MLB-S-BGS2-BW Terminal

User Guide

MLiS Basic Dual / Quad Band GSM/GPRS

Model Number:

MLB-S-BGS2-BW

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Service and Support

TBA

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Revision History

Version	Date	Description
1.0	Jan 2013	1st Release
1.1	Mar 2013	2nd Modify Power supply
1.2	Sep 2013	3rd Keep MLB-S-BGS2-BW only
1.3	Apr 2014	4rd New Command Operation

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1 INTRODUCTION

1.1 Description

The MLiS MLB-S-BGS2-BW Dual Band GSM/GPRS terminal is a low cost and compact terminal that is designed for wireless M2M communications.

The MLiS MLB-S-BGS2-BW terminal uses the RJ45 Connector to provide power and data communication interface. LEDs are used to indicate the status of the terminal.

- MLB-S-BGS2-BW is a standard version. It supports standard AT Commands for GPRS connection and SMS.

The MLB-S-BGS2-BW terminal can be used to provide a wireless communications link for many applications, including metering, fleet and asset management, vending, security and alarm monitoring, e-maintenance and other telemetry applications.

1.2 Highlights

Interface

- RJ45 Connector (Power and Communications)
- SMA Female Connector (GSM antenna connector)
- SIM card reader
- Operating Status LEDs (BLUE light)

General Features

- Dual / Quad-Band GSM 850/900/1800/1900 MHz
- GPRS multi-slot class 8
- GSM release 99
- Output Power
  - Class 4 (+33dBm ±2dB) for EGSM850 (quad band only)
  - Class 4 (+33dBm ±2dB) for EGSM900
  - Class 1 (+30dBm ±2dB) for GSM1800
  - Class 1 (+30dBm ±2dB) for GSM1900 (quad band only)
- Control via AT commands
- SIM Application Toolkit (release 99)
- TCP/IP stack access via AT commands

- Internet Services: TCP, UDP, HTTP, FTP, SMTP, POP3
- Supply voltage range: +5 to 32 VDC
- Temperature range
  - Operation: -30°C to 65°C
  - Restricted operation: 65°C to 80°C
- Dimensions: 80 x 50 x 22 mm (excluding connectors)
- Weight: 50 g

GPRS Data Transmission

- GPRS Class 12: max. 86kbps (DL & UL)
- Mobile station class B
- PBCCH support
- Coding schemes CS 1-4

CSD Data Transmission

- Up to 14.4kbit/s
- V.110, RLP
- Non transparent
- USSD support

PPP-stack for GPRS data transfer

Short Message Service (SMS)

- Point-to-point MO and MT
- SMS cell broadcast
- Text and PDU mode
- Cell broadcast
- Storage: SIM card plus 25 SMS locations in mobile equipment Transmission of SMS alternatively over CSD or GPRS. Preferred mode can be user defined.

1.3 Functional Block diagram

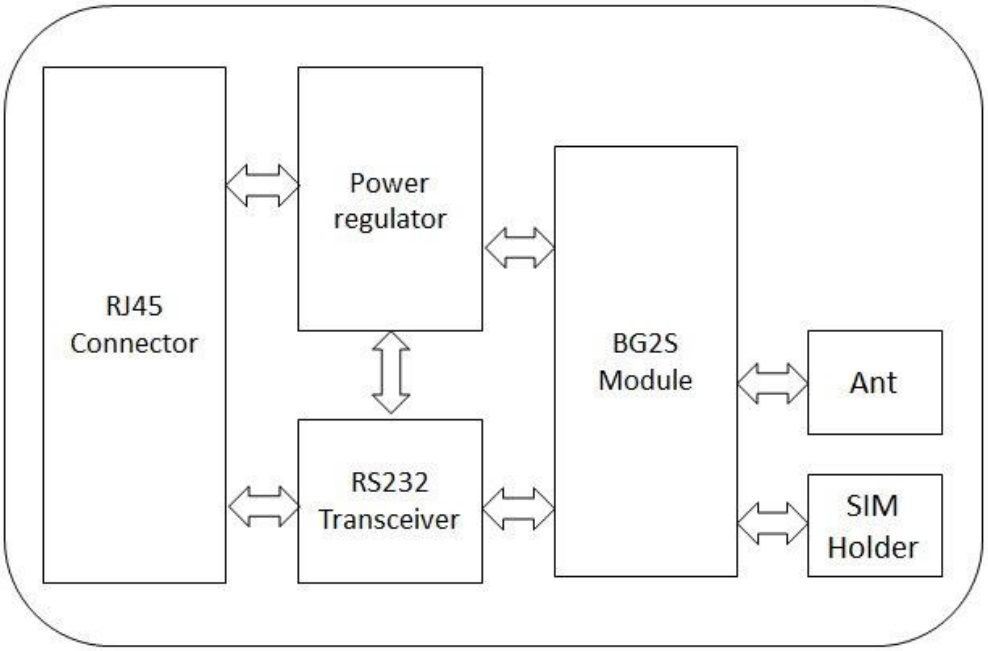


Figure 1: Functional Block Diagram for MLB-S-BGS2-BW

The MLB-S-BGS2-BW consists of a fully certified (CE approved) GSM/GPRS engine, SIM card holder and power regulator. The status of the terminal is indicated via an LED.

Power is supplied to the terminal via the RJ45 connector. The remaining RJ45 connector pins are used for data communications.

The SMA female connector provides the air interface to an external 50 ohm antenna specified for the correct frequency band.

1.4 Main Features and Services

The MLB-S-BGS2-BW perform a set of telecom services (TS) according to GSM standard phase 2+, ETSI and ITU-T. The services and functions of the MLB-S-BGS2-BW are implemented by issuing customized applications embedded on the device, or by AT commands issued internally, or over the RJ45 to RS232 serial interface.

1.4.1 Operating Modes

The table below briefly summarizes the various operating modes referred to in the following chapters.

Normal operation	GSM / GPRS SLEEP	Various power save modes set with AT+CFUN command. Software is active to minimum extent. If the module was registered to the GSM network in IDLE mode, it is registered and paging with the BTS in SLEEP mode, too. Power saving can be chosen at different levels: The NON-CYCLIC SLEEP mode (AT+CFUN=0) disables the AT interface. The CYCLIC SLEEP modes AT+CFUN=7 and 9 alternatingly activate and deactivate the AT interfaces to allow permanent access to all AT commands.
	GSM IDLE	Software is active. Once registered to the GSM network, paging with BTS is carried out. The module is ready to send and receive.
	GPRS IDLE	Module is ready for GPRS data transfer, but no data is currently sent or received. Power consumption depends on network settings and GPRS configuration (e.g. multislot settings).
	GPRS DATA	GPRS data transfer in progress. Power consumption depends on network settings (e.g. power control level), uplink / downlink data rates, GPRS configuration (e.g. used multislot settings) and reduction of maximum output power.
POWER DOWN	Normal shutdown after sending the AT^SMSO command. Only a voltage regulator is active for powering the RTC. Software is not active. Interfaces are not accessible. Operating voltage (connected to BATT+) remains applied.	
Airplane mode	Airplane mode shuts down the radio part of the module, causes the module to log off from the GSM/GPRS network and disables all AT commands whose execution requires a radio connection. Airplane mode can be controlled by using the AT commands AT^SCFG and AT+CALA: • With AT^SCFG=MEopMode/Airplane/OnStart the module can be configured to enter the Airplane mode each time when switched on or reset. • The parameter AT^SCFG=MEopMode/Airplane can be used to switch back and forth between Normal mode and Airplane mode any time during operation. • Setting an alarm time with AT+CALA followed by AT^SMSO wakes the module up into Airplane mode at the scheduled time.	

Table 1: Operating Modes

1.4.2 Terminal Features and Electrical Specifications

S/N	Feature	Specifications	
1	Frequency Bands	Dual-Band 900/1800Mhz	
		Quad-Band 850/900/1800/1900MHz	
2	RF Output Power	Class 4 (+33dBm ±2dB) for EGSM850 (quad band only) Class 4 (+33dBm ±2dB) for EGSM900 Class 1 (+30dBm ±2dB) for GSM1800 Class 1 (+30dBm ±2dB) for GSM1900 (quad band only)	
3	GSM Phase	Release 99	
4	Power Supply	+5 to 32VDC	
5	Power Consumption	- DATA mode : GPRS 1TX, 4RX GSM 850/EGSM 900 GSM 1800/1900	 180mA 145mA
		- DATA mode : GPRS 2TX, 3RX GSM 850/EGSM 900 GSM 1800/1900	 330mA 260mA
6	Operating Temperature	Normal operation: -30°C to +85°C Restricted operation: -40°C to -30°C, +85°C to +90°C	
7	Data Transfer	GPRS Multi-slot Class 12 max 85.6kbps (Downlink and Uplink) Full PBCCH Support Mobile Station Class B Coding Scheme 1~4 PPP stack	
		CSD V.110, RLP, non-transparent @2.4, 4.8, 9.6 & 14.4kbps USSD	
		PPP-stack for GPRS data transfer	
8	SMS	Point-to-Point MT and MO Cell Broadcast Text and PDU Mode Storage: SIM Card plus 25 SMS locations in mobile equipment Transmission of SMS alternatively over CSD or GPRS. Preferred mode can be user defined.	
9	AT Commands	AT-Hayes 3GPP TS 27.007, TS 27.005	
10	TCP/IP Stack	Access by AT Commands Internet Services include TCP, UDP, HTTP, FTP, SMTP, POP3	
11	IP Addresses	IPV6	
12	Serial Interface	RJ45 connector 8-wire Modem Interface with status and control lines, unbalanced, asynchronous Fixed bit rate: 300bps to 460,800bps Autobauding: 1,200bps to 460,800bps Flow Control: Hardware RTS0/CTS0 and Software XON/OFF Multiplex ability according to GSM 07.10 Multiplexer Protocol	
13	SIM Interface	SIM Card Slot Supports SIM Cards: +3V and +1.8V	

S/N	Feature	Specifications
15	Antenna	50 ohms via External SMA Connector
17	Software Reset	Orderly Shut down and Reset by AT Command (AT^SMSO)
19	RoHs	All hardware components are fully compliant with the EU RoHs directive 2002/95/EC Exception: MLB55IN

Table 2: Features and Specifications

1.5 Precautions

The MLB-S-BGS2-BW terminal is designed for indoor use only. To use outdoors it must be integrated into a weatherproof enclosure. Do not exceed the environmental and electrical limits as specified in the user manual.

2 MECHANICAL DESCRIPTION

2.1 Overview

The pictures below show the mechanical design of the terminal along with the positions of the different connectors. The terminal case is made of durable plastic.

2.2 Dimensions

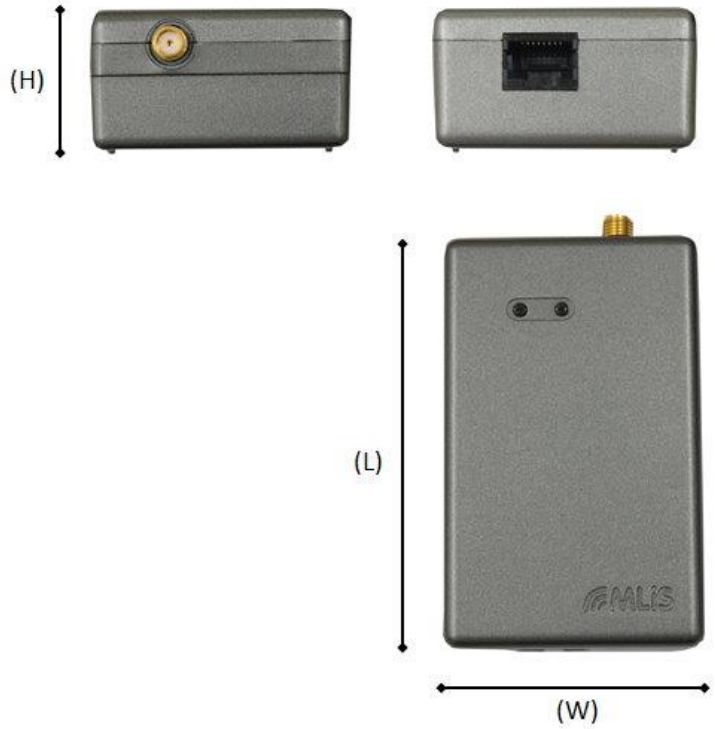


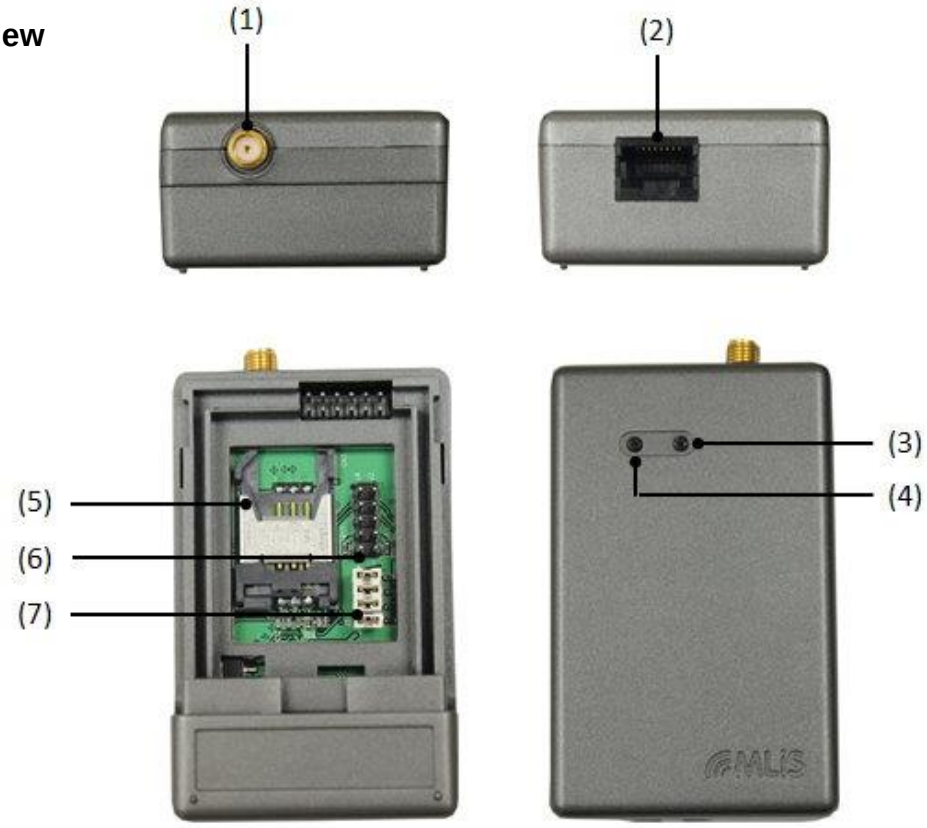
Figure 2: Chassis Dimension for MLB-S-BGS2-BW

S/N	Parameter	Value
1	Height (H)	22 mm
2	Length (L)	80 mm (Terminal)
3	Width (W)	50 mm
4	Weight	50 g
5	Chassis Material	Plastic

Table 3: Chassis Dimensions and Mechanical Description for MLB-S-BGS2-BW

3 ELECTRICAL INTERFACE DESCRIPTIONS

3.1 Overview



Front/Back View

Figure 3: External Interfaces/Indicators for MLB-S-BGS2-BW

The interfaces and indicators for MLB-S-BGS2-BW are as follows:

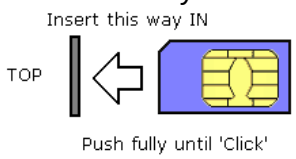
Item	Description	Function
1	Radio Interface RF Connector (SMA Female)	Connects to external 50 ohms antenna of correct frequency band
2	RJ45 Connector	For Power and Communications
3	Power Status LED Indicator	LED lights up when power is applied
4	Status LED	See 3.4.1
5	SIM Card Tray 	Put SIM Card onto Tray and push in to lock SIM card. Accepts both +1.8V and +3V SIM cards Insert with SIM card contacts face up
6	Program Pin	no release

Table 4: Interfaces and Indicators Description of MLB-S-BGS2-BW

3.2 Radio Interface (Type SMA Connector Female) - RF Antenna

Figure 4: Antenna Connector for MLB-S-BGS2-BW

The connection of the antenna or other equipment must be decoupled from DC voltage.

For optimum RF performance, the MLiS Terminal has to be connected to an external RF antenna matched to 50ohms including other connecting cables across the operating frequency bands. Please use a SMA Male connection to the terminal.

Choose suitable types of low attenuation coaxial cables if possible. In general the RG174 or RG58 50 ohms types should be good for normal use. Avoid excessive cable length of > 10 metres.

⁎ **Compatible RF antennas (PCB patched or Monopole type) are available for order, please refer to accessories document.**

3.3 RJ45 Connector

The RJ45 Modular COM port is used to supply power to the terminal as well as provide serial data communication. The terminal accepts voltage levels between +5Vdc to +32Vdc. Do not exceed these levels. The minimum requirement for the terminal to communicate with the application or DTE is through using the following pins:

- TxD: Where the Application sends data to MLiS Terminal
- RxD: Where the Application receives data from MLiS Terminal

Figure 5: RJ45 Connector Pin Definition for MLB-S-BGS2-BW

The table below defines the RS232 Socket pin configuration on the Terminal:

Pin No.	Signal Name	I/O	Function
1	VIN	-	DC Input +5V ~ +32V
2	RTS	O	Request To Send
3	CTS	I	Clear to Send
4	RxD	I	Receive Data
5	TxD	O	Transmit Data
6	GND	-	Ground
7	DTR	I	Data terminal ready
8	DSR	O	Data Set Ready

Table 5: RJ45 connector configuration for MLB-S-BGS2-BW

3.4 Operating States/LED

The modem has a green and a blue LED to display the operating status of the Terminal. The green LED is power indicator,Blue is operating Status LED.

Figure 6: LEDs for MLB-S-BGS2-BW

3.4.1 Blue LED

The AT^SSYNC command is used to control the Green LED status on the terminal.

Mode	LED Status
AT^SSYNC=0	SYNC mode: Enables the SYNC pin to indicate growing power consumption during a transmit burst. You can make use of the signal generated by the SYNC pin, if power consumption is your concern. To do so, ensure that your application is capable of processing the signal. Your platform design must be such that the incoming signal causes other components to draw less current. In short, this allows your application to accommodate current drain and thus, supply sufficient current to the GSM engine if required.
AT^SSYNC=1	LED mode: Enables the SYNC pin to drive a status LED installed in your application. Note: <mode>=1 is the factory default of the MLB-S-BGS2 Series Terminal.

Table 6: AT Command for Blue LED Control for MLB-S-BGS2-BW

The following table lists the possible patterns of status LED behavior, and describes the terminal operating status indicated by each pattern if AT^SSYNC parameter <mode>=1. To better monitor the operating states while power saving is enabled.

LED behavior	ME operating status if AT^SSYNC=1
Permanently off	ME is in one of the following modes: - POWER DOWN mode - NON-CYCLIC SLEEP mode - CYCLIC SLEEP mode with no temporary wake-up event in progress
600 ms on / 600ms off	Limited Network Service: No SIM card inserted or no PIN entered, or network search in progress, or ongoing user authentication, or network login in progress.
75 ms on / 3 s off	IDLE mode: The mobile is registered to the GSM network (monitoring control channels and user interactions). No call is in progress.
75 ms on / 75 ms off / 75 ms on / 3 s off	One or more GPRS PDP contexts activated.
500 ms on / 50 ms off	Packet switched data transfer is in progress
Permanently on	Depending on type of call: Voice call: Connected to remote party. Data call: Connected to remote party or exchange of parameters while setting up or disconnecting a call.

Table 7: AT Command for Green LED Control for MLB-S-BGS2-BW

3.5 SIM card holder

The MLB-S-BGS2-BW Terminal is fitted with a SIM card reader designed for 1.8V and 3V SIM cards. It is the flip-up type which can be locked. It can be accessed through removing the battery cover as shown below.

Figure 7: SIM Card Holder for MLB-S-BGS2-BW

∗**Be sure to power off modem when you replace the SIM card. Otherwise it may cause damage to the equipment.**

The full operation of the MLB-S-BGS2 Series relies on a SIM card being inserted. Some MLB-S-BGS2-BW functionality may be lost if you try to operate the terminal without a SIM card

4 OPERATING MODES

Figure 8: LED indication for MLB-S-BGS2-BW

4.1 Power on the Modem

The modem is usually fully operational 4 seconds after power up. Depending on the signal strength of the network in the area, logging onto a network may take longer and is outside the control of the modem.

A blinking Blue LED indicates normal operation.

4.2 Power down the Modem

There are 2 ways to switch off (power down) the modem as described below:

a) The "AT^SMSO" command lets the MLB-S-BGS2-BW terminal log off from the network and allows the software to enter into a secure state and safe data before disconnecting the power supply. The mode is referred to Power-down mode. In this mode only the RTC stays active.

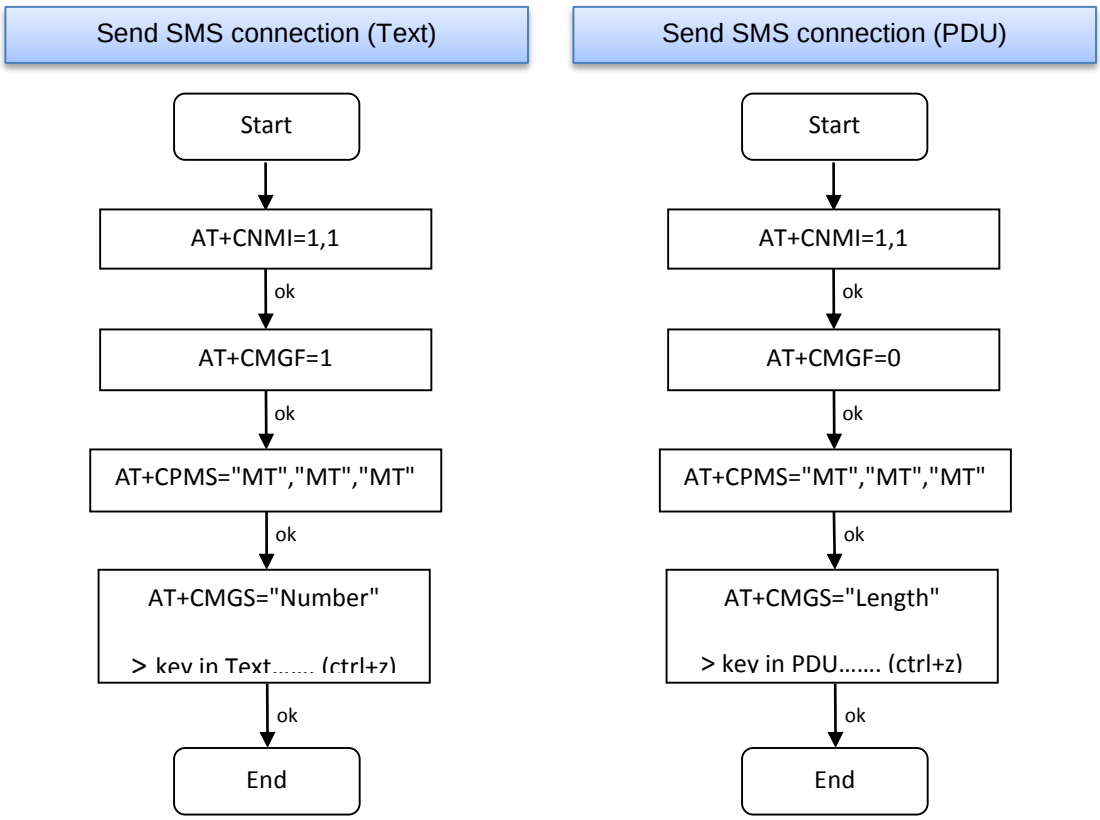
Make sure that the terminal has completely shut down before disconnecting the power supply. The URC "^SHUTDOWN" indicates that data have been stored non-volatile and the terminal turns off in less than 1 second.

b) Direct hardware power off. Data will not be retained in this case.

5 Command Operation

5.1 Command Operation for SMS

Flow chart :



5.1.1 SMS command Explanation

AT+CNMI New short Message Indication

AT+CNMI=1,1

AT+CMGF Select SMS message format

AT+CMGF=1

Text mode=1; PDU mode=0

AT+CPMS Preferred SMS message storage

AT+CPMS=<mem1>[, <mem2>[, <mem3>]]

+CPMS: <used1>, <total1>, <used2>, <total2>, <used3>, <total3>

< mem1 >(str)

Memory to be used when listing, reading and deleting messages:

"SM " SIM message storage

"ME " Mobile Equipment message storage

"MT " (D) Sum of "SM" and "ME" storages

< mem2 >(str)

Memory to be used when writing and sending messages:

"SM" SIM message storage

"ME" Mobile Equipment message storage

"MT" (D) Sum of "SM" and "ME" storages

< mem3 >(str)

Received messages will be placed in this memory storage if routing to TE is not set. See command AT+CNMI with parameter <mt>=2.

"SM" SIM message storage

"MT" (D) Sum of "SM" and "ME" storages

< used1 >(num)

Number of messages currently in <mem1>

< used2 >(num)

Number of messages currently in <mem2>

< used3 >(num)

Number of messages currently in <mem3>

< total1 >(num)

Number of messages storable in <mem1>

< total2 >(num)

Number of messages storable in <mem2>

< total3 >(num)

Number of messages storable in <mem3>

AT+CMGS="Number"

> key in Text

ctrl+z Send Short Message

If text mode (see AT+CMGF=1)

AT+CMGS="Length"

> key in PDU

ctrl+z Send Short Message

If PDU mode (see AT+CMGF=0)

New SMS View

AT+CNMI New short Message Indication

AT+CNMI=1,1

AT+CMGR Read SMS messages

AT+CMGR=1

AT+CMGL List SMS messages from preferred store

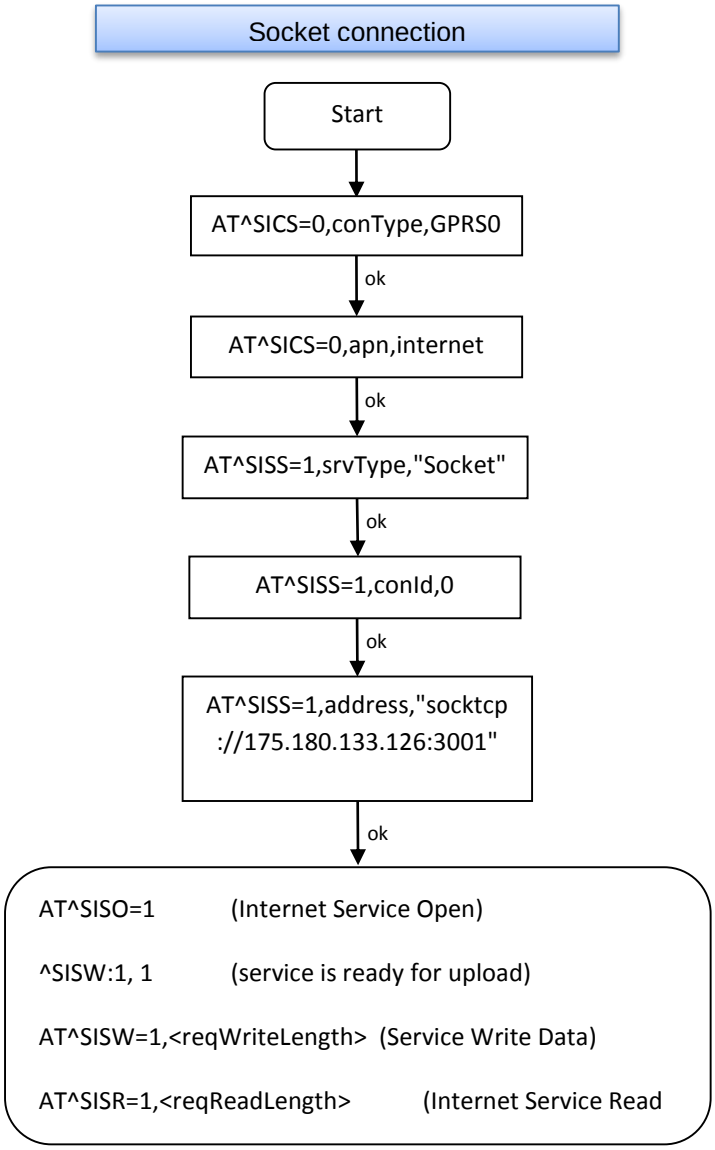
AT+CMGL="ALL"

AT+CMGD Delete short message

AT+CMGD=4

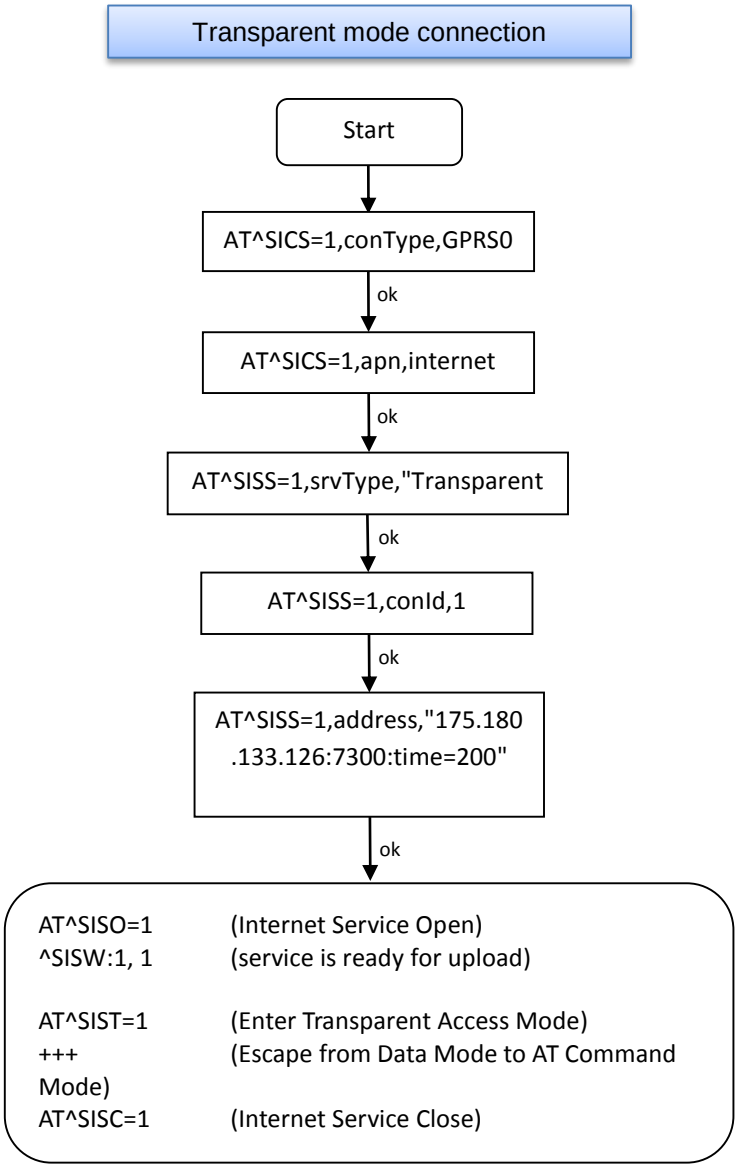
5.2 Command Operation for Socket Mode

Flow chart :



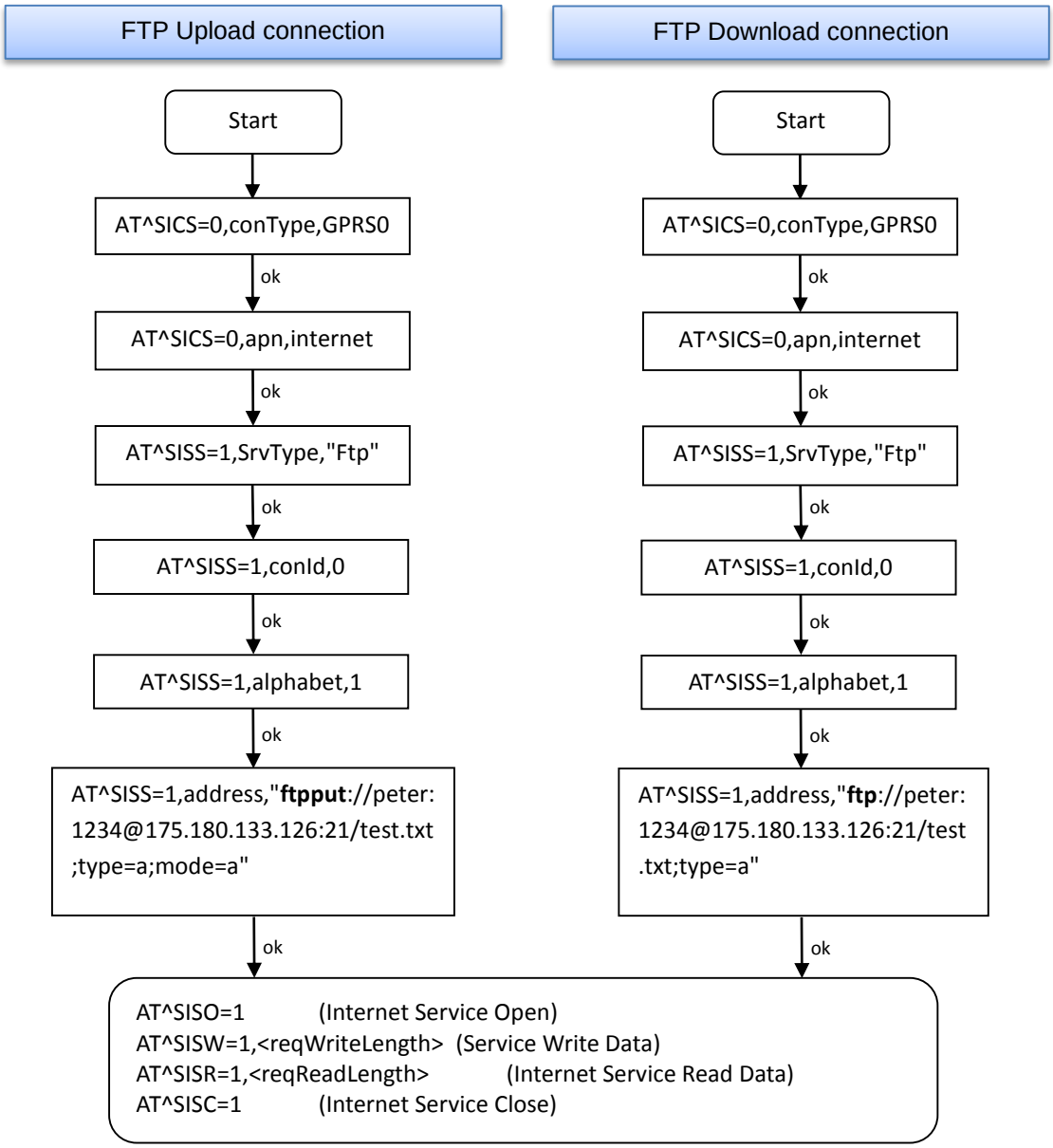
5.3 Command Operation for Transparent Mode

Flow chart :



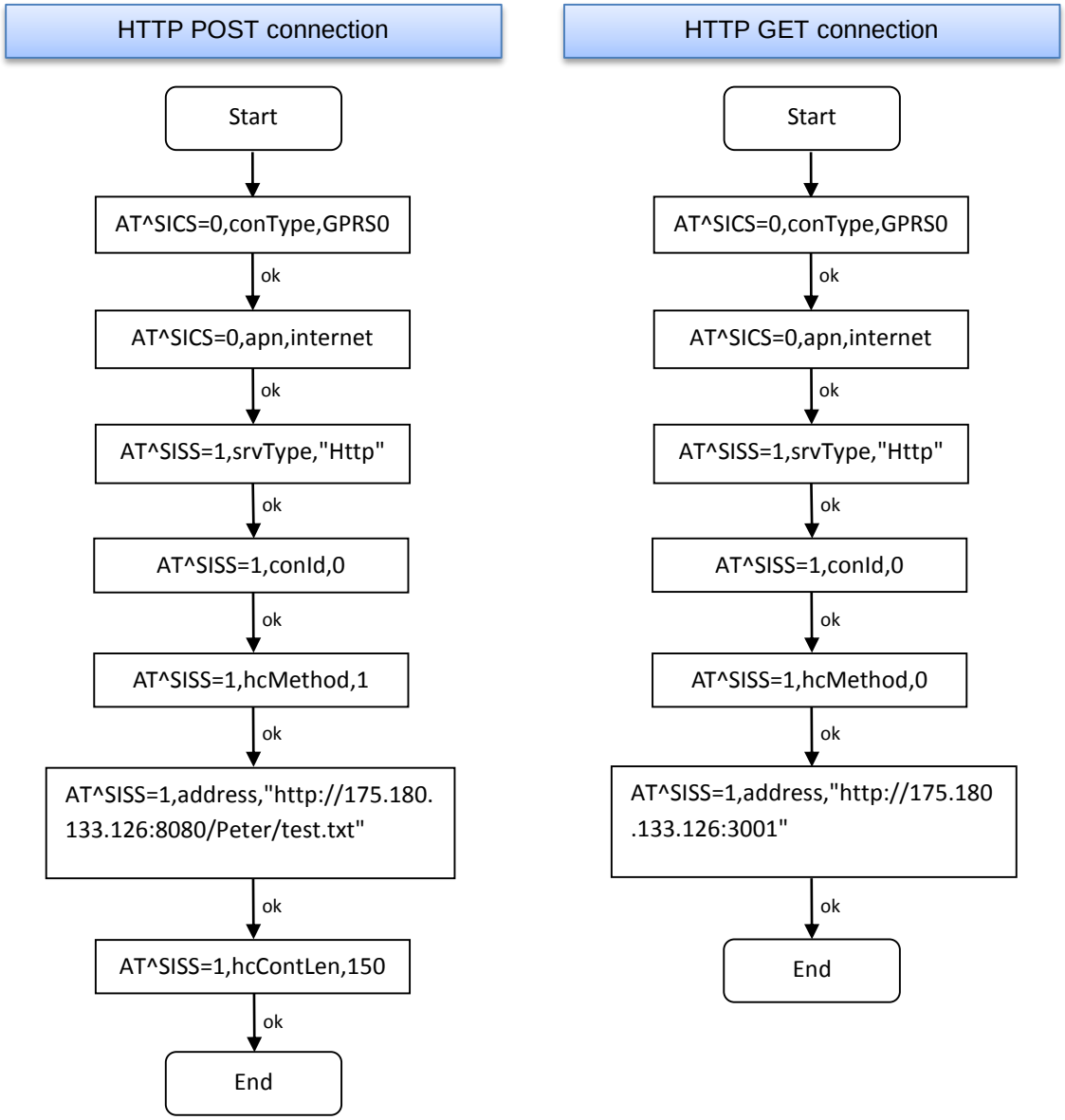
5.4 Command Operation for FTP Mode

Flow chart :



5.5 Command Operation for HTTP Mode

Flow chart :



5.6 Command Operation for SMTP Mode

AT^SICS=0,conType,GPRS0 OK	Select connection type GPRS0.
AT^SICS=0,apn,"internet" OK	APN to access the GPRS services provided by the internet.
AT^SISS=1,srvType,"Smtp" OK	Select service type SMTP.
AT^SISS=1,conId,"0" OK	Select connection profile 0.
AT^SISS=1,alphabet,"0" OK	Choose ASCII alphabet.
AT^SISS=1,address,"192.168.1.2" OK	Specify SMTP server address.
AT^SISS=1,user,"subscriber1" OK	Specify sender's user name required for SMTP authentication.
AT^SISS=1,passwd,"subscr1" OK	Specify password used by the sender for SMTP authentication.
AT^SISS=1,smFrom,"subscriber1@testdomain.com" OK	Sender's email address.
AT^SISS=1,smRcpt,"subscriber2@testdomain.com" OK	Recipient's email address.
AT^SISS=1,smSubj,"Meeting Request Sunday Morning" OK	Enter text for subject field.
AT^SISS=1,smAuth,"1" OK	Sender name and password can be used for SMTP authentication.
AT^SISO=1 OK	Open the service, i.e. start to send the email.

^SISW:1, 1	Service is ready for upload.
AT^SISW=1,87 ^SISW: 1,87,87	The email to be sent has 87 bytes. The write command response confirms that 87 bytes are available for transmission.
Good Morning everyone, we are delighted to announce our next meeting on Sunday morning. OK	Write the message text.
AT^SISC=1 OK	Internet Service Close.

5.7 Command Operation for POP3 Mode

AT^SICS=0,conType,GPRS0	Select connection type GPRS0.
OK	
AT^SICS=0,apn,"internet"	APN to access the GPRS services provided by the internet.
OK	
AT^SISS=1,srvType,"Pop3"	Select service type POP3.
OK	
AT^SISS=1,conId,0	Select connection profile 0.
OK	
AT^SISS=1,address,"192.168.1.2"	Specify POP3 server address.
OK	
AT^SISS=1,user,"subscriber1"	Specify recipient's mailbox name.
OK	
AT^SISS=1,passwd,"subscr1"	Password used by recipient for authentication to POP3 server.
OK	
AT^SISS=1,pCmd,"3"	Command used to retrieve emails.
OK	
AT^SISS=1,pNumber,"2"	Email message number 2 shall be retrieved.
OK	
AT^SISO=1	Open the service that was created to retrieve email number 2 from the POP3 server.
OK	
^SISR: 1,1	The "^SISR" indicates that data is available for reading.
AT^SISR=1,500	Try to read 500 bytes.
^SISR: 1,500	Command response indicates that 500 bytes will be transferred, i.e. there will be no other URC since the requested length equals the confirmed length.
Return-Path: <subscriber1@testdomain.com>	
X-Original-To: subscriber1@testdomain.com	

Delivered-To: subscriber2@testdomain.com Received: from 10.10.0.132 (unknown [10.10.0.132]) by testdomain.com (Postfix) with SMTP id 379321D004 for <subscriber1@testdomain.com>; Tue, 20 Dec 2005 08:00:07 +0100 (CET) To: subscriber2@testdomain.com Cc: From: subscriber1@testdomain.com Subject: TestMail Message-Id: <20051220070007.379321D004@testdomain.com > Date: Tue, 20 Dec 2005 08:00:07 +0100 Ok	
AT^SISR=1,500 AT^SISR =1,78	Try to read another 500 bytes. Command response indicates that only 78 bytes will transferred.
(CET) X-UIDL: &lL"!(Z6"!^cl!!1+%"! Status: RO Hallo Tom!Bye Bye Tom! . OK	Dot indicates end of mail according to RFC 2821.
^SISR: 1,2	Parameter <urcCauseId> of the "^SISR" URC confirms that all data is transferred successfully.
AT^SISC=1 OK	Close the service.

5.8 Command Explanation

5.8.1 AT^SICS Internet Connection Setup

AT^SICS=<conProfileId>, <conParmTag>, <conParmValue>

< conProfileId >(num)	
0...5	Internet connection profile identifier. The <conProfileId> identifies all parameters of a connection profile, and when a service profile is created with AT^SISS the <conProfileId> needs to be set as "conId" value of the AT^SISS parameter <srvParmTag>.

< conParmTag >(str)	
Internet connection parameter	
"conType"	Type of Internet connection. For supported values of <conParmValue> refer to <conParmValue-con-Type>.
"alphabet"	Selects the character set for input and output of string parameters within a profile. The selected value is bound to the specific profile. This means that different profiles may use different alphabets. Unlike other parameters the alphabet can be changed no matter whether the <conParmTag> value "conType" has been set. For supported values of <conParmValue> refer to <conParmValuealphabet>.
"user"	User name string: maximum 31 characters (where "" is default).
"passwd"	Password string: maximum 31 characters (where ***** is default).
"apn"	Access point name string value: maximum 99 characters (where "" is default).
"inactTO"	Inactivity timeout value in seconds: 0 ... 2^{16}-1, default = 20 Number of seconds the bearer remains open although the service no longer needs the bearer connection. Do not set the timeout value below 3 sec. This may result in problems when using the <eodFlag> (set in the last AT^SISW command to terminate an upload data stream).
"calledNum"	Called BCD number.
"dataType"	Data call type. For supported values of <conParmValue> refer to <conParmValuedataType>.

"dns1"	Primary DNS server address (IP address in dotted-four-byte format). This value determines whether to use the DNS server addresses dynamically assigned by the network or a specific DNS server address given by the user. "dns1" = "0.0.0.0" (default) means that the CSD or GPRS connection profile uses dynamic DNS assignment. Any other address means that the Primary DNS is manually set. The default value applies automatically if no other address is set. Note that the AT^SICS read command only returns a manually configured IP address, while the value "0.0.0.0" is not indicated at all, no matter whether assumed by default or explicitly specified. See also note below.
"dns2"	Secondary DNS server address (IP address in dotted-four-byte format). If "dns1" = "0.0.0.0" this setting will be ignored. Otherwise this value can be used to manually configure an alternate server for the DNS1. If "dns1" is not equal "0.0.0.0" and no "dns2" address is given, then "dns2"="0.0.0.0" will be assumed automatically. The AT^SICS read command only returns a manually configured IP address, while the value "0.0.0.0" is not indicated at all, no matter whether assumed by default or explicitly specified.

< conParmValue >(str)

Parameter value; type and supported content depend on related <conParmTag>.

< conParmValue – conType >(str)

Supported connection type values in <conParmValue> for <conParmTag> value "conType".

CSD	Circuit-switched data call.
GPRS0	GPRS connection. Settings of GPRS related commands are not used, e.g. AT+CGDCONT. When a service based on a GPRS connection profile is started after entering AT^SISO MLB-S-BGS2-BW automatically tries to attach to the GPRS. Yet, the only exception is AT+CGATT which can be used any time to detach from the GPRS and thus disconnect the bearer opened with AT^SISO.
none	Clears the connection profile.

<conParmTag> value	CSD	GPRS0
"conType"	mandatory	mandatory
"user"	optional	optional
"passwd"	optional	optional
"apn"	ø	optional
"inactTO"	optional	optional
"calledNum"	mandatory	ø
"dataType"	mandatory	ø
"dns1"	optional	optional
"dns2"	optional	optional
"alphabet"	optional	optional

Table 8: Applicability of AT^SICS <conParmTag> values

5.8.2 AT^SISS Internet Service Setup

AT^SISS=<srvProfileId>, <srvParmTag>, <srvParmValue>

< srvProfileId >(num)

Internet service profile identifier.

The <srvProfileId> is used to reference all parameters related to the same service profile. Furthermore, when using the AT commands AT^SISO, AT^SISR, AT^SISW, AT^SIST, AT^SISH and AT^SISC the <srvProfileId> is needed to select a specific service profile.

0...9

< srvParmTag >(u)

Internet service profile parameter.

srvType Type of Internet service to be configured with consecutive usage of AT^SISS.

For supported values of <srvParmValue> refer to <srvParmValue-srv-Type>.

alphabet Selects the character set for input and output of string parameters within a profile.

The selected value is bound to the specific profile. This means that different profiles may use different alphabets. Unlike other parameters the alphabet can be changed no matter whether the <srvParmTag> value "srvType" has been set.

For supported values of <srvParmValue> refer to <srvParmValuealphabet>.

user User name string

1. Socket

Not applicable.

2. Transparent

Not applicable.

3. FTP

Not applicable; set within "address" parameter.

4. HTTP

Length: 2...31

User name for the HTTP authentication mechanism. Currently only HTTP simple authentication is supported.

5. SMTP

User name to be used for SMTP authentication (string).

Length: 4...64.

If SMTP authentication is disabled, i.e. "smAuth" flag not set, user name parameter will be ignored.

6. POP3

User name identifying a mailbox, i.e. mailbox name (string).

Length: 1...64.

passwd Password string

1. Socket

Not applicable.

2. Transparent

Not applicable.

3. FTP

Not applicable; set within "address" parameter.

4. HTTP

Length: 2...31

Password for the HTTP authentication mechanism. Currently HTTP simple authentication is supported only.

5. SMTP

Password to be used for SMTP authentication (string).

Length: 4...64.

If SMTP authentication is disabled, i.e. "smAuth" flag not set, password parameter will be ignored.

6. POP3

Server/mailbox-specific password (string).

Length: 1...64.

Used to perform authentication with a POP3 server.

conId Internet connection profile to be used, for details refer AT^SICS.

tcpPort TCP Port Number

1. Socket

Not applicable; set within "address" parameter.

2. Transparent

Not applicable; set within "address" parameter.

3. FTP

Not applicable; set within "address" parameter.

4. HTTP

Not applicable; set within "address" parameter.

If parameter is omitted the service connects to HTTP default port 80.

5. SMTP

SMTP server TCP port number (numeric)

Length: 0...2^{16}-1

If this parameter is not set, SMTP default port number 25 is used.

6. POP3

POP3 server TCP port number (numeric)

Length: 0... 2^{16}-1

If this parameter is not set, POP3 default port number 110 is used.

address

String value, depending on the service type either a URL in the case of Socket, FTP and HTTP or an address in the case of SMTP and POP3:

1. Socket

- Socket type TCP client URL

"socktcp://<host>:<remotePort>

- Socket type TCP server URL

"socktcp://listener:<localPort>"

- Socket type UDP client URL

"sockudp://<host>:<remotePort>[;size=<value>][;port=<localPort>]"

Option "size":

0: PDU size is variable (default).

1...1460: Fixed PDU size in bytes.

Option "port":

0: Port number will be assigned from service (default).

1... 2^{16}-1: defines the local port number for the UDP client.

2. Transparent service

- Transparent TCP client

"[socktcp://]<host>:<remotePort>[;timer=<value>][;etx=<etx-Char>]

[;keepidle=<value>][;keepcnt=<value>][;keepintvl=<value>]"

- Transparent UDP client

"sockudp://<host>:<remotePort>[;timer=<value>][;etx=<etxChar>]"

- Transparent TCP Listener

"[socktcp://]:<localPort>[;timer=<value>][;etx=<etxChar>][;autoconnect='0|1']

[;connecttimeout=<value>][;keepidle=<value>][;keepcnt=<value>][;keepintvl=<value>][;addrfilter=<filter>]"

Supported Options:

- "timer": The parameter configures the Nagle algorithm, which is used in transparent access mode.

range: 20...[100]...500 milliseconds in steps of 20

- "etx": Specifies the character used to change from transparent access mode to AT command mode.

range: 1...15,17...255 (16 is not allowed because it is used as DLE (0x10))

If value is not set no escaping is configured, thus requiring either +++ or DTR ON-OFF transition for changing to AT command mode. If value is set, the transmitted bytes are parsed for the DLE (0x10) character followed by the specified <etxChar> value. If both characters are found the service returns to AT command mode without transmitting these two bytes. This behavior differs from +++ handling, where +++ is transmitted over the air.

If you wish to send DLE characters as normal text string within your payload data the characters shall be doubled (DLE DLE).

- "keepidle": specifies the TCP parameter TCP_KEEPIDLE (see RFC1122; not for

Transparent UDP client)

range: 1...65535 seconds, 0 disabled (default)

- "keepcnt": specifies the TCP parameter TCP_KEEPCNT (see RFC1122; not for

Transparent UDP client); ignored if option "keepidle" is not set

range: 1...[9]...127

- "keepintvl": specifies the TCP parameter TCP_KEEPINTVL (see RFC1122; not for Transparent UDP client); ignored if option "keepidle" is not set

range: 1...[75]...255 seconds

- "autoconnect" (for Transparent TCP Listener service only):

0 ... disabled (default) 1 ... automatically accept incoming client connects

- "connecttimeout": specifies the time after which incoming client connects are rejected automatically (for Transparent TCP Listener service only)

range: 1...[30]...180 seconds

- "addrfilter": This option allows to filter incoming client connects based on the IP address of the client (for Transparent TCP Listener service only).

It is possible to specify a maximum of 3 filters separated by commas.

Each filter is specified as 4 numbers separated by dots("<n>.<n>.<n>.<n>"). Each number n can be in the range between 0 and 254. It is allowed to use the wildcard "*" instead of n which matches all. The IP address of any incoming client connect does not match any of the specified filters, then the connect is rejected automatically. If the option is not specified, then all client connects are allowed.

Example: "addrfilter=10.10.0.*,80.190.158.9" - allows connects from 10.10.0.81 and 80.190.158.9 but not from 10.10.17.81 and 80.190.158.10.

3. FTP

- FTP client URL (get)

"ftp://<user>:<passwd>@<host>:<tcpPort>/<url-path> [;type='a|i|d'] " Refer to

"IETF-RFC 1738".

- FTP client URL (put)

"ftpput://<user>:<passwd>@<host>:<tcpPort>/<url-path>/<element name>

[;type='a|i'][;mode='u|a|d'] "

Used parameters:

<host> is mandatory, all other parameters are optional.

If <passwd> is set then <user> must be set as well.

If <user> is omitted the string "anonymous" is selected for <user> and <passwd>.

If <passwd> is omitted the password request is served by an empty string.

If <tcpPort> is omitted the service connects to the FTP default port 21.

If <url-path> contains only the IP address a directory listing is requested.

If <url-path> contains the IP address and has a slash '/' appended a detailed directory listing is requested.

"type": [a)scii | i)mage | d)irectory]

"mode": [u)nique | a)ppend | d)elete]

"u)nique" selects the FTP Store Unique command to create a file name unique to the current directory. If the file name is assigned by the server then the "^SIS" URC will appear, indicating <urcInfoId> 2100 and the file name.

"d)elete" clears given 'element name'.

If "mode" is omitted "replace mode" is default setting.

4. HTTP

HTTP client URL

Length: 6...255

"http://<server>:<port>/<path>" or "http://<server>:<ort>/<path>" if profile is configured for secure connection (see value "secOpt" below).

<server>: FQDN or IP-address

<path>: path of file or directory

<port>: If parameter is omitted the service connects to HTTP default port 80.

Refer to "IETF-RFC 2616".

5. SMTP

SMTP server address (string).

Length: 4...256.

6. POP3

POP3 server address (string).

Length: 4...256.

hcContent Optional parameter for HTTP method "Post".

	Length: 0...127 Can be used to transfer a small amount of data. The content of this string will only be sent if "hcContLen" = 0. The maximum length of "hcContent" is 127 bytes. To transmit a larger amount of data "hcContLen" must be set to a non-zero value. In this case the "hcContent" string will be ignored, and data transmission from the client to the server is done with AT^SISW.
hcContLen	Mandatory parameter for HTTP method "Post". Length: 0... 2^{31}-1 The content length shall be set in the header of the HTTP "Post" request before the data part is transferred. If "hcContLen" = 0 then the data given in the "hcContent" string will be posted. If "hcContLen" > 0 then the AT^SISW command will be used to send data from the client to the server. In this case, "hcContLen" specifies the total amount of data to be sent. The data can be sent in one or several parts. For each part, the transmission is triggered by the URC "^SISW: x, 1", then the AT^SISW write command can be executed. After the exact number of bytes are transferred via the serial interface, the HTTP client will go from service state "Up" to service state "Closing" (see parameters <srvState> and <srvState> for detail). Finally, the URC "^SISW: x, 2" indicates that all data have been transferred and the service can be closed with AT^SISC.
hcUsrAgent	The user agent string must be set by the application to identify the mobile. Usually operation system and software version info is set with this browser identifier. Length: 0...63
hcMethod	HTTP method specification: 0=GET, 1=POST, 2=HEAD.
hcProp	Parameter for several HTTP settings. Length: 0...127 The general format is 'key': <space> 'value' Multiple settings can be given separated by "\0d\0a" sequences within the string, do not put them at the end. Possible 'key' values are defined at HTTP/1.1 Standard RFC 2616.
hcRedir	This flag controls the redirection mechanism of the MLB-S-BGS2-BW acting as HTTP client (numeric). If "hcRedir" = 0: No redirection. If "hcRedir" = 1 (default): The client automatically sends a new HTTP request if the server answers with a redirect code (range 30x).

hcAuth	HTTP authentication control flag (numeric): "hcAuth" = 0 (default): To be used if "passwd" and "user" are not required and not set for HTTP. "hcAuth" = 1: HTTP client will automatically answer on authentication requests from the server with the current "passwd" and "user" parameter settings. If these parameters are not specified the MLB-S-BGS2-BW will terminate the HTTP connection and send an indication to the TA.
smFrom	Email sender address, i.e. "MAIL FROM" address (string). Length: 6...256 A valid address parameter consists of local part and domain name delimited by a '@' character, e.g. "john.smith@somedomain.de".
smRcpt	Recipient address of the email, i.e. "RCPT TO" address (string). Length: 6...256 If multiple recipient addresses are to be supplied the comma character is used as delimiter to separate individual address values, e.g. "john.smith@somedo-main.de,tom.meier@somedomain.de". Some mail servers do not accept recip-ient addresses without brackets <>. It is recommended to use the "RCPT TO" variable with brackets.
smCC	CC recipient address of the email (string). Length: 6...256 If multiple CC recipient addresses are to be supplied the comma character is used as delimiter to separate individual address values, e.g. "john.smith@somedomain.de,tom.meier@somedomain.de".
smSubj	Subject content of the email (string). Length: 0...256 If no subject is supplied the email will be sent with an empty subject.
smHdr	This parameter, if set, will be appended at the end of the email header section (string). Length: 0...256 Hence, it serves as a generic header field parameter which allows the user to provide any email header field. It is the user's responsibility to provide correct header fields! String of max. 256 characters. Example for multipart MIME messages: "Content-Type: multipart/mixed".
smAuth	SMTP authentication control flag (numeric).

If "smAuth" = 0 (default): MLB-S-BGS2-BW performs action without SMTP authentication.

If "smAuth" = 1: Authentication procedure with the SMTP server will be performed by means of supported authentication methods, using values of "user" and "passwd" parameters. If MLB-S-BGS2-BW and SMTP server are not able to negotiate an authentication mechanism supported by both parties, the MLB-S-BGS2-BW continues action without authentication.

MLB-S-BGS2-BW supports SMTP authentication.

pCmd — POP3 user command to be executed by the POP3 service (numeric).

For supported values of <srvParmValue> refer to <srvParmValue-pCmd>.

pNumber — Optional message number argument used by the POP3 commands List ("2"), Retrieve ("3") and Delete ("4"). For POP3 commands see <srvParmTag> value "pCmd".

Length: 0... 2^{31}-1

If no specific value is set in the service profile, the value "0" is assumed by default, i.e. "pNumber" is disabled.

pLength — Maximum message length (string, optional)

Length: 0... 2^{31}-1

"pLength" can be used to specify the length of the message(s) to be retrieved from or deleted on the POP3 server. If no specific value is set in the service profile, the default value "0" is assumed, which means that there is no limit on the message size.

A warning will be issued inthe following cases:

- If "pNumber" > 0 and a specific message to be retrieved from / deleted on the server is longer than "pLength".
- If "pNumber" = 0 and all messages to be retrieved from / deleted on the server are longer than "pLength".

No warning will be issued in the following cases:

- If there are no messages at all on the server.
- If the server has message(s) below and above the "pLength" specified. In this case, the message(s) within the range of "pLength" can be successfully retrieved or deleted, but the message(s) above "pLength" remain on the server without any further notification given to the user.
- Therefore, after retrieving / deleting messages, it is recommended to check the message status on the server. This can be done by adding a further POP3 service profile using the POP3 user command List ("2").

pDelFlag — Flag to be used with the POP3 user command Retrieve ("3"). Specifies whether or not to delete retrieved emails on the server (optional).

	For supported values of <srvParmValue> refer to <srvParmValuepDelFlag>.
tcpMR	Parameter can be used to overwrite the global AT^SCFG parameter "Tcp/ MaxRetransmissions" <tcpMr> for a specific Internet Service connection profile. If the parameter is not specified the value specified with AT^SCFG will be used. Supported values <srvParmValue> for this parameter are the same as described for <tcpMr>. Setting is not relevant for Internet Service "Socket" with type "UDP".
tcpOT	Parameter can be used to overwrite the global AT^SCFG parameter "Tcp/OverallTimeout" <tcpOt> for a specific Internet Service connection profile. If the parameter is not specified the value specified with AT^SCFG will be used. Supported values <srvParmValue> for this parameter are the same as described for <tcpOt>. Setting is not relevant for Internet Service "Socket" with type "UDP".
secOpt	Parameter for secure connection (TLS) settings for following services: TCP Socket client, Transparent TCP client, HTTP client. Detailed guidelines for managing the required certificates can be found in [11]. See also AT commands AT^SIND, AT^SBNW and AT^SBNR. secOpt = "" (default) - do not use secure connection (TLS) secOpt = "-1" - use secure connection (TLS) without check certificates secOpt = "0...10" - use secure connection (TLS) with client or/and server certificate (client certificate is stored in NVRAM at index 0, server certificates are stored in NVRAM at certificate indexes from 1 to 10), e.g. "0,1,5,9"

The list below shows which <srvParmTag> parameters apply to each Internet service and which of them are mandatory (= m) or optional (= o).

<srvParmTag>	Socket	Transparent	FTP	HTTP	SMTP	POP3
"srvType"	m	m	m	m	m	m
"conId"	m	m	m	m	m	m
"alphabet"	o	o	o	o	o	o
"address"	m	m	m	m	m	m
"tcpMR"	o	o	o	o	o	
"tcpOT"	o	o	o	o	o	o
"secOpt"	o	o		o		o
"user"				o	o	m

"passwd"				o	o	m
"hcContent"				o		
"hcContLen"				o		
"hcUserAgent"				o		
"hcMethod"				m		
"hcProp"				o		
"hcRedir"				o		
"hcAuth"				o		
"tcpPort"					o	o
"smFrom"					m	
"smRcpt"					m	
"smCC"					o	
"smSubj"					o	
"smHdr"					o	
"smAuth"					o	
"pCmd"						m
"pNumber"						o
"pLength"						o
"pDelFlag"						o

Table 9: Applicability of AT^SISS <srvParmTag> values

< srvParmValue >(str)

Parameter value; type and supported content depend on related <srvParmTag>.

< srvParmValue – srvType >(str)

Supported Internet service type values in <srvParmValue> for <srvParmTag> value "srvType".

Before changing the "srvType" of an existing service profile be sure that the profile is closed. To verify the connection state of the service profile enter the read command AT^SISI. Only when <srvState>=2 is returned for this specific service profile you can change its service type.

Socket	MLB-S-BGS2-BW acting as client or server (listener) for TCP or UDP.
Transparent	MLB-S-BGS2-BW acting as Transparent TCP client or Transparent UDP client.

Ftp	MLB-S-BGS2-BW acting as FTP client.
Http	MLB-S-BGS2-BW acting as HTTP client.
Smtp	MLB-S-BGS2-BW acting as SMTP client.
Pop3	MLB-S-BGS2-BW acting as POP3 client.
none	Reset Internet service profile settings. Operation is not allowed if profile is in use, i.e. it was activated via AT^SISO.

5.8.3 AT^SISO Internet Service Open

AT^SISO=<srvProfileId>

< srvProfileId > (num)

<srvProfileId> 0 ... 9 specified with AT^SISS.

5.8.4 AT^SIST Enter Transparent Access Mode

AT^SIST=<srvProfileId>

< srvProfileId > (num)

<srvProfileId> 0 ... 9 specified with AT^SISS.

5.8.5 +++ Escape from Data Mode to AT Command Mode

+++ esacape sequence is only available during a CSD call or a GPRS connection. The +++ character sequence causes the MLB-S-BGS2-BW to pause data mode and return to AT command mode.

5.8.6 AT^SISC Internet Service Close

AT^SISC=<srvProfileId>

< srvProfileId > (num)

<srvProfileId> 0 ... 9 specified with AT^SISS.

5.8.7 AT^SISW Internet Service Write Data

AT^SISW=<srvProfileId>, <reqWriteLength>[, <eodFlag>[, <mode>]]

^SISW: <srvProfileId>, <cnfWriteLength>, <unackData>

Unsolicited Result Code

^SISW: <srvProfileId>, <urcCauseId>

Data availability status of the Internet service configured with AT^SISS has changed. The URC is issued when the service is ready to accept new user data. In this context the URC is also issued for the Transparent TCP or Transparent UDP client that supports data transfer via AT^SIST only. URC is not supported for Transparent TCP Listener services.

The URC is disabled in polling mode. See AT^SCFG, parameter "Tcp/WithURCs", <tcpWithUrc>.

< srvProfileId >(num)

<srvProfileId> 0 ... 9 specified with AT^SISS. Transparent TCP Listener services are not supported.

< reqWriteLength >(num)

0...1500

Specifies the number of bytes to be sent with AT^SISW or, if set to 0, requests the amount of data already sent with AT^SISW but not yet acknowledged:

- Parameter <reqWriteLength> may be 1...1500 bytes to specify the amount of data to be sent with AT^SISW.
- If parameter <reqWriteLength> equals 0, AT^SISW does not expect any data, but a normal query is perfomed. This allows the application to explictly request, in particular at the end of an upload job , the amount of unacknowledged data at the TCP layer indicated by <unackData>.
- In interactive text mode, <reqWriteLength> must be set to any value greater than 0 (but not necessarilythe precise number of bytes). If set to 0 in interactive text mode, <reqWriteLength> would be interpreted as query for unacknowledged data and, thus, prevent data transfer.
- If Socket service is selected with UDP protocol
  - <reqWriteLength>=0 can be used to send an empty UDP packet;
  - it is recommended that the size of each data packet be limited to 1460 bytes. Otherwise, it is possible that the following URC occurs: "^SIS: <id>, 0, 9, The supplied buffer was too small / large".

< eodFlag >(num)

End of data indication flag.

Parameter is ignored for HTTP, POP3, FTP download.

[0] No end of data. Other data may follow to be transmitted via the Internet service.

1 End of data is signalled to the Internet Service. Further AT^SISW write commands return an error response. However, reading data may be possible. The <eodFlag> is effective only if the <reqWriteLength> equals <cnfWrite-Length>, in particular if the <reqWriteLength> equals 0.

If <mode> equals 1 the <eodFlag> is effective only if the write operation has been finished with CTRL-Z.

< mode >(num)

Control how the application provides the data bytes to be sent.

[0] Binary mode

This mode allows sending a number of bytes defined with parameter <reqWriteLength>.

1 Interactive text mode

This mode allows the user to type and send 8-bit ASCII characters while the service is open. Ctrl-Z terminates data input and causes the data to be transferred.

Interactive text mode requires that the <reqWriteLength> is set to any value greater than 0 (though it is not necessary to specify the precise number of bytes). In this case the <cnfWriteLength> parameter indicates the maximum length of the data stream without control character CTRL-Z.

In interactive text mode, the following characters are predefined as control codes:

• BACKSPACE ("\x08") deletes the last given character,

• CTRL-Z ("\x1a") terminates the input,

• ESC ("\x1b") aborts the command. An <eodFlag> is ignored in this case.

The V.25 command ATE also controls the echo mode of the interactive text mode. If echo is enabled (ATE1) all characters are echoed until <cnfWrite-Length> is reached. Any attempt to input further data ends up with the warning message 4001 indicated after the data stream has been completed with CTRL-Z, nevertheless all data within the range of <cnfWriteLength> will be sent. See also Section 10.14, Internet Service URC "^SIS". ATE0 disables the echo mode generally.

< cnfWriteLength >(num)

0...1500 Confirmed number of data bytes which can be transmitted via the Internet service configured in <srvProfileId>. In binary mode (see <mode>) this number may be less or equal to the value requested with <reqWriteLength>.

The application has to deliver exactly the number of bytes indicated by <cnfWriteLength>. A 0 value means that no data can be written at this time, i.e. it serves as a flow control mechanism.

In interactive text mode, <cnfWriteLength> indicates the maximum number of bytes it can process. Characters above the indicated number are ignored.

< unackData >(num)

Number of data bytes already sent but not yet acknowledged at the TCP layer.

The value is constantly changing until the entire upload job has completed. If the value equals 0 all data sent so far is acknowledged.

In binary mode, <unackData> includes the <cnfWriteLength> value of the pending write operation. There-fore, the very first write operation of an upload job returns identical values for <cnfWriteLength> and <unackData>.

This mechanism allows the host application to easily verify whether or not the remote host has successfully received the data.

Parameter is not applicable to HTTP, POP3, SMTP, Socket with UDP protocol, TCP Socket client with secure connection (TLS), Transparent TCP client with secure connection (TLS). For these services the counter is always set to 0.

< urcCauseId >(num)

1	The service is ready to accept new user data.
2	Data transfer has been finished successfully and Internet service may be closed without loss of data.

5.8.8 AT^SISR Internet Service Read Data

AT^SISR=<srvProfileId>, <reqReadLength>

^SISR: <srvProfileId>, <cnfReadLength>[, <remainUdpPacketLength>]

Unsolicited Result Code

^SISR: <srvProfileId>, <urcCauseId>

Data availability status of the Internet service configured with AT^SISS has changed. The URC is issued when:

• data is available after opening an Internet service or

• less data was confirmed (in <cnfReadLength>) than requested (with <reqReadLength>) during the last "Read Data" operation and new data is available.

< srvProfileId > (num)

<srvProfileId> 0 ... 9 specified with AT^SISS. Transparent TCP Listener services are not supported.

< reqReadLength > (num)	
0	Peek Operator: Query number of received bytes within internal buffers. The behaviour of the peek operator depends on the selected Internet service,i.e. it may not be supported by all IP Services. For "Socket" service configured for UDP the size of the next available UDP packet is returned.
1...1500	Requested number of data bytes to be read via the Internet service specified in <srvProfileId>.
-2	Indicates end of data. Data transfer has been finished (all data have been read) and the service can be closed with AT^SISC.
-1	Applies only to HTTP: Querying number of available bytes is not supported by the HTTP service.
0	Indicates that no further data is available at the moment.
>0	Number of available data bytes. The range is determined by <reqRead-Length>: If <reqReadLength> was greater than 0, then <cnfReadLength> may be less or equal to the value requested with <reqReadLength>.

If <reqReadLength> equals 0 (peek operator) the value indicated by <cnfReadLength> may be greater than 1500.

< urcCauseId >(num)

Indicates whether or not data is available for reading with AT^SISR.

1	Data is available and can be read by sending the AT^SISR command. The URC appears when less data was confirmed (in <cnfReadLength>) than requested (with <reqReadLength>) during the last "Read Data" operation and new data is available.
2	End of data. Data transfer has completed (all data read). The service can be closed with AT^SISC.

< remainUdpPacketLength >(num)

Optional third parameter of the AT^SISR write command response displayed only if the Socket service uses the UDP protocol.

The reception of each datagram must be completed before the next datagram can be received. This may be a problem if the buffer of the host application is limited and not designed to handle the maximum packet size of 1500 bytes. To compensate this, the host is advised to request, via <reqReadLength>, an amount less or equal its maxmimum buffer capacity and wait for the resulting AT^SISR write command response with parameter <remainUdpPacketLength>. The benefit of this approach is that the host may properly receive all parts of a UDP datagram, as after each received data part the number of remaining bytes is synchronized, until reading

the datagram is finished.

If the currently read datagram is smaller than the number of bytes requested by the host the <remainUdpPacketLength> parameter is omitted.

Further write attempts with AT^SISR are denied as long as the <remainUdpPacketLength> is unequal 0 or is not omitted. In this case the service returns "+CME ERROR: operation of service temporary not allowed".

0	Indicates that all bytes of the current UDP datagram are read.
1...(max. data size)-1	Indicates that the currently read UDP datagram is not yet complete. The displayed value is the remaining number of bytes. <remainUdpPacketLength> is unequal 0 until reading all parts of the current datagram is finished.

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7 ORDERING INFORMATION

MLiS Product

MLB-S-BGS2-BW: The Dual/Qual Band GSM/GPRS terminal, it supports standard AT commands for GPRS connection and SMS.

Power Adaptor

MLA-PSP-100: Input: AC 100 ~ 240V Output: 9V/1.3A DC Jack 5.5/2.1

MLA-PSP-101: US Adapter Plug

MLA-PSP-104: British Adapter Plug

MLA-PSP-103: European Adapter Plug

MLA-PSP-102: Australia Adapter Plug

MLA-CAB-001: DC Jack power line 5.5/2.1

Cable

MLA-CAB-103: RJ45 to DB9 (w/dc jack) Cable

Antenna

MLA-ANT-002: Magnet standalone antenna

MLA-ANT-001: PCB antenna

Notes:


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