

# AUBTM-12 bluetooth module

## External Commands

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## REVISION HISTORY

Revision Number	Release Date	Authors	Reason of Revisions	Review Date	Reviewers
00.01		Jie Liu	Initial Draft		
00.02	4/32007	Jie Liu	Add RING command		

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# 1. Introduction

## 1.1 Background

AUBTM-12 is a Bluetooth v1.2 module with A2DP/AVRCP/HANDSFREE/HEADSET/OPP profiles. The module is intended to be integrated into another HOST system which requires Bluetooth functions. The HOST system could send commands to AUBTM-12 through a UART. AUBTM-12 will parse the commands and execute proper functions, e.g. connect to another Bluetooth device, initiate a phone call.

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## 1.2 Purpose

The purpose of this document is to define the protocol between the HOST system and AUBTM-12 through the UART connection.

The protocol heavily depends on the AT commands of 3GPP 27.007[1] and 27.005 GSM[1] recommendations. Most of the commands are the same with the GSM standard, with several special commands defined by AUSTAR technology.

## 1.3 Scope

This document is largely concerned with the following contents:

1. the package structure of protocol,
2. the definition of each command sent by the HOST system and its corresponding function.
3. The definition of each response sent by AUBTM-12 and its corresponding meaning.

## 1.4 Constraint and Limitation

- ✧ All operations should stick to local laws and regulations.

## 1.5 Acronyms and Abbreviations

Table 1-1 Acronyms and Definitions

Acronym	Definition
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Acronym	Definition

## 1.6 Terms

Table 1-2 Glossary of Terms

Term	Definition
HOST	The system which integrate AUBTM-12
UART	universal asynchronous receiver/transmitter
Bluetooth	
Profile	
A2DP	
AVRCP	
HANDSFREE	
HEADSET	
OPP	
SPP	
Bluetooth address	
Pin code	

## 1.7 Document Organization

## 1.8 Document Location



## 2. Protocol Overview

### 2.1 General

For the exchange of the commands and unsolicited results codes, the format, syntax and procedures of 3GPP 27.007 [1] shall be taken as reference. The following rules specifically apply for this protocol.

- Only one command (or unsolicited result code) per command line needs to be expected.
- The HOST, by default, shall not echo the command characters.
- The HOST shall always transmit result codes using verbose format.
- The characters below shall be used for AT commands and result codes formatting:

<cr> corresponds to the *carriage return (0/13)* as stated in [6]

<lf> corresponds to the *line feed (0/10)* as stated in [6]

- The format of an AT command from the HF to the AG shall be:

<AT command><cr><lf>

- The format of the OK code from the AG to the HF shall be:

<cr><lf>OK<cr><lf>

- The format of the generic ERROR code from the AG to the HF shall be:

<cr><lf>ERROR<cr><lf>

- The format of an unsolicited result code from the AG to the HF shall be:

<cr><lf><result code><cr><lf>

## ***2.2 Message Format***

The GSM 07.07 [1] format and syntax rules shall be taken as the reference for these commands.

## 2.3 Commands Definition

### 2.3.1 Overview of supported commands

Table 2-1 Command Code Definition

Code	Definition	Details
AT+INQ	Inquiry for mobile phones nearby	Refer to 2.4.1
AT+CON	Connect to a mobile phone	Refer to 2.4.2
AT+DCON	Disconnect with a mobile phone	Refer to 2.4.3
ATD	Dial a number through the mobile phone	Refer to 2.4.4
AT+CUP	Hang up a call	Refer to 2.4.5
ATA	Answer a call	Refer to 2.4.6
AT+NAME	Set Bluetooth name	Refer to 2.4.7
AT+PIN	Set Bluetooth PIN code	Refer to 2.4.8
+RING	Notify a incoming call	Refer to 2.4.9

## 2.4 Message Definition

### 2.4.1 AT+INQ Inquiry for mobile phones nearby

AT+INQ=?	Response  OK
Execute command  AT+INQ	Response  +INQ:<Bluetooth address>,<name>[,<Bluetooth address>,<name>]  OK/ERROR  Parameter  <Bluetooth address> format: xx:xx:xx:xx:xx:xx, “ x” is from 0 to F  <name> the name of the device  Example:  <cr><lf>+INQ:00:12:39:00:34:35,” Tom’ s Mobile” ,00:13:45:46:99:23,” Jerry” <cr><lf>

## 2.4.2 AT+CON Connect to a mobile phone

AT+CON=?	Response  OK
Execute command  AT+CON=<Bluetooth address>,<profile>	Parameter  <Bluetooth address> format: xx:xx:xx:xx:xx:xx, " x" is from 0 to F  <profile> " 0" =handsfree  " 1" =headset  " 2" =spp  " 3" =opp  Response  +CON:<n>  Parameter  <n>          " 1" =success  " 0" =fail  OK/ERROR  Example:

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## 2.4.3 AT+DCON Disconnect with a mobile phone

AT+DCON=?	Response  OK
Execute command  AT+DCON	Response  OK/ERROR

#### 2.4.4 ATD Dial a number through the mobile phone

ATD=?	Response  OK
Execute command  ATDdd..dd	Parameter  dd..dd the phone number to dial  Response  OK/ERROR  Example:

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#### 2.4.5 AT+CUP Hang up a call

AT+CUP=?	Response  OK
Execute command  AT+CUP	Response  OK/ERROR  Example:

#### 2.4.6 ATA Answer a call

ATA=?	Response  OK
Execute command  ATA	Response  OK/ERROR  Example:

#### 2.4.7 AT+NAME Set Bluetooth name

AT+NAME=?	Response
-----------	----------

	OK
Execute command  AT+NAME=<name>	Parameter  <name> the device name to return when other Bluetooth devices inquiry for name. The maxim length of name is characters.  Response  OK/ERROR  Example:

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#### 2.4.8 AT+PIN Set Bluetooth PIN code

AT+PIN=?	Response  OK
Execute command  AT+PIN=<pin>	Parameter  <pin> The pin code to return when other Bluetooth devices pair with.  The maxim length of pin code is 16 digits.  Response  OK/ERROR  Example:

#### 2.4.9 +RING Notify a incoming call (unsolicited)

Execute command  +RING=<call number>,<caller ID>	Parameter  <call number> The number of the incoming call. It may contains digits from 0-9 and ' + ' .  <caller ID>the display name of the caller. For some mobile phone, it may not send the caller ID and in that case this is optional.  Response
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	<p>none</p> <p>Example:</p> <p>+RING=+8657185122538,AUSTAR</p> <p>+RING=+8657185027136</p>
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### 3. Process Definition

#### 3.1 *Connection Handshake*



## 4. References

[1] 3GPP 27.007 v6.8.0 now supersedes and replaces ETS 300 916, “ Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME) (GSM 07.07 version 7.5.0)” <http://www.3gpp.org/ftp/Specs/html-info/27007.htm>

[2] “ GSM 02.30 (version 7.1.0): Digital cellular telecommunications system (Phase 2+); Man-Machine Interface (MMI) of the Mobile Station (MS)”

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