Agilent E3238 Pager Intercept System

Product Overview

Summary

Pager signals are automatically intercepted, demodulated, decoded, and recorded by the Pager Intercept System. Over 100,000 pages per hour can be recorded. User-defined alarms search new pager messages for capcodes and pager parameters, as well as words and numbers contained in ASCII messages. A display shows the alarms as they occur, allowing you to click on them to read the messages immediately. Powerful find capabilities allow you to search the entire database for words, capcodes, or protocol parameters. Reports summarize the results of the find operation in a concise chronological report.

Key features

- Support of POCSAG and FLEX™ standards
- Message content, capcode, and pager parameters of all pages are recorded in a Signals Database
- Capable of logging over 100,000 pages per hour
- User-defined alarms search messages for words, capcodes, and pager parameters
- Alarm display shows target messages as they happen
- Automatically generated reports summarize searches of the Signals Database
- E3238 Search system can quantify pager traffic in all bands to help select which bands to target
- 32 channels with a single E9821A
- 96 channels with two E9821As
- Remote operation via LAN
- Unattended operation
- Portable configurations easy access and usability across computer platforms
The Alarm Display shows targeted messages as they occur.

Click on an alarm number to see all messages that meet that particular alarm criteria.

When a message meets an alarm criteria, it turns the button with that alarm number red. In this case, alarms 3, 4, and 5 have new messages that have not been cleared by the operator. Clicking button #3 shows the description of alarm #3 and displays a short portion of the last 100 messages. In this example, alarm #3 is looking for the word "quake." When a button is blue it indicates there is an alarm defined with that number. There are no alarms defined for 6 through 100. This display is very important because it shows you intercepted pages as they occur, alerting you to situations as they develop.

Signals Database Message

Double-click a message to see the entire message.

This dialog box displays the entire message, including extensive information about the pager, protocol, capcode, and other useful information. Notice that the word "quake" is present in the message.
Define alarm criteria with this graphical form

It is quick and easy to define alarms.

You can alarm on many pager parameters, in addition to capcode and message content. Pager protocol and several of its parameters can be selected as alarm criteria. Also, a range of capcodes and specific capcodes can be targeted, in addition to words in the message.

Create lists of capcodes (left).

You can create several lists of specific capcodes and then choose a list to alarm on.

Create dictionaries of words (right).

Lists of words pertaining to a general topic can be created and then used as alarm criteria. You can name the dictionaries to make identifying them easier.
Use **find** to sift through pages for additional information

A powerful find capability lets you search the entire Signals Database to find old database entries that match newly defined criteria. If it finds matches in the database, you can step through the individual messages one by one. Here is a user scenario: Let’s say an alarm has just intercepted a page by targeting its capcode. The page’s message lists a telephone number that has not been seen before. You can use the find function to search the entire Signals Database for other messages that contain the telephone number.

**Automate the find function with reports**

You can generate concise summary reports automatically with the report capability. It works like find, but it summarizes the matches it finds. You can chose what information to display using pre-defined output formats.

All pager signals are demodulated and decoded, then the message content, plus many other parameters, are entered in the Signals Database. Alarms evaluate all new entries as they occur, providing immediate feedback. The find and report capability let you search the entire database for any messages that meet the find search criteria, allowing you extract new information.

**The Find Dialog Box**

Find uses the same graphical form used to create alarm criteria. Think of find as a retroactive alarm that searches all old entries in the database, while an alarm instead compares all new database entries to the alarm criteria. Find sifts through historical data while alarms examine all new data as it is recorded.

**The Signals Database**
Quickly generate summaries of database information.

Reports use the same form to define the search criteria, but also allow you to select what data is included in the report summary by choosing a report output format.

Example of a Report Summary

This report contains the time, capcode, and message of all entries in the Signals Database that meet the criteria defined in the form above.
Use search to find pager frequencies and quantify channel occupancy percentage

You may not always know the pager transmission frequencies. Use the E3238’s powerful search capability to find the frequencies and collect data to characterize the level of traffic on each frequency. Search works by detecting new energy, computing several parameters of the energy and saving the parameters in an Energy History Database. The E3238 can evaluate the energy to see if it is a pager signal. If it is, it can enter that frequency in a frequency list to be used by the Pager Intercept System.

Searching for Pager Signals

This display shows frequencies where energy has been detected, as well as information about the energy, such as the number of intercepts and the percent of time the energy was present. Use this information to choose frequencies to target for data collection.

Energy Detection Threshold

Set the energy threshold level and type.

Energy that exceeds a threshold is classified and entered into the Energy History Database. This dialog box lets you select a threshold level and threshold type. The threshold is a flat line in this case, but it could be a threshold that takes its shape from the spectrum noise floor.
Percent Occupancy of Channels

Choose frequencies to target.
This graph shows channels with a high percentage of utilization. Channels with high usage are good targets for intercepting pager messages.

Statistics by Frequency

Protocol types by frequency.
This list shows the number of pages by protocol for each channel.

Duration Profile

Stripchart of duration.
Channel utilization can be viewed as a stripchart.

Capcode Histogram

Display traffic by capcode and frequency.
Use this histogram to see which capcodes are most common for a given frequency.
Configuration Example:  
96 Channel Pager Intercept System

Measurement hardware

Mainframe
• MFRAME1 5-slot VXI mainframe or
  • E1421B 6-slot VXI mainframe
  • E1421-80921 RFI shields
  • E1421B-xxx power cord or
  • E8403A 13-slot VXI mainframe
  • E1401-80918 RFI shields
  • E8403A-xxx power cord or
  • E8404A 13-slot VXI mainframe
  • E1401-80918 RFI shields
  • E8404A-xxx power cord

Tuner
• E2730B 20-2700 MHz or
  • E2731B 20-6000 MHz

ADC
• N6830A 70 MHz IF ADC

DSP
• 1 - E9821A - Signal Processor Module
• 3- E9821A-101 Add dual G4 processor card with extended RAM
• 1 - E9821A-200 Add 32-channel DDC
• 1 - E9821A - Signal Processor Module
• 2- E9821A-101 Add dual G4 processor card with extended RAM
• 2 - E9821A-200 Add 32-channel DDC

Controller and interface
• LTPC2 Windows laptop controller
• E8491B VXI Firewire® interface

Measurement software
• 35688E Intercept and Collection software
• 35688E-PG1 Pager Intercept application

Agilent Custom Solutions

Agilent Technologies creates standard and custom solutions for signal intercept requirements. If what you have read in this document is similar but not exactly what you require, please talk to your local Agilent Sales Representative about creating a custom solution to fit your exact scenario.

Physical Characteristics

<table>
<thead>
<tr>
<th>MFRAME1 5-Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
</tr>
<tr>
<td>Width</td>
</tr>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Depth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Configured system</strong></th>
<th><strong>power</strong></th>
<th><strong>lbs</strong></th>
<th><strong>kg</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pager - 32 Channel</td>
<td>200 watts</td>
<td>47.5</td>
<td>21.57</td>
</tr>
<tr>
<td>Pager - 96 Channel</td>
<td>285 watts</td>
<td>51.5</td>
<td>23.38</td>
</tr>
</tbody>
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Remove all doubt

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For more information on repair and calibration services, go to:

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