

M2Micro

MCC6000-CD01

Installation Guide

Statement

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FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference.
- 2) this device must accept any interference received, including interference that may

cause undesired operation.



Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be located or operating in conjunction with any other antenna or transmitter.

“To comply with FCC RF exposure compliance requirements, this grant is applicable to only mobile configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.”

Preface

Manual instruction

This Installation Guide describes the hardware features, installation methods and points for attention during installation.

To avoid possible equipment damage or personal injury before and during the installation process, please read this manual carefully.

Overview of this guide

| Chapter | Instruction |
|----------------|--|
| 1-Introduction | Outlined the basic functionality and product features. |
| 2-Installation | Describes product installation methods and attentions. |
| A-Data sheet | Lists the hardware specifications. |

Version

| Date | Version | Update description |
|------------|-----------------|-----------------------------|
| 2011-11-23 | R20111123-V1.00 | Manual initial release. |
| 2013-2-22 | R20130222-V1.01 | Increase FCC certification. |

Conventions

Unless otherwise specified, the terms of "systems", "equipment", "products" in the following parts of this manual refer to the MMR6000 meter reading system.

Two signs are used herein to draw the users' attention during the operation, with meanings as follows:



This icon is used to list advertent items during operation and to remind the users of undesirable consequences due to inaccurate operation, such as potential damage to the equipment or otherwise.



This icon is to give supplementary explanation for the operation details described.

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1

Introduction

1.1 Product Overview

Automatic Meter Reading (AMR), also called remote meter reading system, is a new meter reading way to finish meter reading without people on site. Via communication technology, it can be automatically transferred to the data in Watt-hour meter the accounting and management center for efficient handling. Also, it can be provided real-time measurement information to help the users to optimize their energy supply solutions.

Aiming at AMR application, M2Micro launches its MMR6000 AMR system, which supports ad hoc network and data collection for various types of meters. It is mainly made up of MRU6000 terminal units and MCC6000 control units and OMS meter management system.

The main function of MCC6000 is remote data forwarding. In downlink direction, it receives data collected from meters by the wireless terminal units, and in uplink direction, it sends data to OMS meter management system by wired connection or GSM wireless network.

1.2 Features

- Modular design, existing meters can be upgraded by attaching wireless AMR modules.

- Support hybrid meter reading, can collect data of water meter, gas meter, etc.
- Based on M2Micro developed chips, MAC and PHY layer can work together perfectly.
- Support 433.92MHz frequency band, with good transportation distance and penetration.
- Support Ad-hoc network, can be deployed to complicate environment.

1.3 Demonstration of the type

Based on transfer mode of uplink data, MCC6000 series can be classified into 2 models, i.e.



Figure 1 MCC6000-CD01, MCC6000-DD01

1.4 Network topology

The following figure shows the network topology for MMR6000.

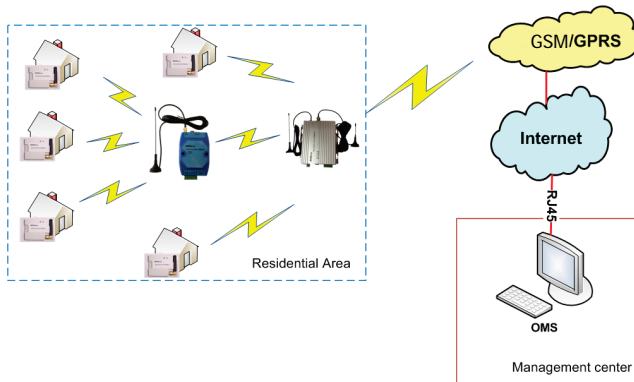


Figure 2 Network topology

2 Installation

2.1 Packing list

Make sure that the package contains the following items.

| Serial no. | Item | Quantity |
|------------|---------------------------------|----------|
| A | MCC6000 | 1 |
| B | GSM/GPRS antenna(Only for CD01) | 1 |
| C | This Installation Guide | 1 |

2.2 Internal structure

The internal structure of MCC6000 is shown in Figure 3.

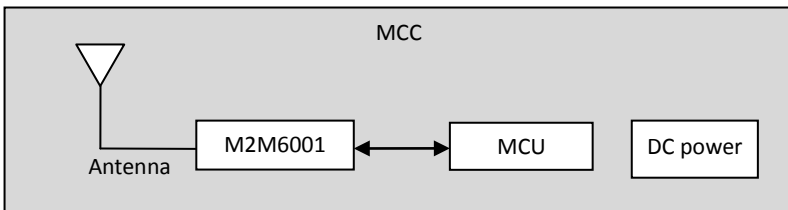


Figure 3 The internal structure of MCC

- Antenna: Bi-directional wireless data communication.
- M2M6001: Meter data transfer.

- MCU: Wireless network management, and data transfer-control.
- DC power: Provide stable current to the whole control unit.

2.3 Appearance

2.3.1 Dimension

Before installation, please select the place for installation according to the product size.

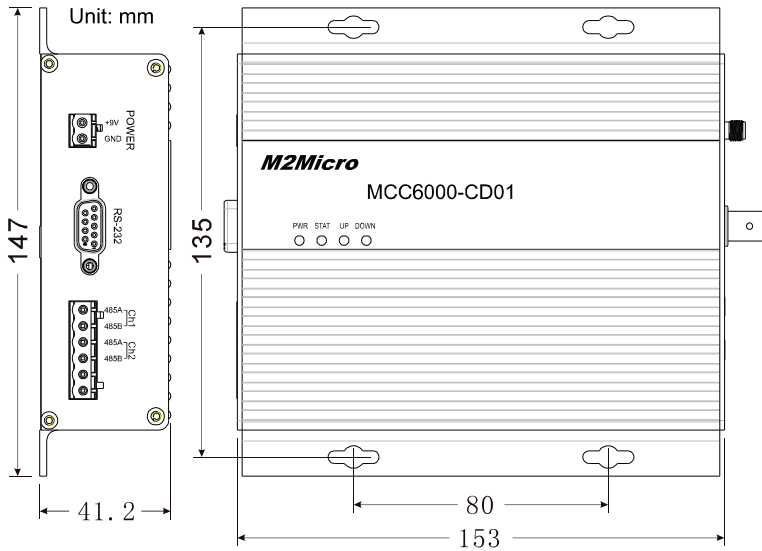


Figure 4 The dimension of MCC6000

2.3.2 LEDs introduction

LED of MCC6000 is shown in the following figure.

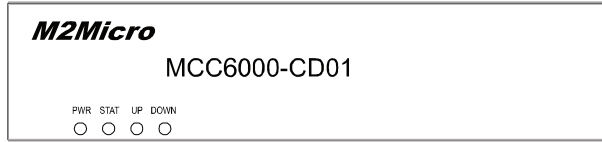


Figure 5 LED of MCC6000

| LED | Color | Status | Comments |
|----------|--------|----------|---|
| Power | Red | On | The device is powered on. |
| | | Off | The device is powered off. |
| Status | Yellow | On | The network is open. |
| | | Off | The network is not open. |
| Uplink | Green | Flashing | Data is being communicated with OMS. |
| | | Off | Login Server already. But no data transmission. |
| Downlink | Green | Flashing | Data is being communicated between MCC and MRU. |
| | | Off | No data transmission between MCC and MRU. |

2.4 Installation

2.4.1 Instruction

MCC6000 is should be installed inside a box which is solid, waterproof and difficult to shake in. Through the back of MCC500, left four mounting holes, four M4 × 12 self-tapping screws can be used to fix mounted MCC6000 on the wall.

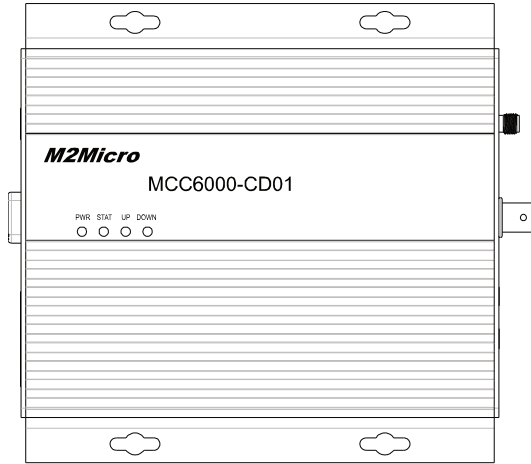


Figure 6

2.4.2 Connection

The left panel of MCC6000-CD01 is shown in the following figure.

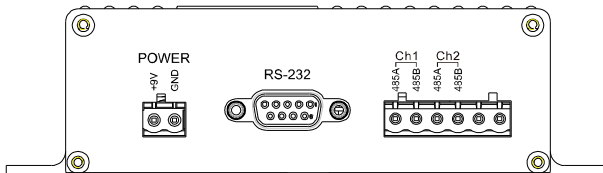


Figure 7 Left panel of MCC6000-CD01

| Port | Comments |
|---------|--|
| POWER | Power input. Input voltage is 9V DC. |
| RS-232 | RS-232 connector. |
| Ch1/Ch2 | RS485 connector. Ch1 is used for the connection connected with electrical |

| | |
|--|--|
| | <p>energy data acquisition;</p> <p>Ch2 is reserved for the connection, which is connected with water meter or gas meter and other types of meters.</p> |
|--|--|

The right panel of MCC6000-CD01 is shown in the following figure.

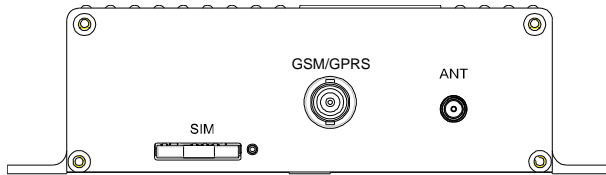


Figure 8 Right panel of MCC6000-CD01

| Port | Comments |
|-----------|--|
| SIM | SIM card slot. |
| GSM /GPRS | Connector to the GSM/GPRS communication antenna. |
| ANT | Connector to the wireless antenna. |

A Appendix - Data Sheet

| MCC6000-CD01 | |
|-------------------------------|---|
| Parameter | Value |
| Input Voltage | AC220V±20% 50Hz |
| Operating Temperature | -40~70°C |
| Operating Humidity | < 95% |
| Maximum Number of Mounted MRU | 200 |
| Mean Time Between Failures | MTBF > 2x10 ⁴ hours |
| Electrostatic Discharge | 8kV |
| Transient rapid pulse group | 1kV |
| Impulse Withstand Voltage | 4kV |
| Communication Port | Uplink: GSM/GPRS or RS232 Downlink: Wireless data transmission |

| MCC6000-DD01 | |
|-------------------------------|---|
| Parameter | Value |
| Input Voltage | AC220V±20% 50Hz |
| Operating Temperature | -40~85°C |
| Operating Humidity | <95% |
| Maximum Number of Mounted MRU | 200 |
| Mean Time Between Failures | MTBF > 2x10 ⁴ hours |
| Electrostatic Discharge | 8kV |
| Transient rapid pulse group | 1kV |
| Impulse Withstand Voltage | 4kV |
| Communication Port | Uplink: RS232 Downlink: Wireless data transmission |