

## 1 Overview

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This document gives additional technical information that can be useful for using the eWON Embedded GSM modem.

The eWON® 4000 embeds a Siemens GSM/GPRS modem with reference: MC35, while the eWON® 2001 or 4001 embeds a Wavecom GSM/GPRS modem with reference Q2426, Q2406 or Q2403.

The device is dual band and supports communication up to 14400 bauds.

## 2 Modem Configuration

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- **The Siemens MC35 GSM modem configuration defaults to:**

AT&FE0&D2&C1\Q3+IPR=19200

The meaning of this config is described below:

Parameter	Meaning
&F	Back to factory setup
E0	No echo
&D2	DTR line ON->OFF disconnects any call
&C1	DCD line is ON in case carrier only
\Q3	Flow control using RTS/CTS
+IPR=19200	Communication between eWON and modem runs at 19200 baud

Figure 1: Modem init string elements description

If any of these parameters is changed it could result in the modem not working properly with the eWON.

**Special remark about +IPR=19200: the eWON communicates with the GSM at 19200 baud. This is not the speed of the GSM data communication that the modem negotiates with its other party.**

**That actual transfer rate is normally of 9600 baud with GSM communications. Even if a faster or slower protocol is chosen, the 19200-baud rate between eWON and GSM MUST BE maintained. Do not try to change this baud rate because the eWON may not be able to communicate with the GSM if its baud rate is changed.**



# eWON GSM How To...

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For eWON® types: eWON® 4000, 2001-4001

The WavecomQ2426, Q2406 and Q2403 modem configuration defaults to:

AT&FE0&D2&C1+IFC=2,2

Parameter	Meaning
<b>&amp;F</b>	Back to factory setup
<b>E0</b>	No echo
<b>&amp;D2</b>	DTR line ON->OFF disconnects any call
<b>&amp;C1</b>	DCD line is ON in case carrier only
<b>\Q3</b>	Flow control using RTS/CTS
<b>+IFC=2,2</b>	This command is used to control the operation of local flow control between the data terminal device and the mobile.

If you change the configuration line, you should reboot the eWON and check the events.txt file in order to check that no error has arisen. The error is reported by the following message:

```
ppp Modem init failedcode:22016
```

In that case the modem is not usable until the init string is corrected and the eWON is rebooted.

### 3 Selecting the Bearer service

You do not need to know this except if you want to force DIGITAL or ANALOG communication, or force the modem speed.

The bearer is the low level protocol used to transmit data.

GSM communication supports 2 bearers services:

- **V.32 is the default analog bearer service**
- **V.110 is the digital bearer service for low speed ISDN communication.**

The +CBST=x command can be used to force the bearer and speed.

+CBST	Meaning
<b>0</b>	auto bauding
<b>4</b>	2400 bps( V.22bis)
<b>6</b>	4800 bps( V.32)
<b>7</b>	9600 bps(V.32)
<b>14</b>	14400 bps(V.32)
<b>68</b>	2400 bps (V.110)
<b>70</b>	4800 bps (V.110)
<b>71</b>	9600 bps (V.110)

The default value is V32 9600 bps.

For eWON® types: eWON® 4000, 2001-4001

You may want to change this for example if:

- **Your GSM provider support the high-speed 14400 communication: select 14.**

The setup line would be:

AT&FE0&D2&C1\Q3+IPR=19200;+CBST=14

- **You want to connect to the eWON with an ISDN modem supporting the V.110 protocol, in that case select 71**

The setup line would be:

AT&FE0&D2&C1\Q3+IPR=19200;+CBST=71

Please note the “;” between +IPR and +CBST parameter.

## 4 PIN code setup and modem startup

GSM Pin Code (reboot required)	1473	Signal Level: 23	Network: Home network
Modem Init String	AT&FE0&D2&C1\Q3+IPR=19200+0 clear this line to restore default value		

Figure 2: GSM modem settings - ( firmware version 3.5 and 3.8)

MODEM SETTINGS			
<b>Modem Detected</b>	Internal BIBAND GSM		
GSM Pin Code (reboot required)	1234	Signal Level: 19	Network: Home network
Modem Init String (Basic Part)	AT&FE0&D2&C1+IFC=2,2 clear this line to restore default value		

Figure 3: GSM settings (version 4.xx)

### 4.1 GSM Pin Code

The PIN code must be entered in the configuration window.

The config must be saved and the eWON must be rebooted (power off /power on).

2 kinds of information are shown in this window:

- **Correct operation: Signal level and Network detection.**
- **Error reason.**

The following errors may happen:

Message	Reason
<b>SIM card error!</b>	The SIM card was not detected in the SIM drawer
<b>PIN Code Error!</b>	
<b>In Progress...</b>	The modem is still booting and logging on the GSM network. This is normal at boot time.

PIN Error: in that case the PIN Code entered is reset to blank. Normally you should not have to enter the PUK code because if wrong code has been entered, at the first error, the PIN code is cleared from the eWON configuration.



## 4.2 Signal level

The signal level is recomputed every minutes - you need to recall the page to see the updated value (it is a number between 0 and 99).

The value must be higher than 17 for normal operation.

A value of 25 is a good reception, 30 is very good.

## 4.3 Home network alias roaming

When the eWON is used in the country where the SIM card was delivered, it is reported as registered on "**home network**". If the SIM card is used abroad the eWON reports a "**Roaming**" message if that service is enabled on the card (not all SIM cards can be used abroad).

## 5 Service to enable

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GSM providers offer different services to the users:

- **Voice transmission**
- **Data transmission**
- **Fax transmission**

There are also contracts that only allow receiving or generating calls. Fax transmission is never required. Data transmission is required if you want to call the eWON not if you want the eWON to call a server.

## 6 Calling a modem from the eWON

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The eWON can generate an outgoing call to an Analog or Digital modem even if only the "Voice" service is enabled (No data).

In order to connect to an ISDN modem, the destination modem must be configured for V.110 protocol and the GSM must be configured for V.110 also.

In order to originate a digital call, the phone number must start with a I (capital i).

**For example:**

+3223891139 would become: I+3223891139

The default GSM configuration will allow connecting to an analog modem.

## 7 Calling the eWON with a modem

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A "Data" contract must be signed with the GSM provider to allow Data transmission from a modem to the GSM-eWON.

Normally the phone number to dial is different from the default "Voice" number. If you think you must call the same number for "Data" and for "Voice" you must be absolutely sure that your GSM provider is using the "Single Numbering Scheme". **This is the less common scheme** so normally you can check that your contract allows data call by checking that the number to dial is different from the Voice number.

Once again the default configuration is to call the eWON using an analog modem. If you need an ISDN call, the ISDN modem and the eWON GSM modem must be configured for V.110.