CMi-Box
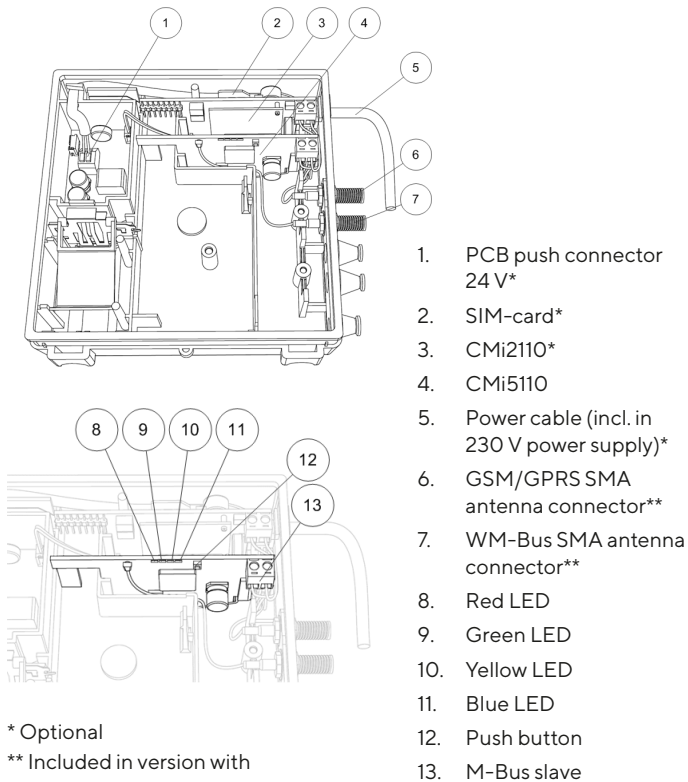## M-Bus Metering Gateway for the Mobile Network

INTRODUCTION

The CMi-Box is a flexible solution that can be equipped with wired or wirelss M-Bus for communication wirth meters and GSM/GPRS for integration with other systems. CMi -Box is available with 24 V or 230 V power supply, internal or external antenna and with different slave capacities. For a complete description of the product or for information in Swedish, visit the Elvaco AB website, www.elvaco.com.

OVERVIEW

1. PCB push connector 24 V*
2. SIM-card*
3. CMi2110*
4. CMi5110
5. Power cable (incl. in 230 V power supply)*
6. GSM/GPRS SMA antenna connector**
7. WM-Bus SMA antenna connector**
8. Red LED
9. Green LED
10. Yellow LED
11. Blue LED
12. Push button
13. M-Bus slave

* Optional
** Included in version with external antenna

MOUNTING

Use the included wall bracket for mounting the product on a suitable indoor wall. For outdoor usage, a special enclosure is needed. When mounting several CMi-Boxes with internal antenna, make sure to spread them to get the best coverage throughout the property.

POWER SUPPLY

The installation should be performed by a qualified electrician or an installer with the required knowledge. The power supply should be connected via a clearly marked, easily accessible switch so the unit can be switched off during service work.

Power supply 230 VAC
The 230 VAC supply is equipped with a 3 m cable for connection to main power.

Power supply 24 VAC/VDC
Connect the external 24 V power supply to the push connector on the Elvaco 24 VAC/VDC power supply (1). It is possible to use a cable with four conductors. Two of the conductors will be used for 24 V power supply, and two for M-Bus. The input for 24 VAC/VDC is polarity independent.

ANTENNA

The product is available with external or internal antenna.

External antenna
Mount the antenna in a suitable place, if both GSM/GPRS and Wireless M-Bus antennas are used, place the antennas at least 1.5 m apart from each other. Connect the cable/cables to the SMA connector (6, 7). If the antenna's range is inadequate, please contact Elvaco for more information about antenna options.

IMPORTANT
- Do not mount the antenna close to any metallic objects.
- Do not mount the antenna close to the M-Bus 2-wire bus.
- Do not mount the antenna inside a metallic cabinet.
- The SMA connector should be connected to the antenna when the antenna wiring is done. Otherwise it can be damaged.

Internal antenna
There is no possibility to connect an external antenna to the version of CMi-Box with internal antenna. If the internal antenna is inadequate, please contact Elvaco for information.

M-BUS SLAVE PORT

The product is equipped with an M-Bus slave port to enable wide integration. The port can be used to read the connected wireless M-Bus slaves as normal M-Bus slaves.
Slaves can be read using primary and/or secondary addressing. The CMi5110 inside the CMi-Box is available as an M-Bus slave with the secondary address equal to its serial number.
The M-Bus 2-wire interface acts like any other M-Bus slave device on the 2-wire bus. The nominal current is 1T (1.5 mA). This interface can be directly used with any standard M-Bus master.

GETTING STARTED

If the CMi-Box is to deliver readings from wireless meters, its internal M-Bus Master CMi5110 must first be installed. The intallation can be performed in three different ways:

Option 1: Press button (12) to start the installation on CMi5110. When the installation mode is started, the blue LED will light up. The CMi5110 will constantly search for new meters to install.

Option 2: Start the installation by M-Bus commands, for example by using Elvaco's CMe3100. This allows for easy adjustments and administration of parameters and meter lists.

Option 3 (for CMi2110 version): Use SMS commands to install and configure the CMi-Box. Contact Elvaco for information about settings.

LED INDICATIONS CMi5110

LED	State	Description
Red	On	Meter list empty, no meters installed
Green	50/50	Power ON, operation
Yellow	Short flash	Receives data from meter
Blue	On	Product is in installation mode

elvaco

TROUBLESHOOTING

When running installation, no wireless meters are found (Red LED on) Please verify:

- CMi5110 antenna installation and position.
- Wireless M-Bus slave mode must be the same as configured CMi5110 wireless M-Bus mode.

CMi5110 does not respond to M-Bus master commands Please verify M-Bus status:

- Voltage over M-Bus slave device should be between 21-42 VDC.
- All M-Bus slave devices must have unique secondary or primary M-Bus addresses depending on addressing mode.
- Verify M-Bus slave baud rate used by M-Bus master. M-Bus master baud rate must be identical to the CMi5110 baud rate.
- Encrypted wireless M-Bus slaves without uploaded keys will send meter data in container mode. Add keys to corresponding meter using M-Bus commands.

FACTORY RESET

Turn off power. Press push button (2) and turn on power. Keep pressing the button for 10 s, until the red and yellow LED is flashing.

SAFETY

The warranty does not cover damage to the product caused by usage in any other way than described in this manual. Elvaco AB can not be liable for personal injury or property damage caused by usage in any other way than described in this manual.

TECHNICAL SPECIFICATIONS

Mechanics

Protection class	IP54
Mounting	Wall-mounted with bracket

Electrical connections

Power supply	230 V: 3 m cable included, 24 V: PCB push connector
M-Bus slave port	Screw terminal 0.5-2.5 mm²
Antenna	Built-in, or optionally external via SMA-f

Electrical characteristics

Nominal voltage	230 V power supply: 100-240 VAC, 24 V power supply: 12-35 VAC or 12-48 VDC, Internal power supply: 4 VAC
Frequency	50/60 Hz
Power consumption	<2.5 W
Installation category	CAT 2

Integrated M-Bus Master

M-Bus baud rate	300 and 2400 bit/s
Maximum unit loads	8T/12 mA
Maximum cable length	1000 m (100 nF/lm, maximum: 90 Ω)

Wireless M-Bus Receiver

Wireless M-Bus modes	S1, T1,C1
Maximum number of wireless M-Bus devices	800
Radio frequency band	868 MHz
Encryption	AES-128
RF sensitivity (standard/ amplified version)	-104 dBm / -109 dBm

M-Bus slave interface

M-Bus baud rate	300 and 2400 bit/s
Power consumption	1T/1,5 mA

Approvals

EMC	EN 61000-6-2, EN 61000-6-3
Safety	EN 61010-1, CAT 2

ORDERING INFORMATION

CMi-Box, Wireless M-Bus Receiver

Part number	Description
1100117	24 V, internal antenna
1100118	230 V, internal antenna
1100119	24 V, external antenna
1100120	230 V, external antenna

CMi-Box Enhanced, Wireless M-Bus Receiver

Part number	Description
1100304	230 V, internal antenna
1100305	230 V, external antenna
1100306	24 V, internal antenna
1100307	24 V, external antenna

CMi-Box, M-Bus Metering Gateway for Mobile Network

Part number	Description
1100121	24 V, external/internal antenna (GPRS/WM-Bus)
1100122	230 V, external/internal antenna (GPRS/WM-Bus)
1100123	24 V, 2 x external antenna
1100124	230 V, 2 x external antenna
1100174	24 V, 2 x internal antenna
1100156	230 V, 2 x internal antenna
1100150	24 V, external antenna
1100149	230 V, external antenna

CMi-Box Enhanced, M-Bus Metering Gateway for Mobile Network

Part number	Description
1100308	230 V, 2 x internal antenna
1100309	230 V, internal/external antenna (GPRS/WM-Bus)
1100310	230 V, 2 x external antenna
1100311	24 V, 2 x internal antenna
1100312	24 V, internal/external antenna (GPRS/WM-Bus)
1100313	24 V, 2 x external antenna

CONTACT INFORMATION

Elvaco AB Technical support:

Phone: +46 300 434300
E-mail: support@elvaco.com
Online: www.elvaco.com

EU DECLARATION OF CONFORMITY

This declaration of conformity is issued under the sole responsibility of the manufacturer:
Elvaco AB, Kabelgatan 2T, S-43437 Kungsbacka, Sweden

Product	Year of CE-marking
CMiB Wmbus IA24	2016
CMiB Wmbus IA230	2016
CMiB Wmbus EA24	2016
CMiB Wmbus EA230	2016
CMiB Wmbus GIA24	2016
CMiB Wmbus GIA230	2016
CMiB Wmbus GEA24	2016
CMiB Wmbus GEA230	2016

The object(s) of the declaration listed above is in conformity with the relevant Community harmonization legislation:
LVD Directive 2014/35/EU
EMC Directive 2014/30/EU
Radio Equipment Directive 2014/53/EU
RoHS 2011/65/EU
And are in conformity with the following harmonization standards or other normative documents:
IEC 61010-1 (ed.3)
EN55022 (Radiated emission)
EN 61000-4-6 (Immunity to HF-injection)
EN 61000-4-3 (Immunity to RF-field)
EN 61000-4-11 (Immunity to voltage variation)
EN 61000-4-4 (Immunity to burst)
EN 61000-4-5 (Immunity to surge)
EN 61000-4-2 (Immunity to ESD)
EN 300 220-1 (SRD Low power radio equipment)
EN 300220-2
EN 3010511:v.9.0.2 (Gemalto)
Kungsbacka, Sweden, 2016-04-16

David Vonasek, CEO