

## Diamond Knowledge Base

### System Sentry - Enquires & Commands Guide

ST: Status (enquire)

The Status enquire returns the current System Sentry status as follows:

>%02X%02X%02X%02X%02X%02X%02X%04X%04X%04X,%04X

The ">" indicates the start of the response (common to all enquires).

The ending ",%04X" is a 16 bit CRC check value (common to all enquires).

The 7 values between these numbers are the actual status values.

Status values:

- %02X - Current Time (Seconds/00-59)
- %02X - Current Time (Minutes/00-59)
- %02X - Current Time (Hours/00-23)
- %02X - Current Date (Day of Week/1-7)
- %02X - Current Date (Day of Month/1-31)
- %02X - Current Date (Month/1-12)
- %02X - Current Date (Year/00-99)
- %04X - Total number of memory pages (260 bytes each). Should always be 0x1000
- %04X - Total number of memory pages used
- %04X - Total number of memory pages containing new data

SK: Set Clock (command)

This command sets the internal clock on the System Sentry.

SK=%02X%02X%02X%02X%02X%02X%02X

The "SK" is the set clock command.

The "=" marks the start of the settings.

The 7 values represent the time you want to set as listed below.

Command values:

- %02X - Current Time (Seconds/00-59)
- %02X - Current Time (Minutes/00-59)
- %02X - Current Time (Hours/00-23)
- %02X - Current Date (Day of Week/1-7)
- %02X - Current Date (Day of Month/1-31)
- %02X - Current Date (Month/1-12)
- %02X - Current Date (Year/00-99)

G0: Get Modem Monitor (enquire)    S0: Set Modem Monitor (command)

This enquire returns the current Modem Monitor configuration. The command sets the current Modem Monitor configuration. Regardless if it is a command or enquire, the sequence and type of parameters are the same. Note that the enquire always ends in a ,%04X representing the CRC value and the command is always followed with an equals (S0=....).

Values in sequence:

%1X	MODEM_TYPE
*1	LAND LINE: Use this setting when modem is connected to a standard telephone line.

%02X

MODEM\_RINGS

Number of rings in a row without a pickup to cause Modem Restart.  
\*10 is the default.

%04X

MODEM\_MAXTIME1

Maximum off hook time before automatically causing Modem Restart with no DCD (in 1.14 second increments). Set to \*0 to disable. This is always disabled when MODEM\_TYPE is set to CELLULAR.

%04X

MODEM\_MAXTIME2

Maximum off hook time before automatically causing Modem Restart with DCD active (in 1.14 second increments). Set to \*0 to disable.

%1X

## MODEM\_POWERTIME

Set to Number of power times to use. Set to \*0 to power modem all the time.

%1X

## MODEM\_POWERONRING

If powered off, turn modem on when a ring is detected (1=Yes,\*0=No).

%04X%04X

## MODEM\_POWERTIME1

Power On Time #1 - Start Time & End Time.

%04X%04X

## MODEM\_POWERTIME2

Power On Time #2 - Start Time & End Time.

%04X%04X

## MODEM\_POWERTIME3

Power On Time #3 - Start Time & End Time.

%04X%04X

MODEM\_POWERTIME4

Power On Time #4 - Start Time & End Time.

%04X%04X

MODEM\_POWERTIME5

Power On Time #5 - Start Time & End Time.

%04X

MODEM\_REINITTIME1

Time #1 to reinitialize modem. Set to \*0xFFFF to disable.

%04X

MODEM\_REINITTIME2

Time #2 to reinitialize modem. Set to \*0xFFFF to disable.

%04X

## MODEM\_REINITTIME3

Time #3 to reinitialize modem. Set to \*0xFFFF to disable.

%1X

## MODEM\_INITBAUD

Baud rate to reinitialize modem at:

\*0=Last Detected Rate 1=300 2=1200 3=2400 4=4800 5=9600 6=19200 7=38400 8=57600  
9=115200

%04X

## MODEM\_OFFTIME

Time to leave modem off before powering back on (in 1.14 second increments). From 3 (default) to 999.

%-50s

## MODEM\_INITSTR1

Modem Initialization String #1 (50 characters). Default = AT&F

%-50s

## MODEM\_INITSTR2

Modem Initialization String #2 (50 characters). Default =

%-50s

MODEM\_INITSTR3

Modem Initialization String #3 (50 characters). Default =

%-50s

MODEM\_INITSTR4

Modem Initialization String #4 (50 characters). Default =

%-50s

MODEM\_INITSTR5

Modem Initialization String #5 (50 characters). Default =

G1: Get Call Back (enquire)    S1: Set Call Back (command)

NOTE: These commands are a future enhancement and are not supported in V1.00.

The enquire returns the current Call Back configuration. The command sets the current Call Back configuration. Regardless of if it is a command or enquire, the sequence and type of parameters are the same.

Note that the enquire always ends in a ,%04X representing the CRC value and the command is always followed with an equals (S1=....).

Values in sequence:

%1X	FMODEM_BAUD	Baud rate to initialize calls at: 0=Last Detected Rate 1=300 2=1200 3=2400 4=4800 5=9600 *6=19200 7=38400 8=57600 9=115200
%-50s	FMODEM_CALLSTR1	Modem Calling String #1 (50 characters). Default = AT&F
%-50s	FMODEM_CALLSTR2	Modem Calling String #2 (50 characters). Default =
%-50s	FMODEM_CALLSTR3	Modem Calling String #3 (50 characters). Default =
%-50s	FMODEM_CALLNUMBER	Modem Calling Command & Number (50 characters). Default = ATDT1-541-345-8231
%1X	FMODEM_CALLTIMES	When to call (*0=On alert,1-3=Times).
%04X	FMODEM_CALLTIME1	Call Time #1 (*10pm)
%04X	FMODEM_CALLTIME2	Call Time #2 (*11pm)
%04X	FMODEM_CALLTIME3	Call Time #3 (*6am)
%04X	FMODEM_WAITDCD	Time to wait for Carrier Detect (in 1.14 second increments) Default = 105 (120 seconds)
%02X	FMODEM_ATTEMPT	Number of recall attempts before moving to next calling time. Note that if FMODEM_CALLTIMES is set to 0, then the call times will still be used for any unsuccessful reportings. Default = 3

G2: Get Alerts (enquire) S2: Set Alerts (command)

NOTE: These commands are a future enhancement and are not supported in V1.00.

This enquire returns the current Alerts configuration. The command sets the current Alerts configuration. Regardless of if it is a command or enquire, the sequence and type of parameters are the same.

Note that the enquire always ends in a ,%04X representing the CRC value and the command is always followed with an equals (S2=....).

Values in sequence:

%1X	EMAIL_ALERTS	Enable or disable the alerts (1=Enabled,*0=Disabled)
%04X	ALERT_NOCHARGE	No charging alert. Set to 0 to disable, or from 1-1000 hours in a row with < 50mA Charge. Default = 12 hours
%04X %04X	ALERT_CHARGEMAX ALERT_CHARGEMIN	Charger current alert (*0 disabled on both). Set to number of mA the Maximum and Minimum from the DC input.
%04X %04X	ALERT_BATTMAXIN ALERT_BATTMININ	Battery charge alert (*0 disabled on both). Set to number of mA the Maximum and Minimum into the 12V Battery.
%04X %04X	ALERT_BATTINPER ALERT_BATTINTIME	Battery charge alert percentage (*0 disabled on both). Set to change percentage allowed over specified time (in minutes).
%04X %04X	ALERT_BATTMAXOUT ALERT_BATTMINOUT	Battery drain alert (*0 disabled on both). Set to number of mA the Maximum and Minimum out of the 12V Battery.

%04X %04X	ALERT_BATTOUTPER ALERT_BATTOUTTIME	Battery drain alert percentage (*0 disabled on both). Set to change percentage allowed over specified time (in minutes).
%04X %04X	ALERT_BATMAXVOLT ALERT_BATMINVOLT	Battery Voltage Alert (*0 disabled on both). Set to the minimum and maximum 12V battery voltage (in tenths of a volt).
%04X %04X	ALERT_MODEMMAX ALERT_MODEMMIN	Modem drain alert (*0 disabled on both). Set to number of mA the Maximum and Minimum being drawn from the Modem.
%04X %04X	ALERT_ATRMAX ALERT_ATRMIN	ATR charge alert (*0 disabled on both). Set to number of mA the Maximum and Minimum into the ATR DC Input.
%04X %04X	ALERT_ATR2MAXVOLT ALERT_ATR2MINVOLT	ATR Internal Battery Voltage Alert (*0 disabled on both). Set to the minimum and maximum battery voltage (in tenths of a volt) for the internal ATR battery.
%04X %04X	ALERT_ATR2MAXIN ALERT_ATR2MININ	ATR Internal Battery charge alert (*0 disabled on both). Set to number of mA the Maximum and Minimum into the internal ATR Battery.
%04X %04X	ALERT_ATR2MAXOUT ALERT_ATR2MINOUT	ATR Internal Battery drain alert (*0 disabled on both). Set to number of mA the Maximum and Minimum out of the internal ATR Battery.
%04X %02X	ALERT_SMARTPWR1 ALERT_SMARTPWR1DY	Enables the overall power alert (0 to disable). This is if the amount of charging is less than this value (in hundredths) times the average current draw for DY days. Default for ALERT_SMARTPWR1 is 200 (x2.00). Default for ALERT_SMARTPWR1DY is 3.
%04X	ALERT_SMARTPWR2	If enabled, generates an alert if the 12V battery fails to charge to the same point after getting this value (in hundredths) times current into it. Set to zero to disable. Default = 100 (x1.00)
%04X	ALERT_SMARTPWR3	If enabled, generates an alert if the ATR internal battery fails to charge to the same point after getting this value (in hundredths) times current into it. Set to zero to disable. Default = 100 (x1.00)

### G3: Get General Configuration (enquire)    S3: Set General Configuration (command)

The enquire returns the current General Configuration. The command sets the current General Configuration. Regardless if it is a command or enquire, the sequence and type of parameters are the same.

Note that the enquire always ends in a ,%04X representing the CRC value and the command is always followed with an equals (S3=....).

Values in sequence:

%02X	DEVICE_TYPE	Type of ATR or other device connected to: *0 = Unknown 1 = Diamond TT-2001, Unicorn, or Phoenix 2 = IRD TCC-540 or TCC-500 3 = Peek 241 4 = Peek ADR
------	-------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------



%1X	DEVICE_BAUD	Baud rate to talk to device at: 0=Last Detected Rate 1=300 2=1200 3=2400 4=4800 5=9600 6=19200 7=38400 8=57600 9=115200
%02X	SENTRY_ID	ID Code of System Sentry (0-255) Default is *0. This is used for all locations.
%04X	SOLAR_CUR_OFF	Offset value for the Solar/DC Charger input (signed). Default = 16
%04X	12VBATT_CUR_OFF	Offset value for the 12 Volt DC Battery (signed). Default = 16
%04X	MODEM_CUR_OFF	Offset value for the Modem power (signed). Default = 16
%04X	ATRIN_CUR_OFF	Offset value for the ATR Input power (signed). Default = 16
%04X	ATRBATT_CUR_OFF	Offset value for the ATR Battery power (signed). Default = 16
%04X	ZERO_CUR_HIGH	Positive current reading at or under to consider 0mA, Default = 16
%04X	ZERO_CUR_LOW	Negative current reading at or above to consider 0mA, Default = 16
%04X	TEMP_OFFSET	Signed temperature offset (in 0.5 degree C increments). Default = 16
%-50s	FMODEM_SITEID	Site ID of location of System Sentry (50 characters). Default is "System Sentry"
%-50s	FMODEM_SITEPHONE	Phone number at System Sentry location (50 characters). Default is "System Sentry"

## RT: Real Time Enquire

The Real Time command returns the current live monitoring parameters from the System Sentry. It is used by S3 to provide the real time update screen.

There are two variations: RT (single real time returned)  
RTX (multiple real times sent until Cntrl+A, Cntrl+E, or Cntrl+X)

The real time string looks like this:

>%04X,%04X,%04X,%04X,%04X,%04X,%04X,%04X,%04X

The ">" indicates the start of the response (common to all enquires).

The eight middle "%04X" values are the actual real time values (see below)

The last ",%04X" is a 16 bit CRC check value (common to all enquires).

The real time values are as follows:

%04X - Voltage @ 12V Battery/DC Charger

Value is in 1/20th of a volt (0.05V). This is the average voltage during the period (9 bits, 0x1FF, from 0 to 511 which equals 0.00V to 25.55V).

%04X - Voltage @ ATR Battery

Value is in 1/20th of a volt (0.05V). This is the average voltage during the period (9 bits, 0x1FF, from 0 to 511 which equals 0.00V to 25.55V).

%04X - Solar/DC Charger Current Measurement

Value is in 1.63mA increments. This is the average current during period (12 bits + sign bit = 13 total, 0xFFFF for data, 0mA to 6675mA). Positive number indicates power coming in from charger.

%04X - 12V Battery Current Measurement

Value is in 1.63mA increments. This is the average current during period (13 bits, 12 data bits + sign bit,

0xFF for data, 0mA to 6675mA). Positive number means battery is being drained, negative number indicates battery is being charged.

%04X - Modem Current Measurement

Value is in 0.84mA increments. This is the average current during period (11 data bits, no sign, 0xFF for data, 0mA to 1719mA). This always positive number indicates power going to the modem.

%04X - ATR Power In Current Measurement

Value is in 0.84mA increments. This is the average current during period (12 bits, 11 data bits + sign bit, 0xFF for data, 0mA to 1719mA). Positive number indicates power going to traffic counter.

%04X - ATR Battery Current Measurement

Value is in 0.84mA increments. This is the average current during period (12 bits, 11 data bits + sign bit, 0xFF for data, 0mA to 1719mA). A positive number indicates battery is being drained, a negative number indicates battery is being charged.

%04X - Temperature

Value is 0.5 degrees C. This is the average temperature during period (8 bits plus 9th sign bit sign, 0xFF for data, -128.5C to +128.5C).

## **RA: Retrieve All Data (enquire)    RN: Retrieve New Data (enquire)**

NOTE: These commands are a future enhancement and are not supported in V1.00.

The two retrieve commands start an XMODEM send by the System Sentry of either all the data in the memory of the device or just the data since the last download. In either case, the System Sentry sends:

>%06X,%04X

The ">" indicates the start of the response (common to all enquires).

The "%06X" value is the total size of the data being sent.

The last ",%04X" is a 16 bit CRC check value (common to all enquires).

At this point the actual XMODEM transfer begins. Send a Control+X to abort. If ALL the requested data is successfully transferred, it is marked as retrieved.

## **CL: Clear All Data (command)**

NOTE: This command is a future enhancement and is not supported in V1.00.

This command clears all data stored in the System Sentry. It must be followed with "VERIFIED!".

CL=VERIFIED!

The System Sentry will clear all memory and then send "OK".

## **IN: Instant Function (command)**

This command executes a single function on the device. These functions are intended to perform specific electrical operations and can be used to manually reset and reprogram a site.

IN=%02X [ ... ]

The first %02X specifies the function to execute (see below). Depending on the function, there may be additional optional command parameters.

IN=01

Power traffic counter off and then on again, optionally followed by a %02X which specifies the amount of time to leave it off (in 1 second increments), otherwise it is done for 10 seconds. When device is powered back on, the System Sentry sends OK.

IN=02

Pulse the open collector Diamond Power switch, optionally followed by a %02X which specifies the amount of time to leave it off (in 1 second increments), otherwise it is done for 2 seconds. This command normally follows the IN=01 command on Diamond counters.

## **NF: New Flash (command)**

This command uploads new flash code into the System Sentry. It is started with the command:

NF=YES!

From this point the system sends: ERASE\r

This starts the erase process and the program sends updates for each block erased. When finished, a ">" is sent indicating it is waiting for an Intel hex upload.

Send Intel Hex lines one at a time waiting for the ">" to be returned when programming of that line complete. When the last line sent, the System Sentry will automatically send a "\*GO\*" string indicating that it has restarted. You must now re-link to the System Sentry to communicate.

<http://support.diamondtraffic.com/knowledgemanager/questions/68/>