



## **FieldServer Driver - FieldBus FS-8700-21 LonWorks®**

### **Description**

The FieldServer LonWorks driver allows the FieldServer to act as an information or data bridge/gateway between LonWorks and other protocol networks such as Modbus, BACNet, Metasys, EtherNet/IP etc. The FS-X40 can handle up to 4096 Network Variables and the FS-X2011 up to 1000 which can be of the Standard Network Variable Types (SNVT) and/or User-defined Network Variable Types (UNVT). The FieldServer LonWorks device can be used with explicit and/or implicit addressing and can be bound to a maximum of 15 other LonWorks nodes. The FieldServer currently supports a default of 63 network variable aliases to avoid network variable connection constraints.

The FieldServer can transfer data (Network Variables) in two ways.

- It can poll (request data from) other devices at a regular interval.
- It can send Network Variable Updates
  - At a regular interval
  - When the data has changed
  - In throttled mode using minimum and maximum send time and change on delta parameters.

The FieldServer is capable of being configured by Network Management Tools such as LonMaker. For binding (implicit mode), a Network Management Tool is necessary to create the bindings. It is possible to place a FieldServer into a Network for explicit communications without using a Network Management Tool, but this requires intimate knowledge of the network in question.

The external interface file (.XIF) for the FieldServer can be uploaded from the FieldServer for the particular application. The FieldServer differs from most other LonWorks devices in that its XIF file is not fixed due to varying applications. The list of points available to the network will vary depending on the other networks connected to the FieldServer, and the requirements of the particular application. The recommended procedure for obtaining the XIF file for the FieldServer is to upload it.

The FieldServer provides the capability of defining multiple functional blocks, but only a single LonMark object. The user can create multiple functional blocks or a LonMark object by filling out the Node Self-Documentation String and the respective Network Variable Self-documentation String fields in the FieldServer configuration file.



The following table summarizes the FieldServer LonWorks driver's capabilities:

	<b>FS-X40</b>	<b>FS-X2011</b>
Number of Network Variables <sup>1</sup>	4096	1000
Address Table Entries	15	15
Network Variable Aliases	63	63
Number of Domain Tables <sup>2</sup>	2	2
Support for SNVTs <sup>3</sup>	Yes	Yes
Support for UNVTs	Yes	Yes
Explicit Addressing	Yes	Yes
Implicit Addressing	Yes	Yes
XIF file	Yes	Yes
Supports Polled Network Variables	Yes	Yes
Supports Network Variable Updates	Yes	Yes
Supports Configuration Properties <sup>4</sup>	Yes	Yes
Supports Node and Network Variable Self-documentation Strings	Yes	Yes
Support for SCPTs <sup>5</sup>	Yes	Yes
Network Management Tools such as LonMaker Supported	Yes	Yes
Commissioning without Network Management Tool Supported <sup>6</sup>	Yes	Yes
Service Pin Supported	Yes	Yes
LonMark Object and Functional Profiles definition <sup>7</sup>	Yes	Yes

<sup>1</sup> The length of Network Variable names and complexity of the configuration may limit the actual number of usable Network Variables

<sup>2</sup> One of the two domains is the zero domain used by Network Management Tools

<sup>3</sup> Most of Version 12 SNVTs are supported, see driver manual for complete list

<sup>4</sup> Implemented with Configuration Network Variables

<sup>5</sup> Only selected SCPTs are supported, extra SCPTs can be added on a per configuration basis

<sup>6</sup> Explicit Addressing Only

<sup>7</sup> Only approved LonMark objects are supported, see [www.lonmark.org](http://www.lonmark.org)



Fieldserver Mode	Nodes	Comments
Client or Server	1	The FieldServer can only represent one LonWorks device on the LonWorks Network. A LonWorks device is unique in terms of its Neuron Chip Identification Number.

**Formal Driver Type**

FieldBus  
Client or Server

**Compatibility Matrix**

FieldServer Model	Compatible with this driver
FS-X2010	No
FS-X2011	Yes
FS-X40	Yes

**Connection Information**

**Connection type:** FTT-10 Free Topology Network Transceiver  
**Baud Rates:** 78125 bps (bits per second)  
**Hardware interface:** PCC10 LonWorks adapter ISA card ( FS-X40 )  
Built in LonWorks FTT-10 interface ( FS-X2011 )

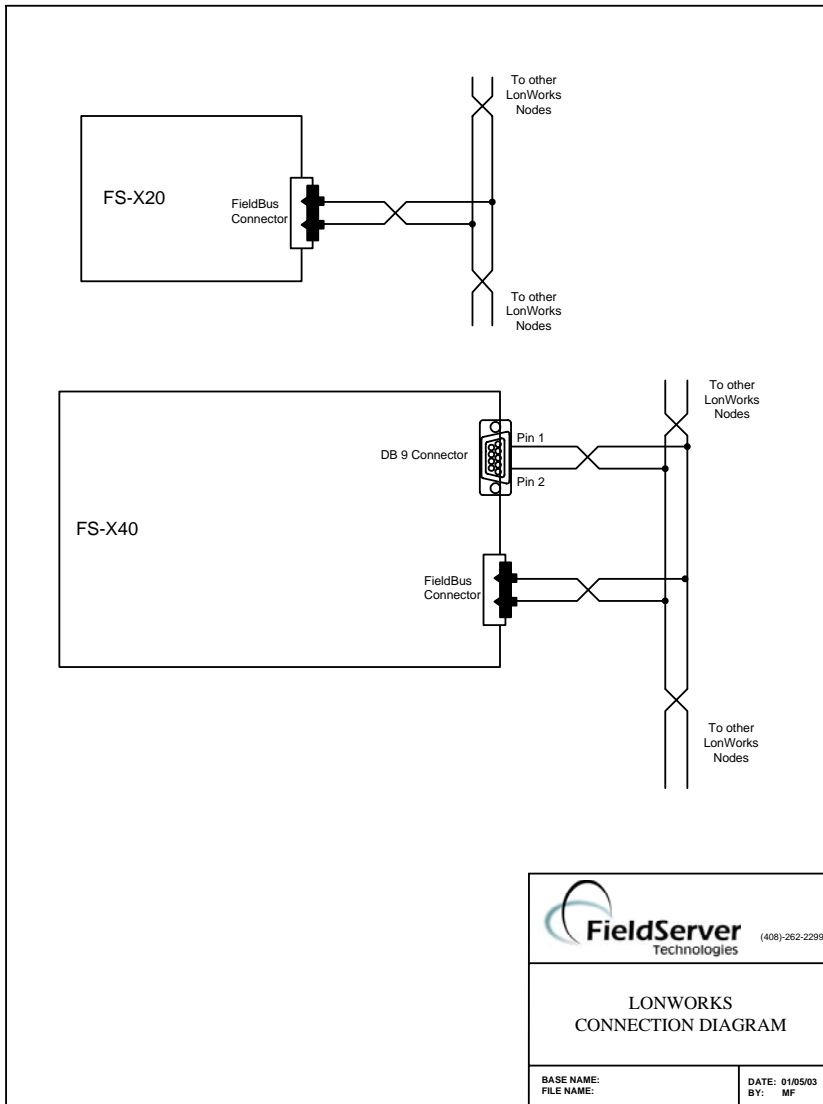
**Devices tested**

Device	Tested (FACTORY, SITE)
LonMaker for Windows V3.1	Factory/Site
TAC Xenta	Factory/Site
TAC VISTA	Site
Electronic Systems USA	Factory
Echelon I Lon 100	Site
Plexus Technologies	Site
Invensys I/A Series	Factory
Circon UHC 300 (and others)	Factory
Distech	Site
Purechoice Nose	Factory/Site
Honeywell	Factory/Site
...and many others	



### Connection configurations

The connection diagram below shows how the FieldServer FS-X20 and FS-X40 are connected to a LonWorks network:



### Connection Notes

The 2-wire twisted-pair connection to the network is polarity insensitive. The FTT-10 network is a free topology network which supports star, loop and / or bus wiring connections. Please refer to the FTT-10A Free Topology Transceiver User's Guide from Echelon Corporation for recommended wiring practices if necessary.

**Communications functions - Supported functions at a glance:****Data Types Supported**

<b>FieldServer Data Type</b>	<b>Description (or Device Data Type)</b>
Integers ( Long, short, signed, unsigned )	SNVTs and UNVTs can be presented, stored and moved into any FieldServer data type
Float	
Byte	
Bit	

**Read Operations supported**

<b>FieldServer as a Client</b>	<b>FieldServer as a Server</b>
<b>Polled Network Variables:</b>	<b>Polled Network Variables:</b>
-Send Network Variable Fetch	-Respond to Network Variable Fetch
-Send Network Variable Poll	-Respond to Network Variable Poll

**Write (Control) Operations supported**

<b>FieldServer as a Client</b>	<b>FieldServer as a Server</b>
<b>Network Variables Updates:</b>	<b>Network Variables Updates:</b>
-Send Network Variable Updates	-Accept Network Variable Updates

**Unsupported Functions and Data Types**

<b>Function</b>	<b>Reason</b>
Programming messages	FieldServer is a data transfer device, and as such, programming messages are not required
Direct Memory Read / Writes under user control	The driver uses the Echelon MIP which handles direct memory read and writes

**Unsupported Devices or Protocol Options**

<b>Device / Option</b>	<b>Details</b>
-	



## Revision History

Date	Resp	Format	Driver Ver.	Doc. Rev.	Comment
6/24/02			1.11	0	Releasing
6/20/03	MF		1.11	1	Added Performance paragraph – DUR0092
8/14/03	JD		1.11	2	Releasing
9/15/03	MF		1.11	3	Updated according to DUR0186 – Supported functions added
10/13/03	MF		1.11	4	Updated formatting
11/13/03	RJC		1.11	5	Closing DUR0186
12/30/03	JD		1.13	6	Releasing
3/26/04	MC	MC	1.13	7	Updated formatting.
5/7/04	DR	DR	1.17	8	DUR0182, updated to new format
6/16/04	JD		1.17	9	Releasing