



ET-M8196F

Ethernet Remote Unit with High-speed, DSP-based,
6-axis Motion Control Module

Features

- Remote control via Modbus TCP
- DSP-based motion control module
- Pulse output rate: 4 MHz (Max.)
- Maximum encoder input frequency: 12 MHz
- Independent 6-axis motion control
- 2 to 6 axes linear / 2 to 3 axes circular / 3 axes helical interpolation functions
- Continuous interpolation
- 4-step home mode with auto-searching
- Synchronized start motion
- Programmable T/S-curve acceleration and deceleration
- Software limit protection
- Software FIFO for arbitrary curve motion
- High-speed position latch
- High-speed compare trigger and auto-increment compare mode
- Expandable remote I/O:
128 DI and 128 DO via a two-wire FRnet interface



Introduction

The **ET-M8196F** is a compact remote motion control device which uses Modbus TCP as its communication protocol. The ET-M8196F acts as a server in a Modbus TCP network and supports all standard Modbus function codes defined by the Modbus TCP protocol. Nowadays many PCs have got limited PCI slots; therefore the ET-M8196F can be used to replace PCI motion control cards. The ET-M8196F has got two Ethernet ports which allow daisy chaining.

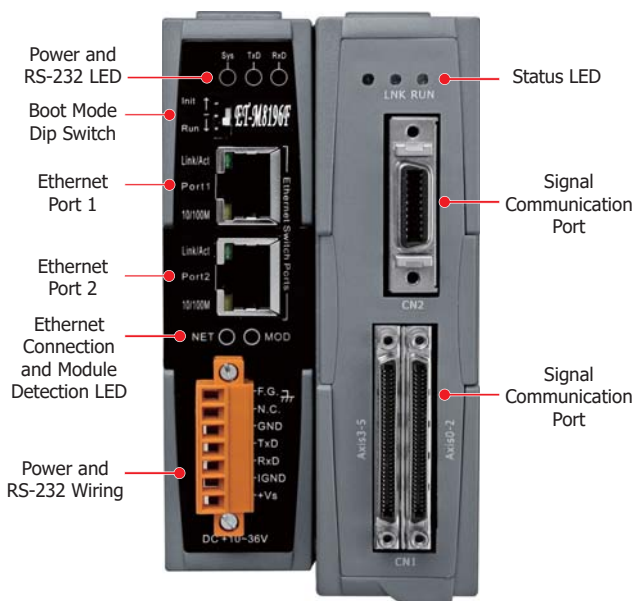
The motion controller of the ET-M8196F consists of an Ethernet communication module and a 6-axis motion control card. A digital signal processor (DSP) is the brain of the motion controller which calculates the commanded move trajectory and manages supervisory control by monitoring the limits and emergency stops to ensure safe operation. I/O control output (e.g. latch, compare, encoder counter etc.) is realized in a Field Programmable Gate Array (FPGA).

The motion controller is suitable for general-purpose motion control applications. In additions to its wide speed range, this intelligent motion controller also has a variety of built-in motion control functions, such as 2 to 6 axes linear interpolation, 2 to 3 axes circular interpolation, 3 axes helical interpolation, T/S-curve acceleration/deceleration, and automatic home search, etc.

In addition the ET-M8196F acts as an FRnet master and can control up to 128 digital outputs and 128 digital inputs. FRnet is a two-wire serial bus and has a scan interval of 0.72 ms and it is specifically designed for easy and cost effective wiring. ICPDAS provides a large range of FRnet I/O terminal boards and modules.

An application programming interface (API) for communicating with the ET-M8196F motion controller is being provided. This enables the user's program on the host computer to easily interact with the motion controller. A software utility for Ethernet configuration and basic motion settings and execution is part of the software package.

Hardware



ET-M8196F Interface Functions

Specifications

Model	ET-M8196F	Model	ET-M8196F
Software		Mode	
OS Support	Windows 7/8/10 32/64 bit	Counting Rate	A/B Phase, Up/Down 12 MHz
Development	Visual C++ lib/DLL, C#, VB.Net DLL, Delphi Visual Basic 6.0 BCB 5.0, 6.0	Counter Width	32-bit
Utility	EzGo Utility	Pulse Output	
Hardware		Mode	CW/CCW, PULSE/DIR, A/B Phase
Connector	68-pin VHDCI and 20-pin SCSI-II	Counter Width	32-bit
General		Rate	4 MPPS (Max.)
No. of Axes	6	Interpolation	
Motion Control Type	DSP Based	Circular	Any 2 to 3 axes (up to 3 groups)
Speed Profile	T/S-curve	Continuous	Yes
Servo Update Rate	2 KHz	Helical	3 axes
Position Control Mode	Incremental and absolute mode	Linear	Any 2 to 6 axes (up to 3 groups)
Command Type	Pulse Command	Digital Input	
Auto-Home Search	Yes	Channels	Local: 12 DI Expandable: 128 DI
Input Signal Filter	Yes	Isolation	2500 Vrms (with DN-8368)
Axis I/O		Digital Output	
Servo Interface Output	SVON, ALM_RST, ERC	Channels	Local: 3 DO Expandable: 128 DO
Latch Input	High-Speed 5 V or 24 V NPN	Isolation	2500 Vrms (with DN-8368)
Mechanical Switch Input	Home, Limit+/-, Near Home, Emergency	Ethernet	
Position Compare Output	High-Speed 5 V TTL or 24 V open collector	Protocol	Modbus TCP
Servo Interface Input	INP, ALM, RDY	Power	
Encoder Input		Input Range	+24V
Ring Counter Mode	32-bit	Mechanical	
		Dimensions (mm)	65 x 121 x 125 (W x L x H)
		Environment	
		Operating Temperature	0 ~ +60 °C
		Storage Temperature	-20 ~ +80 °C
		Humidity	5 ~ 90% RH, non-condensing

Ordering Information

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Accessories

DN-8368UB	Photo-isolated Universal Snap-on wiring terminal board
DN-8368GB	Photo-isolated General-purpose wiring terminal board
DN-8368MB	Photo-isolated Snap-on wiring terminal board for Mitsubishi MELSERVO-J2 servo amplifier
DN-20M	General purpose digital input and remote digital I/O (FRnet) extension board
CA-MINI68-15	68-pin VHDCI to SCSI-II Connector Cable, Length 1.5 M
CA-SCSI20-M1/M3/M5	20-pin SCSI-II Male connector cable (for Mitsubishi J2 series motor), Length 1 M / 3 M / 5 M.
CA-26-MJ3-15/30/50(B)	26-pin HD D-Sub Male Cable for Mitsubishi Servo Amplifier, 1.5/3/5 M. (for MELSERVO-J3/J4Series)
CA-26-PA4-15/30/50(B)	26-pin HD D-Sub Male Cable for Panasonic Servo Amplifier, 1.5/3/5 M. (for MINAS A4/A5 Series)
CA-26-YSV-15/30/50(B)	26-pin HD D-Sub Male Cable for Yaskawa Servo Amplifier, 1.5/3/5 M. (for Sigma II/III/V Series)
CA-26-DAA2-15/30/50(B)	26-pin HD D-Sub Male Cable for Delta A2 Servo Amplifier, 1.5/3/5 M. (for ASDA-A2 Series)
CA-26-DAB2-15/30/50(B)	26-pin HD D-Sub Male Cable for Delta B2 Servo Amplifier, 1.5/3/5 M. (for ASDA-B2 Series)
CA-26-FFW-15/30/50	26-pin HD D-Sub Male Cable for Fuji Servo Amplifier, 1.5/3/5 M. (for FALDIC-W and ALPHA5 Smart Series)
CA-26-TTA-15/30/50	26-pin HD D-Sub Male Cable for Teco Servo Amplifier, 1.5/3/5 M. (for TSTA-A/A+ Series)