Command List

LLC I V1.06 GenPro24e - Q24PL B OAT313

Embedded application for autonomous management of GPIO features

GenPro 24e

Reference : EG_GenPro24e_988_CL_005_UK

Revision : 005

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Document history

Revision	Modifications	Author	Date
000	Creation	PBR	31/01/07
001	Correction of the missing "N" in the command +EGPHN Addition of version OAT3.13	PBR	16/02/07
002	Suppression of TCP information and correction of paragraph DOWNLOAD Addition of info remove SIM card	PBR	15/03/07
004	Modification of ref OS to OS 657	BBO	29/03/07
005	AT+WIOW : new parameter of timer	BBO/SDU	20/01/09

The main modifications in this document compared to its previous version are easily identifiable on a screen by the blue color of the text.

REFERENCE DOCUMENTS:

[R1] – AT Command Interface Guide For 6.57c RELEASE (ref: WM_ASW_OAT_UGD_xxx)

CONTENTS

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1 DESCRIPTION

1.1 Introduction

The GenLoc24e has been designed from a Wavecom Wismo module that incorporates the GSM communication functions.

The basic system includes the GSM functions but they are not automatic.
The application developed with the tools made available by Wavecom allows to download an application directly into the device. It allows the conception of a product with autonomous functions requiring no external intelligence.

NOTE:
The embedded application has been developed with the Wavecom software suite Open AT® in ADL (Advanced Developper Layer) in order to make the processing easier. The result of this is that at power-on, various "**WIND**" messages are systematically sent ; these messages cannot be filtered by the application as the application is activated after.

1.2 Functions

1.2.1 Particularity

The standard configuration commands for our products and used for this application begin with the string **"AT+EG".**

Some commands have been created but have no use for the moment or are redundant.

This software version only works on devices that have the version "**657***x***09gm.Q24PL***xxx*" installed.

Use the command ATI3 to determine the current version.

1.2.2 Use.

To drive the output, use the command AT+WIOW=0,x where x is the desired value.

2 APPLICATION COMMANDS

2.1 General principles

This embedded application allows the remote management of the 3 inputs + the output of the GenPro 24e and the internal parameters of the device via SMS and/or GSM DATA.
The available functions are:

Actions on the inputs:

- In case of change of state (simple or double), each input can send a SMS to one or several destinations (destination N°, identifier and free message)
- The 3 inputs can be locally read by AT command (AT+WIOR)
- The 3 inputs can be remotely read via SMS (formatted message)
- The 3 inputs can be remotely read via a Data connection (formatted message)

Control of the output:

- The output can be locally controlled by AT command (AT+WIOW)
- The output can be remotely controlled via SMS (formatted message)
- The output can be remotely controlled via a Data connection (formatted message)

Remote control:
The remote control is available in GSM DATA mode. The access is authorized only after the entry of an escape sequence and a password.

Management of authorized accesses:
For the control of the output via SMS or GSM DATA, the authorized telephone numbers can be managed in two different ways:

- The authorized telephone numbers are predefined in the flash memory of the modem.
- The authorized telephone numbers are not predefined, but the access via SMS or GSM Data is done thanks to a Password predefined in the flash memory of the modem.

Simple local sending of SMS:
This command in addition to the basic existing command allows to send a SMS in one single line. This avoids having to manage the basic complex procedure. See command AT+CMGS of the general documentation.

2.1.1 AT+EGFM – Feature Management

Description:

This command allows to program the Erco&Gener specific functions added to the basic product.
For the moment there are two possibilities: management by SMS and management in GSM DATA mode.
By default, there is no function activated.

Syntax:

AT+ EGFM =<n>,<feature>,<pwd>

Examples:

Command	Possible responses	Notes
`AT+EGFM=?`	`+EGFM=2 or (0-1),"FEATURE","PWD"` `OK`	*Display the syntax.*
`AT+EGFM=1,"DATA_CONTROL"` `,"4443"`	`OK`	*Program the function DATA_CONTROL (must be followed by the command AT+CFUN=1)*

`AT+EGFM=2`	`+EGFM: "SMS_CONTROL",0`
	`+EGFM: "DATA_CONTROL",1`
	`OK`
		Display the active and non-active functions

Defined values:

<n>	"1" activation of the function "0" deactivation of the function "2" display the functions
<feature>	SMS_CONTROL for remote control via SMS DATA_CONTROL for remote control in DATA mode
<pwd>	**5343** password for function management via SMS **4443** password for function management via DATA

IMPORTANT: This command must be followed by a reset command AT+CFUN=1 so that it can be taken into account.

Notes:

- The passwords of activation of these two functions cannot be modified.
- The two functions SMS_CONTROL and DATA_CONTROL can be simultaneously activated.
- Once the function SMS_CONTROL is active, no SMS can be received by the exterior application, but it is still possible to send a SMS.

2.1.2 AT+EGMGS – Direct emission of a mini message (SMS)

Description:

This command in addition to the existing basic command allows to send a SMS in one single line. This avoids having to manage the basic complex procedure. See command AT+CMGS of the general documentation.

Syntax:

AT+EGMGS="+3301234567","This is my message"

Examples:

Command	Possible responses	Notes
AT+EGMGS="0612345678","This is my message"	OK	*The SMS has been sent*
AT+EGMGS="0612345678","This is my message "	ERROR	*The SMS has not been sent*

The only information returned (OK or ERROR) allows to check if the SMS has been sent or not.
If the network is absent, the message ERROR is immediately returned.

2.1.3 AT+EGPHN – Authorized telephone numbers

Description:

This command allows to program the users' telephone numbers used by the unit:

- To define the destination number of the outgoing SMS
- To define the destination number of the outgoing data connections
- To define the destination numbers that are authorized to connect in incoming call or via SMS.

Then a telephone directory is available which is independent from the one of the SIM card.

This command is available when the functions "SMS_CONTROL" or "DATA_CONTROL" are active.

Syntax:

AT+EGPHN=<x>[,<nnn>,<y>] (PHoNe)

Examples:

Command	Possible responses	Notes
AT+EGPHN=?	+EGPHN: (1-255),20,(0-255) OK	*Display the syntax*
AT+ EGPHN=x,,y	OK	*Modify only the parameters of function, for an existing telephone number*
AT+ EGPHN=1, "0612345678",8	OK	*Program a destination telephone number authorized to connect in DATA mode*
AT+ EGPHN=1, "0687654321",128	OK	*Program the telephone number authorized to send a command SMS without using the password*
AT+ EGPHN?	+EGPHN: 1,"0612345678",5 OK	*Read the programmed telephone numbers.*
AT+ EGPHN=1	OK	*Erase the telephone numbers stored in position 1.*

Defined values:

<x> Index (1 to 255).

<nnn> Telephone number (20 digits max.). The format of the telephone number must be "+yyxxxxxxx". This field is not used for a GPRS connection but it must contain at least one digit.

<y> Bit map that allows to choose the function used by this telephone number:

- 1 (bit 0) Reserved.
- 2 (bit 1) Reserved.
- 4 (bit 2) Reserved.
- 8 (bit 3) Destination number. Incoming call in Data mode.
- 16 (bit 4) Reserved.
- 32 (bit 5) Reserved.
- 64 (bit 6) Reserved.
- 128 (bit 7) Number authorized for management via SMS.

Examples:

- Entry of the destination number of the outgoing SMS (status transfer of the inputs) :
  AT+EGPHN=1,"+33612345678",128

- Entry of the destination number for the outgoing Data calls (status transfer of the inputs) :
  AT+EGPHN=1,"0241234567",8

2.1.4 AT+EGINP – Configuration of the inputs for alarm transmission

Description:

This command allows to configure the use of the opto-coupled inputs.
This command is available once the functions "SMS_CONTROL" or "DATA_CONTROL" are active.

Syntax:

AT+EGINP=<n>,<o>,<t>,<x>,<y> (INPut set-up)

Examples :

Command	Possible responses	Notes
AT+EGINP=?	+EGINP: (1-3),(0-1),(0-65535),("O","C"),("D","S") +EGINP: (1-3),("O"-"C"),"Message" OK	*Display the syntax*
AT+EGINP?	+EGINP: 1,0,00000,"O","D" +EGINP: 1,"C","ENTREE 1 ON" +EGINP: 1,"O","ENTREE 1 OFF" +EGINP: 2,0,00000,"O","D"	*Display the current configuration*

	+EGINP: 2,"C","ENTREE 2 ON" +EGINP: 2,"O","ENTREE 2 OFF" +EGINP: 3,0,00000,"O","D" +EGINP: 3,"C","ENTREE 3 ON" +EGINP: 3,"O","ENTREE 3 OFF" OK	
AT+EGINP	+EGINP: 1-8 +EGINP: 2-2 +EGINP: 3-0 OK	*Number of changes of state of the inputs if they are configured*

Defined values:

<n> Input number, 1 to 3.

<o> option

If <o> "0" or "1"
0 input inactive,
1 input active

<t> Time of presence of the active input before action of 0 (inactive) at 65535 (basis of time 100 ms).

<x> Idle state of the input. "O" for Open and "C" for Closed.

<y> Type of management at change of state:
"S" for Single, the change of state from idle to active initiates the action.
"D" for Double, the change of state from idle to active and from active to idle initiates the action.

If <o> is "O" or "C"
"O", the next parameter indicates the message that will be sent when the input opens.
"C", the next parameter indicates the message that will be sent when the input closes.

<t> Message included in the SMS, maximum length 140 characters. The identifier (AT+EGIDT) is automatically added at the beginning of the frame.

Note:

Configuration by default:

+EGINP: 1,0,00000,"O","D"
+EGINP: 1,"C","ENTREE 1 ON"
+EGINP: 1,"O","ENTREE 1 OFF"
+EGINP: 2,0,00000,"O","D"
+EGINP: 2,"C","ENTREE 2 ON"
+EGINP: 2,"O","ENTREE 2 OFF"
+EGINP: 3,0,00000,"O","D"
+EGINP: 3,"C","ENTREE 3 ON"
+EGINP: 3,"O","ENTREE 3 OFF"

Examples:

Input 1, active, 500ms, Open on idle mode, Double action

at+eginp=1,1,5,"O","D"
OK

at+eginp=1,"C","INPUT 1 CLOSED"
OK

at+eginp=1,"O","INPUT 1 OPENNED "
OK

at+eginp?
+EGINP: 1,1,00005,"O","D"
+EGINP: 1,"C","INPUT 1 CLOSED"
+EGINP: 1,"O","INPUT 1 OPPENED"
+EGINP: 2,0,00000,"O","D"
+EGINP: 2,"C","ENTREE 2 ON"
+EGINP: 2,"O","ENTREE 2 OFF"
+EGINP: 3,0,00000,"O","D"
+EGINP: 3,"C","ENTREE 3 ON"
+EGINP: 3,"O","ENTREE 3 OFF"

2.1.5 AT+WIOR – Read GPIO value

This command will read the requested SPI GPIO pin value.

Syntax: AT+WIOR=<index>

<index>

0 Opto-coupled input 0
1 Opto-coupled input 1
2 Opto-coupled input 2

Examples :

Command	Possible Responses	Notes
AT+WIOR	**AT+WIOR=(0-2)** **OK**	***Display syntax***
AT+WIOR=0	**+WIOR: 0** OK	***Opto-coupled input 0 is low***
AT+WIOR=1	**+WIOR: 1** OK	***Opto-coupled input 1 is high***
AT+WIOR=2	**+WIOR: 0**	***Opto-coupled input 2 is low***

	OK	
AT+WIOR?	**+WIOR: 0,0,1** OK	***All inputs state in this order 0,1,2***

2.1.6 AT+WIOW – Write GPIO value

This command will write a value to the requested SPI GPIO pin with a timer option.

Syntax: AT+WIOW=<index>,<value>,<timer>

<index>
0 Open-collector output (only "0" is available)

<value>
0 Output pin is reset low (means output is closed)
1 Output pin is set high (means output is opened)

<timer>
***n* x 100ms** (example: n=20=2000ms)

Examples :

Command	Possible Responses	Notes
AT+WIOW	**AT+WIOW=(0),(0-1)** **OK**	***Display syntax***
AT+WIOW=0,1	 OK	***Open-collector output is set high (opened)***
AT+WIOW=0,0,50	 OK	***Open-collector output is set closed during 5s***
AT+WIOW?	**AT+WIOW=0,0** **OK**	***Open-collector output is set low (closed)***

2.1.7 AT+EGIDT –Modem identifier

WARNING : This command is available only if the function SMS_CONTROL is active (see AT+EGFM).

Description:
This command allows to program an identifier which makes easier the identification of the device during the information sending via SMS.
This command is available when the function "SMS_CONTROL" is active.

Syntax:
AT+ EGIDT =<IdenTifier>

Examples:

Command	Possible responses	Notes
AT+EGIDT=?	+EGIDT: (20) OK	*Display the syntax.*
AT+EGIDT="354475000000001"	OK	*Program the identifier.*
AT+EGIDT?	+EGIDT: "354475000000001" OK	*Display the current identifier*

Defined values:

<IdenTifier> Value of the identifier entered as an ascii character string, example: “012345678912345”.

Notes:

The maximum length of the identifier is 20 characters.
Identifier by default: IMEI number.

2.1.8 AT+EGPWS – Management of the access password via SMS

WARNING: This command is only available once the function SMS_CONTROL is active (see AT+EGFM).

Description:

This command allows to manage a password that will authorize the access to the different remote management functions, in the case where the telephone number associated to the command is different from the number programmed (reception SMS).

Syntax:

AT+EGPWS=<OLD>,[<NEW>]

Examples:

Command	Possible responses	Notes
AT+EGPWS=?	AT+EGPWS="OLD","NEW" Program password for SMS acces (8 chars max) OK	*Display the syntax. Maximum length of the password*
AT+EGPWS?	+EGPWS: "0000" OK	*Display the current configuration*
AT+EGPWS=”0000”,”1234”	OK	*Modify the password. Immediately saved in flash.*

Defined values:

<OLD> Current password entered as an ascii string, example : “0000”.

<NEW> New password

Notes:

The maximum length of the password is 8 characters. Be Careful to the case of the characters (capital letters, small letters, digits, etc.). Password by default: 0000.

2.1.9 AT+EGPWD – Password of access via GSM DATA

WARNING: This command is available only if the DATA_CONTROL function is active (see AT+EGFM).

Description:

This command allows to manage a password that will authorize the access to the different functions of remote management (connection in DATA mode).

Syntax:

AT+EGPWD=<OLD>,[<NEW>,<OPT>]

Examples:

Command	Possible responses	Notes
AT+EGPWD=?	AT+EGPWD="OLD","NEW",("R") Program password for remote acces (8 chars max) OK	*Display the syntax. Maximum length of the password*
AT+EGPWD?	+EGPWS: "0000" OK	*Display the current configuration*
AT+EGPWD="0000","1234"	OK	*Change the password. Immediately saved in flash.*
AT+EGPWD="0000",,"R"	OK	*Complete erase.*

Defined values:

<OLD> Current password entered as an ascii string, example: "0000".

<NEW> New password

<OPT> If "R", it allows to erase the password and its request when accessing in remote control. With S201=0 allows a direct access in GSM DATA mode

Notes:

Maximum length of the password is 8 characters. Careful! Respect the case (capital letters, small letters, digits, etc.). Password by default: 0000.

2.1.10 ATS201 – Escape character for access via GSM DATA

WARNING: This register is available only if the function DATA_CONTROL is active (see AT+EGFM).

Description:

This command allows to manage the value of the escape character that authorizes the access to the different functions of remote management (connection in DATA mode).

Syntax:

ATS201=x

Examples:

Command	Possible responses	Notes
ATS201?	035 OK	*Display the current configuration*
ATS201=42	OK	*Change of character. Immediately saved in flash.*

Defined values:

<x> 0 to 255. **Value by default 35** (character "#").

2.1.11 ATS37 – Inactivity Timeout

WARNING: This register is available only if the function DATA_CONTROL is active (see AT+EGFM).

When the value of this register is different from 0, the detection of inactivity whilst in communication is active. This allows to close a communication when there is no more data transfer between the two sites.

Syntax:

ATS37=x

Examples:

Command	Possible Responses	Notes
ATS37?	000 OK	*Display the current configuration*
ATS37=2	OK	*2 minutes of inactivity before stopping. Immediately saved in flash.*

Defined values:

<x> 0 to 255. Value by default 0.

NOTE : precision of +/- 1 second.

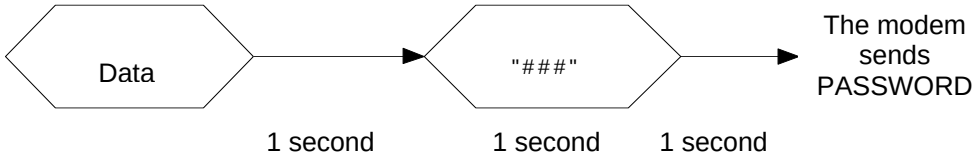
2.2 REMOTE CONTROL

Principe:

Once the connection is established, the remote user sends an escape sequence that allows to put the GSM modem in command mode when the modem is connected (on line). In order to interpret correctly this sequence, the GSM modem requires a guard silence before, during and after the escape sequence. By default, this guard silence is 1 second. Then the modem resends a message to indicate that the command mode is now « PASSWORD ».

At this moment, the user must enter his password; if it is correct, the modem sends the character « > » indicating that it is ready to receive a command. If the password is incorrect, the modem hangs up.

The fact to move in command mode does not interrupt the link between the two modems, but only the data transmission.



The PASSWORD requested is the one programmed by the command AT+EGPWD (Password DATA)

It is then possible to verify the general parameters of the remote modem and to modify them if necessary.

2.3 PIN code

2.3.1 AT+CPIN – Enter a PIN code

The PIN code is essential to make or receive a call coming from the GSM network.
This code is held on the SIM card and can be changed by the user.

Warning !	The user has only **3 chances** to enter the PIN code. After 3 incorrect tries, only the **PUK** code supplied by the operator, will allow to choose a new PIN code. (See chapter *Erreur ! Source du renvoi introuvable.*.)

Example (PIN code = 1234) :

- Enter the PIN code:
  AT+CPIN=1234

- Verify the PIN code:
  AT+CPIN?

  The modem replies:
  +CPIN: READY (PIN code correct)
  +CPIN: SIM PIN (PIN code incorrect or not entered yet)
  +CPIN: SIM PUK (PUK code required)

2.3.2 AT+CLCK – Lock the PIN code

To avoid entering systematically the PIN code of the SIM card at each power-up, this command allows to lock the request.

Warning !	The card will be unlocked and then can be used on any other GSM terminal. To protect the use, see the command.

Example (PIN code = 1234) :

- Enter the PIN code:
  AT+CPIN=1234

- Verify the PIN code:
  AT+CPIN?

  The modem replies:
  +CPIN: READY (PIN code correct)

- Lock the PIN code ('SC' must be entered in capital letters):
  AT+CLCK="SC",0,1234 (the digit 0 means locked)

  The modem replies:
  OK (PIN code correctly locked)
  or
  ERROR (wait 2 minutes and send again the command (the SIM card must be initialized)

At the next power-up, the modem will accept any outgoing or incoming call. To reactivate the request for the PIN code at each power-up, enter the command:

AT+CLCK="SC",1,1234

2.3.3 AT+CPWD – Modify the PIN code

Description:

The PIN code may be changed by the user, provided that the current PIN code is known.

Syntax:

AT+CPWD=<"SC">,<old>,<new>

Example (current PIN code = 1234, new PIN code = 4321) :

AT+CPWD="SC",1234,4321

Notes:

The request for the PIN code must be active. See command **AT+CLCK="SC",1,1234**

Miscellaneous

2.3.4 Re-initialization

If after several manipulations, the device does not perform as expected, it is possible to re-initialize completely the memory space with the factory parameters (see command **AT+WOPEN**).

2.3.4.1 AT+WOPEN

Proceed as follows.

Send the command "**AT+WOPEN=0**", to stop the application.
Send the command "**AT+WOPEN=3**", to erase the parameters of the application.
Send the command "**AT+WOPEN=1**", to restart the application.

DOWNLOAD THE APPLICATION

2.4 Preparing the download

VERY IMPORTANT

To ensure a correct download (without stopping or blocking), before downloading a new version of the application,

REMOVE THE SIM CARD (This deactivates the hardware watchdog, otherwise there is a risk of blocking the device if a hardware reset occurs during the updating)

Ensure that the following commands are then executed:

AT+WOPEN=0	(stops the current application)
AT+WOPEN=3	(erases the parameters in flash memory)
AT+WOPEN=4	(erases the program)
AT&F	(re-load the factory parameters)
AT&W	(saves the current configuration)
AT+CFUN=1	(reset the devices)

2.5 AT+WDWL – Download the application

- Start HyperTerminal under Windows.
- Activate **Material Flow Control**.
- Execute the sequence of initialization commands as described in *Erreur ! Source du renvoi introuvable.* to initialize the modem.
- Enter the command **AT+WDWL** to put the modem in download mode.
- At this moment, the modem returns **+WDWL : 0** and non interpreted control characters ('**§**' or similar) within 2 seconds. If not, enter the command **AT+CFUN=1** to reset the modem and start again from the entering of the initialization commands sequence.
- In the toolbar, select "**Transfer**" and then "**Send file**".
- Select the file to send which has the extension "**.DWL**"
- Select the protocol "**Xmodem**".
- Validate the selection.
- The download starts.
- Once the download is finished, enter the command **AT+CFUN=1** to reset the modem, otherwise the modem keeps sending control characters.
- The modem returns "**OK**".
- Enter the command **AT+WOPEN=1** to activate the function **MUSE** and the new application.
- Verify with the command **AT+WOPEN?**. The modem replies **+WOPEN :1** if active, or **+WOPEN :0** if inactive.

To deactivate the function **MUSE** and the downloaded application, enter the command **AT+WOPEN=0**.

2.6 Transfer at 115200 b/s

- Execute the sequence of initialization commands as described above in **Preparing the download** to initialize the modem.
- At 9600 b/s, enter the command **AT+IPR=115200**.
- Change the speed of Hyperterminal at 115200 b/s.
- Execute the steps of the paragraph above **AT+WDWL** until the command **AT+CFUN=1** that makes the device coming back to 9600 b/s
- Change the speed of Hyperterminal at 9600 b/s.
- Enter the command **AT+WOPEN=1** to activate the function **MUSE** and the new downloaded application.
- Verify with the command **AT+WOPEN?**. The modem replies **+WOPEN :1** if active, or **+WOPEN :0** if inactive.