A Sierra Monitor Company

FieldServer Driver - Ethernet
FS-8704-14
Ethernet/IP

Description

The Ethernet/IP driver allows the FieldServer to transfer data from an Ethernet/IP enabled device. This driver encapsulates the Control and Information Protocol (CIP). CIP is a peer to peer object orientated protocol that provides connection between industrial devices and higher level devices. The driver can act as both a client and server. The driver also diverts from the strict CIP protocol to make allowances for certain PLC's that require specific encapsulation message types (eg. Logix 5550 PLC's).

Fieldserver Mode	Nodes	Comments
Client	1	Only 1 Client Node allowed.
Server	32	32 Server Nodes allowed.

Formal Driver Type

Ethernet
Client or Server

Compatibility Matrix

FieldServer Model	Compatible with this driver
FS-X2010	Yes
FS-X2011	Yes
FS-X40	Yes

Connection Information

Connection type: Ethernet
Multidrop Capability: N/A

Devices tested

Device	Tested (FACTORY, SITE)
ODVA Conformance Tool (ENetCT Ver A3.5)	FACTORY
FlexLogix PLC/ 1788 - Enet Ethernet Card	FACTORY

Communications functions

Supported functions at a glance:

Ethernet/IP is an object orientated protocol. The OO structure therefore allows for classes, instances, attributes and services. The 'data types' listed below are to be considered as the objects supported in the protocol. Each of these has attributes that have been supported to differing degrees.

Data Types Supported

FieldServer Data Type	Description (or Device Data Type)
Identity – Class Code 0x01	**Attributes Supported:** *One instance supported (0x01)* Attributes List: 1. Vendor ID 2. Device Type 3. Product Code 4. Device Revision 5. Status 6. Serial Number 7. Device Description (text) **Services Supported:** Get_Attribute_All Get_Attribute_Single
Message Router – Class Code 0x02	**Attributes Supported:** *One instance supported (0x01)* Attribute List: 1. Max Connections **Services Supported:** Get_Attribute_Single
Assembly – Class Code 0x04	**Attributes Supported:** *Class Instance Support (0x00)* Class Attributes: 0x02 (Max Instance) *Two instances supported (0x0100 and 0x0101)* Attribute List: 1. Member List 2. Not Supported 3. Data **Services Supported:** Get_Attribute_Single
Connection Manager – Class Code 0x06	Forward Open Service Forward Close Service

Register – Class Code 0x07	**Attributes Supported:** *Class Instance Support (0x00)* Class Attributes: 0x02 (Max Instance) *Two instances supported (0x01 and 0x02)* Attribute List: 4. Status Flag 5. Direction (read/write) 6. Size of Data (bits) **Services Supported:** Get_Attribute_Single
Discrete Input Point – Class Code 0x08	No visible interface currently
Discrete Output Point – Class Code 0x09	No visible interface currently
Analog Input Point – Class Code 0x0A	**Attributes Supported:** *Class Instance Support (0x00)* Class Attributes: 0x02 (Max Instance) *Two instances supported (0x01 and 0x02)* Attribute List: 1. Number of Attributes 2. Not Supported 3. Analog value (UINT16) 4. not supported 5. Vendor ID **Services Supported:** Get_Attribute_Single
Analog Output Point – Class Code 0x0B	**Attributes Supported:** *Class Instance Support (0x00)* Class Attributes: 0x02 (Max Instance) *Two instances supported (0x01 and 0x02)* Attribute List: 1. Number of Attributes 2. not supported 3. Analog value (UINT16) 4. not supported 5. Vendor ID **Services Supported:** Set_Attribute_Single Get_Attribute_Single

TCP/IP Interface Object – Class Code 0xF5	**Attributes Supported:** *One instance supported (0x01)* Attribute List: 1. Status 2. Configuration Capability 3. Configuration Control 4. Physical Link Object 5. Interface Configuration 6. Host Name **Services Supported:** Get_Attribute_Single
EtherNet Link Object – Class Code 0xF6	**Attributes Supported:** *One instance supported (0x01)* Attribute List: 1. Interface Speed 2. Interface Flags 3. Physical Address 4. Interface Counters 5. Media Counters **Services Supported:** Get_Attribute_Single
Data Table Object – Private Object	**Attributes Supported:** This object does not support instances or attributes but uses the data table structure, and associated tags, in Logix5000 PLC's. **Services Supported:** CIP Read Data

Connection Types Supported

Connection Type	Support Details
Unconnected Messages	Unconnected messages are supported to objects mentioned above.
Explicit Messages	Both client and server support Explicit Messages to all supported objects.
Implicit Messages	Implicit Messages are not currently supported.

Read Operations supported

The functions below are supported to varying degrees by the objects above. The exact support for functions is mentioned in the table above.

FieldServer as a Client	FieldServer as a Server
Get_Attribute_Single – Service Code 0x0E	Get_Attribute_Single – Service Code 0x0E
Data Table Read – Service Code 0x4C	Get_Attribute_All – Service Code 0x01

Write (Control) Operations supported

FieldServer as a Client	FieldServer as a Server
Set_Attribute_Single – Service Code 0x10	Set_Attribute_Single – Service Code 0x10

Unsupported Functions and Data Types

Function	Reason
Programming messages	FieldServer is a data transfer device, and as such, programming messages are not required.
All Group Functions. (e.g. Analog Input Group Object)	Possibility of later support.
All Application Specific Data Objects (e.g. AC/DC Drive Object)	Possibility of later support.
PCCC support	PCCC encapsulation (for PLC5 and SLC) is currently unsupported in this driver.

Revision History

Date	Driver Version	Document Revision	Resp	Comment
09/25/03	1.00aA	1.00	HLK	Created
01/16/04	1.00aC	1.01	HLK	Added Error Codes
01/21/04	1.00aD	1.02	HLK	Added supported classes and services
01/23/04	1.00aD	1.03	HLK	Updated fact sheet to incorporate new features
02/24/04	1.00aL	1.04	HLK	Updating supported aspects
02/26/04	1.00aL	1.04	JD	Releasing