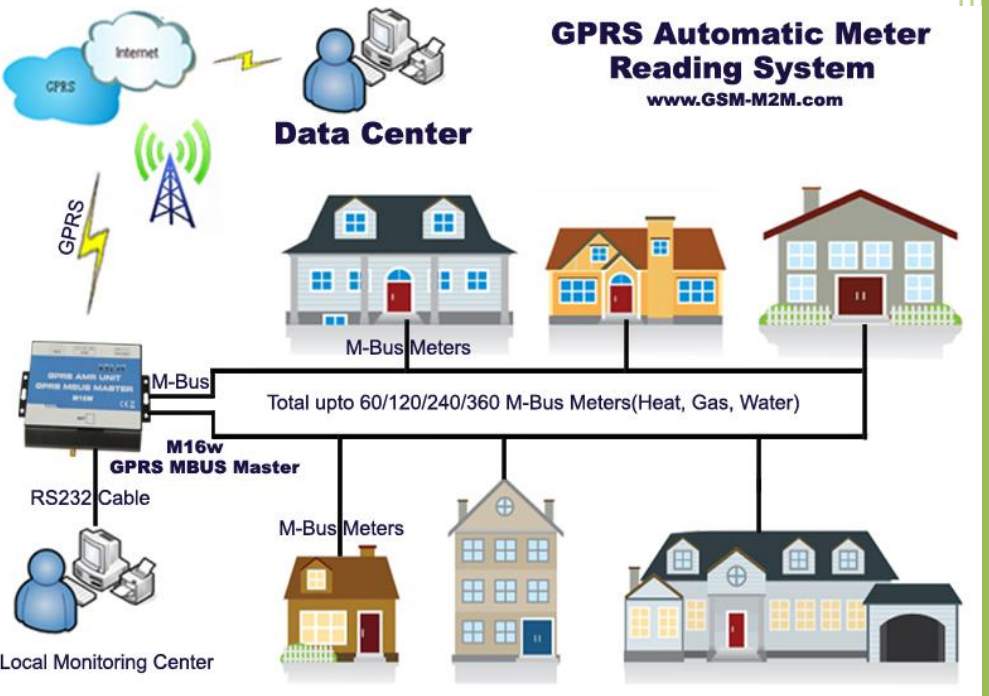
An Economical and Practical Solution For Remote Automactic M-Bus Smart Meter Reading by GPRS In The Worldwide!

GPRS M-Bus Master

KING PIGEON



User Manual

Mx Series

Ver 1.00

Date Issued: 2015-07-28

www.GSM-M2M.com

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This handbook has been designed as a guide to the installation and operation of M Series GPRS M-Bus Masters. Statements contained in the handbook are general guidelines only and in no way are designed to supersede the instructions contained with other products.
We recommend that the advice of a registered electrician be sought before any Installation work commences.
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M Series GPRS M-Bus Master Comparison Table

Model	RS232 Port	M-Bus Port	Accept Max. Meters	Loader Capacity
M16W	1	1	60	300mA
M32W	1	2	120	2*300mA
M64W	1	4	240	4*300mA
M128W	1	6	360	6*300mA

Compatible with below meters:

Kamstrup SIEMENS HYDROMETER

Landis+Gyr manage energy better Danfoss

1. Brief introduction

The GPRS M-Bus Master M Series is a wireless GPRS Automatic Meter Reading(AMR) System. It embedded with high-performance ARM®Cortex®-M3 32-bit RISC MCU with real-timeμ C/OS-II RTOS and industrial GPRS Engine inside. It is special for communication between monitoring center and M-Bus meters, intelligent instrument and industrial meters over wireless GPRS Network. It is the best solution for meter reading master station or controller.

The GPRS M-Bus Master M Series is special for automatic meter reading(AMR) system, compatible with EN 1434-2008 protocol and M-Bus interface, it supports 60/120/240/360 M-BUS meter Slaves, like M-BUS heat meters, M-BUS Gas meters, M-BUS electricity meters, M-BUS Water meters and other M-BUS meters, and then transfer the meters data over wireless GPRS Network to Server.

The user can remotely setup the GPRS M-Bus Master parameters via GPRS. The GPRS M-Bus Master will periodically automatic reading the meters, and upload the meters' value to monitoring center transparently. The data format that uploading by GPRS is the same as the meters data format. It is convenient for users to maintain its present monitoring center.

Where Does the GPRS M-Bus Master M Series Suitable for?

The GPRS M-Bus Master M Series suitable for below applications:

◆The Electricity Power Remote meter reading;

◆Remotely Heating meter reading;

◆Remotely other meter reading.

2.Safety Directions

Safe Startup
Do not use GPRS M-Bus Master when using GSM equipment is prohibited or might bring disturbance or danger.

Interference
All wireless equipment might interfere network signals of GPRS M-Bus Master and influence its performance.

Avoid Use at Gas Station
Do not use GPRS M-Bus Master at a gas station. Power off GPRS M-Bus Master when it near fuels or chemicals.

Power it off near Blasting Places
Please follow relevant restrictive regulations. Avoid using the device in blasting places.

Reasonable Use

Please install the product at suitable places as described in the product documentation.
Avoid signal shielded by covering the mainframe.

Use Qualified Maintenance Service

Maintenance can be carried out only by qualified maintainer.

3. Standard Packing List

GPRS M-Bus Master X1, GSM ANT X1, User Manual + PC Configurator X1(CD), RS232 Cable X1.

4. Physical Layout

LED& Interface Instruction

LED	**Power**	Power indicator, once powered on, it will always on.
	TX	Transmit data indicator, only transmitting data will flick;
	RX	Receive data indicator, only receiving data will flick;
	GSM	GSM signal indicator, flicks after power on, online will flick slowly.
	OVL	Overload Alarm indicator, turn on 2s after power on, then goes off. If the overload alarm indicator always on, stands for the GPRS M-Bus Master connected too many meters, please remove some of them.
Interface	**ATN**	GSM Antenna
	MBUS	Connecting MBUS Cable, non- polarity.
RS232	**RX**	Receive Port
	TX	Transmit Port

	GND	Ground
12VDC	**+12V**	The external power input. 12VDC Positive, 2A.
	GND	The external power Ground, negative.
110VAC/220VAC		Optional, for sample we only provide 12VDC 2A, for project we can provide 110VAC/220VAC Version in order to protect engineer safety.

5. Mainly Features

1. GPRS Data Transmission, real-time online data transfer, no distance limitation;
2. Embedded ARM®Cortex®-M3 32-bit RISC MCU with real-timeμ C/OS-II RTOS;
3. Embedded complete PPP, TCP/IP protocol stack;
4. Supports European standard M-Bus (Meter Bus) interface for intelligent meters;
5. Supports EN 1434-2008 protocol (Intelligent meter communication protocol) over GPRS network communication for up to 60 /120/240/360 meters;
6. Supports transparent and non-transparent data transfer via RS232 or GPRS network;
7. Supports point-to-point, Point–to–Multipoint, Multipoint-to-Multipoint Communication Mode;
8. Supports up to 3 DNS and static data service center IP address;
9. “Plug and Play” solution can realize data transmission between com port and internet;
10. Supports RS232 three-wire standard serial port, rate speed up to 115200 BPS;
11. Built-in hardware Watch Dog Timer to ensure it reliable and stable;
12. Supports remotely program the GRPS M-Bus Master from server via TCP/IP;
13. Adopts application layer heartbeat technology to keep application layer stable connection;
14. Running Stability: 365 x 24 hours;
15. Industrial class design suitable for long time work applications.

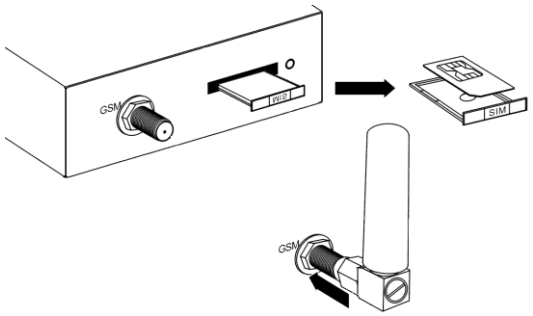
6. Installation

Notice:

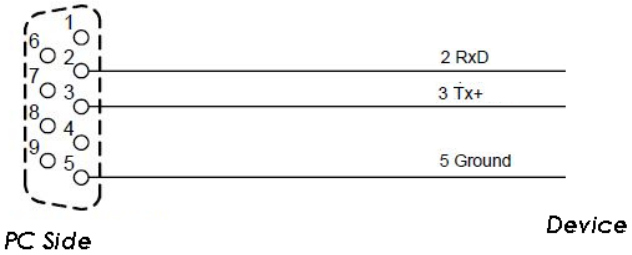
1).Only engineers can install the unit.
2).While inserting the SIMcard, please ensure the unit is power off.
3) Please ensure the GPRS function of the SIMCard which install to this unit is enable.
4)The GPRS M-Bus Master should be installed in the position that person cannot get it, and there’re with a 110~220VAC @50Hz power source as well as enough GSM signal coverage.
5)For sample we only provide rated voltage 12VDC2A version, for project we will provide 110~220VAC rated voltage version.

6.1 *Insert SIMcard and install GSM Antenna*

Using a small thimble press the SIMCard Slot button, the SIMCard Slot will pop up. Put the Simcard to the slot, the circuit side(Gold side) up towards, and insert it back to the solt. Then install the GSM Antenna. See below:

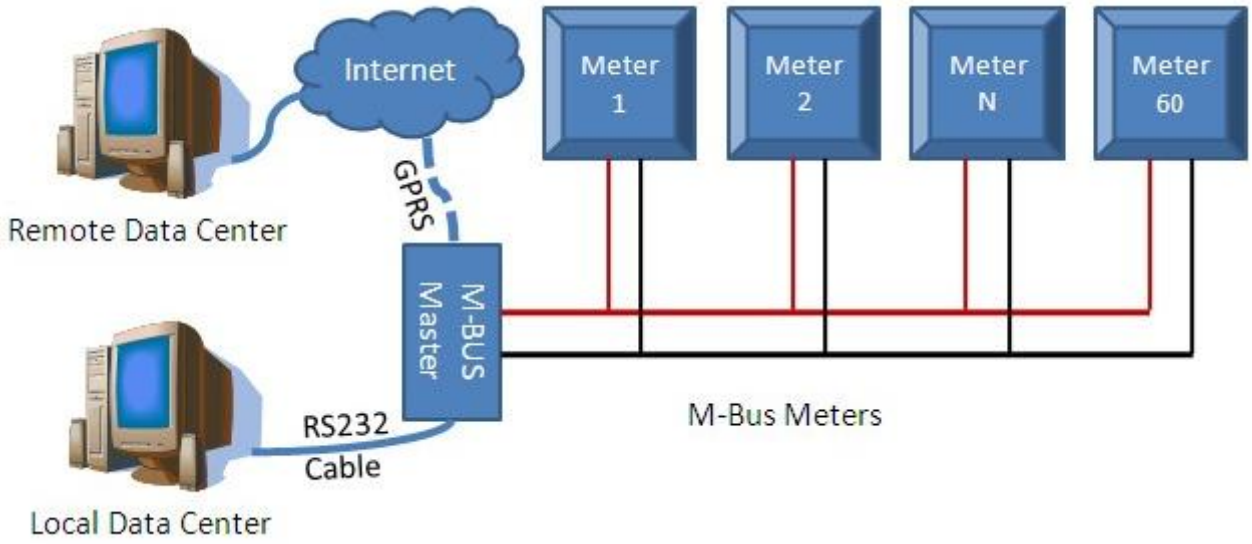


6.2 Connecting the RS232 Cable to the PC for Program, the diagram please see below:



6.3 Connecting the M-Bus Meter to the GPRS M-Bus Master, the diagram please see below:

The GPRS M-Bus Master capacity is limited, the maximum quantity of the meters according to the M Series GPRS M-Bus Master Comparison Table. The diagrams please see below:



Notice:

1) The Meter should be: a) Standard M-Bus interface; b) Compatible with EN 1434-2008 protocol. c）If you use special meter or special protocol, please inform us before you ordering products, our R&D will modify the protocol according to your special meters.
2) MBUS Cable maximum length is 3000meters;
3) The cable should be compatible with the standard ISO/IEC 11801:2002 category 7/class F, IEC 61156-5:2002, IEC 61156-7, USA ANSI/TIA/EIA-568A.
   The cable using for connecting MBUS meters should be: Dia>=0.5mm, Resistance <=100±15 ohm/km, Loss<=10.4 dB/100m, FTP n*2*24AWG, shielded type.
4) The GPRS M-Bus Master compatible with below brand meters:

Kamstrup, Danfoss, SIEMENS, HYDROMETER, Landis+Gyr manage energy better

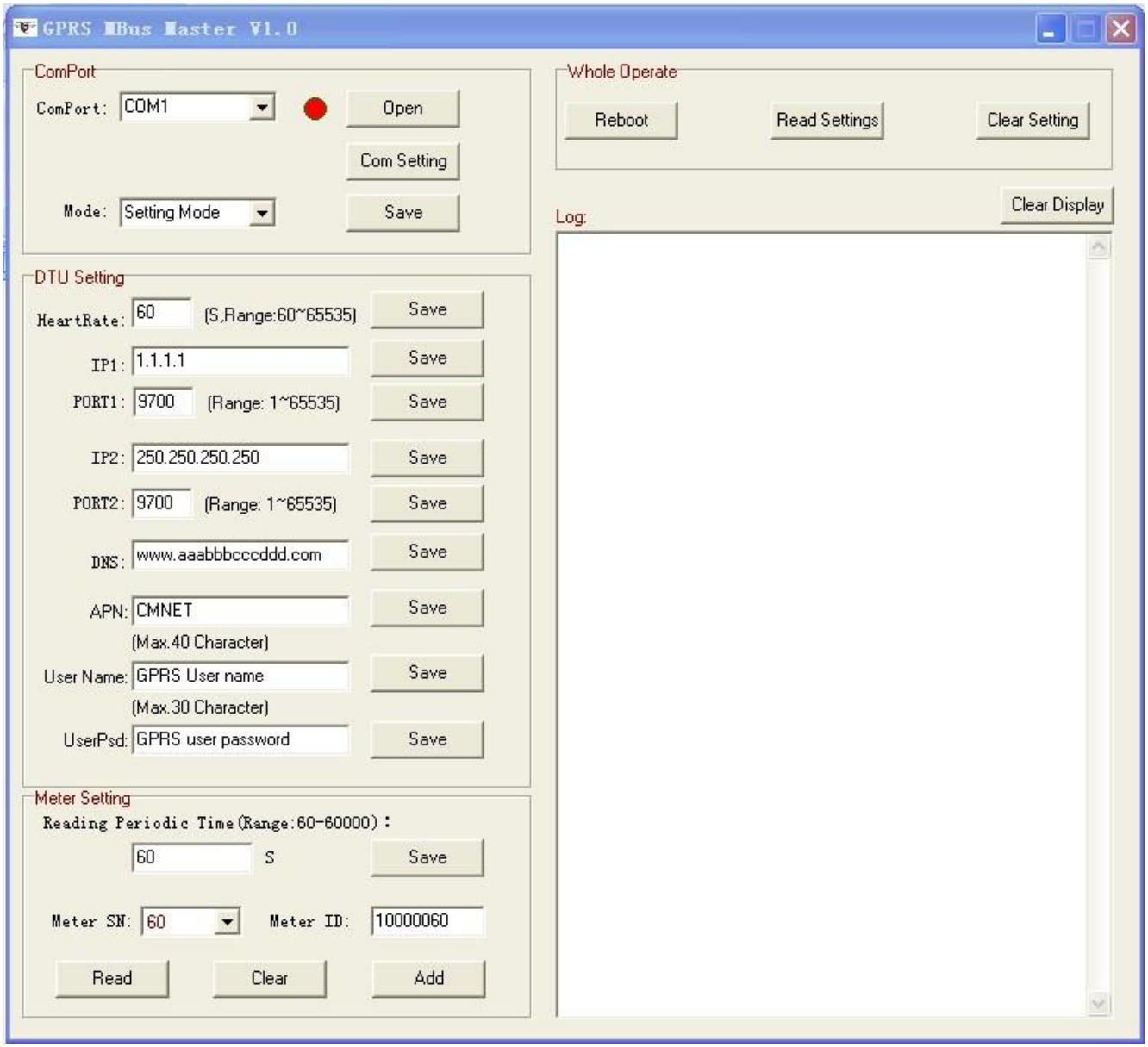
7. Settings

Notice:

**While the GPRS M-Bus Master the Run mode: If GPRS failure, the data will transmit to Server via RS232 Cable. If GPRS is available, the data will transmit to server via GPRS, not transmit to server via RS232 anymore.

**For testing the protocol of the meters compatible with server, the user can use the RS232 cable directly.

1). Running the GPRS M-Bus Master Configurator from the CD;



2) Connection: The RS232 cable included in the package, connecting the RS232 DB9PIN to computer RS232 Port, and the terminals to the unit, power on the GPRS M-Bus Master, the device will contact to the computer, please find out the Com Port at the computer's Device Manager page;

3) Com Port: Choose the correct COM Port, then click Open button to Open the Com port, after finished program, please click the Close button to close the Com port. If can not open the com port,

please check: a.the com port number is correct; b. the RS232 cable is connect correctly; c. click Com setting, to change the Com port parameters.

4) Mode: Choosing the GPRS M-BUS Master present mode, in programming, please choose Setting, after setup all parameters, please set it as Run, otherwise, the GPRS M-Bus cannot work properly.

5) Heart rate: Please setup the GPRS heartrate to ensure the GPRS always online. The unit is 10ms, if setup as 0 stands for no heart rate.

6) IP1/2: Server IP address; **IP1/2 Port:** The Server Port; **DNS:** Server DNS, the port is 53(Default)

7) APN/User Name/User PSD: The GPRS Parameters, please contact the SIMCard Operator to provide it, usually can find out it at Operator's website or smart phones;

8) Reading Periodic Time: the interval time that the GPRS M-Bus Master automatically reading the slave (M-Bus meters) time, after reading all of the slaves, the GPRS M-Bus Master will upload the meter current value to the server via GPRS.

9) Meter SN/Meter ID: to setup the meter's ID numbers. The meter ID is 8 digital. Enter it and click Add to add meters, click Clear to remove the meter.

10. Reboot*:* Click it to restart the GPRS_Mbus Master;

11.Read Settings/Clear Settings: Read the settings or clear the settings.

8. Program Protocol

The user can remotely program the GPRS M-Bus master parameter via GPRS network or RS232 cable, e.g.: Server, Periodic reading time, add/remove meters. The commands should be in ASCII code, and each command should plus the Enter. The character is Decimal. The protocol is below:

Description	Command	Explanation
Enter Setup Mode	SET++>>	Enter into setup mode.
Setup Heart Rate	SETHEARTTIME=xxxx	xxxx stands for the value;
Setup APN	SETAPN=xxxx	xxxx stands for the APN
Setup Server IP1	SETIP=1.1.1.1	1.1.1.1 stands for Server 1 IP
Setup IP1 Com Port	SETPORT=9700	9700 stands for server 1 com port
Setup Server IP2	SETIP2=1.1.1.1	1.1.1.1 stands for Server 2 IP
Setup IP2 Com Port	SETPORT2=9700	9700 stands for server 2 com port
Setup DNS	SETDNS=www.aaabbb.com	www.aaabbb.com stands for DNS
Setup GPRS User Name	SETUSER=xxxx	xxxx stands for GPRS user name
Setup GPRS User Password	SETPSD=xxxx	xxxx stands for GPRS user password
Setup Periodic Reading Time	SET<Jxx>	Xx stands for the time. E.g.: SET<J180> to set it as 180.
Setup Meter ID	SET<P1;xx=12345678>	xx stands for the serial number of meter, 12345678 stands for the meter ID. E.g.: set the 60th meter ID as 87654321, then send SET<P1;60=87654321>

Inquiry Meter ID	SET<P1;xx?>	xx stands for the serial number of meter, e.g. inquiry the 9th meter, then send SET<P1;9?>
Inquiry Settings	SETHELP?	Inquiry the settings of the GPRS M-Bus Master
Restart GPRS M-Bus Master	SETREBOOT!	Restart the GPRS M-Bus Master

9. Technical specifications

Item	Specification
Working Voltage	DC12V2A(Default), 110~220VAC@50Hz (Optional for project order)
Power Consumption	Standby: 50Ma; Transfer data:300Ma;
GPRS Network	Frequency: 850 MHz, 900 MHz,1800 MHz, 1900 MHz; GPRS Class 2～10, CS1~S4
Theory bandwidth	171.2Kb/s;
Actual bandwidth	20-30Kb/s;
SIMCARD	3V/5V
GSM Connector:	SMA antenna,50Ohm
Receive Sensitivity	-102dBm
Working Temp.	-40℃~+85℃
Related Humidity	＜85%(20±5℃),non-condense
Air Pressure	86～208Kpa
Interface for configuration	Com port RS232
Com Baud Rate	1200-115200bps
Meter interface	M-Bus
Max. Heat meters	60/120/240/360
Dimension	120mm×90mm×28mm

10. Warranty

1) This system is warranted to be free of defects in material and workmanship for one year from the date of purchase.
2) This warranty does not extend to any defect, malfunction or failure caused by abuse or misuse by the Operating Instructions.