

Cellular Engine MC35

The extra compact module for voice and data transmission

Application Note: **GPRS Commands**

Author: **J. T.**

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Date: **28.02.01**

Technical Support: **wm.support@mch.siemens.de**

Phone: **+49 89 722-55000**

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1 GPRS AT-Commands in accordance with GSM 07.07

1.1 Commands specific to MTs supporting the GPRS

This clause defines commands that a TE (Terminal Equipment, i.e. an application running on a controlling PC) may use to control a GPRS MT (Mobile Termination, the Wireless Module).

1.2 AT+CGATT GPRS attach and detach	
Test command AT+CGATT=?	The test command is used for requesting information on the supported GPRS service states. Response +CGATT: (list of supported <state>s) OK/ERROR/+CME ERROR Parameter <state> See write command
Read command AT+CGATT?	The read command returns the current GPRS service state. Response +CGACT: <state> OK/ERROR/+CME ERROR Parameter <state> See write command
Write command AT+CGATT= [<state>]	The execution command is used to attach the MT to, or detach the MT from the GPRS service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. Any active PDP contexts will be automatically deactivated when the attachment state changes to detached. Parameter <state> indicates the state of GPRS attachment 0 – detached 1 – attached Response OK/ERROR/+CME ERROR
Reference GSM 07.07	

1.3 AT+CGACT PDP context activate or deactivate	
Test command AT+CGACT=?	The test command is used for requesting information on the supported PDP context activation states. Response +CGACT: (list of supported <state>s) OK/ERROR/+CME ERROR

	Parameter <state> See write command
Read command AT+CGACT?	The read command returns the current activation states for all the defined PDP contexts. Response +CGACT: <cid>, <state> [<cr><lf>+cgact: <cid>,="" <state>...]<="" b=""> OK/ERROR/+CME ERROR Parameter <cid> See write command <state> See write command </cr><lf>+cgact:>
Write command AT+CGACT= [<state> [, <cid>[, ...]]]]]	This command is used to activate or deactivate the specified PDP context (s). After the command has completed, the MT remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged. If the MT is not GPRS attached when the activation form of the command is executed, the MT first performs a GPRS attach and then attempts to activate the specified contexts. If no <cid>s are specified the activation/deactivation form of the command activates/deactivates all defined contexts. Response OK/ERROR/+CME ERROR Parameter <state> indicates the state of PDP context activation 0 – deactivated 1 – activated <cid> PDP Context Identifier is a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. Note: The range of supported cids is returned by AT+CGDCONT=? Response +CGACT: (list of supported <state>s) OK/ERROR/+CME ERROR
Reference GSM 07.07	

1.4 AT+CGDATA Enter data state

Test command AT+CGDATA=?	The test command is used for requesting information on the supported layer 2 protocols to be used between the TE and MT. Response +CGDATA: (list of supported <L2P>s) OK/ERROR/+CME ERROR Parameter <L2P> See write command
Write command +CGDATA=[<L2P> >[, <cid>[, <cid> > [, ...]]]]	The execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more GPRS PDP types. This may include performing a GPRS attach and one or more PDP context activations. Commands following

	<p>+CGDATA command in the AT command line shall not be processed by the MT.</p> <p>Parameter <L2P> layer 2 protocol to be used between the TE and MT PPP</p> <p><cid> PDP Context Identifier is a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in PDP context-related commands.</p> <p>Response On success, the MT issues the intermediate result code CONNECT and enters V.25ter online data state: CONNECT</p> <p>If the <L2P> parameter value is unacceptable to the MT, the MT returns an ERROR or +CME ERROR response: ERROR/+CME ERROR</p>
Reference GSM 07.07	

1.5 AT+CGDCONT Define PDP Context	
Test command AT+CGDCONT=?	<p>The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each <PDP_type> are returned on a separate line.</p> <p>Response +CGDCONT: (range of supported <cid>s), <PDP_type>,,, (list of supported <d_comp>s), (list of supported <h_comp>s) [<CR><LF>+CGDCONT: ...] OK/ERROR/+CME ERROR</p> <p>Parameter <cid>: See write command <PDP_type>: See write command <d_comp>: numeric parameter that controls PDP data compression 0 off <h_comp>: numeric parameter that controls PDP header compression 0 off</p>
Read command AT+CGDCONT?	<p>The read command returns the current settings for each defined context.</p> <p>Response +CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <data_comp>, <head_comp> [<CR><LF>+CGDCONT: ...] OK/ERROR/+CME ERROR</p> <p>Parameter <cid>: See write command <PDP_type>: See write command <APN>: See write command <PDP_addr>: See write command <d_comp>: See test command <h_comp>: See test command</p>

<p>Write command AT+CGDCONT= [<cid> [, <PDP_type> [, <APN> [, <PDP_addr>]]]</p>	<p>This command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>. A special form of the set command, +CGDCONT= <cid> causes the values for context number <cid> to become undefined.</p> <p>Parameter</p> <p><cid>: This PDP Context Identifier is a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is also used in other PDP context-related commands.</p> <p><PDP_type>: Packet Data Protocol type is a string parameter which specifies the type of packet data protocol: IP Internet Protocol (IETF STD 5)</p> <p><APN>: Access Point Name is a string parameter (framed by quotation marks) which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.</p> <p><PDP_addr>: String parameter that identifies the MT in the address space applicable to the PDP (e.g. IP V4 address for PDP type IP). If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested.</p> <p>Response OK/ERROR/+CME ERROR</p>
<p>Reference GSM 07.07</p>	

1.6 AT+CGQMIN Quality of Service Profile (Minimum acceptable)

<p>Test command AT+CGQMIN=?</p>	<p>The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.</p> <p>Response +CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF>+CGQMIN: ...] OK/ERROR/+CME ERROR</p> <p>Parameter</p> <p><PDP_type> See write command <precedence> See write command <delay> See write command <reliability> See write command <peak> See write command <mean> See write command</p>
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<p>Read command AT+CGQMIN?</p>	<p>Response The read command returns the current settings for each defined context. +CGQMIN: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQMIN: ...] OK/ERROR/+CME ERROR</p> <p>Parameter <cid> See write command <PDP_type> See write command <precedence> See write command <delay> See write command <reliability> See write command <peak> See write command <mean> See write command</p>
<p>Write command AT+CGQMIN= [<cid>[, <precedence > [,<delay>[, <reliability> [,<peak> [,<mean>]]]]]]</p>	<p>This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message. The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. A special form of the set command, +CGQMIN= <cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.</p> <p>Parameter <cid> numeric PDP Context Identifier <PDP_type> string parameter of Packet Data Protocol type IP <precedence> numeric parameter for the precedence class 0 network subscribed value 1..3 <delay> numeric parameter for the delay class 0 network subscribed value 1..4 <reliability> numeric parameter for the reliability class 0 network subscribed value 1..5 <peak> numeric parameter for the peak throughput class 0 network subscribed value 1..7 <mean> numeric parameter for the mean throughput class 0 network subscribed value 1..12</p> <p>Note: If parameters are not defined, the parameter default values depend on the HLR-stored subscribed default values. Definitions of parameters in GSM 03.60 paragraph 15.2 „Quality of Service Profile“.</p> <p>Response OK/ERROR/+CME ERROR</p>
<p>Reference GSM 07.07</p>	

1.7 AT+CGQREQ Quality of Service Profile (Requested)

<p>Test command AT+CGQREQ=?</p>	<p>The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.</p> <p>Response +CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF>+CGQREQ: ...] OK/ERROR/+CME ERROR</p> <p>Parameter <PDP_type> See write command <precedence> See write command <delay> See write command <reliability> See write command <peak> See write command <mean> See write command</p>
<p>Read command AT+CGQREQ?</p>	<p>The read command returns the current settings for each defined context.</p> <p>Response +CGQREQ: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQREQ: ...] OK/ERROR/+CME ERROR</p> <p><cid> See write command <PDP_type> See write command <precedence> See write command <delay> See write command <reliability> See write command <peak> See write command <mean> See write command</p>

<p>Write command AT+CGQREQ= [<cid>[, <precedence > [,<delay>[, <reliability> [,<peak> [,<mean>]]]]]]</p>	<p>This command allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network.</p> <p>The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. A special form of the set command, +CGQREQ= <cid> causes the requested profile for context number <cid> to become undefined.</p> <p>Parameter</p> <p><cid> numeric PDP Context Identifier</p> <p><PDP_type> string parameter of Packet Data Protocol type IP</p> <p><precedence> numeric parameter for the precedence class <u>0</u> network subscribed value 1..3</p> <p><delay> numeric parameter for the delay class <u>0</u> network subscribed value 1..4</p> <p><reliability> numeric parameter for the reliability class <u>0</u> network subscribed value 1..5</p> <p><peak> numeric parameter for the peak throughput class <u>0</u> network subscribed value 1..7</p> <p><mean> numeric parameter for the mean throughput class <u>0</u> network subscribed value 1..12</p> <p>Note: If parameters are not defined, the parameter default values depend on the HLR-stored subscribed default values. Definitions of parameters in GSM 03.60 paragraph 15.2 „Quality of Service Profile“.</p> <p>Response OK/ERROR/+CME ERROR</p>
<p>Reference GSM 07.07</p>	

1.8 Modem compatibility commands to MTs supporting the GPRS

This subclause describes how existing AT commands, designed for use with a modem, may be used to control a GPRS MT. This is to provide backwards compatibility with existing communications software.

1.9 ATA Manual acceptance of a network request for PDP context activation	
Execute command ATA	<p>The V.25ter 'A' (Answer) command may be used to accept a network request for a PDP context activation announced by the unsolicited result code.</p> <p>When a network request is indicated (MT -> TE): RING or +CRING: GPRS <PDP_type>, <PDP_addr>, <L2P></p> <p>The application can then issue a manual acceptance (TE -> MT) ATA</p> <p>Response To confirm acceptance of the command (MT -> TE): CONNECT ... and enters V.25ter online data state</p> <p>Note: It is an error to issue the 'ATA' command when there is no outstanding network request.</p>
Reference GSM 07.07	Note: ATA is used as a standard V.25ter AT-Command, too.

1.10 ATD *99:# Request GPRS service

<p>Execute command</p> <pre>ATD*99*<called_address>*<L2P>*<cid>#</pre> <pre>ATD*99**<L2P>*<cid>#</pre> <pre>ATD*99***<cid>#</pre>	<p>This command causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.</p> <p>The V.25ter 'D' (Dial) command causes the MT to enter the V.25ter online data state and, with the TE, to start the specified layer 2 protocol. No further commands may follow on the AT command line. GPRS attachment and PDP context activation procedures may take place prior to or during the PDP startup if they have not already been performed using the +CGATT (see 1.2) and +CGACT (see 1.3) commands.</p> <p>Response</p> <p>To confirm acceptance of the command to entering the V.25ter online data state:</p> <p>CONNECT</p> <p>When the layer 2 protocol has terminated, either as a result of an orderly shut down of the PDP or an error, the MT enters V.25ter command state and return</p> <p>NO CARRIER</p> <p>Parameter</p> <p><called_address> IP V4 address in the form w.x.y.z,</p> <p><L2P> layer 2 protocol to be used between the TE and MT PPP</p> <p><cid>: digit string which specifies a particular PDP context definition (see +CGDCONT command).</p> <p>Note: The +CGDCONT, +CGQREQ, etc. commands may be used prior to set values for cid, PDP type, APN, QoS etc..</p>
<p>Reference</p> <p>GSM 07.07</p>	<p>Note</p> <p>ATD is used as a standard V.25ter AT-Command, too.</p>

1.11 ATD *98:# Request GPRS IP service

<p>Execute command ATD *98[*<cid>]#</p>	<p>This command causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN. The V.25ter 'D' (Dial) command causes the MT to enter the V.25ter online data state and, with the TE, to start the layer 2 protocol.</p> <p>Response To confirm acceptance of the command to entering the V.25ter online data state: CONNECT</p> <p>When the layer 2 protocol has terminated, either as a result of an orderly shut down of the PDP or an error, the MT enters V.25ter command state and return NO CARRIER.</p> <p>Parameter <cid>: a digit string which specifies a particular PDP context definition (see +CGDCONT command).</p> <p>Note: The +CGDCONT, +CGQREQ, etc. commands may be used prior to set values for cid, PDP type, APN, QoS etc..</p>
<p>Reference GSM 07.07</p>	<p>Note: ATD is used as a standard V.25ter AT-Command, too.</p>

1.12 ATH Manual rejection of a network request for PDP context activation

<p>Execute command ATH</p>	<p>Response The V.25ter 'H' or 'H0' (On-hook) command may be used to reject a network request for PDP context activation announced by the unsolicited result code RING or +CRING: GPRS <PDP_type>,<PDP_addr></p> <p>The MT responds with OK.</p>
<p>Reference GSM 07.07</p>	<p>Note</p> <ol style="list-style-type: none"> 1. In contrast to GSM 07.07 it is possible to cancel a connection with ATH after a break. This is done for compatibility reasons due to the „dial-up network“ („DFÜ-Netzwerk“) drivers of Microsoft® Windows®. 2. ATH is used as a standard V.25ter AT-Command, too.

1.13 ATSO Automatic response to a network request for PDP context activation	
Read command ATSO?	<p>Response <n> OK</p> <p>Parameter See write command</p>
Write command ATSO=<n>	<p>The V.25ter 'S0=n' (Automatic answer) command may be used to turn off (n=0) and on (n>0) the automatic response to a network request for a PDP context activation. When the 'S0=n' (n>0) command is received, the MT attempts to perform a GPRS attach if it is not already attached.</p> <p>The MT will announce a network request for PDP context activation by issuing the unsolicited result code RING or +CRING: GPRS <PDP_type>,<PDP_addr></p> <p>Response The MS confirms acceptance of the command to entering the V.25ter online data state: CONNECT</p> <p>In case of an error the response is related to ME functionality: Error/+CME ERROR: <err></p> <p>Note: The 's0=n' (n=0) command does not perform an automatic GPRS detach.</p> <p>Parameter <n>: indicates the state of automatic response 0 – turn off the automatic response 1 – turn on the automatic response</p>
Reference GSM 07.07	Note: ATSO is used as a standard V.25ter AT-Command, too.