

Description

FINS is an Omron protocol which can be used by a PLC program to transfer data and perform other services with a remote PLC connected on an Ethernet Network.

The FINS protocol can be used by remote devices such as FieldServer to transfer data and perform other services.

The protocol uses the Ethernet protocol called UDP to carry the FINS messages back and forth. The UDP protocol is not connection based and reliability is achieved by using confirmation messages.

This Ethernet Driver can be used to transfer data to and from the Nodes supporting FINS communications.

By default driver uses Ethernet port 9600. This parameter is configurable.

The Driver can be configured as a Client or a Server.

As a Client: This driver reads and writes data to Server Nodes. Server nodes should be FINS capable and be configured to communicate over FINS.

As a Server: Driver responses to read requests and updated FieldServer Data Arrays with data from client.

Connection Facts

| FieldServer Mode | Nodes | Comments |
|------------------|-------|---|
| Client | 126 | Omron limit the set of permitted nodes to 126. They are numbered 1 to 126 corresponding to the last byte of the remote node IP address. |
| Server | 20 | The FieldServer can emulate a maximum of 20 Omron FINS servers |

Formal Driver Type

Ethernet, Client or Server

Compatibility

| FieldServer Model | Compatible |
|-------------------|------------|
| ProtoCessor | Yes |
| ProtoCarrier | Yes |
| ProtoNode | Yes |
| ProtoAir | Yes |
| FS-B35 Series | Yes |

| FieldServer Model | Compatible |
|------------------------|------------|
| QuickServer FS-QS-10xx | No |
| QuickServer FS-QS-12xx | Yes |
| QuickServer FS-QS-20xx | Yes |
| QuickServer FS-QS-22xx | Yes |

Connection Information

Connection Type: Ethernet

Ethernet Speeds Supported: 10Base-T, 100Base-T

PLC Types Supported

| PLC Type | Vendor | Physical Medium |
|----------------|--------|-----------------|
| CS1/CJ1 Series | Omron | FINS |

Devices Tested

| Device | Tested (Factory, Site) |
|---------------|------------------------|
| CJ1 Omron PLC | Factory |

Communication Functions

Supported FINS Command Set

| PLC Type | Memory Type | Command Name | Description | Device Data Type | Format |
|----------------|------------------------|----------------------|--|-------------------------|--------|
| CS1/CJ1 Series | I/O Memory | MEMORY AREA READ | Read the contents of consecutive I/O memory area words. | CIO, WR, HR, AR, DM, EM | Word |
| | | MEMORY AREA WRITE | Writes the contents of consecutive I/O memory area words. | | |
| | Operating Mode Changes | RUN | Changes the CPU Unit's operating mode to RUN or MONITOR. | - | - |
| | | STOP | Changes the CPU Unit's operating mode to PROGRAM. | | |
| | Time Data Access | CLOCK READ | Reads the present year, month, date, minute, second, and day of the week. | - | - |
| | | CLOCK WRITE | Changes the present year, month, date, minute, second, or day of the week. | | |
| | Status Reading | CPU UNIT STATUS READ | Reads CPU status, operating mode, other error messages and any text message. | - | - |
| | | CYCLE TIME READ | Reads the CPU average, maximum and minimum cycle time. | | |

PLC Status to Execute Commands

| PLC Type | Memory Type | Command Name | Run Mode | Monitor Mode | Program Mode | Access Right | UM Read Protection | DIP UM Protection |
|----------------|------------------------|----------------------|----------|--------------|--------------|--------------|--------------------|-------------------|
| CS1/CJ1 Series | I/O Memory | MEMORY AREA READ | OK | OK | OK | OK | OK | OK |
| | | MEMORY AREA WRITE | OK | OK | OK | OK | OK | OK |
| | Operating Mode Changes | RUN | OK | OK | OK | Disabled | OK | OK |
| | | STOP | OK | OK | OK | Disabled | OK | OK |
| | Time Data Access | CLOCK READ | OK | OK | OK | OK | OK | OK |
| | | CLOCK WRITE | OK | OK | OK | Disabled | OK | OK |
| | Status Reading | CPU UNIT STATUS READ | OK | OK | OK | OK | OK | OK |
| | | CYCLE TIME READ | OK | OK | Disabled | OK | OK | OK |

Access Right at Other Device: The Access right at other device column tells whether the CPU Unit can or cannot receive a command when another device has the access right to the CPU Unit.

UM Read Protection: The UM read protection column tells whether the CPU Unit can or cannot receive the command when UM (user memory) is protected from a Peripheral Device.

DIP Switch UM Protection: The DIP switch UM protection column tells whether the CPU Unit can or cannot receive a command when UM is write-protected by turning ON pin 1 of the DIP switch on the CPU Unit's front panel.

MSA Safety

1991 Tarob Court, Milpitas, California 95035 USA

O. +1 408 262-6611 TF. +1 800 727-4377 E. SMC-insidesales@msasafety.com

www.MSAsafety.com

Unsupported FINS commands

| Memory Type | Commands | Description |
|----------------------------|------------------------------|---|
| Parameter Area | PARAMETER AREA READ | Read, Write and Clear of Parameters like PLC Setup Area, CPU Bus Unit Setup Area etc. |
| | PARAMETER AREA WRITE | |
| | PARAMETER AREA FILL (CLEAR) | |
| Program Area | PROGRAM AREA READ | Read, Write and Clear memory for particular Program in PLC. |
| | PROGRAM AREA WRITE | |
| | PROGRAM AREA CLEAR | |
| Machine Configuration Area | CPU UNIT DATA READ | Reads CPU information (Model, Bus unit configuration etc.). |
| | CONNECTION DATA READ | |
| Message Display Area | MESSAGE READ/CLEAR | Reads and Clears messages. |
| Access Rights Area | ACCESS RIGHT ACQUIRE | Acquiring and releasing Access right. |
| | ACCESS RIGHT FORCED ACQUIRE | |
| | ACCESS RIGHT RELEASE | |
| Error Log Area | ERROR CLEAR | Reads and Clear error messages or error log. |
| | ERROR LOG READ | |
| | ERROR LOG POINTER CLEAR | |
| File Memory Area | FILE NAME READ | File Operations. |
| | SINGLE FILE READ | |
| | SINGLE FILE WRITE | |
| | FILE MEMORY FORMAT | |
| | FILE DELETE | |
| | FILE COPY | |
| | FILE NAME CHANGE | |
| | MEMORY AREA-FILE TRANSFER | |
| | PARAMETER AREA-FILE TRANSFER | |
| | PROGRAM AREA-FILE TRANSFER | |
| | CREATE/DELETE DIRECTORY | |
| Debugging Area | FORCED SET/RESET | Forcefully sets-resets bits. |
| | FORCED SET/RESET CANCEL | |

Note: FieldServer is a data transfer device, and as such, programming messages are not required.

Unsupported Devices or Protocol Options

| Device / Option | Details |
|-----------------|---|
| CV Series | CV series PLC's or Ethernet Units (Cannot poll the Ethernet unit itself). |
| Socket Services | This is an Omron protocol option that can be used to transfer data between Omron / other device. The Socket Services protocol is different from the FINS protocol and is not supported. |