Chipkin
Automation Systems

Driver Manual

(Supplement to the FieldServer Instruction Manual)

FS-8705-10

Barrington MicroStar Serial Driver

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after Aug 20, 2012

TABLE OF CONTENTS

1 Barrington MicroStar Driver Description

This driver is used to exchange data between a FieldServer and a 'MicroSTAR' devices. They are also commonly known as 'Barrington MicroSTAR' devices. For this driver to work, the LanStar must be removed as the gateway becomes the master on the trunk of Microstars.

Each device has 4x AO, 4x AI, 4x DI, 4x DO and 4x Counters. The devices can be daisy chained on a RS485 network. Setpoints, virtual Digital Outputs, any virtual points or virtual Microstars all reside in the meory of the LanStar and are not accessible using this driver.

The driver can monitor the status of these points and write to the outputs.

This is an active client driver. The FieldServer is the client. The MicroSTAR devices are the passive servers. The Client sends messages and processes responses from the MicroSTAR's.

The driver is a serial driver using a RS485 serial ports to connect between the FieldServer and the MicroSTAR's. If RS232 ports are used then a converter to RS485 must be used.

The driver is fully compatible with other FieldServer drivers and meets FieldServer's quality assurance standards. The driver was developed by Chipkin Automation Systems, an Approved FieldServer Integrator.

Both Client and Server functionality have been implemented. This means that you can use the driver as a client to monitor/command the devices or you can use it a server to make another type of device appear as if it were a MicroSTAR device. Ie. The server functionality allows you to make a foreign device emulate a MicroSTAR so it can be installed in a MicroSTAR trunk

FIELDSERVER MODE	**NODES**	**COMMENTS**
ACTIVE CLIENT	16	A MAXIMUM OF 16 DEVICES MAY BE CONNECTED PER TRUNK. THIS IS A LIMITATION OF THE PROTOCOL WHICH ONLY ALLOWS 16 POSSIBLE ADDRESSES.

Formal Driver Type – Serial - Active Client

2 Driver Scope of Supply

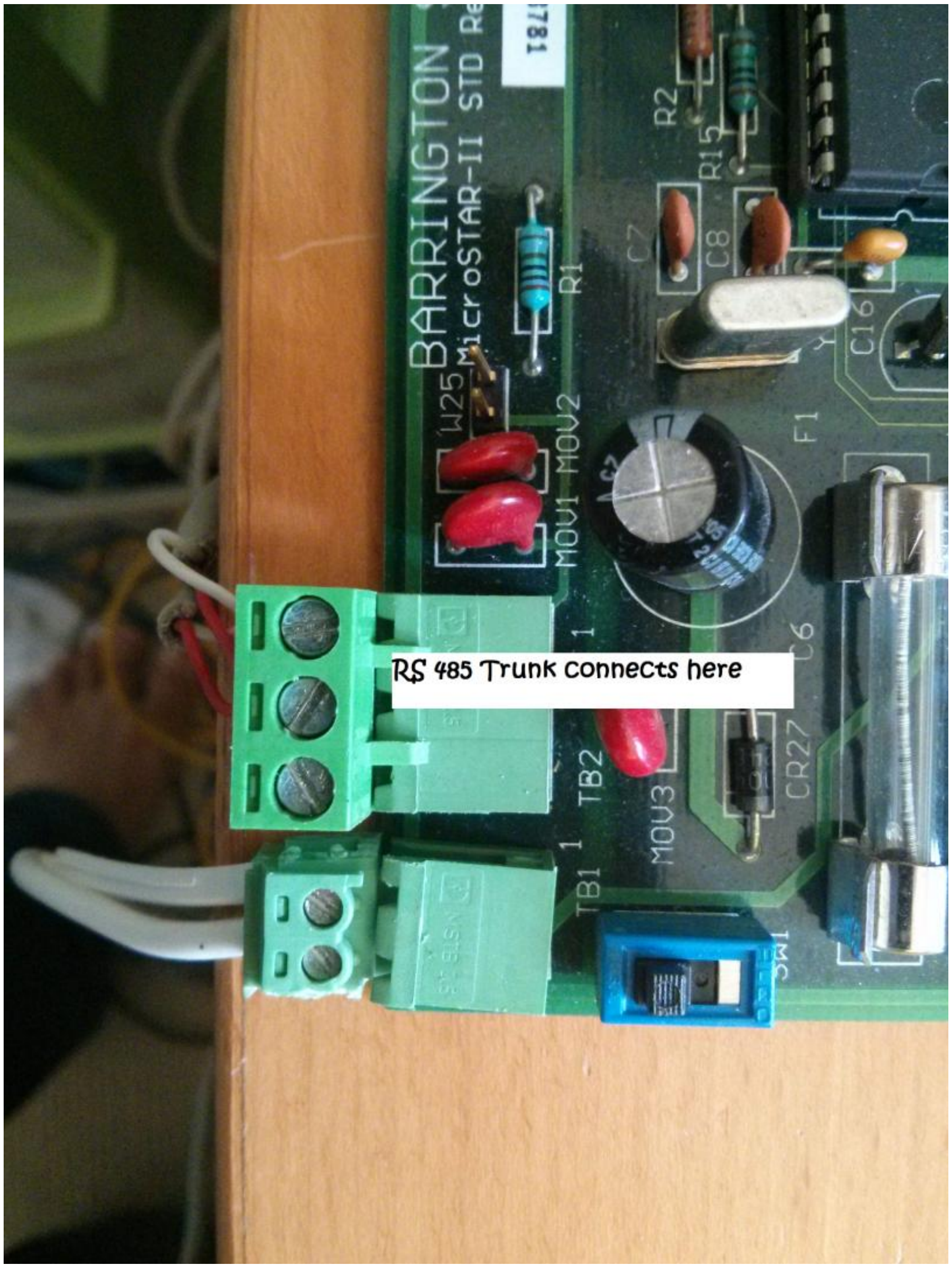
2.1 Supplied with this driver

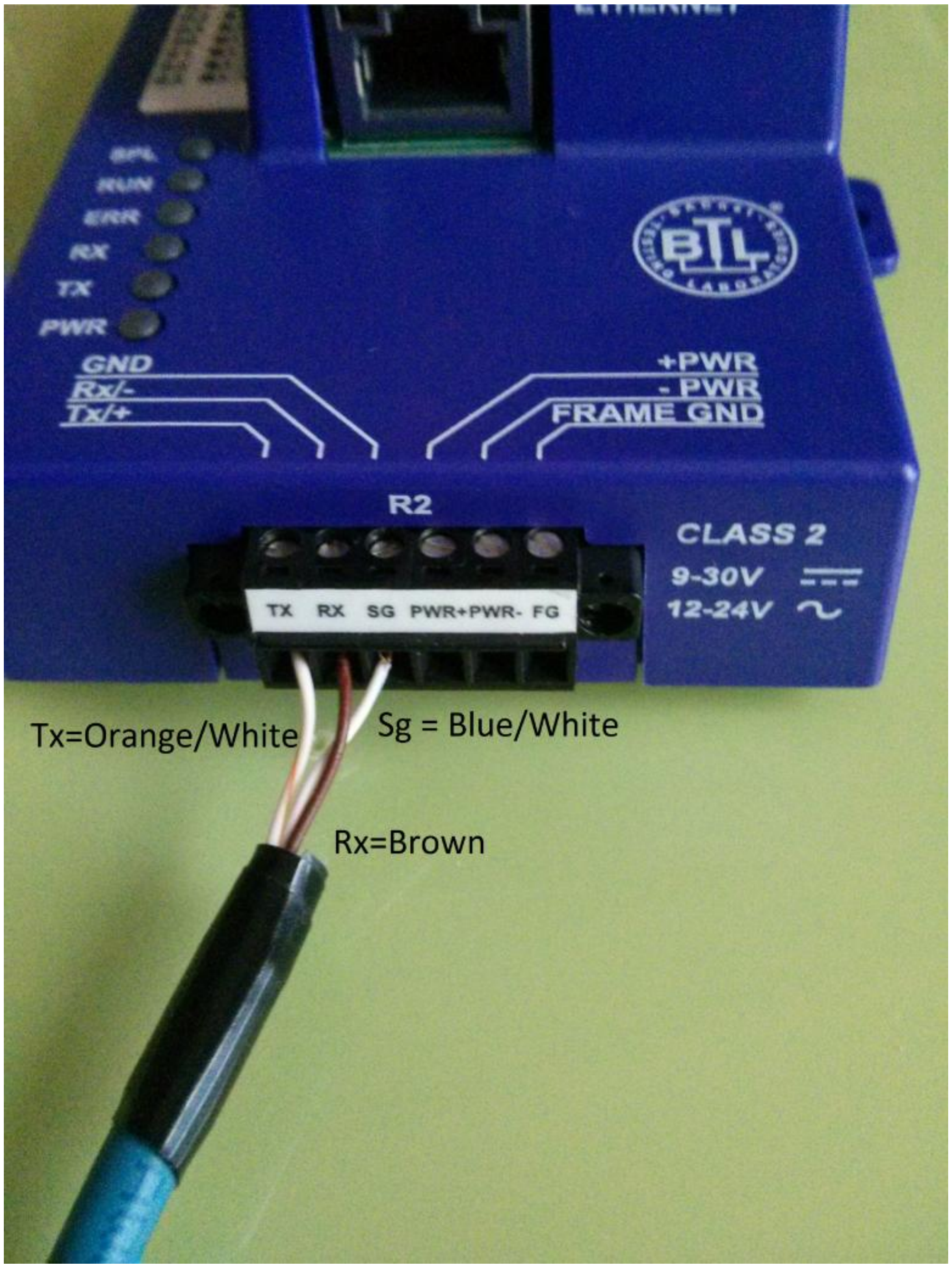
FieldServer Technologies **PART #**	**Description**
8915-10	No specific cables are shipped with this driver. A generic RJ45 Ethernet cable is shipped with the hardware.
FS-8705-26	Driver Manual.

3 Hardware Connections

Multiple WorkStation protocols and connection supported. See list of FieldServer Drivers.

3.1 Hardware Connections



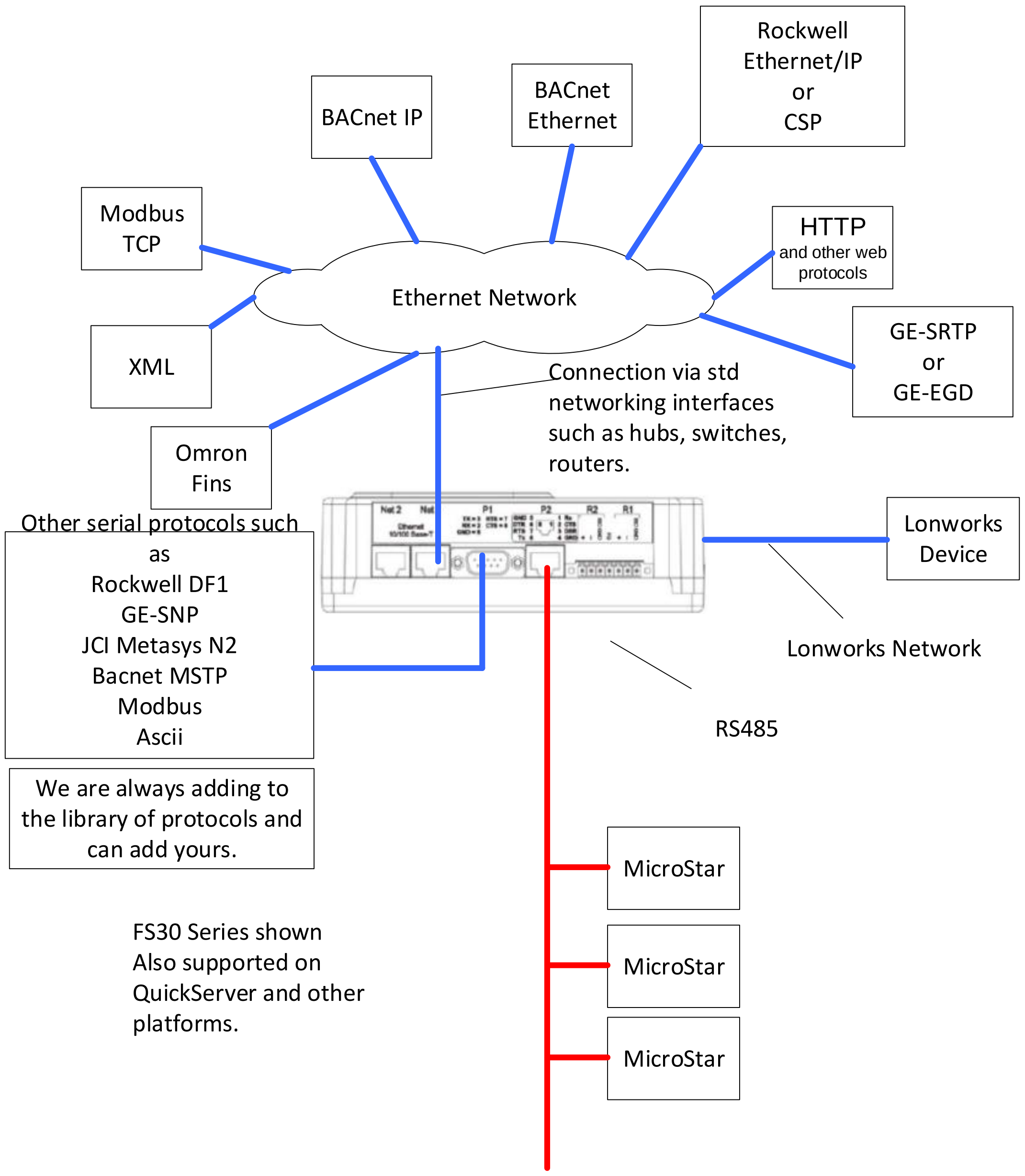


QuickServer Connections

The other end of this cable connect to RS485 port on the Microstar. That connection is shown in other images.

3.2 Block Diagram

FS30 shown as representing FS20, FS30 and FS40


Rockwell Ethernet/IP or CSP
BACnet IP
BACnet Ethernet
Modbus TCP
HTTP and other web protocols
Ethernet Network
XML
GE-SRTP or GE-EGD
Connection via std networking interfaces such as hubs, switches, routers.
Omron Fins
Other serial protocols such as Rockwell DF1 GE-SNP JCI Metasys N2 Bacnet MSTP Modbus Ascii
Lonworks Device
Lonworks Network
RS485
We are always adding to the library of protocols and can add yours.
MicroStar
MicroStar
MicroStar
FS30 Series shown Also supported on QuickServer and other platforms.

FS-8705-10 Barrington Microstar Protocol (Lanstar Replacement)

4 Configuring the FieldServer as a Barrington MicroStar Client

For a detailed discussion on FieldServer configuration, please refer to the FieldServer Configuration Manual. The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer (See ".csv" sample files provided with the FS).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with an Barrington MicroStar system.

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for Barrington MicroStar monitoring, the driver independent FieldServer buffers need to be declared in the "Data Arrays" section, the destination device addresses need to be declared in the "Client Side Nodes" section, and the data required from the servers needs to be mapped in the "Client Side Map Descriptors" section. Details on how to do this can be found below.

Note that in the tables, * indicates an optional parameter, with the bold legal value being the default.

4.1 Data Arrays

Section Title		
Data_Arrays		
Column Title	**Function**	**Legal Values**
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Array_Format	Provide data format. Each Data Array can only take on one format.	**Recommended**: Bit, UInt16, Also Supported: Float, Uint32, SInt16, Packed_Bit, Byte, Packed_Byte, Swapped_Byte
Data_Array_Length	Number of Data Objects. Must be larger than the data storage area required by the Map Descriptors for the data being placed in this array.	1-10,000

4.1.1 Data Arrays - Example

```
//    Data Arrays
Data_Arrays
Data_Array_Name,                Data_Format,        Data_Array_Length,
MicroStarStats,                 UNT16,              200
```

4.2 Client Side Connections

Create one connection for each Barrington MicroStar serial port. Each connection can only be used to connect to a single Barrington MicroStar interface/port.

Section Title
Connections

Column Title	**Function**	**Legal Values**
Port	Specify which port the device is connected to the FieldServer	P1-P8
Protocol	Specify protocol used	Barrington MicroStar
Baud*	Specify baud rate	Driver Supports : 110; 300; 600; 1200; 2400; 4800; **9600**; 19200; 28800; 38400; 57600 Baud *Barrington MicroStar* supports: 9600
Data_Bits *	Specify parity	Driver Supports : 7,**8** *Barrington MicroStar* supports: 7
Stop_Bits*	Specify data bits	Driver Supports : **1**,2 *Barrington MicroStar* supports: 1
Parity *	Specify stop bits	Driver Supports : Odd, Even, **None** *Barrington MicroStar* supports: Even
Mstar_checksum_offset	In forming a poll to the Microstar, the driver starts computing the checksum at the 3rd byte. Ie buffer[2] and hence the value 2 is used.	Value should be set to 2 unless directed by CAS support
Mstar_data_offset	Driver expects the data to start	Value should be set to 0 unless

	in the 4th byte of a response. Adjust this expectation by adjusting the offset.	directed by CAS support
Mstar_invert_data	When set to 1 the byte order in the 16 bit word is reversed in computing the analog value.	Value should be set to 0 unless directed by CAS support

4.2.1 Client Side Connection Descriptions - Example

// Client Side Connections			
Connections			
Port,	Baud,	Parity,	Protocol, Data_Bits , Stop_Bits
P1,	9600,	Even,	Barrington MicroStar , 7 , 1

4.3 Client Side Nodes

Create one Node per FACP in the network only.

Section Title
Nodes

Column Title	**Function**	**Legal Values**
Node_Name	Provide name for node	Up to 32 alphanumeric characters **NB !** The name does not need to correspond to the Node name configured in the Barrington MicroStar system.
Node_ID	Station address of physical server node This parameter is not used directly by the driver. We recommend that a unique Node ID's be given to each node.	0-64 Corresponds to the Node numbers of panels. Master node is typically zero.
Protocol	Specify protocol used	Barrington MicroStar

4.3.1 Client Side Nodes - Example

```
//   Client Side Nodes


Nodes

Node_Name,            Node_ID,            Protocol,              Connection

MainPanel,            0,                  Barrington MicroStar ,  P1
```

4.4 Client Side Map Descriptors

4.4.1 FieldServer Related Map Descriptor Parameters

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	One of the Data Array names from “Data Array” section above
Data_Array_Offset	Starting location in Data Array	0 to maximum specified in “Data Array” section above
Function	Function of Client Map Descriptor..	Passive

4.4.2 Driver Related Map Descriptor Parameters

Column Title	Function	Legal Values
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	This commonly used parameter is not used by this driver.	
Length	Length of Map Descriptor Reserves space in the Data Array.	Always set to 14 as 14 points are served from each Microstar device.
Address	The Point Number	Always set to zero.

4.5 Examples

4.5.1 Map Descriptor Example 1 – Read Points

In this example points are reach from 2 nodes

```
Map_Descriptors

Map_Descriptor_Name , Data_Array_Name , Data_Array_Offset , Node_Name , Function , Length , Address

Read_Node0          , DA_MSTAR00      , 0                 , MSTAR00   , rdbc     , 14     , 1

Read_Node1          , DA_MSTAR01      , 0                 , MSTAR01   , rdbc     , 14     , 1
```

Descrip tive only. Not used.

Data Array and offset where data will be stored.

Node Name of a Node defined in the Nodes section. Node Number must correspond to the Barrington Lanstar panel number. Name must match too.

Read continuously, over and over. Use Scan_Interval to control frequency.

Set Length to 14

5 Sample Configuration File

```
//================================================================================
//
//    Common Information
//

Bridge
Title                   ,system_Node_Id
2NodeSample          ,3


//================================================================================
//
//    Data Arrays
//

Data_Arrays
Data_Array_Name ,Data_Format ,Data_Array_Length
DA_Node_01      ,Float      ,20
DA_Node_02      ,Float      ,20


//================================================================================
//
//    Client Side Connections
//

Connections
Port ,Baud ,Data_Bits ,Stop_Bits ,Parity ,Protocol
R1   ,9600 ,8        ,1        ,None   ,STAR


//================================================================================
//
//    Client Side Nodes
//

Nodes
Node_Name ,Node_ID ,Protocol ,Port
Node_01   ,1      ,STAR     ,R1
Node_02   ,2      ,STAR     ,R1


//================================================================================
//
//    Client Side Map Descriptors
//

Map_Descriptors
Map_Descriptor_Name ,Scan_Interval ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name ,Length
ReadNode1          ,0s          ,DA_Node_01     ,0              ,Rdbc    ,Node_01   ,14
ReadNode2          ,0s          ,DA_Node_02     ,0              ,Rdbc    ,Node_01   ,14



 ,,
```

6

```
//================================================================================
//
//   Client Side Map Descriptors
//

Map_Descriptors
Map_Descriptor_Name ,Scan_Interval ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name ,Length
ReadNode1         ,0s          ,DA_Node_01     ,0              ,Rdbc     ,Node_01   ,14
ReadNode2         ,0s          ,DA_Node_02     ,0              ,Rdbc     ,Node_01   ,14




//================================================================================
//
//   Server Side Connections
//
Connections
Port , Baud  , Protocol    , Timeout , Connection_Type  , Max_Master
R2   , 38400 , BACnet_MSTP , 30      , MSTP_Master_Mode , 127



//=================================
//
//   Server Side Nodes
//

Nodes
Node_Name    ,Node_ID ,Protocol
Bac_Node_01  ,01      ,BACnet_MSTP
Bac_Node_02  ,02      ,BACnet_MSTP

//=================================
//
//   Server Side Map Descriptors
//

Map_Descriptors
Map_Descriptor_Name ,Data_Array_Name ,D          _Offset ,Function ,Node_Name   ,Object_Id,Data_Type  ,Data_Array_Low_Scale ,Data_Array_High_Scale ,Node_Low_Scale
,Node_High_Scale
AI_01           ,DA_Node_01     ,0             ,Server   ,Bac_Node_01  ,1      ,AI       ,0              ,100              ,0           ,100
AI_02           ,DA_Node_01     ,1             ,Server   ,Bac_Node_01  ,2      ,AI       ,0              ,100              ,0           ,100
AI_03           ,DA_Node_01     ,2             ,Server   ,Bac_Node_01  ,3      ,AI       ,0              ,100              ,0           ,100
AI_04           ,DA_Node_01     ,3             ,Server   ,Bac_Node_01  ,4      ,AI       ,0              ,100              ,0           ,100
Ao_01            ,DA_Node_01     ,4             ,Server   ,Bac_Node_01  ,5      ,Av       ,0              ,100              ,0           ,100
Ao_02            ,DA_Node_01     ,5             ,Server   ,Bac_Node_01  ,6      ,Av       ,0              ,100              ,0           ,100
Ao_03            ,DA_Node_01     ,6             ,Server   ,Bac_Node_01  ,7      ,Av       ,0              ,100              ,0           ,100
Ao_04            ,DA_Node_01     ,7             ,Server   ,Bac_Node_01  ,8      ,Av       ,0              ,100              ,0           ,100
DI_01           ,DA_Node_01     ,8             ,Server   ,Bac_Node_01  ,9      ,bi       ,0              ,100              ,0           ,100
DO_01            ,DA_Node_01     ,9             ,Server   ,Bac_Node_01  ,10     ,bv       ,0              ,100              ,0           ,100
CI_01           ,DA_Node_01     ,10            ,Server   ,Bac_Node_01  ,11     ,AI       ,0              ,100              ,0           ,100
CI_02           ,DA_Node_01     ,11            ,Server   ,Bac_Node_01  ,12     ,AI       ,0              ,100              ,0           ,100
CI_03           ,DA_Node_01     ,12            ,Server   ,Bac_Node_01  ,13     ,AI       ,0              ,100              ,0           ,100
CI_04           ,DA_Node_01     ,13            ,Server   ,Bac_Node_01  ,14     ,AI       ,0              ,100              ,0           ,100
```

Of the 14 points stored they are stored at the following relative offsets in the Data Array

AI's: 0,1,2,3
AO's: 4,5,6,7
BI's: Offset 8 (use 4 bits)
Bo's: Offset 8 (use 4 bits)
Counters: Offset 10,11,12,13

Configuring the FieldServer as a Barrington MicroStar Server

This driver cannot be used to emulate an Barrington MicroStar Panel

Appendix 1 – Advanced Topics

Appendix 1.1. Scaling

Points CANNOT be scaled when they are read becasuse each read returns 14 points of different types. They can be scaled by a task that executes on data update or a fixed frequency or they can be scaled when they are served.

Example: Scale before served. Ie scaled number is served.

```
Map_Descriptors

Map_Descriptor_Name ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name
,Object_Id,Data_Type  ,Data_Array_Low_Scale ,Data_Array_High_Scale ,Node_Low_Scale
,Node_High_Scale

AI_01              ,DA_Node_01      ,0                ,Server   ,Bac_Node_01  ,1       ,AI
,0                   ,100                   ,0               ,100

AI_02              ,DA_Node_01      ,1                ,Server   ,Bac_Node_01  ,2       ,AI
,0                   ,100                   ,0               ,100
```

Appendix 1.2. Supported Communications functions

Always check the Data Sheet for an accurate and up to date list.

Function	Notes
Poll Request with Download Data	Writes 4xAO values and 4xDO states. Can also be used to reset one/all of the 4 Counters.
Poll Request	Reads all data for all inputs. Analog inputs are 16 bits values.

Driver cannot read/write data to virtual microSTAR's.

Appendix 1.3. Revision History

Date	Resp	Format	Driver Ver.	Doc. Rev.	Comment
2008Feb11	PMC		1.0	1.0	Created
2014Sep21	PMC		2.0	2.0	Updated for new connection params