Gate Tel
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DRAFT

EZcat with GPIO module
User Programming manual

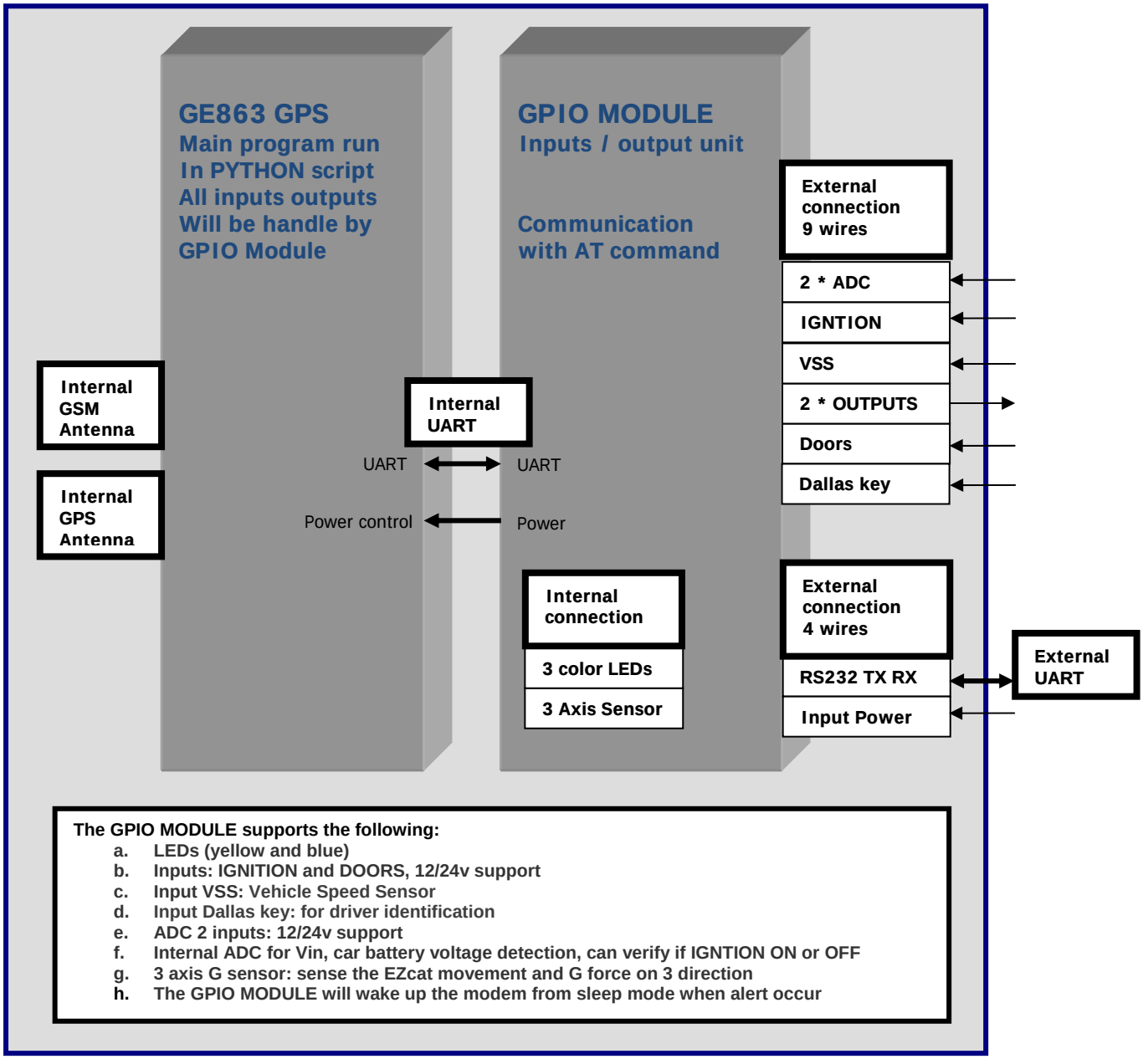
Rev. 1 – 10/08/10

1. Overview

The EZcat is a complete GSM/GPS tracking unit for AVL application.
Design for companies which use their own software on the EZcat hardware.

The EZcat unit Base on Telit GE863 GPS modem, with PYTHON script capability.
The GPIO MODULE overcome the PYTHON luck of speed to support inputs, outputs, ADC, VSS, Dallas Key and more.
The PYTHON script communicates with the GPIO MODULE with AT command via UART.

EZcat Programming Block Diagram



2. Programming

2.1 basic Communication AT (PY) command interface Between the GE863 and the GPIO MODOLE

1. UART Bound rate (Internal / External) 115200 no hardware control.

2. The AT command interface is similar to the regular Modem, with several exceptions.

a. To distinguish between the Modem AT command and the GPIO MODULE AT command, The AT prefix changed to PY.
Example: ***PY#FMR?***

b. All the PY command responding will be send in LOW CASE (command name).
Example: ***PY#LED?***
#led: 1,2,5
ok

Note: Sending the PY command is CASE INSENSITIVE

Each PY command that is sending to the GPIO MODULE must end by '\r' (0x0D).
Each PY command reply from the GPIO MODULE will end with '\r' '\n' (0x0D, 0x0A).
PY command replies are:

Verbal (PY#V=1)	***Numeric (PY#V=1)***
"ok"	***'0'***
"busy"	***'7'***
"error"	***'4'***
"ready"	***'5'***
"connect"	***'2'***

PY command can be send to the GPIO MODULE in one packet. (Few commands in one line)
The separator between the PY command will be ';' instead '\r', the last PY commands will be end with '\r'. The first PY command will start with "PY" and the rest of the PY command will start with '#'

If all the PY command was send correct the GPIO MODULE will respond the reply one by one and after the last reply will send "ok"

If one of the PY command will be wrong the GPIO MODULE will reply "error" and stop to perform the rest of the PY command.

Example: ***PY#LED?;#OC=1,2,5,5;#FMR?\r***
#led: 1,5,10
#led: 2,8,15
#fmr: CAT V 1.05
ok

The PY commands can be send to the GPIO MODULE form both UART (External or Internal) one time each.
To take control from what direction the PY command will be send External or Internal, PY command must be send in one shot "~~~$$$" (without any byte follow).
"connect" or '2' (depends of the PY#V definition) will be reply and this will the indication that the UART that send the "~~~$$$" is connected to the PY command interface.

Note: when the unit is power up the PY command is controlled by the External UART.

Example: The External UART is controlled the PY command interface.
The Internal UART (that connected to the modem) is sending:
"~~~$$$"
"connect"
Now the internal UART can send PY commands.

Debugging option: (user work with External UART directly to GE863 GPS Modem)

To send data in/out of the modem direct to the External UART.
This option will make the GPIO MODULE transparent.
The data must start with $ and send continually (last byte time out is 60mS).

Wake up from Sleep:

During wakeup from sleep all the unsolicited data events (input, ADC ..etc.) that send to the UART are stay in the UART buffer.

If the first PY command from the modem is "***PY#WEVENT?***"
The unit will send to the modem all the events that was accumulate during the modem startup.

If other PY command will be send as the first PY command after the modem wakeup all the accumulated data will be lost.

Example:
py#wevent?
#inl: 1,L,L
#inl: 2,H,H
#inl: 2,L,L
#inl: 1,H,H
#inl: 1,L,L
#inl: 2,H,H
ok

Direct connection from External UART to the GE863 GPS modem:

This PY command use to connecting the modem directly to the External UART for Firmware upgrade, PYTHON programming etc. on this PY command the GPIO MODULE completely ignore any information that run on the UART. This option could be down two ways:

a. Connecting the unit to the power while the internal switch (push-button on the board) is pressed continuously for 3 Sec. During this time the Yellow, Green & Blue will blink fast. After the internal switch (push-button on the board) was pressed continuously for 3 Sec, the Yellow, Green & Blue will turn ON continuously, and the modem is connected directly to the External UART.
To Exit this mode press the internal switch (push-button on the board) and the unit will restart to normal operation.

b. Send ***PY#PRG=0*** this command will restart modem before UART connection,
To Exit this mode press the internal switch (push-button on the board) and the unit will restart to normal operation.
Send ***PY#PRG=1*** this command will connect to UART without modem restarting, to Exit this mode press the internal switch (push-button on the board) "connect" or '2' (Depends of the PY#V definition) will be reply and the unit will continue to work.

WDT (watch dog timer)

To keep the PYTHON working continuously is possible to apply the WDT option.

a. When modem is Start / Restart the #wdt: 0 (WDT is Disable)
   if "***py#wdt=X***" (0, 1-5400 Sec) the WDT will Enabled, GPIO MODULE expect to receive any byte on the UART. It is recommended to send '\r' cause if it send alone, the PY command parser will ignore it.
b. if a byte is not send & WDT t.out occur the follow will happen:
   * WDT will automatically Disable (***py#wdt=0***).
   * Modem will restart.. After the modem will restart the PY must send "***py#wdt=X***".