ICP DAS

Features

- Remote control via Modbus RTU
- 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-axis linear/ 2- to 3-axis circular/ helical interpolation function
- 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

CE FC

RS-M8196F

Serial Communication Remote Unit
with High-speed 6-axis Motion Control Module
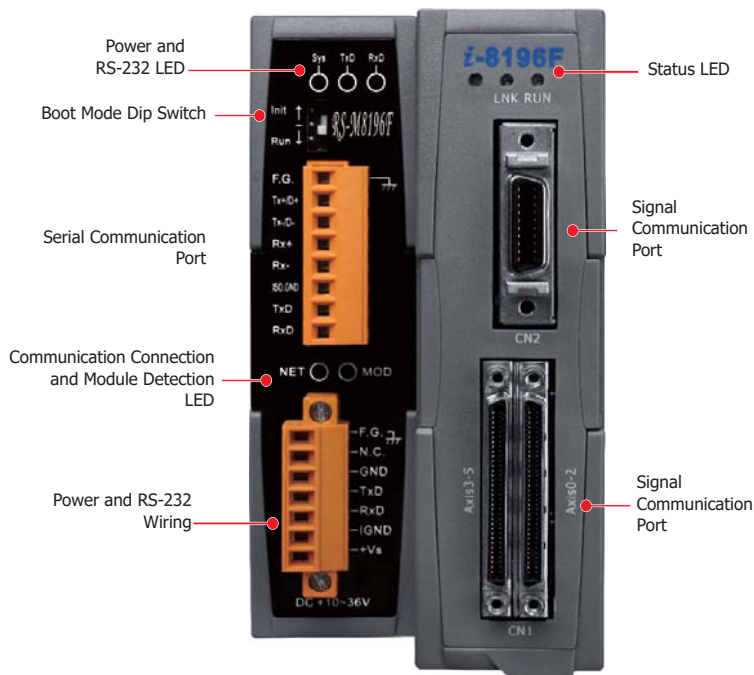
Introduction

The **RS-M8196F** is a remote serial 6-axis stepping/pulse-type servo motion controller which uses Modbus RTU as its communication protocol. The RS-M8196F is a slave in a Modbus RTU network and supports all standard Modbus function codes. Three serial interfaces are provided (RS232, RS485 and RS422) and the user can select any of the three serial interfaces for communication. The RS-M8196F can expand a PLC system by adding 6-axis motion control support.

The motion controller of the RS-M8196F consists of a serial communication module and a 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. A Field Programmable Gate Array (FPGA) controls the input/output (e.g. latch, compare, encoder counter etc.).

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-axis linear interpolation, 2- and 3-axis circular interpolation, 3-axis helical interpolation, T/S-curve acceleration/deceleration, and automatic home search, etc.

In addition the RS-M8196F acts as an FRnet master and can control up to 16 remote DIO slaves (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.

DLL, software utilities and demo programs for Win7, Win8 and Win10 are provided.

Power and RS-232 LED · Boot Mode Dip Switch · Serial Communication Port · Communication Connection and Module Detection LED · Power and RS-232 Wiring · Status LED · Signal Communication Port · Signal Communication Port

RS-M8196F Interface Functions

◼ Specifications

Model	RS-M8196F	
System Specifications		
Communication	RS-232/422/485	
Communication Protocol	Modbus RTU	
Number of Axes	6 axes	
Motion Control Type	DSP Based	
Pulse Output Rate	4 MPPS (Max.)	
Pulse Output Mode	CW/CCW	Yes
	PULSE/DIR	Yes
	A/B Pulse	Yes
Command Type	Pulse Command	
Interpolation	Linear Interpolation	2/6 axes
	Circular Interpolation	2/3 axes
	Helical Interpolation	3 axes
	Continuous Interpolation	2/3 axes
Auto-Home Search	Yes	
Manual Pulse Generation	-	
Velocity Profile	Trapezoidal Curve	Yes
	S-Curve	Yes
Ring Counter Mode	Yes	
Axis I/O		
Mechanical Switch Input	Home	Yes
	Near Home	Yes
	Limit (Positive/Negative)	Yes
	Emergency	Yes
	Latch	Yes
Servo I/O Interface	Input: INP, ALM, RDY	Yes
	Output: SVON, ALMRST ERC	Yes
Encoder Interface	A/B Pulse	Yes
	Up/Down	Yes
Encoder Counter	32-bit	
Encoder Counting Rate	12 MHz	
Position Compare Trigger	4 MHz	

Model	RS-M8196F	
Digital Input		
Digital Input Channels	Local	12 DI
	Frnet	Up to 128 DI
Digital Output		
Digital Output Channels	Local	3 DO
	FRnet	Up to 128 DO
Input Signal Filter	Yes	
I/O Isolation (with daughter board)	2500 Vrms optical isolation (with DN-8368)	
Connector	68-pin VHDCI Connector and 20-pin SCSI-II	
Power		
Input Voltage	+24V	
Mechanical		
Dimensions	65x125x121mm	
Environmental		
Operating Temperature	0 ~ +60 °C	
Storage Temperature	-20 ~ +80 °C	
Operating Humidity		
Storage Humidity	5 ~ 90 % RH, non-condensing	
Software Support		
Windows Driver/DLL/Lib	Windows 7/8/10 32/64 bit: Visual C++ lib/DLL C#, VB.Net DLL Delphi Visual Basic 6.0 BCB 5.0, 6.0 Demo programs	
Software Utility	EzGo Utility	
Macro Programming	-	

◼ Ordering Information

RS-M8196F	Remote serial communication unit with high-speed, DSP-based, 6-axis motion control card

◼ 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)