A Sierra Monitor Company

Driver Manual
(Supplement to the FieldServer Instruction Manual)

FS-8700-12 AB DH+

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after May 1, 2001

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1. Allen Bradley DH+ Description

The DH+ driver allows the FieldServer to transfer data to and from devices using DH+ protocol. The Communications Adapter card is included with the FieldServer. The FieldServer can emulate either a Server or Client.

The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer.

2. Driver Scope of Supply

2.1. Supplied by FieldServer Technologies for this Driver

SMC PART #	DESCRIPTION
FS-SPA23027	DH+ cable

2.2. Provided by the supplier of 3rd Party Equipment

2.2.1. Hardware

PART #	DESCRIPTION
	AB DH+ compatible PLC, e.g. SLC5/03, PLC 5/40, etc [1]
	DH+ Client, e.g. RSView, Wonderware, Intellution FIX, GE Cimplicity, etc.[2]

[1] If FieldServer used as Allen Bradley DH+ Client
[2] If FieldServer used as Allen Bradley DH+ Server

3. Hardware Connections

Configure the PLC according to manufacturer's instructions and configure checksum to use BCC checksum, not CRC.

4. Configuring theFieldServer as a DH+ 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 a DH+ Server.

4.1. Data Arrays/Descriptors

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for DH+ communications, 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.

Section Title
Data_Arrays

Column Title	**Function**	**Legal Values**
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	Float, Bit, UInt16, SInt16, Uint32, Sint32, Packet_Bit, Byte, Packet_Byte, Swapped_Byte
Data_Array_Length	Number of Data Objects	1-10,000

Example

```
//  Data Arrays

Data_Arrays
Data_Array_Name,    Data_Format,    Data_Array_Length
DA_AI_01,           Float,          200
DA_AO_01,           Float,          200
DA_DI_01,           Bit,            200
DA_DO_01,           Bit,            200
```

4.2. Client Side Connection Descriptors

Section Title		
Connections		
Column Title	**Function**	**Legal Values**
Port	Port name	DH+
Protocol	Specify protocol used	AB_DH+

Example

```
//    Client Side Connections

Connections
Port,                                   Protocol
DH+,                                    AB_DH+
```

4.3. Client Side Node Descriptors

Section Title		
Nodes		
Column Title	**Function**	**Legal Values**
Node_Name	Provide name for node	Up to 32 alphanumeric characters
Node_ID	Node ID of physical server node (PLC)	1-255
Protocol	Specify protocol used	AB_DH+
PLC_Type	Specify PLC Type Being Polled	PLC3, PLC5, SLC5

Example

```
//    Client Side Nodes

Nodes
Node_Name,          Node_ID,    Protocol,     PLC_Type,     Port
PLC 1,                 1,       AB_DH+,        SLC5,        DH+
```

4.4. Client Side Map Descriptors

Section Title
Map_Descriptors

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	RDBC, WRBC, WRBX
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
File_Type	File type in PLC	N, B
File_Number	File Number in PLC	0-255
Address	Starting address of read block	0 – 255
Length	Length of read block	1-255
Data_Array_Low_Scale*	Scaling zero in Data Array	-32767 to 32767, **default 0**
Data_Array_High_Scale*	Scaling max in Data Array	-32767 to 32767, **default 100**
Node_Low_Scale*	Scaling zero in Connected Node	-32767 to 32767, **default 0**
Node_High_Scale*	Scaling max in Connected Node	-32767 to 32767, **default 100**

4.4.1. Map Descriptor Example

```
//  Client Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name,    Data_Array_Name,    Data_Array_Offset,    Function    Node_Name    File_Type,    File_Number,    Address,    Length    Scan_Interval
CMD_AI_01,              DA_AI_01,           0,                    Rdbc        PLC 1        N             10              0           16        1.0s
CMD_AO_01,              DA_AO_01,           0,                    Rdbc        PLC 1        N             11              0           16        1.0s

Map_Descriptors
Map_Descriptor_Name,    Data_Array_Name,    Data_Array_Offset,    Function    Node_Name    File_Type,    File_Number,    Address,    Length    Scan_Interval
CMD_DI_01,              DA_DI_01,           0,                    Rdbc        PLC 1        B             12              0           16        1.0s
CMD_DO_01,              DA_DO_01,           0,                    Rdbc        PLC 1        B             13              0           16        1.0s
```

5. FieldServer as a DH+ Server

5.1. Server Side Connection Descriptors

Section Title		
Connections		
Column Title	**Function**	**Legal Values**
Port	Port name	DH+
Protocol	Specify protocol used	AB_DH+

Example

```
//  Server Side Connections

Connections
Port,                    Protocol
DH+,                     AB_DH+
```

5.2. Server Side Node Descriptors

Section Title		
Nodes		
Column Title	**Function**	**Legal Values**
Node_Name	Provide name for node	Up to 32 alphanumeric characters
Node_ID	Node ID of virtual server node (FieldServer)	1-255
Protocol	Specify protocol used	AB_DH+
PLC_Type	Specify PLC Type Being Polled	PLC3, PLC5, SLC5

Example

```
//  Server Side Nodes

Nodes
Node_Name,          Node_ID,    Protocol,    PLC_Type
DHP_Srv_11,         11,         AB_DH+,      SLC5
```

5.3. Server Side Map Descriptors

Section Title
Map_Descriptors

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	Server
Node_Name	Name of Node to fetch data from	One of the node names specified in “Client Node Descriptor” above
File_Type	File type in PLC	N, B
File_Number	File number in PLC	0-255
Address	Starting address of read block	0 - 255
Length	Length of read block	1 - 255
Data_Array_Low_Scale*	Scaling zero in Data Array	-32767 to 32767, **0**
Data_Array_High_Scale*	Scaling max in Data Array	-32767 to 32767, **100**
Node_Low_Scale*	Scaling zero in Connected Node	-32767 to 32767, **0**
Node_High_Scale*	Scaling max in Connected Node	-32767 to 32767, **100**

Map Descriptor Example

```
//  Server Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name,  Data_Array_Name,  Data_Array_Offset,  Function,  Node_Name,  File_Type,  File_Number,  Address,  Length,  Data_Array_Low_Scale,  Data_Array_High_Scale,  Node_Low_Scale,  Node_High_Scale

SMD_AI_01,  DA_AI_01,  0,  Server,  DHP_Srv_11,  N,  10,  0,  200,  0,  100,  0,  100
SMD_AO_01,  DA_AO_01,  0,  Server,  DHP_Srv_11,  N,  11,  0,  200,  0,  100,  0,  100
```

```
Map_Descriptors
Map_Descriptor_Name,  Data_Array_Name,  Data_Array_Offset,  Function,  Node_Name,  File_Type,  File_Number,  Address,  Length
SMD_DI_01,  DA_DI_01,  0,  Server,  DHP_Srv_11,  B,  12,  0,  200
SMD_DO_01,  DA_DO_01,  0,  Server,  DHP_Srv_11,  B,  13,  0,  200
```

6. Driver Notes

6.1. Continuous Map Descriptors

RS View has been known to crash if it tries to read a server mapping that is discontinuous.

e.g. Server map 1: N21: 0-31
Server map 2: N21: 32-100

This will panic the FieldServer and crash RS view as the DH+ will attempt to map N21: 0-100

If set up as: Server Map 1: N21: 0-100

No problems are experienced

6.2. Checksum

When selecting checksum options for DH+ devices communicating to the FieldServer, take note that BCC (Block Check Sum) is supported, whereas CRC (Cyclic Redundancy Check) is not.

6.3. DH+ as FieldServer Server

If the FieldServer is to be polled by the DH+ network, then it is important to declare the station address in the "FieldServer" portion of the configuration file.

e.g. FieldServer

Title,	System_Station_Address
DCC099 Primserv.csv v3.00u,	11

This sets the FieldServer address to 11. The Node_ID on the server side must then be the same as the station address declared.

6.4. Command Support

The following commands are supported by the FieldServer for the various PLC types:

PLC_Type	File_type	FNC	Read	FNC	Write	Typical Command
PLC3	N	1	Range Read	0	Range Write	N7: 3, L5
	F	1	Range Read	0	Range Write	F12: 3, L5
	B	1	Range Read	2	Bit Write	B3/4: 5, l5
PLC5	N	1	Range Read	0	Range Write	N7: 3 , L5
	F	1	Range Read	67	Typed Write	F12: 3, L5
	B	1	Range Read	26	Read Modify Write	B3/4: 5, L5
SLC5	N	A2	Protected Typed Logical Read	AA	Protected Typed Logical Write	N7: 3, L5
	F	A2	Protected Typed Logical Read	AA	Protected Typed Logical Write	B3/4: 5, L7
	B	A2	Protected Typed Logical Read	AB	Protected Typed Logical Write	B3/4: 5, L8
	I	A2	Protected Typed Logical Read	-	-	I: 13, L5
	O	A2	Protected Typed Logical Read	-	-	O: 13, L5

7. Revision History

Date	Driver Version	Document Revision	Resp	Comment
11/28/03		1	MF	Updated formatting
2/18/04		2	JD	Releasing