MSA
The Safety Company
fieldserver

Driver Manual

FS-8700-137 Hochiki FireNET

APPLICABILITY & EFFECTIVITY
Effective for all systems manufactured after March 2021.

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1 Description

The Hochiki Serial driver allows the FieldServer to record data from Hochiki FireNET panels over RS-232 as per "Serial Port Spec Issue 2.37.pdf". There is no active polling by this driver; the communications are one-way through the panel's PC port (J5). The FieldServer acts as a Client; receives messages and records the status of a Panel. The panel MUST output messages in ASCII format in English.

This driver is not capable of emulating a Hochiki panel.

The Hochiki FireNET panel can be a standalone panel or can be part of network. Each Fire Alarm Panel on Network is considered as a Node. 64 Nodes can exist on one network.

Hochiki panel sends the events to the PC (J5) port. The FieldServer captures these events in text form, parses and stores them in Data Arrays. These Data Arrays can be monitored by third party tools. Since the FieldServer does not actively poll for data, the accuracy and timeliness of the stored data is limited to the frequency of update messages that the Hochiki Fire Panel issues.

Please note that the FieldServer can be configured with a large number of points. The point limits purchased with the FieldServer prevent the entire database from being accessed in any one application. It is therefore strongly advisable to ensure that only the point addresses of interest are configured, and that the FieldServer is purchased with the correct point count.

The types of Hochiki panel messages supported by this driver are summarized later in the manual. A detailed table shows each type of message the FieldServer recognizes and the effect that it has on the status of the points in the Data Array.

Max Nodes Supported

FieldServer Mode	Nodes	Comments
Client	1	Only one Hochiki PC Interface(J5) per port
Server	N/A	This driver cannot be configured as a Server

2 Driver Scope of Supply

2.1 Supplied by MSA Safety

Part #	Description
FS-8915-10	UTP cable (7 foot) for Ethernet connection
FS-8915-10	UTP cable (7 foot) for RS-232 use
FS-8917-18	RJ45 to DB9F connector adapter (FS-B3510)

2.2 Provided by the Supplier of 3rd Party Equipment

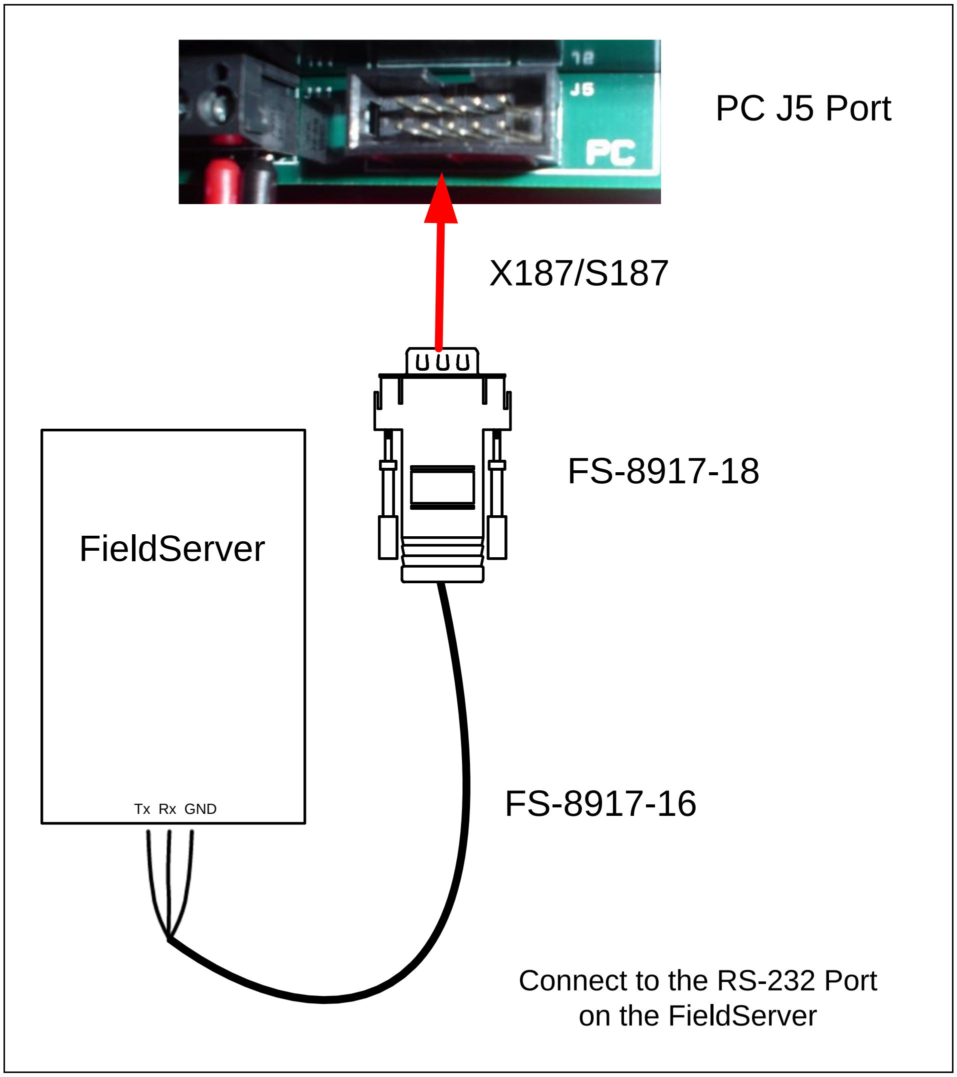
2.2.1 Required 3rd Party Hardware

Part #	Description
X187/S187	Programming cable to connect at communication port J5 of Hochiki panel

3 Hardware Connections

The FieldServer is connected to the Hochiki panel as shown in the connection drawings below.

Configure the Hochiki panel according to manufacturer's instructions.



Connector Pinouts

RJ-45		
Wire Color	**Pin**	**Signal**
Brown	1	Rx
White/Orange	8	Tx
Blue/White	4	GND

4 Data Array Parameters

Data Arrays are “protocol neutral” data buffers for storage of data to be passed between protocols. It is necessary to declare the data format of each of the Data Arrays to facilitate correct storage of the relevant data.

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, Byte, Uint16, Uint32, Sint16, Sint32
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.	1-10000

Example

```
//  Data Arrays
Data_Arrays
Data_Array_Name      , Data_Format   , Data_Array_Length
DA_HB                , UInt32        , 1
DA_1_PANEL           , UInt16,       , 13
DA_1_PNL_TRBLS       , SInt16        , 74
DA_1L1_TROUBLES      , SInt16        , 123
DA_1L1_EVENTS        , UInt16        , 127
1PNL_DEV_EVENTS      , UInt16        , 528
1PNL_DEV_TRBLS       , SInt16        , 33
```

5 Client Side Configuration

For detailed information 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 FieldServer).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a Hochiki FireNET panel.

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for Hochiki FireNET 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: In the tables below, * indicates an optional parameter, with the bold legal value as default.

5.1 Client Side Connection Parameters

Section Title		
Connections		
Column Title	**Function**	**Legal Values**
Port	Specify which port the device is connected to the FieldServer.	P1-P2, R1-R2[1]
Protocol	Specify protocol used.	Hochiki
Baud*	Specify baud rate.	**19200**
Parity*	Specify parity.	**None**
Data_Bits*	Specify data bits.	**8**
Stop_Bits*	Specify stop bits.	**1**
Timeout*	Specify heartbeat timeout (see **Section** 8.1.1).	0-3600s, **20s**

Example

```
//    Client Side Connections
Connections
Port     , Protocol     , Baud      , Parity     , Data_Bits     , Stop_Bits     , Timeout
P1       , Hochiki      , 19200     , None       , 8             , 1             , 20s
```

5.2 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*	Provide the address of the Panel.	**1** – 64
Protocol	Specify Protocol used.	Hochiki
Port	Specify through which port the device is connected to the FieldServer.	P1-P2, R1-R2[1]

Example

```
//    Client Side Nodes
Nodes
Node_Name     , Node_ID,     , Protocol     , Connection
HOC_01        , 1            , Hochiki      , P1
```

[1] Not all ports shown may be supported by the hardware. Consult the appropriate Instruction manual for details of the hardware.

5.3 Client Side Map Descriptor Parameters

5.3.1 FieldServer Specific 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

5.3.2 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	Data type	Panel, Panel_Trouble, Trouble, Alarm, Panel_Device_Alarm, Panel_Device_Trouble, Heartbeat
Length	Length of Map Descriptor indicates the number of devices except in the case of panel related messages where it is the number of Data Array elements that will be used to store data.	Any integer
Address*	Device address – offset into the data array where data will be stored for a particular device. Specify 0 to store loop events or troubles unrelated to any specific device on the loop.	**0**, any integer
Max_Sub_Address*	Maximum number of sub addresses of device. If there is no sub address or Data_Type is Trouble specify - .	**-**, any integer
Loop	Specify the SLC loop number.	1-4

5.4 Map Descriptor Examples

5.4.1 Read Indications

5.4.1 Panel Map Descriptor Example

The following panel level Map Descriptors are used to process panel related messages:

HOC_HB Map Descriptor increments the value of DA_HB Data Array upon receiving heartbeat message from the panel. It will store a 0 value if there is a timeout and will also mark the Node offline.

HOC_1_PANEL Map Descriptor stores the panel state.

HOC_1_PANEL_TROUBLES Map Descriptor stores panel troubles.

```
//   Client Side Map Descriptors
Map_Descriptors
Map_Descriptor_Name       , Data_Array_Name     , Data_Array_Offset   , Function    , Node_Name   , Data_Type      , Length
HOC_HB                    , DA_HB               , 0                   , Passive     , HOC_01      , Heartbeat      , 1
HOC_1_PANEL               , DA_1_PANEL          , 0                   , Passive     , HOC_01      , Panel          , 13
HOC_1_PANEL_TROUBLE       , DA_1_PNL_TRBLS      , 0                   , Passive     , HOC_01      , Panel_Trouble  , 74
```

In the above example:

- Data_Array_Name – Name of one of the Data Arrays defined in the Data_Array section. Indication statuses will be stored in this Data Array.
- Node_Name – One of the Nodes declared in Node Section. Indications will be read from the station address belonging to this Node.
- Data_Type – Specify: Heartbeat to store Heartbeat counts. Panel to store panel state. Panel_Troubles to store panel troubles (see **Section 8.1**).
- Length – Length is the number of Data Array elements that are used to store data.

5.4.2 Loop Map Descriptor Example

The following Loop level Map Descriptors are used to process loop or loop device messages:

HOC_1L1_TROUBLES Map Descriptor is used to store troubles from Loop 1. The number of loop troubles is stored at offset 0. The number of troubles for each device is stored at the offset corresponding to the device address. Refer to **Section** 8.1.2 for more information.

HOC_1L1_EVENTS Map Descriptor is used to store all events other than troubles for loop1. Loop events unrelated to any specific device are stored at offset 0. The total number of events for each device is stored at the offset corresponding to the device address. For storage format details, see **Section** 8.1.4.

HOC_1L1_EVENTS2 is an example of the device address 14 and have 2 sub addresses. Driver will store events for first sub address at offset 14 and for 2nd address at offset 15.

```
//   Client Side Map Descriptors
Map_Descriptors
Map_Descriptor_Name      , Data_Array_Name      , Data_Array_Offset     , Function     , Node_Name    , Data_Type
HOC_1L1_TROUBLES         , DA_1L1_TROUBLES      , 0                     , Passive      , HOC_01       , Trouble
HOC_1L1_EVENTS           , DA_1L1_EVENTS        , 0                     , Passive      , HOC_01       , Alarm
HOC_1L1_EVENTS2          , DA_1L1_EVENTS        , 14                    , Passive      , HOC_01       , Alarm
```

```
, Address        , Max_Sub_Address          , Loop        , Length
, 0              , -                        , 1           , 16
, 0              , -                        , 1           , 14
, 14             , 2                        , 1           , 2
```

In the above example:

- Data_Array_Name – Name of one of the Data Arrays defined in the Data_Array section. Indication statuses will be stored in this Data Array.
- Data_Array_Offset – Offset into data array where data from a particular device is stored. Specify 0 to store loop events or troubles unrelated to any device on loop.
- Node_Name – One of the Nodes declared in Node Section. Indications will be read from the station address belonging to this Node.
- Data_Type – **Trouble:** to store number of troubles on device or on loop. **Alarm:** to store all events other than Troubles on Loop or device. See **Section** 8.1.4 for details.
- Max_Sub_Address – Maximum number of sub addresses of device. If there is no sub address or Data_Type is Trouble specify -.
- Length – Number of sequential devices. If Max_sub_address is non-zero then length should be the number of devices * max_sub_address. Any range of devices i.e. address to address + number of devices should have same max_sub_adress.

5.4.3 Communication Bus Map Descriptor Example

The following communication bus Map Descriptors are used to store events from devices connected directly to the panel:

HOC_1_PANEL_DEVTROUBLE Map Descriptor stores troubles from two devices with address 1 and 2. For storage format refer to **Section** 8.1.2.

HOC_1_PANEL_DEV Map Descriptor stores all events other than troubles from two devices with address 1 and 2 each with 16 sub addresses

Events from device 1, sub-addresses 1-16 will be stored in Data_Array 1PNL_DEV_EVENTS at offsets 0-15. Events from device 2, sub-address 1-16 will be stored at offsets 16-31. For storage format refer to **Section** 8.1.4.

```
//   Client Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name          , Data_Array_Name      , Data_Array_Offset     , Function      , Node_Name
HOC_1_PANEL_DEVTROUBLE       , 1PNL_DEV_TRBLS       , 0                     , Passive       , HOC_01
HOC_1_PANEL_DEV              , 1PNL_DEV_EVENTS      , 0                     , Passive       , HOC_01
```

```
, Data_Type             , Address  , Max_Sub_Address  , Length
, Panel_Device_Trouble  , 1        ,-                 , 2
, Panel_Device_Alarm    , 1        , 16               , 32
```

In the above example:

- Data_Array_Name – Name of one of the Data Arrays defined in the Data_Array section. Indication statuses will be stored in this Data Array.
- Data_Array_Offset – Offset into data array where data from a particular device is stored.
- Node_Name – One of the Nodes declared in Node Section. Indications will be read from the station address belonging to this Node.
- Data_Type – Specify: Panel_Device_Trouble to store number of troubles on device. Panel_Device_Alarm to store all events other than Troubles on device.
- Max_Sub_Address – Specify maximum number of sub addresses of device. If there is no sub address or Data_Type is Panel_Device_Trouble specify -.
- Length – Specify number of sequential devices. If Max_sub_address is non-zero then length should be number of devices * max_sub_address. Any range of devices i.e.address to address + number of devices should have same max_sub_address.

6 Useful Features

6.1 Data Synchronization

The Fire Panel and the FieldServer can be synchronized as follows:

- When in its normal state i.e. when no alarms or troubles are present, the panel can be connected to the FieldServer. The FieldServer will then reset its internal data.
- Cycling power to the panel while connected to the FieldServer will cause the FieldServer to reset its internal data to synchronize with the panel.

NOTE: Pressing "RESET" on the panel will not force the panel to resend all the alarms and troubles to FieldServer. Resetting the panel sends only latched alarms, such as Fire.

7 Troubleshooting

7.1 Heartbeat Data

If heartbeat data is frequently reset to 0 the timeout parameter value declared on the connection may be too short. The panel sends a heartbeat message after every 5 to 10 seconds - the timeout value should be set to 20 – 30s.

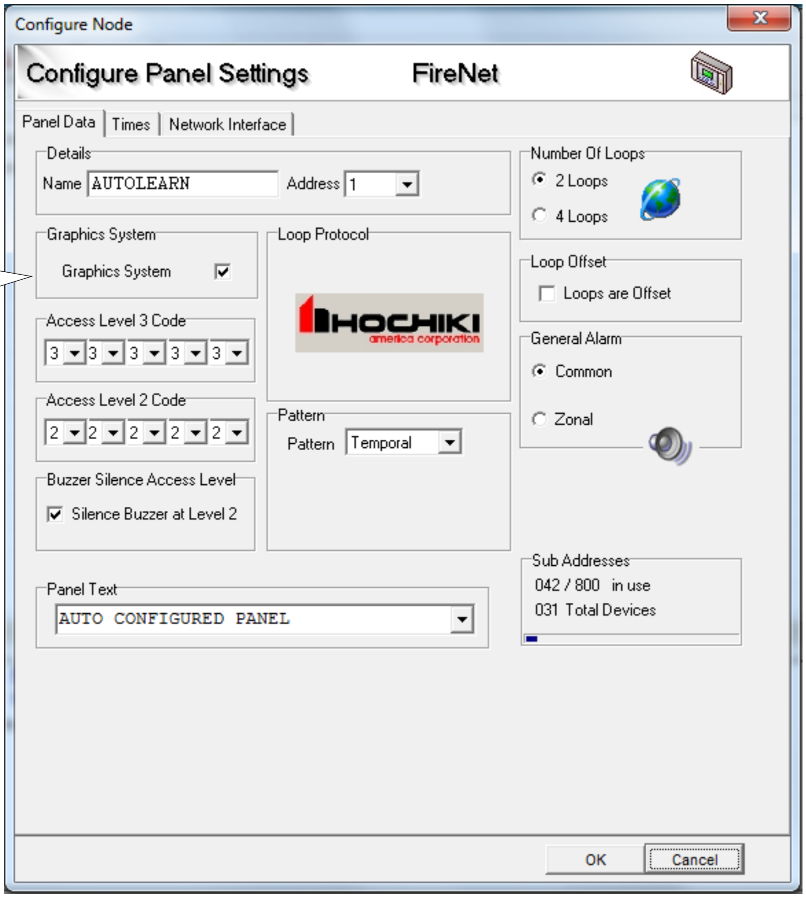
7.2 Using HyperTerminal to Address Communication Problems

If the heartbeat value is always 0 and the connection overview screen shows no increments to RX Char on the Hochiki connection, connect the panel to HyperTerminal and attempt to generate an event. If there is no message on the HyperTerminal, obtain the correct settings from the manufacturer to allow the panel to communicate with HyperTerminal. Retry connecting to the FieldServer using the same connection parameters as used in HyperTerminal.

7.3 Clear on Reset

The FieldServer needs to receive a CLEAR message before it will clear the active events in the Data Array. The Graphics System check box needs to be selected in order for the Panel to send a CLEAR message when a RESET is triggered. Refer to the screenshot below.

The "Graphics System" box must be checked. Otherwise the panel will not send the heartbeat poll or clear events.



Configure Node

Configure Panel Settings FireNet

Panel Data | Times | Network Interface

Details: Name AUTOLEARN, Address 1

Number Of Loops: ● 2 Loops ○ 4 Loops

Graphics System: Graphics System ☑

Loop Protocol

Loop Offset: □ Loops are Offset

Access Level 3 Code: 3 3 3 3 3

General Alarm: ● Common ○ Zonal

Access Level 2 Code: 2 2 2 2 2

Pattern: Pattern Temporal

Buzzer Silence Access Level: ☑ Silence Buzzer at Level 2

Sub Addresses: 042 / 800 in use, 031 Total Devices

Panel Text: AUTO CONFIGURED PANEL

8 Reference

8.1 Data Types

8.1.1 Heartbeat

The Driver increments the value by 1 whenever it receives a heartbeat message from the panel. If the panel times out (no heartbeat message received in the time specified by the timeout parameter on the connection) the Driver stores a value of 0 indicating communication loss and will also mark the Node offline. The panel sends a heartbeat message after every 5-10 seconds – the timeout value should be set to 20-30s.

8.1.2 Panel

The Panel Data Type indicates whether the events listed in the table below are present globally on the panel.

Event Type	Data Array Offset
FIRE	0
FIRE DRILL	1
PRE ALARM	2
SECURITY	3
DISABLEMENT	4
SUPERVISORY	5
STATUS	6
EMERGENCY	7
AUXILIARY	8
SILENCE ALARM	9
RESET	10
USER MESSAGE (Alarm Resound)	11
TEST MODE	12

8.1.3 Panel Troubles

Panel troubles are troubles that are not associated with any device or loop, e.g. Battery Disconnected or Low Battery Voltage.

The Driver stores each trouble at a different memory location as per the event number. Refer to **Section 8.2**.

8.1.4 Alarms

The Driver stores different alarm types as 16bit integers as per the table below:

Event Type	Decimal value	Bit Offset
FIRE	1	0
FIRE DRILL	2	1
PRE ALARM	4	2
SECURITY	8	3
DISABLEMENT	16	4
SUPERVISORY	32	5
STATUS	64	6
EMERGENCY	128	7
AUXILIARY	256	8
SILENCE ALARM	512	9
RESET	1024	10
USER MESSAGE (Alarm Resound)	2048	11
TEST MODE	4096	12

If a device has more than one event, the value will be the sum of both events. For example, if the device is Supervisory and Pre-Alarm the driver will store a value of 32+4=36.

Individual alarms can be extracted from these integers by using the Bit_Extract function. Refer to the FieldServer Configuration manual for an example.

8.1.5 Troubles

The Driver stores the number of troubles currently existing on any loop, loop device or communication bus device. The Driver increments the value upon receiving a trouble message and decrements it when a trouble cleared message is received.

8.2 Event Number and Description Table

Event #	Event Descriptor
0	Internal trouble
1	Maintenance trouble
2	Detector removed
3	Slave line open circuit
4	Slave line short circuit
5	Disconnected trouble
6	Double address
7	Monitored output trouble
8	Unknown device
9	Unexpected device
10	Wrong device type
11	Initializing Device
12	System initializing
13	Autolearn
14	New config downloaded from PC
15	Ground trouble
16	Loop wiring trouble. Press ? for details
17	Loop short circuit
18	Loop open circuit
19	AC Power Failure
20	Low battery voltage
21	Battery disconnected
22	Battery voltage too high
23	Aux 24V fuse trouble
24	Charger Trouble
25	Processor Watch Dog operated
26	Bad data trouble
27	Unknown event trouble
28	Pre alarm
29	Calibration failed trouble
30	Device initializing
31	Input Activated
32	Cause & Effect Active
33	Loop Not Installed
34	Unexpected Loop
35	Sub address limit reached
36	I/O Module not installed
37	Unexpected I/O Module
38	Unexpected network node
39	Unknown network type
40	Network node missing
41	Unexpected network card
42	Network card not installed
43	Network card address incorrect
44	Network open or short circuit
45	Network comms trouble
46	Network comms timeout
47	Network address invalid
48	Fire Drill Active
49	Unknown
50	Communicator Missing
51	Comms Fail
52	Comms Phone Line 1 Trouble
53	Comms Phone Line 1 Restored
54	Comms Phone Line 2 Trouble
55	Comms Phone Line 2 Restored
56	Disabled device
57	Disabled zone
58	Disabled loop
59	All sounders disabled
60	Disabled panel input
61	Disabled panel output
62	CE disablement
63	Buzzer Disabled
64	Printer Disabled
65	Ground trouble Disabled
66	Disablement
67	Test mode
68	Unexpected IO Board
69	IO Board Missing
70	Enunciator missing
71	Unexpected IO Board
72	Sensor Fire test pass
73	Sensor Fire test fail

8.2.1 Message Types Recognized by the Driver

Message Type
Heartbeat
Fire
Fire drill
Pre alarm
Security
Disablement
Supervisory
Status
Emergency
Auxiliary
Silence alarm
Reset
User message (resound)
Test mode
Trouble