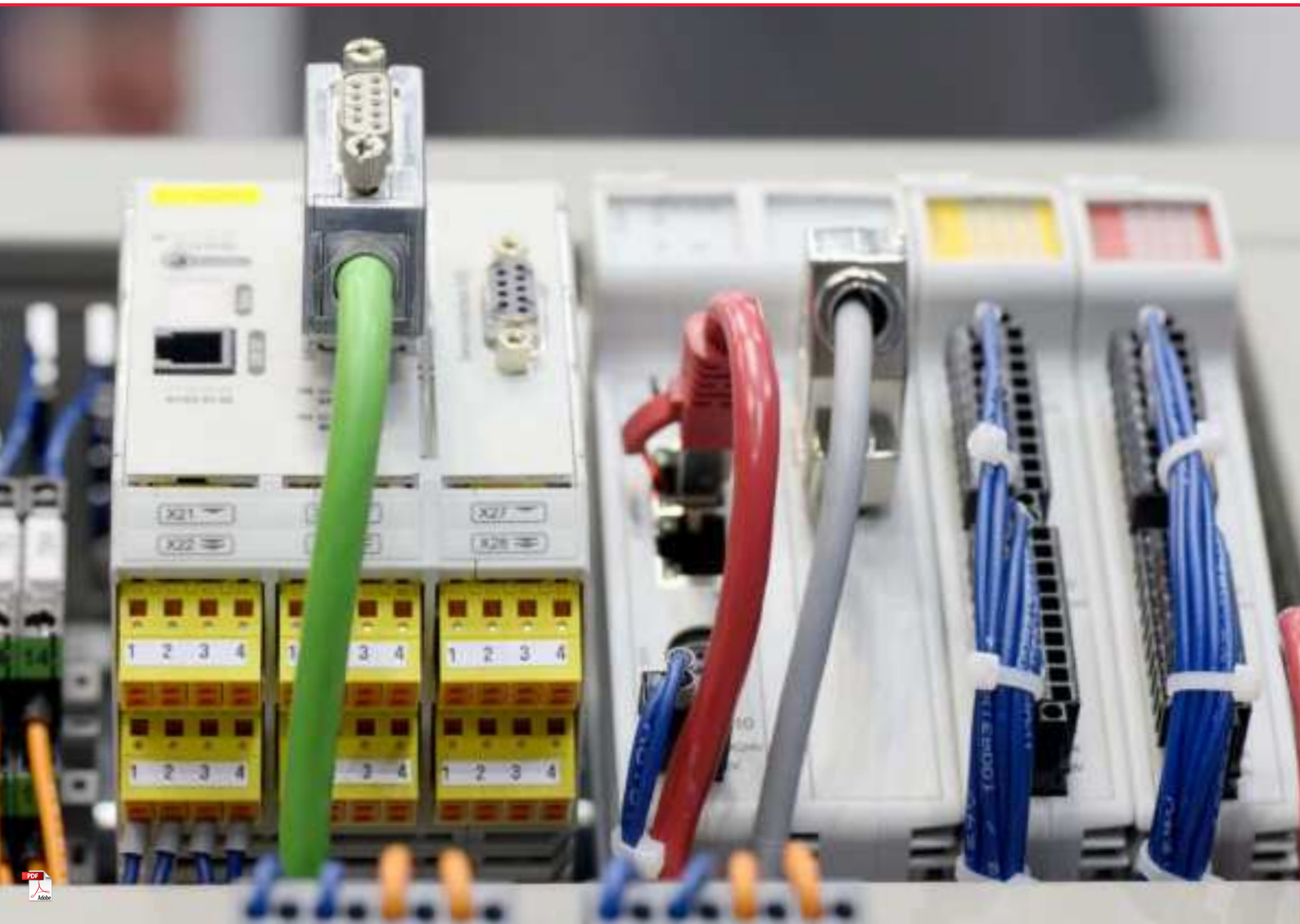
BUCHER
automation

Your partner in industrial automation

Products and Services



Content

Bucher Automation system landscape

Integration of all automation functions

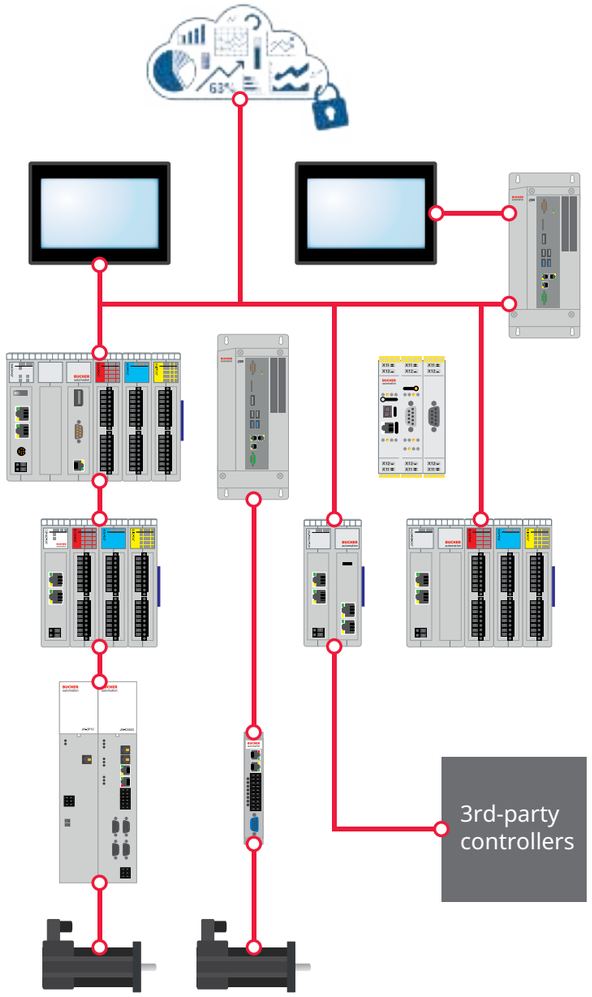
HMIs
Flatpanels
IPCs

Controllers
Embedded IPCs
Safety controllers

I/O systems
Bus nodes
Gateways

Servo amplifiers

Servo motors



Experience Know-how Made in Germany

For decades, the name Bucher Automation AG has been synonymous with the highest standards in automation technology and used in a wide range of industrial and mobile automation applications.

The company's products and components stand out thanks to their advanced system integrity and diversity. Leveraging our in-house R&D capacities (hardware and software) and our production facilities in Germany we maximize our operational agility. Complemented by a comprehensive range of Professional Services we are able to put virtually any customer request into practice.

In industrial automation, Bucher Automation AG is focusing on selected industries. Customers benefit from made-to-measure solutions allowing them to engineer state-of-the-art-machines and facilities that will give the edge over market rivals.

In mobile automation, Bucher Automation AG develops and manufactures highly complex and robust automation strategies allowing users to control a wide variety of functions in municipal, fire-fighting, and agricultural vehicles. This way, our products help sustain the availability of your vehicles and implements.

Radical changes in the industry catalyzed by Industry 4.0 and the IoT call for future-proof solutions. Bucher Automation AG provides you with field-proven and safe systems, and is there for you every step of the way – from engineering to commissioning.

The cornerstone of Bucher Automation AG's product and networking philosophy has always been seamless integration of all automation components into the production process. Bucher Automation AG was the first company worldwide to rely on consistent networking with Ethernet TCP/IP and using common Internet protocols. For many years, we have been delivering tomorrow's state of the art in today's automation products to help customers stay on top of future production process requirements.

Bucher Automation AG's mission statement

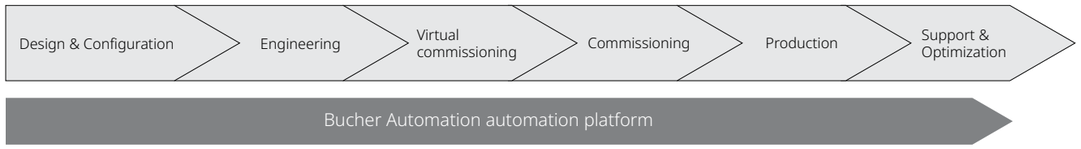
Bucher Automation is a leading provider of automation systems. Understanding your application helps us find the best solution in terms of functionality, sustainability and efficiency.

Software solutions

Bucher Automation's automation platform offers software modules that are perfectly matched to each other to cover all aspects of an automation project for industrial applications. JetSym is a convenient development environment and STX a very powerful programming language based on the IEC-61131-3 standard. JetViewSoft is the comprehensive design tool for creating modern HMI designs, including support for current touch control concepts. JetSafe is the tool for the graphical programming of monitoring programs and enables easy deployment of secure automation applications up to PLe/EN 13849 | SIL3/EN 61508.

Automation platform

With increasing digitalization, machine manufacturers must make their equipment more flexible and more productive in order to stay competitive. Powerful engineering software is an essential key to success. Bucher Automation AG's integrated automation platform facilitates enhanced engineering throughout all phases of the machine life cycle and helps reduce cost and effort.



Teamwork in automation

Automation projects are becoming increasingly complex and making good teamwork ever more important. The Bucher Automation toolchain breaks down into JetSym, JetViewSoft and JetSafe, where each tool is optimally geared to the requirements of its user group: Whether engineer, programmer, HMI designer or support staff – they work with only the tool that caters to their individual needs and offers access to the operating functions and information relevant to them. The individual tools integrate seamlessly to guarantee secure data exchange.

State-of-the-art, lean GUIs

Users are increasingly demanding high standards in terms of software user-friendliness. Bucher Automation automation platform applications stand out by virtue of their user-friendly GUIs and fully configurable window arrangements allowing different user groups to tailor the look and feel of the software precisely to their individual needs.

No-worry software

Bucher Automation designs and develops the majority of its software applications itself. This enables constant product refinement with short response times. Backed by our central support hotline where experienced application specialists provide assistance, Bucher Automation AG is particularly close to its customers. Many renowned machine manufacturers rely on Bucher Automation software solutions to implement their automation and visualization projects.

Minimal system requirements

The applications of the automation platform are perfectly tuned to one another. This completely eliminates the need for maintaining the interfaces. All tools can also be updated independently of each other – without compromising their functionality. Another plus: Bucher Automation applications place minimum requirements on the client hardware.

JetSym – the programming environment

JetSym is Bucher Automation AG's central programming tool. Beyond providing a capable coding environment, it offers extensive functionalities for configuring, debugging, diagnosing and commissioning a machine.

Version management – tool connectivity

JetSym already provides seamless integration with popular version management tools, such as Apache Subversion (SVN), which allows entire automation projects or their individual components to be versioned independently. The current object status is visualized in the project overview.

Powerful debugger

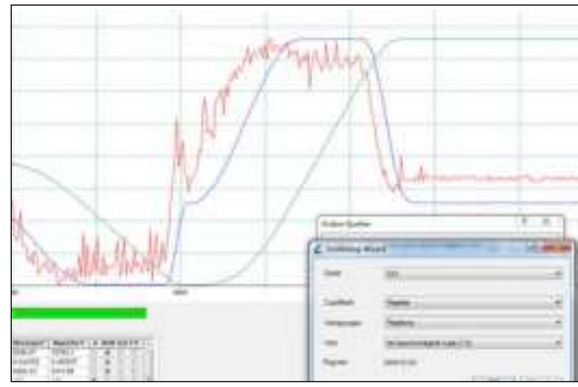
JetSym's extensive debugging capabilities enhance in-line monitoring of STX projects, making troubleshooting and commissioning easier. The program sequence can be interrupted by setting absolute or conditional breakpoints, and further program execution can be tracked in individual steps. Additionally, the setup window allows you to view and monitor selected symbol values during debugging.

Flexible project configuration

JetSym allows for any number of configurations of the same project to be created. Project configurations differ in the hardware being used and its configuration. In this way, different machine versions can be created and tested, particularly during the commissioning phase of a machine.

Integrated oscilloscope

JetSym's integrated oscilloscope performs real-time recordings of variable values on the device and displays them as a curve. Several values can be monitored simultaneously. The value curves are superposed to make them visually comparable. An additional trigger functionality allows the value recording to start automatically when certain conditions occur.



Oscilloscope wizard for quick visualization of motion data.

JetSym – the programming environment

Tracing and monitoring
In addition to debugging, JetSym's tracing and monitoring function offers further assistance in programming and commissioning automation projects. The trace function allows values or individual messages to be output without interrupting the program. Additionally, specific conditions can be defined that trigger the output of a trace message. Further support is provided by JetSym's built-in monitoring function, which allows function parameters and variable values to be displayed at runtime simply by moving the cursor to the code location to be monitored.

Support for secure coding
JetSym greatly helps programmers in their everyday work. The integrated IntelliSense code editing feature suggests meaningful attributes and methods as you type. Together with AutoComplete, programming speed and accuracy increase. Navigating the code is also simplified by syntax highlighting and marking matching keywords.

Template management
JetSym can safe any automation project as a new template at any time to use as a template for future projects. The template includes not only the program code itself, but also the complete hardware settings, axis configurations, etc. This increases the reusability of projects and project components.

Multitasking
For Bucher Automation controllers, multitasking takes place at language level, not within the operating system. This ensures that the tasks' time response is identical on different controller types. In addition, multitasking simplifies debugging by allowing individual tasks to be stopped or started separately.

Plug-and-play expansion modules
Using Bucher Automation AG's perfectly matched hardware and software components, automation projects can be set up quickly and easily. JetSym recognizes newly connected modules immediately, and the basic configuration such as input/output addressing is handled automatically.

The highlights at a glance
- User-friendly display of all files that are relevant to the project
- Flexible project configuration
- Compatibility with version management tools
- Powerful debugger
- Extensive tracing and monitoring
- Integrated oscilloscope
- Integrated multitasking
- Assistance with error-free coding
- Simulator and soft PLC for commissioning without hardware
- Connection to Siemens SIMIT for virtual commissioning
- Support of all major fieldbus systems such as EtherCAT®
- Plug-and-play expansion modules

STX – the programming language

The STX syntax is based on IEC 61131-3 ST and meets all the requirements of modern programming in the automation environment thanks to numerous extensions. STX is characterized by two key features in program creation:

- The process-oriented approach makes direct mapping of real facility processes possible
- The object-oriented approach greatly reduces development and testing time

Process-oriented coding
The majority of programmable logic controllers on the market are cycle oriented. This type of control program would query all values with each program cycle, while STX only once queries the values necessary for the current program step. This results in some crucial differences:

Cyclic programming	**Procedural programming**
The programs are process-oriented, i.e. they run in chronological order.	The programs are process-oriented, i.e. they run in chronological order.
The order of execution is defined by state changes rather than the order in the program as this is case in traditional programming languages.	Task structuring is primarily s based on the processes being currently run within the facility/machine.
Extensive functions and loops must be split into tasks to ensure cycle time compliance.	STX's WHEN command allows the program to wait for feedback from various events within a task.
Typically, task structuring does not represent the actual processes within the facility/machine.	Extensive functions and loops can be implemented exactly where they are required.

Loop coding requires specially trained PLC programmers. In contrast, process-oriented coding can be learned very easily and quickly by mechanical engineers. Another benefit: The structure of the programs is aligned to that of modern high-level languages.

Sample program: Traffic light control application programmed with loop coding of a state machine (left) in comparison with process-oriented programming of Bucher Automation (right).

Object orientation

As automation programs are becoming increasingly powerful as part of Industry 4.0, they are also becoming more complex. The STX programming language, with its consistent object-oriented programming approach, allows you to build programs modularly, making the program code much more flexible compared to adaptations and extensions. Thanks to clearly defined interfaces between the code blocks, individual blocks can be modified or replaced at any time without risking undesirable side effects. This helps reduce both development and testing times significantly.

Based on modern high-level languages

The Structured Text programming language standardized in IEC-61131-3, forms the basis for STX, but the scope of the language has been significantly expanded. For example, objects and their properties can be conveniently addressed via dot notation. This improves the readability of the program code. STX also offers powerful commands for arithmetic, axis handling and user guidance. Integrated functions for character string processing and file operations further simplify controller programming.

Motion control

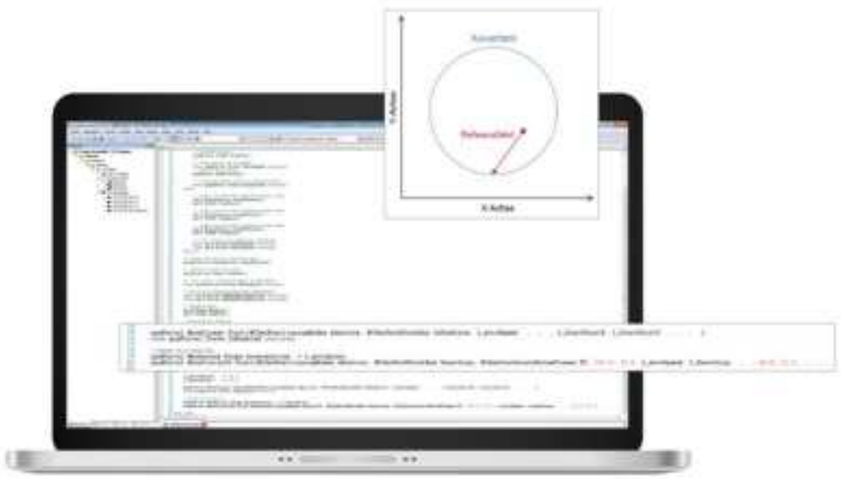
Seamless integration of motion control significantly reduces the effort involved in programming axis movements. With STX, even complex movement patterns, required for example for cam disks and SCARA robots, can be implemented easily with just a few program commands. Creating and testing programs for complex machinery becomes possible within a very short period of time.

Predefined code libraries

STX comes with predefined code libraries for different industry segments that include the most important basic functions and behaviors of a machine type. Companies relying on Bucher Automation technology no longer need to start existing automation projects from scratch, but from an intelligently programmed code base requiring nothing but customization to individual demands.

Minimal system requirements

Application programming with STX distinguishes itself by virtue of low memory and load time requirements. Compared to other system manufacturers' projects, Bucher Automation AG's projects take up a mere fraction of the free memory on the hard disk. Even complex projects load within a few seconds and the user can resume programming immediately.



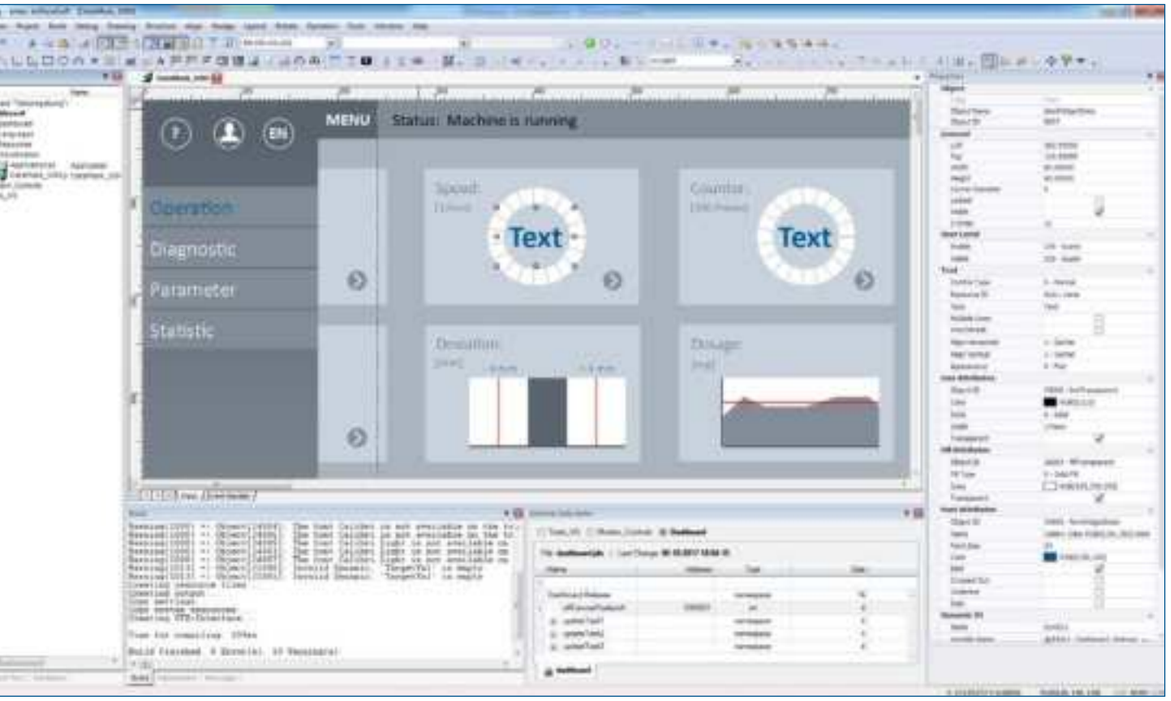
Sample program: Programming a circular motion on two axes in just a few lines thanks to motion control.

JetViewSoft – the design tool

JetViewSoft is the design tool for state-of-the-art, professional HMI process visualization. The editor stands out thanks to its high performance and functionality, without compromising user friendliness. Combined with JetViewSoft's object-oriented approach, even extensive visualization projects can be implemented simply and efficiently.

Object-oriented and efficient

The object-oriented approach of JetViewSoft makes generating screens a lot easier. Once an object such as a button was defined there is no limit to reusing it again. Making changes to an object property automatically takes effect wherever this object has been applied. Various visualization objects can be dynamically displayed or exchanged during runtime in the control program by means of pointers.



JetViewSoft editor showing the object properties of a text label.

Configuring rather than programming GUIs

JetViewSoft comes with a full set of graphical objects such as buttons, sliders and tachometers to be easily dragged and dropped into place on a visualization device. All properties of an object can be displayed and configured centrally via a property grid. This allows you to implement even complex visualization tasks swiftly and efficiently without requiring previous knowledge.

Vector graphics platform

JetViewSoft uses vector graphics to allow for complete and lossless scalability of all objects (except for bitmap graphics). Thus, projects or parts thereof initially designed with a resolution of a specific target device can be used on displays with a different resolution without for loss.

SVG import

JetViewSoft supports the SVG graphics format. Cumbersome conversion of CAD drawings into bitmap format is therefore a thing of the past. In addition, the foreground and background colors of SVG objects can be overridden directly from within JetViewSoft. This allows for different colors, for example of warning or error icons, to be assigned directly and in turn substantially minimizes the effort placed on the graphic department since icons only need to be provided and imported in one single color variant.

Built-in macro language

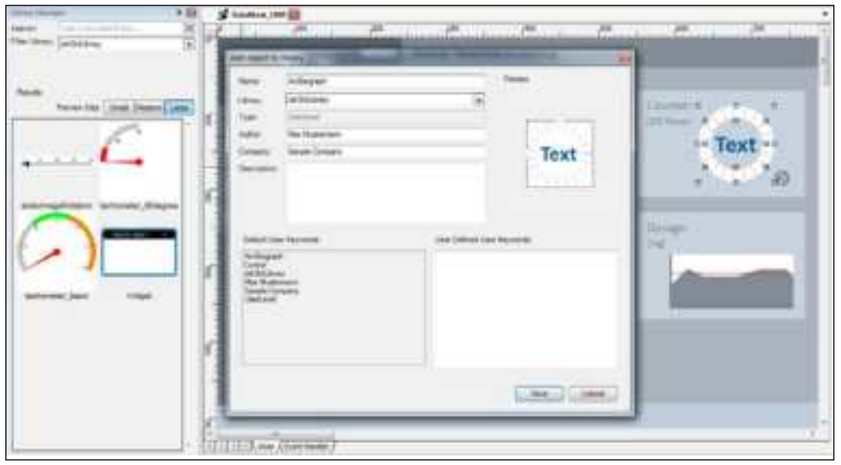
To handle simple processes, JetViewSoft offers customizable macro functions. More complex processes, calculations or programming of special functions can also be carried out with the integrated STX interpreter. The corresponding program code is implemented JetSym using STX.

Internationalization made easy

JetViewSoft allows multiple languages to be integrated, maintained and translated very easily and conveniently. For this purpose, the tags of the different languages can be managed on a clearly structured user interface. Language tags lists can be exported and imported in CSV format to facilitate working with translation agencies.

Dynamic IOs

Using dynamic IOs, graphical objects of the HMI can be updated at runtime without even writing a single line of program code. JetViewSoft continually polls the corresponding values from the controller and updates the visualization accordingly.



Graphics library with frequently used objects.

Object library

Individually created visualization objects (e.g. bar graphs) can be stored in the JetViewSoft object library at any time, making them available as a template for further visualization projects in the future. The library objects can be deployed globally or across individual projects.

Predefined icon libraries

Certain visualization functions, such as the navigation between different masks, typically use the same icons. In JetViewSoft, many of these icons are already available as predefined standard icons in SVG format and can be used immediately. JetViewSoft offers an optional set of icons visualizing the most important machine processes of specific industry segments. This greatly reduces the time required for the engineering of visualization projects.

Alarm service

JetViewSoft already comes with a range of predefined key functions for alarm handling. A set of rules allows for convenient and flexible definition of warning or alarm conditions. If a condition occurs, the corresponding warning or alarm message is automatically output on the HMI.

Integrated access management

Integrated access management ensures only authorized users can access certain control functions. To do this, JetViewSoft provides a user interface where different users, passwords and authorization levels can be managed. Each interaction object within the visualization can be individually assigned to a particular authorization level, thus for example the basic configuration of a machine will be accessible only to a certain group of users.

Simulation feature

The appearance and behavior of a visualization can be tested early in the project phase with a simulator available in JetViewSoft. This feature is particularly valuable where a visualization project is about to start without the display hardware being available yet.

State-of-the-art HMI GUIs and control concepts

JetViewSoft's extensive capabilities enable state-of-the-art HMI designs to be created. The user experience of industrial HMIs has reached a new level with JetViewSoft's built-in support for many touch gestures.

Highlights

- End-to-end object orientation
- Configuring rather than programming
- Supports vector graphics and SVG objects
- Built-in macro language
- Internationalization made easy
- Object library with predefined set of icons
- Dynamic IOs
- Access management
- Alarm service
- Simulation feature

Simulation of visualization with real-time data.

JetSafe – plays it safe

JetSafe is the tool of choice when it comes to creating safety-compliant control programs meeting the PLe/EN 13849 | SIL3/EN 61508 levels. JetSafe is perfectly matched to Bucher Automation safety controllers.

Predefined devices and sensors

All major control devices and sensors used in safety technology, such as light curtains, door contacts, or emergency stop devices are already preconfigured in JetSafe and can be selected by clicking the corresponding icon. In the terminal diagram, these elements are automatically linked with the module they are connected to physically. True to the "configuring rather than programming" maxim, creating a program for a safety controller is very simple.

Wiring diagram

Once the safety controller, sensors and actuators have been configured, the wiring diagram is created automatically.

Module management and device assignment

JetSafe's straightforward user interface makes it particularly easy to assign the individual modules (IOs and axis monitors) to the sensors and functions of the machine while taking into consideration the required performance level.

Sequential function chart

Monitoring features are linked using logic operations. JetSafe monitors the speed, acceleration and position of several axes in relation to one another. The documentation of all monitoring tasks can be set up individually.

Encoder configuration

Reliable recordings of speed or position information of axes bundled into a group requires one or several sensors. For this purpose, a menu exists where you can conveniently configure the sensors and enter their technical parameters. This way, you can easily verify whether input data are correct without any previous knowledge.

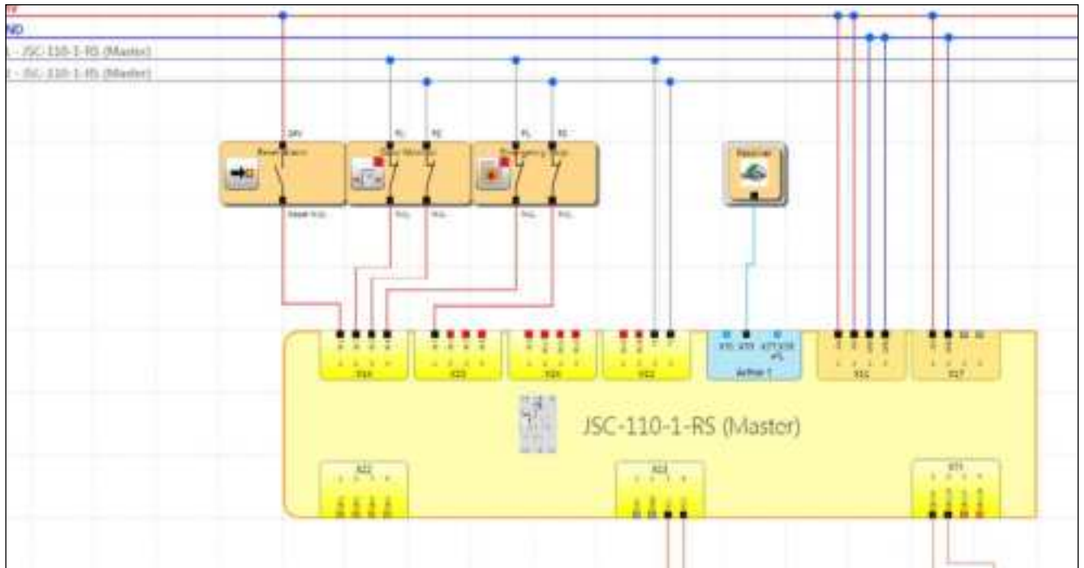
Building blocks

A library holds previously tested function modules to choose from. But you can also define your own modules, protect them or save them to the library for reuse.

Monitoring features

A comprehensive range of motion monitoring features is available, including speed, standstill, range, and direction. These functions can directly be parameterized depending on the respective context.

Example of a wiring plan with JetSafe.



Industry 4.0

Bucher Automation AG's automation platform and the JetControl family of control systems make for safe stepping stones for any company entering into the world of Industry 4.0 thanks to safe communication connections integrated into the basic system functions of the JetControl firmware. The software also provides a full range of functions for analyzing, evaluating and visualizing controller data.

Communication without gateways

Many production facilities make use of gateways for transferring data from controllers to the cloud. Technology by Bucher Automation AG is designed to transfer production and process data directly to the cloud without requiring additional hardware. Pre-processing of data such as averaging, projection of trends, etc. can be carried out in the STX program reducing the volume of the data packets to be transmitted. Another advantage of eliminating gateways: Reduced costs and servicing effort.

Use of open standards

The latest generation of Bucher Automation controllers and HMI displays features MQTT and OPC UA, two of the most important standard protocols when it comes to implementing IoT solutions. These two protocols allow for multisupplier data and information interchange from shop floor to production planning level.

Safety

Production data are among the most sensitive business data. As networking intensifies, not only between machines, but also between production sites all around the world, secure transfer of data is playing an increasingly important role. At Bucher Automation AG', we apply recognized security standards with secure authentication of communication partners, and secure transfer of data thanks to end-to-end encryption to ensure maximum data security.

Controllers

Controllers of the JetControl family come in all performance classes – from micro-controllers to high-performance, high-end controllers engineered to handle complex motion control tasks.

What sets the JetControl family apart:

- Seamless integration of axis control, making even complex axis motions very easy to program
- Multitasking operating system
- Commissioning and programming in STX – a high-level language meeting IEC-61131-3 requirements
- Advanced system scalability and flexibility thanks to a host of interfaces
- Optional integrated web server, supporting email and text messaging from within the application program

JetControl 340

Description

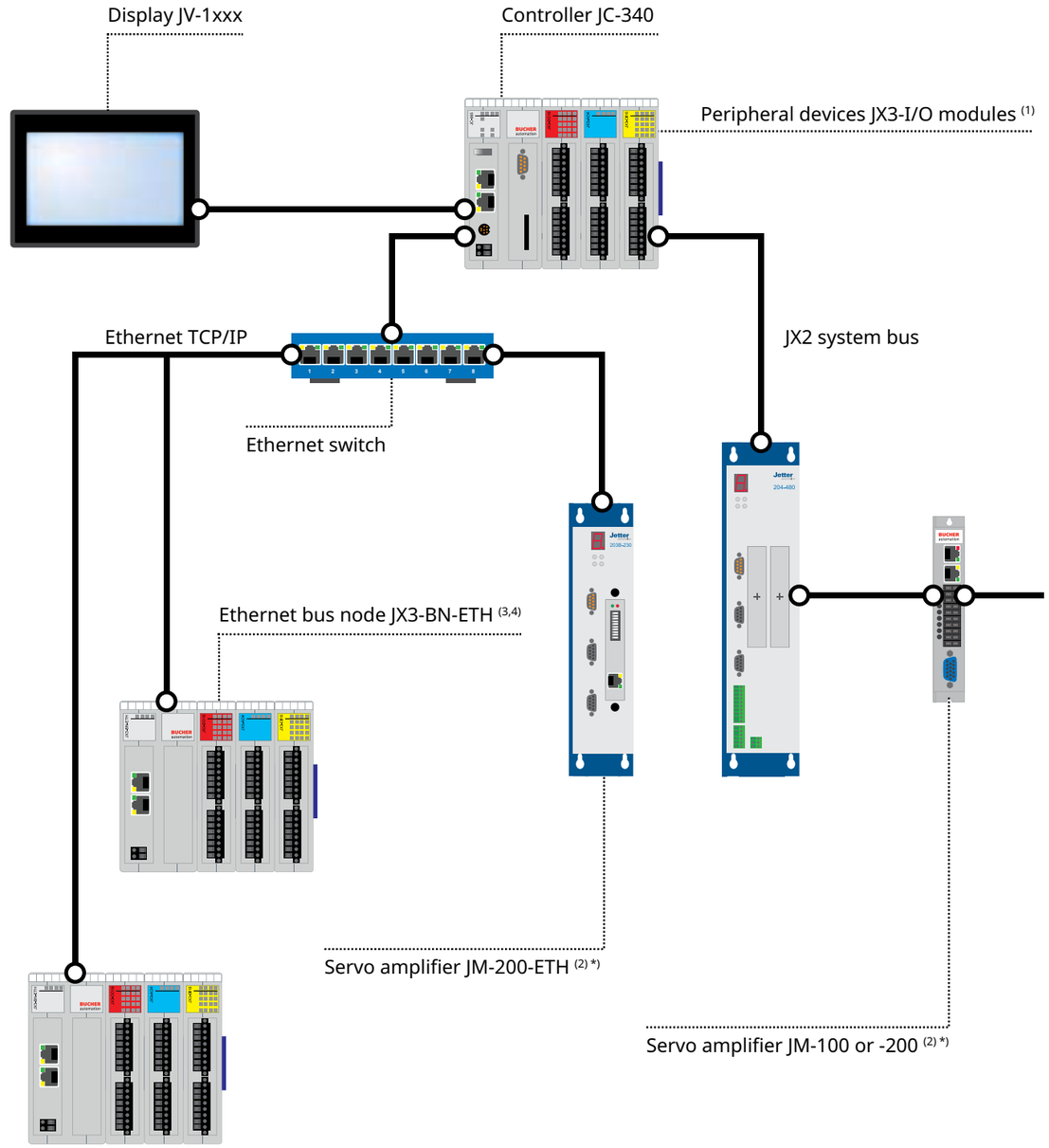
JetControl 340 is the perfect entry-level solution for basic automation tasks and offers ease of operation. It is most suitable for applications that do not involve computationally expensive processes.

Product features

- 1 MB STX program/data memory
- 2,000 non-volatile registers
- 1 Ethernet port with integrated switch
- 1 CAN interface
- 1 serial port
- Programming in STX – a high-level language according to IEC-61131-3
- File system for data storage
- Easy servicing thanks to plug-in terminals and modular design

Options

- Number of axes (0, 3)
- SD memory card slot (-SD)
- Web and email function (-W)
- Modbus TCP (-M)
- 1 CAN interface



(1) up to 16 JX3-IO modules directly connected to a JetControl 300/400
(2) up to 3 JM-100/200 servo amplifiers **)
(3) up to 199 JX-BN-ETH **)
(4) up to 16 JX3-IO modules per JX3-BN-ETH bus node

*) The total number of axes must not exceed the maximum number of axes which can be connected to the controller.
**) The total number of modules connected to JX3-BN-ETH and JM-200-ETH must not exceed 199.

JetControl 340

Technical specifications

Non-volatile memory (NVRAM)	8,000 bytes (80,000 with -SD option)
	2,000 registers (20,000 with -SD option)
STX program/data memory (SDRAM)	1 MB
Flash drive	4 MB
Number of expansion modules	16 max. (supports remote expansion modules)
Number of axes (PtP)	0 (JC-340-0) or 3 (JC-340-3)
Number of axes (MCX) (motion control/path control)	0
Ports and interfaces	1 serial port (RS232/422/485)
	1 JX2 system bus port (CAN)
	2 Ethernet ports (with integrated switch)
SD memory card slot	Option
Expansion options	JX3, JX2
Real-time clock	Yes
Web server, email feature	Option
Modbus TCP	Option
Rated input voltage	DC 24 V (-15 % ... +20 %)
Input current	1.2 A
Dimensions (H x D x W)	131 x 100 x 50 mm
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 ... +70 °C
Humidity	5 % ... 95 %, non-condensing

Ordering information

Item no.	Designation	Description
10000651	JC-340-0	Axes: 0
10000706	JC-340-0-M	Axes: 0; Modbus/TCP
10001614	JC-340-0-M-SD	Axes: 0; Modbus/TCP; SD card slot; 18,000 non-volatile registers
10001012	JC-340-0-M-SD-W	Axes: 0; Modbus/TCP; SD card slot; 18,000 non-volatile registers;Web server, email
10000703	JC-340-0-SD	Axes: 0; SD card slot; 18,000 non-volatile registers
10000808	JC-340-0-SD-W	Axes: 0; SD card slot; 18,000 non-volatile registers; Web server, email
10000729	JC-340-0-W	Axes: 0; Web server, email
10000652	JC-340-1	Axes: 1
10000704	JC-340-1-SD	Axes: 1; SD card slot; 18,000 non-volatile registers
10000653	JC-340-3	Axes: 3
10000746	JC-340-3-M	Axes: 3; Modbus/TCP
10001010	JC-340-3-M-SD	Axes: 3; Modbus/TCP; SD card slot; 18,000 non-volatile registers
10000748	JC-340-3-M-SD-W	Axes: 3; Modbus/TCP; SD card slot; 18,000 non-volatile registers;Web server, email
10000713	JC-340-3-SD	Axes: 3; SD card slot; 18,000 non-volatile registers
10000710	JC-340-3-SD-W	Axes: 3; SD card slot; 18,000 non-volatile registers; Web server, email
10000709	JC-340-3-W	Axes: 3; Web server, email

JetControl 350

Description

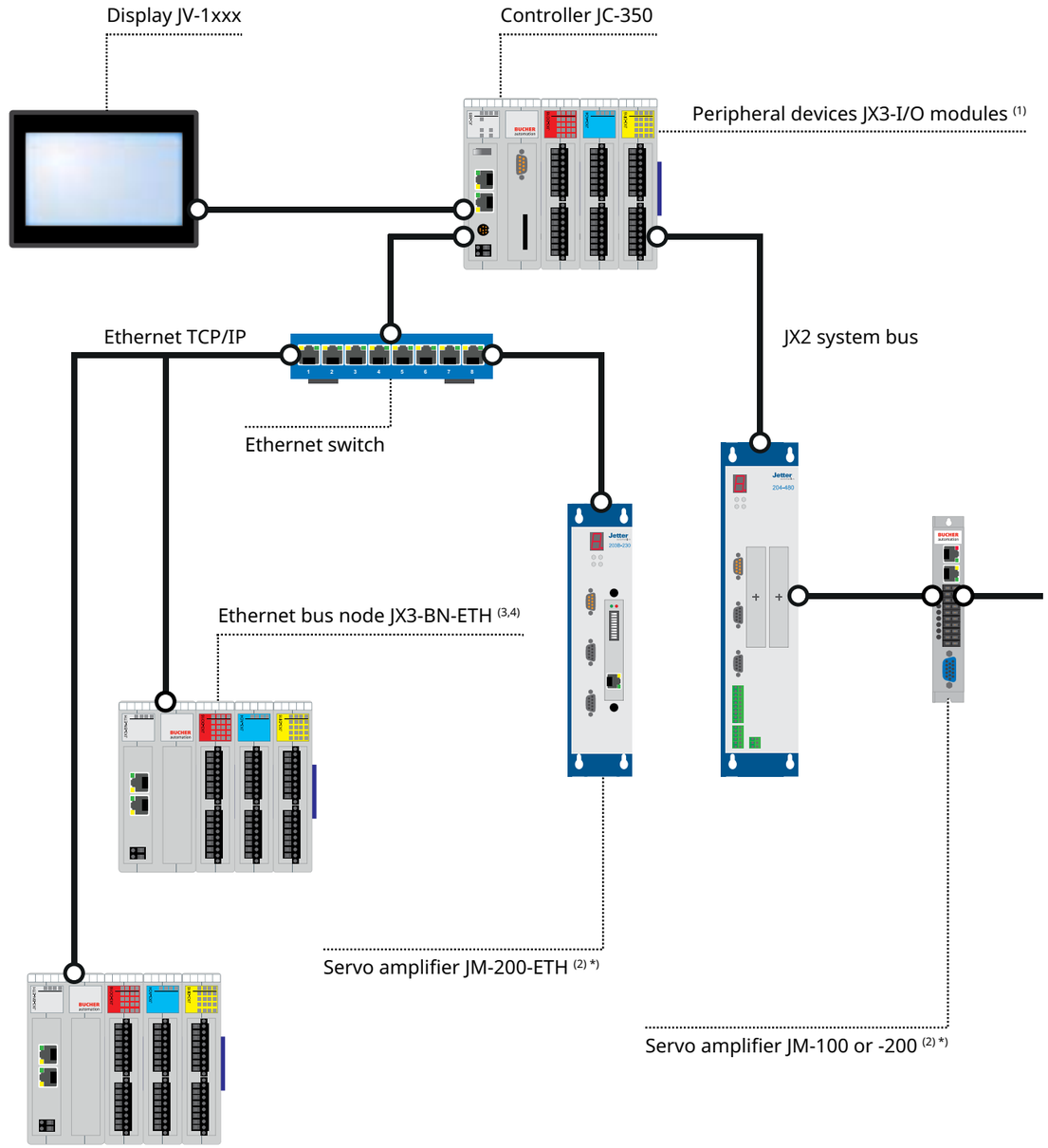
JetControl 350 blends functionality with decent performance. Thus, it is well equipped for a variety of applications.

Product features

- Supports up to 8 servo axes (PtP)
- 2 MB STX program/data memory
- 30,000 non-volatile registers
- 1 Ethernet port with integrated switch
- SD slot for additional memory capacity
- Modbus TCP
- 1 CAN interface
- 1 serial port
- Programming in STX – a high-level language according to IEC-61131-3
- File system for data storage
- Easy servicing thanks to plug-in terminals and modular design

Options

- Number of axes (4, 6, 8)
- Web and email function (-W)



(1) up to 16 JX3-IO modules directly connected to a JetControl 300/400
(2) up to 8 servo amplifiers **)
(3) up to 199 JX-BN-ETH **)
(4) up to 16 JX3-IO modules per JX3-BN-ETH bus node

*) The total number of axes must not exceed the maximum number of axes which can be connected to the controller.
**) The total number of modules connected to JX3-BN-ETH and JM-200-ETH must not exceed 199.

JetControl 350

Technical specifications

Non-volatile memory (NVRAM)	120,000 bytes (30,000 registers)
STX program/data memory (SDRAM)	2 MB
Flash drive	4 MB
Number of expansion modules	16 max. (supports remote expansion modules)
Number of axes (PtP)	4 (JC-350-4), 6 (JC-350-6) or 8 (JC-350-8)
Number of axes (MCX) (motion control/path control)	0
Ports and interfaces	1 serial port (RS232/422/485)
	1 JX2 system bus port (CAN)
	2 Ethernet ports (with integrated switch)
SD memory card slot	Yes
Expansion options	JX3, JX2
Real-time clock	Yes
Web server, email feature	Option
Modbus TCP	Yes
Rated input voltage	DC 24 V (-15 % ... +20 %)
Input current	1.5 A
Dimensions (H x D x W)	131 x 100 x 50 mm
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 ... +70 °C
Humidity	5 % ... 95 %, non-condensing

Ordering information

Item no.	Designation	Description
10000654	JC-350-4	Axes: 4
10000774	JC-350-4-W	Axes: 4; Web server, email
10000861	JC-350-6	Axes: 6
10000873	JC-350-6-W	Axes: 6; Web server, email
10000655	JC-350-8	Axes: 8
10000684	JC-350-8-W	Axes: 8; Web server, email

JetControl 365 | 365MC

Description

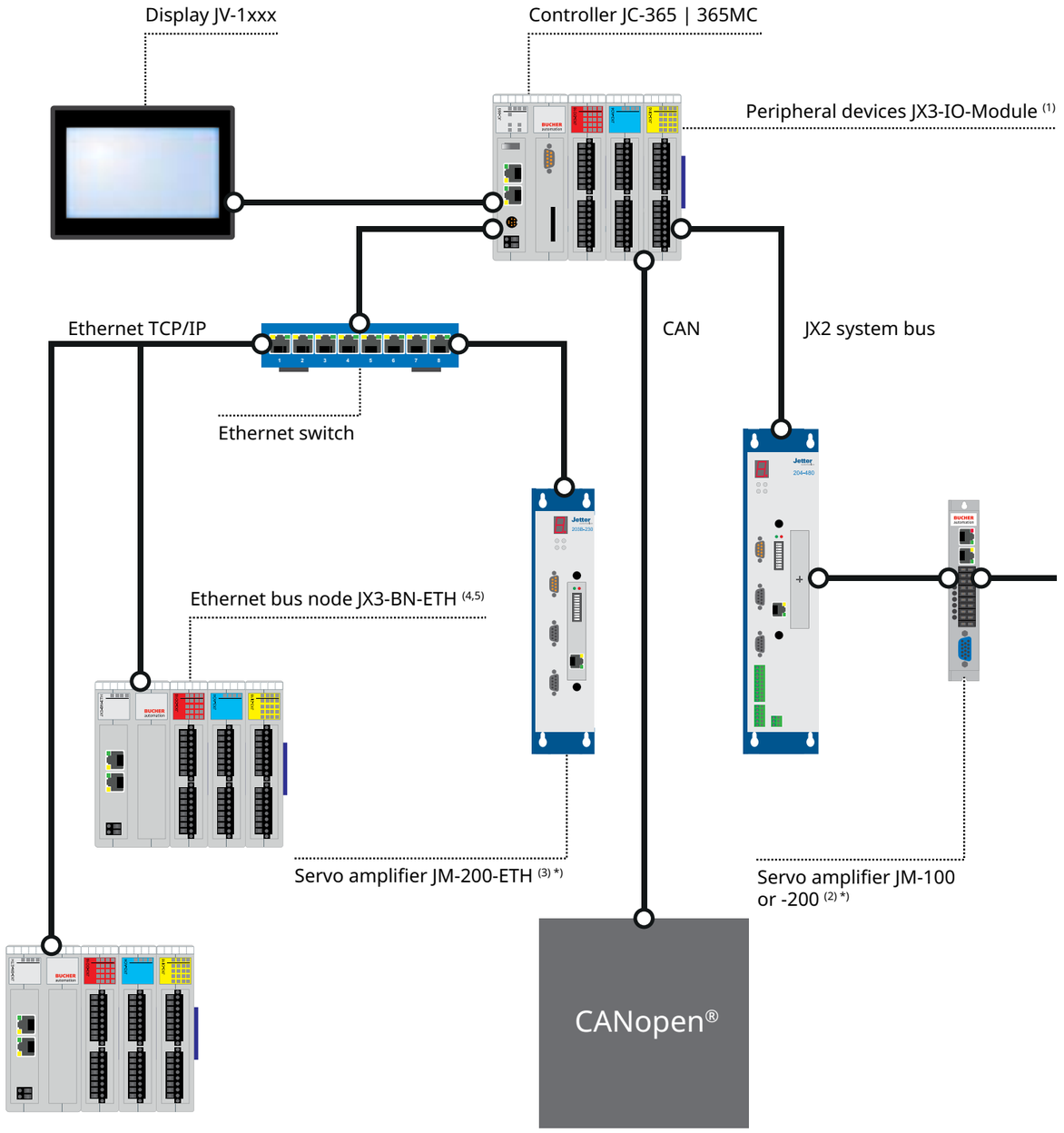
JetControl 365 delivers superior performance packed into compact geometries. It is designed to handle computationally expensive, large applications. JetControl 365MC is perfect for getting started with the motion control (MC) functionality. It allows for the programming of axis groups and complex path control applications.

Product features

- Up to 16 PtP servo axes via CAN
- Unlimited number of axes via Ethernet (JetMove 200-ETH)
- Motion control/path control of up to 12 axes (JetControl 365MC)
- 24 MB STX program/data memory
- 60,000 non-volatile registers
- 1 Ethernet port with integrated switch
- SD slot for additional memory capacity
- Modbus TCP
- Integrated web and email server

Options

- Number of axes (0, 4, 8, 16)
- Number of axes, MC model variant (4, 6, 8, 12)
- Additional memory (120,000 non-volatile registers) (-R)



(1) up to 16 JX3-IO modules directly connected to a JetControl 300/400
(2) up to 16 servo amplifiers in PtP mode, up to 12 servo amplifiers in MC mode **)
(3) up to 199 servo amplifiers JM-200-ETH in PtP mode, maximum 12 in MC mode **)
(4) up to 199 JX-BN-ETH **)
(5) up to 16 JX3-IO modules per JX3-BN-ETH bus node

*) The total number of axes must not exceed the maximum number of axes which can be connected to the controller. Mixed operation of MC axes via Ethernet and JX2 system bus is not possible.
**) The total number of modules connected to JX3-BN-ETH and JM-200-ETH must not exceed 199.

JetControl 365 | 365MC

Technical specifications

Non-volatile memory (NVRAM)	240,000 bytes (480,000 with -R option)
	(60,000 registers (120,000 with -R option)
STX program/data memory (SDRAM)	24 MB
Flash drive	24 MB
Number of expansion modules	16 max. (supports remote expansion modules)
Number of axes (PtP)	0 (JC-365-0), 4 (JC-365-4), 8 (JC-365-8), no limitations (JC-365)
	16 axes max. on the CAN bus
Number of axes (MCX) (motion control/path control)	4 (JC-365MC-4), 8 (JC-365MC-8), 12(JC-365MC)
	6 axes max. on the CAN bus
Ports and interfaces	1 serial port (RS232/422/485)
	1 JX2 system bus port (CAN)
	1 CANopen STX-API
	2 Ethernet ports (with integrated switch)
SD memory card slot	Yes
Expansion options	JX3, JX2, CANopen
Real-time clock	Yes
Web server, email feature	Yes
Modbus TCP	Yes
Rated input voltage	DC 24 V (-15 % ... +20 %)
Input current	1.5 A
Additional memory (option)	120,000 non-volatile registers (total)
Dimensions (H x D x W)	131 x 100 x 50 mm
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 ... +70 °C
Humidity	5 % ... 95 %, non-condensing

Ordering information

Item no.	Designation	Description
10001329	JC-365 (16 axes)	Axes: unlimited (max. 16 connected to CAN)
10001229	JC-365-R (16 axes)	Axes: unlimited (max. 16 connected to CAN); 120,000 non-volatile registers
10001330	JC-365-0	Axes: 0
10001473	JC-365-0-R	Axes: 0; 120,000 non-volatile registers
10001331	JC-365-4	Axes: 4
10001333	JC-365-4-R	Axes: 4; 120,000 non-volatile registers
10001334	JC-365-8	Axes: 8;
10001335	JC-365-8-R	Axes: 8; 120,000 non-volatile registers
10001336	JC-365MC (12 MC axes)	Axes with motion control: 12; PtP axes: unlimited (max. 16 connected to CAN)
10001230	JC-365MC-R (12 MC axes)	Axes with motion control: 12; PtP axes: unlimited (max. 16 connected to CAN); 120,000 non-volatile registers
10001337	JC-365MC-4	Axes with motion control: 4
10001338	JC-365MC-8	Axes with motion control: 8
10001339	JC-365MC-8-R	Axes with motion control: 8; 120,000 non-volatile registers

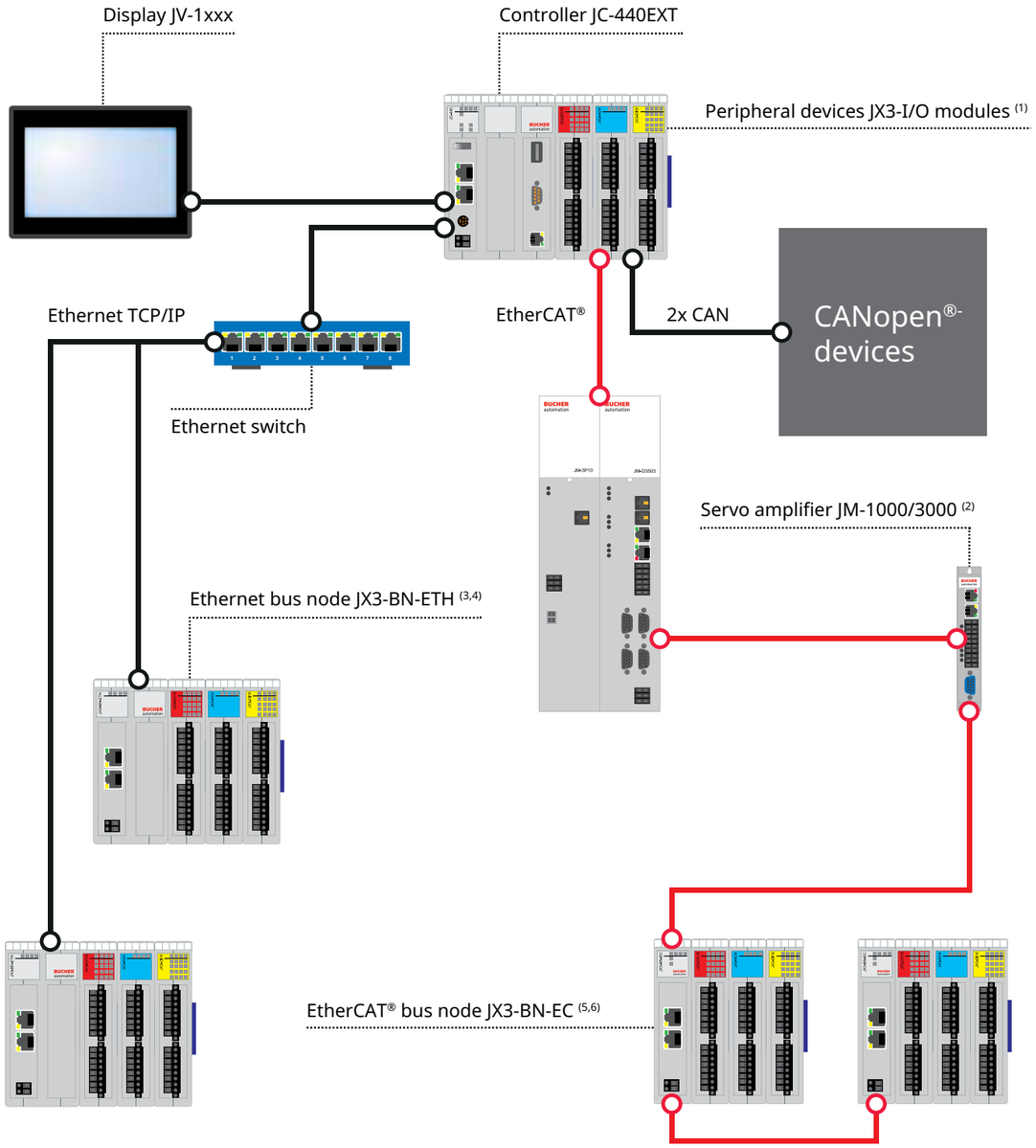
JetControl 440EXT

Description

The JetControl 440EXT controller is maximum performance packed into minimum space. It is designed to handle computationally expensive, large applications. In combination with JetMove 1000/2000/3000 servo amplifiers, it helps you getting started with the motion control functionality. It allows for easy programming of axis groups and complex path control applications. Thanks to the option model, users are flexible to extend the range of functions even at a later date.

Product features

- Supports up to 24 servo axes
- Up to 256 local I/Os (allows for expansion to > 65,000 decentralized I/Os)
- 32 MB STX program/data memory
- 480,000 bytes of non-volatile memory
- 1 x Ethernet port with integrated switch
- EtherCAT® (option)
- 2 x CANopen
- 1 x serial interface
- 1 x USB 2.0 (for storage media)
- Web server
- Email client (option)
- Modbus TCP (option)
- OPC UA server (option)
- MQTT (option)
- Programming in STX – a high-level language according to IEC-61131-3
- Multitasking
- File handling
- String processing



(1) up to 16 JX3-IO modules directly connected to a JetControl 300/400
(2) up to 24 JM-1000/3000 servo amplifiers
(3) up to 199 JX3-BN-ETH
(4) up to 16 JX3-IO modules per JX3-BN-ETH bus node
(5) up to 99 JX3-BN-EC
(6) up to 32 JX3-IO modules can be connected (depending on module type)
(The maximum number of nodes on the EtherCAT® system bus is limited to 127)

Technical specifications

Non-volatile memory (NVRAM)	480,000 bytes (120,000 registers)
STX program/data memory (SDRAM)	32 MB
Flash drive	32 MB
Number of expansion modules	16 JX3 local expansion modules (remote expansion modules are supported)
Number of axes (MCX) (motion control/path control)	24 max.
Ports and interfaces	1 serial port (RS232/422/485)
	1 EtherCAT® (option)
	2 CANopen
	2 Ethernet ports (with integrated switch)
Expansion options	JX3-IO modules, JM-1000/2000/3000, JCF4 options
Real-time clock	Yes
Modbus TCP	Option
Rated input voltage	DC 24 V (-15 % ... +20 %)
Input current	2.3 A with DC 24 V
Dimensions (H x D x W)	approx. 131 x 100 x 75 mm
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 ... +70 °C
Humidity	5 % ... 95 %, non-condensing

Ordering information

Item no.	Designation	Description
10001752	JCF4-C_ETH_(PRIM)	User-programmable Ethernet function
10001744	JCF4-C_ETHERCAT_MASTER	EtherCAT master (BN-EC, JM)
10001751	JCF4-C_FTP_CLIENT	FTP client file dispatch from STX
10001748	JCF4-C_MODBUS/TCP	MODBUS/TCP client+server
10001753	JCF4-C_MQTT	MQTT client
10001747	JCF4-C_OPCUA_SERVER	OPC UA server
10001746	JCF4-C_OPCUA_CLIENT	OPC UA client
10001750	JCF4-C_SMTP	SMTP client (email messaging)
10001741	JCF4-M_AX	1 physical axis (incl. PtP function)
10001743	JCF4-M_PATH	MCX path groups
10001757	JCF4-M_SV1	Software-based positioning function 16 axes via JX3-IO modules
10001742	JCF4-M_TECHNO	MCX technology groups

Note
All options are available as retrofit. When ordering as retrofit, specify the serial number of the JC-440EXT. The options will be activated by installing a license file.

Configuration example

Your application has 4 axes (JM-1000 or JM-3000 servo amplifier). It requires motion control for technology functions (e.g. the cam disk) and you want to make operating data available to other devices via OPC UA.

Required system components:

1 x 10001740 – JC-440EXT
1 x 10001744 – JCF4-C_ETHERCAT_MASTER
1 x 10001742 – JCF4-M_TECHNO
4 x 10001741 – JCF4-M_AX
1 x 10001747 – JCF4-C_OPCUA_SERVER

Configuration aid

The JCF License Configurator supports you with configuring the options for the JC-440EXT.

JetControl 960EXT | 965EXT

Product features

- Intel® i5 processor
- 3 x Ethernet (JetControl 960EXT)
- 2 x Ethernet + 1 x EtherCAT® (JetControl 965EXT)
- 4 x USB
- AutoCopy function
- Licensing scheme for flexible and easy extension with software options
- Up to 128 MCX axes
- 2 optional PCI express slots

Description

The high-performance JetControl 960EXT | 965EXT control systems are most suitable for applications requiring substantial computing power along with comprehensive motion control and control functions.

It comes with a built-in NVRAM for non-volatile program variables, and an SSD card for user application data making an additional flash memory card redundant.

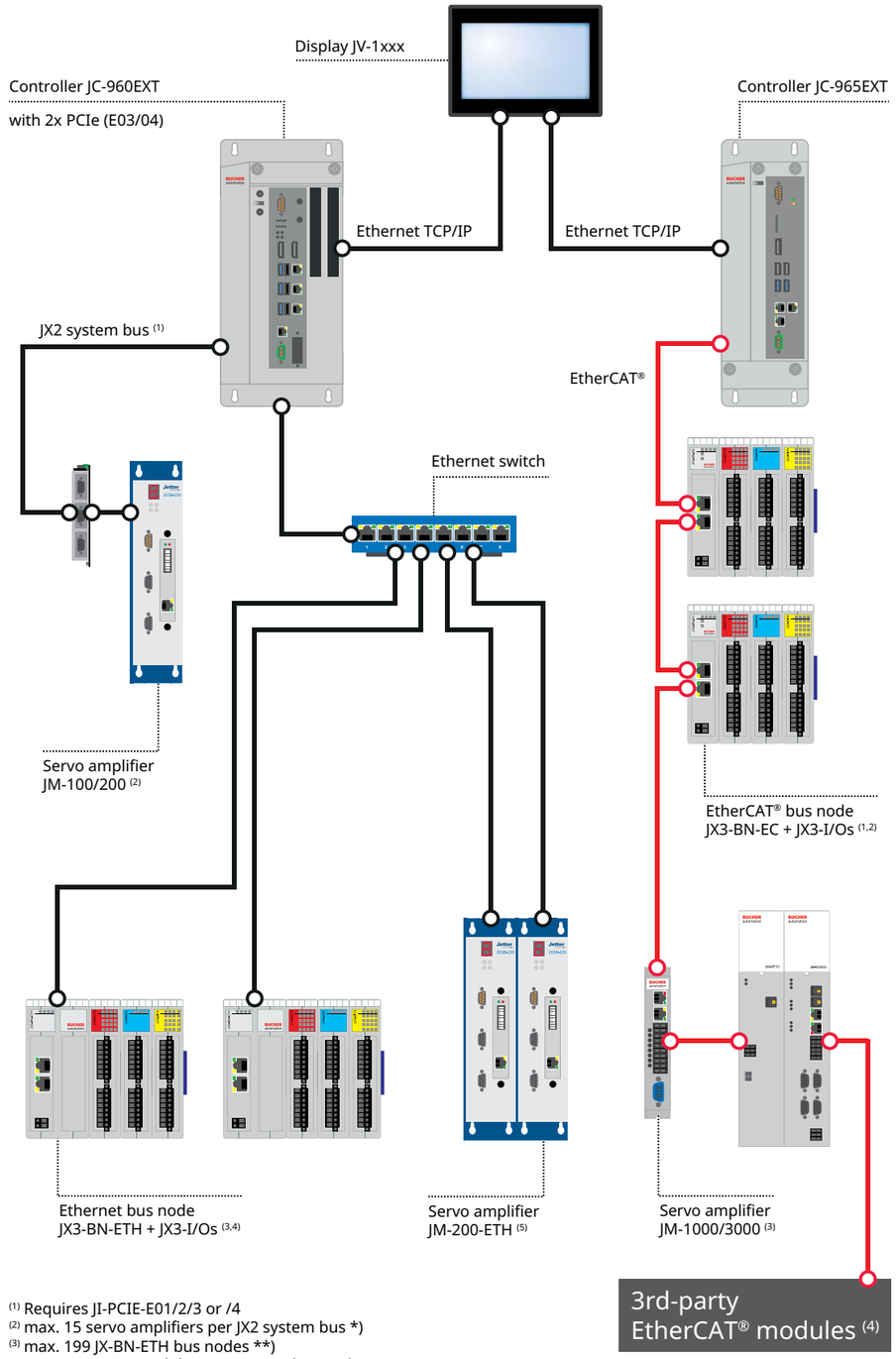
Ordering information

Item no.	Designation	Description
10002329	JC-960EXT	JC-960EXT, 0 PCIe slots, JCF9 extension options available
10002330	JC-965EXT	JC-965EXT, 0 PCIe slots, EtherCAT®, JCF9 extension options available
10002331	JC-960EXT-E03-2	JC-960EXT, 2 free PCIe slots, JCF9 extension options available
10002332	JC-965EXT-E03-2	JC-965EXT, 2 free PCIe slots, EtherCAT®, JCF9 extension options available

Software options

Item no.	Designation	Description
10002340	JCF9-C_ETH_(PRIM)	User-programmable Ethernet function in STX
10002342	JCF9-C_FTP_CLIENT	FTP client file dispatch via STX
10002345	JCF9-C_MODBUS/TCP	MODBUS/TCP client & server
10002346	JCF9-C_MQTT	MQTT client
10002347	JCF9-C_OPCUA_CLIENT	OPC UA client
10002348	JCF9-C_OPCUA_SERVER	OPC UA server
10002349	JCF9-C_SMTP	SMTP client (sending emails)
10002352	JCF9-M_AX	1 physical MCX axis
10002353	JCF9-M_PATH	MCX path groups
10002355	JCF9-M_TECHNO	MCX technology groups
10002354	JCF9-M_SV1	Software-based easy positioning function for 16 axes via JX3-IO modules

Note
The License Configurator helps you manage the software options.
Software options are available as retrofit.



(1) Requires JI-PCIE-E01/2/3 or /4
(2) max. 15 servo amplifiers per JX2 system bus *)
(3) max. 199 JX-BN-ETH bus nodes **)
(4) max. 16 JX3-IO modules per JX3-ETH bus node
(5) max. 199 servo amplifiers ***)
*) max. 6 MC axes per JX2 bus, max. 3 JX2 system buses with MC axes => max. 18 MC axes on the JX2 system bus
**) he ovarall count of JX3-BN-ETH and JM-200-ETH must no exceed 199 nodes
***) of which max. 128 MC axes

(1) max. 99 JX3-BN-EC modules
(2) max. 32 JX3-IO modules per JX3-BN-EC bus node
(3) max. 128 servo amplifiers JM-1000/3000
(4) JetSym V 6.0 and higher
A maximum of 256 devices can be connected to the EtherCAT® system bus

Technical specifications – JC-960EXT / JC-960EXT-E03-2

Non-volatile memory (NVRAM)	480,000 bytes (120,000 registers)
STX program/data memory (SDRAM)	64 MB
Flash drive for application memory	64 MB
Local expansion modules	2 x JI-PCIE-Exx (only -E03-2)
License scheme for software options (JCF9-)	Yes
Motion API	V 1.x
Max. (MXC) axis count (1 JCF9-M_AX license per MCX axis)	Ethernet: 128
	JX6-SB-I: 18
	(Mixed operation not permissible)
Max. PtP axis count (PtP axes do not require JCF9-M_AX licenses)	Ethernet: 199
	JX6-SB-I: 60
Ports and interfaces	3 x Ethernet
	4 x USB 2.0/ 3.0 for storage media
Remote expansion options	JX3-IO modules via JX3-BN-ETH
	JM-100/ 200 servo amplifier
Real-time clock	Yes (50-day buffer at 25 °C ambient temperature)
Rated input voltage	DC 24 V (-15 % ... +20 %)
Input current	1.5 A with DC 24 V
Dimensions (H x D x W)	0 slots: 290 x 222 x 115 mm; 2 slots: 305 x 222 x 155 mm
Weight	0 slots: 3.8 kg; 2 slots: 4.75 kg
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 ... +70 °C
Humidity	5 % ... 93 %, non-condensing

Technical specifications – JC-965EXT / JC-965EXT-E03-2

Non-volatile memory (NVRAM)	480,000 bytes (120,000 registers)
STX program/data memory (SDRAM)	64 MB
Flash drive for application memory	64 MB
Local expansion modules	2 x JI-PCIE-Exx (only -E03-2)
License scheme for software options (JCF9-)	Yes
Motion API	V 2.x
Max. (MXC) axis count (1 JCF9-M_AX license per MCX axis)	EtherCAT®: 128
	Ethernet: -
	JX6-SB-I: -
Max. PtP axis count (PtP axes do not require JCF9-M_AX licenses)	-
Ports and interfaces	2 x Ethernet
	EtherCAT® master
	4 x USB 2.0/ 3.0 for storage media
Remote expansion options	JX3-IO module via JX3-BN-ETH and/or JX3-BN-EC
	JM-1000/3000 servo amplifier
Real-time clock	Yes (50-day buffer at 25 °C ambient temperature)
Rated input voltage	DC 24 V (-15 % ... +20 %)
Input current	1.5 A with DC 24 V
Dimensions (H x D x W)	0 slots: 290 x 222 x 115 mm; 2 slots: 305 x 222 x 155 mm
Weight	0 slots: 3.8 kg; 2 slots: 4.75 kg
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 ... +70 °C
Humidity	5 % ... 93 %, non-condensing

JetControl 970MC | 975MC

Product features

- Intel® i5 processor, dual-core
- Windows and hard realtime combined in a single piece of hardware
- Advanced stability thanks to Hypervisor technology
- EtherCAT® (JetControl 975MC)
- 2 x PCIexpress (only JC-970)
- USB
- 2 x Ethernet
- SD card
- DisplayPort™
- AutoCopy function

Description

The high-performance JetControl 970MC | 975MC models are most suitable for applications requiring maximum computing power in combination with comprehensive motion control and PC functions.

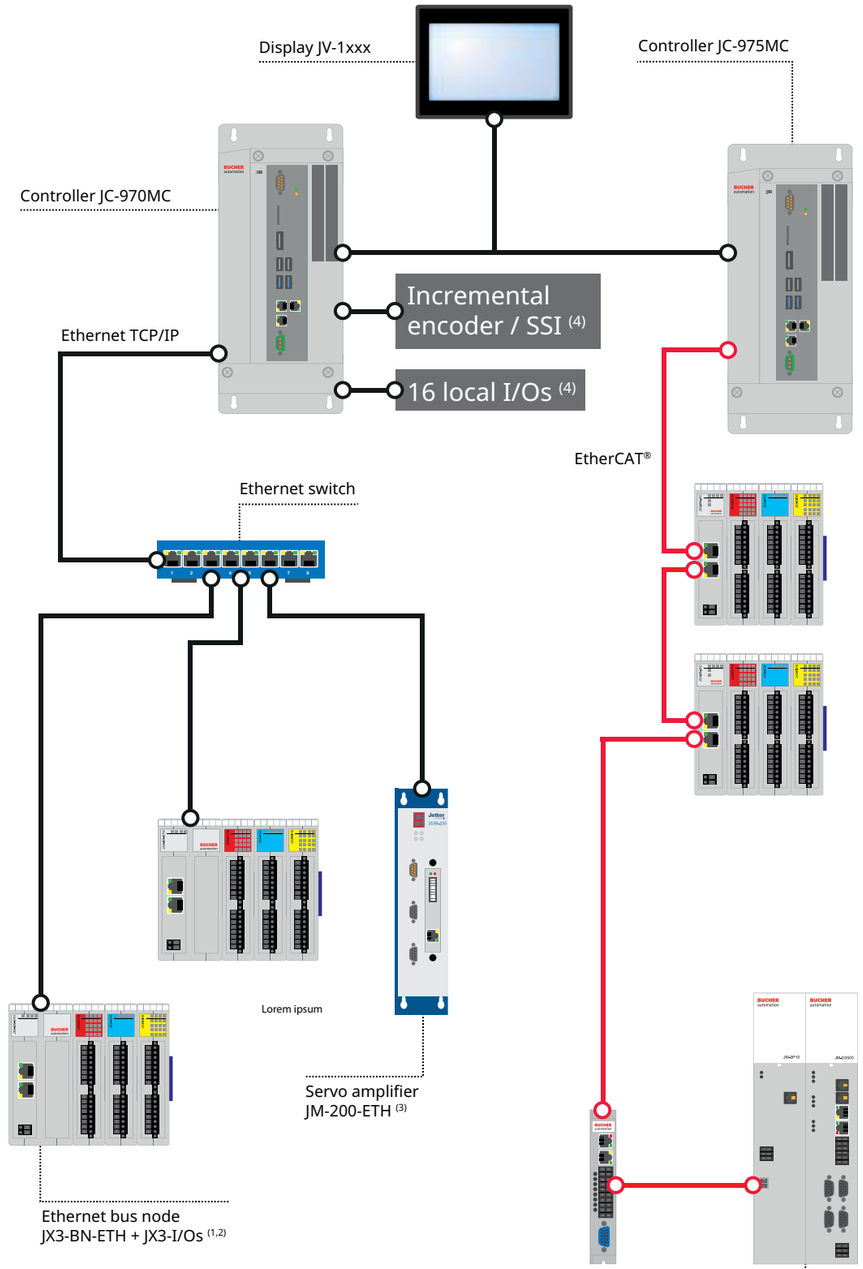
Blending control and visualization tasks into one device reduces the number of components in the control cabinet. Hypervisor technology keeps the applied operating systems strictly separated. The controllers come with NVRAM and flash memories for non-volatile data dispensing with extra costs for additional flash cards.

Options

- 2 x JI-PCIE-Exx (JC-970MC only) (see JetControl 9xx accessories)

Ordering information

Item no.	Designation	Description
10000741	JC-970MC	Axes with motion control: 64
10001699	JC-975MC	Axes with motion control: 64; EtherCAT® system bus

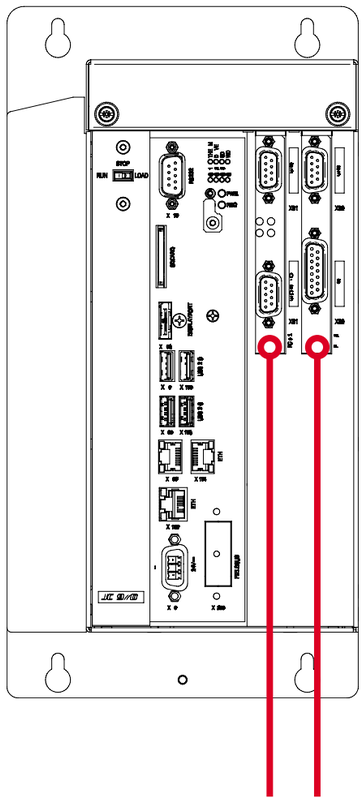


(1) up to 199 JX3-BN-ETH. *)
(2) up to 16 JX3-IO modules per JX3-ETH bus node
(3) up to 64 JM-100/200 servo amplifiers *)
(4) via JI-PCIE-Exx add-on cards
(5) up to 99 JX3-BN-EC
(6) up to 32 JX3-IO modules can be connected (depending on module type)
(7) up to 64 servo amplifiers
(The maximum number of nodes on the EtherCAT® system bus is limited to 127.)
*) The total number of JX3-BN-ETH and JM-200-ETH must not exceed 199.

Technical specifications – JC-970MC / JC-975MC

Processor	Intel® i5 dual-core 1.6 GHz
Non-volatile memory (NVRAM)	480,000 bytes (120,000 registers)
STX program/data memory (SDRAM)	64 MB
Flash drive	32 MB
Local expansion modules	2x (JI-PCIE-xxx via PCI Express)
Number of axes (PtP)	64
Number of axes (MCX) (motion control/path control)	64
Interfaces for use by JetControl	1 x Ethernet TCP/IP
	1 x USB 2.0 (for storage media)
	1 x EtherCAT® (JetControl 975MC)
Windows-accessible interfaces	1 x Ethernet TCP/IP
	2 x USB 3.0
	1x RS-232
	1 x DisplayPort™
	1 x SD card
Expansion options	JX3 (BN-ETH, BN-EC (JC-975MC)), JI-PCIE;
	JM-1000/3000 (JC-975MC),
	JM-100/200 (JC-970MC)
Real-time clock	Yes
Web server, email feature	Yes
Modbus TCP	Yes
Rated input voltage	DC 24 V (-15 % ... +20 %)
Input current	5 A max. with DC 24 V
Dimensions (H x D x W)	310 x 210 x 155 mm
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 °C ... +70 °C
Humidity	5 % ... 95 %, non-condensing

JetControl 9xx - Accessories



JC-970MC-E03-2
JC-975MC-E03-2
JC-960EXT-E03-2
JC-965EXT-E03-2

Expansion slots for 2 JI-PCI-xxx max.

Technical specifications

JI-PCIE-E01	PCI express add-on card to connect up to 31 JX2/JX3 modules and up to 15 JetMove 100/200 servo amplifiers via JX2 system bus.
	Compatible with JC-960EXT-E03-2 and JC-970MC-E03-2.
	Limited compatibility with JC-965EXT-E03-2 and JC-975MC-E03-2. *)
JI-PCIE-E02	PCI express add-on card to connect up to 62 JX2/JX3 modules and up to 30 JetMove 100/200 servo amplifiers via JX2 system bus.
	Compatible with JC-960EXT-E03-2 and JC-970MC-E03-2.
	Limited compatibility with JC-965EXT-E03-2 and JC-975MC-E03-2. *)
JI-PCIE-E03	PCI express expansion card to connect up to 31 JX2-/JX3 modules and up to 15 JetMove 100/200 servo amplifiers via JX2 system bus, as well as 16 local I/Os for swift processing of machine signals.
	Compatible with JC-960EXT-E03-2 and JC-970MC-E03-2.
	Limited compatibility with JC-965EXT-E03-2 and JC-975MC-E03-2. *)
JI-PCIE-E04	PCI express expansion card to connect up to 31 JX2 modules and up to 15 JetMove 100/200 servo amplifiers via JX2 system bus; plus one local port for 1 incremental or SSI encoder.
	Compatible with JC-960EXT-E03-2 and JC-970MC-E03-2.
	Limited compatibility with JC-965EXT-E03-2 and JC-975MC-E03-2. *)
JI-PCIE-E05	PCI express expansion card for local connection to 1 incremental or SSI encoder.
JI-PCIE-E06	PCI express expansion card for local connection to 16 digital I/Os (8/8) for swift processing of machine signals

Ordering information

JI-PCI express expansion cards connecting to JC-97xMC-E03-2, JC-96xEXT-E03-2 **) and adapter plates

Item no.	Designation	Description
10001522	JI-PCIE-E01	JI-PCI express expansion card
10001523	JI-PCIE-E02	JI-PCI express expansion card
10001524	JI-PCIE-E03	JI-PCI express expansion card
10001525	JI-PCIE-E04	JI-PCI express expansion card
10001959	JI-PCIE-E06	JI-PCI express expansion card
10001962	JI-PCIE-E06	JI-PCI express expansion card
60887133	00MW_JC-96x-2-OBEN_003, 2 slots	Adapter plate
60887134	00MW_JC-96x-2-UNTEN_004, 2 slots	Adapter plate
60887135	00MW_JC-96x-0-OBEN_005, 0 slots	Adapter plate
60887136	00MW_JC-96x-0-UNTEN_006, 0 slots	Adapter plate

Note
*) JC-965/975 (EtherCAT®) does not support operation of JM-100 and JM-200 servo amplifiers.
**) JI-PCIE-Exx cards require installation by the customer.

Safety controllers

Engineered with a consistent safety concept, the controllers of JetSafeControl family meet all production and economic requirements placed on your machines and systems.

Typical safety functions can very easily be implemented using existing features. An extensive function library, focusing on safe drive monitoring is available. The functions are broken down into logic blocks that can be combined flexibly to provide the safety functionalities you require.

JetSafeControl 110

Product features

- Up to PLe / EN 13849 | SIL3 / EN 61508
- Programming / parameterization via serial interface
- Scalability:
  - Up to 58 safe digital inputs
  - Up to 22 safe digital outputs
  - 1 safe relay output
  - Up to 6 signaling outputs

Description

The scalable and modular design of the JetSafeControl safety controllers makes them universally applicable in numerous industries. In addition, predefined function modules can be integrated into any application program if required.

These features allow you to implement and adjust to specific safety demands placed on your facilities and machines in no time.

Technical specifications

Maximum number of expansion modules	2
Safe digital inputs	14
Safe digital IOs	-
Safe digital outputs	
p-p/p-n switching	2
Safe relay outputs	2
Signaling outputs	2
Clock outputs	2
Safe axis monitoring	-
Maximum number of axes	-
Encoder interfaces	-
Dimensions (H x D x W)	100 x 115 x 45 mm

Ordering information

Item no.	Designation	Description
10001506	JSC-110	-

JetSafeControl 110-1-RS

Product features

- Up to PLe / EN 13849 | SIL3 / EN 61508
- Programming / parameterization via serial interface
- Technological functions for monitoring one drive
- Scalability:
  - Up to 58 safe digital inputs
  - Up to 22 safe digital outputs
  - 1 safe relay output
  - Up to 6 signaling outputs

Description

The scalable and modular design of the JetSafeControl safety controllers makes them universally applicable in numerous industries. In addition, predefined function modules can be integrated into any application program if required.

These features allow you to implement and adjust to specific safety demands placed on your facilities and machines in no time.

Technical specifications

Maximum number of expansion modules	2
Safe digital inputs	14
Safe digital IOs	-
Safe digital outputs	
p-p/p-n switching	2
Safe relay outputs	2
Signaling outputs	2
Clock outputs	2
Safe axis monitoring	Yes
Maximum number of axes	1 (up to 2 encoders per axis)
Encoder interfaces	Incl. TTL, SinCos, SSI, proximity switch, incremental TL, resolver
Dimensions (H x D x W)	100 x 115 x 67.5 mm

Ordering information

Item no.	Designation	Description
10001507	JSC-110-1-RS	-
10001589	JSC-110-X-RS	Resolver adapter cable for JSC-110-X-RS, cable length 1 m

JetSafeControl 110-2-RS

Product features

- Up to PLe / EN 13849 | SIL3 / EN 61508
- Programming / parameterization via serial interface
- Technological functions for monitoring of up to 2 drives
- Scalability:
- Up to 58 safe digital inputs
- Up to 22 safe digital outputs
- 1 safe relay output
- Up to 6 signaling outputs

Description

The scalable and modular design of the JetSafeControl safety controllers makes them universally applicable in numerous industries. In addition, predefined function modules can be integrated into any application program if required.

These features allow you to implement and adjust to specific safety demands placed on your facilities and machines in no time.

Technical specifications

Maximum number of expansion modules	2
Safe digital inputs	14
Safe digital IOs	-
Safe digital outputs	
p-p/p-n switching	2
Safe relay outputs	2
Signaling outputs	2
Clock outputs	2
Safe axis monitoring	Yes
Maximum number of axes	2 (up to 2 encoders per axis)
Encoder interfaces	Incl. TTL, SinCos, SSI, proximity switch, incremental TL, resolver
Dimensions (H x D x W)	100 x 115 x 112.5 mm

Ordering information

Item no.	Designation	Description
10001508	JSC-110-2-RS	-
10001589	JSC-110-X-RS	Resolver adapter cable for JSC-110-X-RS, cable length 1 m

JSX1-DIO22

Product features

- 10 safe IOs that can be configured as either inputs or outputs
- 12 safe inputs, of which 8 support OSSD
- 2 signaling outputs
- Monitoring for shorts between contacts
- External contactors allow for contact multiplication and increasing contact ratings. Combination with internal monitoring is also possible
- Firmware includes comprehensive diagnostic capabilities

Description

The JSX1-DIO22 expansion module features 10 safe IOs, 12 safe inputs, and 2 signaling outputs. The IOs can be configured either as inputs, or outputs.

Technical specifications

Safe digital inputs	12
Safe digital IOs	10
Safe digital outputs	
p-p/p-n switching	-
Safe relay outputs	-
Signaling outputs	2
Clock outputs	2
Dimensions (H x D x W)	100 x 115 x 45 mm

Ordering information

Item no.	Designation	Description
10001509	JSX1-DIO22	-

Expansion modules

The JX3 expansion modules allow you to customize JetControl devices to any automation task. A wide array of expansion modules and virtually no limits as to their combination allow you to create just the machinery or system you want.

What sets the JX3 family apart:

- High-precision and fast signal acquisition ensuring reliable processing of signals and measuring data
- Status and diagnostic LEDs
- The module electronics and field wiring terminals are pluggable, and supplied with either 1-wire or 3-wire connections all of which keeps installation effort and downtime to an absolute minimum.

JX3-BN-ETH

Product features

- Connect to up to 16 JX3 expansion modules (corresponds to 256 I/O channels)
- LED indicators for monitoring communication and power supply
- Synchronous communication via Ethernet

Description

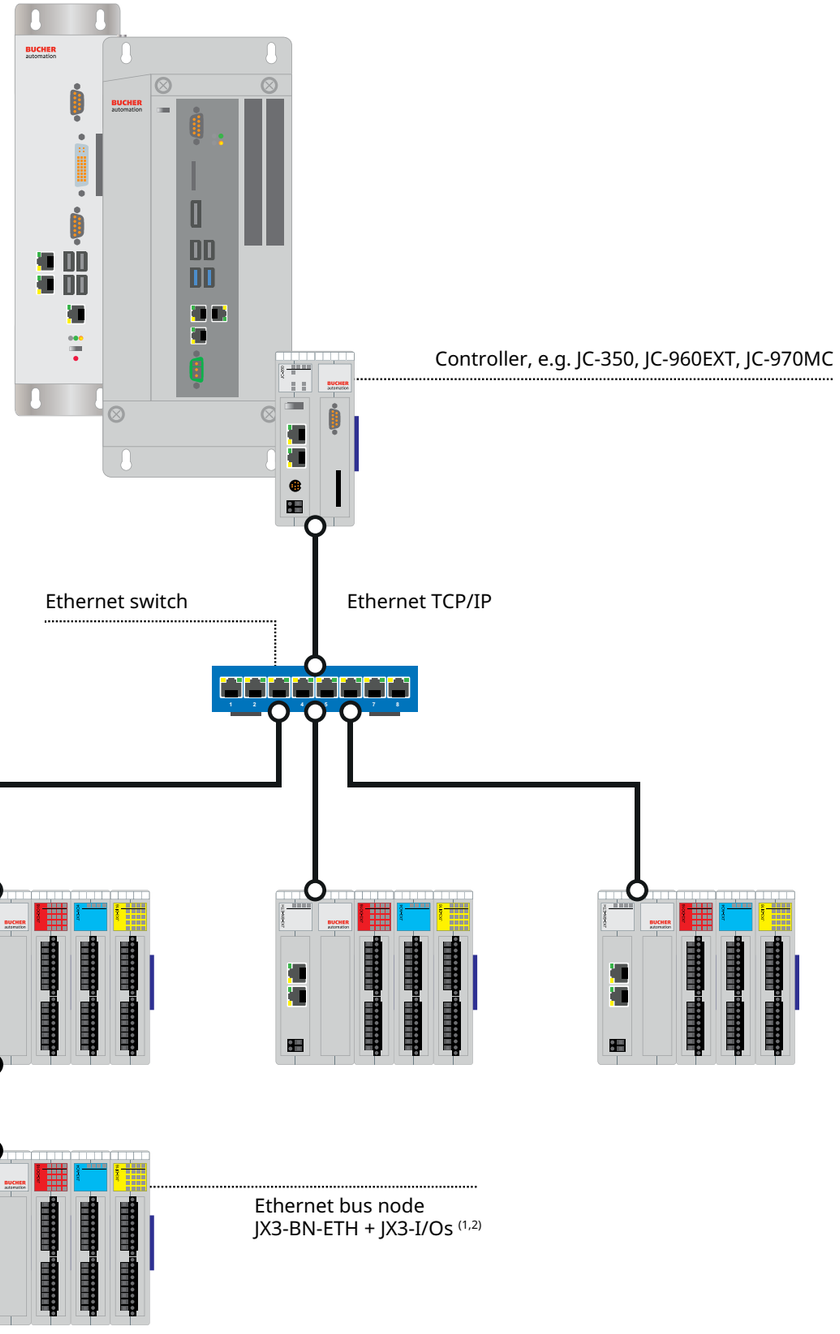
The Ethernet bus node JX3-BN-ETH is for setting up remote I/O stations. This module allows for synchronous communication between controllers and the remote I/O station via standard Ethernet.

Technical specifications

LED membrane	RAL 7035, light gray
Degree of protection	IP20
Operating temperature	0 … +50 °C
Storage temperature	-40 °C … +70 °C
Humidity	10 % … 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Rated input voltage	DC 24 V (-15 % … +20 %)
Input current	1 A max.
Power consumption	12 W maximum
Protection against polarity reversal	Integrated
Diagnostic LEDs	4
Ethernet connection	2 x RJ45, auto-crossover, 10/100 Mbps full duplex (integrated switch)
Power supply terminal	2 pins, 3.5 mm, spring-cage connection
Dimensions (W x H x D)	50 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000645	JX3-BN-ETH	-



(1) up to 64 JX3-BN-ETH per controller
(2) up to 16 IX3-I/O modules per IX3-BN-ETH bus node

JX3-BN-EC

Product features

- Automatic addressing
- CoE (CAN application protocol over EtherCAT®) is supported
- EtherCAT® modular device profile compliant
- Synchronous communication using distributed clocks (DC Sync)
- Connects to up to 32 JX3-IO modules (depending on module type)
- LED indicators for diagnosing communication and power supply

Description

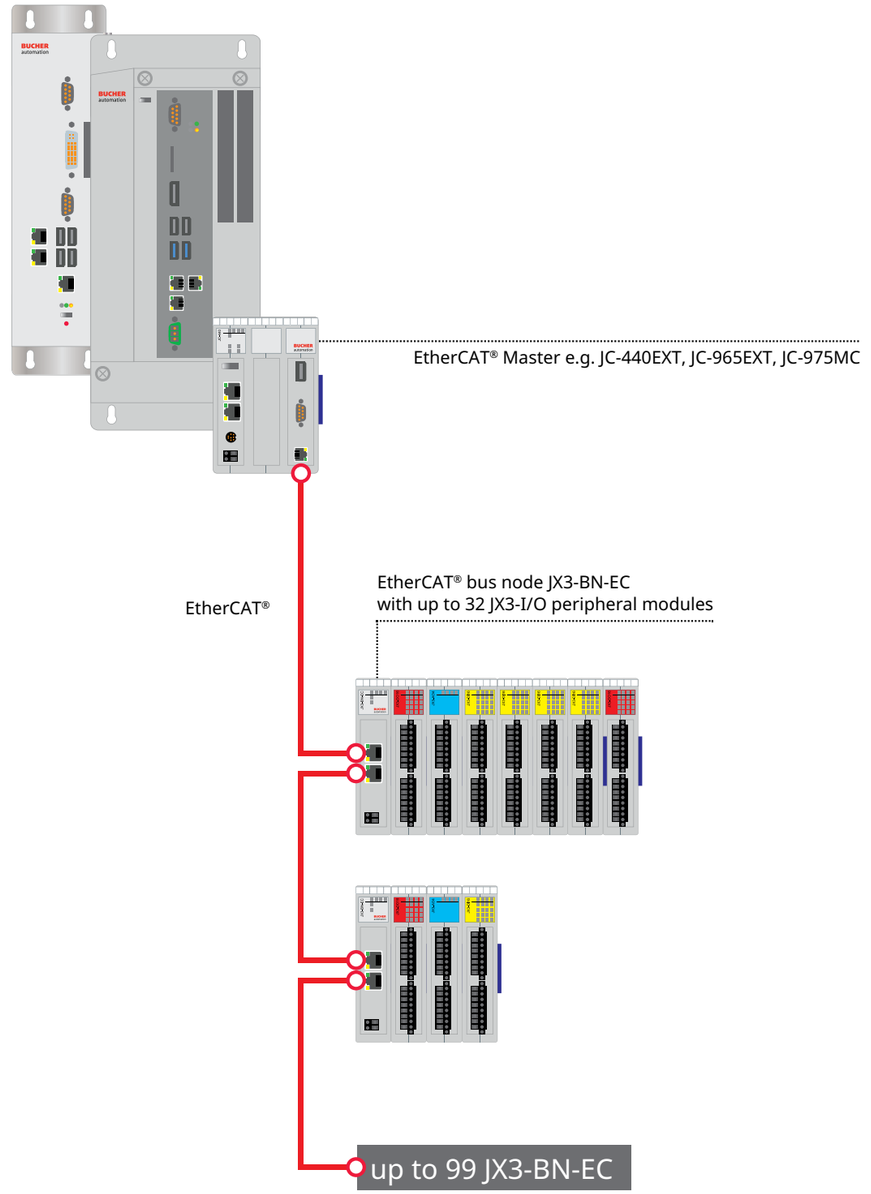
The JX3-BN-EC EtherCAT® bus node serves as a gateway between an EtherCAT® master and Bucher Automation JX3-I/O modules. JX3-BN-EC modules are used for the purpose of setting up remote I/O stations. They enable synchronous communication via EtherCAT® between the controller and remote JX3-I/O modules.

Technical specifications

LED membrane	RAL 7035, light gray
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 ... +70 °C
Humidity	10 ... 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Rated input voltage	DC 24 V (-15 % ... +20 %)
Input current	1 A max. (incl. JX3 modules)
Power consumption	24 W max. (incl. JX3 modules)
Protection against polarity reversal	Integrated
Diagnostic LEDs	6
Ports and interfaces	EtherCAT®, JX3 system bus
Power supply terminal	2 pins, 3.5 mm, spring-cage connection
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10001584	JX3-BN-EC	-



JX3-DI16

Product features
- 16 digital inputs
- Digital input filters
- Pulse stretching
- Counting feature
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Options
- Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

Description
The JX3-DI16 is an input expansion module connecting to digital sensors.

Technical specifications

LED membrane	RAL 1004, amber
Degree of protection	IP20
Operating temperature	0 … +50 °C
Storage temperature	-40 °C … +70 °C
Humidity	10 % … 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Rated input voltage	DC 24 V (-15 % … +20 %)
Typical input current	2 mA … 3 mA, continuous
Pulse stretching range	0 … 7.5 ms
Input filters	3 ms
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000516	JX3-DI16	-
10001479	JX3 DI16_PI	Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

JX3-DO16

Product features
- Automatic addressing
- 16 digital outputs
- Pulse-width modulation (PWM)
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Options
- Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

Description
The JX3-DO16 is an output expansion module connecting to digital actuators.

Technical specifications

LED membrane	RAL 3020, red
Degree of protection	IP20
Operating temperature	0 … +50 °C
Storage temperature	-40 °C … +70 °C
Humidity	10 % … 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Voltage rating	DC 24 V (-15 % … +20 %)
Total current of all 16 outputs	4 A max.
Continuous rated output current	0.5 A/output
Protective circuits	Short-circuit, overload, polarity reversal, overtemperature, inductive load
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000595	JX3-DO16	-
10001482	JX3 DO16_PI	Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

JX3-DIO16

Product features
- 8 digital inputs and 8 digital outputs
-
- Outputs can also be used as inputs
- Digital input filters
- Pulse stretching
- Pulse-width modulation (PWM)
- Counting feature
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Description
The JX3-DIO16 is an I/O expansion module connecting to digital sensors and actuators.

Technical specifications

LED membrane	RAL 3020, red
Degree of protection	IP20
Operating temperature	0 … +50 °C
Storage temperature	-40 °C … +70 °C
Humidity	10 % … 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Rated input voltage	DC 24 V (-15 % … +20 %)
Typical input current	2 mA … 3 mA, continuous
Total current	4 A
Protective circuits	Short-circuit, overload, overtemperature, inductive load
Pulse stretching range	0 … 7.5 ms
Input filters	3 ms
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000517	JX3-DIO16	-
10001480	JX3 DIO16_PI	Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

JX3-AI4

Product features
- 4 analog inputs
- Input signal is adjustable per channel
- Resolution: 16 bits
- Averaging
- User-defined scaling
- Monitoring of upper/lower limit
- Oscilloscope function
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Description
The JX3-AI4 is an input expansion module connecting to analog sensors.

Options
- Galvanic isolation (-EIC)
- Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

Technical specifications

LED membrane	RAL 6018, yellow-green
Degree of protection	IP20
Operating temperature	0 … +50 °C
Storage temperature	-40 °C … +70 °C
Humidity	10 % … 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Number of analog inputs	4
Voltage range	0 … 10 V, -10 V … +10 V
Current range	0 … 20 mA, 4 mA … 20 mA
Resolution	16 bits
Accuracy	better than 0.5 % across the whole operating temperature range
Conversion time	1 ms for all 4 channels (collective conversion)
Maximum input frequency	200 Hz
Electrical isolation	Option
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000542	JX3-AI4	-
10001483	JX3 AI4_PI	Pluggable field wiring 10-pin PUSH-IN terminal (-PI)
10001915	JX3-AI4-EIC_PI	4 galvanically isolated analog inputs with 10-pin PUSH-IN terminal (-PI)

JX3-AO4

Product features

- 4 analog outputs
- Selectable output signal per channel
- Resolution: 16 bits
- User-defined scaling
- Monitoring of limit values
- Trailing indicator
- Capping
- Forcing
- Oscilloscope function
- Table mode
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Description

The JX3-AO4 is an output expansion module connecting to analog actuators.

Options

- Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

Technical specifications

LED membrane	RAL 5015, sky blue
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 °C ... +70 °C
Humidity	10 % ... 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Number of analog outputs	4
Voltage range	0 ... 10 V, -10 V ... +10 V
Current range	0 ... 20 mA, 4 mA ... 20 mA
Resolution	16 bits
Accuracy	better than 0.5 % across the whole operating temperature range
Conversion time	1 ms for all 4 channels
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000569	JX3-AO4	-
10001484	JX3 AO4_PI	Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

JX3-THI2-RTD

Product features

- Temperature range: -50 °C ... +850 °C
- Resolution: 0.01 °C
- 1- to 64-fold averaging
- Monitoring of limit values
- Trailing indicator
- Oscilloscope function
- Forcing
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Description

The temperature expansion module JX3-THI2-RTD is equipped with two inputs for temperature readings from Pt100 or Pt1000 resistance thermometers. The temperature sensors connect by 2-, 3- or 4-wire loop.

Options

- Galvanic isolation (-EI)
- Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

Technical specifications

LED membrane	RAL 6018, yellow-green
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 °C ... +70 °C
Humidity	10 % ... 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Signal range	-50 °C ... 850 °C
Resolution	0.01 °C
Accuracy	0.5 °C... 450 °C, 1 °C at 450 °C or higher (typically 0.1 % of the measured value + 0.0025 % of the measuring range)
Effective conversion time for both channels	Pt100: 90 ms ... 150 ms in slow mode, 8 ms ... 15 ms in fast mode
Pt1000: 100 ms ... 200 ms in slow mode,	better than 0.5 % across the whole operating temperature range
10 ms ... 20 ms in fast mode	1 ms for all 4 channels (collective conversion)
Connection technology	2-, 3- and 4-wire technology
Electrical isolation	Option
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000570	JX3-THI2-RTD	-
10001062	JX3-THI2-RTD-EI	2 galvanically isolated inputs with Pt100 or Pt1000 resistance thermometers

JX3-THI2-TC

Product features

- Temperature range to DIN 60584-1
- Resolution: 0.01 °C
- Integrated terminal temperature compensation
- 1- to 64-fold averaging
- Monitoring of limit values
- Trailing indicator
- Oscilloscope function
- Forcing
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Description

The JX3-THI2-TC expansion module is equipped with two inputs for thermocouple-type temperature sensors. It connects to the following thermocouple types: J, K, B, E, N, R, S, T.

Options

- Galvanic isolation (-EI)
- Full galvanic isolation of the channels (-EIC)
- Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

Technical specifications

LED membrane	RAL 6018, yellow-green
Degree of protection	IP20
Operating temperature	0 … +50 °C
Storage temperature	-40 °C … +70 °C
Humidity	10 % … 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Signal range	Depending on sensor type
Sensor types	J, K, B, E, N, R, S, T
Resolution	0.01 °C
Accuracy	To DIN EN 60584-2:1996
Effective conversion time for both channels	Approx. 10 ms (fast mode), approx. 100 ms (slow mode)
Electrical isolation	Option
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000611	JX3-THI2-TC	
10001913	JX3-THI2-TC-EIC_PI	2 galvanically isolated inputs with 10-pin PUSH-IN terminal (-PI)

JX3-DMS2

Product features

- 2 inputs
- Adjustable measuring accuracy
- Trailing indicator
- User-defined scaling
- Oscilloscope function
- Forcing function for measured values
- Monitoring of limit values
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Description

The JX3-DMS2 is a wire strain gage module for measuring strain, force and pressure. This expansion module supports all strain gages working in accordance with the principle “Strain-resistance effect of electrical conductors”.

Strain gages are connected in 4-wire technology.

Technical specifications

LED membrane	RAL 6018, yellow-green
Degree of protection	IP20
Operating temperature	0 … +50 °C
Storage temperature	-40 °C … +70 °C
Humidity	10 % … 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Total of inputs	2
Connection technology	Differential signals in four-wire technology
Input signal range	1 mV/V … 400 mV/V
Resolution	16 bits + oversampling
Conversion time per channel	6 ms
Signal amplification (PGA)	0.5 … 1050
Maximum current per channel	100 mA
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000612	JX3-DMS2	-

JX3-CNT

Product features

- Trailing indicator
- User-defined scaling
- Oscilloscope function
- Forcing of count values
- Monitoring of limit values
- Frequency measuring
- Period measurement
- Gating measurement
- 16-fold multi-strobe function
- Gate function
- Digital filters
- Referencing
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Description

The JX3-CNT is a versatile counter module and supports the following modes: single-channel counter, dual-channel counter, and SSI (synchronous serial interface).

Options

- Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

Technical specifications

LED membrane	RAL 9003, signal white
Degree of protection	IP20
Operating temperature	0 … +50 °C
Storage temperature	-40 °C … +70 °C
Humidity	10 % … 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Electrical isolation	none
Encoder supply 5 V	200 mA max. (short-circuit-proof)
Encoder supply 24 V	500 mA max. (short-circuit-proof)
Maximum counting rates	Single-channel counter (event counter) 24 V (I/O 1 … I/O 4): 1 kHz
	Single-channel counter (event counter) 24 V (A, B, C): 100 kHz
	Dual-channel counter (incremental encoder 24 V): 500 kHz
	Dual-channel counter (incremental encoder 5 V): 2 MHz
Value range	32 bits
Supported SSI encoders	Single-turn, multi-turn or linear absolute encoders
SSI transmission rate	100 kHz, 200 kHz, 1 MHz
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000686	JX3-CNT	-
10001486	JX3-CNT_PI	Pluggable field wiring 10-pin PUSH-IN terminal (-PI)

JX3-PS1

Product features

- Power supply for up to eight JX3 expansion modules
- LEDs for monitoring power supply

Description

The JX3-PS1 expansion module is used to supply power to JX3 expansion modules.

Technical specifications

LED membrane	RAL 7035, light gray
Degree of protection	IP20
Operating temperature	0 … +50 °C
Storage temperature	-40 °C … +70 °C
Humidity	10 % … 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Rated input voltage	DC 24 V (-15 % … +20 %)
Input current	0.5 A max.
Power consumption	12 W maximum
Protection against polarity reversal	Integrated
Diagnostic LEDs	1
Power supply terminal	2 pins, 3.5 mm, spring cage
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000635	JX3-PS1	-

JX3-MIX1

Product features

- Counter function
- Stepper motor controller
- 3 analog inputs
- 1 analog output
- 8 digital multi-purpose I/Os
- LED indicators for monitoring communication and power supply
- Plug-in field wiring terminals

Description

The JX3-MIX1 is a multi-purpose expansion module and provides a range of commonly required I/O functions. This module is ideal for cost-sensitive applications.

Technical specifications

LED membrane	RAL 9003, signal white
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 °C ... +70 °C
Humidity	10 % ... 95 %, non-condensing
Mechanical installation	DIN rail to EN 50022 – 35 x 7.5 or EN 50022 – 35 x 15
Mounting orientation	Vertical
Labeling system	Standard terminal labels
Certifications	CE
Counter	Available with one dual-channel counter or two single-channel counters up to 50 kHz
Stepper motor controller	Output of STEP and DIR signals, 10 kHz max.
Analog inputs	3; 0 ... 10 V, resolution 12 bits
Analog outputs	1; 0 ... 10 V, resolution 12 bits
Multi-purpose I/Os	8; can be used as digital input to IEC 61131-2, type 3, PNP transistor, or digital output to IEC 61131-2, 0.5 A, PNP transistor
Dimensions (W x H x D)	25 x 131 x 101 mm

Ordering information

Item no.	Designation	Description
10000738	JX3-MIX1	-

JX3 - Accessories

Ordering information

Item no.	Designation	Description
60869252	BU_10_BLZF_F_SW_RM3.5	10-pin plug-in connector, spring-cage technology, black
60870409	BU_02_BLZF_SW_RM3.5	2-pin plug-in connector, spring-cage technology, black
60869253	BU_30_BL-I/O_F_RM3.5	30-pin PUSH-IN plug-in connector, spring connection with operating panel, black
60869254	BU_10_BL-I/O_F_RM3.5	10-pin PUSH-IN plug-in connector, spring connection with operating panel, black
60870411	DIV_DEK_5/5_MC-10_NEUT_WS	Labeling strip for JX3 modules (min. ordering quantity: 100 pcs)
60870410	DIV_BL_SL_3.5_KO_OR	Coding keys for JX3 connectors
60870963	DIV_BL_3.5_ZE_8	Strain relief for BU_10_BLZF_F_SW_RM3.5 connectors
60863970	DIV_CLIPFIX_35	End clamp for DIN rail
60871712	DIV_Schraubendreher_2,5*75	Screwdriver 2.5x75 to VDE (suitable for spring-cage connection)
60873281	SD card, 1 GB	SD memory card, 1 GB, industrial specification

HMIs | Industrial PCs

The latest generation of JetView HMIs and industrial PCs excel by virtue of their modern design, versatile connectivity and advanced performance.

JetView 1004 | 1005 | 1007 | 1010

Description

The JetView 1004 HMI is the entry-level device, ideally suited for small machines and facilities. It features a 4.3" display with a resistive touch screen rated to IP66. In addition to two Ethernet interfaces with integrated switch, the device offers one USB and one serial port. Creation of the graphical user interface is simple and intuitive with JetViewSoft.

The JetView 1005/1007/1010 HMIs have a brilliant widescreen display with projected capacitive touch screen (PCAP). Screen sizes range from 5" to 10". The two Ethernet ports with integrated switch function make it particularly easy to integrate the devices into existing networks. Featuring a scratch-resistant and dirt-repellent, real glass surface with IP66 rating the HMIs can be safely used in harsh operating environments.

JV-1004 options

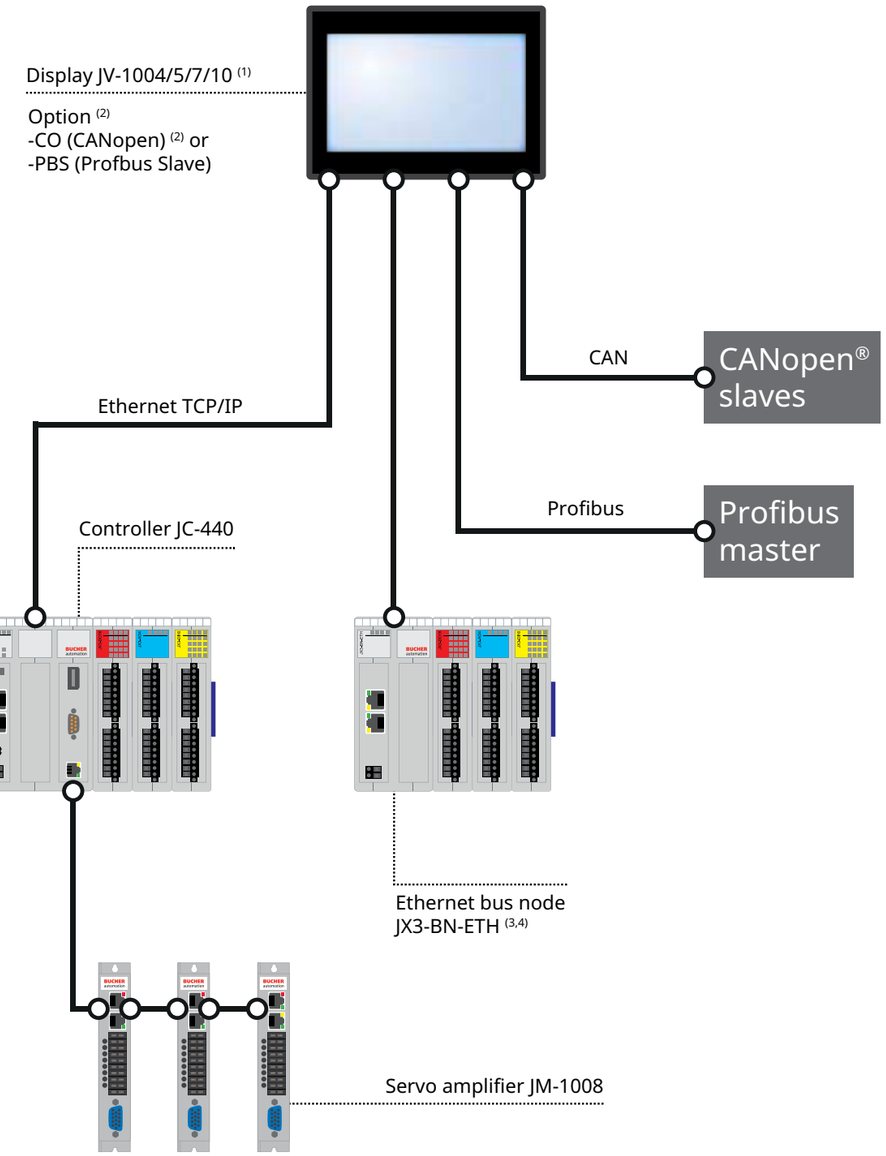
- 4.3“resistive TFT touch display
- 256 MB memory
- 2 x Ethernet port
- SD card slot
- IP66 (on the front)
- Control function included

JV-1005 | JV-1010 options

- Seamless glass front panel
- Widescreen
- Multi-touch
- Supports SVG format
- 2 x Ethernet port
- USB port
- SD card slot
- Control function included

Ordering information

Item no.	Designation	Description
10001006	JV-1004	
10001138	JV-1005-PCT-E1-L5-B4	Windows CE 6.0 operating system
10001441	JV-1005-PCT-E1-L5-B9	WINDOWS Embedded Compact operating system
10001716	JV-1005-PCT-E1-L5-B9-CO	CANopen only with WEC2013 (-B9)
10001790	JV-1005-PCT-E1-L5-B9-PBS	Profibus slave
10001139	JV-1007-PCT-E1-L5-B4	Windows CE 6.0 operating system
10001442	JV-1007-PCT-E1-L5-B9	WINDOWS Embedded Compact operating system
10001717	JV-1007-PCT-E1-L5-B9-CO	CANopen only with WEC2013 (-B9)
10001791	JV-1007-PCT-E1-L5-B9-PBS	Profibus slave
10001140	JV-1010-PCT-E1-L5-B4	Windows CE 6.0 operating system
10001443	JV-1010-PCT-E1-L5-B9	WINDOWS Embedded Compact operating system
10001718	JV-1010-PCT-E1-L5-B9-CO	CANopen only with WEC2013 (-B9)
10001792	JV-1010-PCT-E1-L5-B9-PBS	Profibus slave



(1) Display including control functionality
(2) Order option -CO or -PBS (JV-1005/7/10 only)
(3) up to 64 JX-BN-ETH
(4) up to 16 JX3-I/O modules per JX3-BN-ETH bus node

Technical specifications

	JetView 1004	JetView 1005
Display	4.3” TFT color display, 16 bits color depth	5" TFT color display, 16 bits color depth, widescreen
Resolution	480 x 272, 16:9	800 x 480 (WVGA), 5:3
Brightness	150 cd/m²	200 cd/m²
Front	Plastic	Glass
Background lighting	LED	LED
Input device	Touchscreen	Touchscreen
Touchscreen	Resistive	Capacitive (PCAP), multi-touch with WEC 2013
Operating system	Windows® CE 6.0 R3	Windows® CE 6.0 R3 / Windows® EC 2013
Ports and interfaces	2 x Ethernet 10/100 Mbit with integrated switch	2 x Ethernet 10/100 Mbit with integrated switch
	1 x USB, 1 x multi-standard serial port	1 x USB, 1 x multi-standard serial port
	1 x SD card	1 x SD card
Processor	ARM Cortex-A8	ARM Cortex-A8
Clock frequency	500 MHz	600 MHz
Memory	256 MB DDR, 128 MB flash	256 MB RAM, 128 MB flash
Operating voltage	DC 24 V (DC 18 V ... 30 V), 0.55 A for DC 24 V	DC 24 V (DC 18 V ... 30 V), 0.6 A for DC 24 V
Operating temperature	0 ... 50 °C	0 ... 50 °C
Storage temperature	-20 ... +70 °C	-20 ... +70 °C
Degree of protection	IP65 (front panel), IP20 (rear panel)	IP65 (front panel), IP20 (rear panel)
Housing	Aluminum	Aluminum
Weight	Approx. 1.0 kg	Approx. 1.0 kg
Dimensions (W x H x D)	147 x 107 x 60 mm	147 x 107 x 64 mm
Certifications	CE	CE

Technical specifications

	JetView 1007	JetView 1010
Display	7" TFT color display, 16 bits color depth, widescreen	10.1" TFT color display, 16 bits color depth, widescreen
Resolution	800 x 480 (WVGA), 5:3	1280 x 800 (WXGA), 8:5
Brightness	300 cd/m²	300 cd/m²
Front	Glass	Glass
Background lighting	LED	LED
Input device	Touchscreen	Touchscreen
Touchscreen	Capacitive (PCAP), multi-touch with WEC 2013	Capacitive (PCAP), multi-touch with WEC 2013
Operating system	Windows® CE 6.0 R3 / Windows® EC 2013	Windows® CE 6.0 R3 / Windows® EC 2013
Ports and interfaces	2 x Ethernet with integrated switch,	2 x Ethernet with integrated switch,
	2 x USB, 1 x multi-standard serial port,	2 x USB, 1 x multi-standard serial port,
	1 x SD card	1 x SD card
Processor	ARM Cortex-A8	ARM Cortex-A8
Clock frequency	600 MHz	1 GHz
Memory	256 MB RAM, 256 MB flash	256 MB RAM, 256 MB flash
Operating voltage	DC 24 V (DC 18 V ... 30 V), 0.6 A for DC 24 V	DC 24 V (DC 18 V ... 30 V), 1 A for DC 24 V
Operating temperature	0 ... 50 °C	0 ... 50 °C
Storage temperature	-20 ... 70 °C	-20 ... 70 °C
Degree of protection	IP65 (front panel), IP20 (rear panel)	IP65 (front panel), IP20 (rear panel)
Housing	Aluminum	Aluminum
Weight	Approx. 1.3 kg	Approx. 1.7 kg
Dimensions (W x H x D)	187 x 147 x 55 mm	282 x 197 x 55 mm
Certifications	CE	CE

JI-FPC2015 | 2022

Description

The JI-FPC2015/2022 flat panel PCs are industrial PCs with a widescreen display and a projected capacitive touch screen (PCAP). Available with screen sizes of 15.6" and 21.5", they are amply dimensioned for monitoring and operating medium-sized and large facilities. Featuring multi-core CPUs of the i5® class, the HMI is able to process several applications simultaneously. Thanks to the large number and variety of available interfaces, the device can be tailor-made meet to individual requirements. It comes with a scratch-proof and dirt-repellent real-glass surface.

Product features

- Glass front panel
- Widescreen (16:9)
- Multi-touch
- PCAP
- Windows10 IoT
- JetViewSoft visualization
- Intel® Core™ i5 processor
- 2 x GB Ethernet
- 4 x USB 3.0
- SD card
- SSD
- 1 x HDMI
- 1 x DisplayPort for additional monitor
- Fanless

Options

- 16 GB RAM
- WiFi (WLAN)
- RFID reader
- 2 x COM RS-232,422,485 port
- CF/SD card adapter

Ordering information

Item no.	Designation	Description
10002324	JI-FPC2015-PCT-E1-L7-B10-DE	Flat panel PC 15.6“, 8 GB RAM, i5, 128 GB SSD, Windows 10
10001843	JI-FPC2022-PCT-E1-L7-B10-DE	Flat panel PC 21.5“, 8 GB RAM, i5, 128 GB SSD, Windows 10

Technical specifications

	JI-FPC2015
Display	15.6" TFT widescreen
Resolution	1920 x 1080 (FULL HD)
Format	16:9
Contrast	500:1
Brightness (display)	450 cd/m²
Background lighting	LEDs, service life > 50,000 h
Touch screen	Glass projected capacitive touch (PCAP)
Processor	Intel® Core™ i5 ULT core 7300U „Kaby Lake“
RAM	8 GB
Ports and interfaces	4 x USB 3.0, 2 x GBE LAN (10/100/1000 Mbit/, 1 x DisplayPort, 1 x HDMI
Drives	1 x M.2 SSD 128 GByte
Cooling	Passive (fanless)
Supply voltage	DC 12 V ... 30 V
Current consumption	5 A max.
Weight	6.5 kg
Dimensions (W x H x D)	399 x 260 x 74 mm
Cut-out dimensions	250 x 389 mm
Color (front)	RAL 7021 (anthracite black)
Mechanical installation	Front panel installation
EMC	EN55022 class B
Approvals	CE Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EC RoHS 2 Directive E2011/65/EU + 2015/863/EU + 2017/2102/EU
Degree of protection	IP65 (front panel), IP20 (rear panel)
Operating temperature	0 °C ... +50 °C
Humidity	10 % ... 95 % at 39 °C, non-condensing
Supported operating systems	Windows 10, Linux embedded Default scope of delivery: Windows 10 IoT Enterprise 2019 LTSC Embedded OEM license Key (ePKEA), Value (MUU-00005)
RoHS compliance	Yes (2011/65/EU + 2015/863/EU + 2017/2102/EU)

Technical specifications

	JI-FPC2022
Display	21.5" TFT widescreen
Resolution	1920 x 1080
Format	16:9
Contrast	3000:1
Brightness (display)	300 cd/m²
Background lighting	LEDs, service life > 50,000 h
Touch screen	Glass projected capacitive touch (PCAP)
Processor	Intel® Core™ i5 ULT core 7300U „Kaby Lake“
RAM	8 GB
Ports and interfaces	4 x USB 3.0, 2 x GBE LAN (10/100/1000 Mbit/, 1 x DisplayPort, 1 x HDMI
Drives	1 x M.2 SSD 128 GByte
Cooling	Passive (fanless)
Supply voltage	DC 12 V ... 30 V
Current consumption	5 A max.
Weight	10.5 kg
Dimensions (W x H x D)	533 x 339 x 74 mm
Cut-out dimensions	522.5 x 328 mm
Color (front)	RAL 7021 (anthracite black)
Mechanical installation	Front panel installation
EMC	EN55022 class B
Approvals	CE Low Voltage Directive 2006/95/EC EMC Directive 2004/108/EC RoHS 2 Directive 2011/65/EU
Degree of protection	IP65 (front panel), IP20 (rear panel)
Operating temperature	0 °C ... +50 °C
Humidity	10 % ... 95 % at 39 °C, non-condensing
Supported operating systems	Windows 10, Linux embedded Default scope of delivery: Windows 10 IoT Enterprise 2019 LTSC Embedded OEM license Key (ePKEA), Value (MUU-00005)
RoHS compliance	Yes (2011/65/EU)

JI-PC 602

Product features

- Compact
- 2 x PCIe slot
- 24 V power supply
- Fanless (Intel® Core™ i5)

Description

The JI-PC 602 industrial PC combines a very compact design with optimum performance. It reliably handles a wide range of automation and visualization tasks thanks to a large number of interfaces and its scalable CPU performance. Expansion slots connect to standard field buses. The JI-PC 602 can be operated directly from within the control cabinet thanks to its 24 V power supply.

Technical specifications

Processor	Intel® Core™ i5
Memory	8 GB
Graphics display resolution	Full HD (1920x1080)
Ports and interfaces	3 x Ethernet 10/100/1000
	2 x USB 3.0
	2 x USB 2.0
	1x RS-232
	1 x DisplayPort™
Internal disk drives	2x mSATA
	2 x 2.5“ SATA SSD/HDD
	1 x SD card
Operating voltage	DC 24 V
Expansion slot	2x PCIe
	2 x mPCIe (internal)
Operating system	Windows® 10 IOT LTS
Operating temperature	0 ... 50 °C
Degree of protection	IP20
Dimensions (W x H x D)	155 x 290 x 210 mm

Ordering information

Item no.	Designation	Description
10002570	JI-PC602-L7-B10	i5, 8 GB, 128 GB SSD, WIN10

Servo amplifier

The JetMove series is available in wide array of rated currents and supply voltages.

All devices offer excellent positioning accuracy and the possibility to operate various motor types with different encoders.

The integrated motion GUI allows you to get your motion systems up and running quickly and easily using our JetSym programming software.

JetMove 1005 | 1008

Product features
- Compact geometries
- High positioning accuracy and quality of control
- Integrated safety technology (S1)
- Digital encoder interfaces for 1-cable technology (TD)
- Easy commissioning
- Swift installation and wiring

Description
The JetMove 1005/1008 servo amplifiers are designed to control motors between DC 24 V ... 48 V delivering 384 W max. They connect to Bucher Automation controllers via EtherCAT® and CANopen – whether or not equipped with encoders.

Options
- CANopen (I4)
- TD - HIPERFACE DSL® (TD)
- LinMot® encoder (TL)
- Analog output +/-10 V (T6)

Functional versatility with motion control
- Electronic gearing
- Dynamically changeable cam discs
- Synchronizing of position and velocity
- Print-mark correction
- Winding function
- Flying saw
- Cross cutter
- Torque/force control

Wide range of use cases
- Packaging and filling
- Installation and handling
- Glass and window building machines

Motor and encoder types
- Synchronous and asynchronous motors
- Direct drives, linear motors
- BLDC and DC motors
- 2-phase stepper motors
- Resolver, incremental encoder, hall sensor (digital)
- HIPERFACE DSL®, LinMot®

Technical specifications

	JetMove 1005	JetMove 1008
Cycle times for current, speed and position control	62.5 µs, 125 µs, 250 µs	62.5 µs, 125 µs, 250 µs
Controller interfaces	EtherCAT® or CANopen	EtherCAT® or CANopen
Diagnostics/indicators for device and bus state	Via colored LEDs	Via colored LEDs
CANopen address settings and bus termination	Via rotary switch and DIP switch	Via rotary switch and DIP switch
Motor types	Synchronous/asynchronous motors, direct drives, linear motors, BLDC and DC motors, 2-phase stepper motors	Synchronous/asynchronous motors, direct drives, linear motors, BLDC and DC motors, 2-phase stepper motors
Encoder types – basic equipment	Resolver; incremental encoder (RS422 500 kH max. or SinCos 1 Vpp max. 100 kHz, 5 V Udc)	Resolver; incremental encoder (RS422 500 kH max. or SinCos 1 Vpp max. 100 kHz, 5 V Udc)
Optional encoders	HIPERFACE DSL®, LinMot® (with HDSL or LinMot® without resolver)	HIPERFACE DSL®, LinMot® (with HDSL or LinMot® without resolver)
Thermal sensor, shutdown	Switch, PTC, KTY83-110, KTY84-130, PT-1000; I2T shutdown	Switch, PTC, KTY83-110, KTY84-130, PT-1000; I2T shutdown
Digital inputs	4, DC 24 V, 5 mA, user-configurable, reaction time 250 µs	4, DC 24 V, 5 mA, user-configurable, reaction time 250 µs
Analog inputs	2, -10 ... +10 V, 12 bits, 1 ms sampling interval	2, -10 ... +10 V, 12 bits, 1 ms sampling interval
STO input	2; DC 24 V, 5 mA + 1 x feedback relay (<100 mA), Cat 3, PL „e“	2; DC 24 V, 5 mA + 1 x feedback relay (<100 mA), Cat 3, PL „e“
Brake output	1 relay, DC 24 V max., 500 mA (semiconductor)	1 relay, DC 24 V max., 500 mA (semiconductor)
Ballast resistor	Option: external	Option: external
Supply voltage - logic circuit	DC 24 V (±20 %), 300 mA	DC 24 V (±20 %), 300 mA
Supply voltage - power circuit	DC 24 ... 48 V (±20 %), 10 Ampere max.	DC 24 ... 48 V (±20 %), 10 Ampere max.
Rated current [A] at 16 kHz	5	8
Peak current [A] at 16 kHz for 8 s max.	10	16
Continuous power [kW]	0.24	0.384
Weight [kg]	0.4	0.41
Dimensions (H x W x D) in mm	26 x 142 x 95	26 x 142 x 95
Color (front) and housing	Steel plate, galvanized	Steel plate, galvanized
EMC directive	EMC Directive 2014/30/EU	EMC Directive 2014/30/EU
Approvals	CE	CE
RoHS compliance	Yes	Yes
Degree of protection	IP20	IP20
Height of installation	Operation: 1,000 m max., higher upon request	Operation: 1,000 m max., higher upon request
Shock/vibration – transport	2M2 to EN 60721-3-2: 1997	2M2 to EN 60721-3-2: 1997
Vibration during operation	Sine-shaped, 10 Hz ... 57 Hz: 0.075 mm amplitude, 57 Hz ... 150 Hz: Acceleration 1 g	Sine-shaped, 10 Hz ... 57 Hz: 0.075 mm amplitude, 57 Hz ... 150 Hz: Acceleration 1 g
Ambient temperature – operation/transport (warehouse)	0 °C ... +40 °C / -25 °C ... +70 °C (+55 °C)	0 °C ... +40 °C / -25 °C ... +70 °C (+55 °C)
Ambient air humidity – operation / transport (warehouse)	5 % ... 85 %, non-condensing / 5 % ... 95 %, non-condensing	5 % ... 85 %, non-condensing / 5 % ... 95 %, non-condensing
Maximum storage period	1 year without limitations	1 year without limitations

Ordering information

Item no.	Designation	Description
60882066_00	JM-1005	Standard design
60882067_00	JM-1005	HIPERFACE DSL®
60881662_00	JM-1008	Standard design
60881953_00	JM-1008	HIPERFACE DSL®

JetMove 3000 series

Product features

- Modular design
- Flexible power bus system
- Compact geometries
- Up to three axis modules per device
- High positioning accuracy
- EtherCAT® bus connection
- Integrated safety technology (S1)
- Brake resistor (supply unit) (R1)
- Easy commissioning

Options

- HIPERFACE DSL® (TD)
- Cold plate cooling

Description

The servo amplifiers of the JetMove 3000 series are modular by design and can be extended. The amplifier modules connect to the supply unit via a busbar system. Any servo amplifier of the JetMove 3000 series is available with a choice of 1-, 2- or 3-axis modules. This allows for the implementation of an individual, high-performance, multi-axis coordinated motion system. High rated currents and triple peak currents make acceleration operations highly dynamic. Bus connection is via EtherCAT®.

Ordering information

Item no.	Designation	Description
60879872_02	JetMove 3P10	Standard supply unit
60879874_02	JetMove 3P10	Supply unit with built-in PSU
60879873_02	JetMove 3P22	Standard supply unit
60879875_02	JetMove 3P22	Supply unit with built-in PSU
60879860_02	JetMove 3506	Standard 1-axis module
60879756_02	JetMove 3506	1-axis module with HIPERFACE DSL®
60879861_02	JetMove 3512	Standard 1-axis module
60882967_02	JetMove 3512	1-axis module with HIPERFACE DSL®
60879862_02	JetMove 3518	Standard 1-axis module
60882969_02	JetMove 3518	1-axis module with HIPERFACE DSL®
60879863_02	JetMove 3524	Standard 1-axis module
60882970_02	JetMove 3524	1-axis module with HIPERFACE DSL®
60879864_02	JetMove 3532	Standard 1-axis module
60882971_02	JetMove 3532	1-axis module with HIPERFACE DSL®
60879865_02	JetMove D3503	Standard 2-axis module
60882319_02	JetMove D3503	2-axis module with HIPERFACE DSL®
60879866_02	JetMove D3506	Standard 2-axis module
60882320_02	JetMove D3506	2-axis module with HIPERFACE DSL®
60879867_02	JetMove D3512	Standard 2-axis module
60882972_02	JetMove D3512	2-axis module with HIPERFACE DSL®
60879868_02	JetMove D3516	Standard 2-axis module
60882973_02	JetMove D3516	2-axis module with HIPERFACE DSL®
60879869_02	JetMove T3503	Standard 3-axis module
60882368_02	JetMove T3503	3-axis module with HIPERFACE DSL®
60879870_02	JetMove T3506	Standard 3-axis module
60881661_02	JetMove T3506	3-axis module with HIPERFACE DSL®
60879871_02	JetMove T3512	Standard 3-axis module
60882369_02	JetMove T3512	3-axis module with HIPERFACE DSL®

Technical specifications – Supply unit

	JetMove 3P10	JetMove 3P22
Connection type	3-phase, AC 400 V	3-phase, AC 400 V
Continuous power (kW)	10	22
Peak power (kW)	20	44
Dimensions (H x W x D) in mm	55 x 310 x 241	110 x 310 x 241
Weight (kg)	2.6	5.2

Technical specifications – 1-axis module

	JetMove 3506	JetMove 3512	JetMove 3518	JetMove 3524	JetMove 3532
Connection type	DC 565 V	DC 565 V	DC 565 V	DC 565 V	DC 565 V
Rated current at 4 kHz (A)	6	12	18	24	32
Peak current at 4 kHz (A)	18	36	48	72	100
Weight incl. STO (kg)	2.6	2.7	2.7	4.5	4.5
Dimensions (H x W x D) in mm	55 x 310 x 241	55 x 310 x 241	55 x 310 x 241	110 x 310 x 241	110 x 310 x 241
Safety function S1 STO (SIL3, PL e)	Integrated	Integrated	Integrated	Integrated	Integrated
Controller interfaces	EtherCAT	EtherCAT	EtherCAT	EtherCAT	EtherCAT
Motor encoder interfaces	Resolver; HIPERFACE®; SinCos; EnDat 2.1, 2.2; incremental encoders; SSI; option: HIPERFACE DSL®				
Motor types	Synchronous and asynchronous motors, direct drives, torque and linear motors				

Technical specifications – 2-axis module

	JetMove D3503	JetMove D3506	JetMove D3512	JetMove D3516
Connection type	DC 565 V	DC 565 V	DC 565 V	DC 565 V
Rated current at 4 kHz (A)	2 x 3	2 x 6	2 x 12	2 x 16
Peak current at 4 kHz (A)	2 x 9	2 x 18	2 x 36	2 x 48
Weight incl. STO (kg)	2.6	2.75	4.3	4.3
Dimensions (H x W x D) in mm	55 x 310 x 241	55 x 310 x 241	55 x 310 x 241	55 x 310 x 241
Safety function S1 STO (SIL3, PL e)	Integrated	Integrated	Integrated	Integrated
Controller interfaces	EtherCAT	EtherCAT	EtherCAT	EtherCAT
Motor encoder interfaces	Resolver; HIPERFACE®; SinCos; EnDat 2.1, 2.2; incremental encoders; SSI; option: HIPERFACE DSL®			
Motor types	Synchronous and asynchronous motors, direct drives, torque and linear motors			

Technical specifications – 3-axis module

	JetMove T3503	JetMove T3506	JetMove T3512
Connection type	DC 565 V	DC 565 V	DC 565 V
Rated current at 4 kHz (A)	3x 3	3x 6	3x 12
Peak current at 4 kHz (A)	3x 9	3x 18	3x 36
Weight incl. STO (kg)	2.8	2.8	4.5
Dimensions (H x W x D) in mm	55 x 310 x 241	55 x 310 x 241	110 x 310 x 241
Safety function S1 STO (SIL3, PL e)	Integrated	Integrated	Integrated
Controller interfaces	EtherCAT	EtherCAT	EtherCAT
Motor encoder interfaces	Resolver; HIPERFACE®; SinCos; EnDat 2.1, 2.2; incremental encoders; SSI; option: HIPERFACE DSL®		
Motor types	Synchronous and asynchronous motors, direct drives, torque and linear motors		

Line reactors for the JetMove-3xxx series

Actual product not shown

Description

With 3-phase line filters, the use of line reactors is optional. In addition, they help reduce voltage distortions (THD) in the network while increasing the service life of the servo amplifier. As with line filters, several servo amplifiers can be connected to one line reactor. The following cases mandate the connection of servo amplifiers via a line reactor:

– When using the servo amplifier in applications with disturbance variables according to EN 61000-2-4 environmental class 3 and higher (harsh industrial environment).
– To ensure compliance with EN 61800-3 or IEC 61800-3.

Technical specifications

	JLR34.xxx-UR	JLR34.20-UR	JLR34.44-UR
Mains voltage	3 x 460 V, -25 % +10 %, 50/60 Hz [1]	3 x 460 V, -25 % +10 %, 50/60 Hz [1]	
Overload factor	2.0 x IN for 30 s	2.0 x IN for 3 s	
Ambient temperature	-25 °C ... +45 °C, with derating up to 60 °C (1.3 % per °C)		
Operating altitude	1000 m, up to 2000 m with derating (6 % per 1000 m)		
Relative humidity	15 % ... 95 %, condensation is not permissible		
Storage temperature	-25 °C ... +70 °C		
Degree of protection	IP00		
Short-circuit voltage	U_k 4 % (corresponds to 9.24 V at 400 V) applies to line reactors where IN = 4.0 A ... 32 A [2]; U_k 2 % (corresponds to 4.6 V at 400 V) applies to line reactors where IN = 45 A ... 450 A [3]	U_k 2 % (corresponds to 4.6 V at 400 V)	
Permissible degree of contamination	P2 according to EN 61558-1		
Thermal dimensioning	$I_{RMS} \leq IN$		
UL Recognition	JLR3X.xxx-UR model includes UL recognition for the US and Canada markets	UL recognition for the US and Canada markets	

[1] Where the mains frequency is 60 Hz, the power dissipation increases by approx. 5 to 10%.

[2] Only for servo amplifiers up to 32 A.
[3] Only for servo amplifiers from 45 A.

Technical specifications and JetMove assignment

	JLR34.20-UR	JLR34.44-UR
Optional line reactor	JM-3P10	JM-3P22
Model variant	2	2
Usage	JM-3xxx	JM-3xxx
Certifications	UL	UL
Degree of protection	IP00	IP00
Voltage	3 x AC 460 V, -25 %	3 x AC 460 V, 5 % +10 %, 50/60 Hz
Rated current	20 A	45 A
Overload	40 A	90 A
Conductor/connection	6 mm²	16 mm²
Weight	2.5 kg	5 kg
Inductance	0.735 mH	0.33 mH
Power dissipation	31 W	60 W
Dimensions (H x W x D) in mm	125 x 120 x 75	155 x 151 x 110

Ordering information

Item no.	Designation	Description
60880601_00	JLR34.20-UR	Line reactor JM-3P10, JM-1416/1407/1404
60880602_00	JLR34.44-UR	Line reactor JM-3P22, JM-1432/1416/1407/1404

Line filters for the JetMove-3xxx series

Actual product not shown

Description

External radio interference suppression filters (JEMCxxx) are available for the servo amplifiers.

When applying the requested measuring method and using an external line filter, the servo amplifiers comply with the EMC requirements of the IEC 61800-3 product standard for "First environment" (C2 residential) and "Second environment" (C3 industrial).

The suitable line filter is chosen based on considerations of power (10 kW or 22 kW) and total length of the power cables of all axes (up to 120 m, up to 300 m, up to 600 m).

Ambient conditions

	JEMCxx.xxx-UR
Rated voltage	3 x 480 V AC +10 % at 50/60 Hz
Ambient temperature	+45 °C, with derating up to 55 °C (1.0 % per °C)
Operating altitude	1000 m, up to 2000 m with derating (1 % per 100 m)
Relative humidity	75 % annual average, 95 % for max. 30 days, aggressive atmosphere or condensation not permissible
Storage/transport temperature	-25 °C ... +55 °C / -25 °C ... +70 °C
Climate category	25/105/21
Degree of protection	IP20
Connectors	Contact-protected screw terminals IP20, shield connection
Standards/certificates	IEC 60939-2, RoHS-compliant, UL recognition
Radio interference suppression EN61800-3	Refer to the User Manual of the supply unit
(Category C2 – residential) [1]	
Radio interference suppression EN61800-3	JEMCxx.120-UR: Permissible motor cable length: up to 120 m; JEMCxx.240-UR: permissible
(Category C3 – industrial) [1]	motor cable length: up to 300 m; JEMCxx.600-UR: Permissible motor cable length up to 600 m

[1] Requirement: Vertical installation of the line filters on a bare metal base plate.

Ordering information

Item no.	Designation	Description
60880637_00	JEMC25.120-UR	Line filter for JM-3P10, up to 120 m
60880638_00	JEMC53.120-UR	Line filter for JM-3P22, up to 120 m
60880639_00	JEMC25.240-UR	Line filter for JM-3P10, up to 240 m
60880640_00	JEMC53.240-UR	Line filter for JM-3P22, up to 240 m
60880641_00	JEMC25.600-UR	Line filter for JM-3P10, up to 600 m
60880642_00	JEMC53.600-UR	Line filter for JM-3P22, up to 600 m

Technical specifications and JetMove assignment

	JEMC25.120-UR	JEMC53.120-UR	JEMC25.240-UR
Line filter required	JM-3P10	JM-3P22	JM-3P10
Model variant	-	-	-
Usage	JM-3xxx	JM-3xxx	JM-3xxx
Certifications	UL	UL	UL
Degree of protection	IP20	IP20	IP20
Voltage	3 x AC 480 V	3 x AC 480 V	3 x AC 480 V
Rated current	25 A	53 A	25 A
Overload [1]	50 A	106 A	50 A
Conductor/terminal mm²	0.2 ... 6	0.5 ... 16	0.2 ... 6
Weight	4 kg	4.1 kg	4.6 kg
EN 61800-3, category C3,			
maximum motor cable length	120 m	120 m	300 m
Power dissipation	3 W	16 W	4.8 W
Leakage current [2]	5.5 mA	5.7 mA	24.5 mA
Contact current N/F [3]	5.4 mA	5.9 mA	7.2 mA
Dimensions (H x W x D) in mm	55 x 310 x 220	55 x 310 x 220	55 x 310 x 220

Technical specifications and JetMove assignment

	JEMC53.240-UR	JEMC25.600-UR	JEMC53.600-UR
Line filter required	JM-3P22	JM-3P10	JM-3P22
Model variant	-	-	-
Usage	JM-3xxx	JM-3xxx	JM-3xxx
Certifications	UL	UL	UL
Degree of protection	IP20	IP20	IP20
Voltage	3 x AC 480 V	3 x AC 480 V	3 x AC 480 V
Rated current	53 A	25 A	53 A
Overload [1]	106 A	50 A	106 A
Conductor/terminal mm²	0.5 ... 16	0.2 ... 6	0.5 ... 16
Weight	4.8 kg	5.3 kg	5.9 kg
EN 61800-3, category C3,			
maximum motor cable length	300 m	600 m	600 m
Power dissipation	13.6 W	11 W	18 W
Leakage current [2]	24.5 mA	61.5 mA	61.5 mA
Contact current N/F [3]	7.2 mA	9.2 mA	9.2 mA
Dimensions (H x W x D) in mm	55 x 310 x 220	55 x 310 x 220	55 x 310 x 220

[1] For the duration of 10 s, repeatable after 6 min; requirement: Installation of the line filters vertically on a bare metal base plate.

[2] RMS value of the leakage current according to EN 60939 (2009) at 50 Hz and rated voltage with 2 % unbalance. The device to be suppressed can increase the leakage current.

[3] Peak value measurement with measuring circuit according to EN 60990 at 50 Hz and rated voltage with 2 % unbalance.

Brake resistors for the JetMove-3xxx series

Actual product not shown

Description

Supply units of the JM-3Pxx-xxR1xx ordering option come with an integrated brake resistor. If the integrated resistor is not sufficient, external brake resistors are available. For a cross reference of braking resistors and suitable JetMove models see the table on the opposite page. The user manual also specifies the minimum ohmic resistance that is allowed for an external brake resistor.

Ambient conditions

	JBR-039.02.540-UR JBR-020.02.540-UR	JBR-039.03.540-UR JBR-020.03.540-UR	JBR-039.10.201-UR JBR-020.10.201-UR JBR-039.20.201-UR JBR-020.20.201-UR	JBR090.10.201-UR JBR026.20.201-UR
Surface temperature	> 250 °C	> 250 °C	> 250 °C	> 250 °C
Protection against accidental contact	No	No	Yes	Yes
Voltage	DC 848 V max.	DC 848 V max.	DC 848 V max.	DC 848 V max.
High-voltage strength	DC 4,000 V	DC 4,000 V	DC 4,000 V	DC 4,000 V
Temperature protection	6.3 A / 230 V	6.3 A / 230 V	Yes, with bimetallic projector; 2.0 A / 230 V	Yes, with bimetallic projector; 2.0 A / 230 V
Certifications	CE, UL	CE, UL	CE, UL	CE, UL
Connectivity	Insulated stranded wire, 1 m	Insulated stranded wire, 1 m	Terminals in terminal box with cable gland	Terminals in terminal box with cable gland

Ordering information

Item no.	Designation	Description
60880604_00	JBR-039.02.540-UR	Brake resistor for JM-3P10 (150 W)
60880605_00	JBR-020.02.540-UR	Brake resistor for JM-3P22 (150 W)
60880606_00	JBR-039.03.540-UR	Brake resistor for JM-3P10 (300 W)
60880607_00	JBR-020.03.540-UR	Brake resistor for JM-3P22 (300 W)
60880608_00	JBR-039.10.201-UR	Brake resistor for JM-3P10 (1000 W)
60880609_00	JBR-020.10.201-UR	Brake resistor for JM-3P22 (1000 W)
60880610_00	JBR-039.20.201-UR	Brake resistor for JM-3P10 (2000 W)
60880611_00	JBR-020.20.201-UR	Brake resistor for JM-3P22 (2000 W)

Technical specifications and JetMove assignment

	JBR-039.02.540-UR	JBR-020.02.540-UR	JBR-039.03.540-UR	JBR-020.03.540-UR
Optional use with JM-3Pxx, if brake resistor is not built-in or disconnected	JM-3P10 (150 W)	JM-3P22 (150 W)	JM-3P10 (300 W)	JM-3P22 (300 W)
Model variant	A1	A1	A2	A2
Usage	JM-3xxx	JM-3xxx	JM-3xxx	JM-3xxx
Certifications	UL	UL	UL	UL
Degree of protection [3]	IP54	IP54	IP54	IP54
Resistance	39 Ω	20 Ω	39 Ω	20 Ω
Continuous power [2]	150 W	150 W	300 W	300 W
Maximum conductor size	AWG 14/18 2.08/0.82 mm²	AWG 14/18 2.08/0.82 mm²	AWG 14/18 2.08/0.82 mm²	AWG 14/18 2.08/0.82 mm²
Weight	0.42 kg	0.42 kg	0.85 kg	0.85 kg
Peak braking power	16 kW	32 kW	16 kW	32 kW
Dimensions (H x W x D) in mm	90 x 160 x 15	90 x 160 x 15	90 x 320 x 15	90 x 320 x 15

Technical specifications and JetMove assignment

	JBR-039.10.201-UR	JBR-020.10.201-UR	JBR-039.20.201-UR	JBR-020.20.201-UR
Optional use with JM-3Pxx, if brake resistor is not built-in or disconnected	JM-3P10 (1000 W)	JM-3P22 (1000 W)	JM-3P10 (2000 W)	JM-3P22 (2000 W)
Model variant	A4	A4	A5	A5
Usage	JM-3xxx	JM-3xxx	JM-3xxx	JM-3xxx
Certifications	UL	UL	UL	UL
Degree of protection [3]	IP20	IP20	IP20	IP20
Resistance	39	20	39	20
Continuous power [2]	1000 W	1000 W	2000 W	2000 W
Maximum conductor size	AWG 6/12 10/2.5 mm²	AWG 6/12 10/2.5 mm²	AWG 6/12 10/2.5 mm²	AWG 6/12 10/2.5 mm²
Weight	4 kg	4 kg	6.7 kg	6.7 kg
Peak braking power	16 kW	32 kW	16 kW	32 kW
Dimensions (H x W x D) in mm	92 x 749 x 120	92 x 749 x 120	185 x 749 x 120	185 x 749 x 120

Technical specifications and JetMove assignment

	JBR090.10.201-UR	JBR026.20.201-UR
Optional use with JM-3Pxx, if brake resistor is not built-in or disconnected	JM-3xxx JM-3P10	
Model variant	A4	A5
Usage	JM-3xxx	JM-3xxx
Certifications	UL	UL
Degree of protection [3]	IP20	IP20
Resistance	90 Ω	26 Ω
Continuous power [2]	1000	2000
Maximum conductor size	AWG 6/12; 10/2,5 mm²	AWG 6/12; 0/2,5 mm²
Weight	4 kg	6.7 kg
Peak braking power	6250 W	21635 W
Dimensions (H x W x D) in mm	92 x 749 x 120	185 x 749 x 120

[1] Once for 0.5 s max., then cool down for at least 10 min.

[2] For cycle times of 150 s max., the required rated continuous braking power is calculated follows:
Rated continuous braking power (W) = max. pulse duration (s) x peak power (W) / cycle time (s).

[3] If mounted on a suitable surface.

JetMove 200 series

Description

The servo amplifiers of the JetMove 200 model series cover a full voltage range from 1-phase AC 230 V to 3-phase AC 400 V. They can handle currents of up to 15 A.

Product features

- 1-phase, AC 230 V up to 3-phase, AC 400 V
- 3 A ... 15 A
- Supported motor types:
  - Synchronous and asynchronous motors
  - 3-phase stepper motors
  - Direct drives
  - Linear motors

Options

- Safe Torque Off (STO) (S1)
- Second encoder input (CNT) (incremental, SSI, EnDat 2.2 (without analog signals))
- Incremental encoder emulation (EMU)
- Ethernet interface (ETH)
- Integrated controller (JC-310)

Ordering information

Item no.	Designation	Description
10000618	JetMove D203	Standard design
10000487	JetMove D203	Safe torque off (STO) (S1)
10000647	JetMove 203B	Standard design
10000649	JetMove 203B	Safe torque off (STO) (S1)
10000462	JetMove 206 B	Standard design
10000560	JetMove 204	Standard design
10000567	JetMove 204	Safe torque off (STO) (S1)
10000491	JetMove 208	Standard design
10000559	JetMove 208	Safe torque off (STO) (S1)
10000690	JetMove 215 B	Standard design
10000696	JetMove 215 B	Safe torque off (STO) (S1)

Other options that go with JM-2xx servo amplifiers are available on request.

Technical specifications

	JetMove D203	JetMove 203B	JetMove 206 B
Connection type	1-phase, AC 230 V	1-/3-phase, AC 230 V	1-/3-phase, AC 230 V
Rated current (A)	2 x 3	3	6
Peak current (A)	2 x 6	6	12
Continuous power (kW)	2 x 0.5	0.5	1.0
Ports and interfaces	JX2 system bus	JX2 system bus	JX2 system bus
Safe torque off (STO)	Option	Option	-
JC-310 control system	-	or Ethernet 10/100 Mbit	or Ethernet 10/100 Mbit
Analog input	-	Option	Option
Counter input	-	Option	Option
Emulator	-	Option	Option
Weight incl. STO (kg)	2.5	1.6	3
Dimensions (W x H x D) in mm	87 x 310 x 203	55 x 220 x 233	70 x 254 x 260

Technical specifications

	JetMove 204	JetMove 208	JetMove 215 B
Connection type	3-phase, AC 400 V	3-phase, AC 400 V	3-phase, AC 400 V
Rated current (A)	4	8	15
Peak current (A)	8	16	30
Continuous power (kW)	2	4.5	5.5
Ports and interfaces	JX2 system bus	JX2 system bus	JX2 system bus
Safe torque off (STO)	Option	Option	Option
JC-310 control system	or Ethernet 10/100 Mbit	or Ethernet 10/100 Mbit	or Ethernet 10/100 Mbit
Analog input	Option	Option	Option
Counter input	Option	Option	Option
Emulator	Option	Option	Option
Weight incl. STO (kg)	4.2	4.3	6.8
Dimensions (W x H x D) in mm	72 x 310 x 280	72 x 310 x 280	105 x 310 x 280

JetMove 105

Product features

- DC 12 ... 48 V
- 5 A
- Supported motor types:
  - Synchronous and asynchronous motors
  - 2-phase stepper motors
  - Direct drives
  - DC and BDC motors
  - Linear motors

Description

The JetMove 105 servo amplifier has been designed to handle voltages ranging from DC 12 to 48 V (up to 384 W). This servo amplifier supports all major motor types and requires minimal installation space thanks to its compact geometries.

Technical specifications

Rated motor voltage	DC 12 V ... 48 V
Rated current (A)	5
Peak current (A)	10
Rated output (W)	240
Rated logic circuit voltage	DC 24 V
1 digital output (brake)	0.5 A; DC 24 V
1 analog input	0 ... 10 V (12 bits)
Ports and interfaces	JX2 system bus
Ambient temperature	0 ... 40 °C
Weight incl. STO (kg)	0.3
Dimensions (W x H x D) in mm	26 x 136 x 96

Ordering information

Item no.	Designation	Description
10000633	JetMove 105	-

JetMove 108

Product features

- DC 12 ... 48 V
- 8 A
- Supported motor types:
  - Synchronous and asynchronous motors
  - 2-phase stepper motors
  - Direct drives
  - DC and BDC motors
  - Linear motors

Description

The JetMove 108 servo amplifier has been designed to handle voltages ranging from DC 12 to 48 V (up to 384 W). This servo amplifier supports all major motor types and requires minimal installation space thanks to its compact geometries.

Technical specifications

Rated motor voltage	DC 12 V ... 48 V
Rated current (A)	8
Peak current (A)	16
Rated output (W)	384
Rated logic circuit voltage	DC 24 V
1 digital output (brake)	0.5 A; DC 24 V
1 analog input	0 ... 10 V (12 bits)
Ports and interfaces	JX2 system bus
Ambient temperature	0 ... 40 °C
Weight incl. STO (kg)	0.3
Dimensions (W x H x D) in mm	26 x 136 x 96

Ordering information

Item no.	Designation	Description
10000749	JetMove 108	-

Servo amplifier cables

Encoder cable with M23 connector

Motor cable with M23 con- nector

Encoder cable with Y-Tec connector for JHQ12, JHQ22 and JHQ24 motors

Motor cable with Y-Tec connector for JHQ12, JHQ22 and JHQ24 motors

Description

Motor and power cables are assembled to meet the individual specifications of each JetMove model series and the respective servo motors and encoder designs, and are available in various lengths on request.

Thanks to our many years of experience and know-how backed by a diverse inventory of high-quality cable types and a largely automated production process, we are able to supply tested servo amplifier cables at short notice.

Product features

- UL and CSA approval
- All cables are shielded
- Suitable for drag chains (with PUR sheathing)
- Halogen-free, oil-resistant, flame-retardant, RoHS-compliant,
- Sheath colors to DESINA (encoder cable green, power cable orange)
- Core color according to DIN 47100

Cable length notation for KAY_xxxx_yyyy: xxxx = cable item no. yyyy = length in cm; e.g. 0100 = 1 m

Cable confection no. xxx yy.y = length in meters 1.5 = 1.5 m

Encoder/servo amplifier cables

	Cable no. 623	**Cable no. 1023**	**Cable no. 23**	**Cable no. 23Y**
Use of the cable – encoder type	Resolver cable	Resolver cable	Resolver cable	Resolver cable
	pre-assembled	pre-assembled	pre-assembled	pre-assembled
				motor with Y-Tec plug
Specification	(4x2x0.25) (green)	(4x2x0.25) (green)	(4x2x0.25) (green)	(4x2x0.25) (green)
JetMove	JetMove 100	JetMove 1008	JetMove 200	JetMove 200

	Cable no. 23+	**Cable no. 823**	**Cable no. 1123**	**Cable no. 1323A2**
Use of the cable – encoder type	Resolver cable	Resolver cable	Resolver cable	Resolver cable
	pre-assembled	pre-assembled	pre-assembled	pre-assembled
	Extension			
Specification	(4x2x0.25) (green)	(4x2x0.25) (green)	(4x2x0.25) (green)	(4x2x0.25) (green)
JetMove	JetMove 200	JetMove D200	JetMove 1000	JetMove 3000

	Cable no. 1323YA2	**Cable no. 723**	**Cable no. 923**	**Cable no. 1133**
Use of the cable – encoder type	Resolver cable	HIPERFACE® cable	HIPERFACE® cable	HIPERFACE® cable
	pre-assembled	pre-assembled	pre-assembled	pre-assembled
	motor with Y-Tec plug			
Specification	(4x2x0.25) (green)	(5x2x0.25) (green)	(5x2x0.25) (green)	(5x2x0.25) (green)
JetMove	JetMove 3000	JetMove 200	JetMove D200	JetMove 1000

	Cable no. 1233	**Cable no. 1333A2**	**Cable no. 1331**
Use of the cable – encoder type	HIPERFACE® cable	HIPERFACE® cable	EnDat 2.2 (6 cores)
	pre-assembled	pre-assembled	pre-assembled
Specification	(5x2x0.25) (green)	(5x2x0.25) (green)	(4x2x0.25) (green)
JetMove	JetMove 1432	JetMove 3000	JetMove 3000

23+ = Resolver extension with 2 round connectors (socket + pins)

Servo amplifier cables

Power servo lines

	Cable no. 626	Cable no. 624	Cable no. 26.1	Cable no. 26.1Y
Use of the cable – motor size	Motor without brake	Motor with brake	Motor without brake	Motor without brake
	JL1	JL1	JHN2 ... JHN5	motor with Y-Tec plug
	JHN2	JHN2	JL5-C1	
Specification	(4x1.0) (orange)	(4x1.0+(2x0.75)) (orange)	(4x1.5) (orange)	(4x1.5) (orange)
JetMove	JetMove 100/100x	JetMove 100/100x	JetMove 200	JetMove 200

	Cable no. 24.1	Cable no. 24.1Y	Cable no. 24.1+	Cable no. 1110
Use of the cable – motor size	Motor with brake	Motor with brake	Motor with brake	Motor without brake
	JHN2 ... JHN5	motor with Y-Tec connector	JHN2 ... JHN5	JHN2 ... JHN5
	JL5-C1	e.g. JHQ12, 22, 24	JL5-C1 extension	JL5-C1
Specification	(4x1.5+(2x1.5)) (orange)	(4x1.0+(2x0.75)) (orange)	(4x1.5+(2x1.5)) (orange)	(4x1.5) (orange)
JetMove	JetMove 200	JetMove 200	JetMove 200/1000/3000	JetMove 1000

	Cable no. 1112	Cable no. 1310	Cable no. 1310Y	Cable no. 1312
Use of the cable – motor size	Motor with brake	Motor without brake	Motor without brake	Motor with brake
	JHN2 ... JHN5	JHN2 ... JHN5	motor with Y-Tec plug	JHN2 ... JHN5
	JL5-C1	JL5-C1		JL5-C1
Specification	(4x1.5+(2x1.5)) (orange)	(4x1.5) (orange)	(4x1.5) (orange)	(4x1.5+(2x1.5)) (orange)
JetMove	JetMove 1000	JetMove 3000	JetMove 3000	JetMove 3000

	Cable no. 1312Y	Cable no. 202	Cable no. 204	Cable no. 1210
Use of the cable – motor size	Motor with brake	Motor with brake	Motor with brake	Motor without brake
	motor with Y-Tec connector	JL5 ... JL8 (size 1.5)	JL5 ... JL8 (size 1.5)	JHN5 ... JHN7
	e.g. JHQ12, 22, 24	JHQ8 (size 1.5)	JHQ8 (size 1.5)	JL5 ... JL6-C1
Specification	(4x1.0+(2x0.75)) (orange)	(4x4,0+(2x1.5)) (orange)	(4x6,0+(2x1.5)) (orange)	(4x2.5) (orange)
JetMove	JetMove 3000	JetMove 225/1432	JetMove 225/1432	JetMove 1416/1432

Size 1.5 = large power connector M40x1.5
C1 = for JL5 or JL6 with C1 motor option, size 1 power connector (M23x1.0) is used on the motor instead of size 1.5. This requires a matching cable with M23 connector to be ordered.
Examples: JM-3000(32A) is a servo amplifier with 32 A rated current from the JM-3000 series
Motor cable DSL = 1-cable technology with HIPERFACE DSL® encoder interface
24.1+ = Power extension cable with 2 round connectors (socket + pins)
Y = cable for motors with Y-Tec connectors, I = cable for motors with I-Tec connectors

	Cable no. 1212	Cable no. 1314	Cable no. 1214	Cable no. 1316
Use of the cable – motor size	Motor with brake	Motor with brake	Motor with brake	Motor with brake
	JHN5 ... JHN7	JHN5 ... JHN7	JHN5 ... JHN7, (size 1)	JHN5 ... JHN7, (size 1)
	JL5 ... JL6-C1	JL5 ... JL6-C1	JL5 ... JL6-C1	JL5 ... JL6-C1
Specification	(4x2,5+(2x1.5)) (orange)	(4x2,5+(2x1.5)) (orange)	(4x4,0+(2x1.5)) (orange)	(4x4,0+(2x1.5)) (orange)
JetMove	JetMove 1416/1432	JM-3000 (16/18/24/32 A)	JetMove 1432	JetMove 3000 (32 A)

	Cable no. 1216	Cable no. 1318
Use of the cable – motor size	Motor with brake	Motor with brake
	JHQ8 (size 1.5)	JHQ8 (size 1.5)
	JL5 ... JL8 (size 1.5)	JL5 ... JL8 (size 1.5)
Specification	(4x4,0+(2x1.5)) (orange)	(4x4,0+(2x1.5)) (orange)
JetMove	JetMove 1432	JetMove 3000 (32 A)

Power servo cables for motors with brake and HIPERFACE DSL® encoder (1-cable technology)

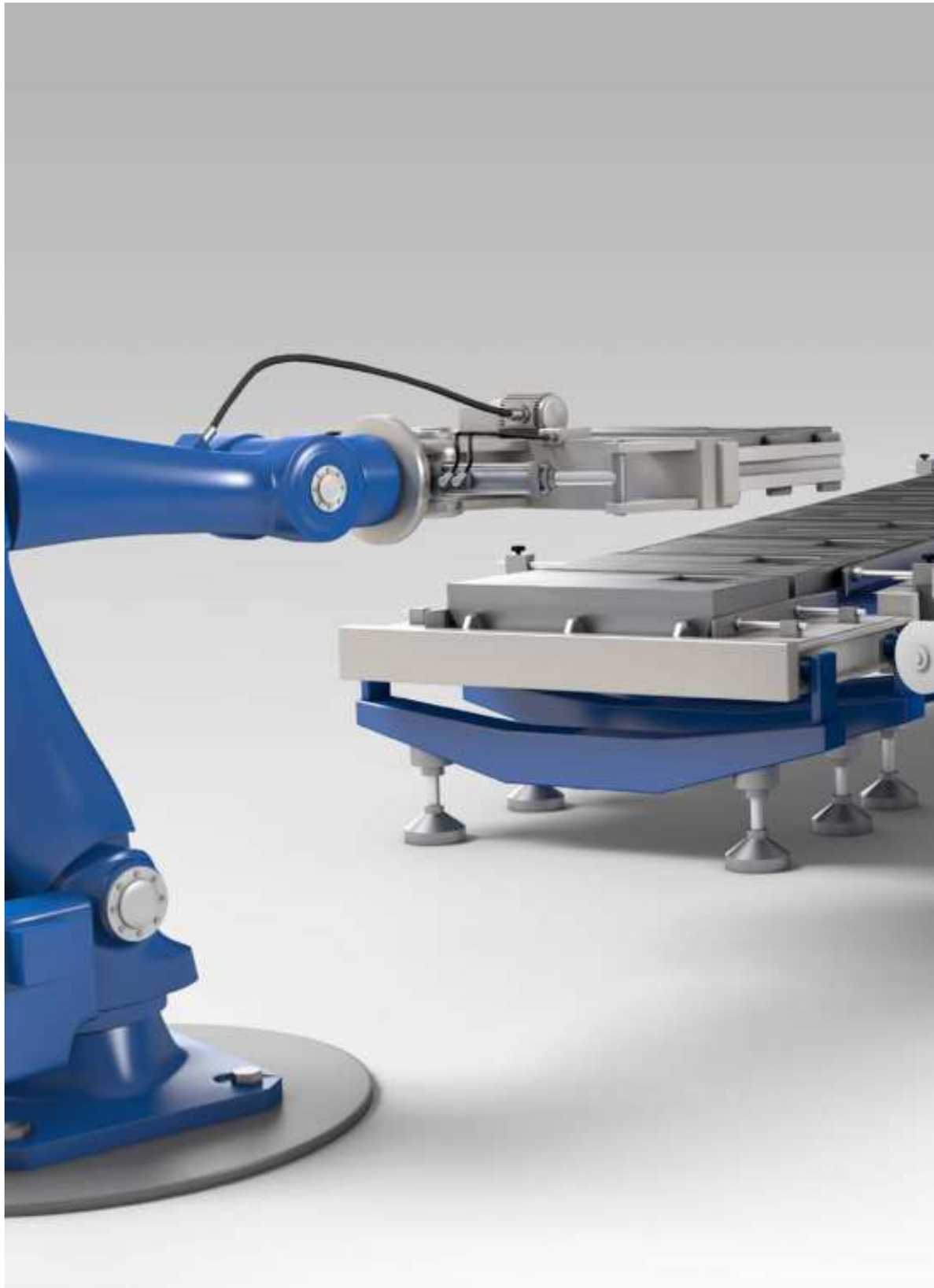
	Cable no. 1013	Cable no. 1113	Cable no. 1311	Cable no. 1311I
Use of the cable – motor size	Motor with brake, DSL	Motor with brake, DSL	Motor with brake, DSL	Motor with brake, DSL
	JHN2 ... JHN3	JHN2 ... JHN5	JHN2 ... JHN3	motor with I-Tec connector
	JHQ2 ... JHQ3	JHQ2 ... JHQ5	JHQ2 ... JHQ3	
Specification	(4x1.0+(2x0.75)+	(4x1.5+(2x0.75)+	(4x1.0+(2x0.75)+	(4x1.0+(2x0.75)+
	(2xAWG22)) (orange)	(2xAWG22)) (orange)	(2xAWG22)) (orange)	(2xAWG22)) (orange)
JetMove	JetMove 1005/1008	JetMove 1000 (6 A... 16 A)	JetMove 3000 (3A ... 6 A)	JetMove 3000 (3A ... 6 A)

	Cable no. 1313	Cable no. 1213	Cable no. 1315	Cable no. 1317
Use of the cable – motor size	Motor DSL with brake	Motor DSL with brake	Motor DSL with brake	Motor DSL with brake
	JHN2 ... JHN5	JHN5 ... JHN7	JHN5 ... JHN7	JHQ8 (size 1.5)
	JHQ2 ... JHQ5	JHQ5 ... JHQ7	JHQ5 ... JHQ7	
Specification	(4x1.5+(2x0.75)+	(4x2.5+(2x1.0)+	(4x2.5+(2x1.0)+	(4x4.0+(2x1.0)+
	(2xAWG22)) (orange)	(2xAWG22)) (orange)	(2xAWG22)) (orange)	(2xAWG22)) (orange)
JetMove	JetMove 3000 (3A ... 16 A)	JetMove 1416	JM-3000 (16/18/24/32 A)	JetMove 3000 (32 A)

Motion Control eXtended - more than movement

Seamless integration of axis functions into the controller

At Bucher Automation, controller and motion control become one allowing for easy implementation of point-to-point (PtP) positioning, technology functions (MC) path control and robot functions. This universal motion control system is called Motion Control eXtended (MCX).



High-precision movements and control with MCX

Precise movements and control

The range of possible applications for MCX motion control is almost unlimited. MCX technology shows its full potential whenever complex motion sequences meet challenging production specifications. Integrated into Bucher Automation controllers, MCX helps achieve maximum processes efficiency and profitability.

All-purpose application

- Screw capping machines
- Winding machines
- Wood, plastic, glass, and stone machining
- Textile machinery
- Packaging systems
- Handling and assembly systems
- Robot kinematics
- Palletizing systems
- Special-purpose machines

The systems deliver advanced positioning accuracy combined with increased dynamics thanks to the professional engineering of motion sequences with limited jerk. Consistent quality in the continuous processing workflow is achieved by using the electronic cam disk and gear functions.

Our motion control technology

- Electronic gearing
- Electronic cam disc
- Interpolation using user-defined mathematical functions
- Dynamic coupling/decoupling with reference to a leading axis
- Print mark for high-precision position correction
- Cross cutter
- Flying saw

Tool Center Point – to the point

For a tool center point movement, we define path groups. They support linear and circular interpolation (2D and 3D). Spline interpolation between defined path points guarantees optimum path generation. The configurable jerk limitation reduces machine vibrations.

Being able to combine these features greatly increases system versatility and simplifies customization to specific application needs.

The MCX hardware and software package

Select your JetControl controller with MCX functionality from a scalable platform. Suitable servo amplifiers of the JetMove series delivering 250 W to 15 kW of continuous power, and servo motors with gearbox round off the system.

Controllers with MCX feature

JetControl 365MC
– Up to 12 axes
– 4 path groups
– 6 technology groups
– 24 cam discs/100 segments

JetControl 440EXT
– Up to 24 axes
– 4 path groups
– 6 technology groups
– 24 cam discs/100 segments

JetControl 96xMC
– Up to 128 axes
– 50 path groups
– 100 technology groups
– 24 cam discs/100 segments

JetControl 97xMC
– Up to 64 axes
– 50 path groups
– 100 technology groups
– 24 cam discs/100 segments
– Integrated IPC with Windows OS

Servo amplifier
The corresponding servo amplifiers can be found in this catalog.

Servo motors
The corresponding servo motors can be found in this catalog and in the servo motor user manual.

JetSym – one programming tool for all control systems

Power to the software – STX for smart coding

The motion controllers are programmed using STX, a programming language offering powerful axis and path control commands and compliance with IEC 61131-3 ST. Programming is essentially process-oriented following sequential tasks. Up to one hundred tasks are available to structure the program.

Servo motors

All motors are wound to optimally match Bucher Automation servo amplifiers and their DC link voltages (or supply voltages) ranging from DC 24 V to DC 560 V. This noticeably improves equipment efficiency.

Servo motors

JHN motors stand out by virtue of the extremely compact design combined with high torque output. This allows them to be installed in smaller machines.

Different servo motor ratings can be combined to deliver the speed your application requires. This also allows you to make the most of the rated current of the respective servo amplifier. All Bucher Automation servo motors are extremely sturdy 3-phase synchronous motors with UL certification. They are available as JL, JHN and JHQ model variants. By default, the motors of the JL and JHN series feature a reduced circular runout tolerance to improve the machines smooth-running behavior. For JHQ motors, reduced runout tolerance is available as a separate option.

Numerous options for connector outlets, degrees of protection and encoder design are available. Complementing the comprehensive range of motors, we offer pre-assembled and tested servo amplifier cables and corresponding gearboxes. When connecting to JM-1000 and JM-3000 servo amplifiers, both JHQ and JHN motors feature the 1-cable technology. This helps reduce the wiring effort and machine space requirements.

For motors of the JL1, JHQ12, JHQ22, JHQ24 model series, the quick-lock screw connection of the rotating Y-Tec connector enables space-saving installation as well as fast connection and disconnection of the motor and encoder cables. The term "SB-X" stands for the angled connector which can be rotated by 300 degrees. On delivery, the connector outlet points to the non-drive end (opposite to the motor shaft). The rotating connector pointing to the drive end is marked "SA-X".

Bucher Automation offers servo cables suitable for drag chains with the corresponding mating connectors and matching the Bucher Automation motor pin-out. Bucher Automation offers ready-made cables in various lengths suited to the specifications of the servo amplifier and encoder technology used (1-cable technology or 2-cable technology).

Motor series JL | JHN | JHQ

	Flange 1	Flange 12	Flange 2
CE and UL certification (USA + Canada) cURus*	-	x	x
Isolation class F, 2-pole resolver	x	x	x
Temperature evaluation KTY83-110 for HDSL PT1000	PTC	PTC	KTY83-110
Degree of protection	IP64	IP65	IP64/IP65
Runout tolerance (R) according to DIN 42955 (for JHQ option)	x	x	x
JL series (Nm)	0.1 ... 0.2	-	0.2 ... 0.8
JHN series (Nm)	-	-	0.28 ... 0.95
JHQ series (Nm)	-	0.18 ... 0.32	0.25 ... 1.25
Length (incl. resolver, without brake) JL (mm)	81 ... 111	-	98 ... 143
Length (incl. resolver without brake) JHN (mm)	-	-	67 ... 112
Length (incl. resolver, without brake) JHQ (mm)	-	63 ... 77	87 ... 135
Flange size/centering/hole circle JL (mm)	37/25/41.5	-	55/40/63
Flange size/centering/hole circle JHN (mm)	-	-	55/40/63
Flange size/centering/hole circle JHQ (mm)	-	40/30/46	58/40/63
Shaft JL (mm)	6 x 16	-	9 x 24
Shaft JHN (mm)	-	-	9 x 20
Shaft JHQ (mm)	-	8 x 25	9 x 20
Brake option, feather key to DIN 6885 (for JL, JHN, JHQ)	x	x	x
IP67 option with shaft seal (for JL, JHN, JHQ)	-	x	x
HIPERFACE® SEx37, SKx36, SEx52, SRx50 options (starting from flange size 3) (for JL, JHN, JHQ)	-	x	x
HIPERFACE DSL® EEx37, EKx36 options (for JHQ)	-	x	x
Connector output option: Drive end, non-drive end, rotating (for JL, JHN, JHQ)	-	x	x
ATEX zone 2 and 22 option: II 3G Ex ec IIC T155 °C / II 3D Ex tc IIIC T135 °C (for JHQ)	-	x	x
Electrical connection option: Cable gland, cable, connector (for JL, JHN)	x	-	x
Options: Special shafts, other encoders, reinforced bearings, special ball-bearing grease, separately driven fan, etc.	On request	On request	On request

*Flange size 1 only available for JL series (CE approval only | no UL approval).

	Flange 22	Flange 23	Flange 24	Flange 3
CE and UL certification (USA + Canada) cURus*	x	x	x	x
Isolation class F, 2-pole resolver	x	x	x	x
Temperature evaluation KTY83-110 for HDSL PT1000	KTY83-110	KTY83-110	KTY83-110	KTY83-110
Degree of protection	IP65	IP65	IP65	IP65
Runout tolerance (R) according to DIN 42955 (for JHQ option)	x	x	x	x
JL series (Nm)	-	-	-	0.65 ... 3.0
JHN series (Nm)	-	-	-	1.15 ... 4.8
JHQ series (Nm)	0.7 ... 1.4	0.6 ... 3.0	0.7 ... 2.7	1.35 ... 4.5
Length (incl. resolver, without brake) JL (mm)	-	-	-	109 ... 181
Length (incl. resolver without brake) JHN (mm)	-	-	-	82 ... 172
Length (incl. resolver, without brake) JHQ (mm)	84 ... 104	112 ... 182	86 ... 120	122 ... 180
Flange size/centering/hole circle JL (mm)	-	-	-	86/80/100
Flange size/centering/hole circle JHN (mm)	-	-	-	86/80/100
Flange size/centering/hole circle JHQ (mm)	60/50/70	70/60/75	80/70/90	91.3/80/100
Shaft JL (mm)	-	-	-	14 x 30
Shaft JHN (mm)	-	-	-	14 x 30
Shaft JHQ (mm)	14 x 30	11 x 23/14 x 30	16 x 40	14 x 30
Brake option, feather key to DIN 6885 (for JL, JHN, JHQ)	x	x	x	x
IP67 option with shaft seal (for JL, JHN, JHQ)	x	x	x	x
HIPERFACE® SEx37, SKx36, SEx52, SRx50 options (starting from flange size 3) (for JL, JHN, JHQ)	x	x	x	x
HIPERFACE DSL® EEx37, EKx36 options (for JHQ)	x	x	x	x
Connector output option: Drive end, non-drive end, rotating (for JL, JHN, JHQ)	x	x	x	x
ATEX zone 2 and 22 option: II 3G Ex ec IIC T155 °C / II 3D Ex tc IIIC T135 °C (for JHQ)	x	x	x	x
Electrical connection option: Cable gland, cable, connector (for JL, JHN)	-	-	-	-
Options: Special shafts, other encoders, reinforced bearings, special ball-bearing grease, separately driven fan, etc.	On request	On request	On request	On request

Motor series JL | JHN | JHQ

	Flange 4	Flange 45	Flange 5	Flange 51
CE and UL certification (USA + Canada) cURus*	x	x	x	x
Isolation class F, 2-pole resolver	x	x	x	x
Temperature evaluation KTY83-110 for HDSL PT1000	KTY83-110	KTY83-110	KTY83-110	KTY83-110
Degree of protection	IP65	IP65	IP65	IP65
Runout tolerance (R) according to DIN 42955 (for JHQ option)	x	x	x	x
JL series (Nm)	5.3 ... 7.5	-	10.5 ... 22.0	-
JHN series (Nm)	5.1 ... 11.3	-	12.0 ... 24.0	-
JHQ series (Nm)	4.0 ... 10.0	6.0 ... 14.0	4.5 ... 26.0	29 ... 38
Length (incl. resolver, without brake) JL (mm)	176 ... 221	-	226 ... 311	-
Length (incl. resolver without brake) JHN (mm)	113 ... 203	-	157 ... 247	-
Length (incl. resolver, without brake) JHQ (mm)	150 ... 214	168 ... 233	148 ... 298	338 ... 405
Flange size/centering/hole circle JL (mm)	98/95/115	-	142/130/165	-
Flange size/centering/hole circle JHN (mm)	98/95/115	-	142/130/165	-
Flange size/centering/hole circle JHQ (mm)	100/95/115	116/110/130	142/130/165	142/130/165
Shaft JL (mm)	19 x 40	-	24 x 50	-
Shaft JHN (mm)	19 x 40	-	24 x 50	-
Shaft JHQ (mm)	19 x 40	19 x 40/24 x 50	24 x 50	28 x 58
Brake option, feather key to DIN 6885 (for JL, JHN, JHQ)	x	x	x	x
IP67 option with shaft seal (for JL, JHN, JHQ)	x	x	x	x
HIPERFACE® SEx37, SKx36, SEx52, SRx50 options (starting from flange size 3) (for JL, JHN, JHQ)	x	x	x	x
HIPERFACE DSL® EEx37, EKx36 options (for JHQ)	x	x	x	x
Connector output option: Drive end, non-drive end, rotating (for JL, JHN, JHQ)	x	x	x	x
ATEX zone 2 and 22 option: II 3G Ex ec IIC T155 °C / II 3D Ex tc IIIC T135 °C (for JHQ)	x	x	x	x
Electrical connection option: Cable gland, cable, connector (for JL, JHN)	-	-	-	-
Options: Special shafts, other encoders, reinforced bearings, special ball-bearing grease, separately driven fan, etc.	On request	On request	On request	On request

	Flange 6	Flange 7	Flange 71	Flange 8
CE and UL certification (USA + Canada) cURus*	x	x	x	x
Isolation class F, 2-pole resolver	x	x	x	x
Temperature evaluation KTY83-110 for HDSL PT1000	KTY83-110	KTY83-110	KTY83-110	KTY83-110
Degree of protection	IP65	IP65	IP65	IP65
Runout tolerance (R) according to DIN 42955 (for JHQ option)	x	x	x	x
JL series (Nm)	19.0 ... 29.0	32.0 ... 40.0	-	40.0 ... 115.0
JHN series (Nm)	18.0 ... 44.0	30.0 ... 60.0	-	-
JHQ series (Nm)	20.0 ... 28.0	36.0 ... 42.0	56 ... 80	42.0 ... 73.0 / 81.0 .... 120.0
Length (incl. resolver, without brake) JL (mm)	242 ... 317	264 ... 294	-	310 ... 514
Length (incl. resolver without brake) JHN (mm)	158 ... 258	181 ... 271	-	-
Length (incl. resolver, without brake) JHQ (mm)	195 ... 218	240 ... 263	308 ... 414	293 ... 493
Flange size/centering/hole circle JL (mm)	190/180/215	190/180/215	-	240/230/265
Flange size/centering/hole circle JHN (mm)	190/180/215	190/180/215	-	-
Flange size/centering/hole circle JHQ (mm)	190/180/215	190/180/215	190/180/215	240/230/265
Shaft JL (mm)	24 x 50	28 x 58	-	38 x 80/42 x 110
Shaft JHN (mm)	24 x 50	28 x 58	-	-
Shaft JHQ (mm)	24 x 50	28 x 58	38 x 80	38 x 80/42 x 110
Brake option, feather key to DIN 6885 (for JL, JHN, JHQ)	x	x	x	x
IP67 option with shaft seal (for JL, JHN, JHQ)	x	x	x	x
HIPERFACE® SEx37, SKx36, SEx52, SRx50 options (starting from flange size 3) (for JL, JHN, JHQ)	x	x	x	x
HIPERFACE DSL® EEx37, EKx36 options (for JHQ)	x	x	x	x
Connector output option: Drive end, non-drive end, rotating (for JL, JHN, JHQ)	x	x	x	x
ATEX zone 2 and 22 option: II 3G Ex ec IIC T155 °C / II 3D Ex tc IIIC T135 °C (for JHQ)	x	x	x	x
Electrical connection option: Cable gland, cable, connector (for JL, JHN)	-	-	-	-
Options: Special shafts, other encoders, reinforced bearings, special ball-bearing grease, separately driven fan, etc.	On request	On request	On request	On request

Decentralized drives

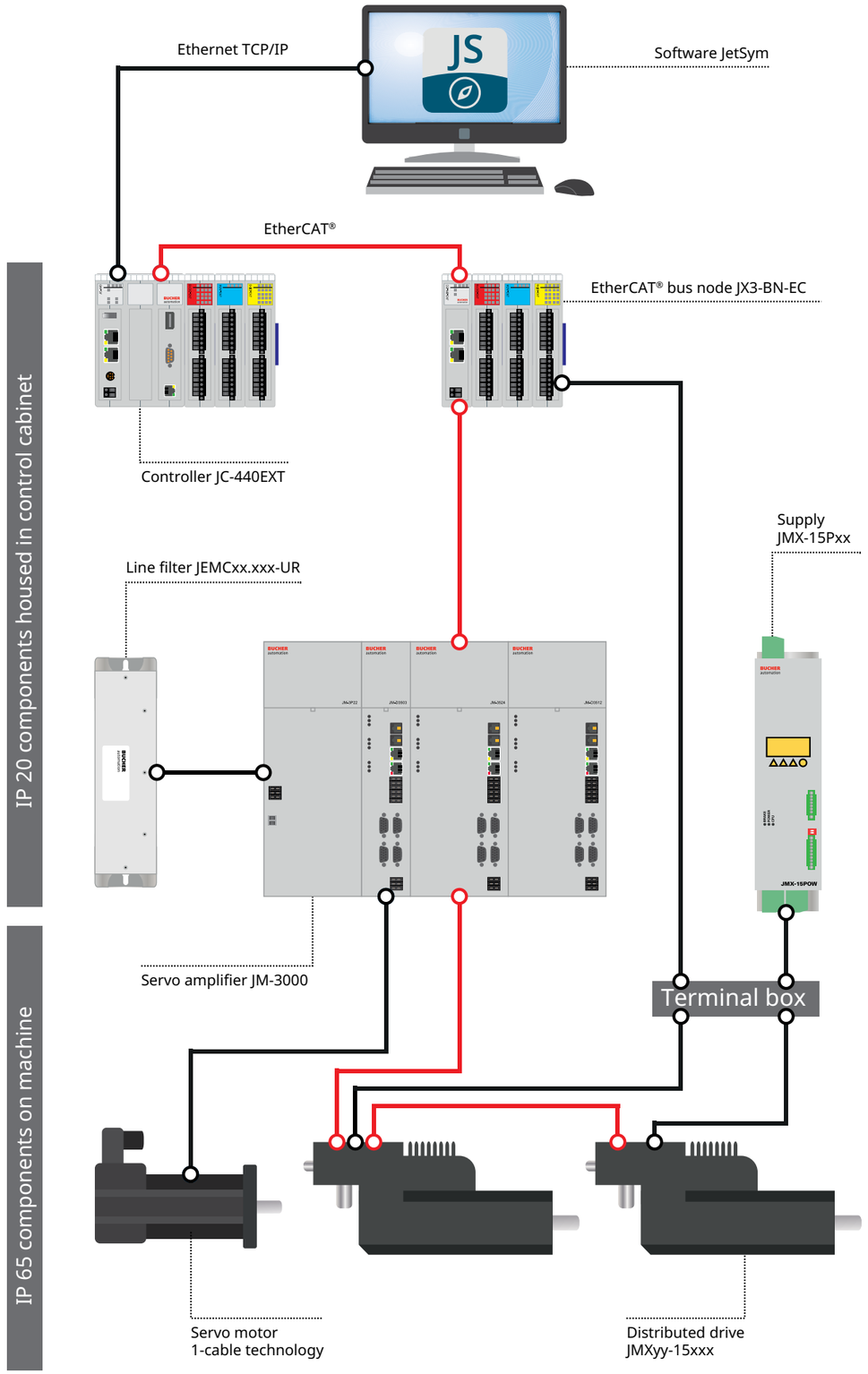
JMXxx-1xxxx

Description

Decentralized servo drives offer two compelling automation benefits: They make control cabinets obsolete while promoting a lean cabling approach. Assembling motor and encoder cables is now a thing of the past. In the basic version, decentralized drives come equipped with a single-turn absolute encoder; upgrade options include a brake and/or multi-turn encoders. Quick wiring is guaranteed thanks to pre-assembled DC power supply cables and EtherCAT® lines.

Ordering information

Item no.	Designation	Description
On request	JMX34-10008-S1-R1-P	JMX34-10008 EtherCAT
On request	JMX34-10016-S1-R1-P	JMX34-10016 EtherCAT
60886258_00	JMX22-15009-PF11	JMX22-15009 EtherCAT
60886361_00	JMX24-15026-S1-PF11	JMX24-15026 EtherCAT
60886363_00	JMX24-15032-S1-PF11	JMX24-15032 EtherCAT
60886362_00	JMX40-15050-S1-PF11	JMX40-15050 EtherCAT
60886360_00	JMX50-15117-S1-PF11	JMX50-15117 EtherCAT
60881445_00	JMX34-10008-I4R1-P	JMX34-10008 CANopen
60881446_00	JMX34-10016-I4R1-P	JMX34-10016 CANopen
60886837_00	JMX-15P11-R1A0	Supply unit
60886838_00	JMX-15P23-R1A0	Supply unit



JMXxx-1xxxx

Technical specifications

	JMX34-10008	JMX34-10016	JMX22-15009	JMX24-15026
Length without brake (mm)	141.2	180	235.8	247.3
Length with brake (mm)	175.2	214	272.8	289.3
Supply voltage U_{PWR} (V)	48	48	560	560
Rated speed N_n (rpm)	4000	4000	5000	3000
Rated torque M_n (Nm)	0.8	1.55	0.9	2.55
Continuous stall torque M_o (Nm)	0.9	1.8	1.3	2.8
Peak torque M_{peak} (Nm)	2.2	2.15	3.9	8.4
Rated holding torque of motor holding brake M_{BR} (option) (Nm)	2	2	2	4.5
Rated motor power P_n (W)	335	649	471	801
Power output under rated operating conditions on motor shaft P_{mech} (kW)	0.34	0.65	0.47	0.8
Electric power consumption under rated operating conditions incl. power dissipation JMX and motor P_{elec} (kW)	0.42	0.7	0.55	0.95
Power dissipation under rated operating conditions P_{pwr} - P_n (kW)	0.08	0.05	0.08	0.15
Power consumption under rated operating conditions I_{pwr} (A)	8.7	14.6	0.97	1.68
Weight without brake M_{BR} (kg)	2	3.1	1.9	4.1
Weight with brake M_{BR} (kg)	2.55	3.65	2.33	4.8
Rotor inertia without brake J (kg cm²)	0.37	0.61	0.24	1.16
Rotor inertia with brake J (kg cm²)	0.428	0.668	0.29	1.38

	JMX24-15032	JMX40-15050	JMX50-15117
Length without brake (mm)	272.3	297.8	363
Length with brake (mm)	314.3	348.3	388
Supply voltage U_{PWR} (V)	560	560	560
Rated speed N_n (rpm)	3000	3000	3000
Rated torque M_n (Nm)	3.2	5	11.7
Continuous stall torque M_o (Nm)	4	6	15.4
Peak torque M_{peak} (Nm)	12	22	45
Rated holding torque of motor holding brake M_{BR} (option) (Nm)	4.5	9	15
Rated motor power P_n (W)	1005	1571	3675
Power output under rated operating conditions on motor shaft P_{mech} (kW)	1.01	1.57	3.68
Electric power consumption under rated operating conditions incl. power dissipation JMX and motor P_{elec} (kW)	1.2	1.85	4.3
Power dissipation under rated operating conditions P_{pwr} - P_n (kW)	0.19	0.28	0.17
Power consumption under rated operating conditions I_{pwr} (A)	2.12	3.27	6.81
Weight without brake M_{BR} (kg)	5.1	8	17
Weight with brake M_{BR} (kg)	5.8	9.2	18.5
Rotor inertia without brake J (kg cm²)	1.58	4	11.5
Rotor inertia with brake J (kg cm²)	1.8	5.06	13.2

Technical specifications

	Flange 22	Flange 24	Flange 34	Flange 40	Flange 50
Example of motor type	JMX22-15009	JMX24-15026	JMX34-10008/16	JMX40-15050	JMX50-15117
Flange edge length (mm)	60	80	80	100	142
Flange centering (mm)	50h7	70h7	70h7	95h7	130j6
Flange hole circle (mm)	70	90	90	115	165
Flange bore 4x... (mm)	5.2	6.5	6.5	9	12.5
Thread depth in shaft (mm)	M5x12.5	M6x16	M4x12	M6x16	M8x20
Shaft diameter x length (mm)	14x30	19x40	11x30	19x40	24x50
Feather key DIN 6685-A (W x H x L) in mm	5x5x25	6x6x30	4x4x20	6x6x30	8x7x40

Supply unit

	JMX-15P11-R1A0	JMX-15P23-R1A0
3-phase connection (AC 50/60 Hz)	400 V	400 V
Continuous power (kW)	11.3	22.6
Peak power (kW)	22.5	46
Input voltage U_{in} (AC 50/60 Hz)	230 ... 480 V	230 ... 480 V
Input voltage U_{in} min./max. (AC 50/60 Hz)	180 ... 520 V	180 ... 520 V
Output voltage U_{out} (DC)	U_{in} * √2 V	U_{in} * √2 V
Dimensions (W x H x D) in mm	82.5 x 352.5 x 270.3	82.5 x 352.5 x 270.3
Weight (kg)	5.8	5.8

Professional Services

Bucher Automation AG’s professional services cater for a full range of mechanical and plant engineering needs. The choice is yours: You can entrust us with managing your entire project, or you draw on our know-how for specific solutions.

Your project under focus

Why not take the easy option and rely on our experts to guide you every step of the way? As part of our project management process, we work with our customers to identify which system, which system module or full-service solution and which device, suits their needs best.

- Consulting and management
- Controller programming services
- Creation of visualization applications
- Electrical engineering and control cabinet manufacturing
- Service and maintenance
- Training
- Retrofit
- Functional safety
- Industrial security

Consulting and management
- End-to-end project management
- Use of standard project management software
- Conceptual design and project planning (centralized, decentralized), dimensioning of project-specific drive technology
- Path, movement and energy optimization
- Creating the safety concept: Selecting safety components
- Selecting sensors, actuators and motors, as well as suitable automation components
- Sourcing of all necessary components

Controller programming services
- Structured text programming to the IEC 61131-3-(ST) standard
- Programming of third-party systems
- Conceptual design and development of software structures
- Development of programming concepts suitable for series-production machinery including version management, update functions and variant handling
- Complete function test and approval

Creation of visualization applications
- Visualization using your own or standard visualization software
- Alarm handling, recipe management, collection and further processing of order and PDA information
- Implementation of database integration
- Selection and programming of suitable user interfaces with key, mouse or touch operation
- Complete function test and approval

Electrical engineering and control cabinet manufacturing
- Planning and optimizing production capacity
- Manufacturing of control panels and cabinets
- Production in accordance with current EN regulations
- CE certification with risk analysis | Preparation for UL certification
- Electrical design with Eplan | to UL guidelines as an option
- Planning and design according to current standards
- Creation of wiring and terminal diagrams

Service and maintenance
– Hotline | Telephone and email support
– 24/7 stand-by support on request
– On-site repairs and replacements by our own service team
– On-line support with optional remote access
– Remote maintenance
– Risk analysis for end-of-life products
– Compatibility analysis for products and systems
– Maintenance contracts | Preventative maintenance
– Extended warranty offers as option

Training
– STX programming
– Drive technology/MC
– Visualization
– Service staff

Retrofit
– Upgrade of existing machines to create a modern, powerful control system
– Seamless integration with the existing IT structure
– Coordination of change-over work with non-production times

Functional safety
– Risk analyses and definition of safety requirements
– Specification of detailed requirements
– Planning for implementing requirements in the development and production process
– Documentation and proof of correct functioning
– Tool qualification
– Staff training
– Verification and validation of documents, products, etc.
– Sourcing of components and quality assurance
– Four-eyes principle
– Monitoring of operational down-times

Industrial security
– Security awareness trainings
– Compliance check against legal and regulatory demands
– Threat and risk analysis
– Defense-in-depth security concept
– “Safe development process” and “safe operation” assessments
– Planning and implementation of technical and organizational steps according to best practices

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Status 10/2023