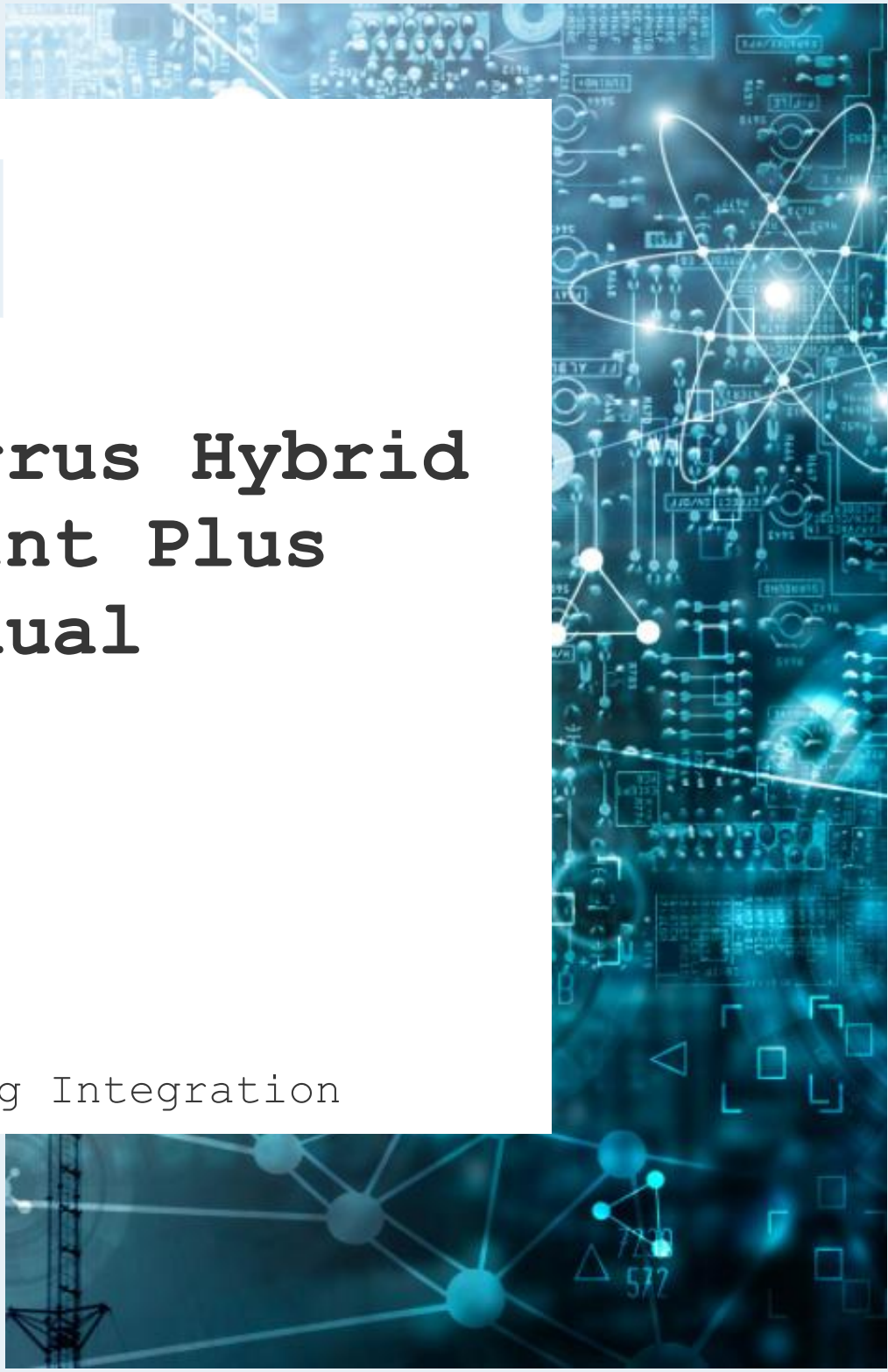

Protec Cirrus Hybrid and Propoint Plus Driver Manual FS-8705-57

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Driver Version: 105aA and later
Document Revision: 2

TABLE OF CONTENTS

1 Protec Driver Description

This driver is suitable for **Protec Cirrus Hybrid** and **Propoint Plus** panels**.**

The Driver can read and write data, change settings and issue commands to the Protec panels. A single gateway can connect to multiple Protec panels on a RS485 bus using this driver. Each FieldServer gateway has 2x RS485 ports and thus two trunks of Protec panels can be monitored by one FieldServer Gateway.

The data that is read will be cached for serving via a 2nd protocol such as DNP3 to Cimplicity or Modbus / BACnet for a building management system. Any of the over 140 protocols in the gateway library may be connected to the Protec Driver.

The gateway requires minimal configuration and has an **auto discovery** process and therefore can be considered a plug and play component of a system, in that it is ready to operate out of the box with the default configuration.

- A separate 'Quick Start' Manual is provided
- A separate 'Prep for Shipping' Manual is provided. This manual provides instructions on how to do a firmware installation.
- A separate 'How to do Bacnet Testing' is available.

A rudimentary web page is provided for testing.

Max Nodes Supported

FIELDSERVER MODE	NODES	COMMENTS
Client	Number of Protec panels limitation is 98	One Gateway can connect to **Protec Cirrus Hybrid** and **Protec Propoint Plus** on a RS485 trunk, provided each has a unique NodeID.
Server	0	This driver cannot be used to simulate a Protec Device

2 Driver Scope of Supply

2.1 Supplied by FieldServer Technologies for this driver

FIELDSERVER TECHNOLOGIES PART #	DESCRIPTION
-	No specific cables are shipped with this driver.
-	
FS-8705-57	Driver Manual.

2.2 Provided by the Supplier of 3rd Party Equipment

2.2.1 Required 3rd Party Hardware

PART #	DESCRIPTION
None	

2.2.2 Required 3rd Party Software

None known.

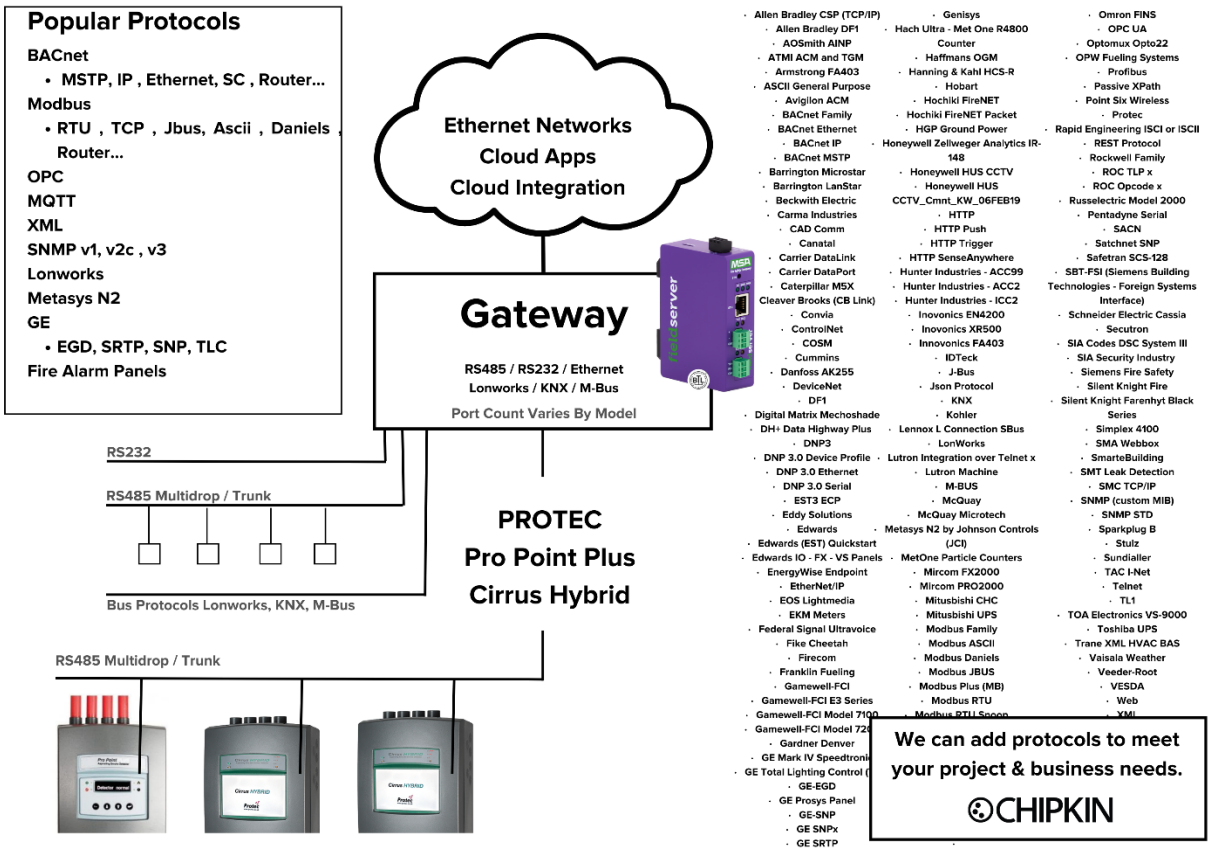
2.2.3 Required 3rd Party Configuration

None known.

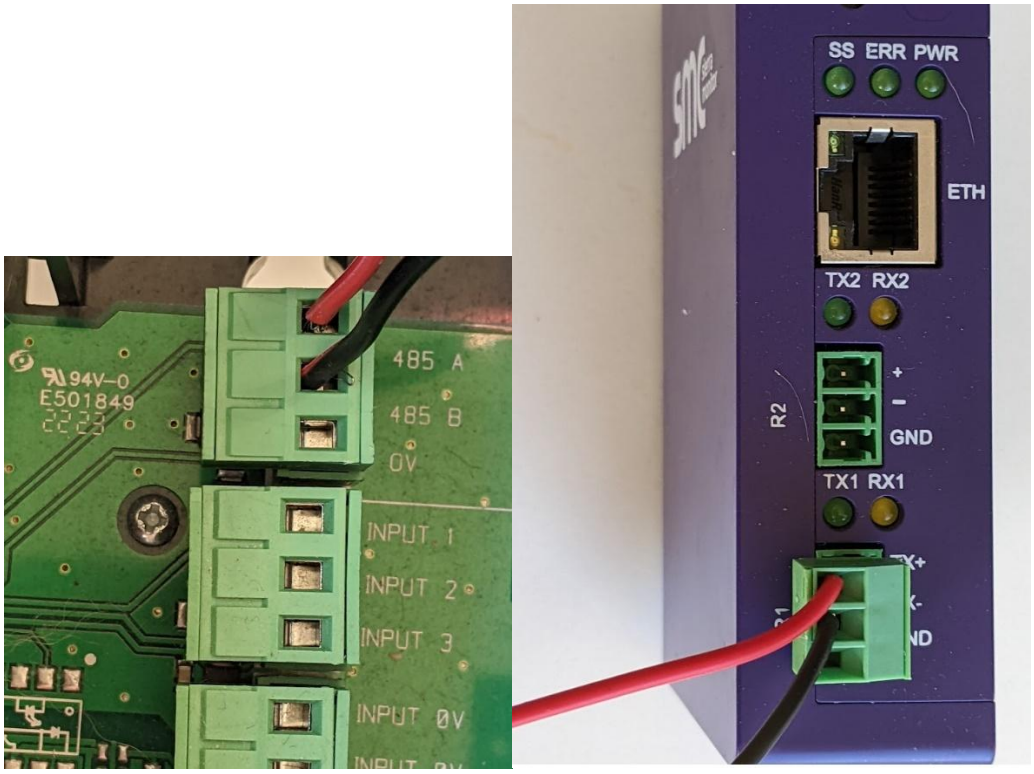
3 Hardware Connections

3.1 Typical Block Diagram

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



3.2 Hardware Connection Tips / Hints



RS485 is meant to be carried on a twisted pair with a drain wire connected to the shield.

Daisy chain the Cirrus Hybrid or PointPlus's using a RS485 cable as per the manufacturers directions.

4 Configuring the FieldServer as a Protec Client

For a detailed discussion on FieldServer configuration, please refer to the FieldServer Configuration Manual.

Google : chipkin 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 Comput25 controller.

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 gateway for Protec Driver 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_Array_Format	Provide data format. Each Data Array can only take on one format.	Float, Bit, UInt16, 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

Example

```
// Data Arrays
Data_Arrays
Data_Array_Name,        Data_Format,        Data_Array_Length,

Dev03_FLT,              UNT16,              200
```

4.2 Client Side Connection Descriptions

Create one adapter for each Ethernet port. Each connection can only be used to connect to a single PRO2000 interface/port.

SECTION TITLE
Adapters

COLUMN TITLE	FUNCTION	LEGAL VALUES
Connections	Specify which serial port the device is connected to the gateway	R1, R2
Protocol	Specify protocol used	Protec
Protec_Token_Timeout	If the token stops passing then this timer is used to restart the token	Suggest 1000secs
Protec_MaxNode	During autoconfig and discovery (performed each time the Fieldserver is restarted.) this parameter is used to limit how many panels can be detected.	**Eg 10** **During discovery, the gateway wll try and find node 1-10 and will ignore node number > 10**
Protec_Resynch_option	When a Resynch Request is sent to the panels this is what action the driver will take just prior to sending the Resynch. The Panels do not report when faults are cleared. This is how this driver deals with the problem – by asking it to re-report all active faults / Fire Status	0 : Fault and Fire DA's will not cleared 1: Fire DA's will not cleared 2:Fault DA's will not cleared 3 : Fault and Fire DA's Cleared

Example

Connections

Port , Baud , Parity , Data_Bits , Stop_Bits , Protocol , poll_delay , timeout , ic_timeout , Protec_MaxNode , Protec_Token_Timeout

R1 ,19200 , None , 8 , 1 , Protec ,0 .01secs , 2.35secs , 0.5secs , 10 , 1000s

4.3 Client-Side Node Descriptors

Create one Node per Protec Controller.

SECTION TITLE
Nodes

COLUMN TITLE	FUNCTION	LEGAL VALUES
Node_Name	Provide name for node	Up to 32 alphanumeric characters
Node_ID	Node ID of Protec Panel	Whole Numbers 0,1,2,…
Protocol	Specify protocol used	Protec
Adapter	Specify which network port the device is connected to the gateway	N1.N1

Example:

```
Nodes

Node_name , Node_ID, Protocol     , Port , Retry_Interval , Recovery_Interval

Cirrus_01     , 1          , Protec        , R1    , 0.1secs          , 0.1secs
```

The Retry and Recovery Interval are set to low numbers during testing – it saves waiting times

Default values are 10secs and 30secs

The idea is this – If a node has gone offline then one would be wasting bandwidth sending it a message and waiting for a timeout. So, when there is no response, the driver waits 10 secs (retry_interval) and tries again. It does this 3 times. If there is still no response it waits 30 secs (recovery_interval) before it tries. It keeps trying at this interval.

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.	RDBC, ARB, WRBX, WRBC

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.	1
Address	This commonly used FieldServer parameter is not used by this protocol.	
ProtecCMD	The Protec Command / Services to be executed. For a complete list see section 4.4.3	
ProtecDataType	Must be specified when using 'Get Data'. Does not need to be provided for all other services. For a list see section 4.4.5	
ProtecdBConstant	Some commands sent to the Panel use data set by this parameter. Eg 'Clear Log' is triggered by writing a value to DA Offset[0] but the value actually sent is the value specified by this	

	parameter. In this example - 1 = Clear historic graphs, 2 = Clear event log Rx	
ProtecDOW	Some ProtecDataType require the day of the week to be specified	

4.4.3 Supported Services

22	Discover Does not result in a new configuration using the discovered panels. Rather it display information on the 'Combined Messages'	'ProtecDataType' is not specified for this service	
33	Discover, generate new CSV and then restarts to apply the new config	'ProtecDataType' is not specified for this service	
77	Remap The process of allocating 'Next Node' to each panel for the token passing.	'ProtecDataType' is not specified for this service When executed the Next Node debug info is printed to the combined log.	
44	Resynch All Sends an instruction to the panel = "When you get the token next please transmit all active faults and Fire events,	'ProtecDataType' is not specified for this service	
2	Silence	'ProtecDataType' is not specified for this service	
3	Read Node Text	'ProtecDataType' is not specified for this service	
6	Send Token For testing only	'ProtecDataType' is not specified for this service	
66	Token Regen This task is used to kick start the token is it stops passing.	'ProtecDataType' is not specified for this service	
8	Get Data Used to read one of the sets of data that correspond to the data type of interest	The 'ProtecDataType' must be specified when 'Get Data' is executed	
5	Fault	Not used. Fault Data is received by the gateway. It is stored in a Data Array with a specially reserved name. DA_Devxx_FLT , UINT16 , 1000	Where xx is the NodeID of the protec panel
10	Fire	Not used. Fault Data is received by the gateway. It is stored in a Data Array with a specially reserved name.	Where xx is the NodeID of the protec panel

		DA_Devxx_FIRE , UINT16 , 4	

4.4.4 Timing Parameters

COLUMN TITLE	FUNCTION	LEGAL VALUES
Scan_Interval	Rate at which data is polled	≥0.001s

4.4.5 Protec Data Types Supported

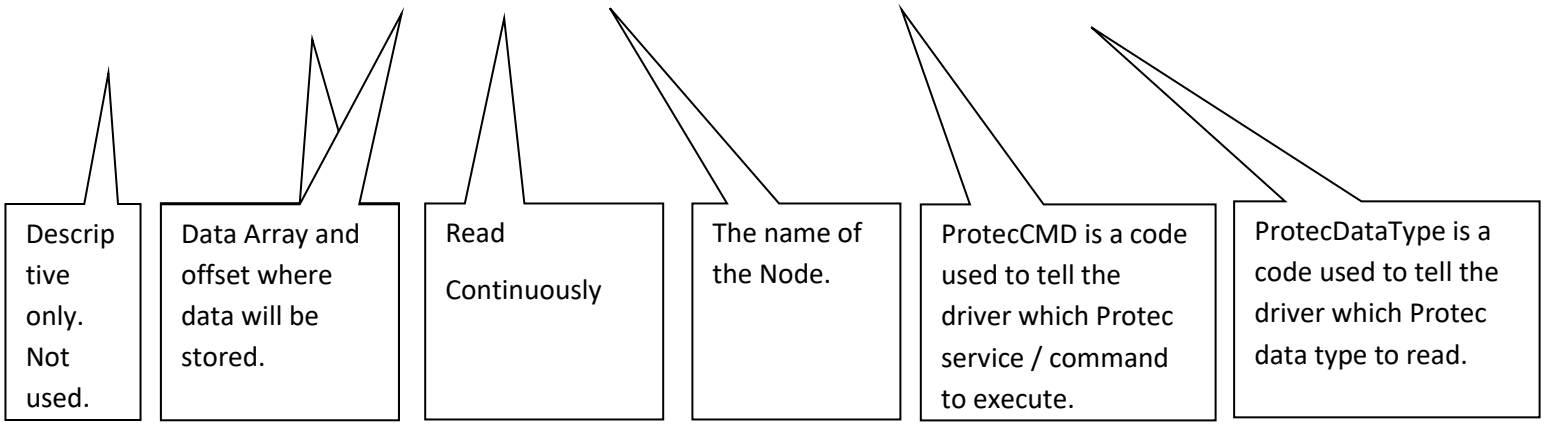
'GET DATA' data types

See Appendix B

4.4.6 Map Descriptor Example 1 – Read 'GET DATA' Datatypes

In this example the driver reads the Controller's Pipe Status Data for all 4 pipes. This task is executed at best every 1.0 seconds. The data read by the command is stored in the data array named "DA_Dev03_dt010" starting at offset zero in the array. Exactly what data is stored is dependent on the ProtecDataType. How and what data is stored in provided in the appendices.

```
Map_Descriptors,,,,,,,,,
Map_Descriptor_Name   , Data_Array_Name , Data_Array_Offset , Function , Node_Name , Scan_Interval , ProtecCMD    , ProtecDataType        , ProtecdBConstant , length,
,,,,,,,,,
Dev03 Pipe 1 Status     , DA_Dev03_dt010  ,0, rdbc     , Dev03     , 1.0s          , 8 (Get Data) , 10(DATATYPE_PIPE1_STATUS) , -               ,40,
Dev03 Pipe 2 Status     , DA_Dev03_dt011  ,0, rdbc     , Dev03     , 1.0s          , 8 (Get Data) , 11(DATATYPE_PIPE2_STATUS) , -               ,40,
Dev03 Pipe 3 Status     , DA_Dev03_dt012  ,0, rdbc     , Dev03     , 1.0s          , 8 (Get Data) , 12(DATATYPE_PIPE3_STATUS) , -               ,40,
Dev03 Pipe 4 Status     , DA_Dev03_dt013  ,0, rdbc     , Dev03     , 1.0s          , 8 (Get Data) , 13(DATATYPE_PIPE3_STATUS) , -               ,40,
```



4.4.7 Read ‘GET DATA’ Datatypes – How Data is Stored

When the ‘GET DATA’ command is completed data is stored in the associated data array. To configure ‘other’ protocol you need to know where the returned data is stored in associated data array.

An easy way to find this data is by navigating to

http://192.168.2.101/CustomUI/plistfull.ini (change the IP)

And looking at the BACnet Server Map Descriptors

For example: The Airflow is stored in the 8th element of the Data Array

```
Map_Descriptors
Map_Descriptor_Name          , Data_Array_Name , Data_Array_Offset , Function , Node_Name , Data_Type , Object_ID ,
Property     , Units
Devxx Pipe1 Status Cloud T1      , DA_Devxx_dt010  , 1          , Server   , vDevxx    , AI      , 1       , Present_Value , No_Units
Devxx Pipe1 Status Optical T1    , DA_Devxx_dt010  , 2          , Server   , vDevxx    , AI      , 2       , Present_Value , No_Units
Devxx Pipe1 Status CO            , DA_Devxx_dt010  , 3          , Server   , vDevxx    , AI      , 3       , Present_Value , No_Units
Devxx Pipe1 Status Temp. DegC    , DA_Devxx_dt010  , 4          , Server   , vDevxx    , AI      , 4       , Present_Value , No_Units
Devxx Pipe1 Status Optical THist , DA_Devxx_dt010  , 5          , Server   , vDevxx    , AI      , 5       , Present_Value , No_Units
Devxx Pipe1 Status CO THist      , DA_Devxx_dt010  , 6          , Server   , vDevxx    , AI      , 6       , Present_Value , No_Units
Devxx Pipe1 Status Temp. THist   , DA_Devxx_dt010  , 7          , Server   , vDevxx    , AI      , 7       , Present_Value , No_Units
Devxx Pipe1 Status Airflow ms    , DA_Devxx_dt010  , 8          , Server   , vDevxx    , AI      , 8       , Present_Value , No_Units
```

5 Configuring the FieldServer as a Protec Server

This driver cannot be used to emulate a Protec device. In other words, you cannot this driver to make some other device appear like a Protec device.

Appendix A – Supported Data Types

Yellow indicates the Data Type is supported.

Specified by setting the 'ProtecDataType' parameter of a map descriptor.

Data type number	Description
1	Read device text
2	Read text of pipe 1
3	Read text of pipe 2
4	Read text of pipe 3
5	Read text of pipe 4
6	Read text for pre-alarm
7	Read text of fire level 1
8	Read text of fire level 2
9	Read text of fire level 3
10	Read status of pipe 1
11	Read status of pipe 2
12	Read status of pipe 3
13	Read status of pipe 4
14	Log in to detector
15	Read detector time
16	Read detector fan speed
17	Write detector fan speed
18	Read/Write Ignore airflow
19	Read/Write airflow error
20	Zero airflow on pipe
21	Clear latched airflow faults
22	Write airflow fault latch on/off
23	Read/Write pipe fire latch level
24	Log out
25	Read day & night settings
26	Write day & night settings
27	Read / Write output settings
28	Read / Write output delay settings
29	Write output override
30	Read / Write input settings
31	Read / Write invert inputs setting
32	Read a page of camera url
33	Read a page of camera url
34	Read a page of camera url

35	Read a page of camera url
36	Read a page of camera url
37	Read a page of camera url
38	Read device loop serial number
39	Write ip/mask/gateway
40	Read ip/mask/gateway
41	Read current ip/mask/gateway
42	Read/Write node number
43	Write user & engineer access codes
44	Write time to detector
45	Write fire levels
46	Read fire levels
47	Read / Write zimezone on/off
48	Write unit text to device
49	Write pipe 1 text
50	Write pipe 2 text
51	Write pipe 3 text
52	Write pipe 4 text
53	Write pre-alarm text
54	Write fire 1 text
55	Write fire 2 text
56	Write fire 3 text
57	Read text site location
58	Read text site commissioned by
59	Read text site commissioned date
60	Read text site name
61	Read text site contact
62	Read text site address
63	Read text site postcode
64	Read text site phone number
65	Read text site comments
66	Read text manufacture date
67	Read text manufacture serial number
68	Read number of seconds powered
69	Read text manufacture tested by
70	AF Airflow
71	Read chamber LED commissioned / current value
72	Read commissioned chamber pressure & current pressure
73	Read current & commissioned background optical
74	Read pipe min/max values
75	Read pipe temperature

76	Read water fill average
77	Read an event from event log
78	Write text site location
79	Write text site commissioned by
80	Write text site commissioned date
81	Write text site name
82	Write text site contact
83	Write text site address
84	Write text site post code
85	Write text site phone number
86	Write text site comment
87	Write buzzer on/pff
88	Store commissioned values
89	Read info from detector
90	Write airflow high error
91	Clear event log
92	Read ProPointPLUS sensitivity
93	Write PPP Sensitivity pipe 1
94	Write PPP Sensitivity pipe 2
95	Write PPP Sensitivity pipe 3
96	Write PPP Sensitivity pipe 4
97	Read PPP Event timeout
98	Write PPP Event timeout pipe 1
99	Write PPP Event timeout pipe 2
100	Write PPP Event timeout pipe 3
101	Write PPP Event timeout pipe 4
102	Write PPP Pre-alarm level pipe 1
103	Write PPP Pre-alarm level pipe 2
104	Write PPP Pre-alarm level pipe 3
105	Write PPP Pre-alarm level pipe 4
106	Fire reset
107	Set / Read single loop address
108	Read device info.

Appendix B – How Data is Stored.

For all of the following:

40 bytes of data are stored in Data Array offsets 0-39. The string is null terminated.

READ DEVICE TEXT

READ TEXT OF PIPE 1

READ TEXT OF PIPE 2

READ TEXT OF PIPE 3

READ TEXT OF PIPE 4

READ TEXT FOR PRE-ALARM

READ TEXT OF FIRE LEVEL 1

READ TEXT OF FIRE LEVEL 2

READ TEXT OF FIRE LEVEL 3

READ TEXT SITE LOCATION

READ TEXT SITE COMMISSIONED BY

READ TEXT SITE COMMISSIONED DATE

READ TEXT SITE NAME

READ TEXT SITE CONTACT

READ TEXT SITE ADDRESS

READ TEXT SITE POSTCODE

READ TEXT SITE PHONE NUMBER

READ TEXT SITE COMMENTS

READ TEXT MANUFACTURE DATE

READ TEXT MANUFACTURE SERIAL NUMBER

READ NUMBER OF SECONDS POWERED

READ TEXT MANUFACTURE TESTED BY

For all of the following:

case READ STATUS OF PIPE 1 :

case READ STATUS OF PIPE 2 :

case READ STATUS OF PIPE 3 :

case READ STATUS OF PIPE 4 :

DA Offset [0] Pipe Number

DA Offset [1] Pipe cloud T1 (0 – 1000)

DA Offset [2] Pipe optical T1 (0 – 1023)

DA Offset [3] Pipe CO T1 (0 – 1023)

DA Offset [4] Pipe temperature (Temperature in Deg.C)

DA Offset [5] Pipe optical THist (0 – 1023)

DA Offset [6] Pipe CO THist (0 – 1023)

DA Offset [7] Pipe temperature THist (Temperature in Deg.C)

DA Offset [8] Pipe airflow (m/s * 10)

DA Offset [9] Pipe Accepted airflow (m/s * 10)

DA Offset [10] Pipe vanilla cloud (0 – 100)

DA Offset [11] Pipe hybrid (0 – 65535, enveloped weighted product)

DA Offset [12] Pipe min (0-1000, minimum cloud value over time period)

DA Offset [13] Pipe max (0 – 1000, maximum cloud value over time period)

DA Offset [14] Pipe T4 – 15 minutes (0 – 1000)

DA Offset [15] Cloud chamber hardware gain (0 – 63)

DA Offset [16] Pipe CFS value

DA Offset [17] Pipe flags

Bit 0 Initialising

Bit 1 Night mode

Bit 2 AFS (Airflow sensor) No optical signal

DA Offset [18] Current Prealarm threshold (0 – 1000)

DA Offset [19] Current Fire 1 threshold (0 – 1000)

DA Offset [20] Current Fire 2 threshold (0 – 1000)

DA Offset [21] Current Fire 3 threshold (0 – 1000)

DA Offset [22] Fire level (0-4)

DA Offset [23] Optical obscuration in db/m * 1000

case READ/WRITE AIRFLOW ERROR**:**

DA Offset [1] Airflow error pipe 1

DA Offset [2] Airflow error pipe 2

DA Offset [3] Airflow error pipe 3

DA Offset [4] Airflow error pipe 4"

case READ DETECTOR TIME

DA Offset[0] READ DETECTOR TIME

DA Offset [1] Time in seconds since 1/1/1970

DA Offset [2] Access level

case CLEAR EVENT LOG

Trigger CMD by Storing 1 in DA Offset[0]

The value sent is set using parameter= ProtecdBConstant

case READ DETECTOR FAN SPEED

DA Offset[0] Fan speed (0% - 100%)

case WRITE DETECTOR FAN SPEED

Trigger CMD by Storing new fan speed in DA Offset[0]

case READ DAY & NIGHT SETTINGS

Trigger CMD by pipe number in DA Offset[1]

Response data is stored as follows

DA Offset[0] Pipe Number

DA Offset [1+x] Sunday Day Hour

DA Offset [2+x] Sunday Day Minute

DA Offset [3+x] Sunday Night Hour

DA Offset [4+x] Sunday Night Minute

Etc for Monday, Tues, Wed, Thur, Fri, Sat

Where x = 100*pipe number

Eg for Pipe 4 Tuesday Night Hour – DA Offset = 3*100+9

case READ IP/MASK/GATEWAY

Trigger by setting value of DA Offset[0]

0 IP Address

1 Network mask

2 Gateway

Address is stored in DA Offset[1..4]

case READ FIRE LEVELS

Trigger by setting the day number then the pipe number

DA Offset[0] = Pipe Number(0..3]

DA Offset[1] = Day Number (0-6)

Response Data is stored

DA Offset[1] Pipe Number

DA Offset[2] Day Number

DA Offset[3] Day Time PreAlarm

DA Offset[4] Day Time Fire 1

DA Offset[5] Day Time Fire 2

DA Offset[6] Day Time Fire 3`

DA Offset[7] Night Time PreAlarm

DA Offset[8] Night Time Fire 1

DA Offset[9] Night Time Fire 2

DA Offset [10] Night Time Fire 3`

case DATATYPE_AF_AIRFLOW

DA Offset[0] Pipe 1 airflow

DA Offset[1] Pipe 2 airflow

DA Offset[2] Pipe 3 airflow

DA Offset[3] Pipe 4 airflow

DA Offset[4] Pipe 1 accepted airflow

DA Offset[5] Pipe 2 accepted airflow

DA Offset[6] Pipe 3 accepted airflow

DA Offset[7] Pipe 4 accepted airflow

case READ CHAMBER LED COMMISSIONED / CURRENT VALUE

case READ COMMISSIONED CHAMBER PRESSURE & CURRENT PRESSURE

DA Offset[1] Commissioned chamber pressure

DA Offset[2] Current chamber pressur

case READ CURRENT & COMMISSIONED BACKGROUND OPTICAL

DA Offset[1] Pipe number

DA Offset[2,3] Pipe optical background at commissioning

DA Offset[4,5] Current pipe optical background (THist)

case READ PIPE MIN/MAX VALUES

DA Offset[1] Pipe 1 min

DA Offset[2] Pipe 1 max

DA Offset[3] Pipe 2 min

DA Offset[4] Pipe 2 max

DA Offset[5] Pipe 3 min

DA Offset[6] Pipe 3 max

DA Offset[7] Pipe 4 min

DA Offset[8] Pipe 4 max

case READ PIPE TEMPERATURE

DA Offset[1] Pipe 1 temperature

DA Offset[2] Pipe 2 temperature

DA Offset[3] Pipe 3 temperature

DA Offset[4] Pipe 4 temperature

case READ WATER FILL AVERAGE

DA Offset [1] Time in secs (UINT32)

case READ INFO FROM DETECTOR

DA Offset[1] Internal node type for pipe 1

DA Offset[2] Internal node type for pipe 2

DA Offset[3] Internal node type for pipe 3

DA Offset[4] Internal node type for pipe 4

DA Offset[5] Internal node type for cloud chamber

DA Offset[6] Internal node type for zone scanner

DA Offset[7] Internal node type for OLED display

Node types are… 1 Cloud chamber 2 HSSD (SCD Version < 1.001) 3 Pipe scanner 4 Network adapter 5 OLED Display 6 I/O expander 7 SCD 8 Airflow sensor

case READ PROPOINTPLUS SENSITIVITY

case READ PPP EVENT TIMEOUT

DA Offset[1] Optical sensitivity pipe 1

DA Offset[2] Optical sensitivity pipe 2

DA Offset[3] Optical sensitivity pipe 3

DA Offset[4] Optical sensitivity pipe 4

Optical sensitivities are… A1 – A3 Class A, 1 – 3 holes B1 – B5 Class B, 1 – 5 holes C1 – CC Class C, 1 – 12 holes 11 – 1F India Special (4 Stage Alarm Levels), 1 – 15 holes F0 CirrusHYBRID

case READ DEVICE INFO.

Trigger the read by writing the device number to DA Offset[0]

Response

DA Offset[1] Device type

DA Offset[2] 32 bytes of device text use 32 offsets to store text string

DA Offset[3] 32 bytes of device text

DA Offset[4] 32 bytes of device text

DA Offset[5] 32 bytes of device text

DA Offset[6] 32 bytes of device text

DA Offset[7] 32 bytes of device text

DA Offset[8] 32 bytes of device text

DA Offset[9] 32 bytes of device text

DA Offset[10] 32 bytes of device text

DA Offset[11] 32 bytes of device text

DA Offset[12] 32 bytes of device text

DA Offset[13] 32 bytes of device text

DA Offset[14] 32 bytes of device text

DA Offset[15] 32 bytes of device text

DA Offset[16] 32 bytes of device text

DA Offset[17] 32 bytes of device text

DA Offset[18] 32 bytes of device text

DA Offset[19] 32 bytes of device text

DA Offset[20] 32 bytes of device text

DA Offset[21] 32 bytes of device text

DA Offset[22] 32 bytes of device text

DA Offset[23] 32 bytes of device text

DA Offset[24] 32 bytes of device text

DA Offset[25] 32 bytes of device text

DA Offset[26] 32 bytes of device text

DA Offset[27] 32 bytes of device text

DA Offset[28] 32 bytes of device text

DA Offset[29] 32 bytes of device text

DA Offset[30] 32 bytes of device text

DA Offset[31] 32 bytes of device text

DA Offset[32] 32 bytes of device text

DA Offset[33] 32 bytes of device text

DA Offset[34] 32 bytes of device text

DA Offset[35] 32 bytes of device text

DA Offset[36] Device Data 0

DA Offset[37] Device Data 1

DA Offset[38] Device Data 2

DA Offset[39] Device Data 3

DA Offset[40] Device Data 4

DA Offset[41] Device Data 5

DA Offset[42] Device Data 6

DA Offset[43] Device Data 7

DA Offset[44] Fault flags

case EVENT_FIRE_LEVEL_CHANGE

DA Offset[[1] Pipe number

DA Offset[[2] Fire level

DA Offset[[3,4] CFS

DA Offset[[5] Unused

case EVENT_SENSITIVITY_CHANGE

DA Offset[2] Pipe 1 PreAlarm fire threshold / 4;

DA Offset[3] Pipe 1 Fire 1 threshold / 4

DA Offset[4] Pipe 1 Fire 2 threshold / 4

DA Offset[5] Pipe 1 Fire 3 threshold / 4

DA Offset[7] Pipe 2 PreAlarm fire threshold / 4;

DA Offset[8] Pipe 2 Fire 1 threshold / 4

DA Offset[9] Pipe 2 Fire 2 threshold / 4

DA Offset[10] Pipe 2 Fire 3 threshold / 4

DA Offset[11] Pipe 3 PreAlarm fire threshold / 4;

DA Offset[12] Pipe 3 Fire 1 threshold / 4

DA Offset[13] Pipe 3 Fire 2 threshold / 4

DA Offset[14] Pipe 3 Fire 3 threshold / 4

DA Offset[15] Pipe 14PreAlarm fire threshold / 4;

DA Offset[16] Pipe 4 Fire 1 threshold / 4

DA Offset[17] Pipe 4 Fire 2 threshold / 4

DA Offset[18] Pipe 4 Fire 3 threshold / 4

case FAULT_AIRFLOW_LOW:

case FAULT_AIRFLOW_HIGH:

DA Offset[[2] Airflow

DA Offset[[3] Unused

DA Offset[4] Pipe

How Faults Are Stored

Additional info may be found 'Client Side Connection Descriptions'

To store fault data a specifically named data array must be part of the configuration

DA Name = DA_DEVxx_FLT

Where x == Protec Panel Number

3 items are stored per fault

DA Offset[0+x] Fault Type (See appendix D)

DA Offset[1+x] Fault Address

0 SCD Pipe 1

1 SCD Pipe 2

2 SCD Pipe 3

3 SCD Pipe 4

4 Cloud Chamber

5 Pipe scanner

6 ProPointPLUS Display

253 Main unit

DA Offset[2+x] Fault Data (meaning varies depending on flt number)

Where x = 'Fault Type' * 3

Eg. Fault Type = 2

X = 6

How Fire Events Data is Stored

To store FIRE data a specially name data array must be part of the configuration

DA Name = DA_DEVxx_FIRE

Where x == Protec Panel Number

4 items are stored per FIRE event

DA Offset[0] Pipe 1 Level

DA Offset[1] Pipe 2 Level

DA Offset[2] Pipe 3 Level

DA Offset[3] Pipe 4 Level

Level = 0 Normal 1 Pre-Alarm 2 Fire 1 3 Fire 2 4 Fire 3 Data[1] Fire level pipe 2

Appendix C – Fault Table

Fault number	Fault description
1	Analogue data event
2	Panel powered up event
3	Fire level has changed
4	Panel time changed
5	All panel faults cleared
6	Panel event log cleared
7	Panel historic log cleared
8	Panel sensitivity changed
9	Panel supply voltage is low
10	Panel fire state reset
11	Panel internal device has reset
12	Chamber water emptied by user
13	Airflow faults cleared
14	Internal device data error
15	Airflow values accepted
16	User has logged in
17	Algotec ‘THist’ reset
18	Optical Hybrid warning output has been activated
19	Optical Hybrid output has been activated
64	Installed device missing
65	Unused
66	No water
67	Seal
68	Vacuum
69	Dead LED
70	Dead water
71	Sample blockage
72	Purge blockage
73	Hardware fault
74	Calibration fault
75	Reserved
76	Reserved
77	Reserved
78	Reserved
79	Reserved
80	Reserved
81	Reserved
82	Relay output being tested
83	Unexpected device fitted
84	SCD value is too high
85	Settings have become corrupt
86	Setup information is incomplete
87	Supply voltage too low

88	PSU indicating fault
89	GUI is corrupt
90	Unit is below operating temperature
91	Unused
92	Unit is isolated from reporting an alarm
93	Pipe airflow is being ignored
94	SCD Calibration fault
95	SCD LED fault
96	SCD CO cell fault
97	
98	Externally triggered fault
99	Externally triggered fault
100	Pipe multiplexing has been stopped
101	Signal is lower than expected
102	Problem with fan
103	ROM Checksum fault
104	SCD temperature reading are out of range
105	Detector replies are outside expected values
106	Pipe is disabled
107	SCD is of wrong type
108	SCD is dirty
109	Internal test fault
110	CO Cell is nearing end of life
111	Pipe airflow is too high
112	Pipe airflow is too low
113	Not using enough water
114	Unit is initialising
115	There is a CO cell expected
116	Sensitivity set wrong
117	Unit is disconnected from network
118	Airflow Out Of Range
119	Hardware Controller fault

Appendix D - plist.ini (Template Configuration)

Note: You do not have to use the template. You can edit the config manually

plist.ini (Template Configuration file is pre-installed)

If directed by Chipkin support then you can install an updated file using File Transfer – General Tab on the FieldServer UI

Some lines in plist.ini are terminated with // Once

When a new config is generated the lines with are only used once. Do not change that part of the template.

All the other lines are the template set of points that will be generated when you do discovery and restart

One chunk for each node on the trunk.

The idea is you edit plist.ini to remove points you do not want or need, install the modified file

When you execute 'Genrate Config and Restart' the template will be used

<u>Explaining the template (and config)</u>

```
                                                                                                                                             // Once
Nodes
Node_Name , Node_ID , Protocol
vDev99    , 1099    , BACnet_IP                                                                                                              // Once
vDevxx    , 10xx    , BACnet_IP   Note A
                                                                                                                                             // Once
                                                                                                                                             // Once
//------------------------------------------------------------------------------                                                            // Once
//                                                                                                                                           // Once
//    Client Side Map Descriptors                                                                                                            // Once
//                                                                                                                                           // Once

Map_Descriptors                                                                                                                                                                                     //Once
Map_Descriptor_Name     , Data_Array_Name , Data_Array_Offset , Function , Node_Name , Scan_Interval , ProtecCMD      , ProtecDataType , ProtecdBConstant , length , timeout        //Once

Do discovery  Note B    , DA_DISCOVER     , 0                 , wrb      , Devxx     , 10.0s         , 22(Discover)   , -              , -                , 1      , 0.15           //Once

Do discovery and restrt , DA_DSCVR_RSTART , 0   Note C        , wrbx     , Devxx     , 10.0s         , 33(Disc&resrt) , -              ,                  , 1      , 0.15           //Once
                                                                                                                                                                                    //Once
Map_Descriptors                                                                                                                                                                     //Once
Map_Descriptor_Name     , Data_Array_Name , Data_Array_Offset , Function , Node_Name , Scan_Interval , ProtecCMD      , ProtecDataType , ProtecdBConstant , length                  //Once
Occasional Map_Info     , DA_REMAP        , 0                 , wrbc     , Devxx     , 60.0s         , 77(Remap)      , -              , -                , 1                       //Once
Occasional Resync       , DA_RESYNCH      , 0                 , wrbc     , Devxx     , 30.0s         , 44(Resynch)    , -              , -                , 1                       //Once
Brdcast Silence Cmd     , DA_SILENCE      , 0                 , Wrbc     , Devxx     , 10.0s         , 2 (Silence)    , -              , -                , 1                       //Once
Send Token              , DA_TOKENS       , 0                 , wrbc     , Devxx     , 15.2s         , 6 (Token)      ,-               ,                  ,1                        //Once
Token Regen Timer Task  , DA_TOKENS       , 1                 , wrbx     , Devxx     , 0.5s          , 66(TokenRegen) ,-               ,                  ,1                        //Once
                                                                                                                                                                                    //Once
                                                                                                                                                                                    //Once
                                                                                                                                                                                    //Once
```

There are 2 types discovery tasks – 1) Does discovery, prints messages to the combined log and take no further action

Note A

When a new config is autogenerated plist.ini is used as a template. The ‘xx’ will be replaced with the node number

Note B

This task performs discovery, prints messages to the combined log and takes no other action. It can be used as a test. Trigger by setting DA_DISCOVER[0] to any value. There is a BACnet object that can be used for this purpose (BV 100002 on device 99). In this example, it does the discovery once (Function = WRB). There is no harm in removing this task

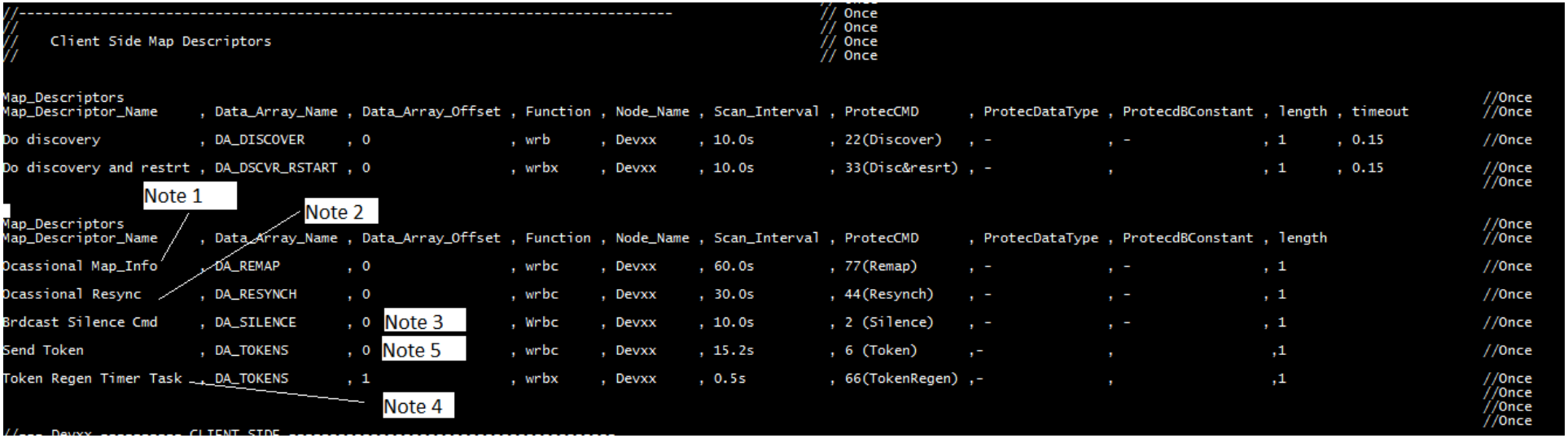
Important: Remove this task if you are building the config manually

Note C

This task performs discovery, prints messages to the combined log and then restarts the gateway so that the new config is applied. Trigger by setting DA_ DA_DSCVR_RSTART[0] to any value. There is a BACnet object that can be used for this purpose (BV 100003 on device 99)

This task has function=WRBX which means that the task is executed each time that DA_DSCVR_RSTART[0]’s value is updated (does not have to be changed)

Remove this task if you are building the config manually



Note 1

This is known as remapping. It is required when Nodes are added and discovery is performed. It executes automatically after discovery is complete.

Task takes the list of discovered nodes and tell each device which is the 'next device' that is used in passing the token.

Task is essential after a discovery (if the number of devices OR the NodeID on the Protec panels has been changed.

There is no harm in executing this task repeatedly except for wasting a bit of bandwidth

In this example it will be done once every 60 seconds.

Prints info to the combined log on the gateway UI.

Note 2

Resynch tasks tell all Protech panels will report active faults and alarms.

There is no harm in executing this task repeatedly except for wasting a bit of bandwidth

In this example it will be done once every 60 seconds.

Prints info to the combined log on the gateway UI.

There is a BACnet object (dev99 BV 100004) attached to DA_RESYNCH [0]

Note 3

When this task is executed a broadcast message to all Protec panels to silence the alarm.

Use function=wrbx to do this on demand instead of periodically (every 10 secs in this example.

There is a BACnet object (dev99 BV 100001) attached to DA_SILENCE [0]

Note 4 and 5:

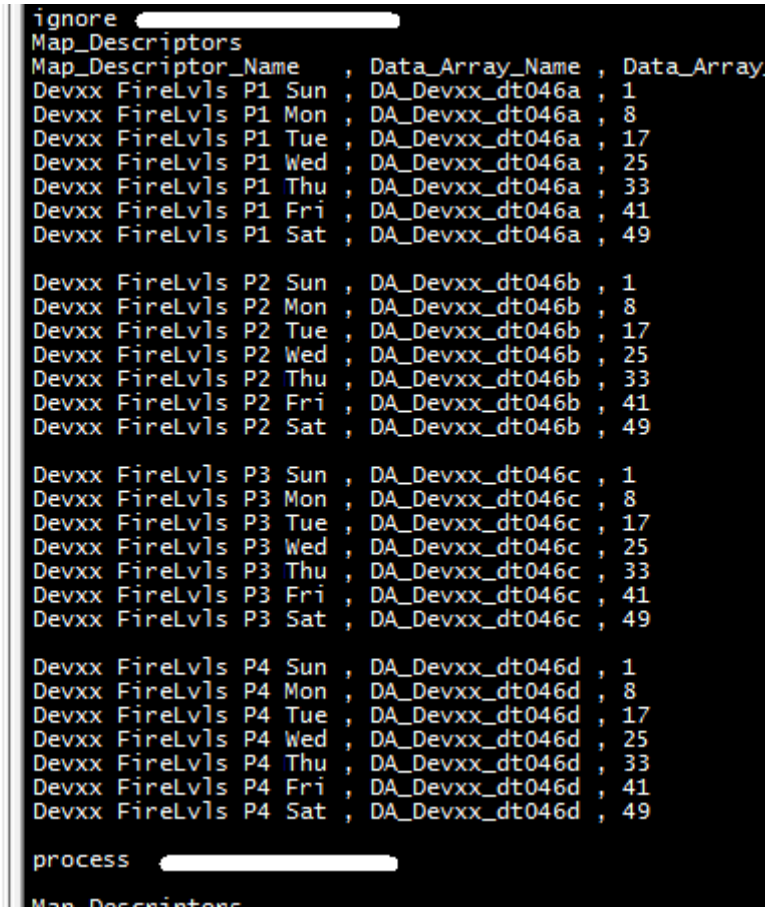
This task must be present in the config.

Note 5:

This task must be present in the config.

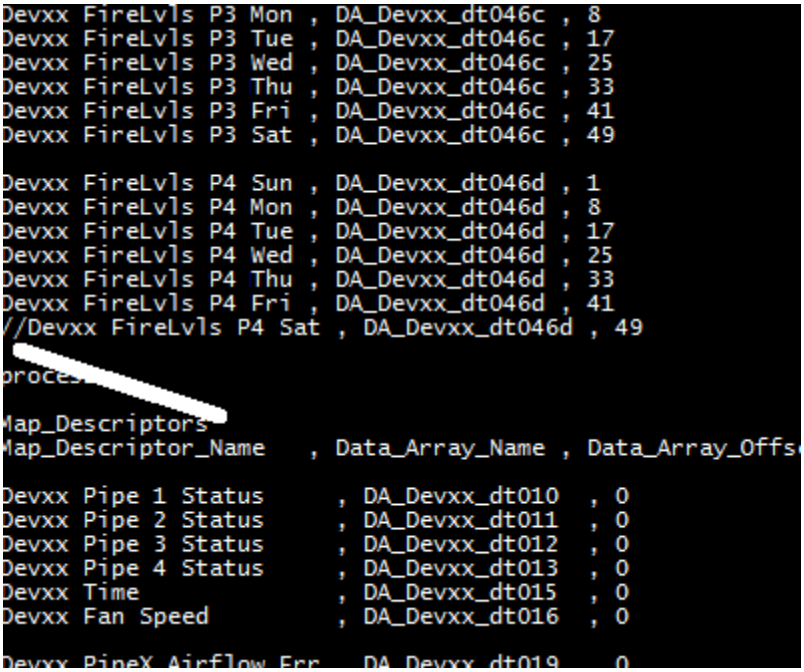
Keywords Ignore / Process

All lines between ignore and process are ignored. This is one way of commenting out points you do not require.



```
ignore [redacted]
Map_Descriptors
Map_Descriptor_Name   , Data_Array_Name , Data_Array
Devxx FireLvls P1 Sun , DA_Devxx_dt046a , 1
Devxx FireLvls P1 Mon , DA_Devxx_dt046a , 8
Devxx FireLvls P1 Tue , DA_Devxx_dt046a , 17
Devxx FireLvls P1 Wed , DA_Devxx_dt046a , 25
Devxx FireLvls P1 Thu , DA_Devxx_dt046a , 33
Devxx FireLvls P1 Fri , DA_Devxx_dt046a , 41
Devxx FireLvls P1 Sat , DA_Devxx_dt046a , 49

Devxx FireLvls P2 Sun , DA_Devxx_dt046b , 1
Devxx FireLvls P2 Mon , DA_Devxx_dt046b , 8
Devxx FireLvls P2 Tue , DA_Devxx_dt046b , 17
Devxx FireLvls P2 Wed , DA_Devxx_dt046b , 25
Devxx FireLvls P2 Thu , DA_Devxx_dt046b , 33
Devxx FireLvls P2 Fri , DA_Devxx_dt046b , 41
Devxx FireLvls P2 Sat , DA_Devxx_dt046b , 49

Devxx FireLvls P3 Sun , DA_Devxx_dt046c , 1
Devxx FireLvls P3 Mon , DA_Devxx_dt046c , 8
Devxx FireLvls P3 Tue , DA_Devxx_dt046c , 17
Devxx FireLvls P3 Wed , DA_Devxx_dt046c , 25
Devxx FireLvls P3 Thu , DA_Devxx_dt046c , 33
Devxx FireLvls P3 Fri , DA_Devxx_dt046c , 41
Devxx FireLvls P3 Sat , DA_Devxx_dt046c , 49

Devxx FireLvls P4 Sun , DA_Devxx_dt046d , 1
Devxx FireLvls P4 Mon , DA_Devxx_dt046d , 8
Devxx FireLvls P4 Tue , DA_Devxx_dt046d , 17
Devxx FireLvls P4 Wed , DA_Devxx_dt046d , 25
Devxx FireLvls P4 Thu , DA_Devxx_dt046d , 33
Devxx FireLvls P4 Fri , DA_Devxx_dt046d , 41
Devxx FireLvls P4 Sat , DA_Devxx_dt046d , 49

process [redacted]

Map_Descriptors
```

Another way is to use // at the begin of a line

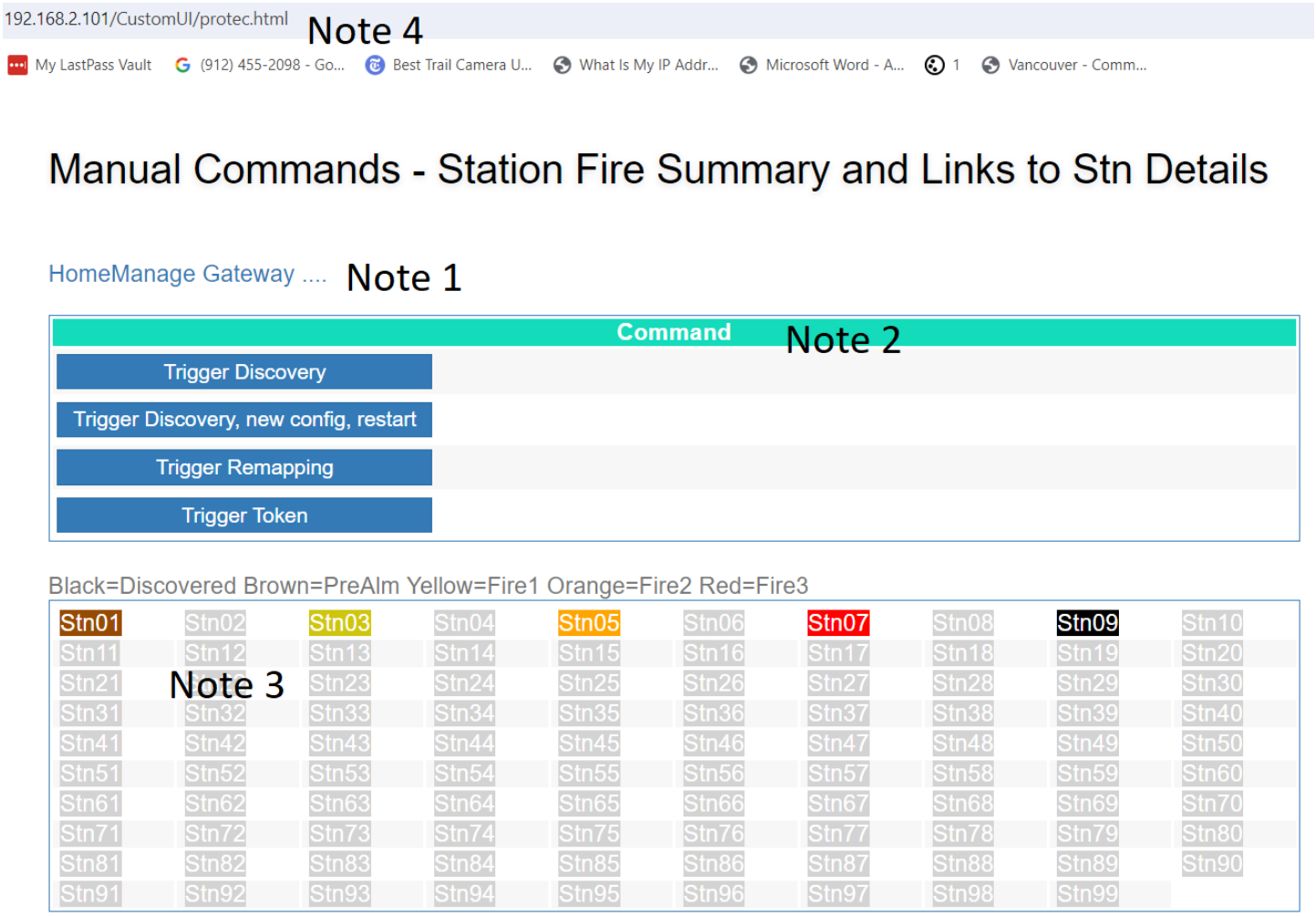


```
Devxx FireLvls P3 Mon , DA_Devxx_dt046c , 8
Devxx FireLvls P3 Tue , DA_Devxx_dt046c , 17
Devxx FireLvls P3 Wed , DA_Devxx_dt046c , 25
Devxx FireLvls P3 Thu , DA_Devxx_dt046c , 33
Devxx FireLvls P3 Fri , DA_Devxx_dt046c , 41
Devxx FireLvls P3 Sat , DA_Devxx_dt046c , 49

Devxx FireLvls P4 Sun , DA_Devxx_dt046d , 1
Devxx FireLvls P4 Mon , DA_Devxx_dt046d , 8
Devxx FireLvls P4 Tue , DA_Devxx_dt046d , 17
Devxx FireLvls P4 Wed , DA_Devxx_dt046d , 25
Devxx FireLvls P4 Thu , DA_Devxx_dt046d , 33
Devxx FireLvls P4 Fri , DA_Devxx_dt046d , 41
//Devxx FireLvls P4 Sat , DA_Devxx_dt046d , 49

proces[redacted]

Map_Descriptors
Map_Descriptor_Name   , Data_Array_Name , Data_Array_Offs

Devxx Pipe 1 Status     , DA_Devxx_dt010  , 0
Devxx Pipe 2 Status     , DA_Devxx_dt011  , 0
Devxx Pipe 3 Status     , DA_Devxx_dt012  , 0
Devxx Pipe 4 Status     , DA_Devxx_dt013  , 0
Devxx Time              , DA_Devxx_dt015  , 0
Devxx Fan Speed         , DA_Devxx_dt016  , 0

Devxx PipeX Airflow Err   DA_Devxx_dt019    0
```

Appendix E - Web Interface

Note that the web interface provided DOES NOT MEET ANY FIRECODES. It should not be used as part of any fire monitoring system.

The Web interface is simple in function and look and feel. If you wish to develop a more comprehensive interface or customize it for your corporation or project feel free to contact Chipkin for source code and help.



Note 1

Click on ‘Manage Gateway’ to get access to the UI used to install files, capture diagnostics and perform some actions that Chipkin Support may direct.

Note 2

Discover is done automatically when the gateway starts up but you can re-discover on demand

With the 1st command – discovery is performed and applied .

With the 2nd command – discovery is performed and used but in addition the gateway configuration is updated and given effect after the restart which comes at the end of the process.

With the 3rd command – Each station is told which the next node in the token passing is. This action is performed automatically at the end of the discovery process. There should be no reason to use this unless directed by Chipkin support/

You may be directed by Chipkin Support to use the 4th command

Note 3

If this part of the page is missing then that means that some relevant Data Arrays do not exist in the gateway. Goto 'Manage the Gateway' and perform a full diagnostic and then contact Chipkin Support.

Stations that are

Grey – were not discovered and will not be monitored.

Black – were discovered and the 'Fire State' is normal for all 4 pipes

Red – were discovered and the 'Fire State' is Fire 3 for any pipe

Orange – were discovered and the 'Fire State' is Fire 2 for any pipe and none of the pipes are in Fire 3

Yellow – were discovered and the 'Fire State' is Fire 1 for any pipe and none of the pipes are in Fire 2/3

Brown – were discovered and the 'Fire State' is Pre-Alarm for any pipe and none of the pipes are in Fire 1/2/3

Click a station to see more details of its current status.

Note 4

To access the web interface

1. Type in the IP address of the gateway
   OR
2. Navigate to ip/CustomUI/protec.html

Panel 03 Status and Faults

Home
Manage Gateway ....

Command	
Manual Resynch	Note 1
Get Status now - Pipe 1	
Get Status now - Pipe 2	Note 2
Get Status now - Pipe 3	
Get Status now - Pipe 4	

Offset	Parameter	Value
1	Pipe1 Status Cloud T1	0
2	Pipe1 Status Optical T1	0
3	Pipe1 Status CO	0
4	Pipe1 Status Temp. DegC	0
5	Pipe1 Status Optical THist	0
6	Pipe1 Status CO THist	0
7	Pipe1 Status Temp. THist	0

Note 1

Panels do not inform the gateway when a fault has been cleared. On a periodic basis, set in the configuration file, a Resynch is performed. When a panel is told to resynch it re-reports all active faults. You can also do this on command by clicking the button.

Note 2

Panels Status is updated on a periodic basis ,set in the configuration file, the panel Status is updated. You can also do this on command by clicking the buttons.

Appendix F - Special Data Arrays

All configurations must contain the following Data Arrays. They are used by the driver.

```
DA_MAP_INFO
DA_TOKENS
DA_TEST
DA_PAGE_FLAGS
DA_SILENCE
DA_DISCOVER
DA_DISCOVER_MAN
DA_Discovered   Used to determine the color of the buttons on the web page
DA_DSCVR_RSTART
DA_FIRESUM      Used to determine the color of the buttons on the web page
DA_REMAP
DA_TOKEN_TIMER
DA_NODETEXT
DA_BO

DA_Dev00_FIRE
DA_FIRESUM
DA_RESYNCH
DA_Dev00_FLT

DA_xx            One of these for each panel
DA_Devxx_FIRE    One of these for each panel
DA_Devxx_FLT     One of these for each panel
DA_Devxx_SYNCH   One of these for each panel
```

Appendix G - Trouble Shooting

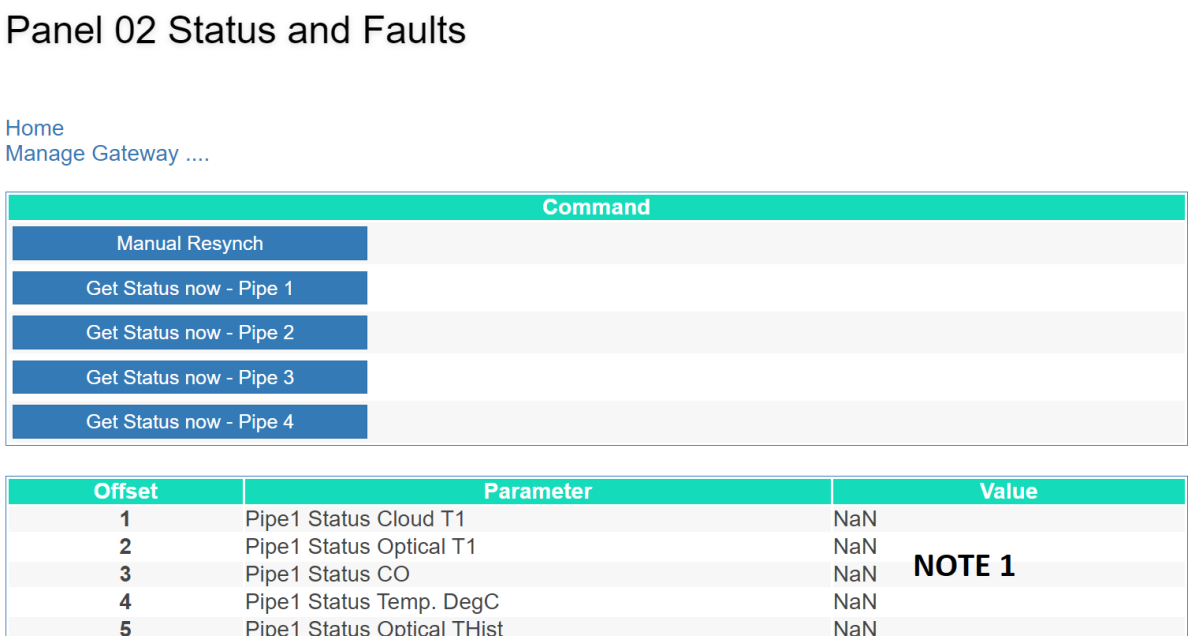
1. **Locked by RDM**

This message appears on the console of the Protec panels when the Panel's Pipe Status is read.

The screen will return to normal after 60 seconds have elapsed since the Pipe Status is read. Since this is done periodically expect to see the message repeat.

This applies to any task which uses the ProtecCMD=8 to get data.

2. Note 1 **- NaN on web pages**
   This is seen when the DA_xx Data Array is not present in the configuration. Where xx is the Panel Number.



   This could also occur on the protec.html page is the following Data Arrays are not present – DA_discovered and DA_FIRESUM.

3. When a **new panel is added to the trunk** – either perform 'Discovery with a restart' on the gateway so it can be discovered and the server (BACNet) objects can be created.

4. The CAS BACnet explorer can be used to test the gateway. Download it here

   https://store.chipkin.com/products/tools/cas-bacnet-explorer

   Learn more about BACnet by reading this booklet

5. Silence the alarm

The as shipped config has a wrbx on this mapdesc because we don't want to suppress the alarm in real life. For testing its ok. Change the wrbx to wrbc.

Broadcast Silence Cmd , DA_SILENCE , 0 , Wrbc , Dev03 , 10.0s , 2 (Silence) , - , - , 1

If you don't do this in plist.ini the next regen will default back to wrbx – as it should. Its not our job to silence alarms.

Appendix H - Generating protec_xx.html Files

Make a folder

Place protec_xx.ini in the folder – This is the template

Place dsw32.exe in this folder (find file in the pe_dev_firmware folders)

Run in a CMD window

dsw32 -chtml.csv

Quit the application.

The files will have generated

Use the ChipkinUI to upload to the FieldServer

html.csv is provided on the next page.

```
Bridge
Title                   , System_Station_Address ,
Protec Html Gen rev 1 , 99                      ,


Data_Arrays
Data_Array_Name , Data_Format , Data_Array_Length
DA_GENERATE     ,UINT16       ,100



Connections
Port , Baud  , Parity , Data_Bits , Stop_Bits , Protocol , poll_delay , timeout , ic_timeout , Protec_MaxNode , Protec_Token_Timeout
R1   , 19200 , None   , 8         , 1         , Protec   , .01s       , 2.35s   , 0.5        , 10             , 1000s


Nodes
Node_Name , Node_ID , Protocol , Port , Retry_Interval , Recovery_Interval
Devxx     , 01      , Protec   , R1   , 0.1s           , 0.1s



Map_Descriptors
//Once
Map_Descriptor_Name      , Data_Array_Name  , Data_Array_Offset , Function , Node_Name , Scan_Interval , ProtecCMD      , ProtecDataType , ProtecdBConstant , length
//Once
Generate protec_xx files , DA_GENERATE      , 0                , Wrb      , Devxx     , -             , 99 ()    , -              , -                 , 1
```

Appendix H - Generating a Configuration File Offline

The process requires

Offline.csv (from a suitable pe_dev_firmware folder)

Plist.ini (from a suitable pe_dev_firmware folder)

Dsw32.exe (from a suitable pe_dev_firmware folder)

Edit offline.csv. Preload an Preload_Data_Index for the nodes required. Example below shows for node 1 and 10.

```
Preloads
Data_Array_Name , Preload_Data_Index , Preload_Data_Value
DA_Discovered   , 1                  , 1
DA_Discovered   , 10                 , 1
```

Run in a CMD window

Dsw32 -coffline.csv

This process generates protec.csv

Appendix J - Revision History

DATE	RESP	DRIVER VER.	DOC. REV.	COMMENT
2024Jul07	PMC	1.05aB	1	For release
2024Sep27	P<C		2	Small Changes, typos etc
2025Jun26	PMC	1.05hE	3	Offline html file gen
2025Nov	PMC		4	Added flts 118, 119