Emotron VFX / FDU 2.0
Industrial Ethernet Option
EtherCAT

Brief description

The EtherCAT® option board provides the Emotron VFX 2.0 and FDU 2.0 AC drives with a real-time industrial Ethernet interface in combination with a high level of reliability.

EtherCAT is an open industrial protocol which has been developed with focus on time critical applications, using the available bandwidth in a very efficient way. This is achieved through the protocol implementation as well as a fast integrated ASIC in every node, removing the need and cost for external switches. The ASIC takes care of the process data exchange "on the fly", which minimizes the telegram delay in each node, creating a very rapid bus system.

Since the EtherCAT network topology forms a "virtual ring" by using both pairs in an Ethernet cable, it is very robust. Using a PLC with two Ethernet ports allows you to create an even more robust, redundant ring network.

The specification of this protocol is maintained and developed by EtherCAT Technology Group (ETG) and its members.

All AC drive functions can be accessed via the network using the CoE (CANopen over EtherCAT) application protocol, which makes it possible to control, monitor, adjust and configure the drive effortlessly.

Technical information

EtherCAT	Connectors	2 x Isolated RJ45 connectors: 1 x EtherCAT IN, 1 x EtherCAT OUT
	Transmission speed	100 Mbit/s – full duplex
	Physical layer	100BASE-TX (IEEE802.3)
	Address configuration	Position addressing (physical node position in ring, set automatically) Node addressing / Station alias (set through master) Logical addressing
	Application protocol	CoE (CANopen over EtherCAT)
	Carrier protocol	EtherCAT
	Transfer cable	Recommendation: CAT5e (or better), STP type
Features	Sync managers	(For DP-ram consistency protection) Sync manager 0 & 1 dedicated for Mailbox write/read transfer (SDO - acyclic) and sync manager 2 & 3 for Read/Write process data (PDO – cyclic I/O data)
	FMMU	(Conversion of logical address into physical memory address.) 8 FMMUs available which can be used freely by master
	Supported commands	APRD, APWR, APRW, FPRD, FPWR, FPRW, BRD, BWR, LRD, LW, LRW, ARMW, FRMW
	Process data (PDO)	Configured by user to best fit the application. Default: compact 4 byte control/status message. Can be configured from both control panel and by CoE.
	Mailbox (CoE)	Supporting SDO request, SDO response for acyclic communication
Diagnostics	LEDs	Run LED, Error LED and Link activity LEDs for both ports
	Drive control panel info	Bus status, Module status, Internal communication link status, Incoming and outgoing process data from/to PLC.

Note: Support for distributed clocks (DC) currently not available. Typical update rate of PDO data 10 ms.

For more information:
EtherCAT (www.ethercat.org)
CANopen (www.can-cia.org)