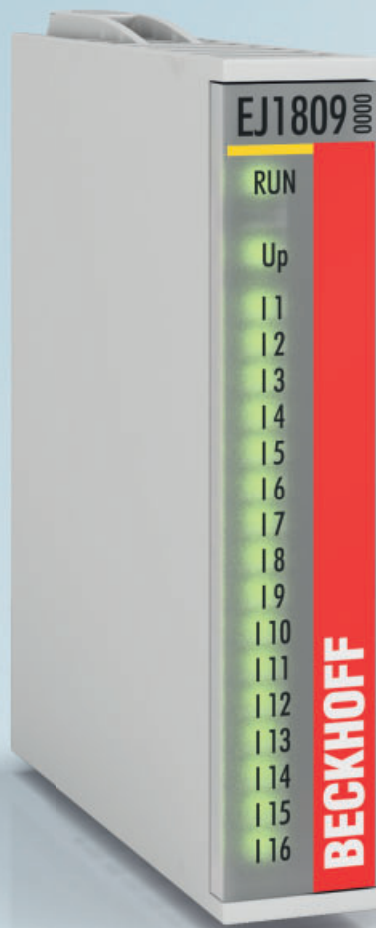




EtherCAT®

EtherCAT Plug-in Modules

Bus Terminals for circuit boards



EtherCAT® 

EtherCAT Plug-in Modules

Efficient I/O solution for large-scale machine production

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Product overview EtherCAT plug-in modules

EtherCAT Couplers			
EtherCAT Couplers E-bus	EJ1100		535

EtherCAT plug-in modules Digital input: EJ1xxx				
Signal	2-channel	4-channel	8-channel	16-channel
24 V DC (filter 3.0 ms)			EJ1008 type 3	EJ1809 type 3
			EJ1859 type 3, 8 inputs, 8 outputs, I _{MAX} = 0.5 A	EJ1889 negative switching

EtherCAT plug-in modules Digital output: EJ2xxx				
Signal	2-channel	4-channel	8-channel	16-channel
24 V DC (I _{MAX} = 0.5 A)			EJ2008	EJ2809
			EJ1859 type 3, 8 inputs, 8 outputs, I _{MAX} = 0.5 A	EJ2889 negative switching
PWM	EJ2502 24 V DC, 1.0 A			

EtherCAT plug-in modules Analog input: EJ3xxx				
Signal	2-channel	4-channel	8-channel	16-channel
±10 V		EJ3004 single-ended, 12 bit	EJ3108 6 x differential inputs, 2 x single-ended, 16 bit	
Resistance thermometer (RTD)	EJ3202 16 bit	EJ3214 16 bit		

EN 61131-2 specification ► www.beckhoff.com/EN61131-2

EtherCAT plug-in modules | Analog output: EJ4xxx

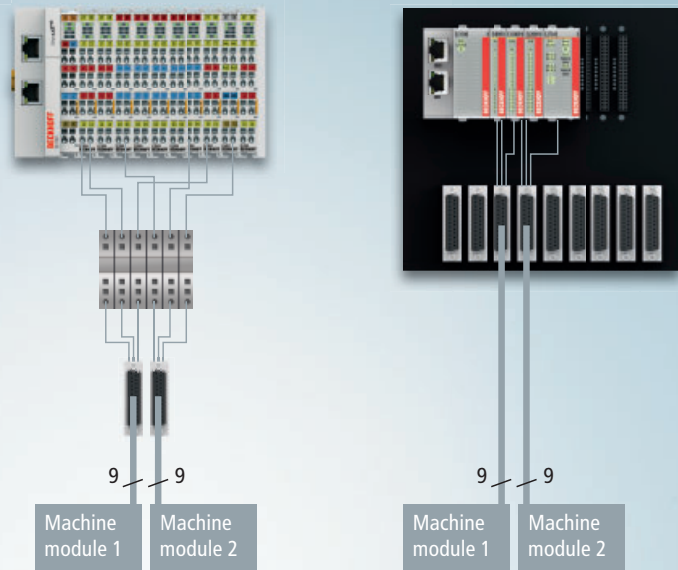
Signal	2-channel	4-channel
0...10 V	EJ4002 12 bit 539	
±10 V		EJ4134 16 bit 539

EtherCAT plug-in modules | Special functions: EJ7xxx

Signal	1-channel	2-channel
Motion	EJ7047 stepper motor module, $I_{\text{MAX}} = 5.0 \text{ A}$, 50 V DC, incremental encoder, vector control 540	EJ7342 DC motor output stage, 50 V DC, 3.5 A, incremental encoder 540
	EJ7211-0010 servomotor module, 50 V DC, 4.5 A _{RMS} , OCT 540	

EtherCAT plug-in modules | System: EJ9xxx

Signal	System
System	EJ9001 placeholder module 541
Signal	Power supply and accessories
µF	EJ9576 brake chopper module, up to 72 V DC, 155 µF 541



Signal distribution via single-core wiring

Signal distribution via signal distribution board

EJxxxx | EtherCAT plug-in modules

The EtherCAT I/O plug-in modules are based electronically on the well-known EtherCAT Terminals, and they provide the same broad variety of signals, including functional safety (TwinSAFE). Their electromechanical design enables them to be plugged directly into an application-specific signal distribution board. This routing board distributes signals and power supply to machine modules via prefabricated cables with application-specific plug connectors. The main advantage of the signal distribution board is the highly automated production process, from the manufacture of the circuit board and its assembly through to the inspection. All connector interfaces can be placed on the circuit board according to customer specifications. The connector level, which is matched to the application, considerably optimises the wiring procedure, for example with the use of prefabricated cables and coded plug connectors.

The manufacturing process can be accelerated as far as possible and the risk of wiring errors is minimised. This saves working time and thus costs. It allows production at different worldwide locations with a minimum of risk, since errors are avoided through automation and coding.

The EtherCAT plug-in modules offer an alternative to conventional point-to-point wiring in control cabinets, since they simplify wiring, and reduce the system installation

time and testing costs where machines are manufactured in high numbers.

Compact design for an optimised machine footprint

Similar to the EtherCAT Terminal system, a module strand consists of a Bus Coupler and any desired I/O modules. In contrast to the EtherCAT Terminals, however, the EtherCAT plug-in modules have no spring-loaded contacts, since the wiring level is implemented differently: for communication, signal distribution and the supply of power to the modules plug connectors on the back side of the modules and the conductive tracks of the signal distribution board are used.

Measuring just 12 x 55 x 66 mm, the EJ modules are extremely compact; compared to the EtherCAT Terminals they are almost 50 % smaller in relation to volume. In conjunction with coding holes in the signal distribution board, coding pins on the underside of the EJ modules ensure protection against incorrect plug insertion. Thus, the risk of errors can be minimised during assembly and service.

The EtherCAT plug-in modules and the plug level for sensors and actuators can be placed flexibly on the signal distribution board. The signal distribution board is developed either by the user or as custom solution by Beckhoff.

I/O solution for standard applications

The EJ system supplements the modular Beckhoff I/O portfolio for controllers used in medium to high-volume production of standard machines. It is also suitable for applications where the reduction of error probability is critical for the exact replication of a machine. In general, the use of the EJ system is recommended for machine manufacturers who want to create a platform of common parts across their product range.

In addition, the EJ system directly addresses projects with a shortage of skilled workers. Especially when production facilities are distributed across various locations with different skill levels, the risk of errors increases along with the complexity of the machines. With the combination of I/O modules, signal distribution board and prefabricated cables, the EJ system offers efficient "Plug & Work" solutions for machine controllers.

Signal distribution board

The EtherCAT plug-in modules can be directly attached to a PCB. This application-specific PCB (signal distribution board) distributes signals and power supply to individual application-specific plug connectors, in order to connect the controller to further machine modules.