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# Alarm Automation Output Specification

## *Software and Firmware Affected:*

The AES 7003 receiver. (Codes only output by this receiver in a separate paragraph)
The AES central receiver 7000/2, beginning with ALM V1.72
The AES System 99 central receiver, beginning with 9AM V1.72
Net7K and Net Concentrator Software, beginning with version 2.12
Net77 1.48 4CT, Net77 1.48 4CTD and Net77 1.48.xx Software
Firmware released on or after October 16, 1997
Software released on or after January 16, 1998

## *Overview*

The Receivers listed above support three different alarm output formats. The output formats are **mode 0**: Ademco 685 compatible format, **mode 1**: Radionics 6500 compatible format, and **mode 2**: a mixed Radionics and Ademco output format.

The Software listed above support Ademco 685 and Radionics 6500 output formats only. Software versions do not support mixed mode.

Communication parameters for all three Receiver modes will be 1200 BPS, 7 data bits, Odd parity, 2 stop bits, Software ACK/NAK and will use DSR/DTR connection hardware handshaking. The software's parameters are configurable but are the same by default.

In mode 0 or Ademco 685-output format the signals received from a subscriber are translated into an appropriate Ademco 685 code. Mode 1 or Radionics 6500 output format attempts to translate Ademco 685 codes passed through an ***IntelliTap,*** to an appropriate Radionics 6500 code. Mode 2 will use Radionics 6500 codes for signals originating in a subscriber or receiver, and Ademco 685 or 4+2 for signals passed through an ***IntelliTap***. Software versions do not support a mixed mode.

The software versions listed above support two different output formats: Ademco 685 and Radionics 6500 compatible formats are available. The selection is made in the system configuration portions of the software or in the configuration file depending on the version of software. By default communication parameters will be 1200 BPS, 7 data bits, Odd parity, 2 stop bits, Software ACK/NAK and will use DSR/DTR connection hardware handshaking.

Software versions do not report Status and Fault codes of our Non UL Receivers to the monitoring system. The 7000/2 and System99 are Non UL Receivers. The reason is that the Non UL receivers do not pass their fault codes through the network port to the AES software. Instead the Non UL receivers pass fault codes through the alarm port to the alarm monitoring system. Therefore, if the software is being used to communicate events to the alarm monitoring system instead of the receivers alarm output port, the software can not report receiver fault codes. The UL software versions report some receiver faults directly on its display screen.

The Event plus Zone, Status and Fault codes specified on the following pages, are those sent by the AES 7000 Receiver system, installed with software and/or firmware listed above, to the alarm monitoring or automation system.

## *Mode 0 or Ademco 685 compatible output format:*

This mode will provide output using 3 line cards; line card 1 is for AES subscriber and receiver signals, line card 3 is for Contact ID signals received through ***IntelliTap***, and line card 4 is for 4+2 signals received through ***IntelliTap***.

*Line Card # 1* AES signals from subscribers and receivers. **

*Signal format*: <LF>RLsACCTs18sEEEEsGGsCNNNs<CR>

<LF> = Line feed code.
R = Receiver number, user programmable. Between 1 - 9 and A - F.
L = Line card number, Line card is selected by firmware or software. 1 - 4
ACCT = Four digit receiver or subscriber ID (Receiver is 0000).
18 = 18 for AES signals. As received for others. .18 means CID format follows.
EEEE = Event qualifier and code (See event codes below)
GG = 00 for AES signals. As received for others. This is the group or partition.
C = C for AES signals. As received for others. A U = user.
NNN = Zone/contact ID, Status or Fault code
s = <Blank space>
<CR> = Carriage return code.

*Event Codes,* AES Subscribers:

E602 Automatic Supervisory Check-In. Zone/contact ID = 000
E140 Alarm Signal or input went active. Zone/contact ID = Zone Number 001 to 072
P140 Prior Alarm. Input still active. Zone/contact ID = Zone Number 001 to 072
Reported during Status Request or Automatic Supervisory Check-In
R140 Alarm Restoral or input to normal. Zone/contact ID = Zone Number 001 to 072
E370 Zone Trouble. Zone/contact ID = Zone Number 001 to 072
P370 Zone Trouble still active. Zone/contact ID = Zone Number 001 to 072
Reported during Status Request or Automatic Supervisory Check-In
R370 Zone Trouble Restoral. Zone/contact ID = Zone Number 001 to 072
E305 Watchdog, or Push-button Reset. Zone/contact ID = 901
E305 Power-On Reset. Zone/contact ID = 902
R356 Acknowledge Delay or Communication time-out. Zone/contact ID = 903
Note that this is a restore signal and may not cause an alert. Look in log files.
E351 ***IntelliTap*** phone line cut. Zone/contact ID = 905
R351 Restoral of ***IntelliTap*** phone line cut. Zone/contact ID = 905
E307 Diagnostic Fault. Zone/contact ID = Fault Code. See Fault code list on next page.
P307 Prior Diagnostic Fault still active. Reported during Check-In.
Zone/contact ID = Fault Code. See Fault code list on next page.
R307 No Faults, Unit OK or Restoral of all Prior Faults. Zone/contact ID = 800

Additional Subscriber Event plus Status & Fault codes:

In addition, AES Net7000 software, generating the alarm output signals can send the following Subscriber codes. This includes the Concentrator, Net77 and Net7K when “Enable Test Time Supervision” is enabled and the signals come from the PC running the AES software.

E354 Exception - Unit or Subscriber Failed to Check-In. Zone/contact ID = 906
R354 Exception Restoral - Unit or Subscriber on Line. Zone/contact ID = 906

Event Codes generated for AES Receivers: **

E302 Low Battery. Zone/contact ID = 000
R302 Low Battery Restore. Zone/contact ID = 000
E308 Stand-by mode. Zone/contact ID = 000
R308 Primary mode. Zone/contact ID = 000
E353 Detected multiple active central controllers/Receivers. Zone/contact ID = 000
E354 Unknown message revision (invalid report). Zone/contact ID = 000
E307 Diagnostic Fault. Zone/contact ID = Fault Code. See Fault code list on next page.

Additional Event Codes for AES 7003, 7703 and 7705 Receivers: **

E330 *Net7K* off-line. Zone/contact ID = 000
R330 *Net7K* on-line. Zone/contact ID = 000
E145 7030, Transceiver Enclosure Tamper ID = 000
R145 7030, Transceiver Enclosure Tamper Restore ID = 000
E301 AC Failure. Zone/contact ID = 000
R300 LCD online / Restore. Zone/contact ID = 000, 7005/7705 only
E300 LCD offline. Zone/contact ID = 000, 7005/7705 only
R301 AC Restore. Zone/contact ID = 000
E333 7030, Transceiver Voltage Fault. Zone/contact ID = 000
R333 7030, Transceiver Voltage Restore. Zone/contact ID = 000
E336 Printer off-line. Zone/contact ID = 000
R336 Printer Restore, on-line. Zone/contact ID = 000

*Fault and Status Codes (Zone information):* AES Subscribers and Receivers: **

800 = No Faults, Unit OK or Restoral of all Prior Faults.
801 = Low Battery - Voltage less than 11.0V
802 = RAM Data error or RAM corrupted - Zone activation will not be reported (Sub. V1.71 &+). Reprogram Unit
803 = 7050 and 7000/2 - U11 RAM Chip Internal Battery Bad
7050E - EEPROM corrupted, or not present
804 = 7050E - A to D Converter Faulted - Zone activation will not be reported (Sub. V1.71 &+).
805 = Modem Chip Failed or missing - U9 in 7050 and 7000/2
806 = Timing Error between CPU and Modem
807 = Ram Chip Read/Write test Failure - U11 in 7050 and 7000/2
808 = Modem Loopback Failed - U9 in 7050 and 7000/2
809 = 7050E - AC Fail or DC voltage supplied by AC has dropped below 12V

Line Card # 3 Contact ID received through ***IntelliTap***.
*Signal format*: <LF>RLsACCTs18sEEEEsGGsNNNNs<CR>
see "Line card #1", "Signal format" in "Mode 0 - Ademco 685 compatible output" for explanation of signal format codes.

This information is passed through. Receiver number is set as programmed by user. Line card is set to 3.

Line Card # 4 4+2 received through ***IntelliTap***.
*Signal format*: <LF>RLsACCTsCC<CR>
CC = two digit zone code.
See "Line card #1", "Signal format" in "Mode 0 - Ademco 685 compatible output" for explanation of other signal format codes.

This Information is passed through. Receiver number is set as programmed by user.
Line card is set to 4.

*Input Signals:*

In mode 0 the receiver will respond to 3 inputs or signals from the monitoring system.

S receiver reply will be - <LF>00sOKAYs@<CR>
<0x06> or ASCII code 6 receiver considers last message acknowledged
<0x15> or ASCII code 21 receiver will re-send last message (if not acknowledged)

** Most AES software versions cannot report receiver Status and Fault codes.

## *Mode 1 or Radionics 6500 compatible output format:*

This mode will provide the output of 4 line cards; line card 1 is for AES subscriber and receiver signals, line card 2 is for SIC signals, line card 3 is for Contact ID signals from ***IntelliTap***, and line card 4 is for 4+2 signals from ***IntelliTap***.

*Line Card # 1* AES signals from subscribers and receivers. **

*Signal format*: 1RRLssssssACCTEEsNNNs<0x14>

| | |
|---|---|
| 1 | = 1 is for automation signal. (a 3 indicates text data) |
| RR | = Receiver number, user programmable. Between 01 and FF. |
| L | = Line card number, Line card is selected by firmware or software. 1 - 4 |
| ACCT | = Four digit subscriber ID or 4 blank spaces for AES receiver |
| EE | = Event code (See event codes below) |
| NNN | = Zone, status or fault code * |
| s | = <Blank space> |
| <0x14> | = Termination character |

* Note: The value of NNN or ($N_2N_1N_0$) in Radionics 6500 format, (or N2 N1 N0 as used for this example) is computed as follows: Value = N2 X 16 + (N1 X 10 + N0). The numbers in positions N1 and N0 represent the two digit decimal equivalent of a single digit hexadecimal number. It will never be greater than decimal 15. The number in position N2 represent the decimal equivalent of a Hexadecimal number where 1 = decimal 16 and 2 = decimal 32.
Examples: 015 = zone 15; 100 = zone 16; 101 = zone 17; 201 = zone 33.

*Event plus Zone, Status and Fault Codes, AES Subscribers*

| | |
|---|---|
| A 000 | Automatic Supervisory Check-In |
| A NNN | Alarm Signal Zone NNN * |
| SA NNN | Prior Alarm zone NNN * Input still active. Reported during Status Request or Check-In |
| R NNN | Restoral Zone NNN * |
| Y 800 | Diagnostic Fault - "No Faults, Unit OK or Restoral of all Prior Faults" see Diagnostic Faults below |
| Y 801 | Diagnostic Fault - "Low Battery" - Voltage less than 11.0V |
| Y 802 | Diagnostic Fault - "RAM Data error or RAM corrupted" - Zone activation will not be reported (Sub. V1.71+). Reprogram Unit |
| Y 803 | Diagnostic Fault - "7050 - U11 RAM Chip Internal Battery Bad" "7050E - EEPROM corrupted, or not present" |
| Y 804 | Diagnostic Fault - "7050E - A to D Converter Faulted" - Reported with Receiver Upgrade ALM Version, beginning with 1.65. Zone activation will not be reported (Sub. V1.71+). |
| Y 805 | Diagnostic Fault - "Modem Chip Failed or missing" - 7050 U9 |
| Y 806 | Diagnostic Fault - "Timing Error between CPU and Modem" |
| Y 807 | Diagnostic Fault - "Ram Chip Read/Write test Failure" - 7050 U11 |
| Y 808 | Diagnostic Fault - "Modem Loopback Failed" -7050 U9" |
| Y 809 | Diagnostic Fault - "7050E - AC Fail" or "DC voltage supplied by AC has dropped below 12V" - Reported with Receiver Upgrade ALM Version 1.65+ |
| SY 80n | Prior Diagnostic Fault still active. Reported during Check-In. (n = 1-9, see Diagnostic Faults above) |
| T 901 | Trouble - "Watchdog or Push-button Reset" |
| T 902 | Trouble - "Power-On Reset" |
| R 903 | Trouble - "Communication time-out or Acknowledge Delay" |
| T 904 | Trouble - "7050E AC Fail" - Reported with Receiver ALM Version 1.64 ONLY. Later firmware versions report the Y 809 as listed above. |
| T 905 | Trouble - "***IntelliTap*** phone line cut." - Reported with Receiver Upgrade ALM Version, beginning with 1.65 |

Additional Subscriber Event plus Status & Fault codes:

**CONTINUED:**

In addition, AES Net7000 software, generating the alarm output signals can send the following Subscriber codes. This includes the Concentrator and Net7K when "Enable Test Time Supervision" is enabled and the signals come from the PC running the AES software.

Software Versions, beginning with 2.12:

| | |
|---|---|
| T 906 | Exception - "Unit or Subscriber Failed to Check-In" |
| R 906 | Exception Restoral - "Unit or Subscriber on Line" or "… has now checked-in" |

Software Version 2.11 only:

| | |
|---|---|
| T 800 | Exception Restoral - "Unit or Subscriber on Line" or "… has now checked-in" |
| T 801 | Exception - "Unit or Subscriber Failed to Check-In" |

Event plus Status and Fault codes, AES Receivers: **

| | |
|---|---|
| Y 802 | Diagnostic Fault - "RAM Data error or RAM corrupted" |
| Y 803 | Diagnostic Fault - "U11 RAM Chip missing or Internal Battery Bad" |
| Y 804 | Diagnostic Fault - "Reserved" |
| Y 805 | Diagnostic Fault - "U9 Modem Chip Failed or missing" |
| Y 806 | Diagnostic Fault - "Timing Error between CPU and Modem" |
| Y 807 | Diagnostic Fault - "U11 Ram Chip Read/Write test Failure" |
| Y 808 | Diagnostic Fault - "Modem Loopback Failed" |
| X 11 | "Low Battery" |
| X 12 | "Low Battery Restore" |
| X 26 | "Unknown message revision, invalid report." |
| X 810 | "Receiver switched to Standby Mode" |
| X 811 | "Receiver switched to Primary Mode" |
| X 812 | "Multiple active Central Controllers detected" |

Event plus Status and Fault codes, AES 7703, 7003, and 7705 Receivers: **

| | |
|---|---|
| X 13 | "AC Fault" (7003, 7703 and 7705 Receivers only) |
| X 14 | "AC Restore" (7003, 7703 and 7705 Receivers only) |
| X 18 | "*Net7K* off-line" (7003, 7703 and 7705 Receivers only) |
| X 17 | "*Net7K* on-line" (7003, 7703 and 7705 Receivers only) |
| X 20 | "Event Printer offline" (7003, 7703 and 7705 Receivers only) |
| X 19 | "Event Printer restore, offline" (7003, 7703 and 7705 Receivers only) |
| X 813 | "7030, Transceiver Enclosure Tamper" (7003, 7703 and 7705 Receivers only) |
| X 913 | "7030, Transceiver Enclosure Tamper Restore" (7003, 7703 and 7705 Rcvrs. only) |
| X 814 | "7030, Transceiver Enclosure Voltage Fault" (7003, 7703 and 7705 Receivers only) |
| X 815 | "7030, Transceiver Enclosure Voltage Restore" (7003, 7703 and 7705 Rcvrs. only) |
| X 911 | "LCD offline" (7005 and 7705 Receivers only) |
| X 912 | "LCD online/restore" (7005 and 7705 Receivers only) |

# 2 Line Card SIC used in Optex Morse Genesys 824 Alpha

Signal format: 1RRLssssssACCTEEsNNNs<0x14>
see "Line card #1", "Signal format" in "Mode 1 – Radionics 6500 compatible output" for explanation of format codes.

This information is translated from SIC to a Radionics compatible format. Receiver number is set as programmed by user. Line card is set to 2.

Line Card # 3 Contact ID received from ***IntelliTap***. Events are translated.
Signal format: 1RRLsssssssACCTEEsNNNs<0x14>
see "Line card #1", "Signal format" in "Mode 1 – Radionics 6500 compatible output" for explanation of signal format codes.

This information is translated from Contact ID to a Radionics compatible format as described below. Receiver number is set as programmed by user. Line card is set to 3.

*Event plus Zone, Status and Fault Codes, AES Subscribers with **IntelliTap**.*

Event Codes with numbers E1XX and E2XX will be reported as: see exception ♣
`A NNN` where NNN is the Point ID or Contact ID number
♣ Event Codes with numbers E12X will be reported as:
`D` ( D followed by 4 spaces.) This is an exception to E1XX above ♣
Event Codes with numbers P1XX and P2XX will be reported as:
`SA NNN` where NNN is the Point ID or Contact ID number
Contact ID Event Codes with numbers R121 and contact 000 will be reported as:
`A NNN` where NNN is the Point ID or Contact ID number
Event Code E121 C000 will be reported as:
`D 000`
Event Codes E3XX, and R3XX with non-zero zone information will be reported as:
`T NNN` where NNN is the Point ID or Contact ID number
Event Codes with numbers P3XX with non-zero zone information will be reported as:
`ST NNN` where NNN is the Point ID or Contact ID number
Event Codes E3XX and R3XX with Point ID or Contact ID value of 000 are reported as:
`Y 3XX` where 3XX is a copy of the event code
Event Codes P3XX with Point ID or Contact ID value of 000 will be reported as:
`SY 3XX` where 3XX is a copy of the event code
Event Codes with numbers E4XX will be reported as:
`O NNN` where NNN is the Point ID or Contact ID number
Event Codes with numbers R4XX will be reported as:
`C NNN` where NNN is the Point ID or Contact ID number
All other Contact ID Event Codes will be reported as:
`Y XXX` where XXX is a copy of the event code. OR
`SY XXX` when PXXX is the event and where XXX is the Point ID or Contact ID number

Note: AES recommends not using Radionics 6500, AES' mode 1 when using ***IntelliTap*** to report Contact ID. If at all possible use mode 0 or 2 if you have a monitoring system that can support them.

( Line card #4 next page)

Line Card # 4 4+2 received from ***IntelliTap***. Events are translated.
Signal format: 1RRLssssssACCTsAssCC<0x14>
A = Character A for alarm event.
CC = two digit zone code.
See “Line card #1”, “Signal format” in “Mode 1 – Radionics 6500 compatible output” for explanation of other signal format codes.

*Event plus Zone, Status and Fault Codes, AES Subscribers with **IntelliTap**.*

All 4+2 messages will be reported as follows:
AssCC where CC is a direct copy of the received 4+2 report code.

*Input Signals:*

In mode 1 the AES receiver will respond to two inputs or signals from the monitoring system.

<0x06> receiver considers last message acknowledged
<0x15> receiver will re-send last message (if not acknowledged)

*Other Messages:*

301ssAESs7000sVX.XXs<0x14>
X.XX this reports the version number of the firmware

**** Most AES software versions do not report receiver Status and Fault codes.

### *Mode 2 - Radionics 6500 mixed with Ademco 685 outputs:*

This output mode or format is not available in the AES software versions.

This mode will provide the output of 4 line cards; line card 1 is for AES subscriber and receiver signals, line card 2 is for SIC signals, line card 3 is for Contact ID signals through ***IntelliTap***, and line card 4 is for 4+2 signals through ***IntelliTap***.

This mode uses the signal format most appropriate based on how it was received. It requires monitoring software that can automatically recognize Radionics 6500 and Ademco 685 signal formats on the same physical input port to the system.

*Line Card # 1* AES signals from subscribers and receivers.
*Signal format*: 1RRLssssssACCTEEsNNN<0x14>

Codes are the same as in "Mode 1" "Line card # 1". Receiver number is set as programmed by user. Line card is set to 1

Line Card # 2 SIC used in Optex Morse Genesys 824 Alpha
Signal format: 1RRLssssssACCTEEsNNN<0x14>
see "Line card #1", "Signal format" in "Mode 1 – Radionics 6500 compatible output" for explanation of format codes.

Codes are the same as in "Mode 1" "Line card # 2". This information is translated from SIC to a Radionics compatible format. Receiver number is set as programmed by user. Line card is set to 2.

Line Card # 3 Contact ID received from ***IntelliTap***. Events are passed through.
*Signal format*: <LF>RLsACCTs18sEEEEsGGsNNNN<0x14>
see "Line card #1", "Signal format" in "Mode 0 - Ademco 685 compatible output" for explanation of signal format codes. Note the different termination character.

This information is passed through. Receiver number is set as programmed by user. Line card is set to 3. The termination character is <0x14> instead of <CR>.

Line Card # 4 4+2 received through ***IntelliTap***.
*Signal format*: <LF>RLsACCTsCC<0x14>
CC = two digit zone code.
See "Line card #1", "Signal format" in "Mode 0 - Ademco 685 compatible output" for explanation of other signal format codes. Note the different termination character.

This Information is passed through. Receiver number is set as programmed by user. Line card is set to 4. The termination character is <0x14> instead of <CR>.

*Input Signals:*

In mode 2 the AES receiver will respond to two inputs or signals from the monitoring system. This is the same as mode 1 input signals.

<0x06> receiver considers last message acknowledged
<0x15> receiver will re-send last message (if not acknowledged)

*Other Messages:*

301ssAESs7000sVX.XXs<0x14>
X.XX this reports the version number of the firmware
Inputs and Other Messages are the same as Mode 1