FSoE)
- → Safety software package merged into CODESYS
- → Online monitoring of secure and insecure data
- → SIL3 according to IEC 61508
- → PLe according to DIN EN ISO 13849

Integrated and CODESYS programmable safety solution.

B-NIMIS **SC-1000, SC-I/O**

Safety technology under control

The innovative and integrated safety solution from Berghof comprises a freely programmable CODESYS Safety PLC and a Safety I/O module in accordance with the requirements of the safety standards IEC 61508 SIL 3 and DIN ISO 13849-1 PLe. The core of the Safety PLC consists of two microprocessors that implement the safety functions and communicate with each other in order to exchange process data and monitor each other. A third microprocessor manages the external communication. The Safety I/O module has 4 digital inputs and 2 digital outputs and allows the connection of common safety devices. The outputs of the module ensure safe connection of actuators such as contactors, signal lamps or drives. As add-on standard modules with integrated bus system, the devices can be easily installed and combined with other control components such as the standardized Berghof MC-system.

Simple programming according to IEC61131

CODESYS safety solution with openSafety and FSoE

Integrated diagnostics and error localization

Safety channels can also be used as standard I/O`s

CODESYS Safety PLC (2 channels)

Safety I/O with 4 digital IN, 2 digital OUT

Familiar modules in standard design with various status displays

Fail Safe over EtherCAT (FSoE)

B-NIMIS **SC-1000, SC-I/O**

Best possible control
through exchangeability of information for diagnosis or status as well as interconnection of signals between all levels

Optimally secured
with the help of additional functions for safeguarding the safety function, e.g. change tracking, safe signal flow, safe versioning, separation of safe operation

Safety technology under control
with certified PLCopen function blocks in Basic and Extended Level as well as certified hardware

Maximum system solution
through modular implementation and easy interaction with all Berghof standard products

Unsurpassed flexibility
thanks to modular expandability and any division within the plant control system

Excellent plant integration
due to simple connection of any FSoE slaves (e.g. safety I/O modules, drive controllers)

No limits
due to limitation of the number of usable safety modules only by the device memory

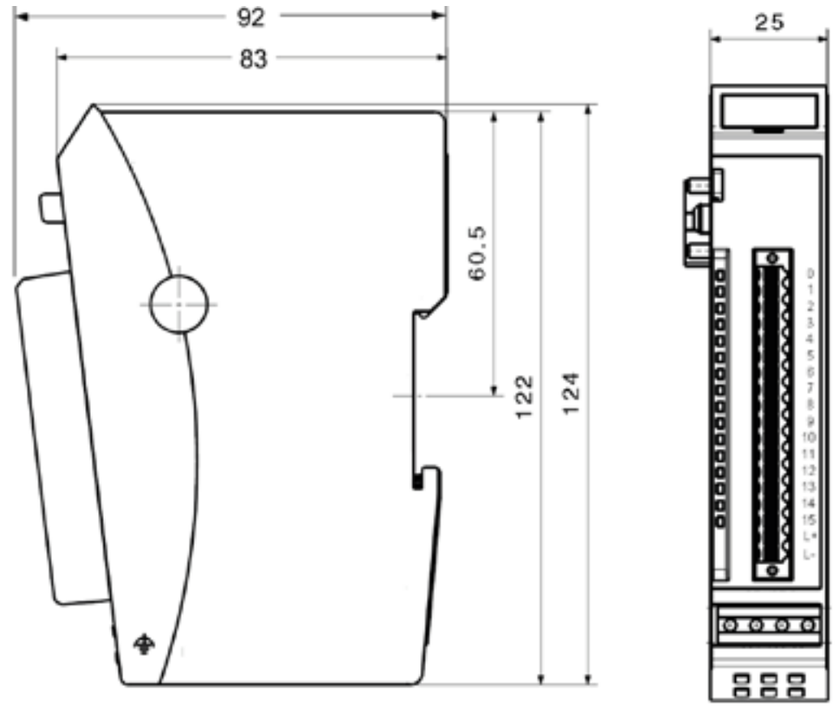
Ideal operation
by integrating the safety software into the CODESYS standard and graphically interconnecting all elements

Intuitive project planning and programming
with the Berghof Safety Package, which allows the user to feel no boundaries between safety and non-safety components

B-NIMIS **SC-1000, SC-I/O**
INFORMATION **TECHNICAL DATA**

B-Nimis SC-1000, SC-I/O		
Description	**SC-1000**	**SC-I/O**
Order number	**S-01060101-0000**	**S-01060201-0000**
Dimensions WxHxD [mm]	25 x 124 x 83	25 x 124 x 92
Weight	approx. 150 g	
Mounting	Rail mounting NS 35/7,5 EN 50022	
Safety standard	IEC 61508 SIL 3 and DIN EN ISO 13849-1 PL e	
Development environment	CODESYS V3 (IEC61131-3) with Safety plugin	
Communication interface	1x EtherCAT, LVDS	
Safety protocol	Safety over EtherCAT (FSoE)	
Digital I/O´s	-	4x failsafe digital inputs 2x failsafe digital outputs
Realisable safety functions	4x emergency stop switches 4x contact detectors 2x light grids 2x single handed operation 2x independent output functions	
Supply voltage	5 V DC via LVDS connection comes from head module (bus coupler or PLC in accordance with EN 61131-2, supply with 24 V DC, min. -15% / +20% SELV/PELV)	
Curren consumption	Typ. 0,3 A	Typ. 0,3 A max. 2x 2A depending on I/O load
Operating conditions Transport / storage	Ambient temperature: operational: 0 °C to 55 °C / transport -25 °C to +70 °C Relative humidity: max. 95%, non-condensing	
EMC, protection type		
Interference immunity	Installation in zone B according to 61000-6-2, in accordance with EN61131-2, installation on earthed top-hat rail in earthed switch cabinet. Install the earthing according to the operating conditions.	Zone B according to EN 61131-2:2007,Installation on earthed top-hat rail in earthed switch cabinet
overvoltage category	Category II according to IEC 60664-1, in accordance with EN 61131-2	Category II according to EN 61131-2:2007
Protection type	IP20	
Vibration	5...8.4 Hz: ±3.5 mm amplitude, 8.4...150 Hz: 10 m/s² (1g), according to IEC 60068-2-6, test Fc	
Schock resistance	150 m/s² (15g), 11 ms sine half-wave, according to IEC 60068-2-27	

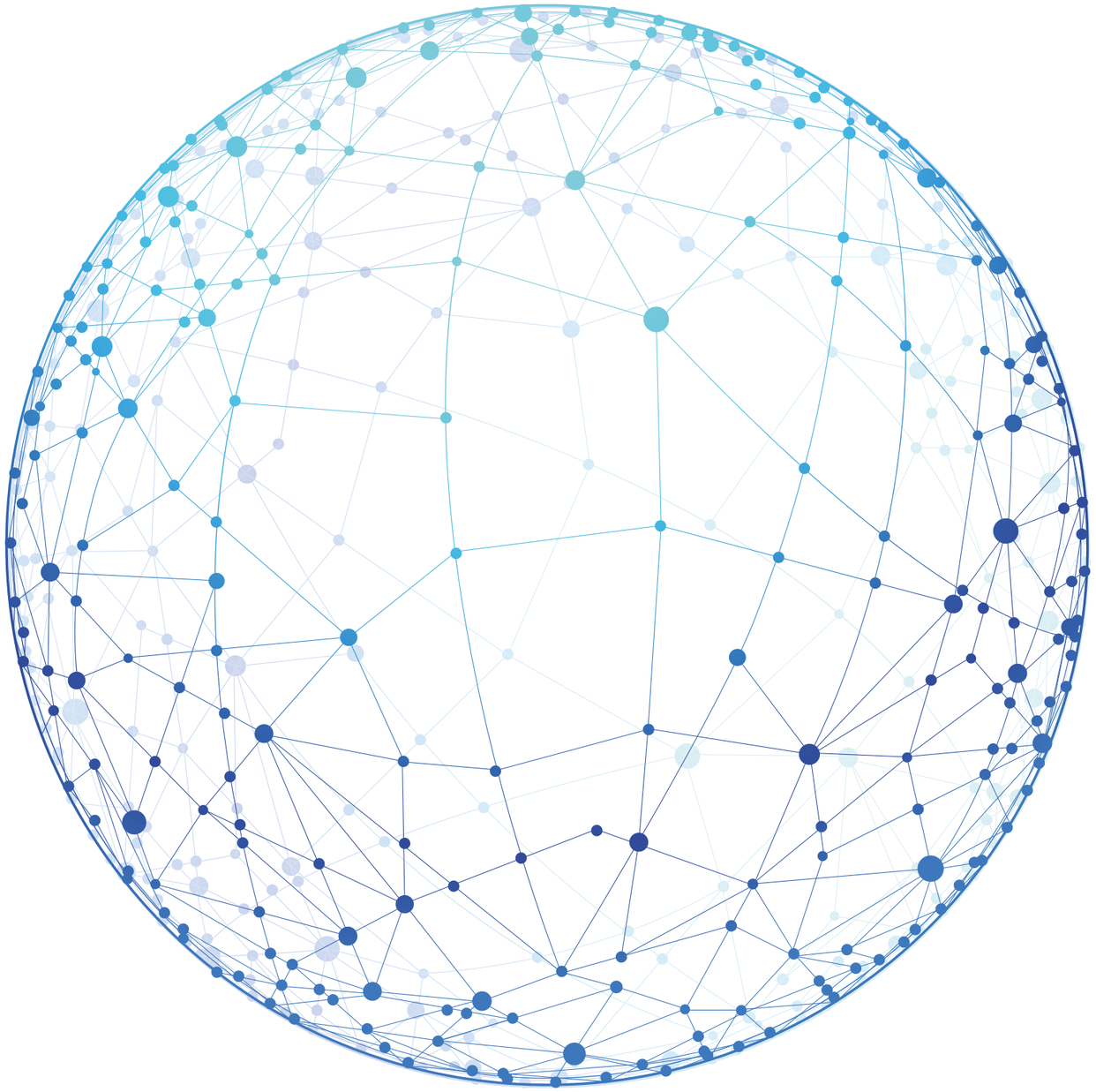
B-NIMIS **SC-1000, SC-I/O**
INFORMATION **DIMENSIONS**



Dimension drawing B-Nimis SC-System

PIONEERING AUTOMATION TECHNOLOGY

HARDWARE & SOFTWARE OPTIONS



OPTIONS

Optional expansions for automation

During development, Berghof Automation & Control Solutions attaches great importance to a **manufacturer-independent solution** and trusts on the long-term reliability of the **CODESYS automation software**, which makes it possible to carry out a wide range of tasks in automation technology.
The platform used is **Linux**, which offers significant advantages over other solutions.

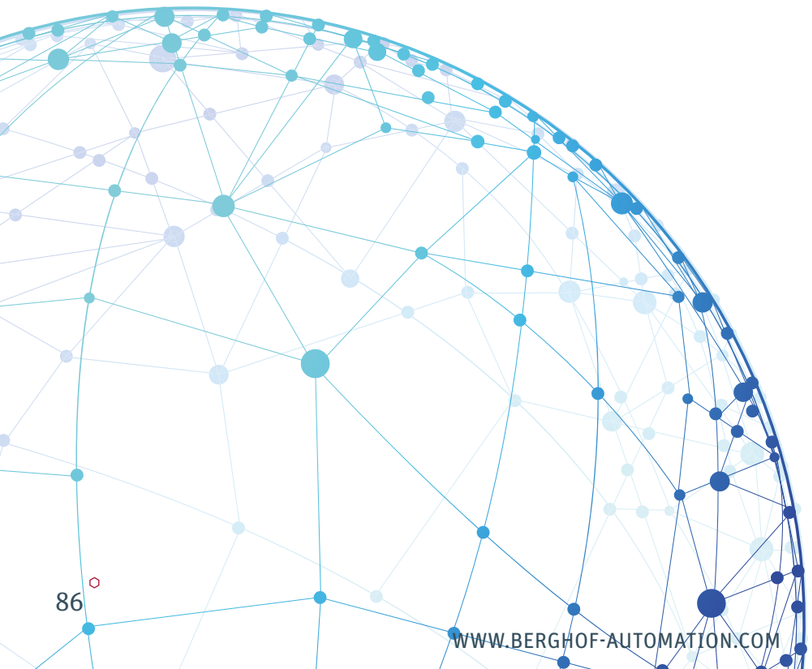
By combining these two open standards of the software, we are able to easily implement functional enhancements. For you as a user, this means unlimited functionality, independence from additional tools and the comprehensive applicability of CODESYS.

Extensions can be selected by means of a standardized or specially tailored range of options. Our products and processes are designed in such a way that a selection can be made both with and after product ordering. Repeat orders are no challenge for us, neither in the allocation in the corresponding product documentation (e.g. for the purpose of support) nor in the delivery with possibly immediate dispatch by electronic means or online connection.

This can be done by specifying the appropriate option code when ordering a product that includes a fully configured device, or by stating the associated order number, with separate delivery of the function.

The options complement the range of functions that Berghof has already created based on CODESYS (see excerpt on page 11). Below you will find the standardized additional functions that can be ordered. If you cannot find what you are looking for, please contact us.

We realize it for you.



OPTIONS

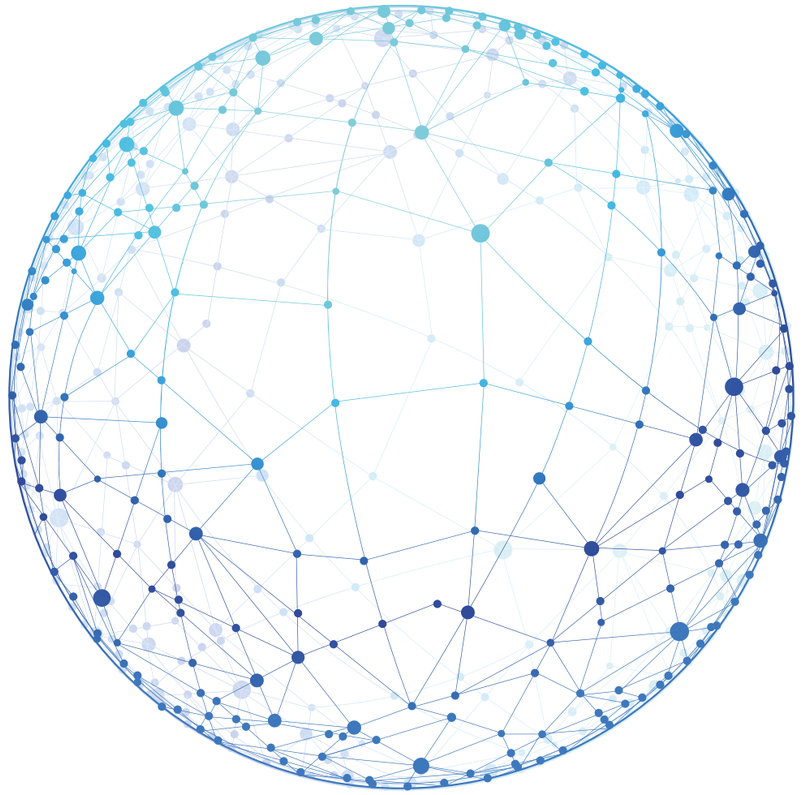
ID	Option	Description	Order number
S000	**Counter Encoder Interface**	With the help of this option it is possible to operate local inputs as counter or encoder inputs.	**S-05000201-0000**
S001	**Hardware Watchdog**	Option for monitoring the IEC tasks by an external watchdog.	**S-05000202-0000**
S002	**USB Serial Interface**	Option to communicate via USB Serial Adapter.	**S-05000203-0000**
S003	**USB Ethernet**	Option for an additional USB network interface for non fieldbus relevant communication.	**S-05000204-0000**
S004	**USB Keyboard**	Option for a USB keyboard / USB barcode scanner.	**S-05000205-0000**
S006	**Fast Event IOs**	Option for fast inputs and outputs. These are then handled independently of the I/O or bus cycle.	**S-05000206-0000**
S100	**CODESYS MODBUS RTU/TCP**	Operation of the controller as Modbus master and/or as Modbus slave. Both Modbus TCP via Ethernet and Modbus RTU via serial connections are supported.	**S-05000301-0000**
S101	**CODESYS BACNET**	Integration of the control in a BACnet network for building automation possible.	**S-05000302-0000**
S102	**CODESYS J1939**	Operation of the controller in a J1939 network. The roles J1939 Manager and J1939 ECU are supported.	**S-05000303-0000**
S103	**CODESYS CANopen Master**	With the help of this software option it is possible to operate the controller as a CANopen master and to communicate with CANopen slaves.	**S-05000305-0000**
S104	**CODESYS EtherCAT Master**	With this software option it is possible to operate the controller as an EtherCAT master and thus extend the controller with EtherCAT modules.	**S-05000304-0000**
S105	**CODESYS Profinet Device (Slave)**	With this software option it is possible to operate the controller as a Profinet Device in a higher-level Profinet plant network.	**S-05000307-0000**
S106	**CODESYS OPCuA Server**	Export of variables via OPCuA. This makes it possible to exchange data via an OPCuA-enabled client and server.	**S-05000308-0000**
S107	**CODESYS EtherNet/IP Scanner (Master)**	Integration of EtherNet/IP based slave devices (adapters) into the IO image.	**S-05000309-0000**
S108	**CODESYS EtherNet/IP Adapter (Slave)**	Integration of the controller as an EtherNet/IP adapter (slave) in an EtherNet/IP network.	**S-05000310-0000**

OPTIONS

ID	Option	Description	Order number
S109	**VPN Client IXON Client**	Integration of the controller into a virtual private network (VPN) as a client. The VPN basic technology used is OpenVPN.	**S-05000311-0000**
S111	**FTP Server**	This option can be used to activate an FTP server on the controller. This enables, for example, the exchange of configuration data or log data with other systems.	**S-05000312-0000**
S112	**NTP Client**	Synchronization of the system time of the controller with an NTP time server.	**S-05000313-0000**
S113	**CODESYS SNMP connectivity**	Option for communication via the SNMP protocol (network management). This is typically used for communication with network components or for status queries in networks.	**S-05000314-0000**
S114	**CODESYS Web-visualization**	Use of CODESYS web visualization. This enables the visualization to be displayed in web browsers.	**S-05000315-0000**
S306	**Motion Basic**	Option to use the Berghof Motion Library for drive control. The library provides simple motion control of multiple drives using uniaxial motion (not synchronized).	**S-05000401-0000**
S300	**Motion Basic + Softmotion**	With the help of this software option it is possible to run drives controlled by the PLC. Typical motion applications with mutually coupled axes can thus be easily implemented. In addition to the Softmotion functionality, this option always includes the software option S306 (Motion Basic).	**S-05000402-0000**
S301	**Motion Basic + Softmotion + CNC**	With the help of this software option it is possible to run drives controlled by the PLC. In addition to the CNC functionality, this option always includes the software option S300 (Motion Basic + Softmotion).	**S-05000403-0000**
S400	**Powertrack Communication**	This software option activates (service) communication in Powertrack systems. This creates a direct connection between CODESYS and PLC, independent of their current position/segment in the Powertrack system. (Online connection to moving vehicles)	**S-05000501-0000**
S401	**Powertrack Servicetool**	Activation of the service tool for Powertrack systems. This supports the cross-segment management of control systems in the Powertrack network.	**S-05000502-0000**

OPTIONS

ID	Option	Description	Order number
S500	**PDF Creation Library**	Library for the creation of PDF documents. With this option, the creation of protocols, measured values or error reports, for example, can be carried out directly on the controller as a PDF file.	**S-05000601-0000**
S501	**Backup/Restore functionality**	This option enables the triggering and importing of a PLC application via the web interface. This can be used e.g. for backup purposes or for the efficient installation of the PLC application in series production.	**S-05000602-0000**
S502	**Display Rotation**	With this software option it is possible to rotate the screen by 90°, 180° or 270°. This can be achieved, for example, by installing display devices in portrait format.	**S-05000603-0000**
S503	**Onboard configuration protection**	Option to password protect the configuration settings via the display menu. This protects the configuration from unauthorized modification.	**S-05000604-0000**



OPTIONS
AVAILABILITY OF OPTIONS FOR THE PRODUCTS

	DC-PRO 4,3“	DC-PRO 7“	DC-PRO/ -PRIME 10/15“	CC-LITE	CC-SLIM	CC-PRIME	MC-CLASSIC	MC-PRO	ET-PRO 4,3“	ET-PRO 7“	ET-PRO/ -PRIME 10/15“
S000 - Counter/Encoder Interface	✔	✔	✔	-	✔	✔	-	-	-	-	-
S001 - Hardware Watchdog	✔	✔	✔	-	✔	✔	-	-	-	-	-
S002 - USB Serial Interface	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S003 - USB Ethernet	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S004 - USB Keyboard	✔	✔	✔	✔	✔	✔	-	✔	✔	✔	✔
S006 - Fast Event I/O´s	-	-	✔	✔	-	✔	-	-	-	-	-
S100 - MODBUS RTU/TCP V3	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S101 - BACNET	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S102 - J1939	✔	✔	✔	-	✔	✔	-	✔	-	-	-
S103 - CANopen Master	✔	✔	✔	-	✔	✔	✔	✔	-	-	-
S104 - EtherCAT Master	✔	✔	✔	✔	✔	✔	✔	✔	-	-	-
S105 - Profinet Device (Slave)	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S106 - OPC UA Server	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S107 - EtherNet/Ip Scanner (Master)	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S108 - EtherNet/IP Adapter (Slave)	✔	✔	✔	✔	✔	✔	-	✔	-	-	-

✔ Option can be ordered for product

\- Option cannot be ordered for product

* Separate network interface required

req Options are interdependent

o.r. on request

OPTIONS
AVAILABILITY OF OPTIONS FOR THE PRODUCTS

	DC-PRO 4,3“	DC-PRO 7“	DC-PRO/ -PRIME 10/15“	CC-LITE	CC-SLIM	CC-PRIME	MC-CLASSIC	MC-PRO	ET-PRO 4,3“	ET-PRO 7“	ET-PRO/ -PRIME 10/15“
S109 - VPN Client	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S111 - FTP Server	✔	✔	✔	✔	✔	✔	✔	✔	-	-	-
S112 - NTP Client	✔	✔	✔	✔	✔	✔	-	✔	✔	✔	✔
S113 - CODESYS SNMP Connectivity	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S114 - CODESYS WebVisualization	✔	✔	✔	✔	✔	✔	✔	✔	-	-	-
S300 - Motion Basic+Softmotion	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S301 - Motion Basic+Softmotion+CNC	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S306 - Motion Basic	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S400 - Powertrack Basic comm.	✔	✔	✔	-	✔	✔	-	✔	-	-	-
S401 - Powertrack Servicetool	✔	✔	✔	-	✔	✔	-	✔	-	-	-
S500 - PDF Creation Library	✔	✔	✔	✔	✔	✔	-	✔	-	-	-
S501 - Backup/Restore Functionality	✔	✔	✔	✔	✔	✔	✔	✔	-	-	-
S502 - Display Rotation	-	✔	✔	-	-	-	-	-	-	✔	✔
S503 - Onboard Config. Protection	o.r.	o.r.	o.r.	o.r.	o.r.	o.r.	o.r.	o.r.	o.r.	o.r.	o.r.

✔ Option can be ordered for product

\- Option cannot be ordered for product

* Separate network interface required

req Options are interdependent

o.r. on request

OPTIONS

AVAILABILITY OF OPTIONS TO EACH OTHER

	S002	S003	S004	S100	S101	S105	S106	S107	S108	S300	S301	S306	S400	S401
S000 - Counter/Encoder Interface	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S001 - Hardware Watchdog	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S002 - USB Serial Interface		-	-	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S003 - USB Ethernet	-		-	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S004 - USB Keyboard	-	-		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S006 - Fast Event I/O´s	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S100 - MODBUS RTU/TCP V3	✔	✔	✔		✔	✔	✔	✔	✔	-	-	-	✔	✔
S101 - BACNET	✔	✔	✔	✔		✔	✔	✔	✔	-	-	-	-	-
S102 - J1939	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S103 - CANopen Master	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S104 - EtherCAT Master	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S105 - Profinet Device (Slave)	✔	✔	✔	✔	✔		✔	*	*	*	*	*	✔	✔
S106 - OPC UA Server	✔	✔	✔	✔	✔	✔		✔	✔	*	*	*	✔	✔
S107 - EtherNet/Ip Scanner (Master)	✔	✔	✔	✔	✔	*	✔		*	*	*	*	✔	✔
S108 - EtherNet/IP Adapter (Slave)	✔	✔	✔	✔	✔	*	✔	*		*	*	*	✔	✔
S109 - VPN Client	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S111 - FTP Server	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S112 - NTP Client	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S113 - CODESYS SNMP Connectivity	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S114 - CODESYS WebVisualization	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
S300 - Motion Basic+Softmotion	✔	✔	✔	-	-	*	*	*	*		-	-	✔	✔
S301 - Motion Basic+Softmotion+CNC	✔	✔	✔	-	-	*	*	*	*	-		-	✔	✔
S306 - Motion Basic	✔	✔	✔	-	-	*	*	*	*	-	-		✔	✔
S400 - Powertrack Basic comm.	✔	✔	✔	✔	-	✔	✔	✔	✔	✔	✔	✔		req
S401 - Powertrack Servicetool	✔	✔	✔	✔	-	✔	✔	✔	✔	✔	✔	✔	req	✔

Options not listed are considered to be basically compatible.

✔ Option can be ordered for product

\- Option cannot be ordered for product

* Separate network interface required

req Options are interdependent

o.r. on request

PIONEERING AUTOMATION TECHNOLOGY

ACCESSORY COMPONENTS

High quality Berghof accessories

Complete system solutions from a single source. In addition to the control products, additive components can also be required. We offer you the right spectrum, tailored to the portfolio and expanding the range of functions. If something is not available, no problem! We complete the offer according to your wishes.

Functional safety, even under the increased conditions of the industrial environment - it is our guarantee with tried and tested range of accessories.
Not every component available on the market fulfils these requirements unconditionally, in most cases this is not easy to recognize despite the appropriate specification.
Our accessories are proven, have completed an extensive test and approval process and are continuously checked for function in the event of innovations.

You can count on us!

ACCESSORY **COMPONENTS**

Patch cable Cat. 6a SmartFlex			
Patch cable	**Description**		**Order number**
Patch cable Cat.6a SmartFlex	**Colour:** black **Version:** Category 6A **Structure:** S/FTP **Cable type:** 4x2 AWD 26/7 **Technology:** PiMF (paarig in Metallfolie) **Halogen-free:** yes **Cable diameter:** 6,2 mm **Type:** Patch cable	Cable length: 0,15m	**S-02010101-0101**
		Cable length: 0,25m	**S-02010101-0102**
		Cable length: 0,5m	**S-02010101-0103**
		Cable length: 1m	**S-02010101-0104**
		Cable length: 1,5m	**S-02010101-0105**
		Cable length: 2m	**S-02010101-0106**
		Cable length: 3m	**S-02010101-0107**
		Cable length: 5m	**S-02010101-0108**
		Cable length: 7,5m	**S-02010101-0109**
		Cable length: 10m	**S-02010101-0110**
		Cable length: 15m	**S-02010101-0111**
		Cable length: 20m	**S-02010101-0112**
		Cable length: 25m	**S-02010101-0113**
		Cable length: 30m	**S-02010101-0114**
Adapter cable RJ45 to D-SUB9 (RS232/RS485)	Adapter cable RJ45 to D-SUB9 for Berghof MX6 controllers. Allows connection via D-SUB9 for COM1 (RS232) and (RS485) at the RJ45 socket for serial connections on the PLC.		**S-02040201-0000**

USB Devices			
Product	**Description**		**Order number**
USB-to-Ethernet adapter	**Connections/Interfaces:** Interface: USB 3.0 LAN: 10/100/1000 Connection: 1xRJ45 **General Information:** Type: network card Structure: external Chipset: ASIX Accessories: drivers, manual **Version:** Standards: IEEE 802.3, 802.3u, 802.3ab **Display:** Display: Status LEDs		**S-02040101-0000**
USB Flash Drive	**Product:** USB 3.0 **Power supply voltage:** 5V **Operating temperature:** 0°C - +70°C **Dimensions:** 68 mm x 18 mm x 8.2 mm **Constant reading rate:** 175 MB/s **Constant writing speed:** 95 MB/s	Memory capacity: 8GB	**S-02030201-0102**
		Memory capacity: 16GB	**S-02030201-0103**
USB-to-WLAN	coming soon...		

Gateways		
Product	**Description**	**Order number**
Gateway EtherCAT-Slave to PROFIBUS DP-Master	• Integrates a subordinate PROFIBUS network strand into EtherCAT • Master for up to 125 PROFIBUS slaves • Lowest I/O data conversion time of less than 10 ms • Device exchange in seconds by charging via memory card • Loadable firmware for flexible use of further conversions • With USB diagnostic and configuration interface	**S-02050201-0100**
Gateway EtherCAT-Slave to PROFIBUS DP-Slave	• Transparent data conversion in dual-slave operation • Lowest I/O data conversion time of less than 10 ms • Device exchange in seconds by charging via memory card • Loadable firmware for flexible use of further conversions • With USB diagnostic and configuration interface	**S-02050201-0200**
Gateway EtherCAT-Slave to MODBUS RTU	• Integrates MODBUS RTU protocol-capable devices as EtherCAT slaves in EtherCAT • MODBUS RTU can be used flexibly as master or slave • Device exchange in seconds by charging via memory card • Loadable firmware for flexible use of further conversions • With USB diagnostic and configuration interface	**S-02050202-0100**
Gateway EtherCAT-Slave to CANopen-Slave	• Transparent data conversion in dual-slave operation • Lowest I/O data conversion time of less than 10 ms • Device exchange in seconds by charging via memory card • Loadable firmware for flexible use of further conversions • With USB diagnostic and configuration interface	**S-02050203-0100**

Plugs		
Product	**Description**	**Order number**
MC-CLASSIC/MC-PRO Plug set	Packaged plug set with 1x 3 pin plug for power supply and 1x 10 pin plug for serial and CAN bus connection.	**S-02020101-0000**
CC-Prime Plug set	Packaged plug set for the CC-Prime PLC with 1x 6 pin plug for power supply, 2x 16 pin digital I/O plug and 3x 14 pin analog I/O plug.	**S-02020102-0100**
	Packaged plug set for the CC-Prime PLC with 1x 6 pin plug for power supply, 2x 16 pin digital I/O plug.	**S-02020102-0200**
	Packaged plug set for the CC-Prime PLC with 1x 6 pin plug for power supply, 2x 16 pin digital I/O plug and 1x 14 pin analog I/O plug.	**S-02020102-0300**
CC-A-I/O Plug set	Packaged plug set for the CC-A-I/O module with 1x 4 pin plug for power supply and 3x 14 pin analog I/O plug..	**S-02020103-0200**
CC-D-I/O Plug set	Packaged plug set for the CC-D-I/O module with 1x 4 pin plug for power supply and 2x 16 pin digital I/O plug.	**S-02020103-0100**
MC-I/O 2-pole connector	Single plug with 2 pins	**S-02020201-0100**

ACCESSORY **COMPONENTS**

Plugs		
Product	**Description**	**Order number**
MC-I/O 3-pole connector	Single plug with 3 pins	**S-02020201-0200**
MC-I/O 6-pole connector	Single plug with 6 pins	**S-02020201-0300**
MC-I/O 8-pole connector	Singe plug with 8 pins	**S-02020201-0400**
MC-I/O 10-pole connector (2x5)	Single plug with 10 pins, divided into two rows with 5 pins each	**S-02020201-0500**
MC-I/O 12-pole connector	Single plug with 12 pins	**S-02020201-0600**
MC-I/O 16-pole connector (2x8)	Single plug with 16 pins, divided into two rows with 8 pins each	**S-02020201-0700**
MC-I/O 18-pole connector	Single plug with 18 pins	**S-02020201-0800**
MC-I/O 36-pole connector (2x18)	Single plug with 16 pins, divided into two rows with 8 pins each	**S-02020201-0900**
DC-CLASSIC plug set	Packed plug set for the DC-CLASSIC expansion card DC XS with 3x3 pin plug and 8x9 pin plug	**S-02020104-0100**

Weiteres Zubehör		
Product	**Description**	**Order number**
MC-I/O shield connection terminal block 2x8mm	The shield connection terminal makes it easier to connect the shielding directly to MC-I/O and SC-I/O modules. The terminal leads the potential of the cable shield to the DIN rail on which the MC-I/O module is located. The size is 2x8mm	**S-02060101-0100**
MC-I/O shield connection terminal block 1x14mm	The shield connection terminal makes it easier to connect the shielding directly to MC-I/O modules. The terminal leads the potential of the cable shield to the DIN rail on which the MC-I/O module is located. The size is 2x14mm	**S-02060101-0200**
SD-Card 2GB SD - formatted/UNICODE font	Standard 2GB SD card with 2 partitions. This SD card can be used with DC-CLASSIC and MC-PRO controllers and allows the use of the options „Map Application on SD-card“ and „Map Fonts to SD-card“. The SD card also includes Arial Unicode MS font	**S-02030101-0101**
Micro SD-Card 2GB SD - formatted/UNICODE font	Industrielle 2GB uSD Karte mit 2 Partitionen. Diese SD Karte kann mit Berghof MX6 Steuerungen benutzt werden und erlaubt die Verwendung der Option „Map Application on SD card“. Die SD-Karte beinhaltet auch das Arial Unicode MS font	**S-02030101-0201**
Micro SD-Card 16GB SD - formatted/UNICODE font	Industrial 16GB uSD card with 2 partitions. This SD card can be used with Berghof MX6 controllers and allows the use of the option „Map Application on SD card“. The SD card also includes Arial Unicode MS font	**S-02030101-0203**

PIONEERING AUTOMATION TECHNOLOGY

BERGHOF **SERVICES**
AS A BERGHOF CUSTOMER, WE WOULD LIKE TO OFFER YOU MAXIMUM RELIABILITY

SERVICES

Knowledge creates success

Those who have mastered extensive technologies and engineering have a clear competitive advantage. With us you will get this competitive edge and offer comprehensive service with guaranteed competent support. The know-how of our employees in the company headquarter is available to you at any time, but you will also be excellently supported by our network of solution partners - in local language with a direct connection to the Berghof central departments.
Test us: in pre-sales, in your project planning phase and in after-sales.

Adapted to your requirements

Do you prefer your control system branded with your logo? You need a keyboard? Do you have a specific design in mind? Do you want your control technology to fit perfectly not only in terms of function but also in terms of dimensions?

No problem - we produce your control system according to your specified design or functionality. Through the use of standardized processes, we are able to realize individualized products in the shortest possible time.

Berghof Automation and Control Solutions realizes your requirements with the aid of standardized components using a specially developed, guided process implemented for this purpose. This ensures a high quality standard with optimum implementation in terms of costs and time necessary. If required, we develop an individual special model according to specific product requirements.

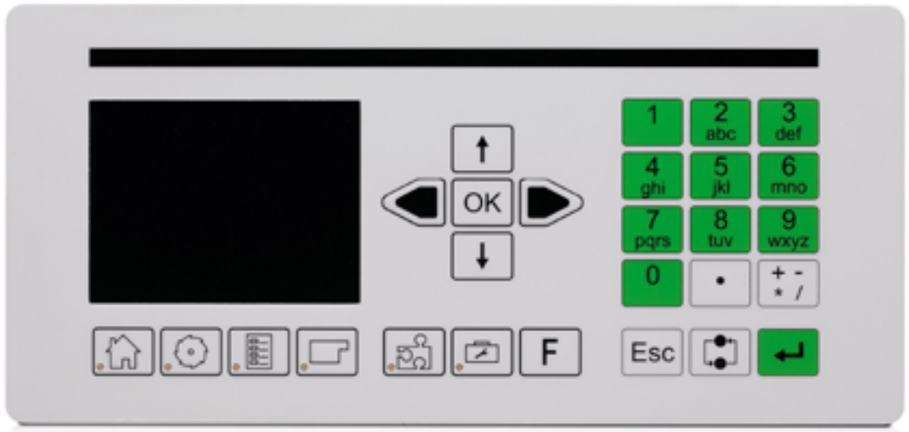
This does not only apply to hardware, we also customize software, adding features or benefits to a completely different basis - just as you need it.

Off-the-shelf products offer many - you get individuality from Berghof.
Numerous leading players in the industry rely on the experience of Berghof specialists in customizing.
Do not hesitate to contact us!

CUSTOMIZING

Your advantages with Berghof customizing:

- Use of assemblies with worldwide approvals and certifications
- Distinct experience of the components used and their quality
- Optimal costs through existing images, no initial costs, flexible suppliers and much more
- Best possible delivery times guaranteed by sophisticated standards
- Comprehensive functional implementations using modular software structures and executable add-ons
- Full access to all features and options of the standard
- The most important thing: the broad experience!



The upgrade for your secure future

Competitiveness means adapting to constantly changing requirements, avoiding production downtimes or keeping production costs low, including maintenance. Missing functional extensions or spare parts cause a long path of suffering. The new acquisition of the entire automation is usually described as inevitable.

Not like that at Berghof. For us, the optimum solution is the most important issue - this can only mean the replacement of a few components, e.g. the control system. Existing technology such as cabinets, cabling or even drive technology does not necessarily have to be replaced in every case.

Our experts support and take over the entire upgrade and retrofit process to keep your efficiency at a maximum: from analysis, product selection and project planning to programming, assembly, commissioning and training.

We guarantee minimum downtimes of the production plants and take care of a cost-optimized implementation. Ensuring compatibility with existing plants and mixed operation with old and new technology is a focus on which we attach great importance.
In order to guarantee the retrofitting of further functions and to be able to react optimally to every situation, your old control system is kept available as a backup.

Retrofit offers numerous advantages:

- Increase in production volume and product quality through new functions
- Ensuring the supply of future spare parts
- Reduction of downtimes and service uncertainties
- Predicitve Maintenance
- Retrofitting of automation technology possible at any time
- Cheaper than a new purchase
- Legal compliance
- Fast availability

Our recipe for success - the 5 phases of retrofitting:

1. Analysis:
We analyse your plant for potentials to prepare the best possible solution for you.

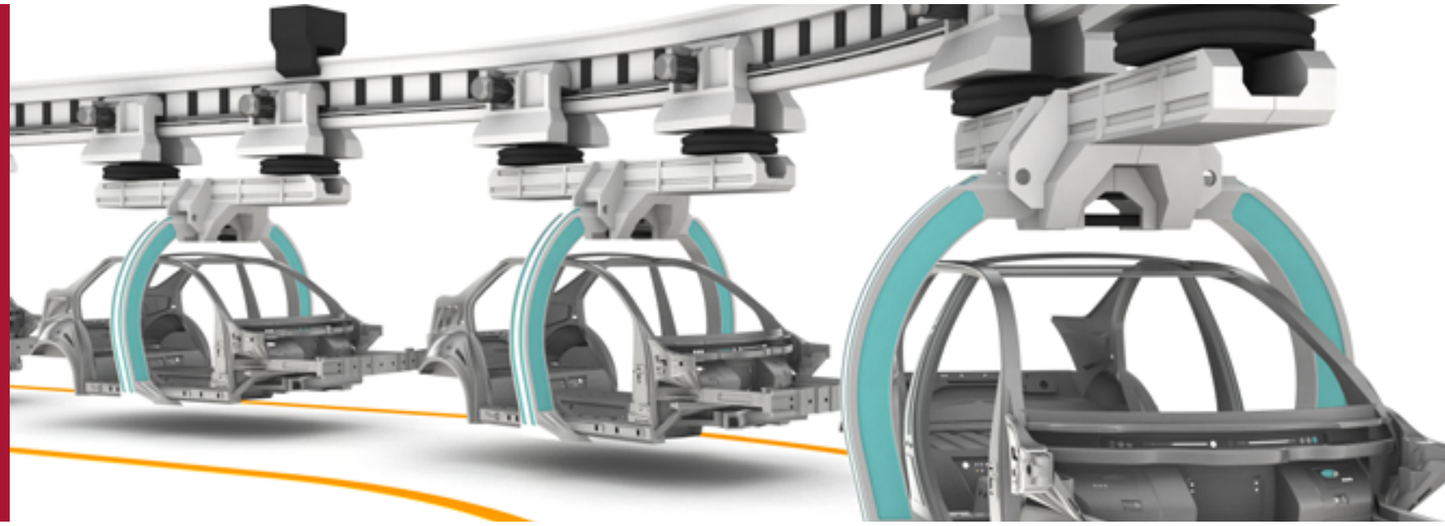
2. Planning:
We will prepare an offer and adapt our concept to your wishes.

3. Programming:
Combining the migration of the existing program with new functions or rebuilding the logic.

4. Assembly/Commissioning:
We replace your old control unit with our newly programmed unit and put the system into operation.

5. Service:
We accompany your production and serve as your contact for all your questions during and after the process.

Retrofitted:
Enjoy all the advantages of your retrofitted system. We will continue to assist you with training & support if required.



CODESYS & BERGHOF **TRAINING**

Know how with Berghof

The effectiveness of your solution depends on the optimum interaction between Berghof technology, programmer and operator. As one of the first companies in automation, we have a unique pool of knowledge and a pronounced service mentality. We would like to pass this experience on to you and therefore offer various custom-made training modules on all aspects of Berghof automation and CODESYS V3.

Module 1: Getting started with CODESYS V3
Learn in a small group in just a short time the most important functions of CODESYS V3.

Module 2: Introduction to CODESYS V3 and Berghof control systems
Learn in a small group the essential functions of the Berghof controls and the basic elements of CODESYS V3 in just a short time.

Module 3: CODESYS V3 fieldbuses
You will learn the basic functions and the use of known fieldbuses in CODESYS V3.

Module 4: Getting started with CODESYS V3 Softmotion
We replace your old control unit with our newly programmed unit and put the system into operation.

Module 5: Berghof Motion
We accompany your production and serve as your contact for all your questions during and after the process.

Module 6: CODESYS V3 communication
Get to know CODESYS V3 functions for communication via serial interface and network connection.

Module 7: Porting a CODESYS V2.3 project to CODESYS V3
Get to know the necessary measures of such a porting and test everything on a CODESYS SoftSPS.

Module 8: Introduction to object-oriented programming
Learn to apply your own projects independently in CODESYS V3.

Module 9: Optional topics
Use practical exercises to determine freely selectable problems with CODESYS V3.

BERGHOF **EXPRESS DELIVERY**

When time is of the essence

we offer you the possibility to purchase all our products, the appropriate accessories and spare parts through our express shipping service. Since your satisfaction is at least as important to us as your machine availability, we will do everything for you in urgent situations to take advantage of our express delivery service.
Thanks to our expertise in the field of plant automation, we know how important it is to receive a spare part as quickly as possible because downtime generates a lot of trouble. You only need one device? No problem! The number of orders, size, weight and quantity of shipments are subject to only low limiting values.

BERGHOF **SOFTWARE-ENGINEERING**

Customized software solutions

We provide the required individuality to generate custom software for your application. On the basis of your specifications, we create functions that are perfectly tailored to your company. Our spectrum of software solutions ranges from planning support to complete project planning. Here we use CODESYS V3 from 3S, the worldwide established standard for application development according to IEC 61131-3. We guarantee optimal interaction of your hardware and software, guaranteed by our many years of expertise and the extensive know-how of the Berghof software specialists in the programming of CODESYS.

- → Consulting and planning of new plants, modernization and extensions
- → Development of requirement specifications
- → Automation concepts with design of bus and network structures
- → Development of operating concepts for fixed and mobile devices
- → Programming of PLC
- → Creation of visualizations
- → Interfaces to external controls
- → Interfaces to MES and ERP systems
- → Database applications
- → Traceability, data analysis and reporting
- → Inhouse- Tests, Factory acceptance test (FAT)

BERGHOF **MIGRATION CODESYS V2-V3**

Adapted to your requirements

The change to the current CODESYS V3 is essential. Updates and support for previous versions are only available to a limited extent from the end of 2019.

Our CODESYS team of experts will safely port your applications to the latest version for you, regardless of the manufacturer of the hardware used.

Our software updates will then keep you up to date at all times. Your time expenditure will be kept to a minimum in order not to negatively influence the day-to-day business.

Extensive know-how. To make full use of the know-how of our experts, all you need to do is take a look into the future - where do you want to go? This perspective helps us to combine migration with optimization. If you are not yet sure, we will be happy to advise you.

Benefit from the extensive experience of our CODESYS experts from numerous challenging projects. Our team accompanies you competently and in partnership from the preliminary analysis, the execution of the porting and the commissioning up to the service, support and maintenance of your automation solution.

BERGHOF **COMMISSIONING**

The first step is always the hardest

but not with commissioning accompanied by a Berghof team of experts. The Berghof service specialists guarantee a time- and cost-optimized realization of your project. Once all parameters and operating conditions have been optimised, you have a plant that is reliable in every aspect. After completion of the installation and commissioning, we support you with qualified specialist personnel from the start-up phase to the continuous operation of your plant.

- Testing of all signal paths from the control system to the field devices
- Checking the direction of rotation of drives and the direction of action of actuators
- Parameter setting for sensors, actuators, frequency converters, switching devices, etc.
- Initial inspection of protective devices
- Test of the automatic function sequences

BERGHOF **MAINTENANCE**

We take care of preventive maintenance

Failure of or even a defect in a machine causes high costs. Berghof helps you to minimize these downtimes and overspending and ensure longer machine run times. It is also important to us at Berghof not only to increase the availability of your system, but also to extend the overall life cycle.

All common service activities are adapted to your plant and needs.

All maintenance work is performed reliably and with the utmost care by certified service technicians and engineers.

The range of services includes:

- 24-hour support via telephone, Internet or on site
- Demand-oriented preventive maintenance
- Performance and maintenance contracts
- Repairs
- Replacement deliveries
- Plant reviews and enhancements including site migrations and capacity expansions
- Systemupgrades and updates (Retrofit)

BERGHOF **CERTIFICATION**

We secure the interaction

You need components that work together with our controls and aren‘t sure it‘s gonna work?

Talk to us; based on our many years of experience, we will give you detailed advice and, if necessary, subject your electronic components, modules and systems to intensive quality and functional tests.
You will then receive instructions on the use and limits of the application.
You can build your application on this release with confidence.

For further questions, information or an offer for component certification, the Berghof team is always at your disposal.
Just get in touch with us.

BERGHOF **24-H SUPPORT**

We are there for you

Your system is awake 24/7, so do we! You may benefit from our service including individually tailored components:

- Telephone hotline/on-call service
- Production support via remote access
- On-site support

We would be pleased to make together the optimal service package for you.

BERGHOF **REPAIR**

Knowledge and experience

are required for the repair of PLC components, control panel or industrial PCs. If a module has failed, a complete exchange is not always necessary. Above all, high-quality products should be reviewed for recovery by experts.

Berghof Automation and Control Solutions own a **special Maintenance-team** with direct contact to the specialists of the Development and access to all documents of all product versions. Furthermore, we provide appropriate warehousing and care about successor components in case of discontinuation. Not only current devices, also components from past generations can be easily repaired. This is supported by an electronic device passport, which we create with each product. So even the installation of the original software at time of delivery is no challenge.

We carry out repair at component level with repair of only the defective components. We deliberately avoid, for example, board replacement in order to keep repair costs low. We charge according to a cost estimate, so you always receive the expenses in the desired scope. We finish the repair with a test procedure and a complete function test. Of course you will receive a protocol of the process.

If the cost for the reparation is too high, we are prepared to offer you other solutions.

BERGHOF **HOTLINE**

Reach us at any time

if you need it. This is our way of support.
Specially trained professionals with extensive experience in the Tech fields of hardware, software, and almost all applications.
In every phase of life cycle we will be there for you by your side. Whether in the development phase, commissioning or during of the operation of your plant – **Berghof is your reliable partner.**

Complex questions are answered face-to-face by replicating your constellation in our headquarter or also at your place.

You can contact us any time online or via the Support-Hotline:

Monday - Friday during office hours.
24/7 individually agreed.

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