



Application Note

BRTSYS_AN_065

IoTPortal Gateway M2M Configuration

Version 1.0

Issue Date: 07-10-2024

Use of BRTSys devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify, and hold BRT Systems harmless from any and all damages, claims, suits or expense resulting from such use.

BRT System Pte Ltd (BRTSys)

1 Tai Seng Avenue, Tower A, #03-01, Singapore 536464

Tel: +65 6547 4827

Web Site: www.brtsys.com

Copyright © BRT Systems Pte Ltd

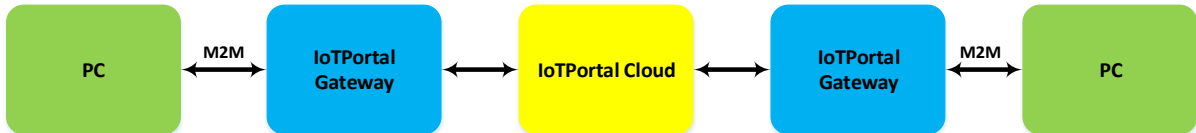
Table of Contents

1	Introduction	3
2	M2M Port Setup	4
2.1	Hardware Required	4
2.2	M2M RJ12-USBA Cable Connection Diagram	4
3	Machine-to-Machine (M2M) GUI Overview	5
4	Creating a Serial Connection.....	8
5	Test the connection with Attention (AT) Commands	11
5.1	Verify Gateway Communication (AT+CT+S)	11
5.2	Send SMS (AT+M)	12
5.3	Send Email (AT+E)	13
5.4	Send Notification (AT+N)	14
6	Contact Information	15
Appendix A – References		16
Document References		16
Acronyms and Abbreviations.....		16
Appendix B – List of Tables & Figures		17
List of Tables.....		17
List of Figures		17
Appendix C – Revision History		18

1 Introduction

The IoTPortal Gateway consists of a serial port called the M2M port. M2M stands for Machine-to-Machine communication. Using the M2M port, a machine (e.g., PC desktop) attached to the M2M port can send messages to another local or remote machine attached to the M2M port of another gateway, or it can send messages directly to users. Refer to **Figure 1**. This communication is supported via AT commands.

Communication Path 1



Communication Path 2

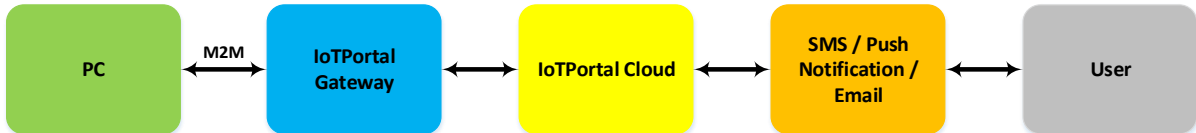


Figure 1 - M2M Port Communication

2 M2M Port Setup

2.1 Hardware Required

- IoTPortal Gateway
- LDSBus M2M RJ12-USBA cable (Part Number: LA0901)
- Any Computer (Laptop / PC), running a serial communications program such as [Tera Term](#)¹.

2.2 M2M RJ12-USBA Cable Connection Diagram

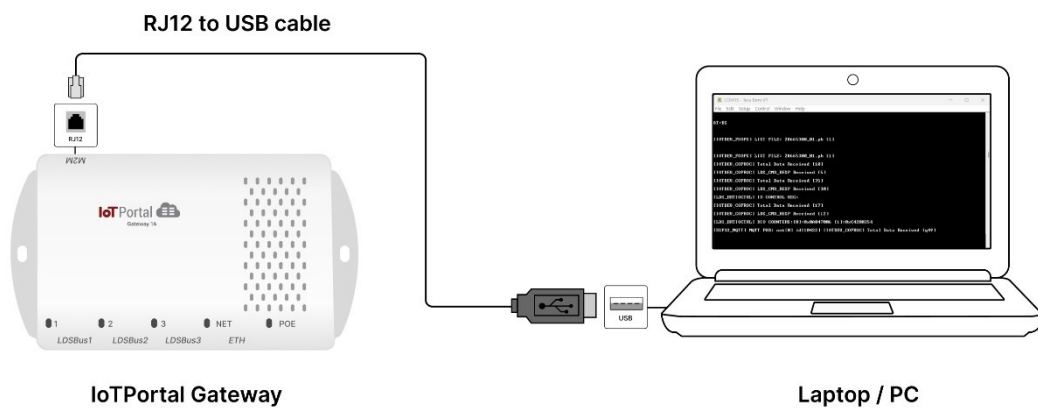


Figure 2 – M2M RJ12-USBA Cable Connection Diagram

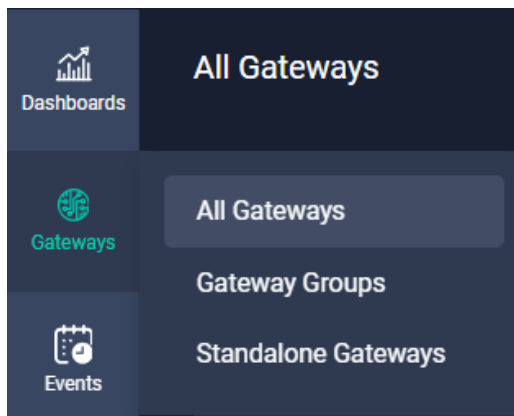
¹ As this is a link to an external site, BRTSys is not responsible for the content of external sites, third-party utilities, etc.

3 Machine-to-Machine (M2M) GUI Overview

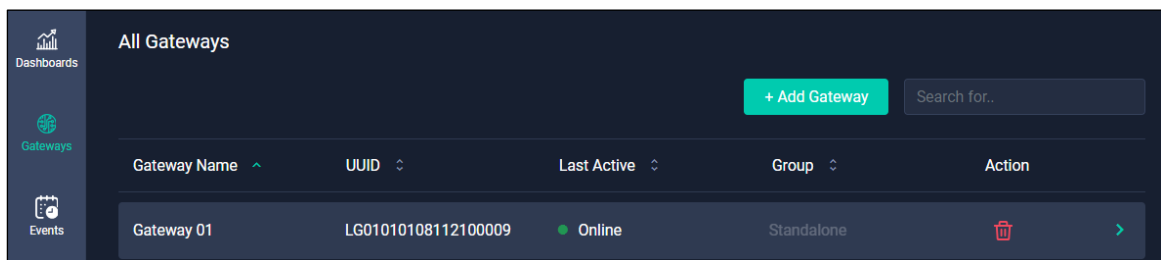
The following illustration is given based on the assumption that the user has added gateways to his personal account or to an organization. For more information on IoTPortal web application refer the user guide in <https://brtsys.com/resources/>.

To access the M2M connection interface,

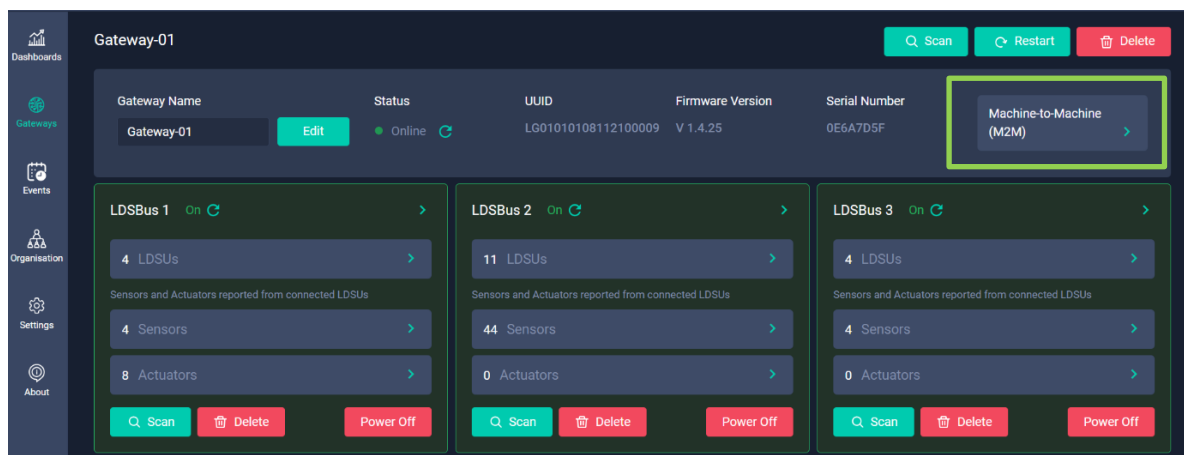
- Login to IoTPortal – www.iotportal.com.
- Click **Gateways > All Gateways**.



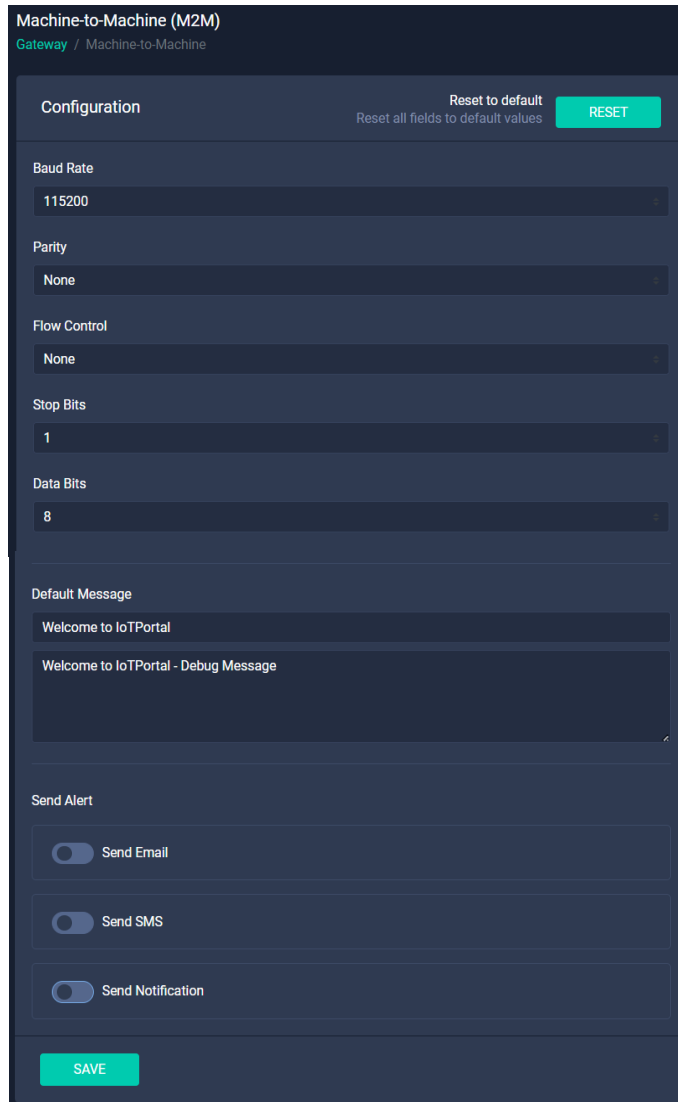
- Click on the **Gateway** to access the Gateway details interface.



- Click on **Machine to Machine (M2M)** to access the M2M configuration interface.



- The M2M configuration interface is displayed.



Note:

- To receive SMS - user must have registered and verified his mobile number.
- To receive push notification - user must have installed IoTPortal app on his phone and logged into his account.

Refer to Error! Reference source not found. for more information related to each field/parameter. The TTL UART settings (Baud Rate, Parity, Flow Control, Stop and Data Bits) must match the settings of the serial port communication settings on the PC side. Refer to section 5 for more information related to testing the connection with AT commands.

Field Name	Common Values / Types	Usage
Baud Rate / Speed	1200, 9600, 19200, 38400, 57600, 115200, 230400	
Parity	<u>None (N)</u> : No parity bit is used. <u>Even (E)</u> : The number of 1s in the data bits should be even. <u>Odd (O)</u> : The number of 1s in the data bits should be odd.	

Flow Control	<u>None</u> : No flow control. <u>Hardware (RTS/CTS)</u> : Uses Ready to Send (RTS) and Clear To Send (CTS) signals. <u>Software (XON/XOFF)</u> : Uses software control characters to manage the flow.	
Stop Bits	<u>1 Stop Bit</u> : Indicates the end of one byte of data. <u>2 Stop Bits</u> : Provides a longer interval for devices that need more time to process the data.	
Data Bits	7 Bits 8 Bits (most common) 9 Bits	
Default Message		To confirm that the M2M communication link is configured correctly, an AT+CT+S command may be sent to the gateway. Refer to Section 5 for more details.

Table 1 - M2M Configuration Parameters

4 Creating a Serial Connection

To create a serial connection, download any terminal emulator like Tera Term, Putty, Terminal, or similar.

For illustrative purposes, Tera Term for Microsoft Windows is used.

1. Download and install Tera Term; Upon installation, start Tera Term.
2. The **Tera Term: New Connection** pop-up window is displayed. Select **"Serial"** radio button; select the serial port to be enabled from the Port drop down menu. For example, COM3, COM15. Click **[OK]**.

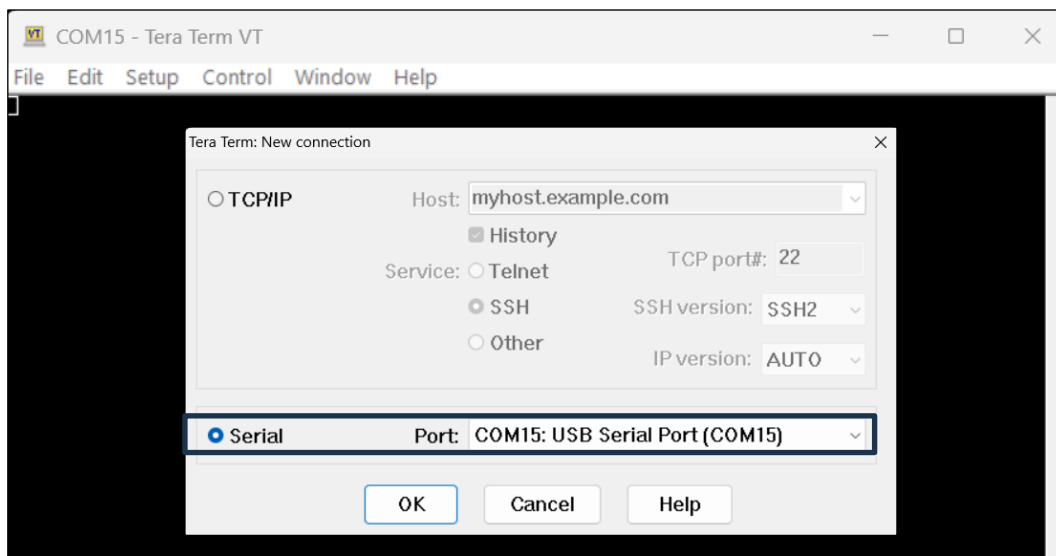


Figure 3 – Tera Term New Connection Window

Note: The New connection window can be accessed by navigating to **File > New Connection**.

3. To access the Serial port setup selection, select **Setup > Serial Port**.

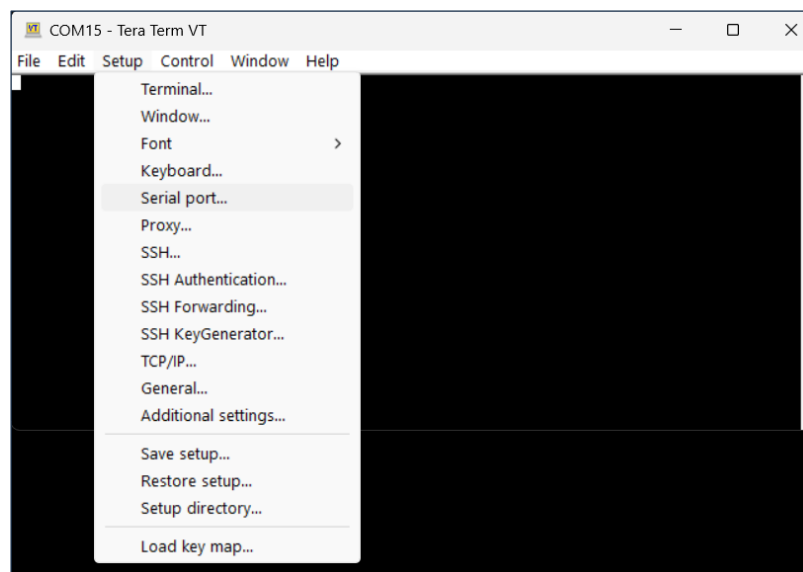


Figure 4 – Setup – Serial Port Menu

- The configuration settings are displayed. Verify if they match the settings provided in the M2M configuration interface in IoTPortal Web Application. Refer to Error! Reference source not found. for details of each field. Upon verifying, click **[New setting]**.

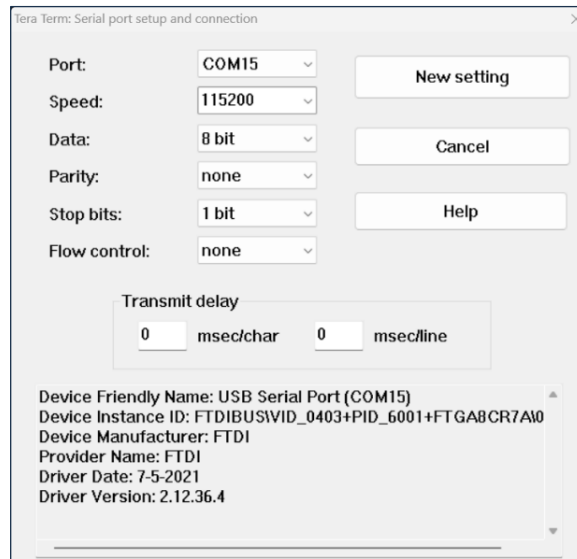


Figure 5 – Serial Port Setup and Connection Window

- Upon clicking on **[New setting]**, The Tera Term Console is opened.

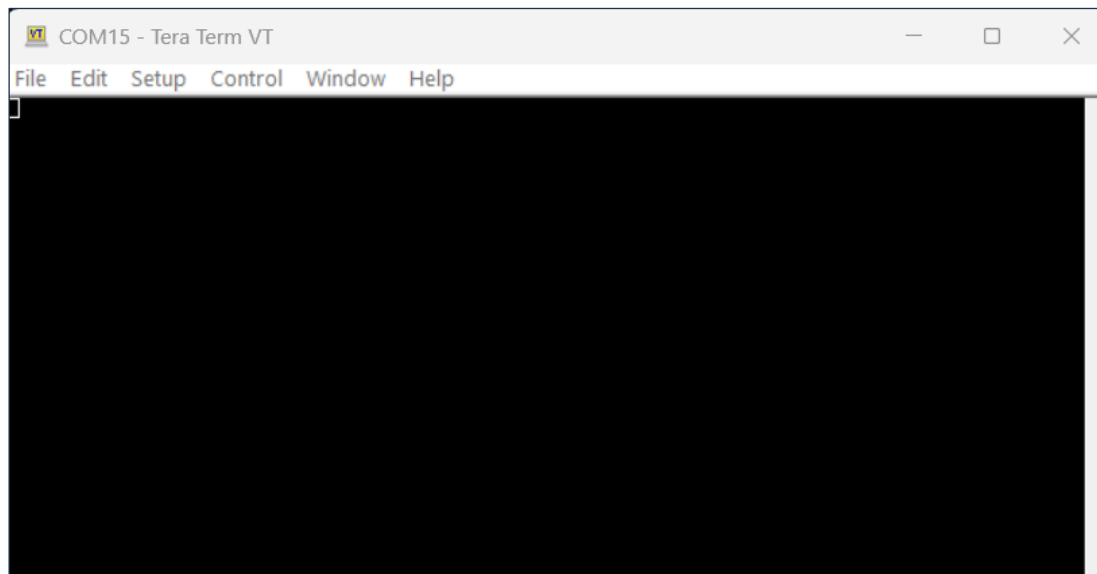


Figure 6 – Tera Term Console

6. Select **Setup > Terminal**.

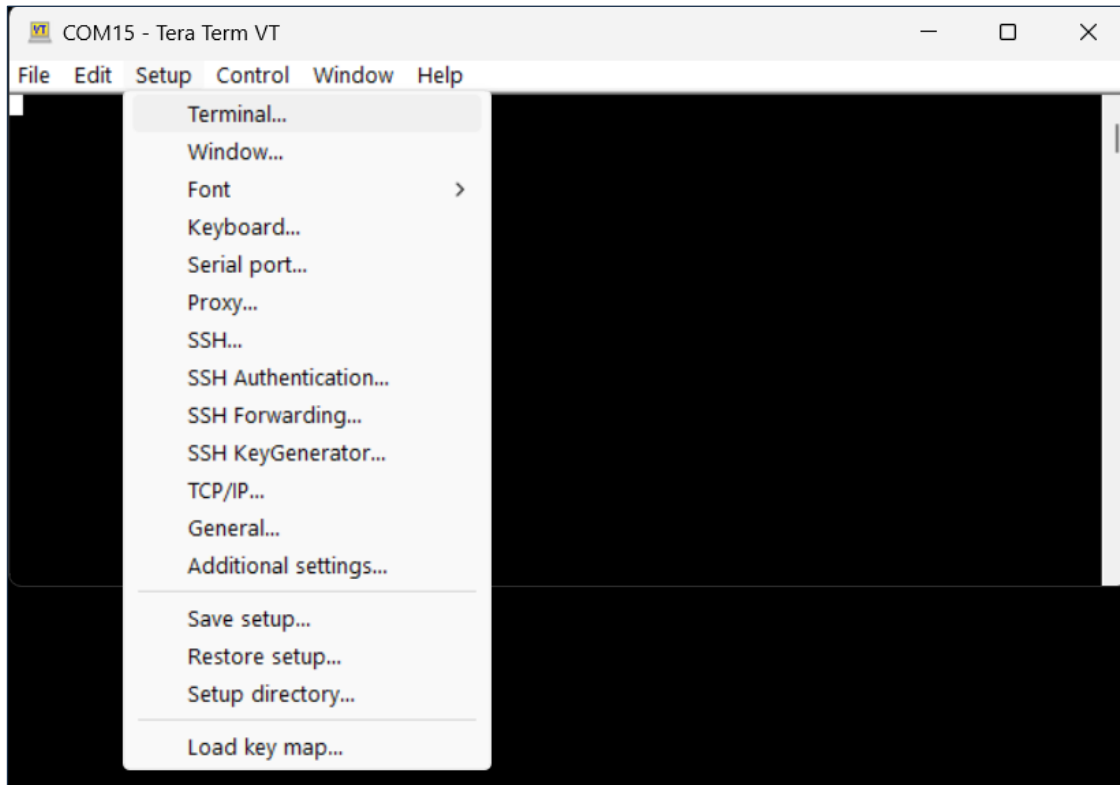


Figure 7 – Setup – Terminal Menu

7. The Terminal Setup window is displayed. Click on the **Local echo** checkbox to view your commands. Click **[OK]**.

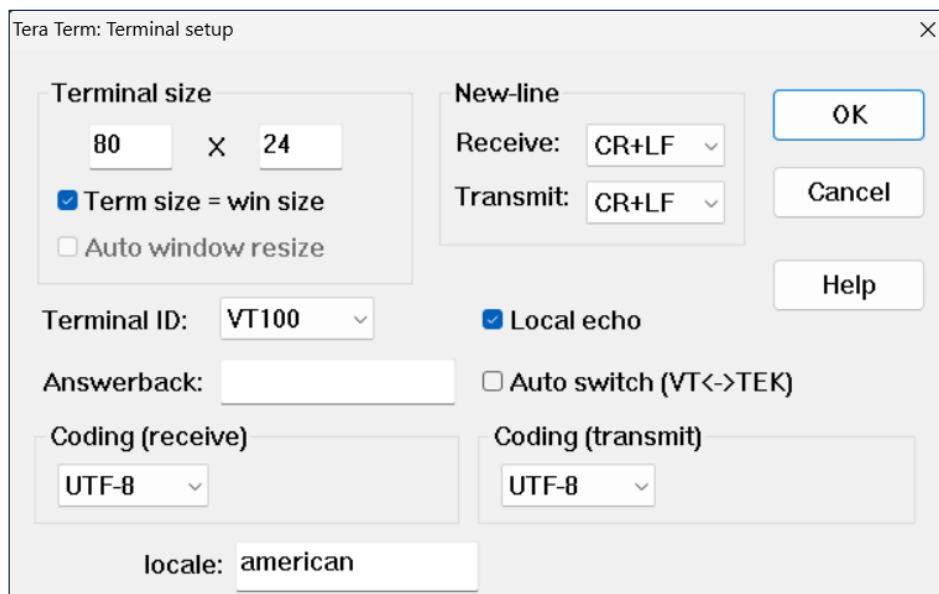


Figure 8 – Tera Term: Terminal Setup Window

5 Test the connection with Attention (AT) Commands

"AT" commands ("AT" means "attention") are instructions used for controlling modems. The command set consists of a series of short text strings that can be combined to provide commands for operations like dialing, managing SMS functions, and changing connection parameters.

5.1 Verify Gateway Communication (AT+CT+S)

The **AT+CT+S** command displays information about gateway communication. In case the gateway communication information is not displayed, please check the connection settings (refer to Error! Reference source not found.).

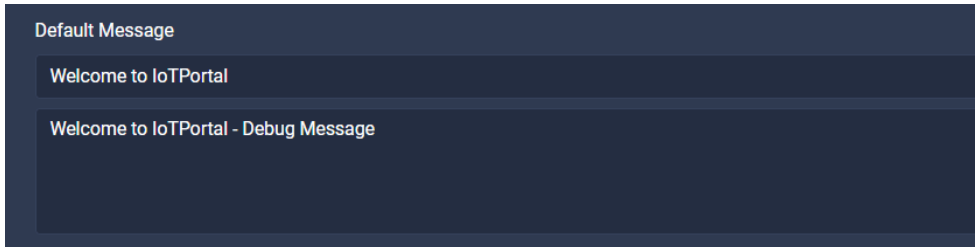


```
COM15 - Tera Term VT
File Edit Setup Control Window Help
AT+CT+S
{"uid":"LG010108112100009","sno":"0E6A7D5F","esp_ver":"1.4.31","ft9xx_ver":"1.4.31","ca_cert":"pass","client_cert":"pass","client_key":"pass","emac":"30:83:98:52:C7:47","wmac":"30:83:98:52:C7:44","poe":"802.3AF","watts_total":"9600","watts_used":"0","watts_p1":"0","watts_p2":"0","watts_p3":"0","pwr_p1":"0","pwr_p2":"0","pwr_p3":"0","fault_p1":"4","fault_p2":"4","fault_p3":"4","rtc_sync":"1","rtc_battery":"0","iface":"ethernet","ip":}
```

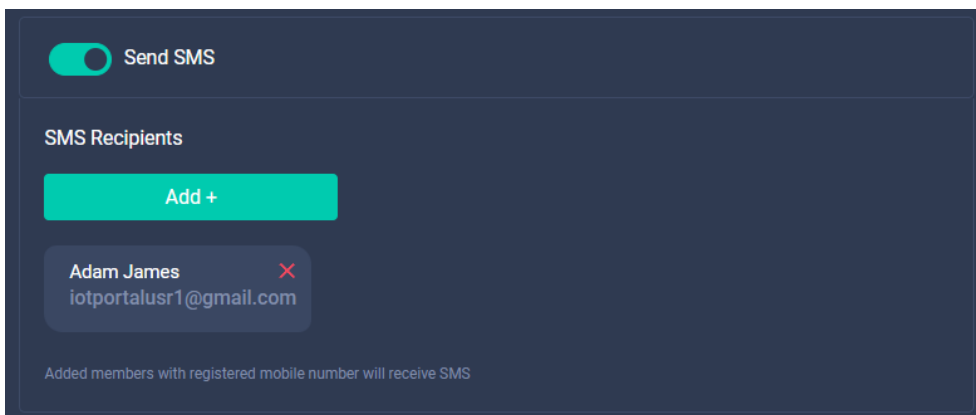
5.2 Send SMS (AT+M)

To send SMS,

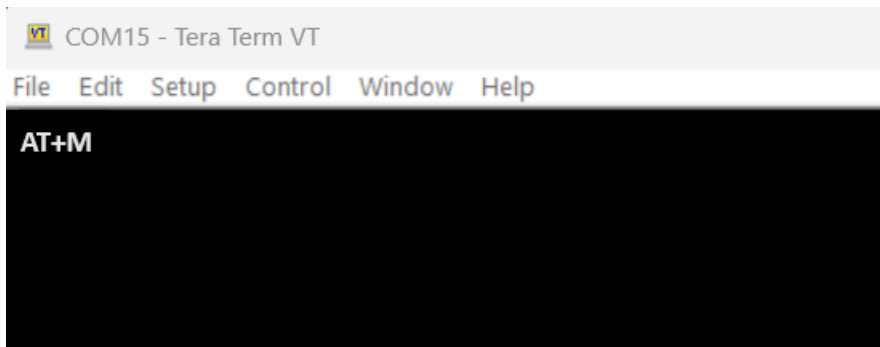
- Enter the custom Default Message.



- Configure SMS and Save.



- Go to Tera Term console, type AT+M press <Enter>.

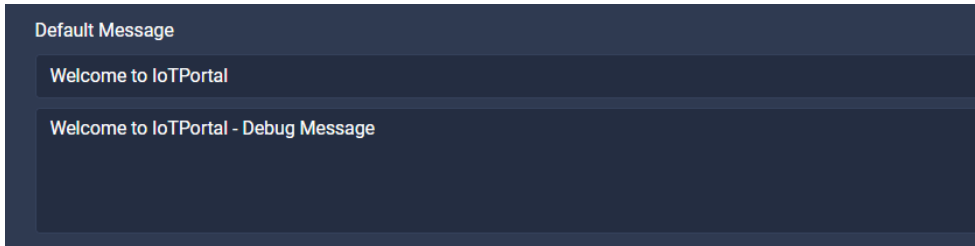


- User will receive SMS with specified default message.

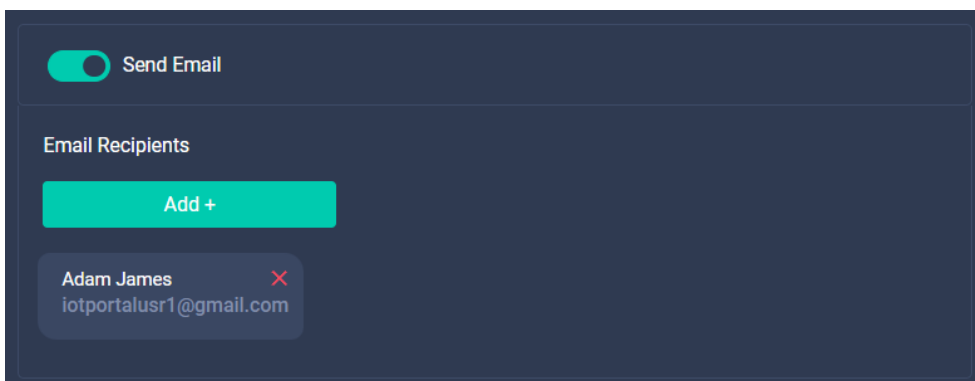
5.3 Send Email (AT+E)

To send email,

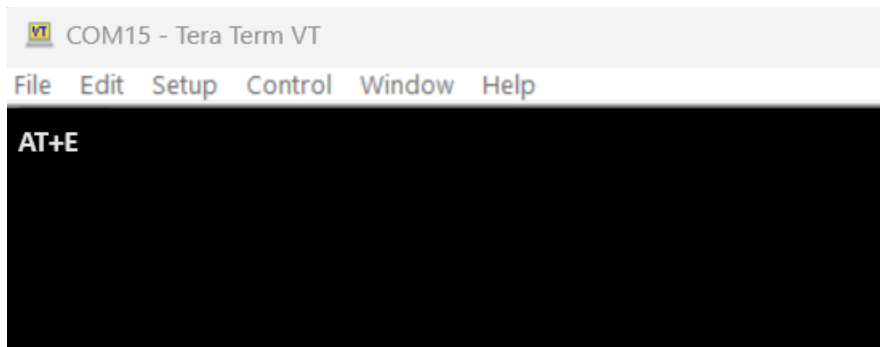
- Enter the custom Default Message.



- Configure Email and Save.



- Go to Tera Term console, type **AT+E** and press <Enter>.

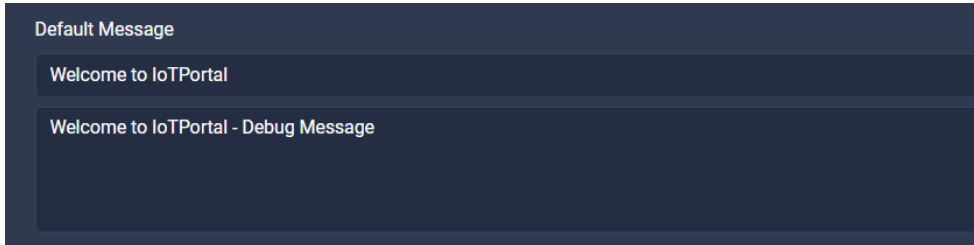


- User will receive email with specified default message.

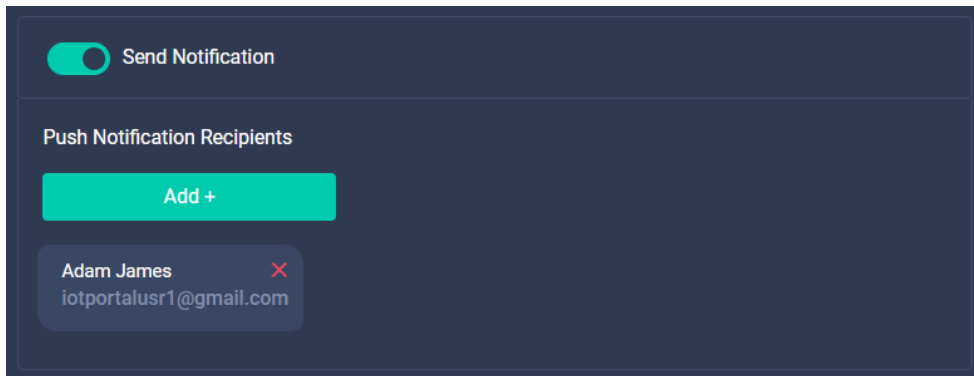
5.4 Send Notification (AT+N)

To send push notification –

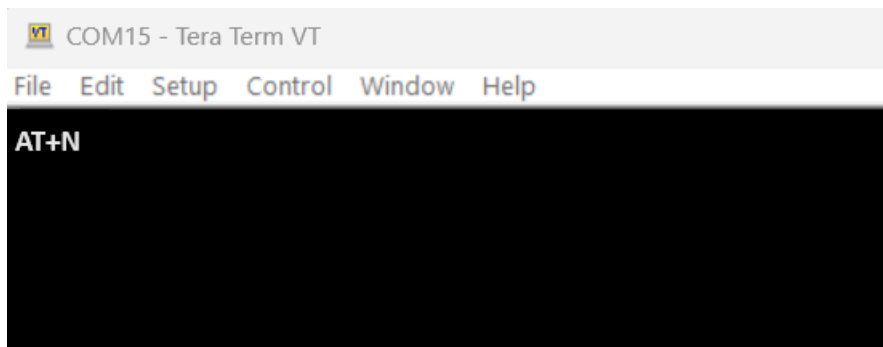
- Enter your custom Default Message.



- Configure Push Notification and Save.



- Go to Tera Term console, type AT+N press <Enter>.



- User will receive push notification with specified default message only if the user has enabled the notification settings in their mobile phone.

Note:

- **Local Echo:** If you don't see the commands you type, you may need to enable local echo in the terminal settings. Go to **Setup -> Terminal** and check the "**Local echo**" option.
- **Logging:** You can enable logging in Tera Term to save the session output for debugging purposes. Go to **File -> Log** and specify the file name and location. While saving, if the timestamp is added, it will be displayed as part of the log.

6 Contact Information

Refer to <https://brtsys.com/contact-us/> for contact information.

System and equipment manufacturers and designers are responsible to ensure that their systems, and any BRT Systems Pte Ltd (BRTSys) devices incorporated in their systems, meet all applicable safety, regulatory and system-level performance requirements. All application-related information in this document (including application descriptions, suggested BRTSys devices and other materials) is provided for reference only. While BRTSys has taken care to assure it is accurate, this information is subject to customer confirmation, and BRTSys disclaims all liability for system designs and for any applications assistance provided by BRTSys. Use of BRTSys devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify, and hold harmless BRTSys from any and all damages, claims, suits, or expense resulting from such use. This document is subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Neither the whole nor any part of the information contained in, or the product described in this document, may be adapted, or reproduced in any material or electronic form without the prior written consent of the copyright holder. BRT Systems Pte Ltd, 1 Tai Seng Avenue, Tower A, #03-01, Singapore 536464. Singapore Registered Company Number: 202220043R.

Appendix A – References

Document References

NA

Acronyms and Abbreviations

Terms	Description
AT Commands	Attention Commands used to control and configure IoT devices
M2M	Machine-to-Machine is direct communication between devices using any communications channel, including wired and wireless.
PC	Personal Computer is a computer designed for individual use
USB	Universal Serial Bus is an industry standard that allows data exchange and delivery of power between many types of electronics.

Appendix B – List of Tables & Figures

List of Tables

Table 1 - M2M Configuration Parameters..... 7

List of Figures

Figure 1 - M2M Port Communication 3
Figure 2 – M2M RJ12-USBA Cable Connection Diagram 4
Figure 3 – Tera Term New Connection Window 8
Figure 4 – Setup – Serial Port Menu 8
Figure 5 – Serial Port Setup and Connection Window 9
Figure 6 – Tera Term Console..... 9
Figure 7 – Setup – Terminal Menu..... 10
Figure 8 – Tera Term: Terminal Setup Window 10

Appendix C – Revision History

Document Title: BRTSYS_AN_065 IoTPortal Gateway M2M Configuration
Document Reference No.: BRTSYS_000138
Clearance No.: BRTSYS#088
Product Page: <http://brtsys.com/>
Document Feedback: [Send Feedback](#)

Revision	Changes	Date
1.0	Initial Release	07-10-2024