I-7188EF

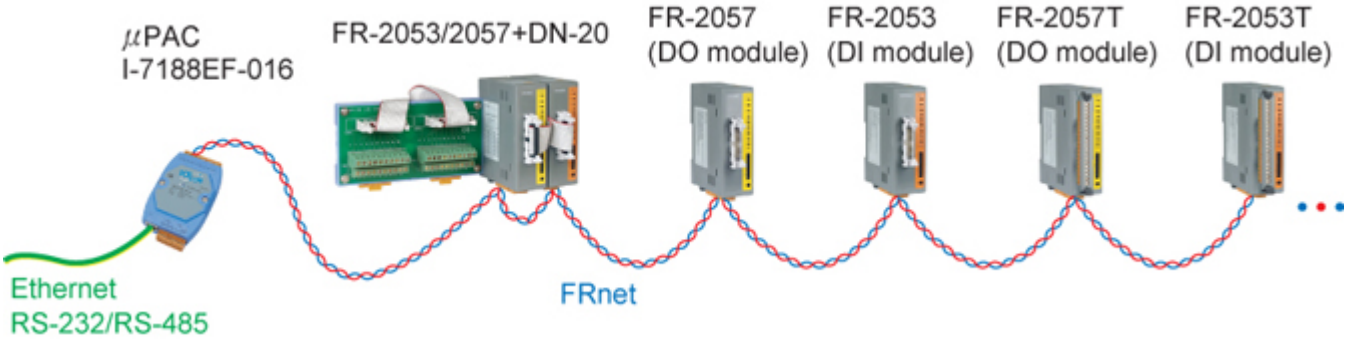
I-7188EFD

I-7188EF-016 / I-7188EFD-016

Embedded Ethernet/Internet Controller

Introduction

The I-7188EF-016 is an µPAC with isolated FRnet, Ethernet, RS-485 and RS-232 ports. I-7188EF-016 is designed to make that the Host PC easily access the FRnet I/O module via Ethernet. I-7188EF-016 controls the distributed FR-2000 and FR I/O module via FRnet, and provides the Modbus and DCON protocol for HOST PC to access these FR I/O channels via Ethernet. The I-7188EF controls distributed FR-2000 and FR I/O modules via FRnet. Each I- 7188EF can control a maximum of with 16 groups, each group having a maximum of 16 I/O channels. In other words, each I- 7188EF-016 can control a maximum of 128 digital input channels and 128 digital output.



MiniOS7 is pre-installed on I-7188EFand is ready to run your C software programs. In addition to being used as a converter, I-7188EF-016 series can also be programmed as an autonomous controller to control distributed FR-2000 I/O modules via FRnet.

Advantages of µPAC-based Control System

Compared to PC-based and PAC-based FRnet control system, the µPAC I-7188EF, is much smaller and cheaper. AS a result of the special features of FRnet, such as real I/O synchronization and fixed scan time, the I-7188EF includes PLClike control functions. Because FRnet is so easy to program, users need only take a few minutes to learn FRnet I/O programming.
The I-7188EF has an Ethernet port, meaning that all FRnet products can be controlled via an intranet or Internet. It also has an additional RS-485 port to control our I-7000 data acquisition modules. Using the I-7188EF, thousands of I/O control system channels can be easily implemented. the optional extended flash memory of I-7188EF can record all I/O status events for a greater length of.
The I-7188EF can operate in a wide temperature range and in harsh industrial environment. Compared to PLCs, traditional the I-7188EF has better network capabilities, strong distributed and high-speed deterministic I/O (FR series I/O), cheaper analog I/O modules, cheaper motion control modules, and richer software tools.

Features

- **FRnet network**
  FRnet is an innovative industrial field bus that the many special features, such as
  - High speed deterministic I/O control
  - Real I/O synchronization capability
  - Non-protocol communication
  - Easy used memory-mapping I/O programming
  - One FRnet port to expand distributed I/O module
  - Two wire cabling
- **dbus protocol**
  - FRnet I/O mapping to Modbus addresses for Modbus/TCP client access
  - Converts single Modbus/TCP to multi Modbus/RT

I-7188EF-016 acts in a similar and way to the I-7188E-MTCP Modbus/TCP gateway. It can easily upgrade many Modbus/RTU devices connected to the COM ports of I-7188EF-016 to give Ethernet communication abilities.

- **ASCII-based protocol (DCON Protocol)**
  I-7188EF-016 includes the DCON protocol, which is a request/reply communication protocol that is used to access the data from the module using a simple ASCII format. For example, sending the command "$ 01M " will query the controller name. The responding module will reply with a message similar to "!017188EF-016(cr)".
- **Various DCON SDK provided (free)**
  In order to access the FRnet I/O of the I-7188EF-016 from the host and the remote I/O modules connected to the I-7188EF-016. Various SDKs have been provided on the CD, such as:
  - DLL driver
  - ActiveX component
  - LabView bundled driver
  - Indusoft bundled driver
  - Linux driver
  - OPC server
- **Firmware modifiable**
  The Modbus and the other related SDK is provided for users to develop their own custom firmware.
- **Built-in Watchdog**
  The built-in watchdog circuit will reset the CPU module if a failure occurs in either the hardware or the software. If the application program does not refresh the watchdog timer within 0.8 sec, the watchdog circuit will initiate a reset of the CPU.

Applications

- Factory automation
- Building automation
- Energy management
- Agriculture automation

Specifications

System

- CPU : 80188-40 or compatible
- EEPROM :
  - 2048 bytes (8 blocks, each block contains 256 bytes)
  - Data retention > 100 years
  - 1,000,000 erase/write cycle
- SRAM : 512Kb
- FLASH ROM :
  - 512Kb
  - Erase unit is one sector (64Kb)
  - 100,000 erase/write cycles
- Programs can be download from COM1
- Built-in 64-bit hardware unique serial number

Communication

- Ethernet Port
  - 10M/10BaseT, RJ-45 Port
- COM Port
  - COM driver support interrupt & 1K QUEUE Input & Output buffer
  - COM1: RS232 (CTS, RTS, RXD, TXD, GND)
  - COM2: RS485 (Data+, Data-)
- FRnetPort
  - Communication speed : 250Kbps
  - Scan time : 128 input / 128 output points @ 2.88 mS (I-7188EF-016L)
  - Communication distance : Max. 400m (I-7188EF-016L)
  - Cable: CPEV 0.9 (2P Twisted-pair wire)
  - Distributed I/O modules
    Max. 8 SA modules, FR-2053 (16 DI)
    Max. 8 RA modules, FR-2057 (16 DO)
  - Each module of FR-2053/FR2057 module is one group.

Built-in WatchDog Timer (0.8 seconds)

Built-in power protection and network protection circuit

Real Time Clock

- Year-2000 compliant
- Displays seconds, minutes, hours, date of the month
- Displays month and year from 1980 to 2079
- NVSRAM: 31 bytes, battery backup, data valid for up to 10 years

Display

- 7-segment LED : 5-digit (for I-7188EFD only)

Power

- Power requirements : 10 - 30 VDC(non-regulated)
- Power consumption : 2.0W for I-7188EF-016
  3.0W for 7188EFD-016

General environment

- Operating temperature : -25°C to +75°C
- Storage temperature : -40°C to +80°C
- Humidity
  - Operating humidity: 10% ~90% RH, non-condensing
  - torage humidity : 5%~95% RH, non-condensing

Mechanical

- Dimensions (W × H × D) : 123 × 72 × 33 mm
- Installation : DIN-Rail, Stack Mounting

Ordering Information

I-7188EF-016	FRnet µPAC
I-7188EFD-016	FRnet µPAC with display