

# Application Note

## >> ANw1.1: Serial Communication

<b>TARGET</b>	B40-09gg.2D10 + eDsoft-w302 v1.0
<b>NEED</b>	Serial port configuration and syntax for communication between the Wavecom product and the attached equipment.

### CONFIGURATION

<b>Serial port data rate</b>	Apply to the Wavecom software the same serial baud rate as the one running on the attached equipment.  AT+IPR Wavecom parameter
<b>Flow Control</b>	Apply to the Wavecom software the same flow control mechanism as the one running on the attached equipment: either hardware (RTS/CTS) or none.  AT+IFC Wavecom parameter
<b>Serial echo</b>	Enable or disable the echo over the serial port of the characters received by the software.  ATE Wavecom parameter
<b>Result code suppression</b>	This parameter selects the activation or suppression of the response codes returned by the Wavecom software: response or no response.  ATQ Wavecom parameter
<b>Response format</b>	This parameter selects the format of the response codes returned by the Wavecom software: numeric or alpha-numeric responses.  ATV Wavecom parameter

<b>NOTE</b>	Data format is: 8 data bits, no parity, 1 stop bit.
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### OUTPUT

**Viewing a parameter**

After typing `AT#Mnemonic?` The Wavecom product sends the following sequence over the serial port:

if the ATQ configuration allows the response message sending, and whatever is the ATV value (0 or 1)

```
#Mnemonic: value[CR][LF]
[CR][LF]OK[CR][LF]
```

the value is between "" if it is a string.

**Indication/ Response message from the Wavecom product**

The Wavecom product sends indications and return codes over the serial port with the following syntax:

if the ATQ configuration allows the response message sending,

```
ATV1
[CR][LF]
Indication message in text
[CR][LF]
```

```
ATV0
[CR]numeric code[CR]
```

For an #CME ERROR, the format of the response is :  
[CR]#CME ERROR: Value [CR][LF]

**Writing a parameter**

After typing `AT#Mnemonic=value`, the software sends the following sequence over the serial port (upon completion). Value shall be between "" if it is a string. The "" are not required if the value is an integer.

if the ATQ configuration allows the response message sending,

```
ATV1
[CR][LF]
OK[CR][LF]
```

```
ATV0
[CR]0[CR]
```

**NOTE**

A 1 second delay shall be introduced before each AT# command issued for writing parameters value.

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### COMMAND MODE / DATA MODE FOR EMAIL

<p><b>Email service : SMTP through AT#PUTMAIL</b></p> <p><b>ENTRY FLOW</b></p>	<p><b>Enter in DATA mode:</b> The "Ok_Info_WaitingForData" message sent to the host on the serial port indicates the entry in DATA mode. The Wavecom product is ready to receive the data from the host. This data will form the body of the email</p>	<p><b>Exit DATA mode:</b></p> <ol style="list-style-type: none"> <li>1. The host ends the DATA mode by sending the [CR][LF].[CR][LF] sequence on the serial port</li> <li>2. The Wavecom product ends the DATA mode if an error occurs by sending an error message to the host (this message is not preceded by the [CR][LF].[CR][LF] sequence)</li> </ol>
<p><b>Email service : POP3 through AT#GETMAIL</b></p> <p><b>OUTPUT FLOW</b></p>	<p><b>Enter in DATA mode:</b> The "Ok_Info_Mail" message sent to the host on the serial port indicates the entry in DATA mode. The Wavecom product then immediately sends the data received from the POP3 server to the host.</p>	<p><b>Exit DATA mode:</b></p> <ol style="list-style-type: none"> <li>1. The Wavecom product ends the DATA mode by sending the [CR][LF].[CR][LF] sequence on the serial port. This sequence is sent in case of a positive result or if an error occurs.</li> <li>2. It is not possible for the host to exit the DATA mode</li> </ol>

### COMMAND MODE / DATA MODE FOR FTP

<p><b>FTP service : FTP through AT#FTPPUT</b></p> <p><b>ENTRY FLOW</b></p>	<p><b>Enter in DATA mode:</b> The "Ok_Info_WaitingForData" message sent to the host on the serial port indicates the entry in DATA mode. The Wavecom product is ready to receive the data from the host for sending it. This data will form the file on the FTP server.</p>	<p><b>Exit DATA mode:</b></p> <ol style="list-style-type: none"> <li>1. The host ends the DATA mode by sending the [ETX] character (not preceded by [DLE]) on the serial port.</li> <li>2. The Wavecom product ends the DATA mode if an error occurs by sending an error message to the host (this message is not preceded by the [ETX] character). [ETX] is CTRL+C in a keyboard. [DLE] is CTRL+P in a keyboard.</li> </ol>
<p><b>FTP service : FTP through AT#FTPGET</b></p> <p><b>OUTPUT FLOW</b></p>	<p><b>Enter in DATA mode:</b> The "Ok_Info_DataBegin" message sent to the host on the serial port indicates the entry in DATA mode. The Wavecom product then immediately sends the data received from the FTP server to the host.</p>	<p><b>Exit DATA mode:</b></p> <ol style="list-style-type: none"> <li>1. The Wavecom product ends the DATA mode by sending the [ETX] character (not preceded by [DLE]) on the serial port. This character is sent in case of a positive result or if an error occurs.</li> <li>2. It is not possible for the host to exit the DATA mode [ETX] is CTRL+C in a keyboard. [DLE] is CTRL+P in a keyboard.</li> </ol>

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### COMMAND MODE / DATA MODE FOR TCP SERVICES : [ETX] MEANS END OF TCP CONNECTION

When DLEMODE is set to 1, the [ETX] character means a request or an indication of end of connection. As a consequence, [ETX] characters that belongs to the payload data must be sent by the host on the serial port preceded by a [DLE] character. Similarly [ETX] characters received by the Wavecom product from the Internet are sent to the host through the serial port preceded by a [DLE] character

<p><b>Socket TCP service : TCP socket through AT#LTCPSTART or AT#OTCP</b></p> <p><b>ENTRY FLOW</b></p>	<p><b>Enter in DATA mode:</b> The "Ok_Info_WaitingForData" message sent to the host on the serial port indicates the entry in DATA mode. The Wavecom product is ready to receive the data from the host. This data will be sent to the remote TCP peer.</p>	<p><b>Exit DATA mode:</b> 1. The host ends the DATA mode by sending the [ETX] character (not preceded by [DLE]) on the serial port  2. The Wavecom product ends the DATA mode if an error occurs or if the TCP peer disconnects by sending an error message to the host (this message is preceded by the [ETX] character) [ETX] is CTRL+C in a keyboard. [DLE] is CTRL+P in a keyboard.</p>
<p><b>Socket TCP service : TCP socket through AT#LTCPSTART or AT#OTCP</b></p> <p><b>OUTPUT FLOW</b></p>	<p><b>Enter in DATA mode:</b> The "Ok_Info_WaitingForData" message sent to the host on the serial port indicates the entry in DATA mode. The Wavecom product then immediately sends the data received from the remote TCP peer to the host.</p>	<p><b>Exit DATA mode:</b> 1. The host ends the DATA mode by sending the [ETX] character (not preceded by [DLE]) on the serial port  2. The Wavecom product ends the DATA mode if an error occurs or if the TCP peer disconnects by sending a message to the host (this message is preceded by the [ETX] character) [ETX] is CTRL+C in a keyboard. [DLE] is CTRL+P in a keyboard.</p>

### COMMAND MODE / DATA MODE FOR TCP SERVICES : ETX IS A CHARACTER

When DLEMODE is set to 0, no specific process is needed on [ETX] characters. It means that it is not possible for a host to request a end of connection or to receive a clear indication of end of connection from the Wavecom product.

<p><b>Socket TCP service : TCP socket through AT#LTCPSTART or AT#OTCP</b></p> <p><b>ENTRY FLOW</b></p>	<p><b>Enter in DATA mode:</b> The "Ok_Info_WaitingForData" message sent to the host on the serial port indicates the entry in DATA mode. The Wavecom product is ready to receive the data from the host. This data will be sent to the remote TCP peer.</p>	<p><b>Exit DATA mode:</b> 1. The host can't end the DATA mode  2. The Wavecom product ends the DATA mode if an error occurs or if the TCP peer disconnects by sending a message to the host (this message is not preceded by the [ETX] character)</p>
<p><b>Socket TCP service : TCP socket through AT#LTCPSTART or AT#OTCP</b></p> <p><b>OUTPUT FLOW</b></p>	<p><b>Enter in DATA mode:</b> The "Ok_Info_WaitingForData" message sent to the host on the serial port indicates the entry in DATA mode. The Wavecom product then immediately sends the data received from the remote TCP peer to the host.</p>	<p><b>Exit DATA mode:</b> 1. The host can't end the DATA mode  2. The Wavecom product ends the DATA mode if an error occurs or if the TCP peer disconnects by sending a message to the host (this message is not preceded by the [ETX] character)</p>
<p><b>Socket TCP service : TCP socket through AT#LTCPSTART or AT#OTCP</b></p>	<p>When DLEMODE is set to 1, the [ETX] character means a request or an indication of end of connection.</p> <p>As a consequence, [ETX] characters that belongs to the payload data must be sent by the host on the serial port preceded by a [DLE] character.</p> <p>Similarly [ETX] characters received by The Wavecom product from the Internet are sent to the host through the serial port preceded by a [DLE] character</p> <p>[ETX] is CTRL+C in a keyboard. [DLE] is CTRL+P in a keyboard.</p>	