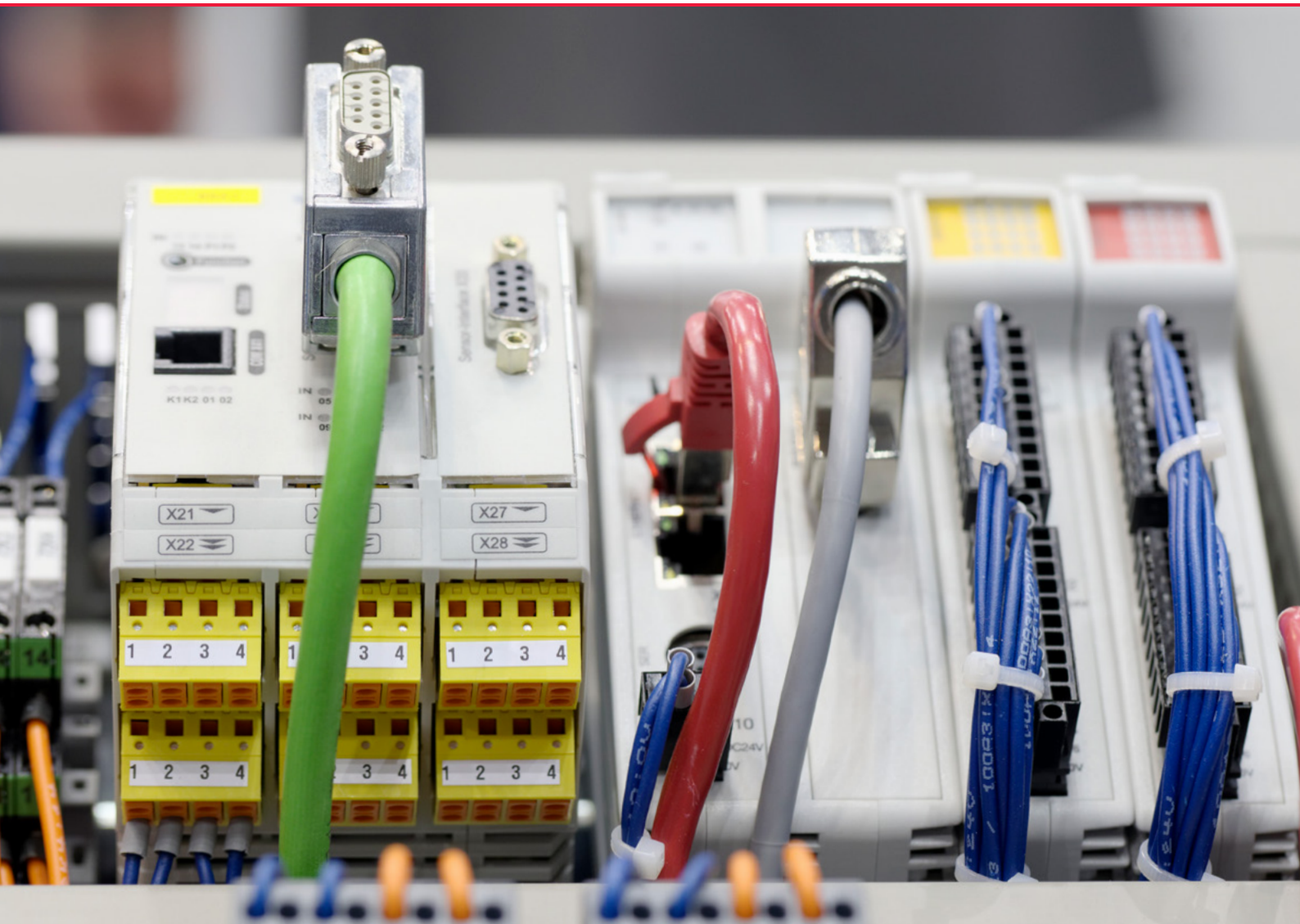
BUCHER
automation

Your partner in industrial automation

Products and Services



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Bucher Automation system landscape

Integration of all automation functions

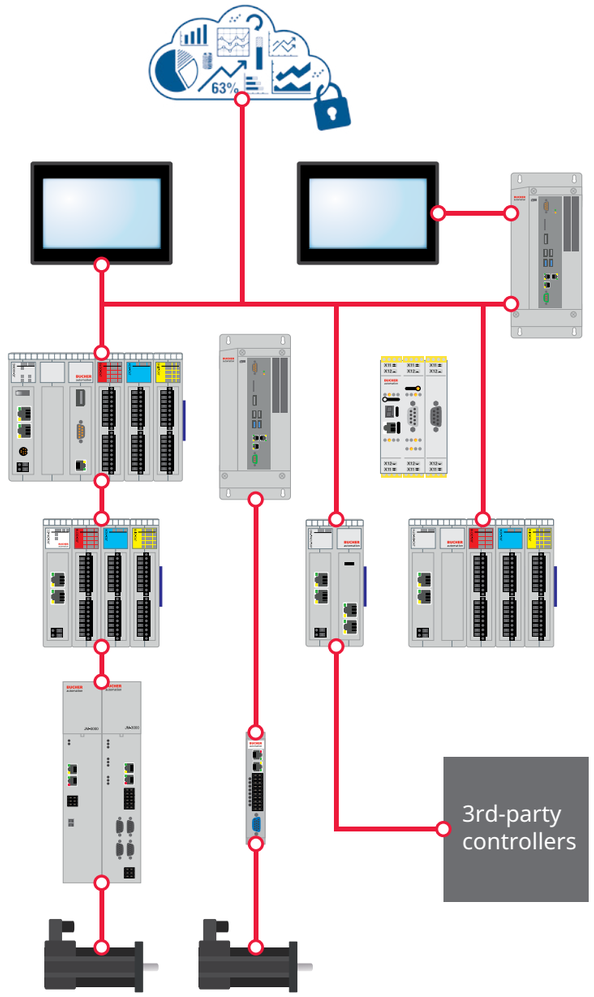
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Flatpanels
IPCs

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.



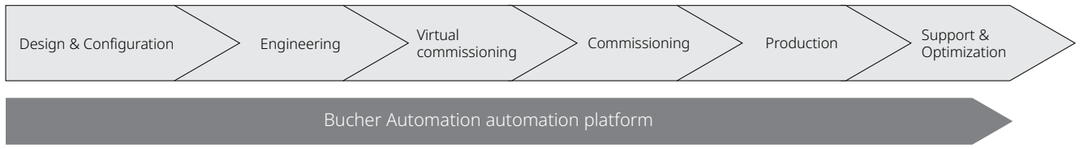
Software solutions

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.

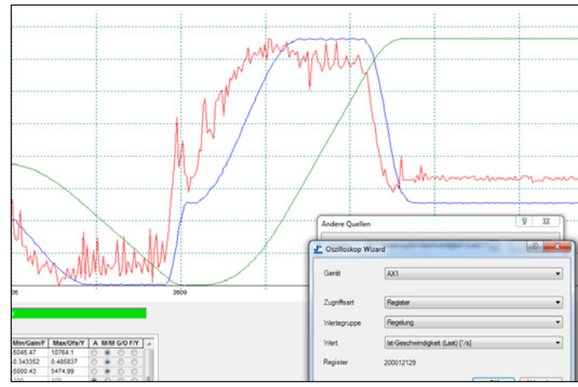
Flexible project configuration

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.

```
PROGRAM SR_EX_ST_004
VAR
        iState : INT := 10;

        GreenDelay : TON := ( PT := T#3S );
        Yellow1Delay : TON := ( PT := T#2S );
        RedDelay : TON := ( PT := T#8S );
        Yellow2Delay : TON := ( PT := T#3S );
END_VAR

GreenDelay(IN:= Exercise.EX_ST_004.xSwitch AND Exercise.EX_ST_004.xGreen);
Yellow1Delay(IN:= Exercise.EX_ST_004.xYellow);
RedDelay(IN:= Exercise.EX_ST_004.xRed);
Yellow2Delay(IN:= Exercise.EX_ST_004.xYellow);

CASE iState OF
10:
        Exercise.EX_ST_004.xRed := FALSE;
        Exercise.EX_ST_004.xYellow := FALSE;
        Exercise.EX_ST_004.xGreen := TRUE;

        IF Exercise.EX_ST_004.xSwitch AND GreenDelay.Q THEN
                iState := 20;
        END_IF
20:
        Exercise.EX_ST_004.xRed := FALSE;
        Exercise.EX_ST_004.xYellow := TRUE;
        Exercise.EX_ST_004.xGreen := FALSE;

        IF Yellow1Delay.Q THEN
                iState := 30;
        END_IF
30:
        Exercise.EX_ST_004.xRed := TRUE;
        Exercise.EX_ST_004.xYellow := FALSE;
        Exercise.EX_ST_004.xGreen := FALSE;

        IF RedDelay.Q THEN
                iState := 40;
        END_IF
40:
        Exercise.EX_ST_004.xRed := TRUE;
        Exercise.EX_ST_004.xYellow := TRUE;
        Exercise.EX_ST_004.xGreen := FALSE;

        IF Yellow2Delay.Q THEN
                iState := 10;
        END_IF
END_CASE
```

```
Var {export jde}
  // Bool variables will be exported to Visu to switch the mask visibility
  greenMask : Bool At %RL 1000001 := False;
  yellowMask : Bool At %RL 1000002 := False;
  redMask : Bool At %RL 1000003 := False;
End_Var;

Task myTask Autorun
    Loop
        // Signal light is green
        greenMask := False;
        yellowMask := True;
        redMask := True;
        Delay(T#2s);
        // Signal light will change to yellow
        greenMask := True;
        yellowMask := False;
        redMask := True;
        Delay(T#2s);
        // Signal light will change to red
        greenMask := True;
        yellowMask := True;
        redMask := False;
        Delay(T#2s);
        // Signal light will change to green
        greenMask := True;
        yellowMask := False;
        redMask := False;
        Delay(T#2s);
    End_Loop;
End_Task;
```

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

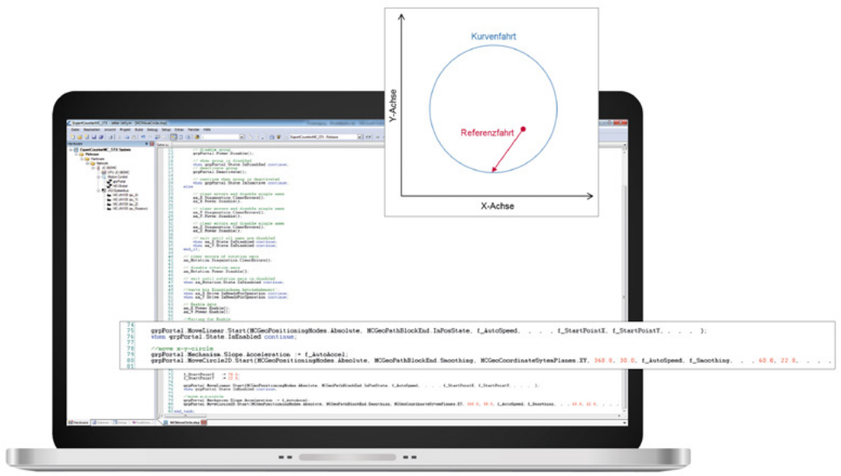
Seamless integration of motion control significantly reduces the effort involved in programming axis movements. With STX, even complex movement patterns, required for example for cam disks and SCARA robots, can be implemented easily with just a few program commands. Creating and testing programs for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



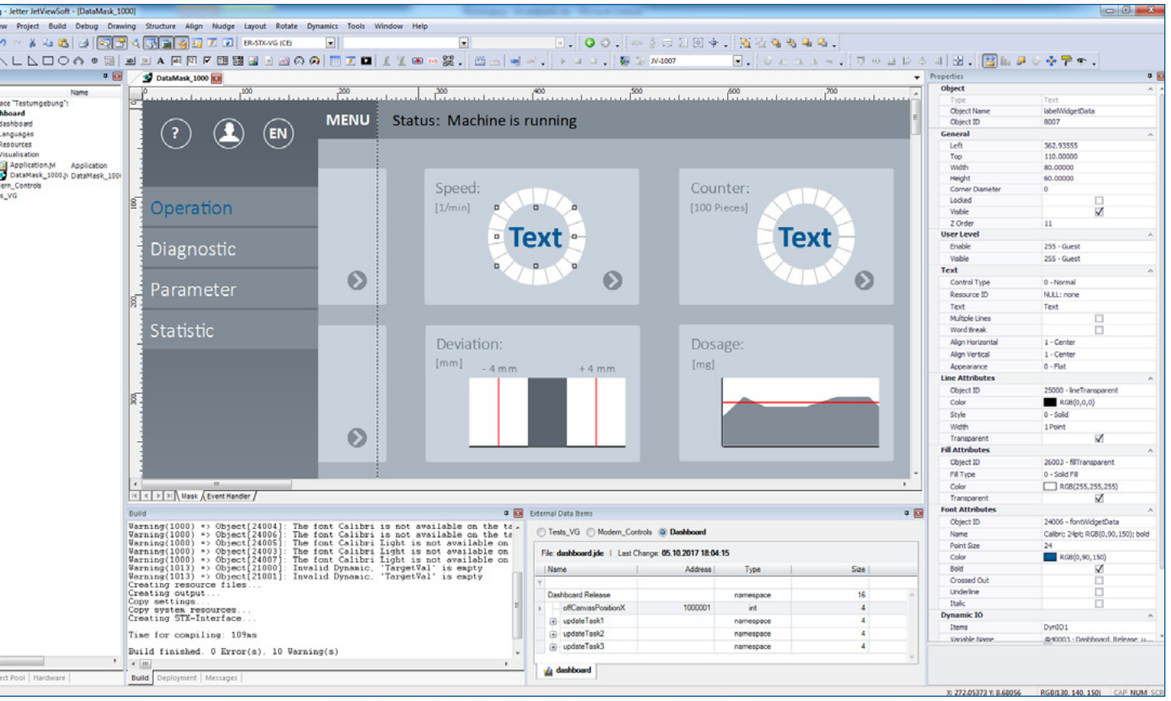
Sample program: Programming a circular motion on two axes in just a few lines thanks to motion control.

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

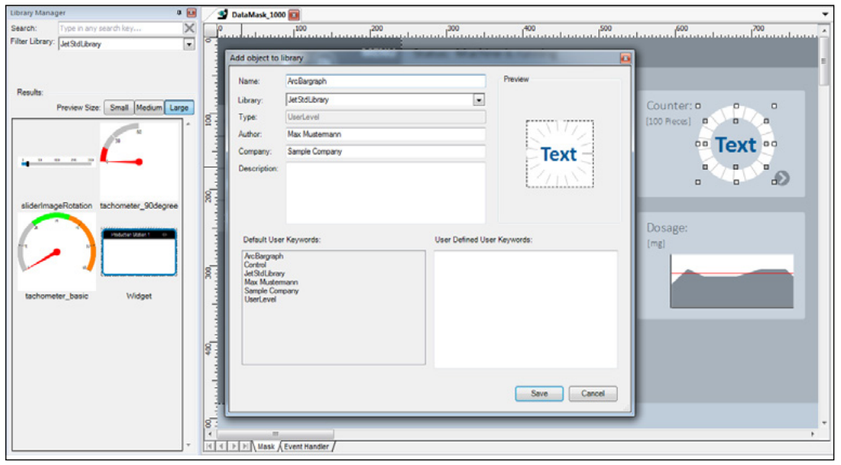
To handle simple processes, JetViewSoft offers customizable macro functions. More complex processes, calculations or programming of special functions can also be carried out with the integrated STX interpreter. The corresponding program code is implemented JetSym using STX.

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.

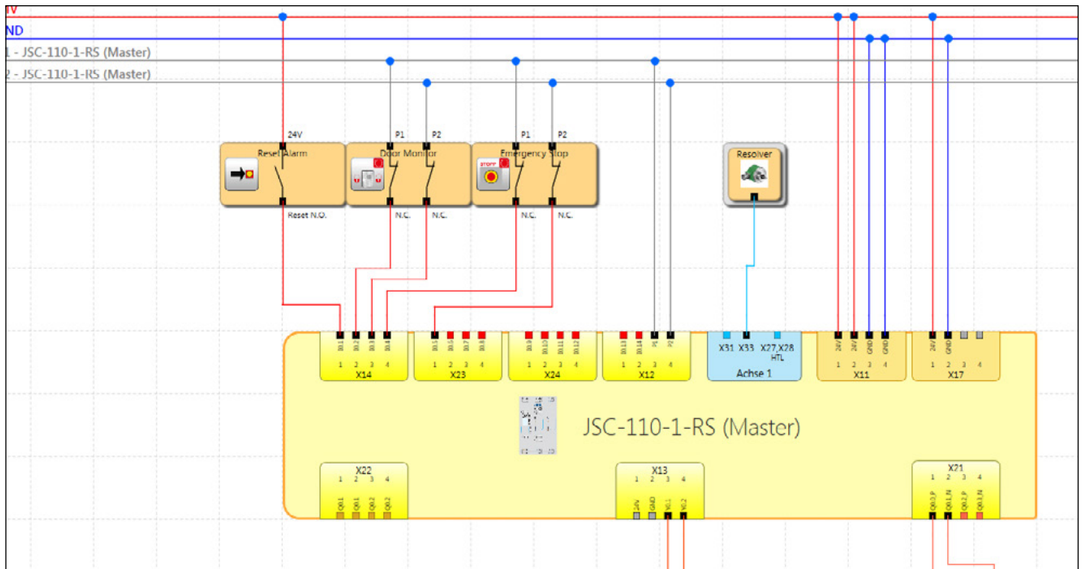
Building blocks

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.

Find the right product quickly

Get to the right control faster with Controller-Quick-Select. Functions may be subject to a charge.

	Maximum number of axes*	Motion Control (MCX)*	EtherCAT®*	CANopen	Modbus TCP*	MQTT*	OPC UA*	Web server	FTP*	E-mail client*	License model**	JetControl-VM***
JetControl 420EXT	**8**	X	X	X	X	X	X	X	X	X	X	–
JetControl 440EXT	**24**	X	X	X	X	X	X	X	X	X	X	X
JetControl 965EXT	**128**	X	X	–	X	X	X	X	X	X	X	X
JetControl 975EXT	**128**	X	X	–	X	X	X	X	X	X	X	–

* Function may be subject to a fee.
** Individual configuration of functionality possible, even retrospectively.
*** Control also available as a virtual controller for VMware®.



JetControl 420EXT



Description

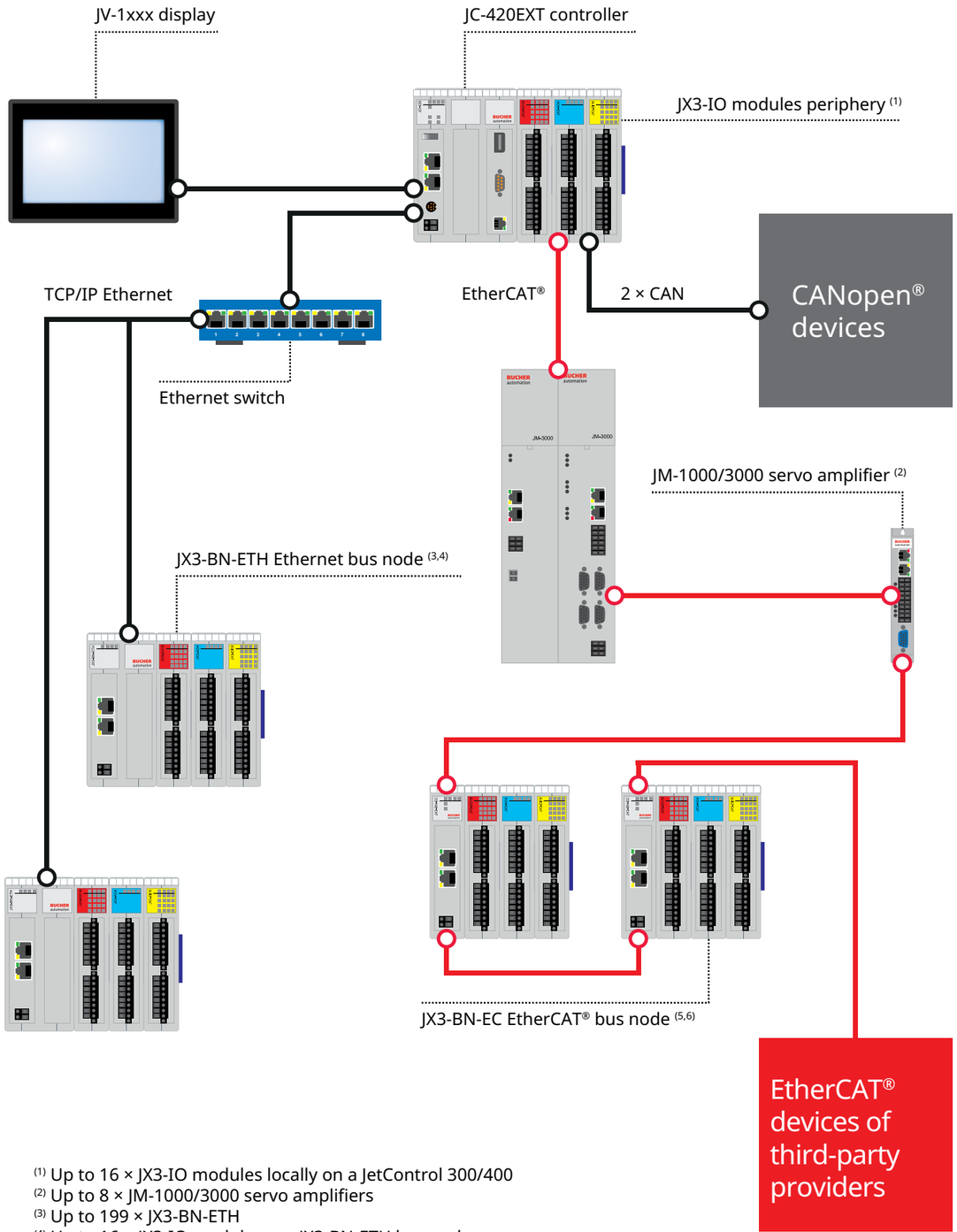
The JetControl 420EXT controller offers an ideal price-to-performance ratio in a compact design for medium to complex control tasks that demand both motion control functionality (up to 8 axes) and connectivity.

In combination with the servo amplifiers of the JetMove 1000/2000/3000 series and the servo motors with integrated amplifier of the JMX series, this controller provides an easy way to get started in the world of motion control.

With the JC-420EXT, point-to-point axes (PtP) and technology axis groups such as cam disks as well as path groups with circular and linear interpolation can be programmed and placed in operation in a very simple manner.

Features

- Supports up to 8 servo axes
- Up to 256 local I/Os (expandable non-centrally to > 65,000)
- 32 MB STX program/data storage
- 240,000 bytes of non-volatile memory
- 1 × Ethernet connection with integrated switch
- EtherCAT® (option)
- 2 × CANopen
- 1 × serial interface
- 1 × USB 2.0 (for storage media)
- Web server
- E-mail client (option)
- Modbus TCP (option)
- OPC UA server (option)
- MQTT (option)
- Programming in STX (high-level language in accordance with IEC-61131-3)
- Multitasking
- File handling
- String processing



(1) Up to 16 × JX3-IO modules locally on a JetControl 300/400
(2) Up to 8 × 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 the type of module)
The maximum number of devices on the EtherCAT® system bus is limited to 127.

JetControl 420EXT

Technical Data

Non-volatile memory (NVRAM)	240,000 bytes (60,000 registers)
STX program/data storage (SDRAM)	32 MB
Flash disk	32 MB
Number of expansion modules	16 JX3-IO modules local (expandable locally)
Number of axes (MCX) (motion control/path control)	Max. 8
Ports and interfaces	1 serial interface (RS232/422/485)
	1 EtherCAT® (option)
	2 CANopen
	2 Ethernet ports (with integrated switch)
Expandable by	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 @ DC 24 V
Dimensions (H × D × W)	approx. 131 × 100 × 75 mm
Degree of protection	IP20
Operating temperature	0 ... +50 °C
Storage temperature	-40 °C ... +70 °C
Relative humidity	5 % ... 95 %, non-condensing

Ordering information

Article no.	Designation	Description
10002630	JC-420EXT	Basic device JC-420EXT including the following options:
10001752	JCF4-C_ETH_(PRIM)	User-programmable Ethernet
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	OPCUA server
10001746	JCF4-C_OPCUA_CLIENT	OPCUA client
10001750	JCF4-C_SMTP	SMTP client (e-mail dispatch)
10001741	JCF4-M_AX	1 physical axis (including PtP function)
10001743	JCF4-M_PATH	MCX path groups
10001757	JCF4-M_SV1	Software position function 16 axes via JX3-IO modules
10001742	JCF4-M_TECHNO	MCX technology groups

The following preferred types can be ordered pre-configured

Article no.	Designation	Description
10002644	JC-420EXT-ECM-MOD-FTC-ETP-SV1	JC-420EXT controller including the following options: 1 × EtherCAT master JCF4-C_ETHERCAT_MASTER 1 × MODBUS/TCP server + client JCF4-C_MODBUS/TCP 1 × FTP client in STX JCF4-C_FTP_CLIENT 1 × Ethernet in STX programming JCF4-C_ETH_(PRIM) 1 × simple servo function for JX3-IO modules JCF4-M_SV1
10002645	JC-420EXT-AXS_006-ECM-MOD-FTC-ETP-SV1	JC-420EXT controller including the following options: 6 × phys. axis incl. PtP function JCF4-M_AX 1 × EtherCAT master JCF4-C_ETHERCAT_MASTER 1 × MODBUS/TCP server + client JCF4-C_MODBUS/TCP 1 × FTP client in STX JCF4-C_FTP_CLIENT 1 × Ethernet in STX programming JCF4-C_ETH_(PRIM) 1 × simple servo function for JX3-IO modules JCF4-M_SV1
10002646	JC-420EXT-AXS_006-TEC-ECM-MOD-FTC-ETP-SV1	JC-420EXT controller including the following options: 6 × phys. axis incl. PtP function JCF4-M_AX 1 × MCX technology groups JCF4-M_TECHNO 1 × EtherCAT master JCF4-C_ETHERCAT_MASTER 1 × MODBUS/TCP server + client JCF4-C_MODBUS/TCP 1 × FTP client in STX JCF4-C_FTP_CLIENT 1 × Ethernet in STX programming JCF4-C_ETH_(PRIM) 1 × simple servo function for JX3-IO modules JCF4-M_SV1

Note
All options can also be ordered subsequently. To do this, specify the serial number of the JC-420EXT in your order. The options are activated by loading a license file.

Sample configuration

You have an application with 4 axes (JM-1000 or 3000 servo amplifier) and you need motion control for technology functions (such as a cam disk). You also want to make operating data available to other devices via OPC UA.

For this you will need:
1 × 10002646 – JC-420EXT-AXS_006-TEC-ECM-MOD-FTC-ETP-SV1
1 × 10001747 – JCF4-C_OPCUA_SERVER

Note

The preferred type with 2 axes more than required is cheaper than an individually configured controller with 4 axes.

Configuration aid

The JCF license configurator supports you in configuring the options for the JC-420EXT.

JetControl 440EXT



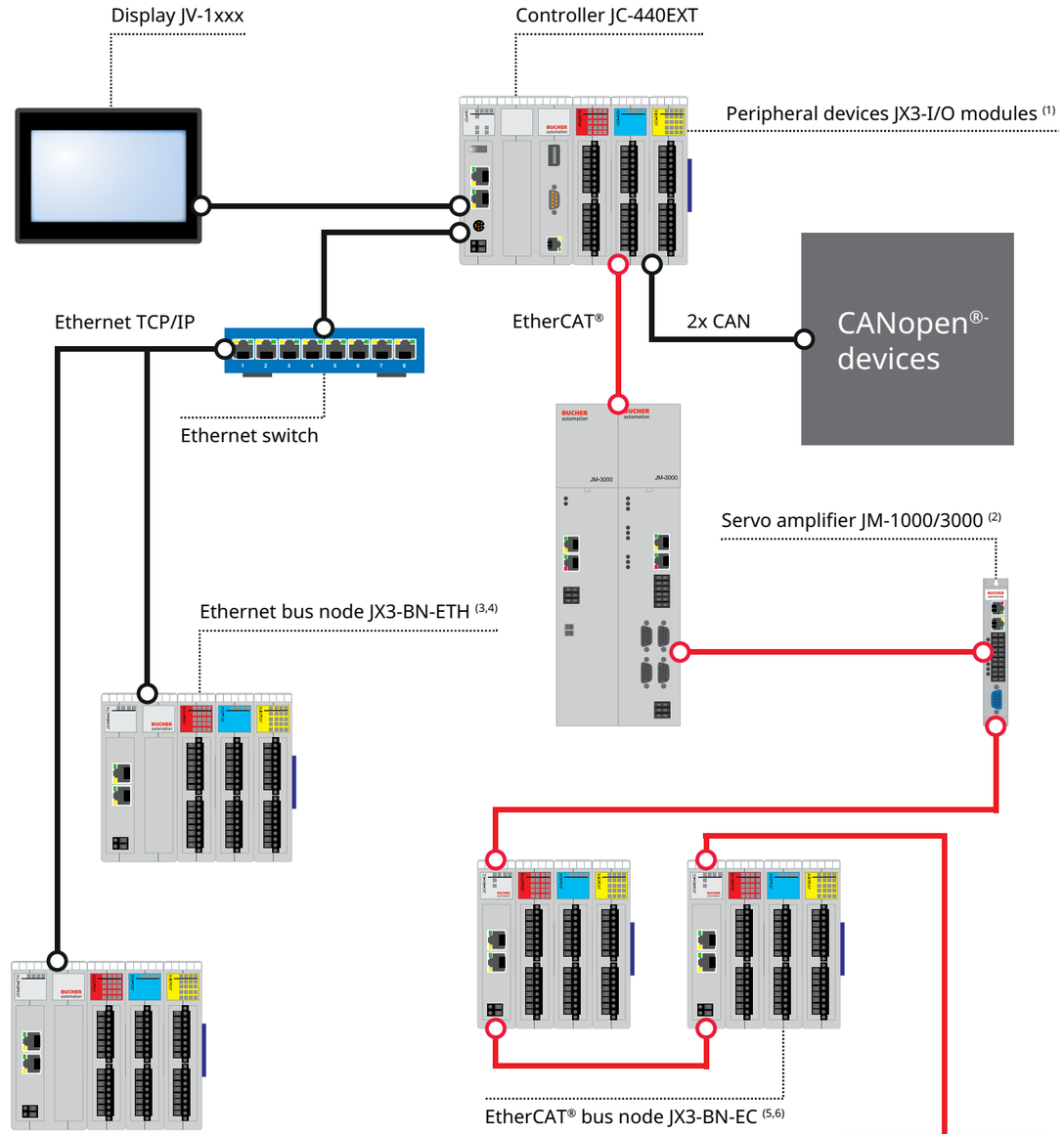
Description

The JetControl 440EXT controller offers high performance in a compact design. It is ideally suited for computationally intensive and extensive applications with up to 24 servo axes.

It provides an easy entry into the world of MotionControl. In conjunction with the servo amplifiers of the JetMove 1000/2000/3000 series and the integrated drives of the JMX series, point-to-point axes (PtP), technology axis systems such as cam plates, and even path systems with kinematic transformations, such as a SCARA robot, can be programmed and put into operation in the simplest possible way.

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)

JetControl 440EXT

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
10001740	JC-440EXT	JC-440EXT controller, expandable with JCF4 options
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 965EXT



Features

- Intel® i5 processor
- 2x Ethernet + 1x EtherCAT®
- 4x USB
- Autocopy function
- Licensing model for flexible and easy expansion of software options
- Up to 128 MCX axes
- Web server
- Optional with 2 PCI Express slots

Description

The JetControl 965EXT high-performance controller is ideal for applications that require maximum computing power, extensive motion control and control functionalities.

The already integrated NVRAM for remanent program variables and the SSD for user files make additional flash memory cards superfluous.

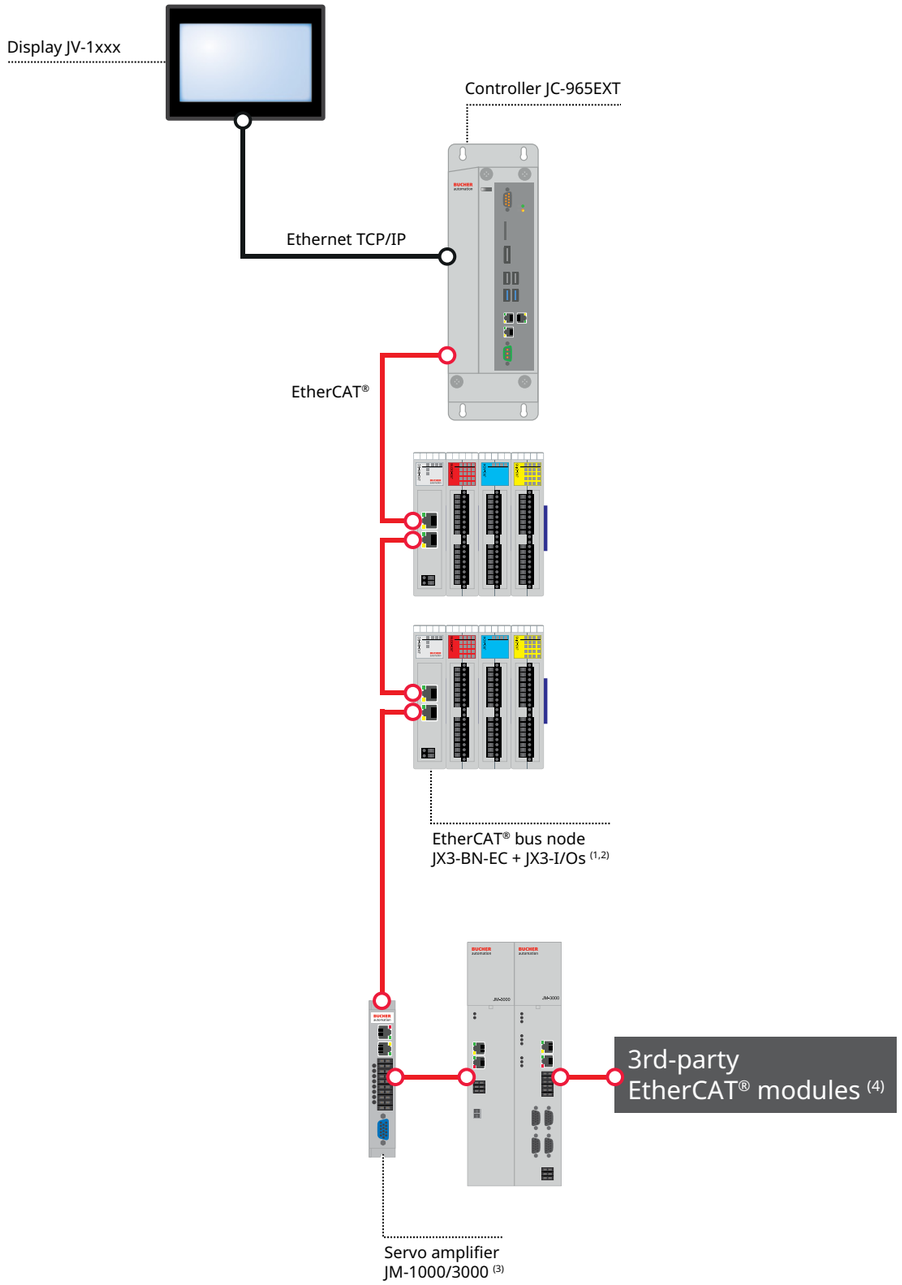
Ordering information

Item no.	Designation	Description
10002330	JC-965EXT	JC-965EXT, 0 PCIe slots, EtherCAT®, expandable with JCF9 options
10002332	JC-965EXT-E03-2	JC-965EXT, 2 free PCIe slots, EtherCAT®, expandable with JCF9 options

Software options

Item no.	Designation	Description
10002340	JCF9-C_ETH_(PRIM)	Ethernet freely programmable in STX
10002342	JCF9-C_FTP_CLIENT	FTP client file transfer 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 (Email sending)
10002352	JCF9-M_AX	1 physical MCX axis
10002353	JCF9-M_PATH	MCX track connections
10002355	JCF9-M_TECHNO	MCX technology connections
10002354	JCF9-M_SV1	Simple positioning function for up to 16 axes via JX3-IO modules

Note
The software options can be configured using the license configurator.
Software options can also be retrofitted.



(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

JetControl 965EXT

Technical specifications

Controller	JetControl 965EXT	JetControl 965EXT-E03-2
Non-volatile memory (NVRAM)	480,000 bytes (120,000 registers)	480,000 bytes (120,000 registers)
STX program/data memory (SDRAM)	64 MB	64 MB
Flash disk user memory	64 MB	64 MB
Local expansion modules	n.a.	2x JI-PCIE-Exx
License model for software options (JCF9-)	Yes	Yes
Motion API	V 2.x	V 2.x
Maximum number of axes (MCX) One JCF9-M_AX license is required per MCX axis	EtherCAT®: 128 Ethernet: n.a.	EtherCAT®: 128 Ethernet: n.a. JX6-SB-I: n.a.
Maximum number of axes (PtP only) PtP axes do not require JCF9-M_AX licenses	n.a. n.a.	n.a. n.a.
Interfaces	3x Ethernet 1x EtherCAT® Master 4x USB 2.0/3.0 for storage media	2x Ethernet 1x EtherCAT® Master 4x USB 2.0/3.0 for storage media 2x PCIexpress for JI-PCIE-Exx
Decentralized expandable with	JX3-IO modules via JX3-BN-ETH and/ or JX3-BN-EC, JX4-IO modules via JX4-BN-EC, JM-1000/2000/3000 servo amplifier	JX3-IO modules via JX3-BN-ETH and/ or JX3-BN-EC, JX4-IO modules via JX4-BN-EC, JM-1000/2000/3000 servo amplifier
Real-time clock	Yes (50 days buffer @ Tu_max 25 °C)	Yes (50 days buffer @ Tu_max 25 °C)
Nominal input voltage	DC 24 V (-15 … +20 %)	DC 24 V (-15 … +20 %)
Input current	1.5 A @ DC 24 V	1.5 A @ DC 24 V
Dimensions (H x D x W)	290 x 222 x 115 mm	305 x 222 x 155 mm
Weight	3.8 kg	4.75 kg
Degree of protection	IP20	IP20
Operating temperature	0 … +50 °C	0 … +50 °C
Storage temperature	-40 … +70 °C	-40 … +70 °C
Humidity	5 … 93 %, non-condensing	5 … 93 %, non-condensing

JetControl 975EXT



Features

- Intel® i5 processor
- 2x Ethernet + 1x EtherCAT®
- 4x USB
- Autocopy function
- License model for flexible and easy expansion of software options
- Up to 128 MCX axes
- Web server
- Optionally with 2 PCI Express slots
- Windows + hard real-time combined on one hardware
- Maximum stability thanks to hypervisor technology

Description

The JetControl 975EXT high-performance controller is ideal for applications that require maximum computing power, extensive motion control and control functionalities.

Control and visualization on a single device reduces the number of components in the control cabinet. In addition, the hypervisor technology ensures strict separation of the operating systems.

The already integrated NVRAM for remanent program variables and the SSD for user files make additional flash memory cards superfluous.

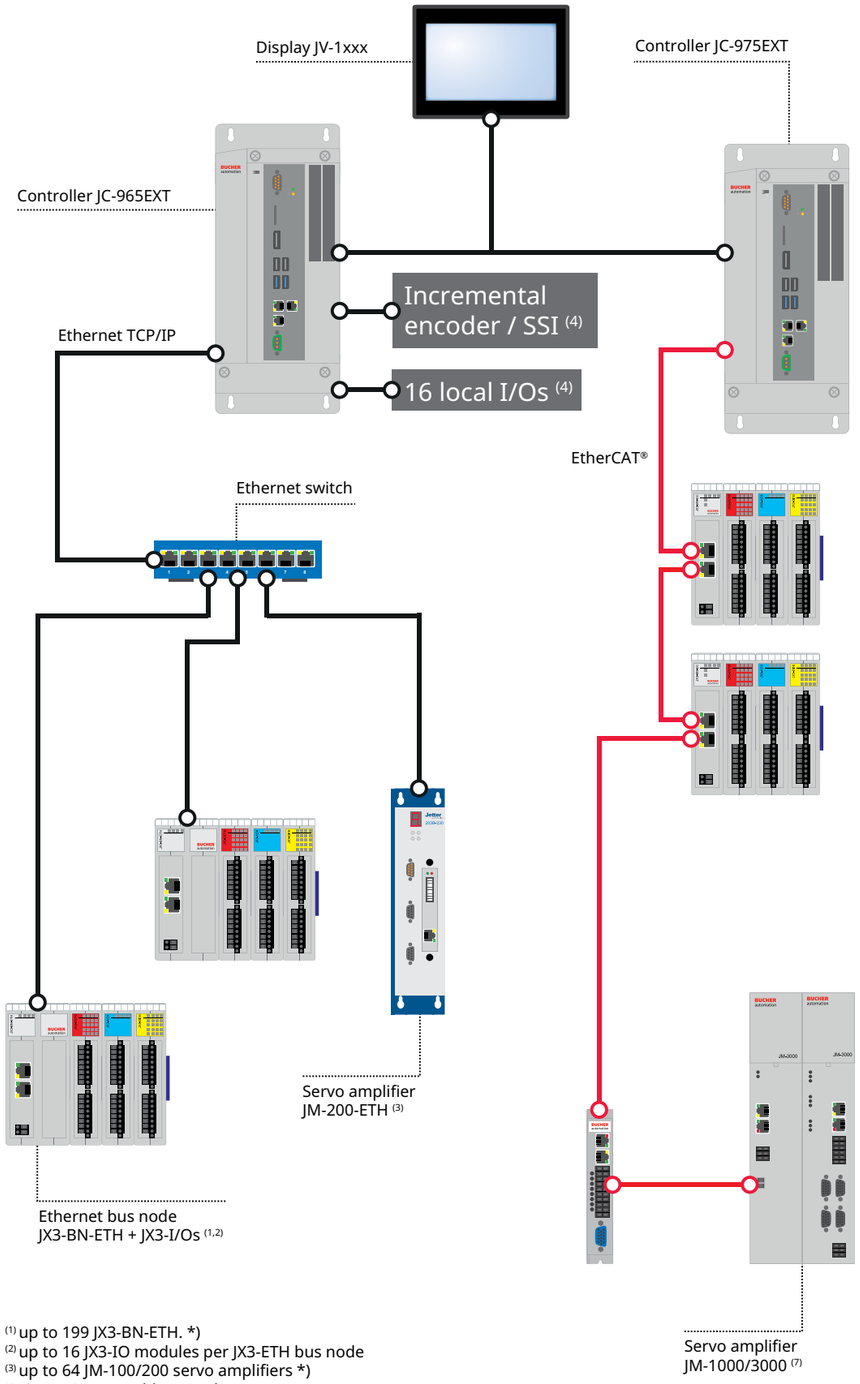
Ordering information

Item no.	Designation	Description
10002597	JC-975EXT	JC-975EXT, 0 PCIe slots, EtherCAT®, expandable with JCF9 options, Windows
10002598	JC-975EXT-E03-2	JC-975EXT, 2 free PCIe slots, EtherCAT®, expandable with JCF9 options, Windows

Software options

Item no.	Designation	Description
10002340	JCF9-C_ETH_(PRIM)	Ethernet freely programmable in STX
10002342	JCF9-C_FTP_CLIENT	FTP client file transfer 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 (Email sending)
10002352	JCF9-M_AX	1 physical MCX axis
10002353	JCF9-M_PATH	MCX track connections
10002355	JCF9-M_TECHNO	MCX technology connections
10002354	JCF9-M_SV1	Simple positioning function for up to 16 axes via JX3-IO modules

Note
The software options can be configured using the license configurator.
Software options can also be retrofitted.



(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.

JetControl 975EXT

Technical specifications

Controller	JetControl 975EXT	JetControl 975EXT-E03-2
Non-volatile memory (NVRAM)	480,000 bytes (120,000 registers)	480,000 bytes (120,000 registers)
STX program/data memory (SDRAM)	64 MB	64 MB
Flash disk user memory	64 MB	64 MB
Local expansion modules	n.a.	2x JI-PCIE-Exx
License model for software options (JCF9-)	Ja	Ja
Motion API	V 2.x	V 2.x
Maximum number of axes (MCX) One JCF9-M_AX license is required per MCX axis	EtherCAT®: 128 Ethernet: n.a.	EtherCAT®: 128 Ethernet: n.a. JX6-SB-I: n.a.
Maximum number of axes (PtP only) PtP axes do not require JCF9-M_AX licenses	n.a. n.a.	n.a. n.a.
Interfaces	1x Ethernet 1x EtherCAT® Master 2x USB 2.0 for storage media	1x Ethernet 1x EtherCAT® Master 2x USB 2.0 for storage media 2x PCIexpress for JI-PCIE-Exx
Decentralized expandable with	JX3-IO modules via JX3-BN-ETH and/ or JX3-BN-EC, JX4-IO modules via JX4-BN-EC, JM-1000/2000/3000 servo amplifier	JX3-IO modules via JX3-BN-ETH and/ or JX3-BN-EC, JX4-IO modules via JX4-BN-EC, JM-1000/2000/3000 servo amplifier
Real-time clock	Yes (50 days buffer @ Tu_max 25 °C)	Yes (50 days buffer @ Tu_max 25 °C)
Nominal input voltage	DC 24 V (-15 … +20 %)	DC 24 V (-15 … +20 %)
Input current	1.5 A @ DC 24 V	1.5 A @ DC 24 V
Dimensions (H x D x W)	290 x 222 x 115 mm	305 x 222 x 155 mm
Weight	3.8 kg	4.75 kg
Degree of protection	IP20	IP20
Operating temperature	0 … +50 °C	0 … +50 °C
Storage temperature	-40 … +70 °C	-40 … +70 °C
Humidity	5 … 93 %, non-condensing	5 … 93 %, non-condensing

Technical specifications

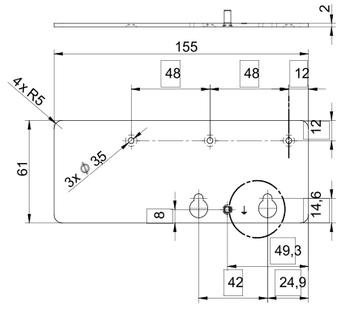
Windows®	JetControl 975EXT	JetControl 975EXT-E03-2
Windows® available	Yes, pre-installed, license activated	Yes, pre-installed, license activated
Hypervisor for separating the Windows® and control part	Yes, installed	Yes, installed
Ethernet	1x Ethernet	1x Ethernet
USB	2x USB 3.0	2x USB 3.0
Displayport	Yes	Yes
RS-232	Yes	Yes
SSD	60 GB	60 GB
RAM	4 GB	4 GB

JetControl 9xx - Accessories

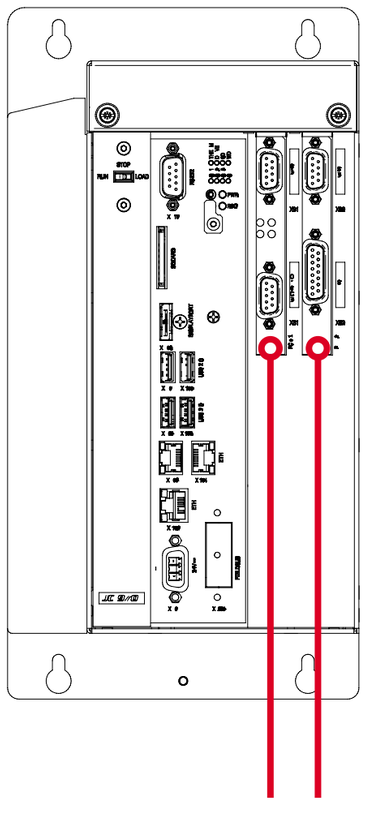
PCIexpress expansion cards for JC-96/7x-E03-2



Adapter plates for mounting JC-96/7x on existing JC-94x holes



Expansion slots for JC-965EXT-E03-2 and JC-975EXT-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

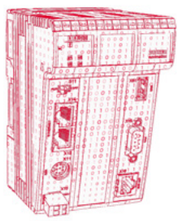
Item no.	Designation	Description
10001522	JI-PCIE-E01	JI-PCIexpress expansion card with 1x JX6-SB-I-ES
10001523	JI-PCIE-E02	JI-PCIexpress expansion card with 2x JX6-SB-I-ES
10001524	JI-PCIE-E03	JI-PCIexpress expansion card with 1x JX6-SB-I-ES 1x JX6-IO16-CB
10001525	JI-PCIE-E04	JI-PCIexpress expansion card with 1x JX6-SV1-ES 1x JX6-SB-I-ES
10001959	JI-PCIE-E06	JI-PCIexpress expansion card with 1x JX6-SV1-ES
10001962	JI-PCIE-E06	JI-PCIexpress expansion card with 1x JX6-IO16-CB
60887133	00MW_JC-96x-2-OBEN_003, 2 slots	Adapter plate TOP, for mounting JC-96/7x-E03-2 (2 slots) on JC-94x holes
60887134	00MW_JC-96x-2-UNTEN_004, 2 slots	Adapter plate BOTTOM, for mounting JC-96/7x-E03-2 (2 slots) on JC-94x holes
60887135	00MW_JC-96x-0-OBEN_005, 0 slots	Adapter plate TOP, for mounting JC-96/7x (0 slots) on JC-94x holes
60887136	00MW_JC-96x-0-UNTEN_006, 0 slots	Adapter plate BOTTOM, for mounting JC-96/7x (0 slots) on JC-94x holes

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.

JetControl-VM



Features

- Controller programming without hardware
- Complete STX and MCX functional range of JetControl controllers including OPC UA, motion control axes, track functions and technology functions
- Shorter project runtimes thanks to programming, testing and debugging without setting up hardware
- Can be used in a digital twin with Windows DLL

Description

The JetControl-VM offers all functions that are also available through real controllers: Registers, motion control commands (MCX Motion Control Extended), oscilloscope function, all TCP/IP-based communication including OPC UA (server and client), OS update, FTP, MQTT and Modbus TCP.

The user benefits from cost savings in creating programs, troubleshooting, testing and commissioning. The need for expensive test hardware is also eliminated and the time-to-market is shortened significantly.

Each order of a virtual JetControl-VM comes with a USB stick that includes the copy protection for the software license. This makes it possible to download any JetControl-VM from the Bucher Automation homepage, then to program it, test it and place it in operation.

Application cases

- Development and testing of STX programs without hardware
- Programming of motion control functions via the Motion API
- Virtual commissioning with and in a digital twin

Your benefits

- Cost savings in creating programs and troubleshooting, testing and commissioning
- Savings on test hardware
- Improved simultaneous engineering
- Shorter time-to-market

Available JetControl-VM

The following JetControl controllers are available as JetControl-VM:

- JC-440EXT
- JC-960EXT
- JC-965EXT

All JetControl-VMs include all options (JCF licenses).

System requirements

PC with at least Intel® Core™ i5 CPU, 8 GB RAM and 1 GB free hard disk space, Windows 10/11 operating system with at least VMware® Workstation Player

Ordering information

Article no.	Designation	Description
10002558	JC-VM	JC-VM runtime license for one JetControl-VM on a Windows-PC

Download the relevant JetControl VM files for VMware® from our homepage or contact our sales department.



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



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



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



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



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	-



JX3 expansion modules

The 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.



JX3-BN-EC



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

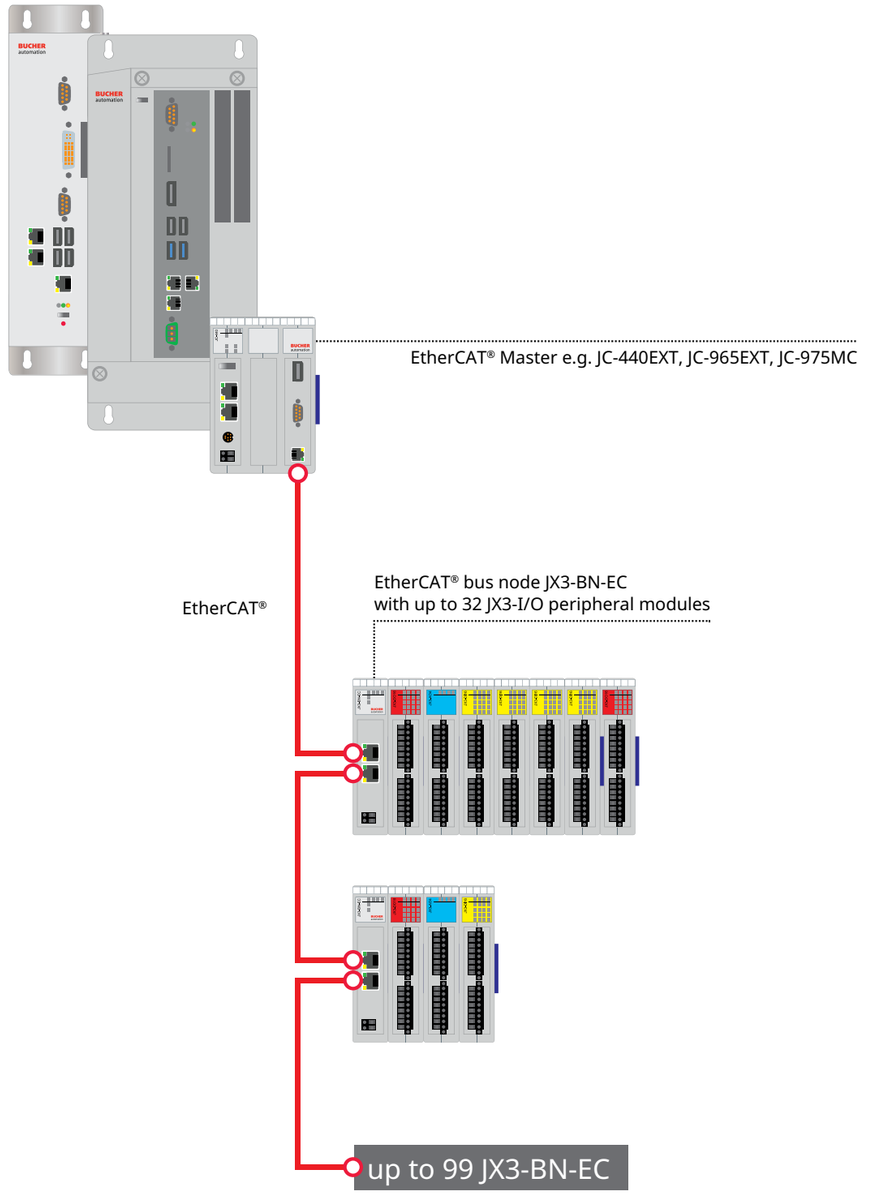
The JX3-BN-EC EtherCAT® bus node serves as a gateway between an EtherCAT® master and Bucher Automation JX3-I/O modules. JX3-BN-EC modules are used for the purpose of setting up remote I/O stations. They enable synchronous communication via EtherCAT® between the controller and remote JX3-I/O modules.

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



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



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



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



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



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



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



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
- 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



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



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



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



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



JX4 expansion modules

The modular, space-saving and maintenance-friendly I/O system in IP20 that supports machine manufacturers in shortening the time-to-market of their machines and speeding up the handling of I/O signals.

General technical data

Operating environment	
Operating temperature	-20 °C ... +60 °C
Storage temperature	-40 °C ... +80 °C
Relative humidity	95 %, non-condensing
Installation	DIN rail EN 50022 – 35 × 7.5 or EN 50022 – 35 × 15
Elevation	≤2000 m
Resistance to vibration	IEC 60068-2-6 sinusoidal vibration 5 Hz–8.4 Hz, 3.5 mm, 8.4 Hz ... 150 Hz, 1 g X/Y/Z triaxial, 10 cycles/axial (100 min)
Shock resistance	IEC 60068-2-27 Mechanical shock 150 m/s², 11 ms, ±X/Y/Z direction 3× per direction
Degree of protection	IP20
Overvoltage category	I
Contamination level	2
Access to PDO via SDO	Support
Diagnostic	Support
Warning	Support
Firmware update	Support
Protection against: Short circuit, reverse polarity and overvoltage	Support
CE	
EMC	EN 61131-2 EN IEC 61000-6-4 EN IEC 61000-6-2
Low Voltage Directive	EN 61010-1:2010/A1 EN IEC 61010-2-201
Requirements for electromagnetic compatibility	
Electrostatic discharge	Level 3, contact ±8 kV air ±8 kV, IEC 61000-4-2
(Electrical) overvoltage (interference immunity against surge voltage)	Level 3, 1 kV DM 2 kV CM, IEC 61000-4-5
Electrical rapid pulse group (rapid transient electrical disturbance values/burst)	Level 4, power cable ±4 kV, IEC 61000-4-4
RoHS certification	Directive 2011/65/EU, Annex II
REACH	Regulation (EC) no. 1907/2006

JX4-BN-EC



Features
- EtherCAT® module device profile
- Max. 32 JX4-I/O modules
- Status LEDs for EtherCAT®, voltage supply and system bus
- Firmware update via FoE

Description
The EtherCAT® bus node JX4-BN-EC is a gateway between an EtherCAT® master and Bucher Automation JX4-I/O modules. The JX4-BN-EC is used to set up decentralized I/O stations. This module enables synchronous communication via EtherCAT® between the controller and decentralized JX4-I/O modules.

EtherCAT® interface

Protocol	EtherCAT®
Data transfer	Ethernet/EtherCAT® CAT5 cable
Bit rate	100 MBit/s
Minimum cycle time	250 µs
Transmission distance	≤100 m (station to station)
Bus interface	2× RJ45
Maximum number of modules in series	32
Volume of input process data and output process data	1024 bytes (1)

Comment (1): The total length of the upload stream and download stream must not exceed 1024 bytes.

Mechanical data

Dimensions (H × W × D)	106.4 × 43 × 61 mm
Weight	155 g

Power supply

Input voltage	SELV input DC 24 V (18 V ... 36 V)
Input current	Max: 600 mA (DC 24 V)
Backplane supply current	Max: 2 A
Backplane supply voltage	DC 5 V
Backplane bus	System bus

Ordering information

Article no.	Designation	Description
10002675	JX4-BN-EC	EtherCAT® bus head for JX4 modules

JX4-DI16



Features
- 16 digital inputs
- Adjustable input filter
- Push-in terminals
- Electrical isolation
- LEDs for monitoring supply voltage and communication

Description
The input expansion module JX4-DI16 is used to connect digital sensors.

Technical Data

	JX4-DI16
Channels	16
Type	Type1/type3 PNP
Nominal input current	5 mA/channel
Max. switching threshold OFF	5 V (max. 0.9 mA)
Min. switching threshold ON	11 V (min. 2.1 mA)
Input delay	<50 µs
Input filter	No filter, 0.1 ms, 0.2 ms, 0.5 ms, 1 ms, 2 ms, 3 ms (factory setting), 4 ms ... 18 ms, 19 ms, 20 ms
Maximum input frequency	150 Hz (filter time: 3 ms)
Input impedance	5.4 KΩ
Electrical isolation	Optocoupler isolation
Isolation voltage	500 V
Logic voltage of the system bus	DC 5 V (-15 % ... +10 %)
Current consumption of logic voltage	68 mA
Energy consumption	0.34 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	90 g

Ordering information

Article no.	Designation	Description
10002678	JX4-DI16	JX4 module with 16 dig. inputs

JX4-DI32



Features
- 32 digital inputs
- Adjustable input filter
- Push-in terminals
- Electrical isolation
- LEDs for monitoring supply voltage and communication

Description
The input expansion module JX4-DI32 is used to connect digital sensors.

Technical Data

	JX4-DI32
Channels	32
Type	Type1/type3 PNP
Nominal input current	5 mA/channel
Max. switching threshold OFF	5 V (max. 0.9 mA)
Min. switching threshold ON	11 V (min. 2.1 mA)
Input delay	<50 µs
Input filter	No filter, 0.1 ms, 0.2 ms, 0.5 ms, 1 ms, 2 ms, 3 ms (factory setting), 4 ms ... 18 ms, 19 ms, 20 ms
Maximum input frequency	150 Hz (filter time: 3 ms)
Input impedance	5.4 KΩ
Electrical isolation	Optocoupler isolation
Isolation voltage	500 V
Logic voltage of the system bus	DC 5 V (-15 % ... +10 %)
Current consumption of logic voltage	85 mA
Energy consumption	0.425 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002676	JX4-DI32	JX4 module with 32 dig. inputs

JX4-DI16DO16



Features
- 16 digital inputs and 16 digital outputs
- Adjustable input filter
- Possible load types: resistive, inductive. Lamp load
- Overload-proof and short-circuit-proof outputs and reverse polarity protection
- Push-in terminals
- Electrical isolation
- LEDs for monitoring supply voltage and communication

Description
The input and output expansion module JX4-DI16DO16 is used to connect digital sensors and actuators.

Technical Data

	JX4-DI16DO16
Digital input	
Channels	16
Type	Type1/type3 PNP
Nominal input current	5 mA/channel
Max. switching threshold OFF	5 V (max. 0.9 mA)
Min. switching threshold ON	11 V (min. 2.1 mA)
Input delay	<50 µs
Input filter	No filter, 0.1 ms, 0.2 ms, 0.5 ms, 1 ms, 2 ms, 3 ms (factory setting), 4 ms ... 18 ms, 19 ms, 20 ms
Maximum input frequency	150 Hz (filter time: 3 ms)
Input impedance	5.4 KΩ
Digital output	
Channels	16
Type	PNP
Load current per output	Max. 0.5 A
Output load type	Resistance load, inductive load, lighting load
Voltage drop on the output	<1 V
Leakage current	<10 µA
Switching time	<150 µs
Electrical isolation	Optocoupler isolation
Module protection	Reverse polarity protection
Isolation voltage	500 V
Logic voltage of the system bus	DC 5 V (-15 % ... +10 %)
Current consumption of logic voltage	90 mA
Energy consumption	0.45 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002680	JX4-DI16DO16	JX4 module with 16 dig. inputs and 16 dig. outputs

JX4-DO16



Features
- 16 digital outputs
- Possible load types: resistive, inductive. Lamp load
- Overload-proof and short-circuit-proof outputs and reverse polarity protection
- Push-in terminals
- Electrical isolation
- LEDs for monitoring supply voltage and communication

Description
The output expansion module JX4-DO16 is used to connect digital actuators.

Technical Data

	JX4-DO16
Channels	16
Type	PNP
Load current per output	Max. 0.5 A
Output load type	Resistance load, inductive load, lighting load
Voltage drop on the output	<1 V
Switching time	<150 µs
Leakage current	<10 µA
Protective circuit	Short-circuit protection, overload protection
Module protection	Reverse polarity protection
Electrical isolation	Optocoupler isolation
Isolation voltage	500 V
Logic voltage of the system bus	DC 5 V (-15 % ... +10 %)
Current consumption of logic voltage	79 mA
Energy consumption	0.395 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	90 g

Ordering information

Article no.	Designation	Description
10002679	JX4-DO16	JX4 module with 16 dig. inputs

JX4-DO32



Features
- 32 digital outputs
- Possible load types: resistive, inductive. Lamp load
- Overload-proof and short-circuit-proof outputs and reverse polarity protection
- Push-in terminals
- Electrical isolation
- LEDs for monitoring supply voltage and communication

Description
The output expansion module JX4-DO32 is used to connect digital actuators.

Technical Data

	JX4-DO32
Channels	32
Type	PNP
Load current per output	Max. 0.5 A
Output load type	Resistance load, inductive load, lighting load
Voltage drop on the output	<1 V
Switching time	<150 µs
Leakage current	<10 µA
Protective circuit	Short-circuit protection, overload protection
Module protection	Reverse polarity protection
Electrical isolation	Optocoupler isolation
Isolation voltage	500 V
Logic voltage of the system bus	DC 5 V (-15 % ... +10 %)
Current consumption of logic voltage	98 mA
Energy consumption	0.49 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002677	JX4-DO32	JX4 module with 32 dig. outputs

JX4-AI4I



Features
- 4× 20 mA current inputs
- Single-ended configuration
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The input expansion module JX4-AI4I is used for connecting analog sensors with a current interface.

Technical Data

	JX4-AI4I
Analog channels	4
Input type	Current
Input signal	Disable, 4 mA ... 20 mA, 0 mA ... 20 mA (Adjustable range, default 0 mA ... 20 mA)
Input signal type	Single-ended
Conversion time	600 µs/4 channels
Resolution	16 bits
Sampling rate	≤1 ksps
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Input filter	1 ... 200 samples (factory setting: 10 samples)
Input impedance (current)	≤ 300 Ω
Max. permissible input current	30 mA
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	100 mA
Energy consumption	0.5 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002720	JX4-AI4I	JX4 module with 4 current inputs

JX4-AI8I



Features
- 8× 20 mA current inputs
- Single-ended configuration
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The input expansion module JX4-AI8I is used for connecting analog sensors with a current interface.

Technical Data

	JX4-AI8I
Analog channels	8
Input type	Current
Input signal	Disable, 4 mA ... 20 mA, 0 mA ... 20 mA (Adjustable range, default 0 mA ... 20 mA)
Input signal type	Single-ended
Conversion time	700 µs/8 channels
Resolution	16 bits
Sampling rate	≤1 ksps
Measurement error	±0,1 % bei 25 °C, ±0,3 % über den gesamten Temperaturbereich
Input filter	1 ... 200 samples (factory setting: 10 samples)
Input impedance (current)	≤ 300 Ω
Max. permissible input current	30 mA
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	110 mA
Energy consumption	0.55 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002721	JX4-AI8I	JX4 module with 8 current inputs

JX4-AI4ID



Features
- 4× 20 mA current inputs
- Differential configuration
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The input expansion module JX4-AI4ID is used for connecting analog sensors with a current interface.

Technical Data

	JX4-AI4ID
Analog channels	4
Input type	Current
Input signal	Disable, 4 mA ... 20 mA, 0 mA ... 20 mA (Adjustable range, default 0 mA ... 20 mA)
Input signal type	Differential signal
Conversion time	600 µs/4 channels
Resolution	16 bits
Sampling rate	≤1 ksps
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Input filter	1 ... 200 samples (factory setting: 10 samples)
Input impedance (current)	≤ 250 Ω
Max. permissible input current	30 mA
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	150 mA
Energy consumption	0.75 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002724	JX4-AI4ID	JX4 module with 4 differential current inputs

JX4-AI8ID



Features
- 8× 20 mA current inputs
- Differential configuration
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The input expansion module JX4-AI8ID is used for connecting analog sensors with a current interface.

Technical Data

	JX4-AI8ID
Analog channels	8
Input type	Current
Input signal	Disable, 4 mA ... 20 mA, 0 mA ... 20 mA (Adjustable range, default 0 mA ... 20 mA)
Input signal type	Differential signal
Conversion time	770 µs/8 channels
Resolution	16 bits
Sampling rate	≤1 ksps
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Input filter	1 ... 200 samples (factory setting: 10 samples)
Input impedance (current)	≤ 250 Ω
Max. permissible input current	30 mA
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	210 mA
Energy consumption	1.05 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002725	JX4-AI8ID	JX4 module with 8 differential current inputs

JX4-AI4V



Features
- 4× analog voltage inputs
- Single-ended configuration
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Technical Data
The input expansion module JX4-AI4V is used for connecting analog sensors with a voltage interface.

Technical Data

	JX4-AI4V
Analog channels	4
Input type	Voltage
Input signal	Disable, -10 V ... +10 V, 0 V ... 10 V, -5 V ... +5 V, 0 V ... 5 V, 1 V ... 5 V (Adjustable range, default -10 V ... +10 V)
Input signal type	Single-ended
Conversion time	700 us/4 channels
Resolution	16 bits
Sampling rate	≤1 ksps
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Input filter	1 ... 200 samples (factory setting: 10 samples)
Input impedance (voltage)	>= 400 kΩ
Overvoltage protection	±30 V
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	180 mA
Energy consumption	0.95 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002722	JX4-AI4V	JX4 module with 4 voltage inputs

JX4-AI8V



Features
- 8× analog voltage inputs
- Single-ended configuration
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Technical Data
The input expansion module JX4-AI8V is used for connecting analog sensors with a voltage interface.

Technical Data

	JX4-AI8V
Analog channels	8
Input type	Voltage
Input signal	Disable, -10 V ... +10 V, 0 V ... 10 V, -5 V ... +5 V, 0 V ... 5 V, 1 V ... 5 V (Adjustable range, default -10 V ... +10 V)
Input signal type	Single-ended
Conversion time	770 us/8 channels
Resolution	16 bits
Sampling rate	≤1 ksps
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Input filter	1 ... 200 samples (factory setting: 10 samples)
Input impedance (voltage)	>= 400 kΩ
Overvoltage protection	±30 V
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	270 mA
Energy consumption	1.35 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002723	JX4-AI8V	JX4 module with 8 voltage inputs

JX4-AI4VD



Features
- 4× analog voltage inputs
- Differential configuration
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The input expansion module JX4-AI4VD is used for connecting analog sensors with a voltage interface.

Technical Data

	JX4-AI4VD
Analog channels	4
Input type	Voltage
Input signal	Disable, -10 V ... +10 V, 0 V ... 10 V, -5 V ... +5 V, 0 V ... 5 V, 1 V ... 5 V (Adjustable range, default -10 V ... +10 V)
Input signal type	Differential signal
Conversion time	600 us/4 channels
Resolution	16 bits
Sampling rate	≤1 ksps
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Input filter	1 ... 200 samples (factory setting: 10 samples)
Input impedance (voltage)	>= 1 MΩ
Overvoltage protection	±30 V
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	150 mA
Energy consumption	0.75 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002726	JX4-AI4VD	JX4 module with 4 differential voltage inputs

JX4-AI8VD



Features
- 8× analog voltage inputs
- Differential configuration
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The input expansion module JX4-AI8VD is used for connecting analog sensors with a voltage interface.

Technical Data

	JX4-AI8VD
Analog channels	8
Input type	Voltage
Input signal	Disable, -10 V ... +10 V, 0 V ... 10 V, -5 V ... +5 V, 0 V ... 5 V, 1 V ... 5 V (Adjustable range, default -10 V ... +10 V)
Input signal type	Differential signal
Conversion time	850 us/8 channels
Resolution	16 bits
Sampling rate	≤1 ksps
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Input filter	1 ... 200 samples (factory setting: 10 samples)
Input impedance (voltage)	>= 1 MΩ
Overvoltage protection	±30 V
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	210 mA
Energy consumption	1.05 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002727	JX4-AI8VD	JX4 module with 8 differential voltage inputs

JX4-AO4I



Features
- 4× 20 mA current outputs
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The output expansion module JX4-AO4I is used for connecting analog actuators with a current interface.

Technical Data

	JX4-AO4I
Analog channels	4
Output type	Current
Output signal	Disable, 4 mA ... 20 mA, 0 mA ... 20 mA (Adjustable range, default 0 mA ... 20 mA)
Conversion time	200 us/4 channels
Resolution	16 bits
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Load impedance (current)	≤ 500 Ω
Output protection	Overload protection, open-circuit protection, short-circuit protection (all automatic recovery mechanisms)
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	80 mA
Energy consumption	0.4 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002728	JX4-AO4I	JX4 module with 4 current outputs

JX4-AO8I



Features
- 8× 20 mA current outputs
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The output expansion module JX4-AO8I is used for connecting analog actuators with a current interface.

Technical Data

	JX4-AO8I
Analog channels	8
Output type	Current
Output signal	Disable, 4 mA ... 20 mA, 0 mA ... 20 mA (Adjustable range, default 0 mA ... 20 mA)
Conversion time	400 us/8 channels
Resolution	16 bits
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Load impedance (current)	≤ 500 Ω
Output protection	Overload protection, open-circuit protection, short-circuit protection (all automatic recovery mechanisms)
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	100 mA
Energy consumption	0.5 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002729	JX4-AO8I	JX4 module with 8 current outputs

JX4-AO4V



Features
- 4× analog voltage outputs
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The output expansion module JX4-AO4V is used for connecting analog actuators with a voltage interface.

Technical Data

	JX4-AO4V
Analog channels	4
Output type	Voltage
Output signal	Disable, -10 V ... +10 V, 0 V ... 10 V, -5 V ... +5 V, 0 V ... 5 V, 1 V ... 5 V (Adjustable range, default -10 V ... +10 V)
Conversion time	200 µs/4 channels
Resolution	16 bits
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Load impedance (voltage)	≥ 2 kΩ
Output protection	Overload protection, open-circuit protection, short-circuit protection (all automatic recovery mechanisms)
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	80 mA
Energy consumption	0.4 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002730	JX4-AO4V	JX4 module with 4 voltage outputs

JX4-AO8V



Features
- 8× analog voltage outputs
- 16-bit resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The output expansion module JX4-AO8V is used for connecting analog actuators with a voltage interface.

Technical Data

	JX4-AO8V
Analog channels	8
Output type	Voltage
Output signal	Disable, -10 V ... +10 V, 0 V ... 10 V, -5 V ... +5 V, 0 V ... 5 V, 1 V ... 5 V (Adjustable range, default -10 V ... +10 V)
Conversion time	400 µs/8 channels
Resolution	16 bits
Measurement error	±0.1 % at 25 °C, ±0.3 % over the full temperature range
Load impedance (voltage)	≥ 2 kΩ
Output protection	Overload protection, open-circuit protection, short-circuit protection (all automatic recovery mechanisms)
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	100 mA
Energy consumption	0.5 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	110 g

Ordering information

Article no.	Designation	Description
10002731	JX4-AO8V	JX4 module with 8 voltage outputs

JX4-THI4



Features
- 4 analog inputs for temperature sensors
- RTD and TC sensors
- 0.1 °C resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The expansion module JX4-THI4 features inputs for temperature measurement using Pt100/Pt1000 resistance thermometers or alternatively thermocouples of types J, K, B, E, S.

Technical Data

	JX4-THI4
Analog channels	4
Sensor types	TC, RTD
Resolution	0.1 °C (16 bits)
Conversion time	TC: 115 ms/4 channels; RTD: 290 ms/4 channels
Measurement error	TC: ±0.3 % at 25 °C, ±0.5 % over the full temperature range RTD: ±0.1 % at 25 °C, ±0.3 % over the full temperature range
Hardware filter	None, 10 Hz, 50 Hz, 60 Hz
Input impedance	≥ 10 kΩ
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	110 mA
Energy consumption	0.55 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	90 g

Ordering information

Article no.	Designation	Description
10002732	JX4-THI4	JX4 module for 4 temperature sensors

JX4-THI8



Features
- 8 analog inputs for temperature sensors
- RTD and TC sensors
- 0.1 °C resolution
- Galvanic isolation
- LEDs for monitoring supply voltage and communication

Description
The expansion module JX4-THI8 features inputs for temperature measurement using Pt100/Pt1000 resistance thermometers or alternatively thermocouples of types J, K, B, E, S.

Technical Data

	JX4-THI8
Analog channels	8
Sensor types	TC, RTD
Resolution	0.1 °C (16 bits)
Conversion time	TC: 115 ms/8 channels; RTD: 290 ms/8 channels
Measurement error	TC: ±0.3 % at 25 °C, ±0.5 % over the full temperature range RTD: ±0.1 % at 25 °C, ±0.3 % over the full temperature range
Hardware filter	None, 10 Hz, 50 Hz, 60 Hz
Input impedance	≥ 10 kΩ
Galvanic isolation	No isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Current consumption of logic voltage	200 mA
Energy consumption	1 W
Dimensions (H × W × D)	106.4 × 25.7 × 72.3 mm
Weight	90 g

Ordering information

Article no.	Designation	Description
10002733	JX4-THI8	JX4 module for 8 temperature sensors

JX4-CNT8

AVAILABLE SOON



Features
- 8 independent channels for pulse counting
- 100 kHz pulse counting frequency
- Counter and frequency measurement
- Input filtering selectable in 15 steps

Description
The JX4-CNT8 detects 24-V pulse signals up to 100 kHz on eight independent channels, counts them with 32-bit counters, and additionally determines the pulse frequency per channel. Each channel can be activated or deactivated separately and reset. A 15-stage input filtering suppresses interference.

Technical Data

	JX4-CNT8
Number of channels	8
Input frequency range	0 … 100 kHz
Counting range	0 … 4,294,967,295 (2^{32}-1)
Frequency measurement	0 … 100,000 Hz
Input voltage	DC 15 … 30 V
Input filter	0 … 15 filter levels
Galvanic isolation	Isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Logic voltage current consumption	80 mA
Energy consumption	0.4 W
Weight	85 g

Ordering information

Article no.	Designation	Description
10002736	JX4-CNT8	JX4 module with 8 counter inputs

JX4-ENC2

AVAILABLE SOON



Features
- 2× 5 V differential incremental encoders
- 1-, 2- or 4-fold evaluation
- 32-bit count value
- Configurable modulo range
- 2 sample inputs per encoder
- DC 5 V – encoder supply

Description
The JX4-ENC2 is a module for the detection of two 5-V differential incremental encoder signals. It supports 1-, 2- and 4-fold evaluation and determines the speed. An individual modulo range can be configured. Position values can be stored by means of fast sample inputs.

Technical Data

	JX4-ENC2
Number of channels	2
Input type	5 V differential incremental encoder
Input frequency	0 … 1 MHz
Input filter	0 … 15 filter levels
Counting range	0 … 4,294,967,295 (2^{32}-1)
Modulo range	Adjustable, 1 … 65,535 (2^{16}-1)
Sensor supply	5 V
Sample inputs	2 per encoder channel
Comparison outputs	2 per encoder channel (NPN)
Galvanic isolation	Isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Logic voltage current consumption	130 mA
Energy consumption	0.65 W
Weight	110 g

Ordering information

Article no.	Designation	Description
10002734	JX4-ENC2	JX4 module with 2 encoder interfaces

JX4-SSI2

AVAILABLE SOON



Features

- 2 SSI absolute encoders
- Binary or Gray coding
- Up to 2 MHz clock frequency
- 2 sample inputs per encoder
- DC 24 V – encoder supply

Description

The JX4-SSI2 evaluates two SSI absolute encoders with binary or Gray code at a clock frequency of up to 2 MHz. Fast sample inputs enable the storing of position values.

Technical Data

	JX4-SSI2
Number of channels	2
Input type	SSI (differential, 5 V)
SSI clock frequency	Max. 2 MHz
SSI code	Gray or binary
Counting range	0 ... 4,294,967,295 (2^{32}-1)
Encoder supply	24 V
Sample inputs	2 per encoder channel
Galvanic isolation	Isolation between channels, isolation between channels and backplane bus
Isolation voltage	500 V
Logic voltage	DC 5 V
Logic voltage current consumption	160 mA
Energy consumption	0.75 W
Weight	110 g

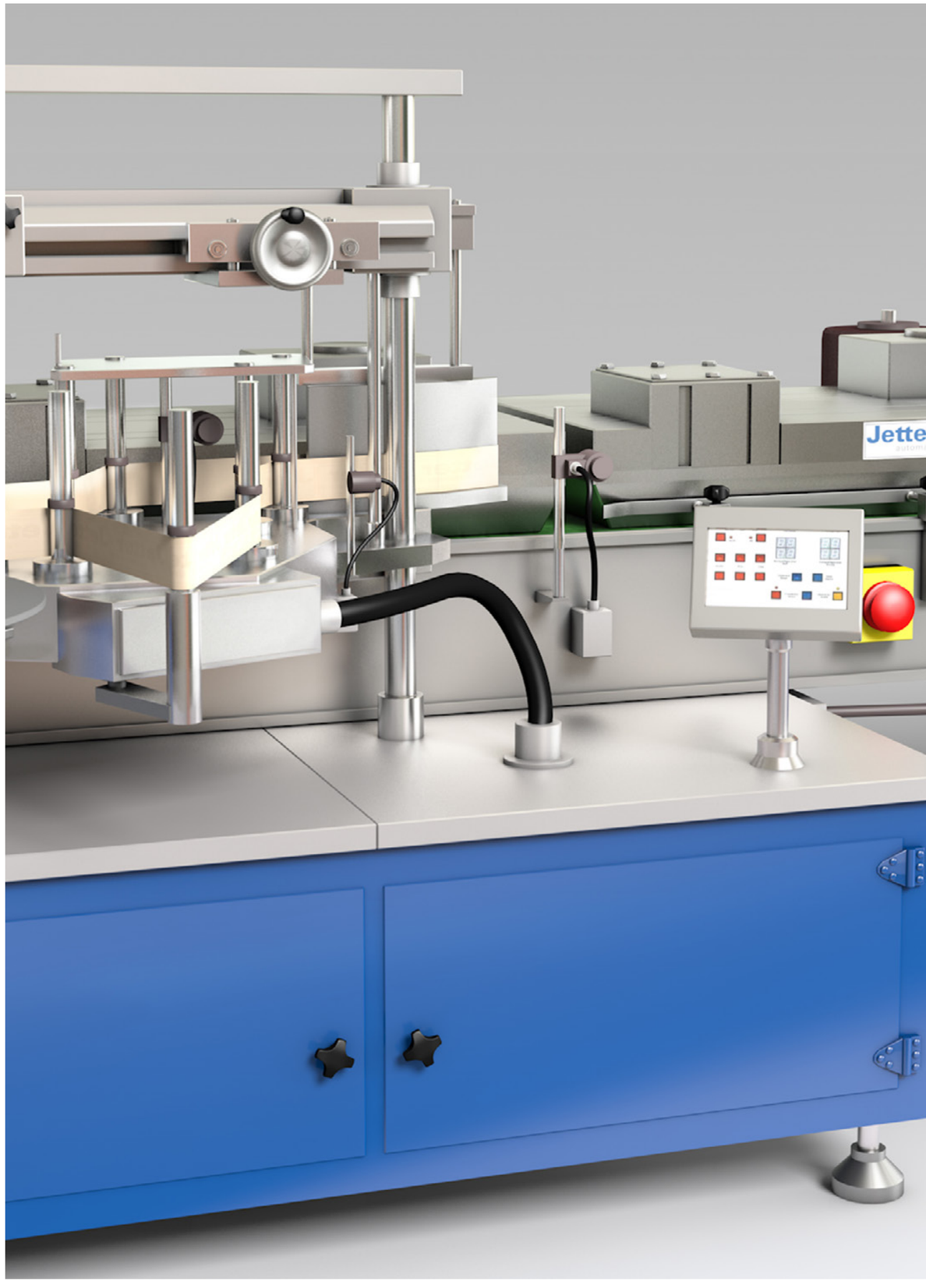
Ordering information

Article no.	**Designation**	**Description**
10002735	JX4-SSI2	JX4 module with 2 SSI-capable interfaces



Industrial PCs

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



JI-FPC3007



Features

- Glass front
- Widescreen (16:9)
- Multitouch
- PCAP (Projected Capacitive)
- Windows® 11 IoT
- JetViewSoft visualization
- Intel® Celeron™ CPU
- 2× GB Ethernet
- 2× USB 3.0
- SSD
- 1× HDMI for additional monitor
- AUDIO OUT
- Fanless

Description

The flat panel PC JI-FPC3007 is an industrial PC featuring a widescreen display and a projected capacitive touchscreen (PCAP). The compact screen size of 7″ provides sufficient space for operator guidance in small systems. Equipped with a multi-core Celeron®-class CPU, the device is capable of executing operator interfaces with high performance. Thanks to the wide range of available interfaces, the device can be optimally adapted to individual requirements. The real glass surface is scratch-resistant and repels dirt.

Ordering information

Item no.	Designation	Description
10002957	JI-FPC3007-PCT-E1-L6-B12-ER	Flat panel PC 7″, 8 GB RAM, Celeron®, 256 GB SSD, Windows® 11 IoT Enterprise OEM 2024 LTSC Includes JetViewSoft Embedded Runtime
10002958	JI-FPC3007-PCT-E1-L6-B12	Flat panel PC 7″, 8 GB RAM, Celeron®, 256 GB SSD, Windows® 11 IoT Enterprise OEM 2024 LTSC

Technical specifications

	JI-FPC3007
Display	7″ TFT widescreen
Resolution	1024 × 600
Format	16:9
Brightness (display)	250 cd/m²
Backlight	LED, lifetime > 50,000 h
Touch screen	Glass projected capacitive touch (PCAP)
Processor	Intel® Celeron J6412 (QuadCore, 2.0 GHz)
RAM	8 GB
Interfaces	2× USB 3.0, 2× GBE LAN (10/100/1000 Mbit), 1× AUDIO OUT, 1× HDMI, 1× COM (RS-232)
Drives	1× SSD 256 GByte
Cooling	Passive (fanless)
Supply voltage	DC 24 V
Power consumption	Max. 48 W
Weight	1.9 kg
Dimensions (H × W × D)	160 × 225 × 59 mm
Cut-out dimensions	210,9 × 146,5 mm
Color (front)	Similar to black anthracite RAL 7021
Mounting	Front panel mounting, VESA 75 × 75 / 100 × 100
EMC	EN55022
Certifications	CE
Protection class	IP65 front side, IP20 rear side
Height	Operation: 2,000 m/Storage: 5,000 m
Operating temperature	0 °C ... +50 °C
Humidity	10 % ... 90 %, @39 °C, non-condensing
Supported operating systems	Windows® 10, Windows® 11, Linux Default delivery: Windows® 11 IoT Enterprise 2024 LTSC
RoHS compliant	Yes

JI-FPC3010



Features

- Glass front
- Widescreen (16:10)
- Multitouch
- PCAP (Projected Capacitive)
- Windows® 11 IoT
- JetViewSoft visualization
- Intel® Celeron™ CPU
- 2× GB Ethernet
- 4× USB
- SSD
- 1× HDMI for additional monitor
- AUDIO OUT
- Fanless

Description

The flat panel PC JI-FPC3010 is an industrial PC featuring a widescreen display and a projected capacitive touchscreen (PCAP). The compact screen size of 10.1” provides sufficient space for operator guidance in small systems. Equipped with a multi-core Celeron®-class CPU, the device is capable of executing operator interfaces with high performance. Thanks to the wide range of available interfaces, the device can be optimally adapted to individual requirements. The real glass surface is scratch-resistant and repels dirt.

Ordering information

Item no.	Designation	Description
10002930	JI-FPC3010-PCT-E1-L6-B12-ER	Flat panel PC 10.1”, 8 GB RAM, Celeron®, 256 GB SSD, Windows® 11 IoT Enterprise OEM 2024 LTSC Includes JetViewSoft Embedded Runtime
10002938	JI-FPC3010-PCT-E1-L6-B12	Flat panel PC 10.1”, 8 GB RAM, Celeron®, 256 GB SSD, Windows® 11 IoT Enterprise OEM 2024 LTSC

Technical specifications

	JI-FPC3010
Display	10.1” TFT widescreen
Resolution	1280 × 800
Format	16:10
Brightness (display)	300 cd/m²
Backlight	LED, lifetime > 50,000 h
Touch screen	Glass projected capacitive touch (PCAP)
Processor	Intel® Celeron J6412 (2.0 GHz)
RAM	8 GB
Interfaces	2× USB 2.0, 2× USB 3.0, 2× GBE LAN (10/100/1000 Mbit), 1× AUDIO OUT, 1× HDMI, 1× COM (RS-232)
Drives	1× SSD 256 GByte
Cooling	Passive (fanless)
Supply voltage	DC 24 V
Power consumption	Max. 48 W
Weight	2.2 kg
Dimensions (H × W × D)	186.2 × 283.7 × 60 mm
Cut-out dimensions	269.8 × 172.3 mm
Color (front)	Similar to black anthracite RAL 7021
Mounting	Front panel mounting, VESA 75 × 75 / 100 × 100
EMC	EN55022
Certifications	CE
Protection class	IP65 front side, IP20 rear side
Height	Operation: 2,000 m/Storage: 5,000 m
Operating temperature	0 °C ... +50 °C
Humidity	10 % ... 90 %, @39 °C, non-condensing
Supported operating systems	Windows® 10, Windows® 11, Linux Default delivery: Windows® 11 IoT Enterprise 2024 LTSC
RoHS compliant	Yes

JI-FPC2015



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
- 1x HDMI
- 1x DisplayPort for additional monitor
- Fanless

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.

Options

- 16 GB RAM
- WiFi (WLAN)
- RFID reader
- 2x 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

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 (eP-KEA), Value (MUU-00005)
RoHS compliance	Yes (2011/65/EU + 2015/863/EU + 2017/2102/EU)

JI-FPC2022



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
- 1x HDMI
- 1x DisplayPort for additional monitor
- Fanless

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.

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
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-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



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



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 2xxx series



Features

- Single or double axes
- Compact and flexible mounting
- EtherCAT® bus connection
- STO (S1) integrated as standard (certification in progress)
- Installed braking resistor (R1)
- Encoder evaluation pluggable depending on the position encoder installed in the motor: Resolver (R); HIPERFACE® and SinCos (A); EnDat™ digital (E6); Incremental (I); HIPERFACE DSL® (H)
- Motor temperature sensor evaluation e.g. switch, PTC, KTY83-110, PT-1000
- High positioning accuracy
- Easy commissioning via EtherCAT®, JetSym and JetControl

Description

The servo amplifiers of the JetMove 2000 series are available as single axes or double axes which can be mounted in any order on a mounting plate to control synchronous servo motors.

Options

- Analog HIPERFACE® encoder (2-cable technology)
- Resolver (2-cable technology)
- HIPERFACE DSL® (1-cable technology)
- EnDat™ 2.2, 6 cores (2-cable technology)

Accessories

- Pre-assembled servo cables (motor and encoder with KAY_14xx_xxxx)
- Connector sets
- External brake resistors
- Spare fitting panel
- Spare motor cable fastening and shielding bracket

Technical specifications

	JM-2203-S1	JM-2403-S1
Rated power	0.55 kW (1x AC 230 V); 1.1 kW (3x AC 230 V)	1.5 kW
Mains voltage	1/3x AC 230 V, AC 184 V ... AC 240 V +10%	3x AC 380 V -15% ... 3x AC 480 V +10%
Rated current (eff.)	3 A	3 A
Peak current (eff.)	9 A (3s), 6 A (60s)	9 A (3s), 6 A (60s)
Brake resistor	70 W	70 W
Safety	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 4*DI (2STO+2SBC), 1*DO (motor holding brake X21, 3 A)	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 4*DI (2STO+2SBC), 1*DO (motor holding brake X21, 3 A)
Encoder interface(s)	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver
Inputs/outputs	4 DI	4 DI
Communication	EtherCAT®	EtherCAT®
Integrated	Brake resistor, fan	Brake resistor, fan
Cooling concept	Air-cooled	Air-cooled
Rated data relative to	1/3x AC 230 V, 40 °C, 8 kHz	3x AC 400 V, 40 °C, 8 kHz
Dimensions (W x H x D)	60 x 266 x 229 mm	60 x 266 x 229 mm

Technical specifications

	JM-2206-S1	JM-2406-S1
Rated power	1.1 kW (1x AC 230 V); 1.5 kW (3x AC 230 V)	2.2 kW
Mains voltage	1/3x AC 230 V, AC 184 V ... AC 240 V +10%	3x AC 380 V -15% ... 3x AC 480 V +10%
Rated current (eff.)	6 A	6 A
Peak current (eff.)	18 A (3s), 12 A (60s)	18 A (3s), 12 A (60s)
Brake resistor	140 W	140 W
Safety	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 4*DI (2STO+2SBC), 1*DO (motor holding brake X21, 3 A)	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 4*DI (2STO+2SBC), 1*DO (motor holding brake X21, 3 A)
Encoder interface(s)	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver
Inputs/outputs	4 DI	4 DI
Communication	EtherCAT®	EtherCAT®
Integrated	Brake resistor, fan	Brake resistor, fan
Cooling concept	Air-cooled	Air-cooled
Rated data relative to	1/3x AC 230 V, 40 °C, 8 kHz	3x AC 400 V, 40 °C, 8 kHz
Dimensions (W x H x D)	60 x 321 x 229 mm	60 x 321 x 229 mm

JetMove 2xxx series

Technical specifications

	JM-2410-S1	JM-2414-S1	JM-2423-S1
Rated power	4 kW	5.5 kW	9.2 kW
Mains voltage	3x AC 380 V -15% ... 3x AC 480 V +10%	3x AC 380 V -15% ... 3x AC 480 V +10%	3x AC 380 V -15% ... 3x AC 480 V +10%
Rated current (eff.)	9.5 A	14 A	23 A
Peak current (eff.)	28.5 A (3s), 19 A (60s)	42 A (3s), 28 A (60s)	69 A (3s), 46 A (60s)
Brake resistor	140 W	140 W	140 W
Safety	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 4*DI (2STO+2SBC), 1*DO (motor holding brake X21, 3 A)	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 4*DI (2STO+2SBC), 1*DO (motor holding brake X21, 3 A)	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 4*DI (2STO+2SBC), 1*DO (motor holding brake X21, 3 A)
Encoder interface(s)	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver
Inputs/outputs	4 DI	4 DI	4 DI
Communication	EtherCAT®	EtherCAT®	EtherCAT®
Integrated	Brake resistor, fa	Brake resistor, fan	Brake resistor, fan
Cooling concept	Air-cooled	Air-cooled	Air-cooled
Rated data relative to	3x AC 400 V, 40 °C, 8 kHz	3x AC 400 V, 40 °C, 8 kHz	3x AC 400 V, 40 °C, 8 kHz
Dimensions (W x H x D)	60 x 321 x 229 mm	80 x 321 x 243 mm	80 x 321 x 243 mm

Technical specifications

	JM-D2203-S1	JM-D2206-S1	JM-D2403-S1
Rated power	2x 0.55 kW (1x AC 230 V); 2x1.1 kW (3x AC 230 V)	2x 1.5 kW (3x AC 230 V)	2x 1.5 kWV
Mains voltage	1/3x AC 230 V, AC 184 V ... AC 240 V +10%	3x AC 230 V, AC 184 V ... AC 240 V +10%	3x AC 380 V -15% ... 3x AC 480 V +10%
Rated current (eff.)	2x 3 A	2x 6 A	2x 3 A
Peak current (eff.)	2x9 A (3s), 2x 6 A (60s)	2x9 A (3s), 2x 6 A (60s)	2x9 A (3s), 2x 6 A (60s)
Brake resistor	140 W	140 W	140 W
Safety	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 8*DI (4STO+4SBC), 2*DO (motor holding brake X21-X22, 3 A)	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 8*DI (4STO+4SBC), 2*DO (motor holding brake X21-X22, 3 A)	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 8*DI (4STO+4SBC), 2*DO (motor holding brake X21-X22, 3 A)
Encoder interface(s)	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver
Inputs/outputs	8 DI	8 DI	8 DI
Communication	EtherCAT®	EtherCAT®	EtherCAT®
Integrated	Brake resistor, fan	Brake resistor, fan	Brake resistor, fan
Cooling concept	Air-cooled	Air-cooled	Air-cooled
Rated data relative to	3x AC 230 V, 40 °C, 8 kHz	3x AC 230 V, 40 °C, 8 kHz	3x AC 400 V, 40 °C, 8 kHz
Dimensions (W x H x D)	60 x 321 x 229 mm	60 x 321 x 229 mm	60 x 321 x 229 mm

Technical specifications

	JM-D2406-S1	JM-D2410-S1
Rated power	2x 2.2 kW	2x 4 kW
Mains voltage	3x AC 380 V -15% ... 3x AC 480 V +10%	3x AC 380 V -15% ... 3x AC 480 V +10%
Rated current (eff.)	2x 6 A	2x 9.5 A
Peak current (eff.)	2x18 A (3s), 2x 12 A (60s)	2x 28.5 A (3s), 2x 19 A (60s)
Brake resistor	140 W	140 W
Safety	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 8*DI (4STO+4SBC), 2*DO (motor holding brake X21-X22, 3 A)	STO+ SBC(PL “e“ to DIN ISO 13849-1; SIL3 to IEC 61508), 8*DI (4STO+4SBC), 2*DO (motor holding brake X21-X22, 3 A)
Encoder interface(s)	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver	HIPERFACE® (analog 8 cores), HIPERFACE DSL® (digital 2-wire) or resolver
Inputs/outputs	8 DI	8 DI
Communication	EtherCAT®	EtherCAT®
Integrated	Brake resistor, fan	Brake resistor, fan
Cooling concept	Air-cooled	Air-cooled
Rated data relative to	3x AC 400 V, 40 °C, 8 kHz	3x AC 400 V, 40 °C, 8 kHz
Dimensions (W x H x D)	60 x 321 x 229 mm	80 x 321 x 243 mm

JetMove 2xxx series

Order informations JetMove

Type	Resolver	HIPERFACE®	HIPERFACE DSL®
230 V - JetMove single			
JM-2203	10002157	10002160	10002159
JM-2206	10002161	10002813	10002832
230 V - JetMove double			
JM-D2203	10002200	10002811	10002829
JM-D2206	10002837	10002847	10002848
400 V - JetMove single			
JM-2403	10002066	10002488	10002490
JM-2406	10002197	10002814	10002833
JM-2410	10002071	10002815	10002834
JM-2414	10002072	10002816	10002835
JM-2423	10002154	10002817	10002836
400 V - JetMove double			
JM-D2403	10002073	10002489	10002491
JM-D2406	10002199	10002812	10002830
JM-D2410	10002074	10002684	10002831

Order informations accessories | spare part (connector sets, mounting hardware)

Item number	Name	Description
60886077		I/O and S1 connector set, single-axis
60886093		I/O and S1 connector set, double-axis
60886078		I/O and S2 connector set, single-axis
60887094		I/O and S2 connector set, double-axis
60886080		Power-level terminal connector set, single-axis, frame size 1
60886081		Power-level terminal connector set, single-axis, frame size 2
60886084		Power-level terminal connector set, single-axis, frame size 3
60886083		Power-level terminal connector set, double-axis, frame size 2
60886085		Power-level terminal connector set, double-axis, frame size 3
60885886		Top fitting panel
60885603		Bottom fitting panel
60886090		Fastening bracket for motor cable with shielding bracket

Order informations optional external brake resistor

Type	Rated watt	Item number	Description
JM-2203	200	60880282_01	JBR090.02.540-UR
JM-2403	200	60880287_01	JBR200.02.540-UR
JM-2406, JM-2410, JM-2414, JM-2423, JM-D2403, JM-D2406, JM-D2410	150	60880604_00	JBR039.02.540-UR
JM-D2206, JM-D2203	150	60880605_00	JBR020.02.540-UR
JM-2203	300	60880283_01	JBR090.03.540-UR
JM-2206	300	60880285_01	JBR026.03.540-UR
JM-2406, JM-2410, JM-2414, JM-2423, JM-D2403, JM-D2406, JM-D2410	300	60880606_00	JBR039.03.540-UR
JM-D2206, JM-D2203	300	60880607_00	JBR020.03.540-UR
JM-2206	1000	60880286_01	JBR026.10.201-UR
JM-2406, JM-2410, JM-2414, JM-2423, JM-D2403, JM-D2406, JM-D2410	1000	60880608_00	JBR039.10.201-UR
JM-D2206, JM-D2203	1000	60880609_00	JBR020.10.201-UR
JM-2206	2000	60880148_01	JBR026.20.201-UR
JM-2406, JM-2410, JM-2414, JM-2423, JM-D2403, JM-D2406, JM-D2410	2000	60880610_00	JBR039.20.201-UR
JM-D2206, JM-D2203	2000	60880611_00	JBR020.20.201-UR

JetMove 3xxx series



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

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®.

Options
- HIPERFACE DSL® (TD)
- Cold plate cooling

Important note!
Devices of the previous JM-3000 series cannot be combined with the new JM-3000 series rev. B.

Technical specifications – Supply unit

	JetMove 3P10B	JetMove 3P22B
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 3506B	JetMove 3512B	JetMove 3518B	JetMove 3524B	JetMove 3532B
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 D3503B	JetMove D3506B	JetMove D3512B	JetMove D3516B
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	110 x 310 x 241	110 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 T3503B	JetMove T3506B	JetMove T3512B
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		

Ordering information

Item no.	Designation	Description
60887707_00	JetMove 3P10B-R1A1	Standard supply unit
60887844_00	JetMove 3P10B-P1R1A1	Supply unit with built-in PSU
60887843_00	JetMove 3P22B-R1A1	Standard supply unit
60887845_00	JetMove 3P22B-P1R1A1	Supply unit with built-in PSU
60887824_02	JetMove 3506B-S1A2	Standard 1-axis module
60887708_02	JetMove 3506B-S1TDA2	1-axis module with HIPERFACE DSL®
60887825_02	JetMove 3512B-S1A2	Standard 1-axis module
60887826_02	JetMove 3512B-S1TDA2	1-axis module with HIPERFACE DSL®
60887803_02	JetMove 3518B-S1A2	Standard 1-axis module
60887804_02	JetMove 3518B-S1TDA2	1-axis module with HIPERFACE DSL®
60887827_02	JetMove 3524B-S1A2	Standard 1-axis module
60887828_02	JetMove 3524B-S1TDA2	1-axis module with HIPERFACE DSL®
60887829_02	JetMove 3532B-S1A2	Standard 1-axis module
60887830_02	JetMove 3532B-S1TDA2	1-axis module with HIPERFACE DSL®
60887831_02	JetMove D3503B-S1A2	Standard 2-axis module
60887709_02	JetMove D3503B-S1TDA2	2-axis module with HIPERFACE DSL®
60887832_02	JetMove D3506B-S1A2	Standard 2-axis module
60887833_02	JetMove D3506B-S1TDA2	2-axis module with HIPERFACE DSL®
60887834_02	JetMove D3512B-S1A2	Standard 2-axis module
60887835_02	JetMove D3512B-S1TDA2	2-axis module with HIPERFACE DSL®
60887836_02	JetMove D3516B-S1A2	Standard 2-axis module
60887837_02	JetMove D3516B-S1TDA2	2-axis module with HIPERFACE DSL®
60887838_02	JetMove T3503B-S1A2	Standard 3-axis module
60887710_02	JetMove T3503B-S1TDA2	3-axis module with HIPERFACE DSL®
60887839_02	JetMove T3506B-S1A2	Standard 3-axis module
60887840_02	JetMove T3506B-S1TDA2	3-axis module with HIPERFACE DSL®
60887841_02	JetMove T3512B-S1A2	Standard 3-axis module
60887842_02	JetMove T3512B-S1TDA2	3-axis module with HIPERFACE DSL®

Note

To connect an EtherCAT® slave to the last JetMove 3000 Rev. B. unit, a 4-wire CAT5 patch cable (green) is absolutely necessary (see table).

Item no.	Description
60887934_00	Patch cable 1:1, 0.6m 4 wired green CAT5
60887935_00	Patch cable 1:1, 1m 4 wired green CAT5
60887936_00	Patch cable 1:1, 2m 4 wired green CAT5

Accessories

Item no.	Description
60887736_00	Patch cable 1:1, 0.25m gray Hirose CAT5e
60879945_00	Patch cable 1:1, 0.25m gray Hirose CAT5e + PE bridge
60537500	Patch cable 1:1, 1m gray Hirose CAT5e
60854512	Patch cable 1:1, 2m gray Hirose CAT5e

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.

Servo amplifier cables



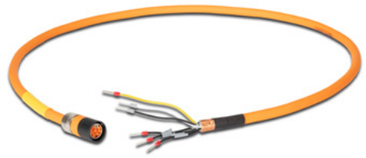
Encoder cable with M23 connector



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.

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)

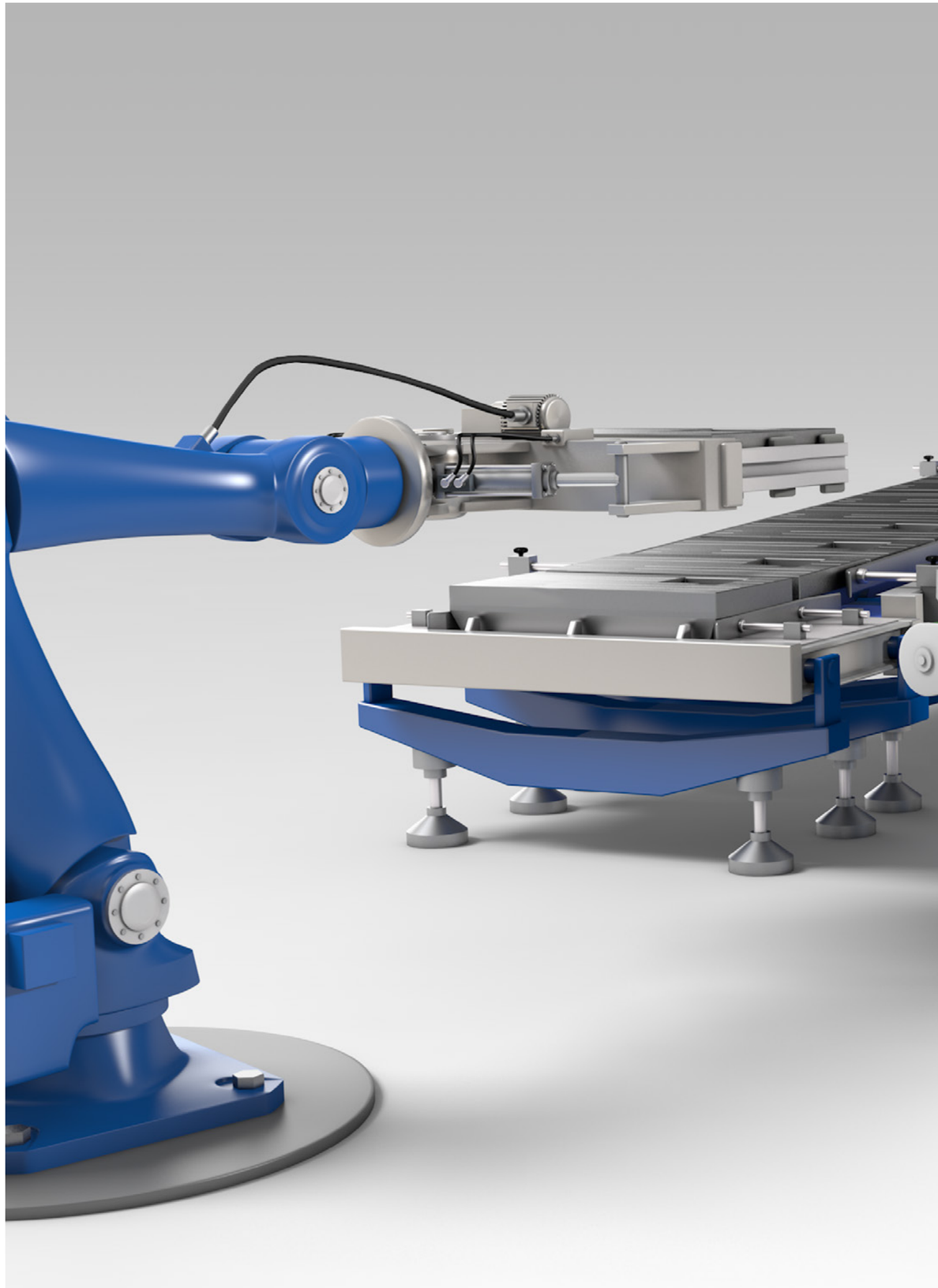
	Cable no. 1013	Cable no. 1113	Cable no. 1311	Cable no. 1311I
Use of the cable – motor size	Motor with brake, DSL	Motor with brake, DSL	Motor with brake, DSL	Motor with brake, DSL
	JHN2 ... JHN3	JHN2 ... JHN5	JHN2 ... JHN3	motor with I-Tec connector
	JHQ2 ... JHQ3	JHQ2 ... JHQ5	JHQ2 ... JHQ3	
Specification	(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)

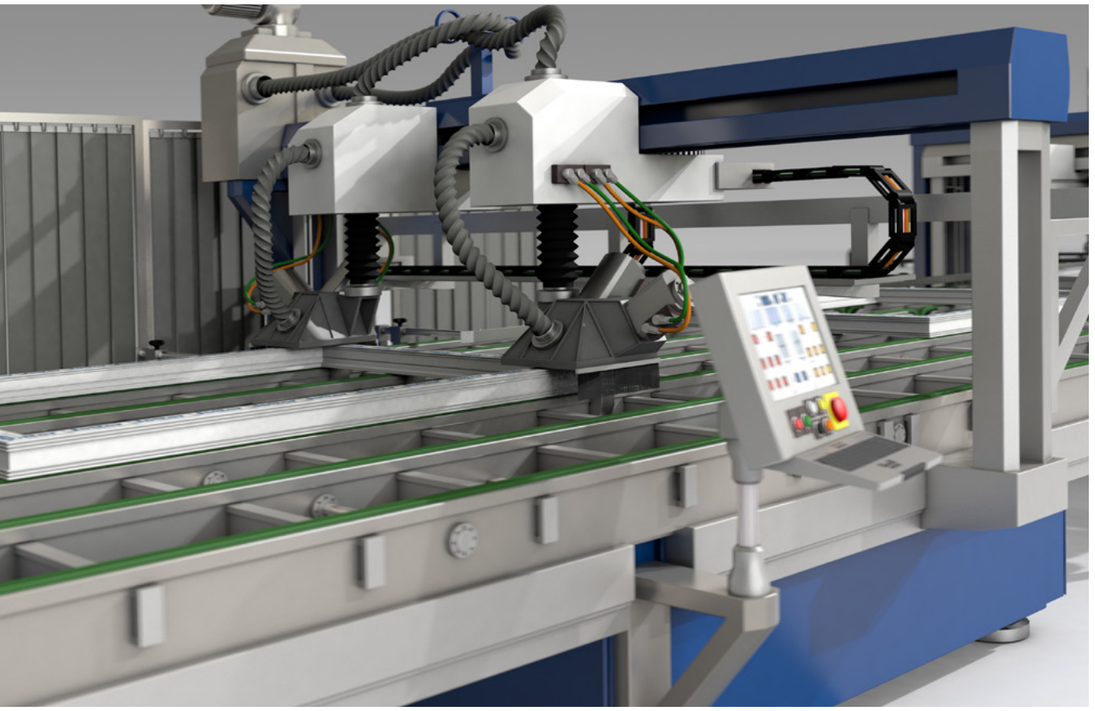
	Cable no. 1313	Cable no. 1213	Cable no. 1315	Cable no. 1317
Use of the cable – motor size	Motor DSL with brake	Motor DSL with brake	Motor DSL with brake	Motor DSL with brake
	JHN2 ... JHN5	JHN5 ... JHN7	JHN5 ... JHN7	JHQ8 (size 1.5)
	JHQ2 ... JHQ5	JHQ5 ... JHQ7	JHQ5 ... JHQ7	
Specification	(4x1.5+(2x0.75)+	(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

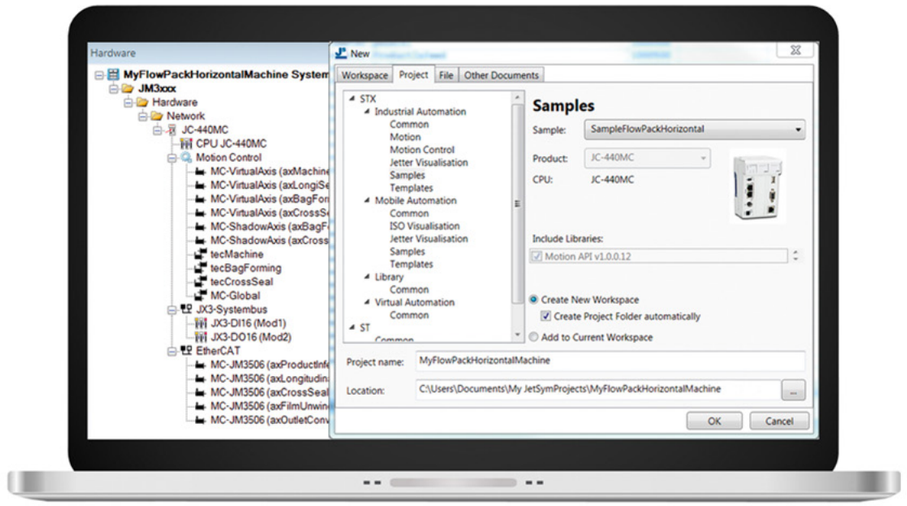
Tool Center Point – to the point

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 420EXT
– Up to 8 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 965EXT | 975EXT
– 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.

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

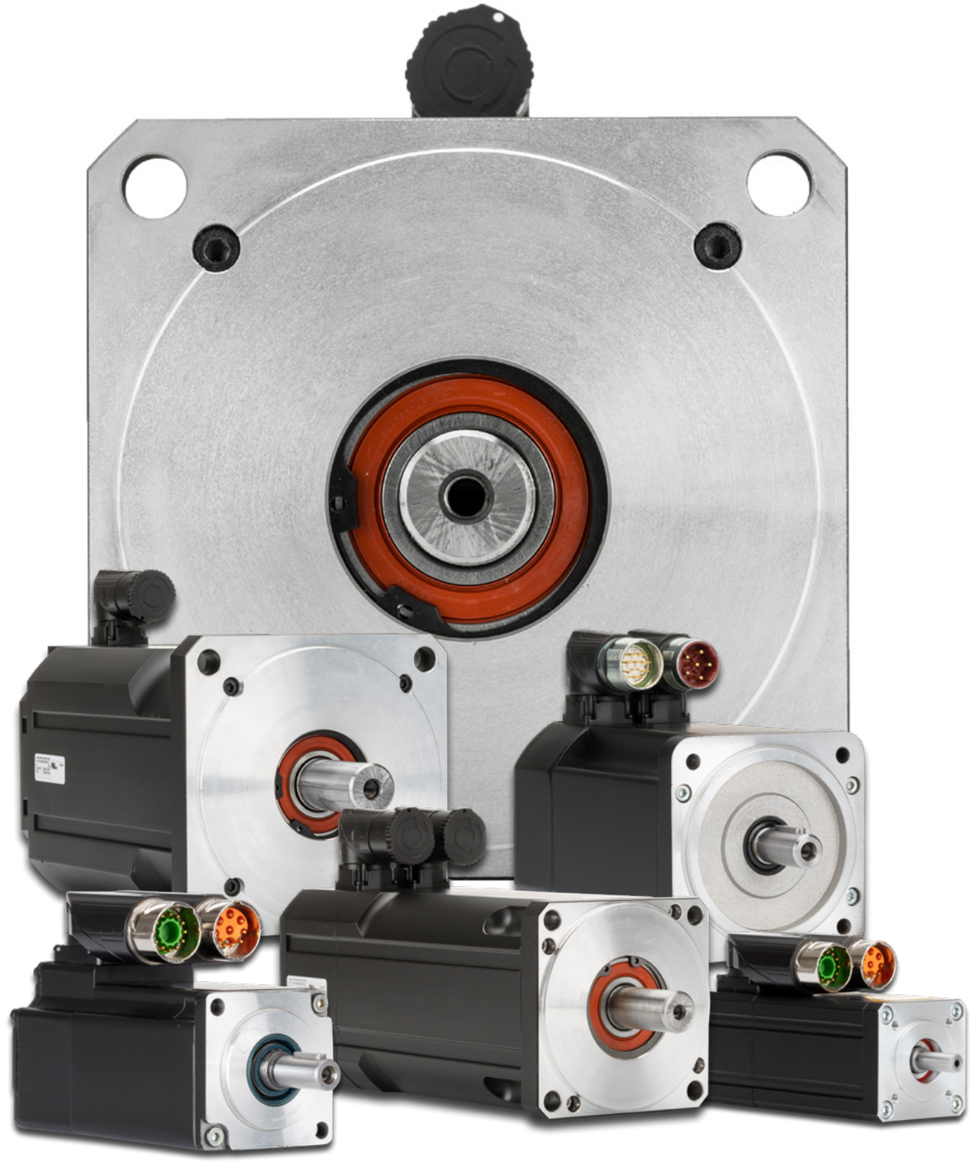
JHN motors stand out by virtue of the extremely compact design combined with high torque output. This allows them to be installed in smaller machines.

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

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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