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A **BELDEN** BRAND

# Application note

**AT Commands**

**OWL Family**

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# 1 AT Commands

# 1.1 Description of AT commands

After establishing a connection with the router through a serial interface or an Ethernet it is possible to use AT commands to work with SMS messages.

This application not only lists commands that Hirschmann Automation and Control GmbH routers support. For other AT commands, the router sends an OK response. Treatment of complex AT command are unsupported, in such cases, the router sends an ERROR response.

## 1.1.1 ATE

The ATE <value> command determines whether or not the device echoes characters. By default this function is disabled, but may be useful for debugging purposes.

- ▶ <value> is 0 – characters are not echoed
- ▶ <value> is 1 – characters are echoed

Command	Action
ATE1	Enter
OK	

## 1.1.2 AT+CMGF

To set the presentation format of short messages use the AT+CMGF=<mode> command.

- ▶ <mode> is 0 – PDU mode
- ▶ <mode> is 1 – text mode

Command	Action
AT+CMGF=1	Enter
OK	

## 1.1.3 AT+CMGS

This command allows you to send a short message to the number that enters in the command. After sending the command AT+CMGS= “number” and pressing the `Enter` key, wait for the router to display the cursor character “>”. Enter your message behind the cursor. You terminate and send the text string using the `CTRL+Z` key combination. Transmitting the message takes some time. You can deactivate the SMS writing function by pressing the `Esc` key.

Command	Action
AT+CMGS="465717171"	Enter
>Hello World!	CTRL+Z (shortcut key)
OK	

### 1.1.4 AT+CMGL

The AT+CMGL command lists the messages of a certain status from a message storage area. If you use this command in the form AT+CMGL="ALL", you get a list of all stored messages. If the status of a message is "received unread", after being retrieved by the AT+CMGL command, the status changes to "received read".

+CMGL: <index>, <status>, <sender number>, <date>, <time> SMS text

The Parameters have the following meaning:

- ▶ <index> – location of the message in the message storage area
- ▶ <status> – specifies the message status:
  - ▶ REC UNREAD – receives the unread messages
  - ▶ REC READ – receives the read messages
  - ▶ STO UNSENT – stores the unsent messages
  - ▶ STO SENT – stores the sent messages
  - ▶ ALL – lists all the messages
- ▶ <sender number> – the telephone number that sends the message
- ▶ <date> – the message receiving date
- ▶ <time> – the message receiving time

Command	Action
AT+CMGL="ALL"	Enter
+CMGL: 1, "REC UNREAD", "+420465717171", "08/02/02, 10:33:26+04"	
Hello World!	

### 1.1.5 AT+CMGR

The AT+CMGR command reads a message from the message storage area. The <index> number specifies the location of the next message from the message storage area. If the status of a message is "received unread", once the AT+CMGR command retrieves it, the status changes to "received read". Each message is displayed in this form (parameters are described in the previous command):



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+CMGR: <index>, <status>, <sender number>, <date>, <time> SMS text

Command	Action
AT+CMGR="ALL"	Enter
+CMGR: 1, "REC UNREAD", "+420465717171", "08/01/12, 9:48:04+04"	
Hello World!	

### 1.1.6 AT+CMGD

This command deletes a message from the location <index>.

Command	Action
AT+CMGD=1	Enter
OK	

### 1.1.7 AT+CPMS

The AT+CPMS command performs a set of operation to select the SMS memory storage types for SMS reading, writing, deleting, sending or receiving. For SIM card, use "SM". Expected response is a string in the following form:

+CPMS: <used1>,<max1>,<used2>,<max2>,<used3>,<max3>,

where the used items indicate the number of messages currently in this memory, the max items indicate the number of messages that are stored.

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Command	Action
AT+CPMS="SM","SM"	Enter
+CPMS: 1,10,1,10	
OK	

### 1.1.8 AT+CSCA

This command sets the Short Message Service Center (SMSC) number that sends the SMS text messages.

Command	Action
AT+CSCA="+497170760000"	Enter
OK	

### 1.1.9 AT+CSCS

The AT+CSCS= <set> command changes the character set. If this command is in the form "AT+CSCS=?", the response is a list of supported character sets.

Command	Action
AT+CSCS=?	Enter
+CSCS: ("GSM","IRA",'HEX')	

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Command	Action
AT+CSCS="HEX"	Enter
OK	

### 1.1.10 AT+CPIN

The AT+CPIN? command inquires whether the PIN code is expected. If the response is +CPIN: READY, the SIM card requires no PIN code and is ready for use. In case that the SIM card requires PIN code the response is +CPIN: SIM PIN, enter the PIN using command AT+CPIN=<PIN>. If you enter the wrong PIN code for more than 3 times, the SIM card gets block and you require the PUK code (response is +CPIN: SIM PUK).

Command	Action
AT+CPIN="2654"	Enter
OK	

### 1.1.11 AT+CREG

The AT+CREG? command displays network registration status and returns the response in this form:

CREG: <n>, <stat>,

where <n> corresponds to one of the following values:

- ▶ 0 – disable network registration unsolicited result code
- ▶ 1 – enable network registration unsolicited result code

and `<stat>` (registration status) corresponds to one of the following values:

- ▶ 0 – not registered, not searching a new operator
- ▶ 1 – registered, home network
- ▶ 2 – not registered, currently searching a new operator
- ▶ 3 – registration denied
- ▶ 4 – unknown
- ▶ 5 – registered, roaming

Use the `AT+CREG=<n>` command to enable or disable network registration unsolicited result code.

Command	Action
AT+CREG=1	Enter
OK	

## 1.1.12 AT+CSQ

This command returns the signal strength of the registered network. The response is in the form `+CSQ: <rssi>, <ber>`, where `<rssi>` is the received signal strength indication and has value from 0 (-113 dBm and lower) to 31 (-51 dBm and higher), or 99 if the signal strength is not known or not detectable. The `<ber>` parameter is the channel bit error rate. It is detected only during a call, in other cases has a value 0 or 99 according to the SIM card. If this error rate is measured, its value is from 0 to 7.

Command	Action
AT+CSQ=1	Enter
+CSQ: 28,99	

### 1.1.13 AT+CGMM

The AT+CGMM command causes the device to return the manufacturer specific model identity.

Command	Action
AT+CGMM	Enter
+CGMM: "UCR11 V2"	

### 1.1.14 AT+GMM

See the previous command AT+CGMM...

### 1.1.15 AT+GSN

The AT+GSN command returns the device to the product serial number.

Command	Action
AT+GSN	Enter
+GSN: "5700001"	

### **1.1.16 AT+CIMI**

The AT+CIMI command returns the device to the International Mobile Subscriber Identity number (IMSI). It is a unique identification assigned to a SIM card by a mobile operator. An IMSI is usually presented as a 15 digit long number. The first 3 digits are the Mobile Country Code (MCC), and is followed by the Mobile Network Code (MNC), either 2 digits (European standard) or 3 digits (North American standard). The length of the MNC depends on the value of the MCC. The remaining digits are the Mobile Subscription Identification Number (MSIN) within the network of the customer base.

### **1.1.17 ATI**

Use the ATI <value> command to transmit the manufacturer specific information about the device. The <value> parameter selects between multiple types of identification information. The value of this parameter starts at zero (0 corresponds to AT+GMM).

### **1.1.18 AT+CGPADDR**

The command AT+CGPADDR displays the IP address of the ppp0 interface.

### 1.1.19 AT+CMGW

This command allows you to write a short message to SIM storage. After sending the command AT+CMGW= "length" and pressing the `Enter` key, wait for the router to display the cursor character ">". Enter your message behind the cursor. You terminate and send the text string using the `CTRL+Z` key combination. Transmitting the message takes some time. You can deactivate the SMS writing function by pressing the `Esc` key. The response for this command is information about position, where the message was stored.

Command	Action
AT+CMGW="140"	Enter
>Hello World!	CTRL+Z (shortcut key)
+CMGW: 2	

### 1.1.20 AT+CMSS

The AT+CMSS command sends a message from a SIM storage location value <index>. The location corresponds to the value that is returned by AT+CMGW command. The response is a reference value.

Command	Action
AT+CMSS=2	Enter
+CMSS: 12	

## 1.1.21 AT+COPS?

The AT+COPS command identifies the available mobile networks. When you press the `Enter` key, the command displays the response in the following form:

+COPS: <mode> <format> <operator> ,

where the <mode> parameter specifies the registration mode:

- ▶ 0 – automatic
- ▶ 1 – manual
- ▶ 2 – de-register from network
- ▶ 4 – manual/automatic (if manual selection fails, automatic mode is entered)

and the <operator> parameter shows the operator identity, within the speech marks, in the format set by <format>:

- ▶ 0 – long alphanumeric format
- ▶ 1 – short alphanumeric format
- ▶ 2 – numeric format

Command	Action
AT+COPS?	Enter
+COPS: 0,0,"02 - CZ"	

## 1.1.22 AT+GMI

The AT+GMI command returns the device to the manufacturer specific identity.

Command	Action
AT+GMI	Enter
+GMI: HIRSCHMANN	



### **1.1.23 AT+CGMI**

See the previous command AT+GMI...

### **1.1.24 AT+GMR**

The AT+GMR command returns the device to the manufacturer specific model revision identity.

### **1.1.25 AT+CGMR**

See the previous command AT+GMR...

### **1.1.26 AT+CGSN**

See the command AT+GSN...

## 1.2 List of AT commands

The commands are listed in alphabetical order.

AT Command	Description
AT+CGMI	Returns the manufacturer specific identity
AT+CGMM	Returns the manufacturer specific model identity
AT+CGMR	Returns the manufacturer specific model revision identity
AT+CGPADDR	Displays the IP address of the ppp0 interface
AT+CGSN	Returns the product serial number
AT+CIMI	Returns the International Mobile Subscriber Identity number (IMSI)
AT+CMGD	Deletes a message from the location
AT+CMGF	Sets the presentation format of short messages
AT+CMGL	Lists messages of a certain status from a message storage area
AT+CMGR	Reads a message from a message storage area
AT+CMGS	Sends a short message from the device to entered tel. number
AT+CMGW	Writes a short message to SIM storage
AT+CMSS	Sends a message from SIM storage location value
AT+COPS?	Identifies the available mobile networks
AT+CPIN	Is used to query and enter a PIN code
AT+CPMS	Selects SMS memory storage types, to be used for short message operations
AT+CREG	Displays network registration status
AT+CSCA	Sets the short message service center (SMSC) number
AT+CSCS	Selects the character set
AT+CSQ	Returns the signal strength of the registered network
AT+GMI	Returns the manufacturer specific identity
AT+GMM	Returns the manufacturer specific model identity
AT+GMR	Returns the manufacturer specific model revision identity
AT+GSN	Returns the product serial number
ATE	Determines whether or not the device echoes characters
ATI	Transmits the manufacturer specific information about the device

Table 1: List of AT commands

# A Further support

## Technical questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You find the addresses of our partners on the Internet at <http://www.hirschmann.com>.

A list of local telephone numbers and email addresses for technical support directly from Hirschmann is available at <https://hirschmann-support.belden.com>.

This site also includes a free of charge knowledge base and a software download section.

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