



Fratech **FE900**
Digital IP Receiver

from **ir** inner range www.innerrange.com
Intelligent Security Solutions

Software Guide

Contents

FE900 Receiver Basics	3
Installing the FE900 Software	4
Requirements.....	4
Installation Procedure	6
Quick-start FE900 Configuration	7
The Main Window (always displayed)	11
The Receiver Window	13
Configuring the Receiver.....	16
Configuring General Options	17
Configuring the Automation System	19
Configuring Line Cards	21
Advanced Configuration.....	23
Updating Firmware.....	24
Displaying Card Details	26
CPU Card Details.....	27
Line Card Details	29
Configuration History	32
Selection Criteria Pane	32
Revision pane	33
Tasks.....	34
The Event Log Window.....	35
Selection Criteria.....	36
Event Log Window Columns.....	38
Printing the Event Log.....	40
The Caller ID Window.....	41
Selective Answer (Caller-ID Based Call Rejection)	41
Line Statistics	43
Printing Statistics	45
Line Audio	46
Manual Listen/Capture	47
Triggered Capture	48
Capture Task Menu	48
Capture Task Edit Screen.....	49
Handshakes and Formats	51
ADEMCO Type Handshakes	52
TONE1400 Type Handshakes	53
TONE2300 Type Handshakes	53
MODEM Type Handshakes	53
Discovered FE900 Receivers	54
Discovered Receiver Tasks	54
Audio Listen In	56
Automation Protocols.....	57
SIA Format Support	57
TCP/IP Connection to an Automation System.....	57
Hot Standby CPU Operation	58
Mastership Switchover.....	58
Emergency CPU Cards.....	59
User Permissions	60
Appendices	62
Appendix 1 – Network Supplement	63
Appendix 2 – Error Codes.....	64

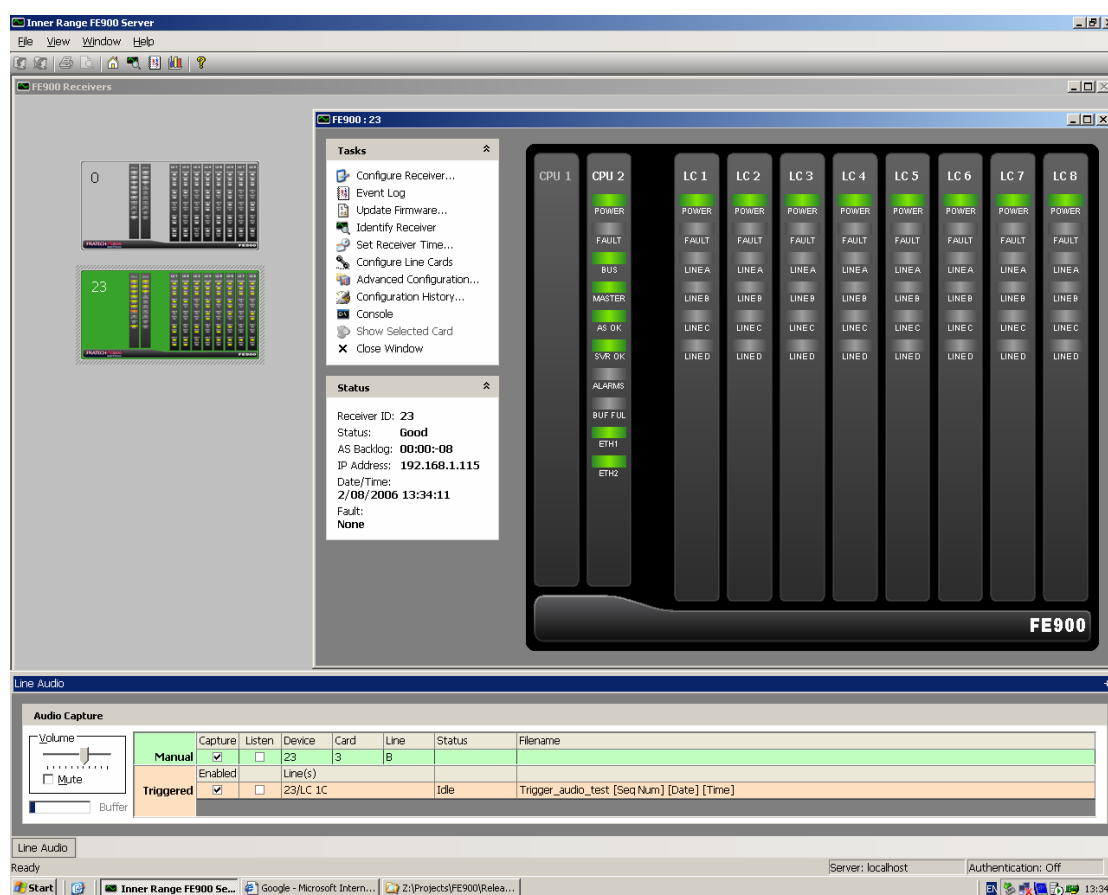
FE900 Receiver Basics

The FE900 Receiver is a multi-format digital receiver able to decode alarm information over a variety of PSTN protocols and pass that information onto one or two Automation Systems via either RS232 or Ethernet. In addition, alarm information is passed to the FE900 Client/Server application using Ethernet only.



The **FE900 Client/Server application** (aka FE900 Software) can be used to view event information independently of the Automation System and is also used for configuration and debugging of the FE900 receiver.

The FE900 Client/Server application connects to up to 255 FE900 Receivers on an Ethernet network. A route must exist between the FE900 Receivers and the FE900 Client/Server and must support Multicast IP. Multicast IP is used to allow the FE900 Receivers and Client/Server software to connect automatically. This can be achieved with the appropriate router or a sufficiently broad subnet mask.



Installing the FE900 Software

Requirements

The FE900 configuration and management software is of a client/server design. In an FE900 system, there is always one 'server' PC. There may also be any number of optional 'client' PCs.

The 'server' PC hosts a server application and a client application. The server application communicates with the FE900 receiver(s) and manages a database, which amongst other things contains events from FE900 Receivers. The FE900 software client is the interface operators use to interact with the receiver(s). All PC communications to FE900 receivers are routed via the 'server' application. The requirements for the 'server' PC are thus slightly higher than for 'client' machines.

Note

If there is a need to access more than 100,000 call events at a time for reporting, etc., then SQL Server 2005 will be required due to the resultant size of the FE900 software's database.



Server PC Requirements

Minimum

- Windows® XP Professional / Windows® Vista
- Intel® Pentium 4 3GHz, AMD® Athlon 3000
- 512Mb RAM (May limit performance & some features)
- 120Gb HDD
- SVGA monitor at 800 x 600, 16 bit colour
- Keyboard & Microsoft Mouse or compatible pointing device
- 100Base-T Network Interface card for TCP/IP networking

Recommended

- Windows® 2003 Server
- SQL Server 2005 (For larger installations. Also requires Windows® 2003 Server)
- Intel® Xeon 3GHz / AMD® Opteron 3000 or better
- 1Gb RAM
- 120Gb HDD, RAID 1 (mirroring)
- XVGA monitor at 1024 x 768, 24 bit colour

Client PC Requirements

Minimum

- Windows® XP Professional / Windows® Vista
- Intel® Pentium 4 3GHz, AMD® Athlon 3000
- 512Mb RAM (May limit performance & some features)
- 10Gb HDD
- SVGA monitor at 800 x 600, 16 bit colour
- Keyboard & Microsoft Mouse or compatible pointing device
- 100Base-T Network Interface card for TCP/IP networking

Network Requirements

An FE900 can use up to 4 Ethernet connections. The following requirements apply to the TCP/IP network:

- The FE900 Receiver uses one or two full-duplex 10Mbit Cat5 type Ethernet connections per CPU Card
- Both TCP and UDP are used by the FE900 to communicate over Ethernet

- A DHCP server is required on the network to establish unique Internet Protocol (IP) addresses.
- The DHCP server **must** be pointing at a gateway on the same subnet as the FE900 Receiver(s). The gateway must **not** be 0.0.0.0.
- The network path between each FE900 Receiver and the FE900 software server component **must** support multicast addressing. (Note that most switches and routers support multicast addressing, but not all).

Note

Most networks meet the above requirements and therefore, in most cases the FE900 Receiver should communicate over the network “straight out of the box”. If difficulties with the network arise, please consult the [Network Supplement](#) in this document.



Installation Procedure

1. Ensure that all PCs intended for use with the FE900 software meet the [requirements](#).
2. The PC that is designated as the 'server' should be identified first. Whilst there can be many FE900 Receivers in a system and many PCs to interact with the receivers, there is typically only one FE900 'server' PC in a system.



Tip

There is usually only one FE900 'server' PC needed in a system.

3. The FE900 software on the CD has an installer for the FE900 both the server and client components of the FE900 and an installer for the FE900 client component. The FE900 software CD should be inserted into the 'FE900 Server PC'.
4. To install the software, run the Setup.exe file on the CD.
5. The installer will prompt for an installation directory. The default installation location is, "C:\Program Files\Inner Range\FE900\". If the default location is suitable, select "OK". If required, browse to a different location and then select, "OK"
6. Prior to writing any files, the installer will check for the presence of:
 - .NET Framework v2.0
 - MSDE engine, SQL Express 2005 or SQL Server
7. If either of the above are not found, the installer will indicate what is missing and offer to run the installer for the missing component(s). If this is the case, install the missing co-requisite software, then run the FE900 installer again.
8. As soon as a successful installation is completed, the installer will start the FE900 software server component. Any FE900 Receivers on the network will connect to the FE900 software server. (Verification of this step can be done by checking that the windows service, "Inner Range FE900 Service" is running).
9. The installer should have also installed the client component of the FE900 software on the machine. This is the user interface from which one interacts with FE900 Receivers. Run the client by selecting, "Inner Range > FE900 > FE900 Client" from the "Start" menu.
10. In the main view of the FE900 client software, any FE900 Receivers on the local network will be shown as icons.

Installing the FE900 Client on other PCs

During the installation process, an installer for the FE900 client component is placed in the folder containing the FE900 software. If the software was installed to the default location, the client component installer files can be found at: "C:\Program Files\Inner Range\FE900\Client Installer\"

Prior to installation of the FE900 client software on other client machines, either:

- Make the "ClientInstaller.vbs" and "Client.msi" files available through the network, or
- Copy the files to some portable media

To install the FE900 client software on other 'client' machines:

1. From the target 'client' machine, navigate to the network location or portable media where the installation files are located and run "ClientInstaller.vbs"
2. The installer will prompt for an installation directory on the local machine (the target 'client' machine). The default installation location is, "C:\Program Files\Inner Range\FE900\". If the default location is suitable, select, "Next". If required, browse to a different location, select "OK" to set the location, then select, "Next".
3. The installer will then prompt for the network name or IP address of the machine containing the FE900 software 'server' component. The default value will be the computer name of the machine the FE900 software server was installed on. If the default value is correct, select, "OK". Otherwise, enter the details for the desired FE900 server and select, "OK".

Quick-start FE900 Configuration

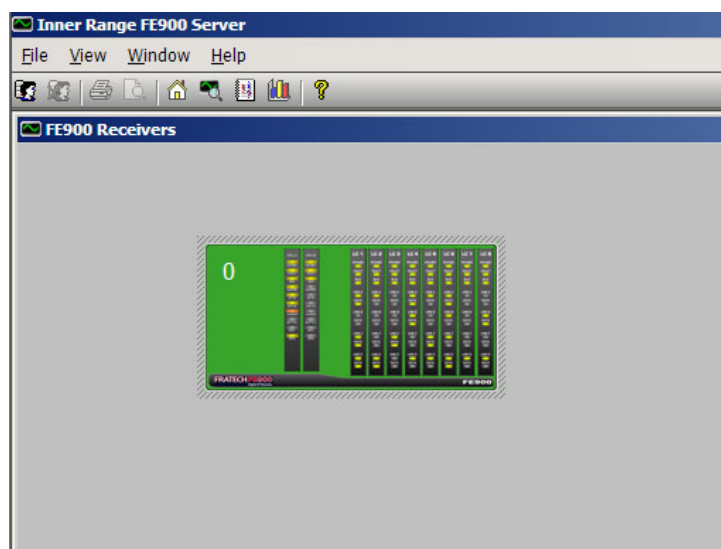
This section is intended only as a brief guide. Full details are in [Configuring the Receiver](#).

Tip

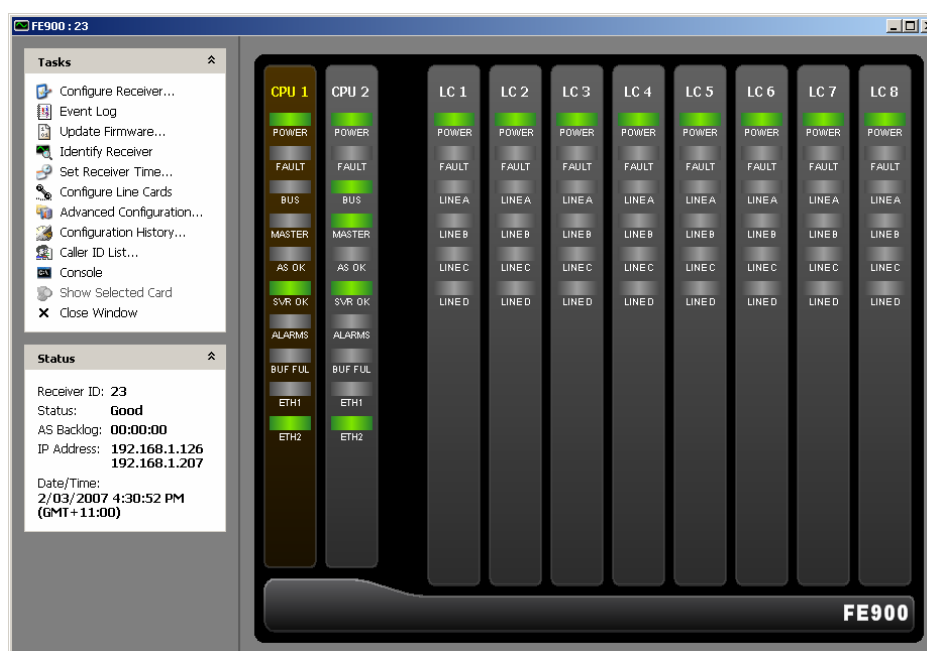
For ease of installation, it is strongly advised that new FE900 Receivers are added to a system and configured **one at a time!** This means that in the case of adding two or more FE900s to a system, that only the first receiver is powered to start with. Once a receiver is configured, the next new FE900 can be powered up and configured and so on.

Receiver Configuration

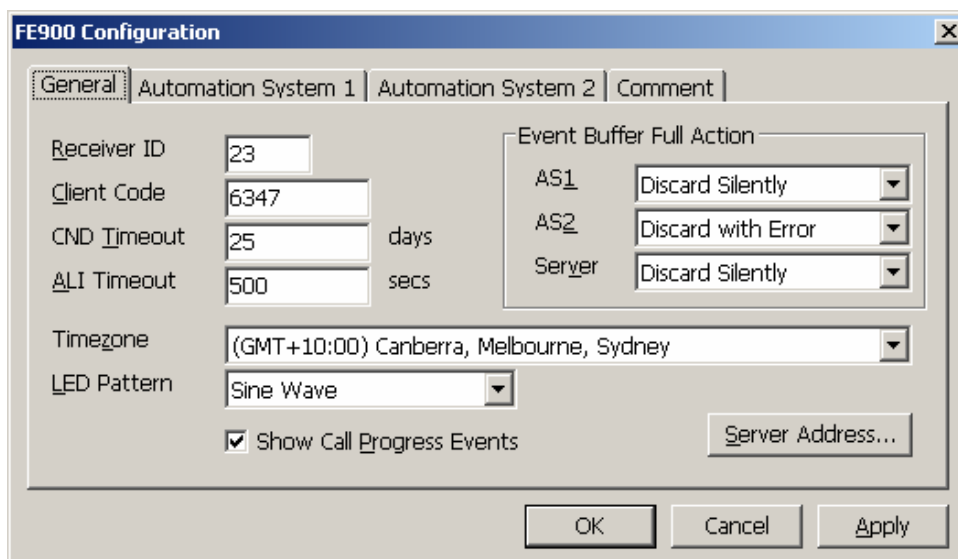
1. Run the FE900 software
2. From the main interface, select the new FE900 by double-clicking it. (A factory default FE900 will show up as a green icon with the identifier of, "0" in the top left corner).



3. After double-clicking the new FE900 Receiver, a window showing a mimic of the front panel will appear in the bottom half of the main interface showing all installed CPU and Line Cards. This is the, "Device Details" window.



4. Select the, "Configure" button. A Configuration dialog will appear.



The image shows the 'FE900 Configuration' dialog box with the 'General' tab selected. The 'Automation System 1' tab is also visible. The 'General' tab contains the following fields and controls:

- Receiver ID:** Text box with value '23'.
- Client Code:** Text box with value '6347'.
- CND Timeout:** Text box with value '25' and a unit dropdown set to 'days'.
- ALI Timeout:** Text box with value '500' and a unit dropdown set to 'secs'.
- Timezone:** Dropdown menu showing '(GMT+10:00) Canberra, Melbourne, Sydney'.
- LED Pattern:** Dropdown menu showing 'Sine Wave'.
- Event Buffer Full Action:** A group box containing three dropdowns:
 - AS1: Discard Silently
 - AS2: Discard with Error
 - Server: Discard Silently
- Show Call Progress Events:** A checked checkbox.
- Server Address...:** A button to open a server address selection dialog.

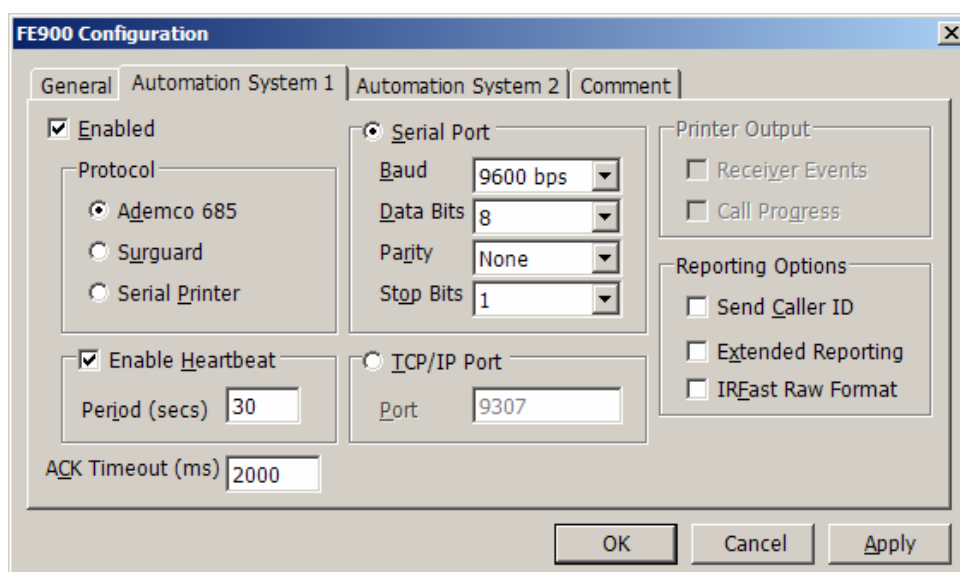
At the bottom are 'OK', 'Cancel', and 'Apply' buttons.

5. First of all, set the **Receiver ID** to a unique, non-zero number. The valid range for this value is 1-255.

Tip

It is highly recommended that the Receiver ID is marked on the physical FE900 Receiver using a Dymo label or similar.

6. Next, set the **Client Code**. This Client Code is to identify the FE900 Receiver to the Automation System. The Client Code is six digits long. The first two digits are "R/L" (Receiver Number and Line Number) and the last four digits are for the ContactID Client Code. The default value is 99999.
7. Set the **Time Zone** that the FE900 Receiver is located in.
8. Now select the, "Automation System 1" or, "Automation System 2" tab. Automation System 1 corresponds to the Automation System (A.S.) connected to the AS1 DB9M connector on the rear of the FE900 Receiver. (This Quick-start assumes that the A.S. is connected using RS232).



The image shows the 'FE900 Configuration' dialog box with the 'Automation System 1' tab selected. The 'General' tab is also visible. The 'Automation System 1' tab contains the following fields and controls:

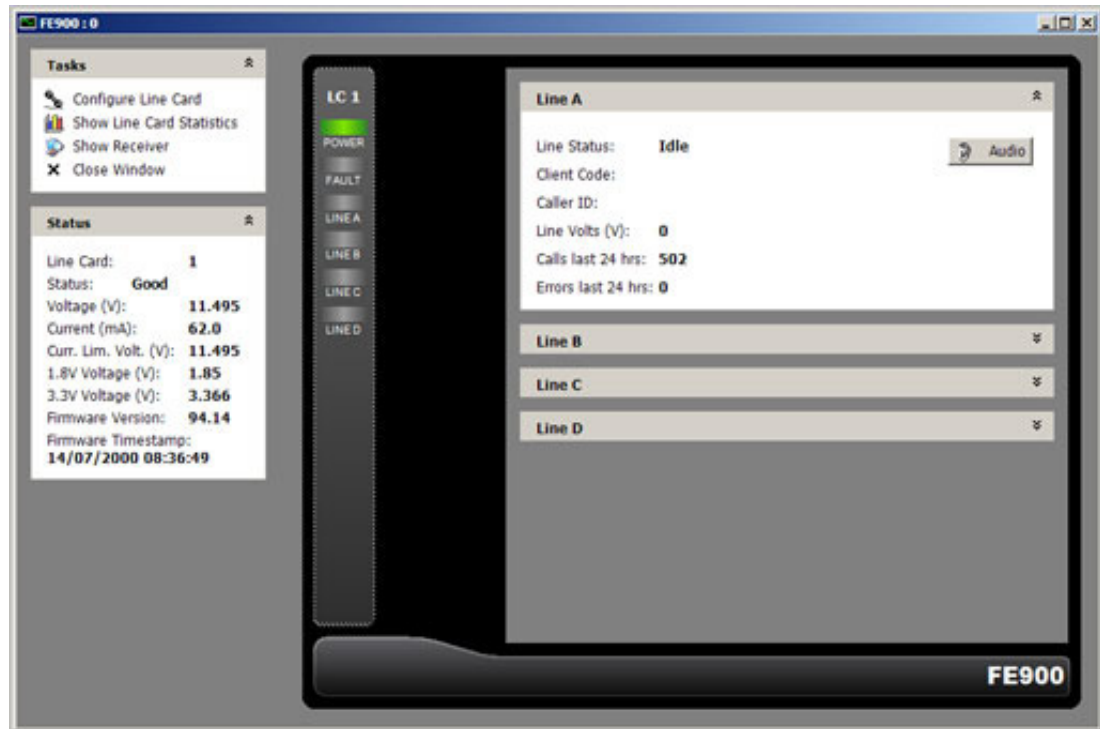
- Enabled:** A checked checkbox.
- Protocol:** A group box containing three radio buttons:
 - Ademco 685 (selected)
 - Surguard
 - Serial Printer
- Serial Port:** A group box containing four dropdowns:
 - Baud: 9600 bps
 - Data Bits: 8
 - Parity: None
 - Stop Bits: 1
- Printer Output:** A group box containing two checkboxes:
 - Receiver Events (unchecked)
 - Call Progress (unchecked)
- Reporting Options:** A group box containing three checkboxes:
 - Send Caller ID (unchecked)
 - Extended Reporting (unchecked)
 - IRFast Raw Format (unchecked)
- Enable Heartbeat:** A checked checkbox.
- Period (secs):** Text box with value '30'.
- ICP/IP Port:** A group box containing a text box for 'Port' with value '9307'.
- ACK Timeout (ms):** Text box with value '2000'.

At the bottom are 'OK', 'Cancel', and 'Apply' buttons.

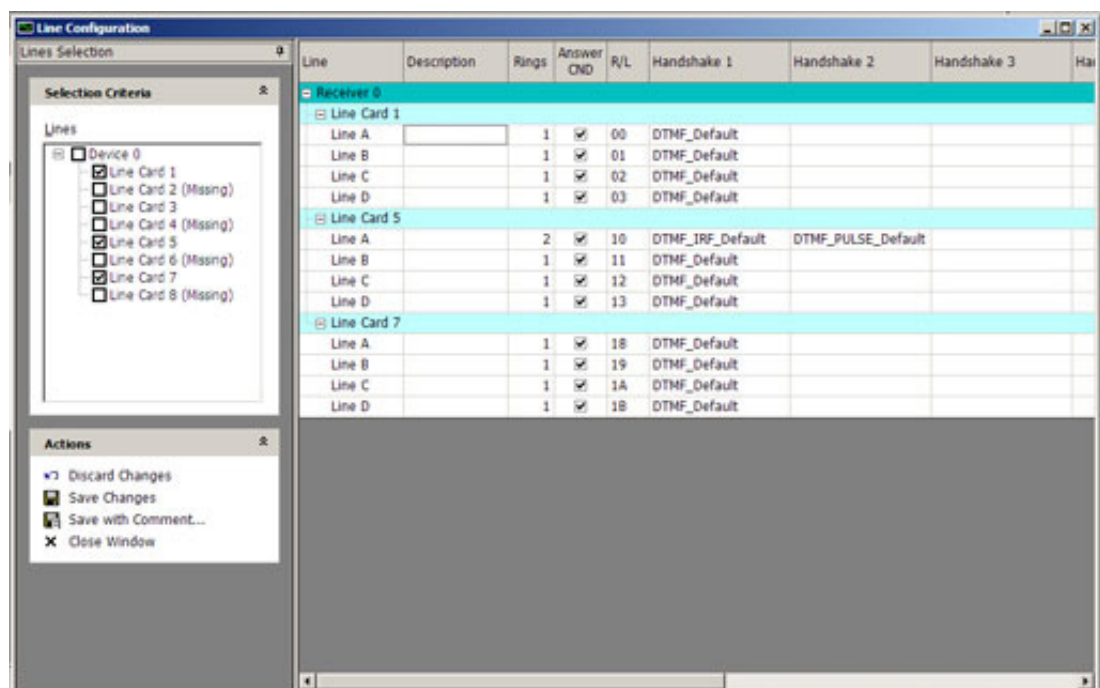
9. Select the, "Enable" checkbox.
10. Set the **Protocol** with which to communicate with the Automation System.
11. Set the **Serial Settings** to match the Automation System connection.
12. Select, "OK" to commit the changes and close the dialog. The view returns to the mimic in the Device Details view.

Line Card Configuration

1. Select a Line Card by double-clicking it. A "Line Card Details" window appears revealing operating parameters of the Line Card, such as Line Status, etc.



2. Select the, "Configure" button.



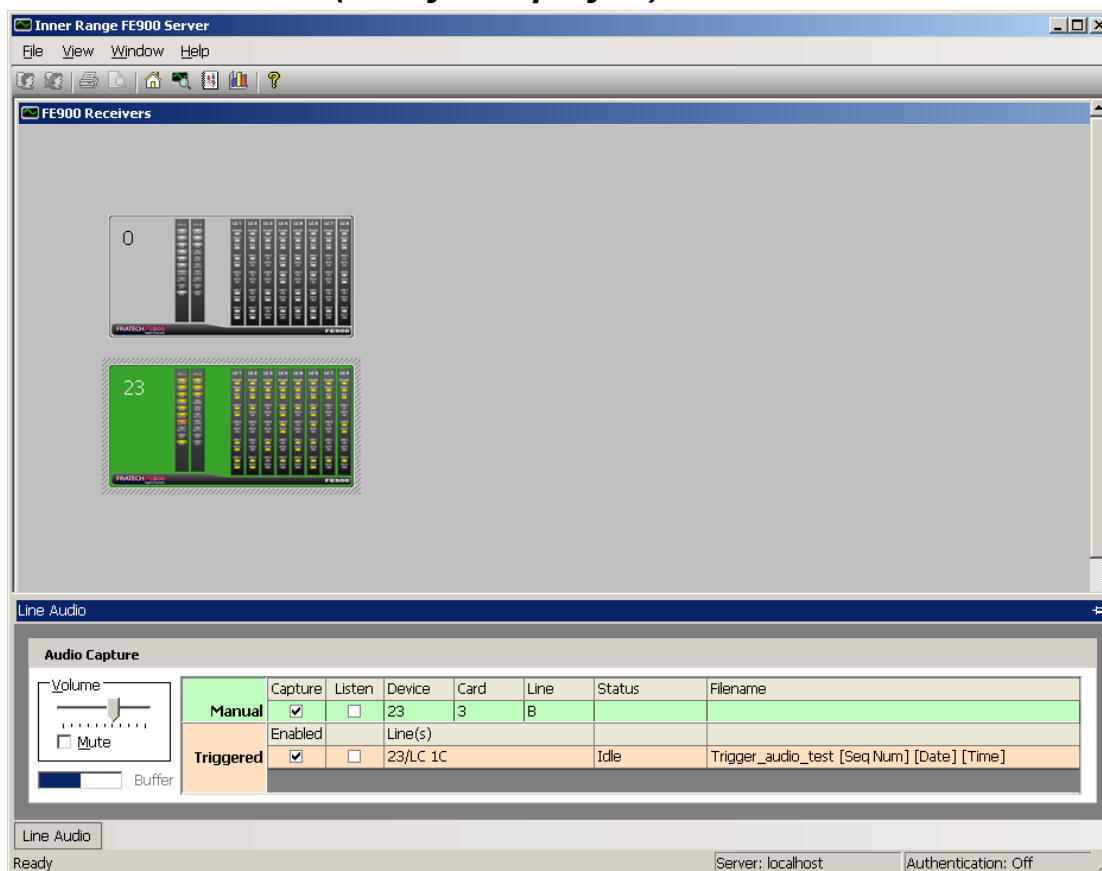
3. To enable a line, set the **Rings** parameter for the selected line to a non-zero value.
4. If the line is to automatically pick-up as soon as a valid Caller ID is detected, check the **Answer CND** parameter for this line. With **Answer CND** checked, **Rings** should be set to 2. This setting provides the fastest way to answer a call and still decode Caller ID.

**Tip**

The main benefit of enabling **Answer CND** is that calls can be processed faster.

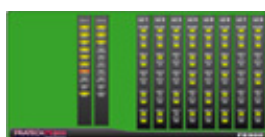
5. Set the **R/L** parameter for this line. This sets the Receiver Number and Line Number that will be passed onto the Automation System for this line.
6. Next, set the type of **Handshake(s)** that this line will respond to and the sequence in which handshakes will be tried. Up to eight different handshakes can be in the sequence. For each handshake field, select a handshake from the drop-down list.
7. Repeat the steps from 4.6.15 for each line that is to be configured.
8. When completed, select, "Update" to commit the changes and return to the Line Card Details view.

The Main Window (always displayed)

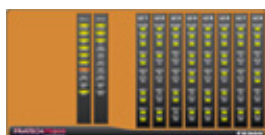


The main window displays all FE900 Receivers that the FE900 Server is currently connected to, or has been connected to in the past. The FE900 receivers are numbered between 0 and 255.

Receiver Icons



- If the FE900 Receiver icon is green, this indicates the Server is communicating with that Receiver.



- If the FE900 Receiver icon is flashing between green and orange, this indicates the Server is communicating with that Receiver, but the Receiver has an outstanding problem.



- If the FE900 Receiver is grey, this indicates that this Receiver has communicated to the Server in the past but is currently not communicating.

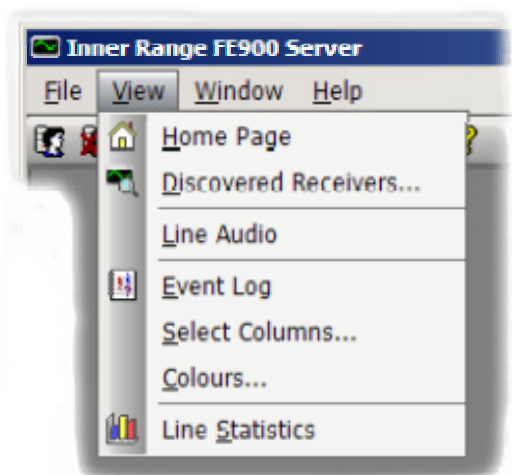
The Receiver icons can be re-arranged on screen as desired. Double clicking on a Receiver icon displays the [Receiver Window](#).

Tool Bar Options



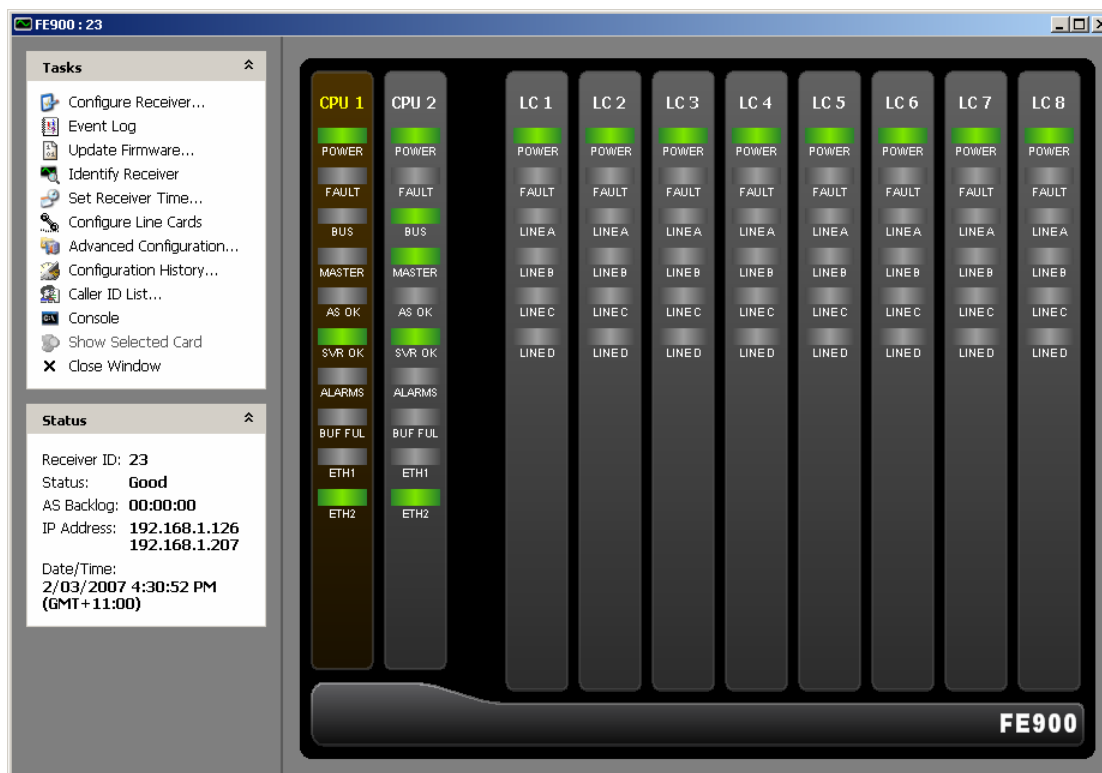
1. **Logon** – Log on to FE900 Server. Only active if there are [users](#) defined.
2. **Logoff** – Log the current user off of the FE900 Server software.
3. **Print** – Send the current view to the printer. Only active on Event Log and Line Statistics windows.
4. **Print Preview** – Opens the Print Preview window.
5. Go to **Main Window**.
6. **Discovered Receivers** – Opens the [Discovered FE900 Receivers](#) window.
7. **Event Log** – Opens the [Event Log](#) window.
8. **Line Statistics** – Opens the [Line Statistics](#) window.
9. **Help** – Opens the online Help.

View Menu Options



- **Home Page** – Opens Main Window.
- **Discovered Receivers** – This shows all receivers on the network, even if connected to another server. See [Discovered FE900 Receivers](#) for more details.
- **Line Audio** – This invokes the Line Audio window. See [Line Audio](#) for more details.
- **Event Log** – This opens an Event Log Window. See [The Event Log Window](#) for more details.
- **Select Columns** – This is used to alter what columns are selected in the selected Event Log Window. See [Event Log Window Columns](#) for more details.
- **Colours** – This is used to alter the colour of events displayed in the selected Event Log Window. See [Event Log Window Columns](#) for more details.
- **Line Statistics** – This allows various call statistics to be displayed. See [Line Statistics](#) for more details.

The Receiver Window

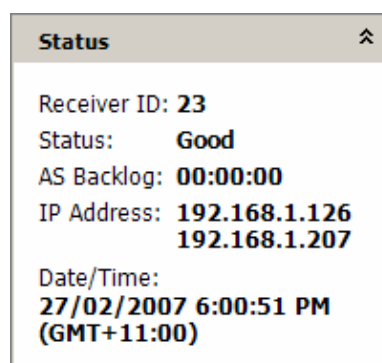


The Receiver Window is selected by double clicking on the desired receiver from the Main Window and shows a mimic of the selected receiver. All the slots in the receiver are shown as either populated with a card, or if a card is absent the slot will be shown as a grey panel. Populated slots will show a mimic of the actual cards plugged into those slots including a mimic of the front panel LEDs being updated in real time. Double clicking on a card will display more details for that card (See [Displaying Card Details](#))

The Status Pane

The status pane shows general status information about the receiver:

- **Receiver ID** – This shows the ID of the receiver, also shown at the top of the Receiver Window. The ID is from 0 to 255.
- **Status** – This shows the overall status of the receiver. The possible displays are:
 1. **Good** - All is well, there are no outstanding warnings or faults.
 2. **Warning** - There is a warning condition present (see Fault below).
 3. **Unknown** - The Status could not be determined most likely because the receiver is not connected.
- **AS Backlog** – This shows the time difference in hours, minutes and seconds between the latest event to be received by the receiver and last event acknowledged by the Automation System. This gives an indication on whether the Automation System is keeping up with received events.



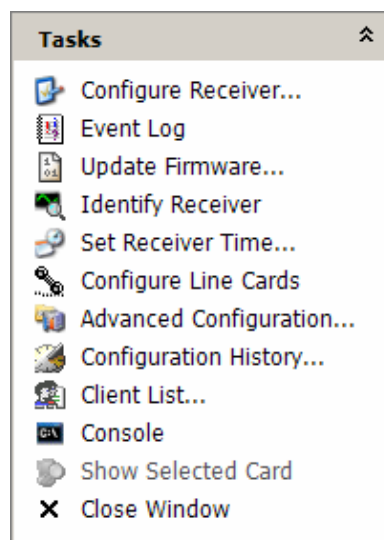
- **IP Address** – This shows the current IP address of this receiver assigned by the network it is connected to. When a standby CPU Card is installed and there is a valid connection to the standby CPU, the IP address of the standby CPU Card will also be shown here.
- **Date/Time** – This shows the local date and time for this receiver, taking into account its time zone setting. The time zone setting is shown underneath.
- **Fault** – This shows the description of any outstanding faults. The possible displays are:

Fault Display	Description
None	No fault.
Line Fault	One or more cards cannot sense line voltage.
No Connection	No connection to the receiver is currently active.
Multiple Connections	Multiple connections have been detected from the same receiver. This is generally due to duplicate receiver IDs.
Receiver Fault	A general fault has occurred on the receiver.
Event buffer full	The event buffer is full.
No master CPU	No master CPU has been detected.
No Master CPU Connection	No connection has been established to the master CPU. Status information will be available, but limited control operations may be performed.
CPU Firmware Mismatch	The firmware versions in the two detected CPU Cards in the receiver do not match. Although the receiver will continue to function correctly, it is strongly advised to bring both CPU Cards to the same firmware version.
Using default configuration	The receiver is currently using the default configuration. This warning will remain until the configuration is manually updated.
Battery Low	The battery that maintains the battery-backed RAM is low. Replace the battery to clear this warning.
Automation System Offline	No connection to automation system can be established. This can be due to physical connection problems or the automation system not sending or acknowledging heartbeat messages.
Code Corrupt	The firmware is corrupt.
Line Card Missing	A Line Card that has lines that have been configured to answer calls cannot be detected as installed. Either ensure that a Line Card is installed in the correct slot, or configure the line not to answer calls.
Valet Not Responding	The valet device has failed.
Temperature Overrange	The CPU Card temperature has exceeded its configured limit.
Supply Voltage Underrange	The power supply voltage is below the configured threshold.

The Task Pane

The task pane displays the various tasks that can be performed from this window by clicking on the desired task. The tasks are:

- **Configure Receiver** – This allows general receiver and Automation System options to be configured. See [Configuring the Automation System](#) and [Configuring General Options](#) for more details.
- **Event Log** – This opens a window to allow events in the database to be viewed. More than one window can be opened. See [The Event Log Window](#). This receiver will be initially selected in the filter criteria.
- **Update Firmware** – This opens a dialog to allow the CPU and Line Card firmware to be updated. More than one card can be updated simultaneously. See [Updating Firmware](#) for more details.
- **Identify Receiver** – This aids in identifying which receiver is which in a rack. Selecting “Identify Receiver” will cause all the LEDs on the Master CPU Card to flash on this receiver for 60 seconds.
- **Set Receiver Time** – This allows the receiver time to be set. This time should be set to the local time for the server, no matter what time zone the actual receiver may be located in. If the “Update to Server Time” tick box is set, then the time will automatically be copied from the Server’s local time. Note that different receivers can be set to different time zones. The receiver’s local time is displayed for reference based on the receiver’s time zone. See setting the time zone under [Configuring General Options](#). The “Synchronise Time” tab allows the receiver to be configured to receive automatic time updates from the server. The “Synchronisation Period” determines how often this will occur.
- **Configure Line Cards** – This task allows Line Cards to be configured. See [Configuring Line Cards](#) for more details.
- **Advanced Configuration** – This task allows receiver templates to be displayed and altered. See [Advanced Configuration](#) for more details.
- **Configuration History** – This task allows past configuration changes to be viewed. See [Configuration History](#) for more details.
- **Caller ID List** – This opens [the Caller ID List window](#), showing the Caller-ID database in the receiver.
- **Console** – This option is used by the manufacturer for testing and need not be accessed.
- **Show Selected Card** – This shows greater detail for the selected card. This can also be achieved by double clicking on the desired card.
- **Close Window** – This closes the displayed receiver window.



Configuring the Receiver

Receiver configuration is divided into four main areas:

General Receiver Configuration	Allows general Receiver-wide items to be configured. This is accessed by the “ Configure Receiver ” task in the Receiver Window.
Automation System Configuration	Allows the type of Automation System to be configured, along with various options such as baud rate. Up to two independent Automation Systems can be selected. This is accessed by the “ Configure Receiver ” task in the Receiver Window.
Line Card Configuration	Allows individual lines on Line Cards to be configured. This will determine what dialler formats will be received on what lines. This is accessed by the “ Configure Line Cards ” task in the Receiver Window.
Receiver Templates	The FE900 contains many additional options not individually alterable from a screen. These items are collectively called templates. There are templates for CPU Cards, Line Cards and Individual Lines. This is accessed by the “ Advanced Configuration ” task in the Receiver Window.

Whenever a configuration change is made, there is an opportunity to enter an optional comment describing the changes made. This comment will appear in the configuration history. See [Configuration History](#).

When configuration changes are saved, they are sent to the receiver and stored on the CPU Card(s) along with the Receiver ID.

Tip

The Configure Receiver task affects the ‘whole’ receiver – it does not matter if the FE900 contains one or two CPU Cards. In receivers containing two CPU Cards, configuration changes are written to **both** CPU Cards so that they have identical configuration. For more information, see [Hot Standby CPU Operation](#).

If a Line Card is replaced with another, then the replacement Line Card will automatically be re-programmed with the configuration relevant to that slot from the CPU. This means that Line Cards can be hot-swapped without worrying about Line Card re-configuration

If there is only one CPU Card in a receiver and that CPU Card is replaced, then the receiver configuration will alter to that contained in the replacement CPU Card.

If a 2nd CPU Card is plugged into an operating receiver, that CPU Card configuration will be updated from the 1st CPU Card (Master).

If a receiver is powered up with two CPU Card with different configurations, then configuration of the Master CPU Card will take precedence, and be copied to the backup CPU Card

Warning

It is not recommended to power up a receiver which contains two CPU Cards having different configurations. This is due to the following behaviour: When an FE900 with two CPU Cards is powered up, either CPU Card can become the Master CPU Card.

Tip

The FE900 offers a convenient way to copy receiver configurations from one receiver to another, and also store complete configurations as a file. See [Configuration History](#) for more details.

Configuring General Options

This task is accessed from the “Configure Receiver” task in the Receiver Window and allows general Receiver options to be configured. Select the “General” tab to display the following items:

The screenshot shows the 'FE900 Configuration' dialog box with the 'General' tab selected. The dialog has four tabs: 'General', 'Automation System 1', 'Automation System 2', and 'Comment'. The 'General' tab contains the following fields and controls:

- Receiver ID:** A text box containing the value '23'.
- Client Code:** A text box containing the value '6347'.
- CND Timeout:** A text box containing '25' followed by a 'days' label.
- ALI Timeout:** A text box containing '500' followed by a 'secs' label.
- Timezone:** A dropdown menu showing '(GMT+10:00) Canberra, Melbourne, Sydney'.
- LED Pattern:** A dropdown menu showing 'Sine Wave'.
- Event Buffer Full Action:** A section with three dropdown menus:
 - AS1:** 'Discard Silently'
 - AS2:** 'Discard with Error'
 - Server:** 'Discard Silently'
- Show Call Progress Events:** A checked checkbox.
- Server Address...:** A button.

At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Apply'.

- **Receiver ID** – This field allows the Receiver ID to be chosen to identify this receiver. The ID may be between 0 and 255. An error will be displayed if the entered ID is not unique across all receivers.
- **Client Code** – This field sets the client code that will be used whenever an FE900 generated event is sent to the Automation System in Contact ID. Six digits should be entered, the 1st two digits are the Receiver and Line Number that will be used for receiver generated events and the last 4 digits are the Contact ID client code.
- **CND (Calling Number Display) Timeout** – The FE900 keeps a database of up to 10,000 panel Caller IDs that allow the FE900 to select the appropriate handshake to use if the Caller ID is recognised. This saves on-line time when the calling telephone number is recognized. This timeout (in days) selects how long a Caller ID will remain in the database if it has not called in.
- **ALI Timeout** – When an Audio Listen In mode is selected, this setting determines the maximum time (in seconds) the Audio Listen In period will last for before it is terminated by the FE900 Receiver. Audio Listen In shouldn't be confused with Audio Capture. See [Audio Listen In](#) for more details
- **Time Zone** – Each FE900 Receiver can be programmed with its own local time zone. This time zone determines the local time for that receiver. Events displayed in the Event Log for a given receiver will show the receiver's local time and date stamp based on the time-zone chosen for the receiver. Adjustments for daylight savings time will automatically be applied in accordance with the selected time-zone.
- **LED Pattern** – When all four lines are idle on a Line Card, the LEDs on the Line Card can be set to flash with a particular pattern. This pattern acts as a kind of heartbeat signal to show that the Line Card is operational. When there is any activity on any line for that Line Card, the heartbeat pattern will cease on that card. Use the drop down list to select the desired pattern.

- **Show Call Progress Events** – The FE900 Receiver saves Call Progress events to its buffer as well as panel events. The Call Progress events can be used to aid in debugging and analysis. For a very busy receiver, these events can be turned off to maximize buffer space for panel events.
- **Event Buffer Full Action: AS1, AS2, Server** – If an Automation System (AS1 or AS2) or the Server stops acknowledging events for any reason, (e.g. communication failure), then the FE900 will buffer up to approximately 30,000 events. After this time the FE900 must decide what to do with the oldest events. The drop down lists allows the appropriate action to be selected individually for AS1, AS2 and the Server. The choices are:
 1. **Discard Silently** - means discard oldest events with no error or warning.
 2. **Discard with Warning** - means discard oldest events but generate a warning condition.
 3. **Discard with Error** - means discard oldest events but generate an FE900 error event.
 4. **Do not Answer Calls** - means do not accept any additional calls from panels until the overflow condition has been resolved. Events from calls in progress and system events can still be added.

Note that the buffer is considered “full” when the buffer has used 99% of its capacity. This still allows hundreds of events to be added.

- **Server Address (aka Announce Group in the resultant dialog)** – The FE900 Server discovers what FE900 Receivers are present on a network using Multicast IP. This option sets the Multicast group address to be used. ***The Multicast Group Address is normally not altered unless multiple servers are being run with multiple receivers.***

Generally, the next step is to [configure the Automation System](#). When the Automation System(s) have been configured, a comment describing the changes made can be entered after selecting the “Comment” tab. This comment will appear in the configuration history. See [Configuration History](#).

Now select “Apply” to save the changes or “Cancel” to close the dialog without saving any changes.

Configuring the Automation System

This task is accessed from the “Configure Receiver” task in the Receiver Window and allows the Automation System interface to be configured. Two independent Automation Systems can be set up per receiver. Select either the “Automation System 1” or Automation System 2” tab to display the following items:

The screenshot shows the 'FE900 Configuration' dialog box with the 'Automation System 1' tab selected. The 'General' tab is also visible. The 'Automation System 1' tab contains the following settings:

- Enabled:** Checked.
- Protocol:**
 - ☒ Ademco 685
 - ☐ Surgard
 - ☐ Serial Printer
- Serial Port:**
 - Baud:** 9600 bps
 - Data Bits:** 8
 - Parity:** None
 - Stop Bits:** 1
- Printer Output:**
 - ☐ Receiver Events
 - ☐ Call Progress
- Reporting Options:**
 - ☐ Send Caller ID
 - ☐ Extended Reporting
 - ☐ IRFast Raw Format
- Enable Heartbeat:** Checked.
 - Period (secs):** 30
- TCP/IP Port:**
 - Port:** 9307
- ACK Timeout (ms):** 2000

Buttons at the bottom: OK, Cancel, Apply.

Notes

Remember that the FE900 Configuration task affects the ‘whole’ receiver, regardless of the number of CPU Cards fitted. Therefore:

- Each FE900 can talk to up to two Automation Systems concurrently
- Connection to Automation Systems can be over RS232 or TCP/IP
- Whilst both CPU Cards in a dual-CPU receiver will be listening to the Automation System(s), it is only the “Master” CPU which actively communicates
- “Automation System 1” does NOT exclusively correspond to CPU Card 1 and vice versa
- **Enabled** – This setting determines if the Automation System port is enabled.
- **Protocol** – This enables the protocol for the Automation System to be selected. Choice are:
 1. **Ademco 685** – This selects a protocol compatible with Automation Systems that can communicate with an Ademco 685 Receiver.
 2. **Surgard** – This selects a protocol compatible with Automation Systems that can communicate with a SurGard Receiver.
 3. **Printer** – This selects an ASCII protocol suitable for sending to a serial printer.

Note

If any panels report using SIA format, the Surgard Protocol must be selected.

- **Enable Heartbeat** – This tick box determines if the FE900 is going to expect a “heartbeat” signal to be sent regularly from the Automation System. When ticked, the FE900 will create an alarm event if a heartbeat signal is not received within a pre-programmed time. (See “Period” below).

- **ACK Timeout** – When the “Enable Heartbeat” option above is ticked, this sets the maximum time in milliseconds that the FE900 will wait for an acknowledge signal from the Automation System. A setting of 2000 (2 seconds) is common.
- **Period** – When the “Enable Heartbeat” option above is ticked, this sets the maximum time allowed between heartbeat signals sent by the Automation System before the FE900 creates an alarm event. The entered value is in seconds.
- **Serial Port** - Sets the serial connection settings
 1. **Baud** – This sets the baud rate for the relevant Automation System. Automation System 1 uses COM1 and Automation System 2 uses COM2.
 2. **Data Bits** – This sets the number of data bits for the relevant Automation System.
 3. **Parity** – This sets the type of parity used for the relevant Automation System.
 4. **Stop Bits** – This sets the number of stop bits for the relevant Automation System.
- **TCP/IP Port** – This option allows the FE900 to communicate with an Automation System using TCP/IP. Enabling this option puts the corresponding AS serial port into ‘transmit-only’ mode. See [TCP/IP Connection to an Automation System](#).

Note

The Automation System needs to know the IP Address(es) of the receiver, and the TCP port. It is possible to connect to two Automation Systems with one IP address as AS1 and AS2 are on different ports (9307 & 9308, by default). See [TCP/IP Connection to an Automation System](#).

- **Receiver Events** – When the Serial Printer protocol is chosen, this option determines whether Receiver Events are logged to the printer.
- **Call Progress** – When the Serial Printer protocol is chosen, this option determines whether Call Progress Events are logged to the printer.
- **Send Caller ID with Event** – This option determines if Caller ID information will be sent along with panel events to the Automation System. If ticked then Caller ID information will be sent to the Automation System.
- **Extended Reporting** – This option determines if extra non-standard information will be sent along with panel events to the Automation System. Only select if the Automation System can understand extended reporting. See [Automation Protocols](#) for more information.
- **IRFast Raw Format** – When checked, all events sent to this serial port will be in IRFast Raw Format. This format can be used by some Automation Systems.

Note

This setting requires that the handshakes the Line Cards use are changed so that the panel is not asked to send IRFast as well as Contact ID. In this situation, variants of handshakes with _NOIRFCID in their names should be used. See [Handshakes and Formats](#).

When the Automation System(s) have been configured, a comment describing the changes made can be entered after selecting the “Comment” tab. This comment will appear in the configuration history. See [Configuration History](#).

Tip

Entering comments in the Comment tab after changing configuration is highly recommended! The comments are of great assistance to operators when any future maintenance or debugging has to be performed.

Now select “Apply” to save the changes or “Cancel” to close the dialog without saving any changes.

Configuring Line Cards

Line Configuration

Lines Selection

Selection Criteria

Lines

- ☐ Receiver 23
 - ☒ Line Card 1
 - ☒ Line Card 2
 - ☒ Line Card 3
 - ☒ Line Card 4
 - ☒ Line Card 5
 - ☒ Line Card 6
 - ☒ Line Card 7 (Missing)
 - ☒ Line Card 8

Actions

- Discard Changes
- Save Changes
- Save with Comment...
- Close Window

Line	Description	Rings	Answer CND	R/L	Audio Listen-In Mode	Handshake 1	Handshake 2
Receiver 23							
Line Card 1							
Line A		2	☒	FF	None	ademco_2v0	tone1400_2v0
Line B		0	☐	01	None	(None)	
Line C		0	☐	02	None	(None)	
Line D		0	☐	03	None	ademco_2v0	
Line Card 2							
Line A		0	☐	04	None	ademco_irfbxt_2v0	
Line B		0	☐	05	None	ademco_j21c_2v0	
Line C		0	☐	06	None	ademco_noirf_2v0	
Line D		0	☐	07	None	tone1400_2v0	
Line Card 3							
Line A		0	☐	08	None		
Line B		0	☐	09	None		
Line C		0	☐	0A	None		
Line D		0	☐	0B	None		
Line Card 4							
Line A		0	☐	0C	None		
Line B		0	☐	0D	None		
Line C		0	☐	0E	None		
Line D		0	☐	0F	None		
Line Card 5							
Line A		0	☐	10	None		

This task is accessed from the “Configure Line Cards” task in the Receiver Window or on the Line Card Details Window. Use this task to determine what lines are configured and what formats they will receive.

Tip

The selection criteria allow more than one Line Card to be displayed from one or more receivers. This is useful when groups of lines need to be programmed the same, for example when used in a rotary group. Simply tick or un-tick the relevant Line Cards to display or hide the relevant configuration pane for that Line Card.

The configuration pane comprises a number of columns that can be configured for each line of each Line Card. The four lines on a Line Card are labelled A, B, C and D. The columns to be configured are listed below:

- **Line** - This shows what line is being configured.
- **Description** – This allows an optional description to be entered for each line. This description is useful for describing what the line is used for, for example “Contact ID Main Rotary”. This description can also be displayed in the Event Log.
- **Rings** – This sets how many rings before the Line Card will answer the line. A setting of zero disables that line from answering and also disables line voltage monitoring. If Caller ID is to be decoded reliably then set the rings to 2 or more.
- **Answer CND** – This setting is used to cause the line to answer immediately after Caller ID has been decoded. With **Answer CND** checked, **Rings** should be set to 2. This setting provides the fastest way to answer a call and still decode Caller ID.

Tip

The main benefit of enabling **Answer CND** is that calls can be processed faster.

Warning

If the [Selective Answer](#) feature is being used, Answer CND **MUST** be switched off in Line Card Configuration for the relevant lines!

- **Audio Listen In Mode** – This setting determines if Audio Listen In is allowed and if so, how it will work. A drop down list is used to select the Audio Listen In mode. A setting of “None” disables Audio Listen In for this line. See [Audio Listen In](#) for more details.
- **Handshake 1 to Handshake 8** – When the line answers a call, the FE900 will output up to 8 handshake signals in the order Handshake 1 to Handshake 8. The Handshakes chosen determine what formats will be received on that line. The Handshakes are chosen by a drop-down list. See [Handshakes and Formats](#) for more details.

**Tip**

The FE900 will remember the last successful handshake used in conjunction with each known Caller-ID in it's database, and use this handshake first when next responding to the panel.

**Important!**

There are side-effects when there are Caller-ID + known handshakes in the receiver's database and handshake settings for the Line are subsequently changed. Refer to [Handshakes and Formats](#) for more information.

Once Line Cards have been configured they can be “Discarded”, “Saved” or “Saved with a Comment”. If “Saved with a Comment” is selected, then a dialog appears. A comment may be entered describing the changes made. This comment will appear in the configuration history. See [Configuration History](#).

**Notes**

- A new Line Card configuration does not take effect in the selected card(s) until all lines on the Line Card are idle.
- During a changeover of configuration, there is a possibility that “handshake not found errors” may occur if (a) a new handshake has been added to the handshake sequence AND (b) There is a line active on the card, preventing the change of configuration taking place immediately AND (c) another call comes in on another line on that Line Card which tries to use the new handshake added in (a).

**Tip**

Entering comments in the Comment tab after changing configuration is highly recommended! The comments are of great assistance to operators when any future maintenance or debugging has to be performed.

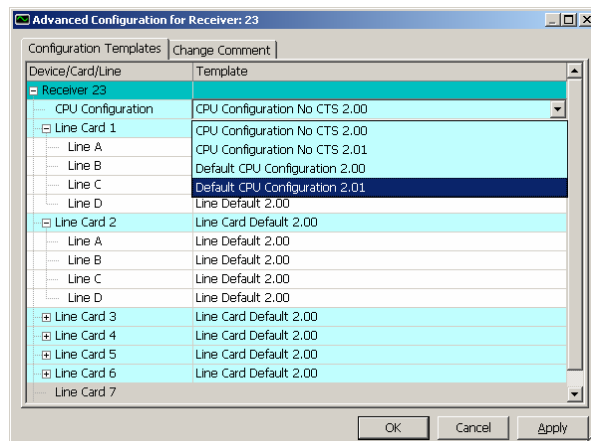
Advanced Configuration

This task is accessed from the “Advanced Configuration” task in the Receiver Window. The FE900 contains many additional options not displayed that can be used to further customise a receiver. These options are divided into 3 groups:

1. CPU Configuration
2. Line Card Configuration
3. Line Configuration

The options in each group are assigned by means of a template file. This template file contains all additional options that may be used to customize a receiver.

When this screen is accessed, the FE900 will attempt to identify which template files are being used for CPU, Line Cards and Lines. If the options are matched to a template file, the name of the template file is displayed. If the options are not matched to a template file then the word “Unknown” will appear.



Tip

Take care to expand out each Line on Line Cards to check that the template is recognised.

Normally these options should match known template files:

- CPU should match “CPU Card Default v.vv” template.
- Line Card should match “Line Card Default v.vv” template.
- Line should match “Line Default v.vv” template.

It is recommended that the newest version (highest version number) of a template file is chosen in each case.

Notes

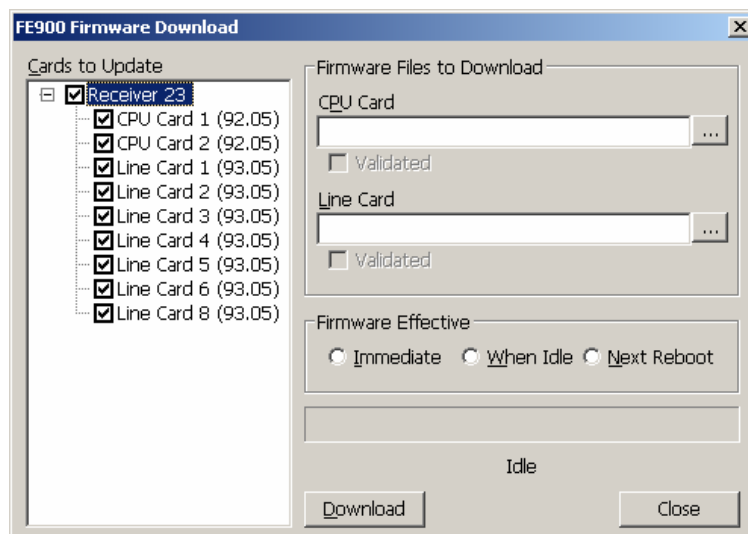
- If any CPU, Line Card or Line template is displayed as “Unknown”, it should be set to a known template file.
- The dialog will display the name of the newest template file matching the current configuration. This may not be the file chosen by the operator if the relevant file contents are the same.
- From time to time other template files may be built to customise the receiver. Only select these on advice from Inner Range.

When changes to Advanced Configuration are complete, it is possible to document the changes made by selecting the “Comment” tab and entering text describing the changes made. This comment will appear in the configuration history. See [Configuration History](#).

Tip

Entering comments in the Comment tab after changing configuration is highly recommended! The comments are of great assistance to operators when any future maintenance or debugging has to be performed. The information can be useful when operators wish to rollback to a previous configuration.

Updating Firmware



The FE900 allows convenient updating of both the CPU and Line Card firmware to improve functionality and add new features. Inner Range is constantly improving the FE900 and will publish new firmware from time to time on the Inner Range Web Site. The FE900 Update Firmware pane allows multiple cards across multiple receivers to be upgraded in one action. As little as one card on one receiver can be updated and as many as all cards on all receivers can be updated at a time. Each card will show its current version.

Note

If two CPU Cards are installed, they can both be updated together, or one at a time. For correct operation, *both* CPU Cards should end up with the same firmware version installed.

When CPU Cards from the same receiver are updated together, the current backup CPU Card is updated first, and then the current Master. When the Master restarts itself the backup becomes master, so this process results in a “Mastership switch”. The receiver will continue to accept panel events and send them to the Automation System throughout this operation - one of the advantages of having dual redundant CPU Cards.

Tip

Generally speaking with an operational FE900, it is prudent to test new firmware on a limited number of lines/receivers before updating all cards. It is possible to update to historic versions when warranted.

Once the desired cards to update have been selected, the firmware files for the CPU Card (if required) and the Line Card (if required) can be selected.

CPU firmware files are labelled CPU_v_vv.dld where v_vv is the firmware version.

Line Card firmware files are labelled Linecard_v_vv.dld where v_vv is the firmware version.

Select the browse button ‘...’ adjacent to the firmware file field to display the standard file browse dialog box to select the firmware file to apply.

When a filename has been entered or selected, the software will verify that the file is a valid firmware file of the correct type. The Validated checkbox will be checked if the specified file is correct.

After the file(s) have been selected, the timing of when the new version will take effect must be chosen:

- **Immediate** – The new version will take effect immediately after the download completes.
- **When Idle** – The new version will take effect immediately for a CPU Card and when all four lines are idle for a Line Card.
- **Next Reboot** - The new version will take effect when the card is next rebooted (Either next Power up or manual reset)

During the download, the card remains fully functional.



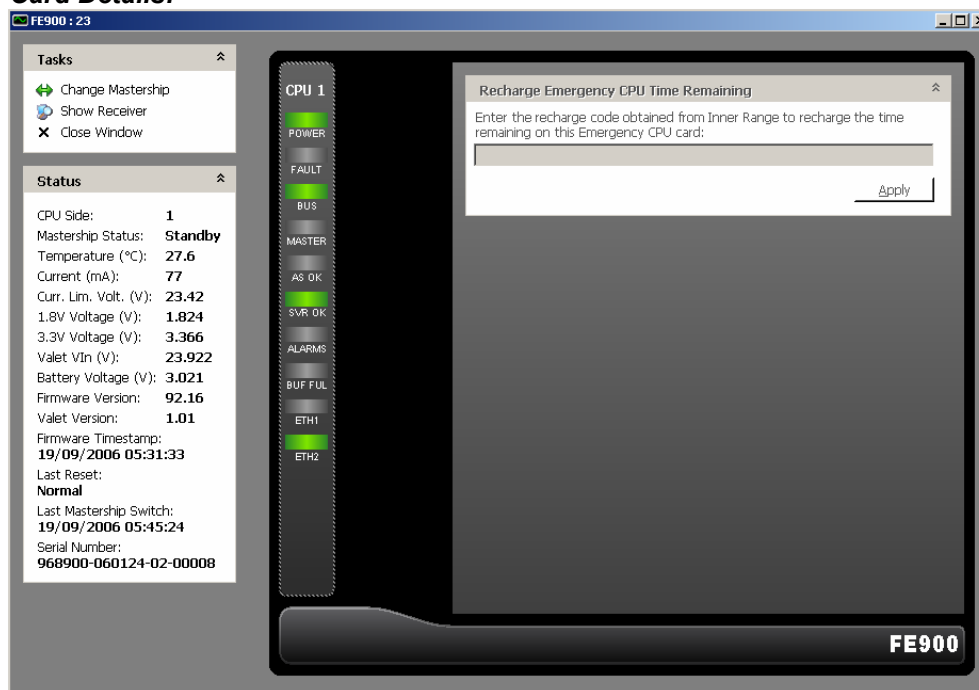
Notes

- When a CPU Card is updated, it will lose communication with the server for up to 60 seconds.
- When the updates are complete, the Firmware Update Pane will be out of date until the firmware update process is complete and the pane is closed and re-opened.
- After a major upgrade has been released, it is wise to check to see if any updated template files have been supplied with the update. (See [Advanced Configuration](#) for more details).
- Some CPU Card / Line Card firmware combinations are not compatible. For example the version 3 CPU firmware (that supports redundant CPU Cards) should not be used with Line Card firmware earlier than version 3, as unreliable operation will result. However version 3 Line Card firmware can be used with earlier CPU firmware (eg. V2.xx).

Displaying Card Details

CPU or Line Card details can be displayed by double clicking on the desired card from the Main Receiver Window, or selecting the “Show Selected Card” task when the desired card is selected. A card mimic is then displayed showing the LED states in real time and also showing additional details and options:

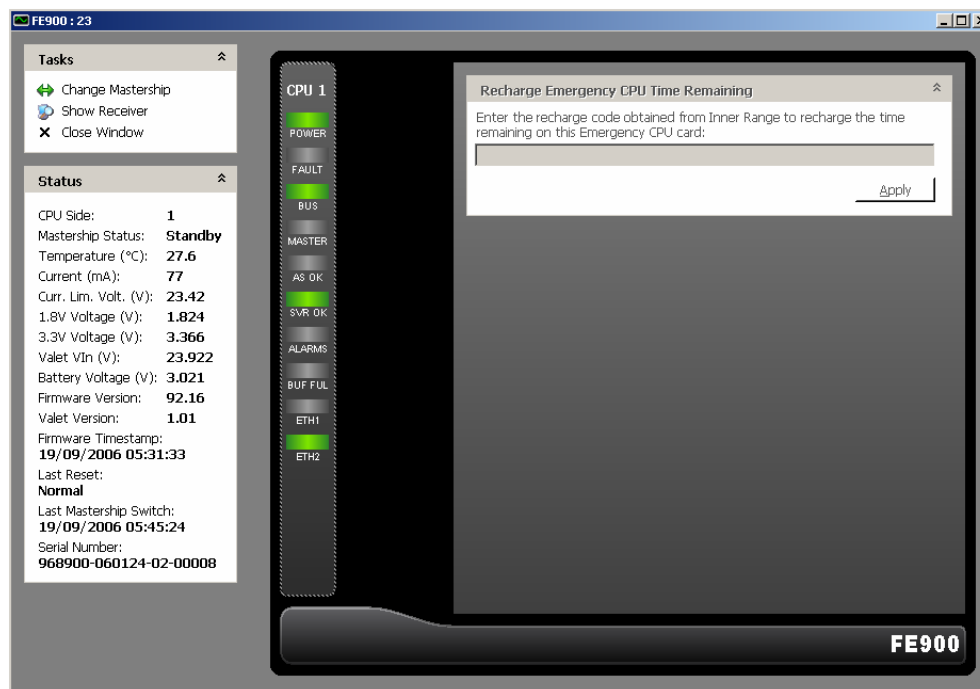
CPU Card Details:



Line Card Details:



CPU Card Details



The following detailed status information is displayed:

- **CPU Card Type*** – This indicates whether the CPU Card is a “Full” CPU Card, or an “Emergency” CPU Card.
- **CPU Side** – This shows whether the CPU Card is plugged into the LHS (1) or the RHS (2).
- **Mastership Status** – This shows whether the CPU Card is currently the Master or the Standby. See [Hot Standby CPU Operation](#) for more details.
- **Temperature** – This shows the internal temperature of the CPU Card.
- **Current** – This shows the current consumption of the CPU Card.
- **Curr. Lim. Volt.** – This shows an internal voltage.
- **1.8V Voltage** – This shows an internal voltage.
- **3.3V Voltage** – This shows an internal voltage.
- **Valet VIN** – This shows an internal voltage. This is about 0.5 volt less than the supply voltage on the backplane.
- **Battery Voltage** – This shows the voltage of the lithium backup battery used for maintaining the Real-Time-Clock and the Event buffer when the CPU Card is un-powered.

Status	
CPU Side:	1
Mastership Status:	Standby
Temperature (°C):	27.6
Current (mA):	77
Curr. Lim. Volt. (V):	23.42
1.8V Voltage (V):	1.824
3.3V Voltage (V):	3.366
Valet VIN (V):	23.922
Battery Voltage (V):	3.021
Firmware Version:	92.16
Valet Version:	1.01
Firmware Timestamp:	19/09/2006 05:31:33
Last Reset:	Normal
Last Mastership Switch:	19/09/2006 05:45:24
Serial Number:	968900-060124-02-00008

- **Firmware Version** – This is the current CPU Card firmware version.
- **Valet Version** – The ‘Valet’ performs watchdog functions related to card hot-swapping and power supply monitoring. There is a Valet on each card.
- **Firmware Timestamp** – This is the time/date the current CPU firmware version was downloaded to the card.
- **Last Reset** – This shows the last reason why the card was reset.
- **Last Mastership Switch** – This shows the last time/date that the Mastership changed.
- **Emergency Time Remaining*** – This shows how much operational time (as Master) the Emergency CPU Card has left before requiring a “recharge”.
- **Serial Number** – This shows the serial number of the selected CPU Card which is required information for “recharging” Emergency CPU Cards.



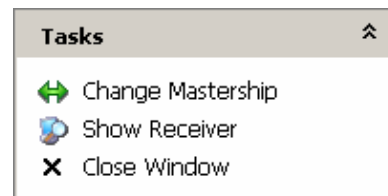
Notes

- The items marked with an asterisk only appear in the Status Pane if the card is an Emergency CPU Card.
- An Emergency CPU Card is a special version of a CPU Card that has a limited operational time (which can be recharged), known as “Emergency Time”. The Emergency Time **only** counts down when the Emergency CPU Card has “Mastership”. See [Emergency CPU Cards](#) in the Hot Standby CPU Operation section of this manual for more information.

CPU Card Tasks

The following tasks are available:

- **Change Mastership** – This task allows the current Mastership status to be toggled. See [Hot Standby CPU Operation](#) for more details.
- **Show Receiver** - This task re-displays the [Main Receiver Window](#)



Line Card Details



The following detailed status information is displayed:

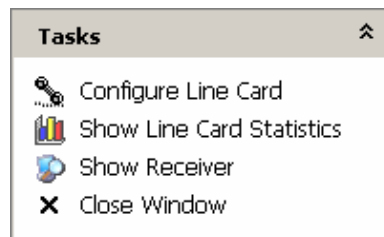
- **Line Card** – This shows the current slot the Line Card resides in (1 to 8).
- **Status** – This shows the overall status of the Line Card. The possible displays are:
 1. **Good** – There are no problems with this card.
 2. **Disconnected** – The Line Card is not currently installed in the backplane.
- **Voltage** – This shows the supply voltage to the Line Card.
- **Current** – This shows the current consumption of the Line Card.
- **Curr. Lim. Volt.** – This shows an internal voltage.
- **1.8V Voltage** – This shows an internal voltage.
- **3.3V Voltage** – This shows an internal voltage.
- **Firmware Version** – This is the current Line Card firmware version.
- **Valet Version** – The 'Valet' performs watchdog functions related to card hot-swapping and power supply monitoring. There is a Valet on each card.
- **Firmware Timestamp** – This is the time/date the current Line Card firmware version was downloaded to the card.
- **Serial Number** – This shows the serial number of the selected Line Card.

Status	
Line Card:	1
Status:	Good
Voltage (V):	11.309
Current (mA):	66.0
Curr. Lim. Volt. (V):	11.309
1.8V Voltage (V):	1.837
3.3V Voltage (V):	3.366
Firmware Version:	3.10
Valet Version:	1.01
Firmware Timestamp:	8/02/2007 2:24:10 AM
Serial Number:	968901-060608-02-00107

Line Card Tasks

The following tasks are available:

- **Configure Line Card** – See [Configuring Line Cards](#) for more details.
- **Show Line Card Statistics** – See [Line Statistics](#) for more details.
- **Show Receiver** - This task re-displays the [Main Receiver Window](#)



Line Status



Even more detailed information can be displayed for each line on the Line Card. The four tabs Line A, Line B, Line C and Line D allow line specific information to be displayed:

- **Line Status** – This shows the current state of this line. The possible states are:
 1. **Idle** – Line is on-hook
 2. **Pre-ring** – This state occurs when the Caller ID appears on the line before the first ring (for example, in the U.K.)
 3. **Ringing** – Line is currently ringing
 4. **Negotiating...** – The line is currently attempting handshake sequences for the online panel
 5. **Online** – Line is currently off-hook
 6. **Hanging Up...** – The line is currently attempting to go back on-hook
- **Client Code** – This shows the most recent client code to send a message on this line. The client code display will remain until another message is received from a different client code.
- **Caller ID** – This shows the Caller ID if decoded for the panel that was most recently online with this line. This display will remain until a new call is received by the line.
- **Line Volts** – This shows the current line voltage for this line.
- **Calls last 24 Hours** – This is the number of calls this line has received in the last 24 hours.
- **Errors last 24 Hours** – This is the number of calls which contained communication errors this line has received in the last 24 hours.

- **Audio** – This toggles the listening to this line via the PCs audio system on or off by automatically configuring the Line Audio Pane appropriately. See [Line Audio](#) for more details.

Configuration History

Revision	Date/Time	User	Change Extent	Comment
123	29/08/2006 09:29:00		All	Refreshed configuration from Receiver.
124	29/08/2006 09:31:55		All	Refreshed configuration from Receiver.
125	29/08/2006 10:26:35		Cpu	
126	29/08/2006 14:06:28		Cpu, LineCard1	Refreshed configuration from Receiver.
127	29/08/2006 14:06:47		Cpu, LineCard1	
128	29/08/2006 14:47:35		Cpu, LineCard1	
129	29/08/2006 14:47:52		Cpu, LineCard2,	
130	29/08/2006 14:53:55		Cpu, LineCard8	
131	29/08/2006 14:54:26		Cpu, LineCard8	
132	29/08/2006 15:06:16		Cpu, LineCard7,	Refreshed configuration from Receiver.
133	29/08/2006 15:07:04		LineCard7	Refreshed configuration from Receiver.
134	29/08/2006 15:09:36		All	
135	29/08/2006 15:09:59		Cpu, LineCard1,	
136	29/08/2006 15:10:22		Cpu, LineCard5,	
137	29/08/2006 15:10:54		Cpu, LineCard8	
138	29/08/2006 15:11:31		Cpu, LineCard8	
139	29/08/2006 15:11:37		Cpu, LineCard7	
140	29/08/2006 15:11:56		Cpu, LineCard3,	
141	29/08/2006 15:12:09		Cpu, LineCard2	
142	29/08/2006 15:12:55		All	
143	29/08/2006 15:27:11		Cpu, LineCard1	
144	29/08/2006 15:39:52		Cpu, LineCard1	

Selection Criteria

☒ None

☐ Revision Range

From 1 To 999

☐ Date Range

From ☒ 30/08/2006 09:33:41

To ☐ 30/08/2006 09:33:40

☐ Show All Receivers

Show

Tasks

- Rollback\Copy...
- Export Configuration...
- Import Configuration...
- Close Window

The Configuration History Window is accessed from the Receiver Window. After every time a configuration change is made to the FE900, a snapshot of the complete FE900 configuration is automatically saved. If a comment was entered at the time of the change then this is saved also. These historic configurations are termed “Revisions” and are numbered 1, 2, 3 etc. As each new configuration change is saved, the revision number is incremented.

Tip

Since the FE900 software automatically saves all past configuration changes as revisions, the user may go back to any previous receiver configuration in its entirety by simply selecting the desired revision and selecting the Rollback task.

Selection Criteria Pane

The selection criteria pane allows only selected past revisions to be displayed, along with any comments entered when the change was made.

- **Revision Range** - This selects what revisions are to be displayed. A higher revision number corresponds to a more recent change.
- **Date range** - This tab allows optional filtering based on time and date. If the “From” box is ticked then only events after this time and date will be shown. If the “To” box is ticked then only events before this date and time will be shown. If neither box is ticked then no time/data criteria is applied.
- **Show all receivers** - Ticking this option allows revisions from all receivers to be displayed.

Selection Criteria

☒ None

☐ Revision Range

From 1 To 999

☐ Date Range

From ☒ 30/08/2006 09:33:41

To ☐ 30/08/2006 09:33:40

☐ Show All Receivers

Show

Revision pane

Revision	Date/Time	User	Change Extent	Comment
123	29/08/2006 09:29:00		All	Refreshed configuration from Receiver.
124	29/08/2006 09:31:55		All	Refreshed configuration from Receiver.
125	29/08/2006 10:26:35		Cpu	
126	29/08/2006 14:06:28		Cpu, LineCard1	Refreshed configuration from Receiver.
127	29/08/2006 14:06:47		Cpu, LineCard1	
128	29/08/2006 14:47:35		Cpu, LineCard1	
129	29/08/2006 14:47:52		Cpu, LineCard2,	
130	29/08/2006 14:53:55		Cpu, LineCard8	

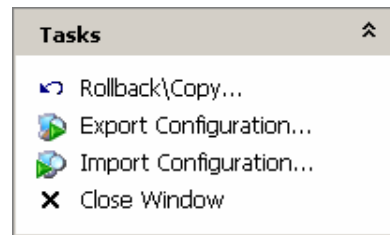
The revision pane shows all the revisions which match the selection criteria. The information shown is:

- **Revision** – This is the revision number for this configuration.
- **Date/Time** – This is the time and date the revision was created.
- **User** – This is the User who was logged on when the revision was created
- **Change Extent** – This gives an approximate idea of what the change affected in the receiver:
 1. **CPU** – Change affected the CPU Card.
 2. **LineCard N** – Change affected Line Card N.
 3. **All** – Change affected all cards.
- **Comment** – This is the optional comment that was entered at the time this change was saved.

Tasks

The following tasks are available when displaying the Configuration History:

- **Rollback/Copy** - This option allows the current receiver to be totally reconfigured with any previous revision for this receiver or any revision from any other receiver. Select the desired revision and select "Rollback/Copy". A confirmation screen will allow an additional comment to be made if desired.



Tip

Whenever a new CPU Card is replaced in a receiver, "Rollback/Copy" provides a convenient way to totally re-configure the replacement CPU Card.

- **Export Configuration** - A copy of a particular revision can be saved to a single file if desired. This provides a convenient way to transfer a particular revision from one server to another. In addition it can be useful to send this file to Inner Range if required for analysis. Select the desired revision and select "Export Configuration". A dialog box will allow a filename and directory to be chosen before saving that whole configuration in a single file.
- **Import Configuration** - This task allows a convenient way to re-program a receiver from a single file saved previously using the "Export Configuration" task. A dialog box will allow a filename and directory to be chosen before re-programming the current receiver with the configuration from the import file.

Note

Every release will include a file called "Factory Default Release x.xx", where x.xx is the release number. The FE900 can be defaulted back to factory default by importing this file.

The Event Log Window

Inner Range FE900 Server - [Event Log]

Selection Criteria

Event Sources

- ☒ Receiver 23
 - ☒ CPU Card 1
 - ☒ CPU Card 2
 - ☐ Line Card 1
 - ☐ Line Card 2
 - ☐ Line Card 3
 - ☐ Line Card 4
 - ☐ Line Card 5
 - ☐ Line Card 6
 - ☐ Line Card 7
 - ☐ Line Card 8
 - ☒ Line A
 - ☒ Line B
 - ☒ Line C
 - ☒ Line D

Date Range

From: 1/08/2006 13:13:16
To: 16/08/2006 14:13:16

Event Types

☒ Receiver ☒ Call
☒ Panel ☒ Set Clock
☒ Unverified ☒ Audio Listen-In

Call Result

Other

B/L Number:
 Client Code:
 Caller ID:
 Format: Any
 Min Duration: 0

☒ Auto Refresh Search

Ack	Event Time	Source	Client Code	Message	Format	Caller ID	Call State	Raw Event Data
✓	15/08/2006 15:57:54.830	23/LC 1A		Call event: State Answered 103		103	Answered	02103F33000300
✓	15/08/2006 15:57:59.040	23/LC 1A	9999	Client: 9999, TelcoIFault, New Event, Zone: 916	Contact ID	103		99991813510091
✓	15/08/2006 15:58:01.980	23/LC 1A	9999	Client: 9999, TelcoIFault, New Restore, Zone: 916	Contact ID	103		99991833510091
✓	15/08/2006 15:58:04.890	23/LC 1A	9999	Client: 9999, TelcoIFault, New Event, Zone: 916	Contact ID	103		99991813510091
✓	15/08/2006 15:58:07.820	23/LC 1A	9999	Client: 9999, TelcoIFault, New Restore, Zone: 916	Contact ID	103		99991833510091
✓	15/08/2006 15:58:11.860	23/LC 1A		Call event: State Completed 103		103	Completed	04103F33000300
✓	15/08/2006 15:58:56.320	23/LC 1A		Call event: State Ringing		103	Ringing	00103F33000300
✓	15/08/2006 15:58:59.320	23/LC 1A		Call event: State ReceivedCallerID 103		103	Caller ID	01103F33000300
✓	15/08/2006 15:58:59.320	23/LC 1A		Call event: State Answered 103		103	Answered	02103F33000300
✓	15/08/2006 15:59:03.510	23/LC 1A	9999	Client: 9999, SensorTrouble, New Event, Zone: 901	Contact ID	103		99991813800090
✓	15/08/2006 15:59:06.420	23/LC 1A	9999	Client: 9999, LowSystemBattery, New Event, Zone: 904	Contact ID	103		99991813020090
✓	15/08/2006 15:59:09.350	23/LC 1A	9999	Client: 9999, SystemPeripheralTrouble, New Event, Zone: 911	Contact ID	103		99991813300091
✓	15/08/2006 15:59:12.270	23/LC 1A	9999	Client: 9999, LongRangeRadioXmitterFault, New Event, Zone: 912	Contact ID	103		99991813530091
✓	15/08/2006 15:59:15.200	23/LC 1A	9999	Client: 9999, SensorTrouble, New Restore, Zone: 901	Contact ID	103		99991833800090
✓	15/08/2006 15:59:19.470	23/LC 1A		Call event: State Completed 103		103	Completed	04103F33000300
✓	15/08/2006 16:00:39.890	23/LC 1A		Call event: State Ringing		103	Ringing	00103F33000300
✓	15/08/2006 16:00:42.900	23/LC 1A		Call event: State ReceivedCallerID 103		103	Caller ID	01103F33000300
✓	15/08/2006 16:00:42.900	23/LC 1A		Call event: State Answered 103		103	Answered	02103F33000300
✓	15/08/2006 16:00:47.100	23/LC 1A	9999	Client: 9999, SensorTrouble, New Event, Zone: 901	Contact ID	103		99991813800090
✓	15/08/2006 16:00:50.020	23/LC 1A	9999	Client: 9999, LowSystemBattery, New Event, Zone: 904	Contact ID	103		99991813020090
✓	15/08/2006 16:00:52.960	23/LC 1A	9999	Client: 9999, SystemPeripheralTrouble, New Event, Zone: 911	Contact ID	103		99991813300091
✓	15/08/2006 16:00:55.880	23/LC 1A	9999	Client: 9999, LongRangeRadioXmitterFault, New Event, Zone: 912	Contact ID	103		99991813530091
✓	15/08/2006 16:00:58.790	23/LC 1A	9999	Client: 9999, SensorTrouble, New Restore, Zone: 901	Contact ID	103		99991833800090
✓	15/08/2006 16:01:02.840	23/LC 1A		Call event: State Completed 103		103	Completed	04103F33000300
✓	15/08/2006 16:02:38.350	23/LC 1A		Call event: State Ringing		103	Ringing	00103F33000300
✓	15/08/2006 16:02:41.370	23/LC 1A		Call event: State ReceivedCallerID 103		103	Caller ID	01103F33000300
✓	15/08/2006 16:02:41.370	23/LC 1A		Call event: State Answered 103		103	Answered	02103F33000300
✓	15/08/2006 16:02:45.560	23/LC 1A	9999	Client: 9999, SystemReset, New Event, Zone: 901	Contact ID	103		99991813050090
✓	15/08/2006 16:02:48.480	23/LC 1A	9999	Client: 9999, LowSystemBattery, New Event, Zone: 904	Contact ID	103		99991813020090
✓	15/08/2006 16:02:51.390	23/LC 1A	9999	Client: 9999, SystemPeripheralTrouble, New Event, Zone: 911	Contact ID	103		99991813300091
✓	15/08/2006 16:02:54.310	23/LC 1A	9999	Client: 9999, LongRangeRadioXmitterFault, New Event, Zone: 912	Contact ID	103		99991813530091
✓	15/08/2006 16:02:57.250	23/LC 1A	9999	Client: 9999, SystemReset, New Restore, Zone: 901	Contact ID	103		99991833050090
✓	15/08/2006 16:03:00.170	23/LC 1A	9999	Client: 9999, TelcoIFault, New Event, Zone: 916	Contact ID	103		99991813510091
✓	15/08/2006 16:03:01.990	23/LC 1A		Unverified error. Category ProtocolWarning, code FormatIsDisabled.	DTMF	103		0909090901
✓	15/08/2006 16:03:10.000	23/LC 1A		Call event: State Completed 103		103	Completed	04103F33000300
✓	15/08/2006 16:03:21.930	23/LC 1A		Call event: State Ringing		103	Ringing	00103F33000300
✓	15/08/2006 16:03:24.950	23/LC 1A		Call event: State ReceivedCallerID 103		103	Caller ID	01103F33000300
✓	15/08/2006 16:03:24.950	23/LC 1A		Call event: State Answered 103		103	Answered	02103F33000300
✓	15/08/2006 16:03:29.160	23/LC 1A	0210	Client: 0210, SensorTrouble, New Event, Zone: 901	Contact ID	103		02101813800090
✓	15/08/2006 16:03:32.080	23/LC 1A	0210	Client: 0210, LowSystemBattery, New Event, Zone: 904	Contact ID	103		02101813020090
✓	15/08/2006 16:03:34.990	23/LC 1A	0210	Client: 0210, SystemPeripheralTrouble, New Event, Zone: 911	Contact ID	103		02101813300091
✓	15/08/2006 16:03:37.900	23/LC 1A	0210	Client: 0210, LongRangeRadioXmitterFault, New Event, Zone: 912	Contact ID	103		02101813530091
✓	15/08/2006 16:03:40.830	23/LC 1A	0210	Client: 0210, SensorTrouble, New Restore, Zone: 901	Contact ID	103		02101833800090
✓	15/08/2006 16:03:44.860	23/LC 1A		Call event: State Completed 103		103	Completed	04103F33000300

Line Audio
Ready Server: localhost Authentication: Off

The Event Log Window is used to view the contents of the database of events received from all the FE900 Receivers connected to the server. The Event Log Window can show events as they are received in real time, or can be used to view historic events.

More than one Event Log Window can be open at once. Each Event Log Window can apply individual filters to only display selected events. In addition, each Event Log Window can be configured as to what columns are displayed and their order. The colours of each type of event log message can be configured. The selected colour scheme applies to all Event Log windows.

Selection Criteria

The selection criteria tab allows various criteria to be selected that will filter the database to only show the selected events. As more selection criteria are chosen, the search filter will become narrower. Once all the selection criteria have been selected, selecting the “Search” button will begin searching the database according to the selected criteria. Once the search has been completed, only the events that match the selection criteria will be displayed. Listed below is an explanation of the various selection criteria that can be applied:

Event Sources

This tab allows only events from selected receivers and lines to be shown. The user can select whole Receivers, CPU Cards, Line Cards or individual lines. At least one box must be ticked or else everything will be displayed.

Date range

This tab allows option filtering based on time and date. If the “From” box is ticked then only events after this time and date will be shown. If the “To” box is ticked then only events before this date and time will be shown. If neither box is ticked then no time/data criteria is applied.

Event Types

This tab allows a filter to be applied on the type of Receiver event. If the event type is ticked then that type is allowed to be displayed:

- **Receiver** – These are events generated by the FE900 Receiver itself.
- **Panel** – These are events received from a panel.
- **Unverified** – These are events received from a panel that cannot be verified.
- **Call** – These are events generated by the FE900 Receiver to indicate the current call status.

Note

Call events may not be in the database if they have been deactivated in [Configuring General Options](#).



- **Set Clock** – These are events that are associated with changing the Real-Time-Clock on the Receiver.
- **Audio Listen In** – These are events associated with [Audio Listen In](#).
- **System** – These are events generated by the FE900 Software.

Call Result

This tab allows a further filter to be applied to panel and unverified events. The parameters allow a filter based on what happened during the call:

- **All Outcomes** – These are all panel events, regardless of outcome.
- **Calls Full Success** – These are panel events that only contained verified messages.
- **Calls Partial Success** – These are panel events that contain both verified and unverified messages.
- **Calls No Success** – These are panel events that contain no verified messages.
- **Calls No Data** – These are panel events that contain no verified or no unverified messages.

Call Result

- ☒ All Outcomes
- ☐ Calls Full Success
- ☐ Calls Partial Success
- ☐ Calls No Success
- ☐ Calls No Data

Other

This tab allows a filter to be applied on miscellaneous items contained within the event. If the item is left blank, then no filter will be applied.

- **R/L Number** – This allows a particular R/L number to be selected. The R/L number is set by programming for each line. The allowable range is 00 to FF (hexadecimal).
- **Client Code** – This allows a particular panel client code to be filtered. Up to 8 hexadecimal digits can be entered. (Note that most formats use 4 digit decimal client codes).
- **Caller ID** – This allows a particular panel caller ID to be selected. This is very useful when the panel client code is not being decoded.
- **Format** – This allows selection based on the particular panel format used.
- **Min Duration** – This allows calls to be filtered based on the length of call in seconds. Only calls whose on line time exceeds that selected will be shown.

Other

R/L Number

Client Code

Caller ID

Format Any

Min Duration

Ticking the “Auto Refresh” option will cause the Event Log display to update automatically when new events that match the specified filter criteria need to be displayed. If the “Auto Refresh” option is not ticked, then the Event Log display will remain static.

☒ Auto Refresh

Once the selection criteria have been chosen, select the “Search” function to search the database and display the results.

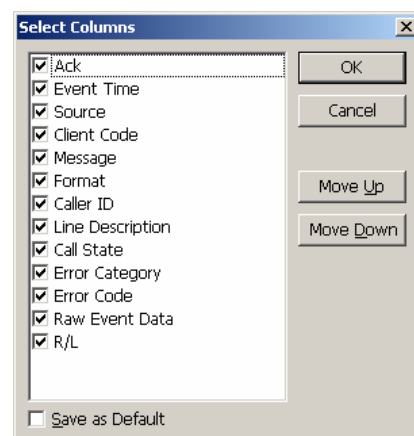
Event Log Window Columns

✓	Ack	Event Time	Source	Client Code	Message	Format	Caller ID	Call State	Raw Event Data
✓		15/08/2006 15:57:54.820	23/LC 1A		Call event: State Answered 103		103	Answered	02103F33000300
✓		15/08/2006 15:57:59.040	23/LC 1A	0600	Client: 0090, Telco:Fault, New Event, Zone: 016	Contact ID: 103			00001813510001
✓		15/08/2006 15:58:01.980	23/LC 1A	0600	Client: 0090, Telco:Fault, New Restore, Zone: 016	Contact ID: 103			00001813510001
✓		15/08/2006 15:58:04.860	23/LC 1A	0600	Client: 0090, Telco:Fault, New Event, Zone: 016	Contact ID: 103			00001813510001
✓		15/08/2006 15:58:07.820	23/LC 1A	0600	Client: 0090, Telco:Fault, New Restore, Zone: 016	Contact ID: 103			00001813510001
✓		15/08/2006 15:58:11.860	23/LC 1A		Call event: State Completed 103		103	Completed	04103F33000300

The user can select what columns on the Event Log are displayed, their order of display and their colours.

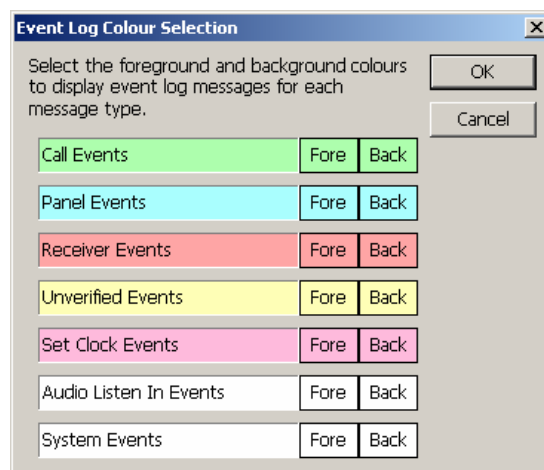
Selecting Event Log Columns to Display

When the desired Event Log Window is being displayed, select "View" and "Select Columns..." on the main menu. There is now the opportunity to select which Event Log Columns to display by toggling the tick box on the appropriate item. The user can also select the order of the columns by selecting an item and pressing "Move Up" or "Move Down". The uppermost items are displayed on the left hand side of the Event Log Window. If the "Save as default" box is ticked, then these settings will be used initially whenever a new event log is opened. Push "Ok" when finished.



Event Log Colour Selection

The colour of various event types can also be selected. Select "View" and "Colours..." on the main menu. The user now has the opportunity to select the foreground and background colours for all the main event types. Click on "Fore" or "Back" to open a colour picker for both the foreground and background respectively.



Event Log Column Descriptions

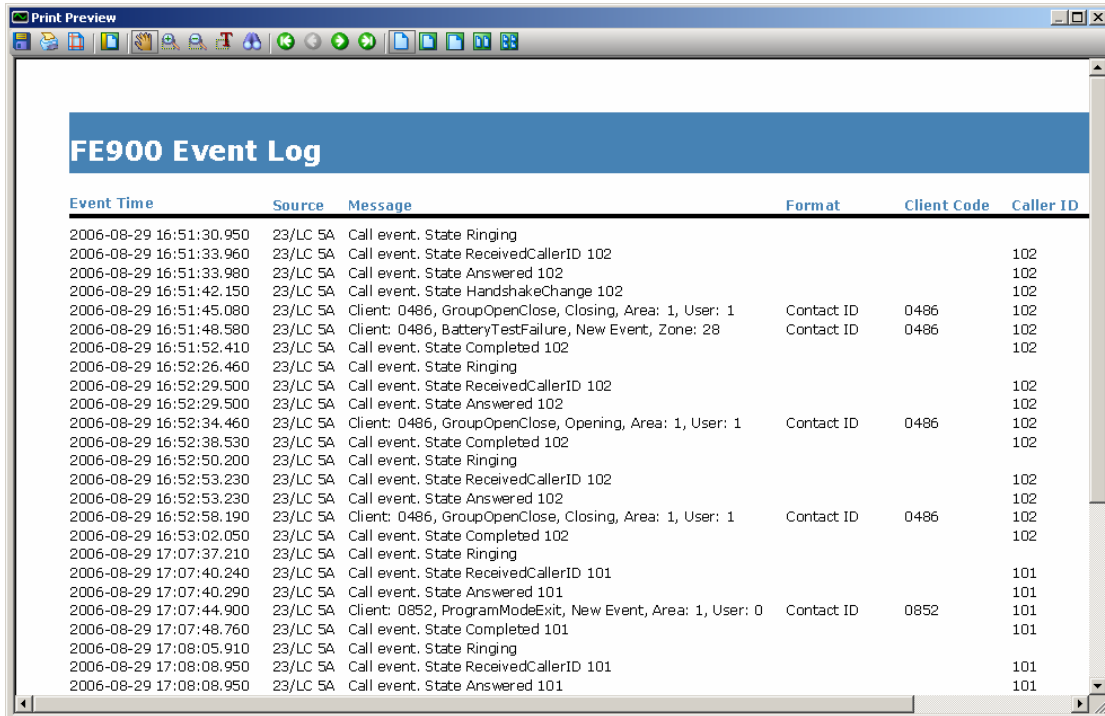
Listed below are all the Event Log columns:

- **Ack** - This column shows whether the event has been successfully acknowledged by the Automation System. Items not sent to the Automation System will automatically be ticked. If there are two Automation Systems, then an acknowledge has to have been received from both systems for a tick to be displayed.
- **Event Time** - This is the date and time that the event was processed on the FE900 receiver. The timestamp is synchronised to the individual FE900 real time clock. This is displayed in the local time-zone of the receiver.
- **Source** - This shows the Receiver number and Card that generated the event. The first 3 numbers indicate the receiver number. Following the "/" a mnemonic of "CPU 1" or "CPU 2" indicates the event originated from either CPU Card 1 or CPU Card 2. If the event was generated by a Line Card then following the "/" a mnemonic of "LC n" will be shown where n is the Line Card number (1 to 8). If the event originated from an individual line then a further suffix of "A", "B", "C" or "D" will indicate the actual line.
- **Message** - This column decodes the event into simple English.
- **Format** - This column shows the dialler format for panel events only. See [Handshakes and Formats](#) for a list of formats.
- **R/L** - This column shows the R/L number based on the line that the event was received on, and that R/L programming for that line. In most Automation System protocols, the R/L number is used along with the panel client code to determine the origin of the event.
- **Client Code** - This is the panel client code extracted for this panel event. It also appears in the message column.
- **Caller ID** - This is the received Caller ID if received for this panel, call or unverified event.
- **Call State** - This is the current call state extracted from Call type events. It also appears in the message column.
- **Error Category** - If the event is a Receiver event, then this 4 digit number specifies the particular category the event belongs to. See "Error Categories" in the FE900 Installation Guide.
- **Error Code** - If the event is a Receiver event, then this 4 digit number specifies the error detail for this event. See "Error Codes" in the FE900 Installation Guide.
- **Line Description** - Each line can be configured with a description to aid in identifying the line. This description is repeated in the Line Description column for clarity.
- **Raw Event Data** - The raw numbers for each event are displayed in this column. This can be useful when trying to decipher unverified panel events. The raw event data is shown for both verified and un-verified panel events.

Printing the Event Log

The displayed event log can be printed to the default windows printer by selecting the “File” “Print” menu or toolbar item. The report can be previewed if desired by selecting “Print Preview”.

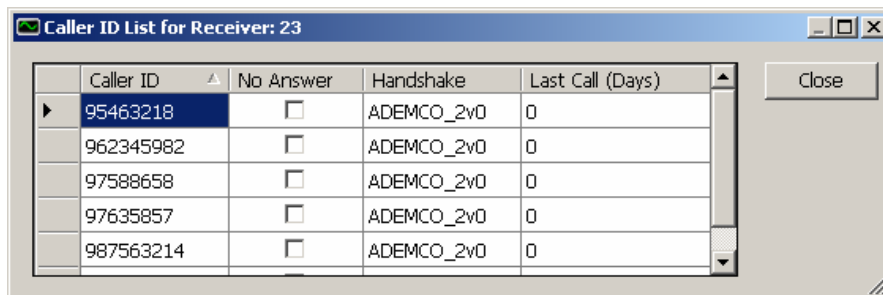
Page setup and desired printer selection can be made by selecting the ‘File’ ‘Page Setup...’ menu item.



The screenshot shows a 'Print Preview' window with a toolbar at the top. The main content area displays a table titled 'FE900 Event Log'. The table has six columns: Event Time, Source, Message, Format, Client Code, and Caller ID. The data is organized into two groups of events, one for Caller ID 102 and another for Caller ID 101. The events include state changes (Ringing, Received, Answered, Completed, HandshakeChange) and client-specific messages (GroupOpenClose, BatteryTestFailure, ProgramModeExit).

Event Time	Source	Message	Format	Client Code	Caller ID
2006-08-29 16:51:30.950	23/LC 5A	Call event. State Ringing			102
2006-08-29 16:51:33.960	23/LC 5A	Call event. State ReceivedCallerID 102			102
2006-08-29 16:51:33.980	23/LC 5A	Call event. State Answered 102			102
2006-08-29 16:51:42.150	23/LC 5A	Call event. State HandshakeChange 102			102
2006-08-29 16:51:45.080	23/LC 5A	Client: 0486, GroupOpenClose, Closing, Area: 1, User: 1	Contact ID	0486	102
2006-08-29 16:51:48.580	23/LC 5A	Client: 0486, BatteryTestFailure, New Event, Zone: 28	Contact ID	0486	102
2006-08-29 16:51:52.410	23/LC 5A	Call event. State Completed 102			102
2006-08-29 16:52:26.460	23/LC 5A	Call event. State Ringing			102
2006-08-29 16:52:29.500	23/LC 5A	Call event. State ReceivedCallerID 102			102
2006-08-29 16:52:29.500	23/LC 5A	Call event. State Answered 102			102
2006-08-29 16:52:34.460	23/LC 5A	Client: 0486, GroupOpenClose, Opening, Area: 1, User: 1	Contact ID	0486	102
2006-08-29 16:52:38.530	23/LC 5A	Call event. State Completed 102			102
2006-08-29 16:52:50.200	23/LC 5A	Call event. State Ringing			102
2006-08-29 16:52:53.230	23/LC 5A	Call event. State ReceivedCallerID 102			102
2006-08-29 16:52:53.230	23/LC 5A	Call event. State Answered 102			102
2006-08-29 16:52:58.190	23/LC 5A	Client: 0486, GroupOpenClose, Closing, Area: 1, User: 1	Contact ID	0486	102
2006-08-29 16:53:02.050	23/LC 5A	Call event. State Completed 102			102
2006-08-29 17:07:37.210	23/LC 5A	Call event. State Ringing			101
2006-08-29 17:07:40.240	23/LC 5A	Call event. State ReceivedCallerID 101			101
2006-08-29 17:07:40.290	23/LC 5A	Call event. State Answered 101			101
2006-08-29 17:07:44.900	23/LC 5A	Client: 0852, ProgramModeExit, New Event, Area: 1, User: 0	Contact ID	0852	101
2006-08-29 17:07:48.760	23/LC 5A	Call event. State Completed 101			101
2006-08-29 17:08:05.910	23/LC 5A	Call event. State Ringing			101
2006-08-29 17:08:08.950	23/LC 5A	Call event. State ReceivedCallerID 101			101
2006-08-29 17:08:08.950	23/LC 5A	Call event. State Answered 101			101

The Caller ID List Window



The Caller ID List serves as a means for the operator to view and interact with a receiver's on-board Caller ID database. Along with the Caller-ID, the window also displays information about the last successful call to the receiver made by each Caller ID. The Caller ID List is accessed from the Tasks pane on the Receiver Window.

The displayed items are:

- **Caller ID** – The phone number of the client panel.
- **No Answer** – If this item is checked, the receiver will not answer calls from this Caller ID. This allows the receiver to block calls from delinquent clients. See [Selective Answer](#) for more information on this feature.
- **Handshake** – This shows the 'preferred' handshake for the Caller ID. This was the handshake used between receiver and panel on the last successful call into the receiver.
- **Last Call** – Shows when the last successful call made to the receiver by this Caller ID was made, in days.

The Caller ID List view can be sorted on Caller ID, Handshake and Last Call. The operator can add and remove Caller IDs here, as well as modify the No Answer field. Changes here will be propagated to the receiver. Adding items would normally only be used in conjunction with Selective Answer

Selective Answer (Caller-ID Based Call Rejection)

This feature allows calls from delinquent clients to be rejected (not answered) by matching the Caller-ID with a record in the non-volatile Caller-ID database held in the receiver. This feature requires:

- FE900 Software V3.1 or later
- CPU Card firmware 3.15 or later
- Line Card firmware 3.10 or later

To block a caller, find the phone number in the [Caller ID List](#) and tick the 'No Answer' column. Sorting of the list, by clicking on the column heading, can help with a large list. Alternatively, the operator can find an event in the [Event Log](#) which has come from a delinquent client and right-click on the event. This pops up a menu with the option to block the calls from the corresponding phone number.

If the phone number of the delinquent client is not held in the receiver's Caller ID List and there are no prior entries from this Caller ID in the Event Log, the operator can add a new item by navigating to the last row (marked "***") in the Caller ID List, entering the phone number and ticking the 'No Answer' column.

Note

Unlike database entries containing the preferred communications format (handshake) of a Caller ID (which are purged automatically if no call is received within the configured 'CND timeout'), the 'No Answer' database entries are permanent. When a 'No Answer' entry is no

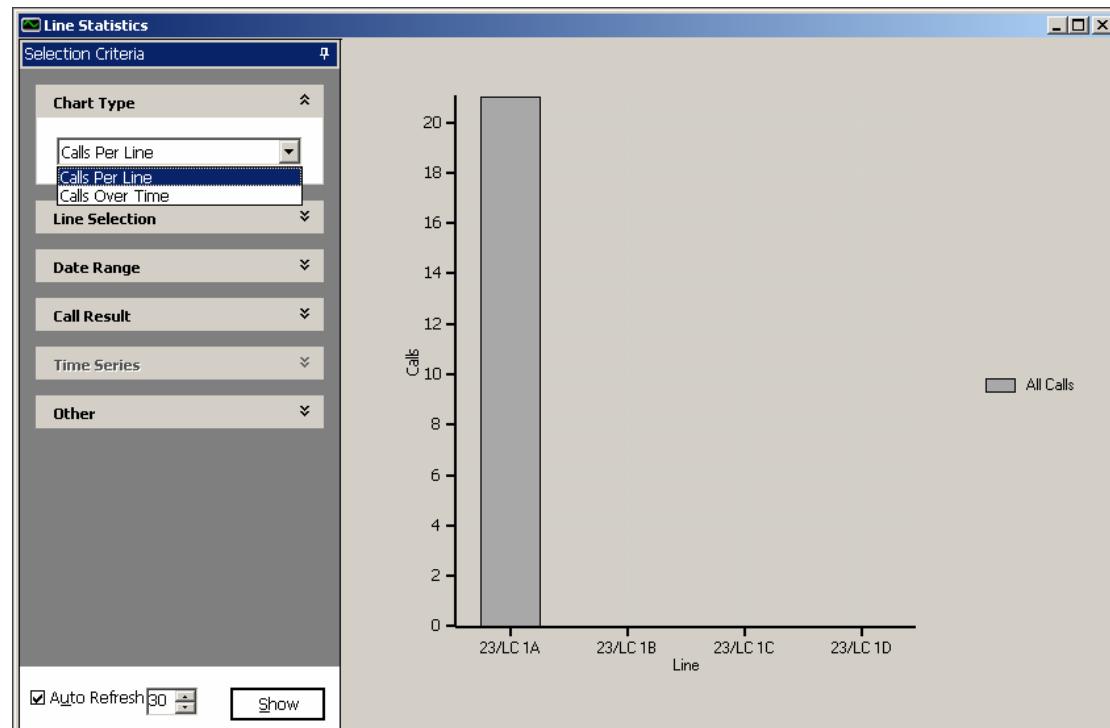


longer required, un-check the 'No Answer' check box in the Caller ID List. This will allow the Caller ID to be answered or purged normally.

**Warning**

If the Selective Answer feature is being used, Answer CND **MUST** be switched off in [Line Card Configuration](#) for the relevant lines!

Line Statistics



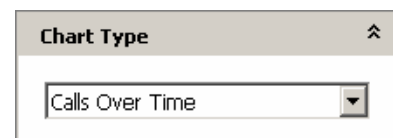
The Line Statistics window can be selected from either the toolbar on the Main Window, or by pressing the “Show Line Card Statistics” task on the Line Card detail Window. The Line Statistics screen allows the user to graphically analyse calls received by the FE900 to help in finding problems and maintaining the receiver. A “Zoom” feature allows a particular point of interest on the chart to be double clicked and a new Event Log Window will be opened only showing events relevant to the chart point. For example a chart showing all calls over 10 minutes might indicate 2 calls meeting those criteria. Double clicking on that part of the chart will show an Event Log Window only showing events for those two calls.

The Selection Criteria is used to select what type of statistic to show and to filter events as required:

Chart Type

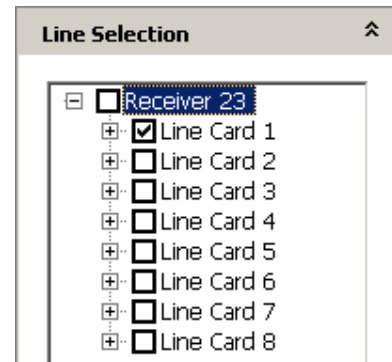
There are two chart types available:

- **Calls per Line** – This chart shows a bar graph of the number of calls received versus the source of the calls (i.e., “23/LC 1A” is Receiver 23, Line A on Line Card 1). This chart is useful for:
 1. Monitoring rotary usage.
 2. Monitoring Client activity.
 3. Checking what formats are received on what lines.
 4. Gauging the level of communication errors on lines.
 5. Judging what clients/lines have high on-line times.
- **Calls over Time** – This chart shows a line graph of the number of calls received per line verses time. This chart is useful for
 1. Determining peak hour traffic volumes
 2. Calculating the time and duration of peak hour
 3. Observing the frequency of reporting for selected clients.



Line Selection

This tab allows only events from selected receivers and lines to be shown. The user can select whole Receivers, Line Cards or individual lines. At least one box must be ticked or else nothing will be displayed.



Date Range

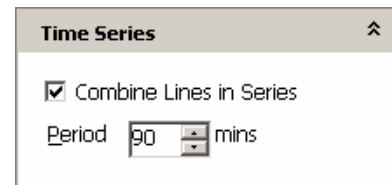
See [“Event Log Window” selection criteria](#) (This criteria is mandatory for the “Calls over Time” chart type).

Call Result

See [“Event Log Window” selection criteria](#) (This is not used for the “Calls over Time” chart type).

Time Series

This option is only relevant for the “Calls over time” chart type. The “Combine Lines in Series” option will cause all individual lines to be aggregated into a single line series. The “Period” option sets the resolution desired between the two selected dates above.



Other

See [“Event Log Window” selection criteria](#)

Auto Refresh

The Auto Refresh option when ticked allows the chart to be automatically updated. The period between updates (in seconds) can be selected ☒ Auto Refresh

When the chart type has been selected and all the selection criteria have been chosen, press “Show” to display the chart.



Tips

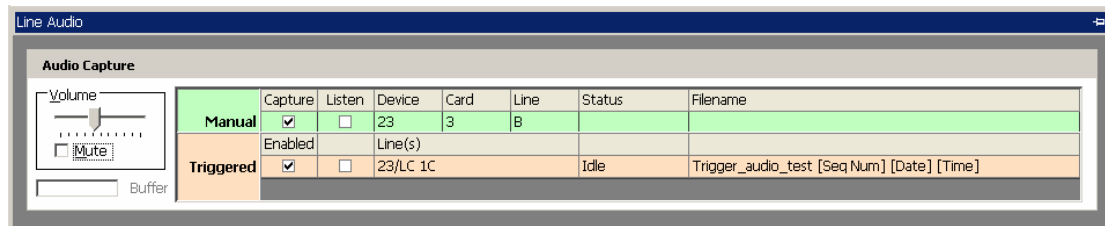
- When the chart is being displayed the user can zoom in / drill-down on any point on the chart by double clicking that point. A new Event Log Window will be opened displaying the events relevant to that point.
- Holding the Shift Key whilst dragging the mouse with the left button pressed will cause that part of the chart to be offset. Holding the Control Key whilst dragging the mouse with the left button pressed will cause that part of the chart to be re-scaled.

Printing Statistics

The displayed statistics chart can be printed to the default windows printer by selecting the “print” menu or toolbar item. Statistics charts can be previewed by selecting, “File > Print Preview”.

Page setup and desired printer selection can be made by selecting the ‘File’ ‘Page Setup...’ menu item.

Line Audio



The FE900 has powerful inbuilt audio facilities to aid in debugging communications problems. The Audio Window can be used to:

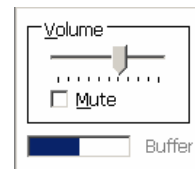
- Listen to the audio on a particular line. (This can also be achieved by pressing the “Audio” button on the “Line Details Window”.
- Manually initiate capturing audio from a particular line and saving it to a file.
- Set up trigger conditions to automatically trigger the capture of audio to a file or files.

Because PSTN dialler communications use voice band signals, if these signals can be recorded, then this offers a powerful way to analyse the communications in great detail. If some problem exists with a panel’s communications, the FE900 can be configured to record the audio from that panel to a file. This file can then be analysed by the user (using a wave editor) or sent to Inner Range for analysis. The data captured then allows the communication to be analysed for timing issues, noise levels, signal levels etc.

The Audio Window is selected under “View” > “Line Audio” on the Main Window, or pressing the “Line Audio” tab on the bottom left hand side of the Main Window.

On the left hand side of the Audio Window is a volume slider to allow the volume to be adjusted of any audio being listened to, and a mute button to mute the audio entirely.

The box marked Buffer indicates the relationship between audio information being received from the FE900 and audio being streamed out to the speaker.



On the right hand side are two panes. The top most pane is used to configure “Manual” audio listening/capture. The bottom most pane is used to configure “Triggered” audio capture.

Manual Listen/Capture

	Capture	Listen	Device	Card	Line	Status	Filename
Manual	☒	☐	23	3	B		

The following items can be selected:

- **Capture** – Selecting this tick-box will automatically start capturing audio from the specified Device, Card and Line to the filename specified under “Filename”. If a filename is not specified, the FE900 will create a new file named “Capture nnnn.wav” where nnnn is the next number in sequence after the last file name recorded. The “Listen” box will automatically be ticked.
- **Listen** – Selecting this tick-box will automatically start listening to audio from the specified Device, Card and Line. If you are already listening then un-ticking this box will disable audio listening.
- **Device** - This drop-down box selects the FE900 Receiver you wish to listen to/capture from.
- **Card** - This drop-down box selects the Line Card you wish to listen to/capture from.
- **Line** - This drop-down box selects the individual line you wish to listen to/capture from.
- **Filename** – This box allows you to select a filename to capture to. If a filename is not specified when capture is initiated, the FE900 will create a new file named “Capture nnnn.wav” where nnnn is the next number in sequence after the last file name recorded.



Note

All captured audio files are saved to the AudioCapture folder directly beneath the FE900 Software installation folder on the server PC.



Warning

If an operator is running the client software from a *different* computer to that running the server, the captured audio file will only be saved to the server computer and not to the computer that the operator is using.

The “Status” box shows the current status of manual audio listen/capture:

1. **Disabled** – Manual Capture/Listen is disabled
2. **Listening** – Currently Listening
3. **Capturing** – Currently Capturing
4. **Capturing/Listening** – Currently Capturing and Listening

Triggered Capture

	Enabled		Line(s)		
Triggered	☒	☐	23/LC 1C	Idle	Trigger_audio_test [Seq Num] [Date] [Time]

The Triggered Capture pane allows multiple Audio Capture tasks to be defined. (See [Capture Task Menu](#)). Each Audio Capture task takes up a line in the Triggered Capture pane. To enable a specified capture task, tick the appropriate “Enabled” tick box. Un-ticking the “Enable” box will disable the capture task. Only one capture task may be enabled per receiver at any one time. There is an option to listen to a selected capture task by ticking the “Listen” box.

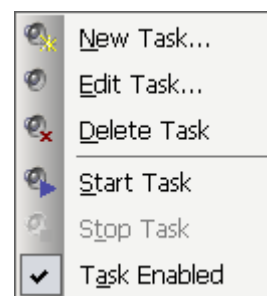
The information displayed for a capture task is:

- **Line(s)** – This shows what lines the capture task will trigger on. When the task is actually capturing/listening audio, this will display the line that the audio is coming from.
- **Filename** – This shows the filename that will be used to save captured audio for this task.
- **Status** – This shows the current status of the capture task:
 1. **Disabled** – Disabled, will not trigger
 2. **Idle** – Waiting for a trigger condition
 3. **Capturing** – Currently capturing after a trigger condition was met
 4. **Capturing/Listening** – Currently Capturing and Listening

Capture Task Menu

The capture task menu is displayed by right clicking the mouse anywhere within the “Triggered” Capture window. The menu options are:

- **New Task** – This option allows a new task to be created by opening the Capture Task Edit Screen. (See below).
- **Edit Task** – This option allows the currently selected task to be edited by opening the Capture Task Edit Screen. (See below). Double clicking a task will also allow it to be edited.
- **Delete Task** – This will delete the currently selected task.
- **Start Task** – This will unconditionally trigger the selected task, irrespective of its trigger conditions.
- **Stop Task** – This will un-conditionally stop the selected task if it has been triggered, irrespective of its trigger end conditions.
- **Task Enabled** – This indicates if the selected task is currently enabled. Selecting this item will toggle the enabled state of the selected task.



Note

ONLY ONE LINE CAN BE CAPTURED OR LISTENED TO PER RECEIVER AT ANY ONE TIME.



Capture Task Edit Screen

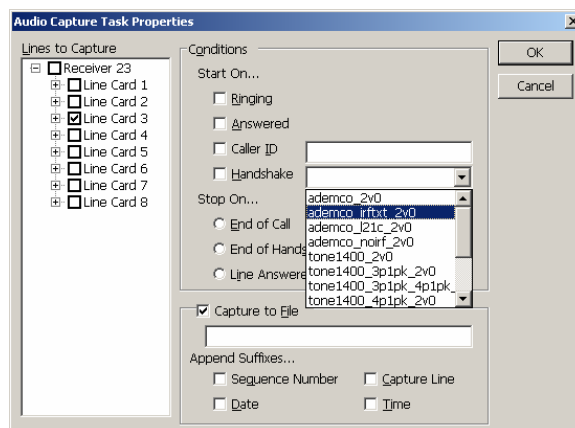
The capture task edit screen allows a new task to be defined, or an existing task to be edited.

Line to Capture

This pane allows the user to select which devices and lines to monitor for the capture condition.

Conditions – Start on

- **Ring** – If this option is selected then the FE900 will trigger at the start of ringing on the selected lines. No other trigger condition should be set.
- **Answering** – If this option is selected then the FE900 will trigger when the line is answered on the selected line(s). No other trigger condition should be set.
- **Caller ID** – If this option is selected then the FE900 will trigger when the chosen Caller ID is decoded on the selected line(s). If no caller ID number is entered, then the FE900 will trigger if Caller ID is not decoded.
- **Handshake** – If this option is selected then the FE900 will trigger at the start of the selected handshake, if it is sent on one of the selected lines.



Conditions – Stop on

- **End of Call** – If this option is selected then the capture will finish at the end of the call.
- **End of Handshake** – If this option is selected then the capture will finish at the end of the 1st handshake attempted after being triggered.
- **Line Answered** – If this option is selected then the capture will finish when the line is answered. (this only makes sense if the capture started on Ringing or on Caller ID).

Capture to file

This allows the capture file name to be specified. It will be saved to the AudioCapture folder below the FE900 Software installation folder on the server computer. If the box is not ticked then no capture will take place.

Append Suffixes:

- **Sequence Number** – If this option is selected then a 4 digit sequence number will be appended to the end of the file name. This number is automatically incremented by the server to avoid overwriting a previous file.
- **Date** – If this option is selected then the date at capture will be appended to the end of the file name.
- **Captured Line** – If this option is selected then the device/Line Card/line being captured will be appended to the end of the file name.
- **Time** – If this option is selected then the time at capture will be appended to the end of the file name.

**Warning**

If no Append Suffixes are chosen and multiple capture conditions are triggered then the same file name will be used for all captures. This means that older capture files will be overwritten.

Handshakes and Formats

Handshakes are programmed into individual lines on Line Cards and determine what panel formats can be received on that line. More than one handshake can be programmed for a particular line so that multiple formats can be received on that line; However, the type of handshake and the order of the handshakes can affect the way that line communicates. Some handshakes are not compatible with others on the same line. Some handshakes should appear before others when used on the same line.

Handshakes are broadly categorized into types. These types can be recognised by the first word in the handshake description prior to the underscore. The types are:

Type	Description
ADEMCO_	Used to receive most DTMF formats starting with a two tone handshake.
TONE1400_	Used to receive pulse formats with a 1400Hz handshake tone.
TONE2300_	Used for pulse formats with a 2300Hz handshake tone.
MODEM_	Used for modem formats.

AS A GENERAL RULE, ONLY ONE HANDSHAKE OF EACH OF THESE FOUR TYPES SHOULD BE USED ON THE SAME PSTN LINE.

Handshakes also end in a version number of the form XvY preceded by an underscore. (For example: Ademco_3v0).

Tip

Unless advised otherwise, *a/ways* choose the handshake with the highest version number.



Important to note when changing handshakes in Line Configuration

The FE900 stores a database of Caller-IDs that have dialled into the Receiver. Along with the Caller-ID, the FE900 stores the last successful handshake used with each Caller-ID to speed up processing of subsequent calls from that number.

There is a side-effect of this feature with respect to subsequent modification of Line Card Configuration:

If the following conditions are met:

1. In Line Card Configuration: If a handshake is deleted and replaced with another handshake (with a different handshake number), AND
2. If the Caller-ID database has panels that have answered calls on the deleted handshake:

Next time any of these panels rings in, an error "LC Template not found" (Error 2008) is raised and the call is terminated.

The panel will then ring back and the newly configured handshake sequence is applied. If the panel then answers on one of the configured handshakes, that new handshake is stored in the Caller-ID database.

The sections below describe what formats are received with what handshakes:

ADEMCO Type Handshakes

Handshake/ Format	No. of tones	ADEMCO_	ADEMCO_ L21C_	ADEMCO_ IRFTXT_	ADEMCO_ NOIRF_	ADEMCO_ LHSTO_	ADEMCO_ NOIRF_ LHSTO_	ADEMCO_ NOIRFCID_	ADEMCO_ CnK_ NOIRFCID_
4+2 Dual	6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4+2+K	7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ademco Express	9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ademco Fast Dual	13	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ademco Fast Checksum	14	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6 digit Ademco Fast Dual	15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6 digit Ademco Fast Checksum	16	No	No	No	No	No	No	No	No
Contact ID	16	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Contact ID Plus	21	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IRFast DTMF	21	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IRFast Modem	NA	Yes (no text)	Yes (no text)	Yes (with text)	No	Yes (no text)	Yes (no text)	Yes (no text)	Yes (no text)

Notes

- ADEMCO_L21C accepts the same formats as the ADEMCO handshake but is designed specifically to cope with British Telecom's 21C line conditions.
- IRFast Format: The FE900 accepts both 300 and 1200 baud IRFast communications from Concept 4000 alarm panels.
- Handshakes containing LHSTO_ have a Long Hand-Shake Time Out. This extends the time that the receiver waits for a response from the panel after sending the handshake tones.
- Handshakes containing NOIRFCID_ support IRFast, but do not request that the panel send embedded Contact-ID messages. This type of handshake is used when the Automation System supports IRFast, which in turn is enabled by ticking the Reporting Options/IRFast Raw Format check-box in the [Automation System Configuration](#) tab of the Configure Receiver dialog. This type of handshake stops the A.S. seeing duplicated events (one copy reported via IRFast and the other via Contact-ID).
- Handshakes containing CnK_ provide a long kissoff tone as required by some C & K panels

TONE1400 Type Handshakes

TONE1400 Handshakes use a 1400Hz handshake tone

Handshake/ Format	No. of digits	TONE 1400_ LEOR	TONE 1400_ 3p1pK_ 4p1pK_	TONE 1400_ 3p1pK_ 4p1pK_	TONE 1400_ 3p1pK_ 4p1pK_	TONE 1400_ 3p1pK_ 4p1pK_
3+1 Dual	4	Yes	Yes	Yes	Yes	Yes
3+1+K	5	No	No	Yes	No	Yes
4+1 Dual	5	Yes	Yes	No	Yes	No
4+1+K	6	No	No	No	Yes	Yes
4+2 Dual	6	Yes	Yes	Yes	No	No
4+2+K	7	Yes	Yes	Yes	Yes	Yes

Note

The TONE1400_LEOR handshake is the same as the TONE1400_ handshake except it has a longer end of round time such as is required by a Spectra 1728 when using a 4+2 dual round format.



TONE2300 Type Handshakes

TONE2300 Handshakes use a 2300Hz handshake tone

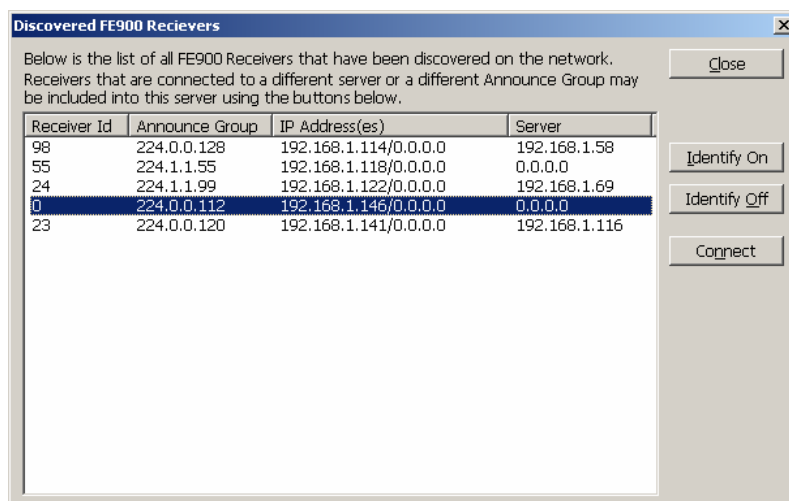
Handshake/ Format	No. of digits	TONE 2300_ 3p1pK	TONE 2300_ 3p1pK 4p1pK	TONE 2300_ 3p1pK 4p1pK	TONE 2300_ 3p1pK 4p1pK
3+1 Dual	4	Yes	Yes	Yes	Yes
3+1+K	5	No	Yes	No	Yes
4+1 Dual	5	Yes	No	Yes	No
4+1+K	6	No	No	Yes	Yes
4+2 Dual	6	Yes	Yes	No	No
4+2+K	7	Yes	Yes	Yes	Yes

MODEM Type Handshakes

MODEM_SIA

MODEM_SIA_ supports panels which report in SIA format. Includes: Panel Capabilities packet support, Data Acknowledge support and Audio Listen In support to level 3.

Discovered FE900 Receivers



This window is displayed when “Discovered Receivers” is selected from the Tool Bar on the Main Window or from the View menu and is used to display all FE900 receivers accessible on the network, whether they are connected to other FE900 servers or not. In addition the IP addresses assigned by DHCP are shown. If the assigned FE900 Server IP address is 0.0.0.0 then that receiver is not connected to a server.

Tip

This screen is particularly useful if more than one server resides on a network (even though it is not usual to have more than one FE900 server on a network).

The displayed items are:

- **Receiver ID** - This is the current Receiver ID assigned to this receiver.
- **Announce Group** - This is the current multicast group address used by this receiver. This receiver will attempt to connect to a FE900 server with the same announce group setting (See setting “Announce Group” under [Configuring General Options](#)).
- **IP Address(s)** - This is the current IP addresses assigned to the FE900 CPU A (and CPU B if present).
- **Server** - This is the current IP address assigned to the FE900 server connected to this receiver. A display of 0.0.0.0 means this receiver is not currently connected to any FE900 server.

Discovered Receiver Tasks

The following actions can be invoked on the selected receiver:

- **Identify On** - This task will cause all the LEDs on the master CPU Card on the selected receiver to flash. The LEDs will revert to normal operation after 30 seconds.

Tip

This is a useful aid in identifying a receiver in a rack containing many FE900 receivers. This can be done even if the receiver is not connected to a server, or even connected to another server.

- **Identify Off** - This turns off the flashing LEDs which were activated by "Identify On". This task would normally be used if the Operator wishes that LEDs return to normal operation *earlier* than the default 30 seconds after an "Identify On" is initiated.
- **Connect** - If the selected receiver is not currently connected to a server, you can force it to connect to your server by selecting this task. The FE900 Server's "Announce Address" will be copied to the receiver's "Announce Group" causing the receiver to attempt to connect to this server.

Audio Listen In

Audio Listen In is a function whereby a call to a receiver is patched through to an operator at the Monitoring Centre when the receiver has passed the event to the Automation System.

For correct operation of Audio Listen In, the panel and receiver must be able to communicate using communications formats that support it (such as SIA format and Ademco fast) and the Automation System must support it as well.

Currently, the FE900 supports the ADFast 8 protocol for Audio Listen In (which is available in the ADSW Automation System), although other protocols can be added by request.

For more information on the operation of Audio Listen In, contact Inner Range.

Automation Protocols

SIA Format Support

SIA support is level 1 with some aspects of level 2 and level 3, such as data acknowledge. Audio Listen In is also supported. Additional features of SIA can be added as required by customers with SIA panels.

In order to receive events from panels and pass them to the Automation System in SIA Format, the receiver must have at least:

- CPU Card firmware 3.16 or later
- Line Card firmware 3.11 or later
- Lines expected to receive SIA events must have the MODEM_SIA handshake in their Line configuration

This allows the FE900 to receive SIA format from panels and send SIA events to the Automation System (using SURGARD A.S. format only).

FE900 Software V3.2 or later is able to display SIA panel events in the Event Log in a readable way. This version of the FE900 software also includes the MODEM_SIA handshake file.

TCP/IP Connection to an Automation System

The FE900 receiver can connect to compatible Automation System (A.S.) software via TCP/IP instead of RS232. Either or both A.S. ports (AS1 and AS2) can use TCP/IP. To use this feature, the receiver and FE900 Software must meet these requirements:

- FE900 Software V3.1 or later
- CPU Card firmware 3.03 or later (latest revision recommended)

This feature can be enabled in the A.S. Configuration tab within the Configure Receiver task. Tick the TCP/IP check-box and make sure the port number is correct.

The FE900 uses two configurable fixed TCP/IP ports, which are 9307 (for AS1) and 9308 (for AS2) by default. The receiver listens on these ports on all of its Ethernet links (2 on the Master CPU and 2 on the backup CPU if present), and will accept ONE connection per AS port on each CPU. Therefore there can be 4 simultaneous connections from Automation Systems to the FE900 receiver (Master CPU AS1, Master CPU AS2, Backup CPU AS1 and Backup CPU AS2). Normally only the Master CPU AS1 (and Backup CPU AS1 if present) would be used.

The simultaneous connections are all maintained with support for test/check messages (e.g. Ademco 'S' checks) where relevant. However, signals are only sent over the Master CPU connections. If the Mastership switches to the backup CPU Card, it takes over sending of the signals instead.

To configure the A.S. to connect via TCP/IP to the FE900, it needs to be told the IP address(es) of the FE900 and the port number. It then connects to FE900 as a client (with the FE900 CPU Card being a server). The specific way this is achieved depends on the A.S. software (please contact your A.S. supplier).

To support redundant Ethernet links (Eth. 1 and Eth. 2) to a single CPU Card, the A.S. software must be configured with the two IP addresses of the receiver and be able to treat them as a primary and secondary address. If connection to the primary IP address fails, it must automatically connect to the secondary address.

When TCP/IP is in use on an AS port the corresponding RS232 port is a transmit-only port. This means it ignores received data and control signals, and just sends a copy of what is sent via TCP/IP.

For more information on Automation Protocols supported by the FE900, contact Inner Range.

Hot Standby CPU Operation

The backup CPU Card in a redundant CPU Card pair can be described as a 'Hot Standby' CPU because it is always powered and active, ready to take over in an instant.

The backup CPU Card continually monitors the backplane traffic to and from the Line Cards. This allows it to follow the state of all lines, so it always knows the state of any calls. It also stores panel events coming from a line into its own event buffer, so that its event buffer contents always match, as closely as possible, the current contents of the event buffer in the Master CPU Card.

As events are sent by the Master to the Automation System(s), the backup CPU Card discards the corresponding events, so it always stays in sync. This means that when switchover is required, no events are lost and an absolute minimum are duplicated.

Locally generated receiver events (system events) are also exchanged between the Master and Backup CPUs to maintain synchronisation.

The configuration in the backup CPU Card is automatically updated by the Master CPU Card:

- within a few seconds of installation of the backup CPU Card *and*
- whenever the configuration is changed

This means that the user does not need to consider the CPU Cards as separate devices, but rather as a single component of the receiver which has built-in redundancy.

Mastership Switchover

Mastership can be switched manually at any time, as long as the backup CPU Card is fully operational and its configuration has been synchronised (an automatic process).

Automatic switchover occurs whenever the backup CPU Card detects that the Master CPU Card is no longer controlling the rack as it should. This switchover takes only a few hundred milliseconds and does not disrupt calls, Automation System output, or server communications.

In a Mastership switchover, the backup CPU Card takes over driving of the RS232 ports communicating with the Automation System(s) and also takes over management of all other receiver functions. In the case of TCP/IP communications, there is no electrical switching like there is with RS232 ports – The AS1 (and/or AS2) connection is always active on both the Master and backup CPU Cards at any time. The only difference is events are only sent to the Automation System by the CPU Card that is Master at the time.

Note however, that if the switchover was caused by actual failure of the Master CPU, the nature of the failure could potentially still disrupt operation of the receiver – even though the hardware has been designed to prevent this as much as possible. This is a downside of the "hot standby" redundancy approach.

Warning

For the reasons outlined above, a failed CPU which has not recovered on its own should be removed from the rack as soon as is practical.

Automatic switchover will be observed during normal operation in some circumstances. For example, if the firmware in the Master CPU Card is updated and it resets itself, or the Master CPU Card is manually reset, the backup CPU Card will detect this and become Master.



Emergency CPU Cards

An Emergency CPU is a special type of CPU Card with a limited run-time as Master (Emergency CPU Cards come with 30 days run-time as Master when purchased). It can be used as a 'Hot Standby' CPU Card in an FE900 which would be used for redundancy in case of failure of the primary CPU Card, or kept as a spare.

When used as a hot redundant CPU Card, the Emergency CPU Card has a feature which stops it from using up run-time unnecessarily. Whenever there is another CPU Card in the FE900 which is running and appears stable, the Emergency CPU Card will relinquish Mastership to the other CPU Card. The Emergency card keeps track of failures of the primary CPU Card and if it fails repeatedly within a limited period of time, the Emergency CPU Card will no longer relinquish Mastership. The settings for the automatic switchback can be changed by asking Inner Range to supply a custom CPU template file.

Apart from the limited run-time and the automatic switchback feature, the Emergency CPU Card is a fully featured CPU Card and behaves in the same way as a normal CPU Card. Physically, an Emergency CPU Card can be recognised by the label on the PCB.

Within the FE900 Software, an Emergency CPU Card is displayed with a different background colour to "Full" CPU Cards in the [Receiver Window](#). The colour of the Emergency CPU Card will change depending on its current status:

- *Brown* – Emergency CPU is in Hot Standby Mode
- *Dark Blue* – Emergency CPU is Master and there are more than 5 days of run-time as Master left.
- *Dark Blue with Red* – Emergency CPU is Master and **available run-time as Master is running out!** This will occur if there are **5 days or less** run-time as Master left. The card will fill up with red as available run-time as Master decreases.

Whenever an Emergency CPU becomes Master, a special event is generated to warn the operator that the receiver now has limited run-time. This is event code 1095 (restore is event 1096) and corresponds to Contact-ID system event (from the receiver client code, default 999999) msg 300, point 014. Another event warns the operator when the available run-time falls below a configurable limit. This is reported as contact-ID system event msg 300, point 015. This event is repeated at configurable intervals until the run-time is recharged. Refer to these codes in [Table 2.2](#) of the Error Codes Appendix for more details

"Recharging" Emergency CPU Cards

The available run-time can be increased ("recharged") by the operator at any time, in increments of 30-days. Recharges are cumulative. A new Emergency card has 16 recharges available. A recharge is applied to the card by entering a recharge code into the FE900 Software. A recharge code can only ever be applied once and can only be used on an Emergency card with a specific serial number.

Recharge codes are obtained directly from Inner Range (Product code 998940 - FE900 Emergency CPU 30Day Recharge), and can be delivered via email or, in an emergency, over the phone.

To enter a recharge code, open the Receiver Window and double click on the Emergency CPU Card. The recharge entry field is shown on the right. Enter the code (preferably by cut-and-paste from an email, to avoid typing errors) into the entry-field. The 'Apply' button will become available when a complete and correct recharge code is entered. Select 'Apply' and observe the 'remaining time', which should increase by 30 days.

If the available run-time on an Emergency runs-out, the card will shut down and cease to function, with only the red 'FAULT' LED illuminated. Cycling power to a card in this state (by cycling rack power, or unplugging and reinserting the card) will allow it to run as Master for an extra 2 minutes. Even if this is the only CPU in the rack this is enough time to connect to the server and apply a recharge code to the board.

User Permissions

The FE900 can be configured to provide simple access security by requiring users to Log On and Log Off to view and carry out tasks. As a default the FE900 client/server has only one user configured called the Default user. The Default user has no password and has full permissions. The permissions for the Default user are used when no other user is logged on.

As many additional users can be configured as are required. The user permission configuration is carried out by directly editing entries within the 'Users' table in the FE900 Software's database and restarting the FE900 server.

Note

Only a very basic level of security is provided; it is up to the administrator to ensure that unauthorised access to the SQL database is appropriately restricted.



There are four items to fill out per user:

1. UserName

This is the name of the user. This name will appear in the "Configuration History" if this user makes a configuration change to the receiver. The UserName must be unique.

2. Password

This is the password for this user. This password must be unique.

3. AccessLevel

This setting determines what permissions are allowed for this user. The user permission is set as a number between 0 and 15. The number is calculated by adding up the numbers in the table below for each required permission:

Permission	Number to Add
View items	1
Edit items	2
Delete items	4
Control items	8

For example a user who wants to View, Edit, Delete and Control would require an AccessLevel of $1+2+4+8 = 15$. A setting of 0 disables that user.

4. UserType

This setting determines what type of user this is. A setting of 0 indicates a “Normal” user. A setting of 1 indicates this is the “Default” user.

Tip

Only one of the users should be set as the default user.

Once additional “Normal” users have been added, and the “Default” user modified, a user can select the “Log On” and “Log off” tasks in the File menu on the main window as appropriate.

Example 1

The table below shows the default of user configuration:

UserName	Password	AccessLevel	UserType
Default	(none)	15	1

Note

The default user has an Access Level of 15, providing full permissions when no one is logged on.

Example 2

The table below shows an example with a Default user and three “Normal” users:

UserName	Password	AccessLevel	UserType
Default	(none)	1	1
Alf	“pear”	3	0
Simon	“apple”	7	0
James	“potato”	15	0

Note with no one logged on, that View actions are still allowed. James has full permissions whilst Alf can View and Edit. Simon can View, Edit and Delete.

Note

Configuration of users must be performed by personnel who are familiar with editing SQL databases. Contact Inner Range for more details.

Appendices

Contents:

1. Network Supplement
2. Error Codes

Appendix 1 – Network Supplement

Whilst the FE900 has been designed to communicate 'out of the box' in networks with default settings, difficulties may be encountered in some network configurations. This appendix contains some additional information to help troubleshoot some network issues.

1.1. Possible Network Issues

This section lists some of the issues that may occur in the field where the local network in its current state does not fully meet the [Network Requirements](#) stated earlier, the cause of the issue and the remedy.

1.1.1. Receiver(s) does(do) not appear in the main window of the FE900 Software

Cause: Firewall problems

Remedy: If the receiver(s) does(do) not appear on the server, it could be because the firewall on the PC has not been configured correctly. *The firewall must be set to accept network connections from the PC software.* Often, the firewall software automatically detects the new program and asks the user to accept or reject the connections, but if it is an older or simpler firewall, the user may need to open the necessary ports manually. See the list of [FE900 System Network IP Ports](#) that are required and consult the firewall manual for details.

1.1.2. FE900 Software reports "No route to host" (error 7365) every 5 seconds

Cause: Incorrect DHCP settings

Remedy: If the receiver is appearing on the FE900 Software correctly, but is reporting error 7365 (No route to host) every 5 seconds, *the DHCP server settings need to be changed.* The default gateway address that the server tells the receiver to use **must not be 0.0.0.0, and must be in the same subnet as the receiver and server PC.** It does not need to actually exist however. After changing the DHCP settings the receiver will need to be restarted (or its Ethernet cable unplugged then reconnected) so that it obtains a new DHCP lease.

1.2. FE900 System Network IP Ports

Name	Direction	Type	IP Address	Port Number
Server Announce Port	Server to FE900	UDP	232.15.233.0(default)	9300
Comms Port 1	FE900 to Server	TCP	Server's Address	9301
Comms Port 2	FE900 to Server	TCP	Server's Address	9302
Comms Port 3	FE900 to Server	TCP	Server's Address	9303
Comms Port 4	FE900 to Server	TCP	Server's Address	9304
Comms Port 5	FE900 to Server	TCP	Server's Address	9305
Receiver Announce Port	FE900 to Server	UDP	232.15.249.0	9306
Automation System 1 Port	FE900 ↔ A.S.	TCP	Master & Backup CPUs	9307*
Automation System 2 Port	FE900 ↔ A.S.	TCP	Master & Backup CPUs	9308*

* Can be changed in FE900 Software – See [Configuring the Automation System](#).

1.3. FE900 Network Error Messages

If there are or were network problems, the FE900 will generate events in its event log. These logged events can be useful in helping to diagnose any problems that might arise. Refer to [O.S. Errors](#) in Appendix 2 for a list messages that the FE900 will display.

Appendix 2 – Error Codes

The FE900 Receiver can generate a wide range of internal event codes, some of which are informational and some of which are errors or faults. These are recorded in the event buffer along with the other event types, under the 'Receiver' event type.

Receiver type event codes are divided into categories as shown below. Please note that 'restore' events are in the same category as the corresponding 'alarm' event. For example, the 'Line Card 1 Found' event is in the Hardware Fault category because the corresponding fault 'Line Card 1 Missing' is in that category, even though 'Line Card 1 Found' is not a fault (it is the 'clearing' of a fault).

Group base	Description
500	COP safeguard information reports
1000	Software Information reports
2000	Software Error events
3000	Software Fault events
4000	Hardware Information reports
5000	Hardware Error reports
6000	Hardware Fault events
7000	O.S. Errors
8000	Call Terminating Protocol Errors
9000	Non-terminal Protocol Errors

2.1. System Events

Many of the Receiver events can also be sent to the Automation System as a Contact ID format alarm. These events use the R/L and Client Code (set in section 4.6.6. above). The group number is set to the Receiver ID number (set in section 4.6.5. above).

2.2. Software Informational (status) Category

Code	Description	System Contact ID Event
1000	UART Tx overflow	none
1001	No UART char available	none
1002	UART framing Error	none
1003	UART parity Error	none
1004	UART Rx overflow	none
1005	Tx failure or collision detected	none
1006	Checksum Error	none
1007	SPI device is busy	none
1008	SPI device is offline	none
1009	Event buffer did not contain valid data at boot up.	none
1010	N.V. RAM did not contain valid data at boot up.	none
1011	No event available.	none
1012	Event buffer is nearly full (trigger point reached)	Msg E300 Point 003
1013	Event buffer is full.	Msg E300 Point 004
1014	Checksum Error on RTC RAM contents	none

Code	Description	System Contact ID Event
1015	Unknown slave reply msg_id. Probably due to code version mismatch.	none
1016	Automation system 1 did not ACK within configured period	Msg E354 Point 005
1017	Automation system 2 did not ACK within configured period	Msg E354 Point 006
1018	Configuration for slot 0 was not found at power-on	none
1019	Configuration for slot 1 was not found at power-on	none
1020	Configuration for slot 2 was not found at power-on	none
1021	Configuration for slot 3 was not found at power-on	none
1022	Configuration for slot 4 was not found at power-on	none
1023	Configuration for slot 5 was not found at power-on	none
1024	Configuration for slot 6 was not found at power-on	none
1025	Configuration for slot 7 was not found at power-on	none
1026	Configuration for slot 8 was not found at power-on	none
1027	Configuration for slot 9 was not found at power-on	none
1028	Configuration for slot 10 was not found at power-on	none
1029	Configuration for slot 11 was not found at power-on	none
1030	Configuration for slot 12 was not found at power-on	none
1031	Configuration for slot 13 was not found at power-on	none
1032	Configuration request to slave failed	none
1033	A multi-packet flash write was aborted due to power failure	none
1034	A flash sector erase was in progress at power failure	none
1035	Server IP address has been changed	none
1036	UART FIFO poke failed due to overflow	none
1037	Unknown command from server	none
1038	Incorrect data length	none
1039	Download file was corrupt or incomplete, or not received at all.	none
1040	Configuration broadcast to slaves failed	none
1041	Non-fatal mismatch in the CPU configuration length.	none
1042	Couldn't set software timestamp clock from RTC	none
1043	Requested slave target is offline	none
1044	Requested slave target is busy	none
1045	Flash is busy erasing or writing	none
1046	Slave program download was aborted by slave, reason unknown.	none
1047	Slave not responding correctly, download aborted.	none
1048	Code in flash is corrupt.	none
1049	Request of extended status from slave failed	none

Code	Description	System Contact ID Event
1050	Line protocol terminated	none
1051	Module/function is not ready	none
1052	More than one Server is sending announce packets.	none
1053	No Ethernet connections available for server module to use.	none
1054	Update of flash configuration failed.	none
1055	Non-fatal mismatch in the Line Card configuration length.	none
1056	Operation aborted because power failure was detected.	none
1057	CallerID already exists in database.	none
1058	CallerID database is too busy to do requested operation	none
1059	Line Card generated a new event but buffer was full.	none
1060	Pickup command to a line did not result in Off-hook status.	none
1061	Specified CallerID database record was not found	none
1062	CPU's flash code was successfully updated from a download.	none
1063	CPU's flash configuration was successfully updated	none
1064	Server connected to this CPU	none
1065	Server disconnected from this CPU	none
1066	An event passed the filter but was not in a format that could be sent to the A.S. This means that the format was unsupported by the A.S. and not translatable.	none
1067	AS1 communication has come on-line	Msg R350 Point 007
1068	AS2 communication has come on-line	Msg R350 Point 008
1069	AS1 communication lost	Msg E350 Point 007
1070	AS2 communication lost	Msg E350 Point 008
1071	No more protocols in the handshake sequence for the line.	none
1072	The first main code image in flash is not valid.	none
1073	'Event buffer filling' condition cleared.	Msg R300 Point 003
1074	'Event buffer overflow' condition cleared.	Msg R300 Point 004
1075	Warning: Events for a destination with priority 'Discard with Warning' were discarded due to overflow.	none
1076	Error: Events for a destination with priority 'Discard with Error' were discarded due to overflow.	none
1077	The second main code image in flash is not valid.	none
1078	The time value is out-of-date.	none
1079	A.S. 1 is configured for CTS 'AS OK' signal but it is false.	Msg E354 Point 009
1080	A.S. 2 is configured for CTS 'AS OK' signal but it is false.	Msg E354 Point 010
1081	A.S. 1 is configured for CTS and CTS is restored.	Msg R354 Point 009
1082	A.S. 2 is configured for CTS and CTS is restored.	Msg R354 Point 010

Code	Description	System Contact ID Event
1083	A.S. 1 ACK received.	Msg R354 Point 005
1084	A.S. 2 ACK received.	Msg R354 Point 006
1085	Line Card config updated.	none
1086	The card is using default configuration values.	
1087	The receiver is busy and cannot accept the new command.	
1088	The CPU is not master and this command is master only.	
1089	Config Sync to slaves failed - overall timeout.	
1090	Timeout occurred when receiving a command packet from an A.S.	
1091	A command packet from an A.S. was not valid.	
1092	Backup CPU is online	Msg R300 Point 013
1093	Backup CPU was online and has gone offline	Msg E300 Point 013
1095	Emergency CPU is Master	Msg E300 Point 014
1096	Emergency CPU is backup	Msg R300 Point 014
1097	Emergency CPU Recharged	Msg R300 Point 015
1098	Caller-ID database upload failed	none
1099	Emergency CPU low run-time	Msg E300 Point 015

2.3. Software Error Category

Code	Description	System Contact ID Event
2000	Invalid function parameter	none
2001	Invalid command	none
2002	Invalid parameter - out of range	none
2003	Internal memory allocation failure	none
2004	Internal memory reallocation failure	none
2005	Flash Control Block allocation failure	none
2006	CPU is too busy to process the command	none
2007	Too many CallerID hash-table entries.	none
2008	CPU asked for a template which is not present in the Line Card configuration.	none
2009	A thread stack has exceeded the usage threshold.	none
2010	A call on a line has taken too long	none
2011	Failed to create a packet for backplane	none
2012	A config block checksum failed	none
2013	The CPU has detected that it sent a corrupt event to the Server.	none

2.4. Software Fault Category

Code	Description	System Contact ID Event
3000	Invalid state number 1 has occurred	none
3001	Invalid state number 2 has occurred	none
3002	SPI device is undefined	none
3003	SPI device returned too many bytes	none
3004	Event pre-queue in N.V. RAM has overflowed: events have been lost.	none
3005	Specified Flash-ControlBlock is not available.	none
3006	Sector for flash erase/write was marked as write protected.	none
3007	AS port has failed to transmit for some reason.	none
3008	ASI Invalid State has occurred	none
3009	Configuration is corrupted. Some slot data lost.	none
3010	The CallerID database is corrupt.	none
3011	An invalid CallerID database record was found.	none
3012	A duplicate CallerID database record was found in flash.	none
3013	A value stored in the flash configuration is out of range.	none
3014	An attempt was made to advance an event-buffer read pointer past the write-point.	none
3015	The main code image in flash which is currently running in RAM has been corrupted.	none
3016	There is no valid main code image in flash - reboot at this time would fail.	none
3017	Watchdog reboot due to UIF thread failure.	Msg 305 Point 001
3018	Watchdog reboot due to PNM thread failure.	Msg 305 Point 001
3019	Watchdog reboot due to APP thread failure.	Msg 305 Point 001
3020	Watchdog reboot due to NVM thread failure.	Msg 305 Point 001
3021	Watchdog reboot due to ASI thread failure.	Msg 305 Point 001
3022	Watchdog reboot due to DAM thread failure.	Msg 305 Point 001
3023	Watchdog reboot due to RDM thread failure.	Msg 305 Point 001
3024	Watchdog reboot due to SRV thread failure.	Msg 305 Point 001
3025	Watchdog reboot due to DBM thread failure.	Msg 305 Point 001
3030	Watchdog reboot due to UIF thread slow rate.	Msg 305 Point 001
3031	Watchdog reboot due to PNM thread slow rate.	Msg 305 Point 001
3032	Watchdog reboot due to APP thread slow rate.	Msg 305 Point 001
3033	Watchdog reboot due to NVM thread slow rate.	Msg 305 Point 001
3034	Watchdog reboot due to ASI thread slow rate.	Msg 305 Point 001
3035	Watchdog reboot due to DAM thread slow rate.	Msg 305 Point 001
3036	Watchdog reboot due to RDM thread slow rate.	Msg 305 Point 001
3037	Watchdog reboot due to SRV thread slow rate.	Msg 305 Point 001
3038	Watchdog reboot due to DBM thread slow rate.	Msg 305 Point 001

Code	Description	System Contact ID Event
3039	Watchdog reboot due to timeout of startup process.	Msg 305 Point 001
3040	A template contains invalid data	none
3041	A socket's output buffer for stuffed data has overflowed.	none

2.5. Hardware Informational Category

Code	Description	System Contact ID Event
4000	Restart due to Input voltage overrange	Msg 305 Point 001
4001	Restart due to Overcurrent	Msg 305 Point 001
4002	Restart due to 1.8V rail under/over range	Msg 305 Point 001
4003	Restart due to 3.3V rail under/over range	Msg 305 Point 001
4004	Restart due to Vcurlim << Vin	Msg 305 Point 001
4005	Restart because Alternate CPU requested reset of this CPU	Msg 305 Point 001
4006	Restart due to Power-up overcurrent	Msg 305 Point 001
4007	Restart due to Normal power-on	Msg 305 Point 001
4008	Restart due to Too many SPI (valet comms) Errors	Msg 305 Point 001
4009	Restart due to Manual reset	Msg 305 Point 001
4010	Restart due to Brown out	Msg 305 Point 001
4011	Restart due to Watchdog	Msg 305 Point 001
4012	Restart due to Vin too high	Msg 305 Point 001
4013	Restart due to CPU requested reset	Msg 305 Point 001
4020	CPU 1 has become Bus Master / Active CPU.	Msg R300 Point 011
4021	CPU 1 is no longer Bus Master / Active CPU.	Msg E300 Point 011
4022	CPU 2 has become Bus Master / Active CPU.	Msg R300 Point 012
4023	CPU 2 is no longer Bus Master / Active CPU.	Msg E300 Point 012

2.6. Hardware Error Category

Code	Description	System Contact ID Event
5000	An SPI device transaction took too long	none
5001	An SPI flash write took too long	none
5002	An SPI flash erase took too long	none
5003	An SPI flash status-reg write took too long	none
5004	An I2C device did not respond	none
5005	An SPI flash write failed to start	none
5006	SPI comms with Valet had a problem	none

2.7. Recoverable Hardware Fault Category

Code	Description	System Contact ID Event
6000	On-board backup battery is low	none
6001	ADC reading of battery is now OK (Restore for 6000)	none
6002	Line Card n, which has lines configured for use, is	Msg E300 Point 09n

Code	Description	System Contact ID Event
6009	missing.	
6010 6017	Line Card n, which has lines configured for use, is now present. (Restore for 6002).	Msg R300 Point 09n
6018	CPU temperature is above the configured maximum.	None
6019	CPU temperature has dropped to acceptable level.	None
6020	Receiver voltage is below programmed level.	Msg E302 Point 002
6021	Receiver voltage has recovered to above programmed level (plus 0.5V)	Msg R302 Point 002
6030 6061	Line nn is configured but the line voltage is not valid.	Msg E351 Point 1nn
6062 6091	Line nn is configured for use and was in line fault but line voltage is now valid.	Msg R351 Point 1nn

2.8. O.S. Errors

Errors reported by the CPU Operating System:

Code	Description	System Contact ID Event
7000	No Error	None
7001	Not permitted	None
7002	No such entity	None
7003	No such process	None
7004	Operation interrupted	None
7005	I/O Error	None
7009	Bad file handle	None
7011	Try again later	None
7012	Out of memory	None
7016	Resource busy	None
7018	Cross-device link	None
7019	No such device	None
7020	Not a directory	None
7021	Is a directory	None
7022	Invalid argument	None
7023	Too many open files in system	None
7024	Too many open files	None
7027	File too large	None
7028	No space left on device	None
7029	Illegal seek	None
7030	Read-only file system	None
7033	Argument to math function outside valid domain	None
7034	Math result cannot be represented	None
7035	Resource deadlock would occur	None
7038	Function not implemented	None
7039	Directory not empty	None
7060	File name too long	None
7095	Not supported Error	None
7200	End of file reached	None

Code	Description	System Contact ID Event
7201	Operation not supported	None
7202	Device does not support this operation	None
7300	Device not configured	None
7301	Permission denied	None
7302	File exists	None
7303	Inappropriate ioctl for device	None
7304	Broken pipe	None
7310	Operation now in progress	None
7311	Operation already in progress	None
7320	Socket operation on non-socket	None
7321	Destination address required	None
7322	Message too long	None
7323	Protocol wrong type for socket	None
7324	Protocol not available	None
7325	Protocol not supported	None
7326	Socket type not supported	None
7327	Operation not supported	None
7328	Protocol family not supported	None
7329	Address family not supported by	None
7330	Address already in use	None
7331	Can't assign requested address	None
7350	Network is down	None
7351	Network is unreachable	None
7352	Network dropped connection on reset	None
7353	Software caused connection abort	None
7354	Connection reset by peer	None
7355	No buffer space available	None
7356	Socket is already connected	None
7257	Socket is not connected	None
7358	Can't send after socket shutdown	None
7359	Too many references: can't splice	None
7360	Operation timed out	None
7361	Connection refused	None
7364	Host is down	None
7365	No route to host	None

2.9. Protocol Error Category

Code	Description	System Contact ID Event
8001	Handshake timeout	none
8005	DTMF Round Timeout	none
8006	DTMF Format Change	none
8007	Timeout waiting for Ack/Nak from CPU	none
8008	Too many retries	none

Code	Description	System Contact ID Event
8009	Hangup detected during protocol	none
8010	Dual round repeat failure on Handshake	none
8011	Dual round repeat timeout	none
8012	Received no data	none
8014	The format is disabled in the template	none
8015	Too many symbols for any protocol	none
8016	Mismatch btw. message and param. lengths	none
8017	Generic checksum Error	none
8018	CallerID bad (e.g. no CLI parameter)	none
8019	IRFast timed out on scrambled marks	none
8020	IRFast timed out a packet	none
8021	IRFast had a packet Error	none
8022	IRFast byte-time expired	none
8023	IRFast runt packet Error	none
8024	IRFast CRC Error	none
8029	IRFast Lost Carrier	none
8030	IRFast packet too long	none
8031	IRFast Noisy Line detected	none
8031	IRFast Hangup	none
8040	IRFast Bad Event	none
8041	Failed to create a V.23 Structure	none
8042	Unexpected end of Audio Listen In string	none
8043	Bad command in Audio Listen In string	none
8044	Audio Listen in timed out without hang up	none
8045	Not <0..9>,*,#,<A..D> in DTMF string	none
8046	Unknown symbol received in DTMF/Pulse format	none
8047	Expected a numeric parameter in ALI string	none
8048	A late acknowledgement could not be sent	none
8050	SIA byte time expired	none
8053	SIA Hangup	none
8058	SIA Too Many NAKs	none
8059	SIA Too Many Errors	none

2.10 Recoverable Protocol Errors

(may be accompanied by a non-recoverable Error - Too Many Retries)

Code	Description	System Contact ID Event
9002	DTMF/Pulse Unknown format	none
9003	DTMF/Pulse Checksum or CRC Error	none
9004	DTMF Repeat Mismatch	none
9013	Constant digit in format incorrect	none

Code	Description	System Contact ID Event
9016	Call progress tone on line (e.g. busy, dial tone)	none
9017	The format is disabled in the template	none
9020	SIA Parity Error	none
9021	SIA Lost Carrier	none
9022	SIA Packet Too Long	none
9023	SIA Group Error	none
9024	SIA Content Error	none
9025	SIA Incorrect Tone	none

2.11. Computer-Operating-Properly Report Category

Code	Description	System Contact ID Event
500	Start of a COP report	none
501	End of all COP reports	none
502	Stack high (nearly full) alert	none
503	CRC failure	none
504	Key routine was not executed	none
505	Stack overflowed (might not catch it)	none
506	Stack underflow occurred	none
507	Stack pointer found out of bounds	none
508	COP detected reset	none