EK1814 | EtherCAT Coupler with integrated digital inputs/outputs

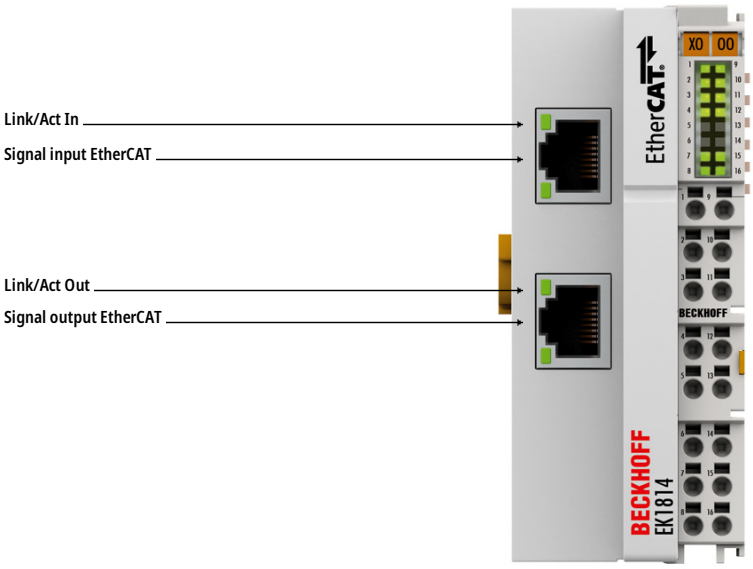

Image similar, may contain optional accessories

Product status: regular delivery

The EK1814 EtherCAT Coupler is the link between the EtherCAT protocol at fieldbus level and the EtherCAT Terminals. In addition, four digital inputs and four digital outputs are integrated. The resulting design is particularly suitable for applications with a small number of I/Os. The coupler converts the passing telegrams from Ethernet 100BASE-TX to E-bus signal representation. A station consists of a coupler and any number of EtherCAT Terminals that are automatically detected and individually displayed in the process image.

Special features:

- Connection technology: 2 x RJ45 socket
- Connection lengths: up to 100 m
- 4 digital inputs and 4 digital outputs
- Number of EtherCAT Terminals in the overall system: up to 65535

The EK1814 has two RJ45 sockets. The upper Ethernet interface is used to connect the coupler to the network; the lower socket serves for the optional connection of further EtherCAT devices in the same segment. In addition, an EtherCAT junction or an EtherCAT extension can be used for the extension or for setting up a line or star topology.

The system and field supply, each 24 V DC, is provided directly at the coupler. The attached EtherCAT Terminals are supplied with the current required for communication from the supplied system voltage. The coupler can supply a maximum of 5 V and 1 A. If higher current is required, power feed terminals such as the EL9410 have to be integrated. The field supply is forwarded to the individual I/O components via the power contacts with up to 10 A.

Product information

Technical data

Technical data	EK1814
Task within EtherCAT system	coupling of EtherCAT Terminals (ELxxxx) to 100BASE-TX EtherCAT networks
Data transfer medium	Ethernet/EtherCAT cable (min. Cat.5), shielded
Distance between stations	max. 100 m (100BASE-TX)
Number of EtherCAT Terminals	up to 65,534
Protocol	EtherCAT
Delay	approx. 1 µs
Data transfer rates	100 Mbit/s
Bus interface	2 x RJ45
Nominal voltage	24 V DC (-15%/+20%)
Current supply E-bus	1000 mA
Current consumption from U_P	40 mA + load
Current consumption from U_S	100 mA + (∑ E-bus current/4)
Number of inputs	4
Specification	EN 61131-2, type 1/3
“0” signal voltage	-3...+5 V (EN 61131-2, type 1/3)
“1” signal voltage	11...30 V (EN 61131-2, type 3)
Input filter	3 ms
Input current	typ. 3 mA (EN 61131-2, type 3)
Number of outputs	4
Load type	ohmic, inductive, lamp load
Max. output current	0.5 A (short-circuit proof) per channel
Short-circuit current	typ. < 2 A
Reverse voltage protection	yes
Breaking energy	< 150 mJ/channel
Switching times	typ. T_{ON}: 60 µs, typ. T_{OFF}: 300 µs
Electrical isolation	500 V (power contact/supply voltage/Ethernet), 500 V (E-bus/field potential)
Operating temperature	-25...+60°C
Storage temperature	-40...+85°C
Relative humidity	95%, no condensation
Vibration/shock resistance	conforms to EN 60068-2-6/EN 60068-2-27

EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4
Protect. rating/installation pos.	IP20/variable
Approvals/markings	CE, UL

Housing data	**EK-44-16pin**
Design form	HD (High Density) housing with signal LEDs
Material	polycarbonate
Installation	on 35 mm DIN rail, conforming to EN 60715 with lock
Side by side mounting by means of	double slot and key connection
Marking	labeling of the BZxxxx series
Wiring	solid conductors (s): direct plug-in technique; fine-stranded conductors (st) and ferrule (f): spring actuation by screwdriver
Connection cross-section	s*: 0.08...1.5 mm^2, st*: 0.25...1.5 mm^2, f*: 0.14...0.75 mm^2
Connection cross-section AWG	s*: AWG28...16, st*: AWG22...16, f*: AWG26...19
Stripping length	8...9 mm
Current load power contacts	I_{max}: 10 A
Dimensions (W x H x D)	44 mm x 100 mm x 67 mm

*s: solid wire; st: stranded wire; f: with ferrule