

1 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 a 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.

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.

2 FORMAL DRIVER TYPE

Ethernet

Client or Server

3 COMPATIBILITY MATRIX

FieldServer Model	Compatible with this driver
FS-x2010	Yes
FS-x2011	Yes
FS-x40	Yes
FS-x30	Yes
QuickServer FS-QS-1010	No
QuickServer FS-QS-1011	No
QuickServer FS-QS-1210	Yes
QuickServer FS-QS-1211	Yes
ProtoCessor FPC-FO2	Yes
ProtoCessor FPC-FD2	Yes

4 CONNECTION INFORMATION

Connection type: Ethernet
Ethernet Speeds Supported 10Base-T, 100Base-T¹

5 PLC TYPES SUPPORTED

PLC Type	Vendor	Protocol
CS1/CJ1 Series	Omron	FINS

6 DEVICES TESTED

Device	Tested (FACTORY, SITE)
CJ1 Omron PLC	Factory

¹ Not all FieldServer models support 100BaseT. Consult the appropriate instruction manual for details of the Ethernet speed supported by specific hardware.

8 COMMUNICATIONS FUNCTIONS - SUPPORTED FUNCTIONS AT A GLANCE:

8.1 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.		

8.2 PLC status to execute commands

PLC Type	Memory Type	Command name	Run Mode	Monitor Mode	Program Mode	Access right ²	UM Read Protection ³	DIP UM Protection*** ⁴
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

² **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.

³ **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.

⁴ **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.

8.3 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	
	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	
	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

8.4 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.