

## **Programming Enfora GPRS modem to work with the DataNet System (Version 14)**

The events listed below (using AT\$EVENT command) are for general usage, and can be removed or edited as required for custom applications. Please read the Enfora event programming guide for more information on event reporting.

Replace the settings in ***red bold italics*** with appropriate strings or numbers. Important notes are shown in blue underlined text.

- 1) Connect PC to Enfora serial port. Baud rate is 115200 bps, unless it has been changed from its default. Use a terminal program (such as HyperTerminal in Windows) to enter the following commands, or use the Enfora Programming utility to send the commands as a script file. Use the AT\$EVENT? command to read back the current script settings at any time.
- 2) AT&F – Reset modem to factory default settings. Note that this also forces modem serial port to 115200 bps.
- 3) AT+CGDCONT=1,"IP","***apn***" – Enter the GPRS APN required by the GSM service provider.
- 4) AT\$MDMID="***ID***" – Enter a modem ID (1-20 characters. 1-8 characters if sending packets with advanced format). This must match the ID configured in the DataNet server. If this command is not entered, the modem will use its IMEI ID (programmed in the factory).
- 5) AT\$UDPAPI=""***,port*** – Modem API port. Enter the UDP port number configured in the DataGate server. If this command is not entered, the default port (1720) will be used.
- 6) AT\$APIPWD="***password***" – Enter a password to prevent unauthorized users accessing the modem remotely – must be 8 characters (A-Z, 0-9). This password must also be entered into the DataGate to allow remote control, such as modifying scripts or polling (requires DataGate version 3.8.3 or later). Use AT\$APIPWD="" to clear the password.
- 7) AT\$ACKTM=***2,30,0*** – Modem will retry each packet 2 times, at an interval of 30 seconds if server does not send ack. You may change these values to suit your application. If you want the modem to reselect its IP address if ack is not received, change the last parameter to 1, although this may increase network costs.
- 8) AT\$AREG=2 – Automatic network connection.
- 9) AT\$NETMON=***10,1,0*** – Modem will release connection if network is unavailable for 10 minutes. After 1 release, network info will be erased. Change the last value to enable network pings every x minutes. Note: releasing the network connection may result in increased data usage counts.
- 10) AT\$EVTIM1=***x*** – Timer 1 will trigger every x seconds. In this sample script, Timer 1 and Timer 2 are used to trigger GPS position reports. Using two timers allows two reporting rates based on vehicle motion, IGN status, etc.
- 11) AT\$EVTIM2=***y*** – Timer 2 will trigger every y seconds.
- 12) AT\$EVTIM3=1 – Timer 3 is used to update user parameters every second.
- 13) AT\$EVDEL=3A – Remove default event 3. Default events 3 to 6 are used by certain Enfora modems to indicate GSM status on the USR1 LED. This and the following 7 commands modify these events to show GPRS status instead.

- 14) AT\$EVDEL=4A – Remove default event 4.
- 15) AT\$EVDEL=5A – Remove default event 5.
- 16) AT\$EVDEL=6A – Remove default event 6.

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- 17) AT\$EVENT=3,0,10,2,4 – GPRS Searching
- 18) AT\$EVENT=4,0,10,5,5 – GPRS Roaming
- 19) AT\$EVENT=5,0,10,0,0 – GPRS Not registered
- 20) AT\$EVENT=6,0,10,1,1 – GPRS Registered

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- 21) AT\$EVENT=10,0,30,**x**,1000000 – Vehicle Idle for x seconds. [This event generates a “stopped” condition, which is useful for generating trip reports. Note that the first parameter in the AT\\$EVENT command \(10 in this case\) indicates the Event Group ID, which is used to identify events. This Group ID can be set to any number from 7 to 99, but each group must use a unique number.](#)
- 22) AT\$EVENT=10,3,41,**id,format** – Send position. [See note at end of document for calculation of format field. If acks are not required, change the 41 \(the third parameter\) to 40 in this and all other send events.](#)
- 23) AT\$EVENT=10,3,43,1,0 – Reset Timer 1. [Reset the timers as this event will send a position report.](#)
- 24) AT\$EVENT=10,3,43,2,0 – Reset Timer 2

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- 25) AT\$EVENT=11,1,12,1,1 – Timer 1 Expired
- 26) AT\$EVENT=11,2,62,0,0 – (OPTIONAL) only send position while stationary.
- 27) AT\$EVENT=11,2,7,0,0 – (OPTIONAL) only send position when IGN off.
- 28) AT\$EVENT=11,2,27,1,1 – (OPTIONAL) only send position when GPS valid.
- 29) AT\$EVENT=11,3,43,2,0 – Reset Timer 2
- 30) AT\$EVENT=11,3,41,**id,format** – Send standard position

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- 31) AT\$EVENT=12,1,13,1,1 – Timer 2 Expired. [This will be triggered when a poll request is sent from the server, so it should not have any conditional inputs.](#)
- 32) AT\$EVENT=12,3,41,**id,format** – Send position
- 33) AT\$EVENT=12,3,43,1,0 – Reset Timer 1

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- 34) AT\$EVENT=13,0,16,**x**,1000000 – Vehicle moved x metres.
- 35) AT\$EVENT=13,3,41,**id,format** – Send position
- 36) AT\$EVENT=13,3,43,1,0 – Reset Timer 1
- 37) AT\$EVENT=13,3,43,2,0 – Reset Timer 2

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- 38) AT\$EVENT=14,0,17,**x**,250 – Vehicle speed exceeds x knots.
- 39) AT\$EVENT=14,3,41,**id,format** – Send position

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- 40) AT\$EVENT=15,0,8,1,1 – Modem power up.
- 41) AT\$EVENT=15,3,41,**id,format** – Send position

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- 42) AT\$EVENT=16,0,0,1,1 – IO1 high
- 43) AT\$EVENT=16,3,41,**id,format** – Send position

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- 44) AT\$EVENT=17,0,0,0,0 – IO1 low
- 45) AT\$EVENT=17,3,41,**id,format** – Send position
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- 46) AT\$EVENT=18,0,1,1,1 – IO2 high
- 47) AT\$EVENT=18,3,41,**id,format** – Send position
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- 48) AT\$EVENT=19,0,1,0,0 – IO2 low
- 49) AT\$EVENT=19,3,41,**id,format** – Send position
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- 50) AT\$EVENT=20,0,2,1,1 – OUT high
- 51) AT\$EVENT=20,3,41,**id,format** – Send position
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- 52) AT\$EVENT=21,0,2,0,0 – OUT low
- 53) AT\$EVENT=21,3,41,**id,format** – Send position
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- 54) AT\$EVENT=22,0,7,1,1 – IGN high. [Note that the modem is automatically reset when the IGN pin goes high.](#)
- 55) AT\$EVENT=22,3,41,**id,format** – Send position
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- 56) AT\$EVENT=23,0,7,0,0 – IGN low
- 57) AT\$EVENT=23,3,41,**id,format** – Send position
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- 58) AT\$EVENT=24,0,29,**x**,1000000 – No GPS signal for x seconds.
- 59) AT\$EVENT=24,3,41,**id,format** – Send position
- 60) AT\$EVENT=24,3,43,1,0 – Reset Timer 1
- 61) AT\$EVENT=24,3,43,2,0 – Reset Timer 2
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- 62) AT\$EVENT=25,1,14,1,1 – Timer 3 Expired
- 63) AT\$EVENT=25,3,**128**,0,-403 – Parameter 0 = Serving Cell ID. [Important: replace the 128 in this and the following lines with 64 for Mini-MT modems.](#)
- 64) AT\$EVENT=25,3,**128**,1,-402 – Parameter 1 = Serving Cell LAC
- 65) AT\$EVENT=25,3,**128**,2,-405 – Parameter 2 = Serving Cell RSSI
- 66) AT\$EVENT=25,3,**128**,3,-200 – Parameter 3 = Battery Level %
- 67) AT\$EVENT=25,3,**128**,4,-107 – Parameter 4 = GPS Heading
- 68) AT\$EVENT=25,3,**128**,5,-105 – Parameter 5 = Speed
- 69) AT\$EVENT=25,3,**128**,6,-104 – Parameter 6 = Altitude
- 70) AT\$EVENT=25,3,**128**,7,-103 – Parameter 7 = Longitude
- 71) AT\$EVENT=25,3,**128**,8,-102 – Parameter 8 = Latitude
- 72) AT\$EVENT=25,3,**128**,9,27 – Parameter 9 = GPS Status
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### Mini-MT Events:

- 73) AT\$EVDL=1 – (OPTIONAL) remove geofence event from Mini-MT. [This allows the geofence button to be used in the script without triggering a geofence alert.](#)
- 74) AT\$EVENT=40,0,59,0, **x** – Low Battery (x percent remaining)
- 75) AT\$EVENT=40,3,41,**id,format** – Send position

- 76) AT\$EVENT=41,1,58,2,2 – PTC button pushed
  - 77) AT\$EVENT=41,3,44,1,0 – Stored AT command 1
  - 78) AT\$STOATEV=1,at\$vibnow=1 – Vibrate for 1 sec
  - 79) AT\$EVENT=41,3,41,**id,format** – Send position
  - 80) AT\$EVENT=42,1,73,2,2 – PTC button released
  - 81) AT\$EVENT=42,3,41,**id,format** – Send position
  - 82) AT\$EVENT=43,1,58,1,1 – User Defined Key pushed
  - 83) AT\$EVENT=43,3,41,**id,format** – Send position
  - 84) AT\$EVENT=44,1,73,1,1 – User Defined Key released
  - 85) AT\$EVENT=44,3,41,**id,format** – Send position
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- 86) AT\$FRIEND=1,1,"**a.b.c.d**" – Enter IP address of DataGate server.
  - 87) AT\$FRIEND=2,0,"0.0.0.0" – Clear FRIEND address. [It is important to manually clear all unused friend addresses, as they are not reset by the AT&F command.](#)
  - 88) AT\$FRIEND=3,0,"0.0.0.0"
  - 89) AT\$FRIEND=4,0,"0.0.0.0"
  - 90) AT\$FRIEND=5,0,"0.0.0.0"
  - 91) AT\$FRIEND=6,0,"0.0.0.0"
  - 92) AT\$FRIEND=7,0,"0.0.0.0"
  - 93) AT\$FRIEND=8,0,"0.0.0.0"
  - 94) AT\$FRIEND=9,0,"0.0.0.0"
  - 95) AT\$FRIEND=10,0,"0.0.0.0"
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#### **Mini-MT Commands:**

- 96) AT\$WAKEENBL=**x** – Set wake up events. Add one or more states as follows:  
1=Start Event 2=Stop Event 4=Moving 8=Stopped 16=Push-to-Call (PTC) button pushed (or set to zero to disable wakeup events).
  - 97) AT\$WAKEINTVL=**x** – Wake up the modem every x minutes (set to zero to disable periodic wakeup).
  - 98) AT\$WAKETIME=**x** – Time in seconds to stay awake before going to sleep (set to zero to disable sleep).
  - 99) AT\$MOTTRANS=**x** – Number of seconds (5 - 65535) to wait before changing from moving to stopped state when no motion is detected.
  - 100) AT\$KEYFNC=**x** – Control external keys. Use 0 to enable all keys, 1 to disable all keys, or add one or more of the following to disable individual keys: 2=Vol Up 4=Vol Down 8=Push-to-Call Dialling 16=GeoFence Tones.
  - 101) AT\$KEYSND=**x** – Control key press sounds, where x=0 (enable sounds) or 1 (disable sounds).
  - 102) AT\$KEYDLY=**x,y** – Delay before key presses will be acted upon, in increments of approximately 1/10 sec. If value y is present, it is used to set the PTC delay, otherwise the PTC delay is set the same as other keys.
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103) AT\$CHGOFF=0 – Use this command to constantly charge the internal battery while connected to power. By default (or if this command is set to “1”) the Mini-MT will disable charging when battery reaches 100%, and restart charging when battery reaches 90% capacity.

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104) AT\$WAKEUP=2,**x** – Modem will send keep-alive messages when its IP address changes (based on ACKTM setting), and every x minutes (set to zero to disable). [Note that this setting changes the value of Timer 4.](#)

105) AT&W – Write settings to memory.

106) AT\$RESET – Reset modem.

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### **ID and Format field calculation**

The modem sends data packets using a programmable format. This format must be configured correctly so that the DataNet server can understand the data.

The supported ID and Format values are:

<b>ID</b>	<b>Format</b>	<b>Type</b>
163839	163839	Standard format
1	-2141192049	Advanced format (8 character MDMID)
2	-2145386353	Advanced format (20 character MDMID)

The standard format includes MDMID, Event Type, GPS data, and I/O states. The advanced format contains specific values from the Enfora CPU, providing access to detailed modem information.

### **Example Script**

```
AT&F
AT+CGDCONT=1,"IP","vpn.com"
AT$MDMID="Unit1"
AT$UDPAPI="",1720
AT$APIPWD="KG8SG12L"
AT$ACKTM=2,30,0
AT$AREG=2
AT$NETMON=10,1,0
AT$EVTIM1=600
AT$EVTIM2=120
AT$EVTIM3=1
AT$EVDEL=3A
AT$EVDEL=4A
AT$EVDEL=5A
AT$EVDEL=6A
AT$EVENT=3,0,10,2,4
AT$EVENT=4,0,10,5,5
AT$EVENT=5,0,10,0,0
AT$EVENT=6,0,10,1,1
AT$EVENT=10,0,30,120,1000000
AT$EVENT=10,3,41,163839,163839
```

AT\$EVENT=10,3,43,1,0  
AT\$EVENT=10,3,43,2,0  
AT\$EVENT=11,1,12,1,1  
AT\$EVENT=11,2,62,0,0  
AT\$EVENT=11,3,42,2,0  
AT\$EVENT=11,3,41,163839,163839  
AT\$EVENT=12,1,13,1,1  
AT\$EVENT=12,2,62,1,1  
AT\$EVENT=12,3,41,163839,163839  
AT\$EVENT=12,3,43,1,0  
AT\$EVENT=13,0,16,1000,1000000  
AT\$EVENT=13,3,41,163839,163839  
AT\$EVENT=13,3,43,1,0  
AT\$EVENT=13,3,43,2,0  
AT\$EVENT=14,0,17,60,250  
AT\$EVENT=14,3,41,163839,163839  
AT\$EVENT=15,0,8,1,1  
AT\$EVENT=15,3,41,163839,163839  
AT\$EVENT=16,0,0,1,1  
AT\$EVENT=16,3,41,163839,163839  
AT\$EVENT=17,0,0,0,0  
AT\$EVENT=17,3,41,163839,163839  
AT\$EVENT=18,0,1,1,1  
AT\$EVENT=18,3,41,163839,163839  
AT\$EVENT=19,0,1,0,0  
AT\$EVENT=19,3,41,163839,163839  
AT\$EVENT=20,0,2,1,1  
AT\$EVENT=20,3,41,163839,163839  
AT\$EVENT=21,0,2,0,0  
AT\$EVENT=21,3,41,163839,163839  
AT\$EVENT=22,0,7,1,1  
AT\$EVENT=22,3,41,163839,163839  
AT\$EVENT=23,0,7,0,0  
AT\$EVENT=23,3,41,163839,163839  
AT\$EVENT=24,0,29,600,1000000  
AT\$EVENT=24,3,43,1,0  
AT\$EVENT=24,3,43,2,0  
AT\$EVENT=24,3,41,1,-2141192049  
AT\$EVENT=25,1,14,1,1  
AT\$EVENT=25,3,128,0,-403  
AT\$EVENT=25,3,128,1,-402  
AT\$EVENT=25,3,128,2,-405  
AT\$EVENT=25,3,128,3,-200  
AT\$EVENT=25,3,128,4,-107  
AT\$EVENT=25,3,128,5,-105  
AT\$EVENT=25,3,128,6,-104  
AT\$EVENT=25,3,128,7,-103  
AT\$EVENT=25,3,128,8,-102  
AT\$EVENT=25,3,128,9,27  
AT\$FRIEND=1,1,"192.168.0.1"  
AT\$FRIEND=2,0,"0.0.0.0"  
AT\$FRIEND=3,0,"0.0.0.0"  
AT\$FRIEND=4,0,"0.0.0.0"

```
AT$FRIEND=5,0,"0.0.0.0"  
AT$FRIEND=6,0,"0.0.0.0"  
AT$FRIEND=7,0,"0.0.0.0"  
AT$FRIEND=8,0,"0.0.0.0"  
AT$FRIEND=9,0,"0.0.0.0"  
AT$FRIEND=10,0,"0.0.0.0"  
AT$WAKEUP=2,0  
AT&W  
AT$RESET
```