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CMe2100 User's Manual English

CMe2100 GSM/GPRS M-Bus Master

The CMe2100 is a flexible and cost-effective GSM/GPRS M-Bus master. It is ready to use with all ABB DIN-mounted electricity meters and any M-Bus meter. The CMe2100 uses standard open protocol for fast and easy integration.

Contents

1 Document notes

All information in this manual, including product data, diagrams, charts, etc. represents information on products at the time of publication, and is subject to change without prior notice due to product improvements or other reasons. It is therefore recommended that customers contact Elvaco AB for the latest product information before purchasing a CMe2100 product.

The documentation and product are provided on an “as is” basis only and may contain deficiencies or inadequacies. Elvaco AB takes no responsibility for damages, liabilities or other losses by using this product.

1.1 Copyright and Trademark

CMe2100 is a trademark of Elvaco AB, Sweden.

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2 Using this manual

2.1 Purpose and Audience

This manual provides information needed to mount, configure and use the CMe2100 products. It is intended for field engineers and developers.

2.2 Models

This manual covers CMe2100.

2.3 Additional and updated information

Latest documentation version is available on Elvaco web site at http://www.elvaco.com.

3 Introduction

This chapter summarizes the CMe2100 features and outlines the basic information needed to get started.

3.1 Product configuration

Use the table below to find out the capabilities of your CMe2100.

Product name	Comments
CMe2100	GPRS M-Bus terminal with M-Bus 2-wire interface and e-mail support

Table 1 Product configuration

3.2 Capabilities

The CMe2100 is a stand-alone, DIN-mounted GSM/GPRS equipment with M-Bus protocol, intended to read and store values from any kind of meter supporting the M-Bus protocol.

The CM Series has the following key capabilities.

- Read and store meter values from any ABB electricity meter with IR interface
- Read and store meter values from any meter following the standard M-Bus protocol
- Connect up to 8 M-Bus slave devices
    - Expansion module series CMeX enables extra connected M-Bus slave devices using IR interface
- Collect meter values using E-Mail, FTP, HTTP, SMS, Transparent GSM and TCP.
- Configurable report templates to enable manufacturer specific value reports, system reports etc.
- Configurable using SMS, HTTP and telnet
- Remotely updatable application, firmware and resources using GPRS

3.3 Applications

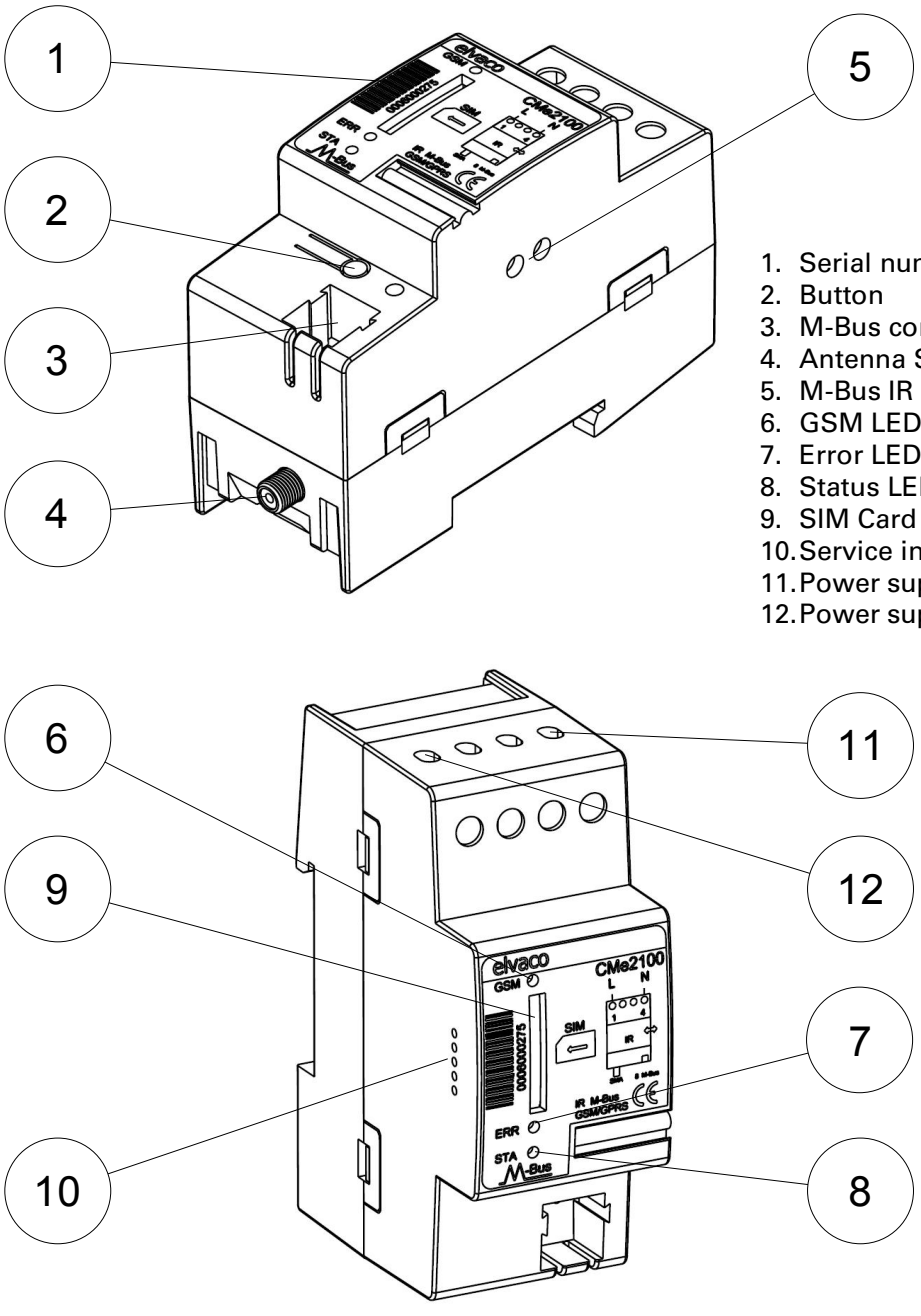
The CMe2100 fits into almost any kind of meter collection system. For example:

- Remote reading of an M-Bus compatible electricity meter
- Remote reading of a combination of meter types on a single bus-system, such as M-Bus compatible water meters, electricity meters and heat meters

4 Getting Started

This chapter covers the steps required for getting the CMe2100 installed and operational.

4.1 Overview



1. Serial number
2. Button
3. M-Bus connector
4. Antenna SMA connector
5. M-Bus IR interface
6. GSM LED (Yellow)
7. Error LED (Red)
8. Status LED (Green)
9. SIM Card holder
10. Service interface
11. Power supply N
12. Power supply L

Figure 1 CMe2100 Front View

4.2 Mounting

The CMe2100 should be mounted on a DIN-rail. The metallic clip on the bottom is used to mount and demount the unit from the DIN-rail. DIN-rail enclosure must cover the terminals.

4.2.1 SIM-Card

Install the GSM SIM-card into the slide (9). Remember the phone number for later use.

⚠ **IMPORTANT**

Please take the following in consideration:

- The SIM-card shall not have any PIN code activated
- The SIM-card must have GPRS internet access activated for full functionality
- If a prepaid SIM-card is used, ensure that enough credits are available

4.2.2 Antenna

The antenna should be connected to the SMA connector (4). Depending on signal strength and environment, a different antenna with extension cable can be used.

⚠ **IMPORTANT**

Please take following in consideration:

- 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

4.2.3 M-Bus 2-wire bus

M-Bus is a multi-drop 2-wire bus, with no polarity. A cable of either shielded (typically 4 x 0.8 mm diam./0.5 mm^2 telephone type or standard mains type (1.5 mm^2) should be used. Connect the wiring to the connector (3). Do not exceed the maximum cable length of 1000 meters.

⚠ **IMPORTANT**

Please take the following in consideration:

- The internal M-Bus interface can handle up to 8 slave devices. Overloading the bus will cause communication problems with the connected devices.
- All connected M-Bus slave devices must have unique M-Bus secondary address.

4.2.4 IR Interface with ABB electricity meters or CMeX series modules

If the IR interface is to be used beside an ABB electricity meter or CMeX module, the IR shield (5) should be removed. The CMe2100 should be mounted on the left side of the ABB electricity meter or CMeX module. There shall be no space between the CMe2100 and the ABB electricity meters or CMeX module. (Do not remove the shield if not used beside an ABB electricity meter or CMeX module.)

4.2.5 Power supply

The main supply should be connected to screw terminal (11) and screw terminal (12). Main supply voltage should be in the range of 100-240 VAC, 50/60 Hz. The CMe2100 will be running factory default settings when first powered up.

4.3 Configuring the product

This section covers a fast and easy way of configuring the product using SMS. For more configuration options, please see chapter 6.

After the CMe2100 has been properly mounted and powered up, the product is ready to use with transparent M-Bus over GSM on 2400 baud.

When running the installation process, the product will search for M-Bus slave devices using secondary and primary addressing (0-250) on baud rate 2400 and synchronize time. On completion of the installation process, the product will:

- Send installation reports by SMS and an E-Mail to configured recipients.
- Store hourly values of installed devices
- Send E-Mail reports every day at 00:00.

Configure the product using SMS to store and send meter data reports by E-Mail with default settings:

Step	SMS messages from and to CMe2100		
	SMS from user to CMe2100	**Response from CMe2100**	**Description**

1	`qset email recipient@mydomain.com`	`From:CMe2100(00000001)`
		`Writing configuration completed successfully.`
		`OK`
			Set e-mail recipient to recipient@mydomain.com

2	`Install 5`	`From:CMe2100(00000001)`
		`install started.`
		`OK`
			Start installation process and expect 5 meters. Installation process may take up to 10 minutes.

3		`From:CMe2100(00000001)`
		`Installation completed successfully.`
		`5 device(s) found.`
		`1`
		`2`
		`3`
		`5`
		`8`
		`OK`
			After Installation completion information SMS is sent to user. 5 devices found with secondary addresses 1, 2, 3, 5 and 8.

*4		`From:CMe2100(00000001)`
		`Time/configuration was synchronized. Product will reboot.`
		`OK`
			If the time needed to be synchronized, the product will set the new time and reboot.

*Table 2 Quick start configuration to enable E-Mail reports. * is depending on product state.*

If any problem occurred during installation or alternative configuration is needed, please continue reading in next section.

4.3.1 Checking product status

Before starting the configuration, send a status command to the CMe2100 to check for network coverage and if the product has enough information to activate GPRS sessions.

How to request status report from the product using SMS:

SMS from user to CMe2100	
Message	Description
`Status`	Request status report from the product

Table 3 SMS request status report

SMS from CMe2100 to user	
Message	Description

`From:CMe2100(00000000)`
`Time:<date>`
`Signal:<sig> of 10`
`Operator:<operator>`
`Gprs:<gprs>`
`Apn:<apn>`
`Smtp:<smtp server>`
`OK`
	Status information from the product.
	<date> - Product date/time
	<sig> - A value between 1 and 10, where 10 is highest
	<operator> - Current operator name
	<gprs> - Information about GPRS coverage: No, Yes or Attached
	<apn> - Current APN for GPRS communication
	<smtp server> - SMTP server used for E-Mail reports

Table 4 SMS response for status report

If <gprs> is Yes or attached, <apn> is filled with APN and <smtp server> is filled with correct information, the product is ready to be configured for sending reports using GPRS. When status information gives wrong information, please see Troubleshooting chapter 9, for more information.

4.3.2 Prepare the CMe2100 to send reports

This section describes how to prepare the product to send E-Mail, FTP and HTTP reports. Please select section of your needs and finalize the installation as described in section 4.3.2.4.

4.3.2.1 Prepare for E-Mail

How to set up the recipients and the SMTP server for E-Mail reporting using SMS:

SMS from user to CMe2100	
Message	Description
`qset email <recipients>`	Configure the recipients for E-Mail reports. <recipients> - List of recipients separated with comma.
Example	
`qset email recipient@mydomain.com`	Set E-Mail recipient to recipient@mydomain.com

Table 5 SMS to configure E-Mail recipients

SMS from CMe2100 to user	
Message	Description
From:CMe2100(00000000) <info> OK	Confirmation response from the product. <info> - Readable confirmation text
Example	
From:CMe2100(00000001) qset completed successfully. OK	Command completed successfully.

Table 6 SMS confirmation on configuration of E-Mail recipients.

4.3.2.2 Prepare for FTP

How to set up the receiving FTP server for FTP reporting using SMS:

SMS from user to CMe2100	
Message	Description
qset ftp <server> [<port>[<user>[<pass>]]]	Configure the FTP server for FTP reports. <server> - DNS name or IP-address <port> - Optional port parameter (default 21) <user> - Optional user parameter (default blank) <pass> - Optional password parameter (default blank)
Example	
Qset ftp ftp.mydomain.com 21 user password	Set FTP server to ftp.mydomain.com, TCP port 21, user and password as login credentials.

Table 7 SMS to configure FTP server information

SMS from CMe2100 to user	
Message	Description
From:CMe2100(00000000) <info> OK	Confirmation response from the product. <info> - Readable confirmation text
Example	
From:CMe2100(00000001) qset completed successfully. OK	Command completed successfully.

Table 8 SMS confirmation on configuration of FTP server.

4.3.2.3 Prepare for HTTP

How to set up the receiving HTTP server for HTTP POST reporting using SMS:

SMS from user to CMe2100

Message	Description
`qset http <url> [<user>[ <pass>[ <authmode>]]]`	Configure the HTTP server for HTTP reports. <url> - Fully qualified URL where to POST HTTP reports <user> - Optional user parameter (default blank) <pass> - Optional password parameter (default blank) <authmode> - Optional authentication mode (basic or none)
Example	
`qset http http://mydomain.com/post.aspx user password basic`	Set HTTP URL post server to http://mydomain.com/post.aspx , user and password as login credentials with basic authentication.

Table 9 SMS to configure HTTP server information

SMS from CMe2100 to user	
Message	Description
`From:CMe2100(00000000) <info> OK`	Confirmation response from the product. <info> - Readable confirmation text
Example	
`From:CMe2100(00000001) qset completed successfully. OK`	Command completed successfully.

Table 10 SMS confirmation on configuration of HTTP server.

4.3.2.4 Completing the installation and search for connected devices

To start sending reports of connected devices, an installation command must be sent to the product. The installation process will set the time from an internet time server, search for connected devices using secondary and primary addressing and enable the default value report **report1.** The default report is an E-Mail report with attached meter data files per product once every day at 00:00 with hourly stored values. To change the report template settings, please see section 6.6.5.

How to complete the installation process and search for connected devices:

SMS from user to CMe2100	
Message	Description
`install [<devices>]`	Start installation process and wait for installation report. <devices> - Optional number of devices to find. Providing this information will make the search process faster and the product will return from installation process as soon as the provided number of devices is found.
Example	

`install 5`	Run installation process and expect 5 connected devices.

Table 11 SMS to start installation process

SMS from CMe2100 to user	
Message	Description

`From:CMe2100(00000000)`
`<info>`
`Signal:<sig> of 10`
`<device count> device (s) found.`
`<device list>`
`OK`
	Confirmation response from the product.
	<info> - Installation status information
	<sig> - GSM signal strength
	<device count> - Number of devices found
	<device list> - List of M-Bus secondary addresses

Example	

`From:CMe2100(00000001)`
`install completed successfully.`
`5 device(s) found.`
`1`
`2`
`3`
`8`
`9`
`OK`
	Command completed successfully.
	5 devices found with secondary addresses 1, 2, 3, 8 and 9.

Table 12 SMS confirmation on installation process

An E-Mail report will be sent to configured recipients after the installation process is complete. The product is now ready. It will read and store hourly values for installed devices and send E-Mail reports every day at 00:00 (default report template 1104). For more information on the administration of the product as well as available report templates, see section 7.

4.3.3 Prepare the CMe2100 for Transparent M-Bus communication

CMe2100 handles transparent M-Bus communication using dial-up GSM data and TCP. This section describes the prerequisites to enable transparent M-Bus communication.

4.3.3.1 Prepare for Transparent M-Bus over GSM

The GSM data transparent M-Bus service is running by default. The transparent GSM data service will answer all incoming data calls. The local M-Bus baud rate is by default 2400 baud. The CMe2100 is set to auto negotiate baud rate over the GSM network, which should not be mixed up with the local baud rate of the M-Bus bus. The calling party should use 8 data bits, event parity and 1 stop bit (8E1).

How to enable Transparent M-Bus over GSM using SMS:

SMS from user to CMe2100	
Message	Description
`qset csd on tmbus 300`	Change local M-Bus baud rate to 300 baud.

Table 13 SMS to change local M-Bus baud rate of transparent M-Bus GSM data

SMS from CMe2100 to user	
Message	Description
`From:CMe2100(00000000) qset completed successfully. OK`	Confirmation response from the product

Table 14 SMS confirmation on change local M-Bus baud rate of transparent M-Bus GSM data

4.3.3.2 Prepare for Transparent M-Bus over TCP

CMe2100 has the possibility of two listening transparent M-Bus TCP services simultaneously. The TCP services are by default off. To enable these services and be able to connect using TCP, the SIM card must have public static IP address activated. Please contact your network provider about public static IP addresses.

How to enable Transparent M-Bus over TCP using SMS:

SMS from user to CMe2100	
Message	Description
`qset tmbus1 on`	Enable transparent M-Bus of TCP service 1 with default local M-Bus baud rate 300 and default TCP listening port 300

Table 15 SMS to enable transparent M-Bus over TCP service 1

SMS from user to CMe2100	
Message	Description
`qset tmbus2 on`	Enable transparent M-Bus of TCP service 2 with default local M-Bus baud rate 2400 and default TCP listening port 2400. **Note :tmbus2 is no longer available from software version 1.3.0**.

Table 16 SMS to enable transparent M-Bus over TCP service 2

SMS from CMe2100 to user	
Message	Description
`From:CMe2100(00000000) qset completed successfully. OK`	Confirmation response from the product

Table 17 SMS confirmation on enabling transparent M-Bus over TCP service 1

The product is now ready for incoming TCP connections on TCP port 300 using M-Bus local baud rate 300 and TCP port 2400 using M-Bus local baud rate 2400. Please see section 6.6.1.6 for more information about configuring TCP ports and local baud rates.

For more information on administration of the product, please see chapter 6.

5 Application description

This chapter covers general application description of the product.

5.1.1 Purpose

The product has two main purposes:

- A transparent M-Bus communication link over GSM or GPRS
- A standalone M-Bus master which sends value reports with collected meter values

All parameters such as baud rate, installed meters, e-mail schedules etc. can be remotely configured. Parameters and behaviour settings are stored in flash, which are preserved on power loss or reset.

5.2 Operation

The product has different operation states depending on the current application task.

5.2.1 Watchdog restart

The product has an intelligent Watchdog functionality to enable stable operation. When any application errors are discovered, the product will automatically reset and reinitialize again.

5.2.2 Power on

When powered on, the product has an internal boot time of approximately 20 seconds. During the boot time, the product will execute the following tasks:

- Initialize all settings
- Start necessary tasks for operation
- Start M-Bus transparent servers (if enabled)
- Start console servers (if enabled)

5.2.3 Normal Operation

During normal operation, the following tasks are executed:

- Interval readout of connected meter defined by schedule
- Listening for incoming requests on SMS, M-Bus TCP or GSM data servers
- Status indication (LED)
- User interaction (push-button)
- Sending reports defined by schedule

5.3 Indications

The product is equipped with three LEDs. The red LED indicates error, the green LED shows current operation and the yellow LED indicates the GSM/GPRS modem status. Please review tables below for indication description.

Green LED	Red LED	Product state	Visual
Permanently off	Permanently off	Off, restart	

Permanently on	Permanently on	Power On	
1500 ms on / 100 ms off	Permanently off	Normal operation, No error	
1500 ms on / 100 ms off	Permanently on	Normal operation, Short circuit or over-current on M-Bus bus	
1500 ms on / 100 ms off	800 ms on / 800 ms off	Normal operation, No SIM card installed	
1500 ms on / 100 ms off	100 ms on / 1500 ms off	Normal operation, Not attached to GSM network	

Table 18 Green and Red LED

Following table shows advanced information about GSM/GPRS activity.

Yellow LED	GSM/GPRS state	Visual
Permanently off	Off, restart	
600 ms on / 600 ms off	Limited network service: No SIM card inserted or PIN error, network search in progress, ongoing user authentication or network login in progress	
75 ms on / 3 s off	IDLE mode: The mobile is registered to the GSM network (monitoring control channels and user interactions). No call is in progress.	
75 ms on / 75 ms off / 75 ms on / 3 s off	One or more GPRS PDP contexts activated, i.e. GPRS is active.	
500 ms on / 50 ms off	Packet switched data transfer is in progress.	
Permanently on	Connected to remote party or exchange of parameters while setting up or disconnecting a call, GSM data active.	

Table 19 Yellow LED

5.4 Reset to factory default

I order to reset the product configuration to factory default, press and hold the button on power-up until the green and red LED lights flashes fast. Then release the button and the product configuration will reset to factory default and restart. The product can also be reset using SMS or telnet, please see section 6.7.1.

6 Administration of the product

This chapter covers the configuration of the product.

6.1 Command parser

The product has a command parser which handles a collection of commands. The commands can be executed using SMS or Telnet mode. Depending on source and login level, some commands are restricted for security purpose. The security function is default off, and must be manually enabled.

All commands, executed using SMS or Telnet, will create a response to the user. All responses end with completion information. If the command completed successfully, last line of the message ends with `OK`, otherwise with `ERROR:<error description>`.

6.1.1 Administration using SMS

The product can be administrated using SMS. Administration is initiated by the user sending an SMS to the product and the product will then execute the command and respond to the user with an SMS.

If security password is enabled, the SMS **must** start with the access code on the first line or separated with ; (semicolon), Example: 2222;report1.

All text messages from the product are starting with the model name and the serial number:

```
From: CMe2100 (000000)
```

6.1.2 Administration using Telnet

The product can be administrated using Telnet on TCP or GSM data connection. Administration is done through a command prompt, like MS-DOS, and enables the user to enter commands.

If security password is enabled, the user **must** login first using the `login` command.

6.1.3 Command parameters and values

Parameters and values from commands are enclosed in **<** and **>**. Optional parameters are enclosed with **[** and **]**.

6.1.4 Generic responses and error information

In command specification, result information may be described as **<error description>** and **<success information>** due to various responses and third party information.

6.1.5 SMS auto-block

To prevent echo bounces (send-reply-send loop), a maximum of failing commands to a product is 3. The user will be informed of the block and the product will un-block this sender as soon as a successful command is executed.

6.2 Common configuration and command configuration

The product has a common configuration, which consist of configuration keys and configuration values. These configuration keys are divided into sections to enable easier readability and localisation. An example of a key is **common.net.apn=online.telia.se**, where **common.net.apn** is the configuration key and **online.telia.se** is the value. Common configuration always has the prefix **common.**

6.2.1 Command specific configuration

Each command may have its own configuration. The configuration of the command is accessed using the command name as the prefix, i.e. **install.enabled=true**, where **install** is the command and **enabled=true** is the configuration key and value. If a key is not present in the specific command configuration, the configuration key and its value is inherited from the common configuration. If the configuration key is present in the command configuration, it overrides the settings in the common configuration.

6.2.2 Execute command with specific configuration

The user has the possibility to override common and command configuration during execution of a command. This facility gives the user a possibility to change configuration only during current execution without permanently change the configuration.

An example of executing a command with specific parameters is:

```
Report1 email.to=recipient@mydomain.com
```

This command will override the configuration key email.to and send report1 to recipient recipient@mydomain.com and not use the information stored in common configuration or report1 configuration.

Please note that the prefix for common or command is not used when overriding configuration when specifying configuration keys in the command line.

6.2.3 Combine commands in command line

Commands executed by SMS and Console can be combined in the same command line. The commands must be separated with semicolon (;).

An Example of executing two commands in the same command line:

```
set common.net.apn=online.telia.se;get common.email.to
```

This line will set common configuration common.net.apn to online.telia.se and get the configuration common.email.to.

6.2.4 Configuration values with spaces

Command lines containing values with spaces which should be treated as one parameter or value, must me enclosed in double quotes (character ”).

An example of executing a command with a parameter containing spaces:

```
set common.product.name=”My Street”
```

This command will set the common configuration key common.product.name to “My Street”.

6.2.5 Synchronize configuration using HTTP

Configuration can be updated using HTTP GET/POST. Please see section 6.7.3 for more information.

6.3 Complete command listing

Table below shows all available commands in the product.

Command	Description	Security level
cfg	Change configuration of a command or an event	1
device	Sends command to connected devices	1
factoryreset	Restore all settings to factory default	1
fwupdate	Update product firmware	2
get	Get a configuration key	1
install	Search for installed devices	1
login	Login in console or SMS mode	1
maintenance	Maintenance task	1
momreport	Read values from devices and send report	1
qset	Quick set configuration	1
reboot	Reboot product	1
report	User definable report.	1
report1	User definable report 1	1
report2	User definable report 2	1
report3	User definable report 3	1
report4	User definable report 4	1
report5	User definable report 5	1
set	Set a configuration key	1
sch	Schedules a command	1
status	Get status information from the product	1
storevalue	Read and store value of installed devices	1
sysreport	Sends system report	1
logreport	Sends system log report	1
sync	Synchronize configuration with synchronize server	2
timesync	Synchronize time with internet timeserver	1

Table 20 Complete command listing

6.4 Complete event listing

Event	Description	Configuration security level
balanceevent	Executed on balance/credits low when using Prepaid SIM card and sends report	1
fwupdateevent	Executed on product firmware update and sends report	1
rebootevent	Executed on unexpected reboot and sends report	1
swupdateevent	Executed on product software update and sends report	1
swupdatesynchandler	Executed on product software update and starts configuration synchronization process	1

Table 21 Complete event listing

6.5 Common configuration settings

6.5.1 Transparent M-Bus and Console GSM data settings

Settings affect the transparent M-Bus over GSM data and console over GSM data.

Configuration	Description	Default value	Validation	Security level
csd.timeout	Idle timeout in seconds before hanging up active call	60	Numeric 0-86400	1
csd.tmbus.baud	Local M-Bus baud rate	2400	Numeric 300,600,1200,2400,4800,9600	1
csd.tmbus.packing.interval	Packing interval in ms. The product will wait this time for silent line on local M-Bus before sending the information to the network.	1000	Numeric 0-65535	1
csd.mode	GSM data service mode	Tmbus	Enumeration tmbus, console	1
csd.enabled	GSM data service on/off	True	Boolean true, false	1
csd.speed	GSM bearer control 0 = Autobauding 1 = 300 bps (V.21) 2 = 1200 bps (V.22) 4 = 2400 bps (V.22bis) 6 = 4800 bps (V.32) 7 = 9600 bps (V.32)	0	Numeric 0, 1, 2, 4, 6, 7, 14, 65, 66, 68, 70, 71, 75	1

	14 = 14400 bps (V.34) 65 = 300 bps (V.110) 66 = 1200 bps (V.110) 68 = 2400 bps (V.110) 70 = 4800 bps (V.110) 71 = 9600 bps (V.110) 75 = 14400 bps (V.110)			

6.5.2 Transparent M-Bus TCP settings

Settings affect the transparent M-Bus over TCP.

Configuration	Description	Default value	Validation	Security level
tcp.tmbus1.enabled	Transparent M-Bus TCP Service 1 on/off	False	Boolean true, false	1
tcp.tmbus1.baud	Transparent M-Bus TCP Service 1 local M-Bus baud rate	300	Numeric 300,600,1200,2400,4800,9600	1
tcp.tmbus1.packing.interval	Packing interval in ms. The product will wait this time for silent line on local M-Bus before sending the information to the network.	1000	Numeric 0-65535	1
tcp.tmbus1.port	Transparent M-Bus TCP Service 1 TCP listening port	300	Numeric 0-65535	1
tcp.tmbus1.timeout	Transparent M-Bus TCP Service 1 idle timeout in seconds before hanging up TCP connection	60	Numeric 0-86400	1
tcp.tmbus2.enabled	Transparent M-Bus TCP Service 2 on/off	False	Boolean true, false	1
tcp.tmbus2.baud	Transparent M-Bus TCP Service 2 local M-Bus baud rate	2400	Numeric 300,600,1200,2400,4800,9600	1
tcp.tmbus2.packing.interval	Packing interval in ms. The product will wait this time for silent line on local M-Bus before sending the information to the network.	1000	Numeric 0-65535	1
tcp.tmbus2.port	Transparent M-Bus TCP Service 2 TCP listening port	2400	Numeric 0-65535	1
tcp.tmbus2.timeout	Transparent M-Bus TCP Service 2 idle timeout in seconds before hanging	60	Numeric 0-86400	1

	up TCP connection			

6.5.3 TCP Console settings

Settings affect the console over TCP.

Configuration	Description	Default value	Validation	Security level
tcp.console.enabled	TCP Console Service on/off	false	Boolean true, false	1
tcp.console.port	TCP Console Service TCP listening port	9999	Numeric 0-65535	1
tcp.console.timeout	TCP Console Service idle timeout in seconds before hanging up TCP connection	60	Numeric 0-86400	1

6.5.4 Security settings

Settings affect the security used by command execution, configuration change etc.

Configuration	Description	Default value	Validation	Security level
security.nraccesslist	SMS and GSM data phonenumber access list	Blank	List of numbers	1
security.ipaccesslist	TCP Services IP address access list	Blank	List of IP addresses	1
security.password1	Password for security level 1	Blank	Text 0-8 characters	1
security.password2	Password for security level 2	2222	Text 0-8 characters	2
security.password3	Password for security level 3	3333	Text 0-8 characters	3

6.5.5 Network settings

Settings affect the GPRS connection to the internet.

Configuration	Description	Default value	Validation	Security level
net.autosmtp	Auto detection of SMTP Server depending on network operator	true	Boolean true, false	1

net.autoapn	Auto detection of APN settings depending on network operator	true	Boolean true, false	1
net.apn	GPRS APN to use. Setting this parameter will disable Auto APN detection. Auto detected when net.autoapn is true.	Blank	Text	1
net.user	GPRS APN user name. Auto detected when net.autoapn is true	Blank	Text	1
net.password	GPRS APN password. Auto detected when net.autoapn is true	Blank	Text	1
net.dns1	GPRS DNS server. Auto detected when net.autoapn is true	Blank	Text	1
net.dns2	GPRS DNS server. Auto detected when net.autoapn is true	Blank	Text	1
net.timeout	GPRS inactivity timeout in seconds. Setting timeout to 0 will disable inactivity disconnection. Usable when running listening TCP services on public static IP addresses.	60	Numeric 0-86400	1
net.cusd.enabled	Enable/Disable unstructured network data. Must be enable when requesting **prepaid** information.	false	Boolean true, false	1

6.5.6 M-Bus settings

Settings affect the M-Bus setting used during M-Bus communication.

Configuration	Description	Default value	Validation	Security level
device.mbus.searchmode	M-Bus search mode used to find M-Bus slave devices	secondary, primary	Enumeration list primary, secondary	1
device.mbus.searchstart	Search start address when using primary search mode	0	Numeric 0-250	1
device.mbus.searchend	Search end address	250	Numeric	1

	when using primary search mode		0-250	
device.mbus.searchidmask	Search identification mask when using secondary search mode	FFFFFFFF	ASCII HEX 00000000-FFFFFFFF	2
device.mbus.searchmanmask	Search manufacturer mask when using secondary search mode	FFFF	ASCII HEX 0000-FFFF	2
device.mbus.searchgenmask	Search generation mask when using secondary search mode	FF	ASCII HEX 00-FF	2
device.mbus.searchmedmask	Search medium mask when using secondary search mode	FF	ASCII HEX 00-FF	2
device.mbus.searchbaud	Baud rate to search for M-Bus slave devices	2400	Enumeration list 300,2400	1
device.mbus.buswatch	Slave collision detection using internal intelligent process	true	Boolean true, false	2
device.mbus.busrecoverytime	Recovery time in milliseconds after collision has been detected	3000	Numeric 500-15000	2
device.mbus.idleduration	Idle time of M-Bus bus before sending any requests	700	Numeric 500-15000	2
device.mbus.nkesleep	Idle time after SND_NKE has been sent before new request	10000	Numeric 500-15000	2
device.mbus.responsetimeout	Extra response time in milliseconds when waiting for response, expect automatically decided M-Bus timeout depending on baud rate	300	Numeric 0-15000	2
device.mbus.fcbmode	FCB bit toggling on/off. Enable will toggle FCB bit and read slaves until “no more data“is found	false	Boolean true, false	2

	or.telegramcount is reached.			
device.mbus.telegramcount	Maximum number of t to receive when fcbmode is true.	0	Numeric 0-255	2
device.mbus.requestretry	Maximum number of retries when requesting data from M-Bus slave devices	3	Numeric 0-10	1
device.mbus.selectretry	Maximum number of retries when selecting slave when running secondary mode	3	Numeric 0-10	1
device.mbus.maxdevices	Maximum number of M-Bus slave devices to found. Setting to -1 disables maximum devices.	-1	Numeric -1-250	1
device.mbus.clean	Enables clean of all installed M-Bus slave devices when running command install	false	Boolean true, false	1
device.mbus.keepstatus	Enables no changes of status when running command install	false	Boolean true, false	1
device.mbus.searchbusrecoverytime	Recovery time in milliseconds after collision has been detected in search	3000	Numeric 500-15000	2
device.mbus.searchidleduration	Idle time of M-Bus bus before sending any requests in search	700	Numeric 500-15000	2
device.mbus.searchnkesleep	Idle time after SND_NKE has been sent before new request in search	10000	Numeric 500-15000	2
device.mbus.searchresponsetimeout	Extra response time in milliseconds when waiting for response, expect automatically decided M-Bus timeout depending on baud rate in search	300	Numeric 0-15000	2
device.mbus.searchrequestretry	Maximum number of retries when	0	Numeric	1

	requesting data from M-Bus slave devices in search		0-10	
device.mbus.searchselectretry	Maximum number of retries when selecting slave when running secondary mode in search	0	Numeric 0-10	1
device.command.runbefore	Name of device command to run before executing command storevalue.	Blank	Text	
device.command.runbeforesleep	Number of milliseconds to wait before executing M-Bus command after runbefore command	2500	Numeric 0-15000	

6.5.7 SMS settings

Settings affect the SMS settings of reports and generic SMS responses.

Configuration	Description	Default value	Validation	Security level
sms.response.mode	SMS response modes.	All	Enumeration list all, none, progress, error, success, login, source, invalid	1
sms.response	Enables response to requesting phonenumber.	True	Boolean true, false	1
sms.to	SMS recipient list. Numbers listed will receive SMS reports.	Blank	List of numbers	1

6.5.8 E-Mail settings

Settings affect the E-Mail settings used when sending E-Mail reports.

Configuration	Description	Default value	Validation	Security

				level
email.to	E-Mail recipients list. E-Mail addresses listed will receive E-Mail reports.	Blank	List of E-Mail addresses	1
email.cc	E-Mail Cc recipients list. E-Mail addresses listed will receive copy of E-Mail reports.	Blank	List of E-Mail addresses	1
email.bcc	E-Mail Bcc recipients list. E-Mail addresses listed will receive hidden copy of E-Mail reports.	Blank	List of E-Mail addresses	1
email.server	SMTP server to use when sending E-Mail reports	Blank	Text	1
email.port	SMTP server port to use when sending E-Mail reports	25	Numeric 0-65535	1
email.user	SMTP server username to use when sending E-Mail reports	Blank	Text	1
email.password	SMTP server password to use when sending E-Mail reports	Blank	Text	1
email.from	E-Mail from address to use when sending E-Mail reports. Blank configuration will first use product.name@elvaco.se then product.snr@elvaco.se.	Blank	Text	1
email.timeout	TCP timeout in seconds.	-1	Numeric -1 = Use default 0-86400	1
email.ssl	Use SSL connection	False	Boolean true, false	1

6.5.9 FTP settings

Settings affect the FTP settings used when sending FTP reports.

Configuration	Description	Default value	Validation	Security level
ftp.server	FTP server to use when sending FTP reports	Blank	Text	1
ftp.port	FTP server port to use when sending FTP reports	21	Numeric 0-65535	1
ftp.user	FTP server username to use when sending FTP reports	Blank	Text	1
ftp.password	FTP server password to use when sending FTP reports	Blank	Text	1
ftp.remotedir	Remote subdirectory where to put files	Blank	Text Front slash (character /) used as directory separator. Must not start or end with front slash.	1
ftp.timeout	TCP timeout in seconds.	-1	Numeric -1 = Use default 0-86400	1
ftp.ssl	Use SSL connection	False	Boolean true, false	1

6.5.10 HTTP settings

Settings affect the HTTP settings used when sending HTTP reports.

Configuration	Description	Default value	Validation	Security level
http.url	HTTP URL to use when sending HTTP reports	Blank	Text	1
http.user	HTTP server	Blank	Text	1

	username to use when sending HTTP reports			
http.password	HTTP server password to use when sending HTTP reports	Blank	Text	1
http.authmode	HTTP server authentication mode.	None	Enumeration none,basic	1
http.header	User definable headers to be sent along with HTTP requests. Separated with comma.	Blank	Text <header name>=<header value>	1

6.5.10.1 HTTP GET/POST

To identify the product, the HTTP header User-Agent is filled with the following information:

```
User-Agent=TC65i/<imei> Profile/IMP-NG Configuration/CLDC-1.1
Model/<model> Hardware/<hw> Firmware/<fw> Application/<sw>
Serial/<serial>
```

Parameter description

<imei>
15 digit product module IMEI number
<model>
Product model, i.e. CMe2100
<hw>
Product hardware version, i.e R4A
<fw>
Product module firmware version, i.e. 01.100
<sw>
Product software version, i.e. 1.1.0
<serial>
10 digit product serial number, i.e. 0006000000

6.5.11 Time settings

Settings affect the Internet time server settings and time synchronization procedure.

Configuration	Description	Default value	Validation	Security level
time.mode	Time synchronization protocols to use	daytime,ntp	List of modes	

	when synchronizing time		daytime,ntp	
Time.utcoffset		1	Numeric -11 – 11	1
time.acceptdiff	Number of seconds difference to accept without setting time	60	Numeric 0-86400	
time.ntp.server	NTP time server to use when synchronizing time	192.36.143.151	Text	1
Time.ntp.retry		3	Numeric 0-10	1
time.ntp.port	NTP time server UDP port to use when synchronizing time	123	Numeric 0-65535	1
time.ntp.localport	NTP time server UDP local port to use when synchronizing time	7000	Numeric 0-65535	1
time.ntp.timeout	NTP time server inactivity timeout in seconds	10	Numeric -1-60	1
time.daytime.server	Daytime time server to use when synchronizing time	64.236.96.53	Text	1
Time.daytime.retry		3	Numeric 0-10	1
time daytime.port	Daytime time server TCP port to use when synchronizing time	13	Numeric 0-65535	1
Time.daytime.timeout		60	Numeric -1-60	1

6.5.12 Schedule settings

Settings affect how scheduled commands will handle completion errors and retries.

Configuration	Description	Default value	Validation	Security level
schedule.retrymax	Number of retries before cancelling scheduled commands	3	Numeric 0-10	1
schedule.retryoffset	Time in seconds between retries of scheduled commands	60	Numeric 0-86400	1

6.5.13 Product generic settings

Settings affect common product settings.

Configuration	Description	Default value	Validation	Security level
syslog.level	Logging level of system logs.	0	Numeric -10-10	1
product.name	Name of product	Blank	Text	1
product.culture	Culture (language) to use in product.	En	Enumeration en	1
product.culture.decimalseparator	Decimal separator in reports	,	Text	1

6.5.14 Firmware update settings

Settings affect how the product should process firmware update and which update server to use.

Configuration	Description	Default value	Validation	Security level
system.fota.url	Firmware update server URL. Internally detected if not set.	Blank	Text	1
system.fota.user	Firmware update server user. Internally detected if not set.	Blank	Text	1
system.fota.password	Firmware update server password. Internally detected if not set.	Blank	Text	1
system.fota.authmode	Firmware update server authentication mode. Internally detected if not set.	Blank	Enumeration none, basic	1

6.5.15 Application update settings

Settings affect how the product should process software update and which update server to use.

Configuration	Description	Default value	Validation	Security level
system.otap.url	Software update server URL.	Blank	Text	1

	Internally detected if not set.			
system.otap.user	Software update server user. Internally detected if not set.	Blank	Text	1
system.otap.password	Software update server password. Internally detected if not set.	Blank	Text	1
system.otap.authmode	Software update server authentication mode. Internally detected if not set.	Blank	Enumeration none, basic	1

6.5.16 Configuration synchronization settings

Settings affect how the product should process configuration synchronization with configuration server. These settings enable the product to synchronize complete product configuration with an HTTP server.

Configuration	Description	Default value	Validation	Security level
system.cota.urlbase	Configuration synchronization server base URL. Internally detected if not set.	Blank	Text	3
system.cota.url	Configuration synchronization server URL. Internally detected if not set.	Blank	Text	1
system.cota.user	Configuration synchronization server user. Internally detected if not set.	Blank	Text	1
system.cota.password	Configuration synchronization server password. Internally detected if not set.	Blank	Text	1
system.cota.authmode	Configuration synchronization server authentication mode. Internally detected if not set.	Blank	Enumeration none, basic	1

6.5.17 Event settings

Settings affect how and when events are triggered.

Configuration	Description	Default value	Validation	Security level
event.balance.low	The low watermark for triggering low balance event	100	Numeric	1

6.5.18 Command and event configuration settings

Following table is a complete list of configuration settings, which may be used in specific command configuration. Not all configurations are implemented in all commands.

Configuration	Description	Default value	Validation	Security level
enabled	Enables or disables a schedule or report of a command or event	-	Boolean true, false	1
Cron	Cron schedule for scheduled commands	-	Cron pattern, Please see 6.5.21	1
runonerror	May specified to run a command on error	-	Implemented command	1

6.5.19 Branding settings

Following table is a complete list of configuration settings, which may be used to brand information sent in reports..

Configuration	Description	Default value	Validation	Security level
branding.company	Company name	Blank	Text	2
branding.address1	Address line 1	Blank	Text	2
branding.address2	Address line 2	Blank	Text	2
branding.address3	Address line 3	Blank	Text	2
branding.address4	Address line 4	Blank	Text	2
branding.tel1	Tel. number 1	Blank	Text	2
branding.tel2	Tel. number 2	Blank	Text	2
branding.fax1	Fax number	Blank	Text	2
branding.email	E-Mail address	Blank	Text	2

branding.web	Web address	Blank	Text	2
branding.logourl	URL to logo	Blank	Text	2
branding.logoalt	Alternative text if logo is not found	Blank	Text	2
branding.supportinfo	Support information text	Blank	Text	2
branding.supporttel	Support tel. number	Blank	Text	2
branding.supportemail	Support e-mail address	Blank	Text	2

6.5.20 Monitor settings

Following table is a complete list of configuration settings, which may be used to enable and configure global monitor settings.

Configuration	Description	Default value	Validation	Security level
Monitor.enabled	Enables or disable monitor handling	False	Boolean true, false	1

6.5.21 Cron schedule configuration

Cron schedule is a powerful way of scheduling task in numerous ways. This section describes how the cron syntax work and how it can be configured.

A UNIX crontab-like pattern is a string splitted in five space separated parts.

Minute sub-pattern

During which minutes should the command be launched. Value range from 0 to 59.

Hour sub-pattern

During which hours of the day should the command be launched. Value range from 0 to 23.

Days of month sub-pattern

During which days of the month should the command be launched. Value range from 0 to 31.

Month sub-pattern

During which months of the year should the command be launched. Value range from 1 (January) to 12 (December). Month sub-pattern also allows alias jan, feb, mar, apr, may, jun, jul, aug, sep, oct, nov, dec.

Days of week sub-pattern

During which days of the week should the command be launched. Value range from 0 (Sunday) to 6 (Saturday). Days of week sub-pattern also allows alias sun, mon, tue, wed, thu, fri, sat.

The * (star) wildcard is also admitted, indicating every minute, every hour of day, every day of month, every month and every weekday, according to the sub-pattern which it is used.

The / (slash character) can be used to identify periodic values, in the form a/b. A Sub-pattern with the slash character is satisfied when the value on the left divided byte the one to the right gives an integer result (a % b == 0)

The ? (question mark) can be used to generate random cron, example:
?1-5 * * * * will generate a random number between 1 and 5 for minute sub-pattern.

Cron patterns can also be combined using | (pipe character).

6.5.21.1 Examples

Cron pattern	Description
*/5 * * * *	Launch every 5 minute; 00:00, 00:05, 00:10 etc
5 * * * *	Launch 5 past every hour; 00:05, 01:05, 02:05 etc
* * * * *	Launch every minute, 00:01, 00:02, 00:03 etc
* 12 * * mon	Launch every minute during the12th hour of Monday
* 12 16 * mon	Launch every minute during the 12th hour of Monday, but only if the day is the 16th of the month
59 11 * * 1,2,3,4,5	Launch 11:59 on Monday, Tuesday, Wednesday, Thursday and Friday
59 11 * * 1-5	Same as above
15 9-17 * * *	Launch every 15 minute between the 9th and the 17th hour of the day, 09:00, 09:15, 09:30 etc.
* 12 10-16/2 * *	Launch every minute during the 12th hour of the day, but only if the day is the 10th, the 12th the 14th or the 16th of the month.
* 12 1-15,17,20-25 * *	Launch every minute during the 12th hour of the day, but the day of the month must be between the 1st and the 15th, the 20th and the 25th, or at least it must be the 17th.
0 5 * * *|8 10 * * *|22 17 * * *	Launch every day at 05:00, 10:08 and 17:22
?1-30 0 * * *	Launch some minute between 1 and 30 every day.

6.6 Configuration commands

This section covers commands used to configure the product. Please see configuration parameters section 6.5 for configuration keys and values.

6.6.1 Qset – Quick configure the product

The quick configuration has been implemented to enable fast access to configuration which is frequently changed.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command `qset <section>[ <param>[ <param>[ ...]]`

Response(s)
`<success information>`
`OK`
 	
or
 	
`<error description>`
`ERROR`

Example 1 Execute – Set E-Mail recipients to recipient@mydomain.com and recipient2@mydomain.com `Qset email recipient@mydomain.com,recipient2@myadomain.com`

Example 1 Response
`qset completed successfully.`
`OK`

Example 2 Execute – Set APN information to online.telia.se `Qset net online.telia.se`

Example 2 Response
`qset completed successfully.`
`OK`

Parameter description

`<section>`
Available quick configuration sections are: email, ftp, http, net, mbus, tmbus1, tmbus2, csd, console
`<param>`
Parameters depending on selected section.

Used configuration

Configuration	Default value

6.6.1.1 Configure E-Mail settings

This section describes how to change the default E-Mail settings and recipients. These settings will be used by default on all E-Mail reports. Executing "qset email" without parameters, will revert E-Mail SMTP settings to auto, but keeping configured recipients.

Syntax

Execute command `qset email [ <[<additive>]recipients>[ <server>[ <port> [ <user>[ <pass>]]]]]`

Response(s) <success information> OK or <error description> ERROR
Example 1 Execute – Set E-Mail recipients to recipient@mydomain.com and recipient2@mydomain.com Qset email recipient@mydomain.com,recipient2@mydomain.com
Example 1 Response qset completed successfully. OK
Example 2 Execute – Add E-Mail recipient recipient@mydomain.com and set SMTP server to smtprelay1.telia.com Qset email +recipient@mydomain.com smtprelay1.telia.com
Example 2 Response qset completed successfully. OK

Parameter description

<recipients>
Comma separated E-Mail recipient list
<server>
SMTP Server DNS or IP-Address
<port>
SMTP Server port (default 25)
<user >
SMTP Server username
<pass>
SMTP Server password
<additive>
Using sign + or sign – , E-Mail addresses can be added or removed without changing already saved recipients.

Used configuration

Configuration	Default value

Additional information

If the SMTP server is using SSL, enable SSL by setting common.email.ssl=true.

6.6.1.2 Configure FTP settings

This section describes how to change the default FTP report settings. These settings will be used by default on all FTP reports. . Executing "qset ftp" without parameters, will revert FTP settings to factory defaults.

Syntax

Execute command `qset ftp[ <server>[ <port> [ <user>[ <pass>[ <remotedir>]]]]]`

Response(s)
`<success information>`
`OK`
 	
or
 	
`<error description>`
`ERROR`

Example 1 Execute – Set FTP Server to ftp.elvaco.se using anonymous login and default TCP port 21 `Qset ftp ftp.elvaco.se`

Example 1 Response
`qset completed successfully.`
`OK`

Example 2 Execute – Set FTP Server to ftp.elvaco.se , TCP port 21 and use username info and password secret `Qset ftp ftp.elvaco.se 21 info secret`

Example 2 Response
`qset completed successfully.`
`OK`

Parameter description

<server>
FTP Server DNS or IP-Address
<port>
FTP Server port (default 25)
<user >
FTP Server username
<pass>
FTP Server password
<remotedir>
FTP Server remote directory. Front slash (character /) is used as directory separator. Must not start or end with front slash.

Used configuration

Configuration	Default value

Additional information

Be sure to setup the FTP server correctly in the networked used. If you are using a regular SIM with dynamic IP address, the FTP should normally run in passive mode.

If the FTP server is using SSL, enable SSL by setting common.email.ssl=true.

6.6.1.3 Configure HTTP settings

This section describes how to change the default HTTP report settings. These settings will be used by default on all HTTP reports. Executing "qset http" without parameters, will revert HTTP settings to factory defaults.

Syntax

Execute command `qset http[ <url> [ <user>[ <pass>[ <authmode>]]]]]]`

Response(s)
`<success information>`
`OK`
 	
or
 	
`<error description>`
`ERROR`

Example 1 Execute – Set HTTP URL to http://www.elvaco.se/portdata.aspx `Qset http http://www.elvaco.se/postdata.aspx`

Example 1 Response
`qset completed successfully.`
`OK`

Example 2 Execute – Set HTTP URL to http://www.elvaco.se , user info, password secret and authentication mode to basic `Qset http http://www.elvaco.se/postdata.aspx info password basic`

Example 2 Response
`qset completed successfully.`
`OK`

Parameter description

<url>
HTTP URL where to post data
<user >
WEB-Server username
<pass>
WEB-Server password
<authmode>
Authentication mode used to login. Currently support mode is none and basic.

Used configuration

Configuration	Default value

Additional information

User definable headers, comma separated key=value pair, can be added using key http.header.

6.6.1.4 Configure Network settings

This section describes how to change the network settings used to enable internet connection over GRPS: Please contact you network provider regarding network settings.

By default, the product is using Auto APN settings. The product will automatically try to configure the correct settings. Depending on network provider, this information is not always available, and the user may need to set these parameters manually.

Executing "qset net" without parameters, will revert net settings to factory defaults and use Auto APN.

Syntax

Execute command `qset net[ <apn> [ <user>[ [ <password>[ <dns1>[ <dns2> [ <timeout>]]]]]]]`

Response(s)
`<success information>`
`OK`
 	
or
 	
`<error description>`
`ERROR`

Example 1 Execute – Set APN to online.telia.se and disable auto APN using no login credentials `Qset net online.telia.se`

Example 1 Response
`qset completed successfully.`
`OK`

Example 2 Execute – Set APN to online.telia.se, user to info and password to secret `Qset net online.telia.se info secret`

Example 2 Response
`qset completed successfully.`
`OK`

Parameter description

<apn>
APN to use. Setting APN will disable the Auto APN feature.
<user >
APN username
<pass>
APN password
<dns1>
Primary DNS to use for DNS lookups
<dns2>
Secondary DNS to use for DNS lookups
<timeout>
Idle timeout, in seconds, for GPRS connections. Setting to zero will disable timeout and keep connection.

Used configuration

Configuration	Default value

Additional information

Use common.net.timeout to set the idle time before disconnecting from the network.

6.6.1.5 Configure M-Bus settings

This section describes how to change the M-Bus communication settings. These settings are used when running installation processes and also when reading and storing M-Bus slave device values.

Syntax

Execute command `qset mbus[ <searchmode> [ <searchbaud>[ <searchstart>[ <searchend> >[ <retrymode>]]]]]`

Response(s)
`<success information>`
`OK`
 	
or
 	
`<error description>`
`ERROR`

Example 1 Execute – Set M-Bus search mode to primary `Qset mbus primary`

Example 1 Response
`qset completed successfully.`
`OK`

Example 2 Execute – Set M-Bus search mode to secondary then primary and use baud 2400 then 300 `Qset mbus secondary,primary 2400,300`

Example 2 Response
`qset completed successfully.`
`OK`

Parameter description

<searchmode>
Comma separated search mode list for M-Bus slave devices search. Valid values are primary and secondary. Primary search mode will search for M-Bus slave devices using primary addressing and Secondary search mode will search for M-Bus slave devices using secondary addressing.
<searchbaud>
Comma separated search baud list for M-Bus slave devices search. Valid values are 300, 600, 1200, 2400, 4800, 9600.
<searchstart>
Primary start address when using primary search mode. Valid values are 0-250.
<searchend>
Primary end address when using primary search mode. Valid values are 0-250.
<retrymode>
Enable or disable enhanced mode which will increase the retries of select and request retries. Valid values are **enhanced** or **simple**.

Used configuration

Configuration	Default value

6.6.1.6 Configure Transparent M-Bus over TCP

This section describes how to change the settings for transparent M-Bus over TCP. Please not that a SIM card with public static IP address is need to connect to the product using TCP.

Syntax

Execute command `qset tmbus<server>[ <run> [ <baud>[ <port>]]]`

Response(s) <success information> OK or <error description> ERROR
Example 1 Execute – Enable Transparent M-Bus over TCP on 300 baud Qset tmbus1 on 300
Example 1 Response qset completed successfully. OK
Example 2 Execute – Enable Transparent M-Bus over TCP, use 2400 baud and listen on TCP port 2400 Qset tmbus2 on 2400 2400
Example 2 Response qset completed successfully. OK

Parameter description

<server>
Server Id. Valid values are 1 and 2.
<run>
Turn Transparent M-Bus over TCP on or off. Valid values are on and off.
<baud>
Local baud rate. Valid values are 300, 600, 1200, 2400, 4800, 9600.
<port>
Listening TCP port for TCP service. Valid values are 0-65535.

Used configuration

Configuration	Default value

Additional information

The listening server is by default using packing mode, which means that incoming data from M-Bus interface will be packed when a silent time of tcp.tmbus1.packing.interval is reached. Setting tcp.tmbus1.packing.interval=0 will send data to network as soon as it's available.

6.6.1.7 Configure console over Telnet TCP

This section describes how to change the settings for console over TCP. The console can be used to configure the product and parse commands. Please not that a SIM card with public static IP address is need to connect to the product using TCP.

Syntax

Execute command `qset console [ <run> [<port>]]`

Response(s)
`<success information>`
`OK`
 	
or
 	
`<error description>`
`ERROR`

Example 1 Execute – Enable TCP Telnet console on default TCP port 9999 `Qset console on`

Example 1 Response
`qset completed successfully.`
`OK`

Example 2 Execute – Enable TCP Telnet console on TCP port 12000 `Qset console on 12000`

Example 2 Response
`qset completed successfully.`
`OK`

Parameter description

<run>
Turn TCP Telnet console on or off. Valid values are on and off.
<port>
Listening TCP port for TCP service. Valid values are 0-65535.

Used configuration

Configuration	Default value

6.6.1.8 Configure Transparent M-Bus over GSM data or console over GSM data

This section describes how to change the settings for incoming calls on GSM data. The GSM data service, depending on settings, will start a console or transparent M-Bus link. There is no current functionality using console and transparent M-Bus over GSM data at the same time.

Syntax

Execute command `qset csd[ <run> [ <mode>[ <baud>]]]`

Response(s)
`<success information>`
`OK`
 	
or
 	
`<error description>`
`ERROR`

Example 1 Execute – Enable Transparent M-Bus over GSM data `Qset csd on tmbus`

Example 1 Response
`qset completed successfully.`
`OK`

Example 2 Execute – Enable GSM data console `Qset csd on console`

Example 2 Response
`qset completed successfully.`
`OK`

Parameter description

<run>
Turn GSM data service on or off. Valid values are on and off.
<mode>
Sets the GSM data service mode. Valid values are tmbus and console. Tmbus mode will enable Transparent M-Bus over GSM data and console will enable console over GSM data.
<baud>
Local M-Bus baud rate when using mode tmbus. Valid values are 300, 600, 1200, 2400, 4800, 9600.

Used configuration

Configuration	Default value

Additional information

Sometimes there is a need to change the bearer service used. The default value is Autobaud/Autonegotiate. Use key common.csd.speed to change service type. Please consult your service provider which service is applicable for your SIM,

The listening server is by default using packing mode, which means that incoming data from M-Bus interface will be packed when a silent time of csd.tmbus.packing.interval is reached. Setting csd.tmbus.packing.interval=0 will send data to network as soon as it's available.

6.6.2 Get – Get configuration value

The get command is used to read a configuration value in a command or common configuration. The command can be used to read one or more configuration keys and also with wildcard character *.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command

```
get <key>[ <key>[ ...]]
```

Response(s)

```
<key>:value
[<key>:<value>
[...]]
OK
```

or

```
<error description>
ERROR
```

Example 1 Execute – Get common configuration common.net.apn and install.enabled

```
get common.net.apn install.enabled
```

Example 1 Response

```
common.net.apn:online.telia.se
install.enabled:true
OK
```

Example 2 Execute – Get common configuration starting with common.net.

```
get common.net.*
```

Example 2 Response

```
net.autosmtp:true
net.autoapn:true
net.apn:
net.user:
net.password:
net.dns:
net.timeout=60
OK
```

Parameter description

<key>
A valid configuration key, please see section 6.5.

Used configuration

Configuration	Default value

6.6.3 Set – Set configuration value

The set command is used to write a configuration value in a command or common configuration.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command

```
set <key>=<value[ <key>=<value>[ ...]]
```

Response(s)

```
<key>:value
[<key>:<value>
[...]]
OK
```

or

```
<error description>
ERROR
```

Example 1 Execute – Set common.net.apn to online.telia.se and install.enabled to true.

```
set common.net.apn=online.telia.se install.enabled=true
```

Example 1 Response

```
common.net.apn:online.telia.se
install.enabled:true
OK
```

Example 2 Execute – Set product.name to an empty string.

```
set common.product.name=
```

Example 2 Response

```
common.product.name:
OK
```

Parameter description

<key>
A valid configuration key, please see table 6.5.
<value>

A valid value for current key, please see table 6.5.

Used configuration

Configuration	Default value

6.6.4 Sch – Schedule command

The Schedule command is used to schedule commands, such as reports, maintenance task and time synchronization. The schedule command is used to turn on/off, changing report templates, changing schedule and setting command specific parameters. Command sch should be used when turning schedule commands on and off while changing configuration. Command sch cannot be used to change commands, which cannot be scheduled.

All overloaded configuration parameters to command cfg will be stored permanently in the configuration file for specified command or event file.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command

```
sch <command> <run> [<key>=<value[ <key>=<value>[ ...]]]
sch <command> <schedule> [<template id>] [<key>=<value[
<key>=<value>[ ...]]]
sch <command> <template id> [<key>=<value[ <key>=<value>[ ...]]]
```

Response(s)

```
<success information>
OK
```

or

```
<error description>
ERROR
```

Example 1 Execute – Enable report1 every day with default report template

```
sch report1 1day
```

Example 1 Response

```
sch completed successfully
OK
```

Example 2 Execute – Enable report1 and change report template to 1105

```
sch report1 1105
```

Example 2 Response
`sch completed successfully`
`OK`

Example 3 Execute – Enable report1 and change report template to 1105 and overload time interval to send values from two days back sch report1 1105 filter.mode=day filter.param=2
Example 3 Response sch completed successfully OK

Parameter description

`<command>`
A valid schedulable command.
`<run>`
Enable/Disable schedule without changing configuration. Valid values are on or off.
`<schedule>`
Schedule and filter settings for a command. Filters settings only applies to reports where a time interval is used to select values. **1min** – Every minute, all values are included in report of last minute **5min** – Every 5 minute, all values are included in report of last 5 minutes **10min** – Every 10 minute, all values are included in report of last 10 minutes **15min** – Every 15 minute, all values are included in report of last 15 minutes **20min** – Every 20 minute, all values are included in report of last 20 minutes **30min** – Every 30 minute, all values are included in report of last 30 minutes **1hour** – Every hour, all values are included in report of last hour **12hour** – Every 12th hour, all values are included in report of last 12 hours **1day** – Every day (00:00), all values are included in report of last day **1week** – Every week (Mondays 00:00), all values are included in report of last week **1month** – Every month (1st 00:00), all values are included in report of last month
`<template id>`
A valid template id, please see table 7 which templates are included in your CMe2100.
<key>
A valid configuration key, please see table 6.5.
<value>
A valid value for current key, please see table 6.5.

Used configuration

Configuration	Default value

6.6.5 Cfg – Change command or event configuration

The cfg command is used to turn on/off, changing report templates, changing schedule and setting command and event specific parameters. Cfg can be used on all command configurations, including events. Cfg command should be used instead of command sch when a command configuration should be changed, which is not schedulable or the schedule of the command should not be changed.

All overloaded configuration parameters to command cfg will be stored permanently in the configuration file for specified command or event file.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command

```
cfg <command/event> <run> [<key>=<value[ <key>=<value>[ ...]]]
cfg <command/event> <schedule> [<template id>] [<key>=<value[
<key>=<value>[ ...]]]
cfg <command/event> <template id> [<key>=<value[ <key>=<value>[
...]]]
```

Response(s)

```
<success information>
OK
```

or

```
<error description>
ERROR
```

Example 1 Execute – Enable report1 every day with default report template

```
cfg report1 1day
```

Example 1 Response

```
cfg completed successfully
OK
```

Example 2 Execute – Enable balance event

```
cfg balanceevent on
```

Example 2 Response

```
cfg completed successfully
OK
```

Example 3 Execute – Enable report1 every day with default report template and use info@elvaco.se as e-mail recipient for this report (Don't use common setting)

```
cfg report1 1day email.to=info@elvaco.se
```

Example 3 Response

```
cfg completed successfully
OK
```

Parameter description

<command/event>
A valid command or event name, please see section 0 and section 6.4.
<run>
Enable/Disable schedule without changing configuration. Valid values are on or off.
<schedule>
Schedule and filter settings for a command. Filters settings only applies to reports where a time interval is used to select values. **1min** – Every minute, all values are included in report of last minute **5min** – Every 5 minute, all values are included in report of last 5 minutes **10min** – Every 10 minute, all values are included in report of last 10 minutes **15min** – Every 15 minute, all values are included in report of last 15 minutes **20min** – Every 20 minute, all values are included in report of last 20 minutes **30min** – Every 30 minute, all values are included in report of last 30 minutes **1hour** – Every hour, all values are included in report of last hour **12hour** – Every 12th hour, all values are included in report of last 12 hours **1day** – Every day (00:00), all values are included in report of last day **1week** – Every week (Mondays 00:00), all values are included in report of last week **1month** – Every month (1st 00:00), all values are included in report of last month
<template id>
A valid template id, please see table 7 which templates are included in your CMe.
<key>
A valid configuration key, please see table 6.5.
<value>
A valid value for current key, please see table 6.5.

Used configuration

Configuration	Default value

6.7 System commands

6.7.1 Factoryreset – Reset all configuration to factory default

Factory reset command will reset all configurations to default. Please see section 6.5, for default settings. Product will be restarted.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command `Factoryreset`

Response(s)
`<success information>`
`OK`
 	
or
 	
`<error description>`
`ERROR`

Example 1 Execute `factoryreset`

Example 1 Response
`factoryreset completed successfully.`
`OK`

Parameter description

Used configuration

Configuration	Default value

6.7.2 Fwupdate – Update firmware

Fwupdate command will connect to an update service web-site using HTTP and download the latest module firmware. If the module firmware is up-to-date, no upgrade will take place. The default update web-site is the http://dist.elvaco.se.

The firmware update should normally never be used. The firmware update is NOT the same as application software update which is handled by Elvaco or by using Elvaco distributed services.

Fwupdate is not available in version 1.3.0.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command `fwupdate`

Response(s) <success information> OK or <error description> ERROR
Example 1 Execute fwupdate
Example 1 Response fwupdate completed successfully. OK

Parameter description

Used configuration

Configuration	Default value
schedule.retrymax	Inherit from common
schedule.retryoffset	Inherit from common
system.fota.url	Inherit from common
system.fota.user	Inherit from common
system.fota.password	Inherit from common
system.fota.authmode	Inherit from common

6.7.3 Sync – Synchronize configuration with HTTP server

Sync command is used to connect to a synchronization service web-site using HTTP to synchronize configuration and product resources. The default synchronization web-site is http://dist.elvaco.se.

If no parameters are used, synchronization will download latest resources for product software, i.e. report templates and command definitions.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command Sync [<syncids>]

Response(s) <success information> OK or <error description> ERROR
Example 1 Execute sync
Example 1 Response Sync started. OK
Example 2 Execute – Run command and synchronize with synchronization id "elv" Sync elv
Example 2 Response Sync started. OK

Parameter description

<syncid>
One or more synchronization ids, separated with comma, to use to synchronize product settings.

Used configuration

Configuration	Default value
schedule.retrymax	Inherit from common
schedule.retryoffset	Inherit from common
system.cota.urlbase	Inherit from common
system.cota.url	Inherit from common
system.cota.user	Inherit from common
system.cota.password	Inherit from common
system.cota.authmode	Inherit from common

6.7.3.1 Synchronization description

Command sync can synchronize files and configuration on a web server. Please see Figure 2.

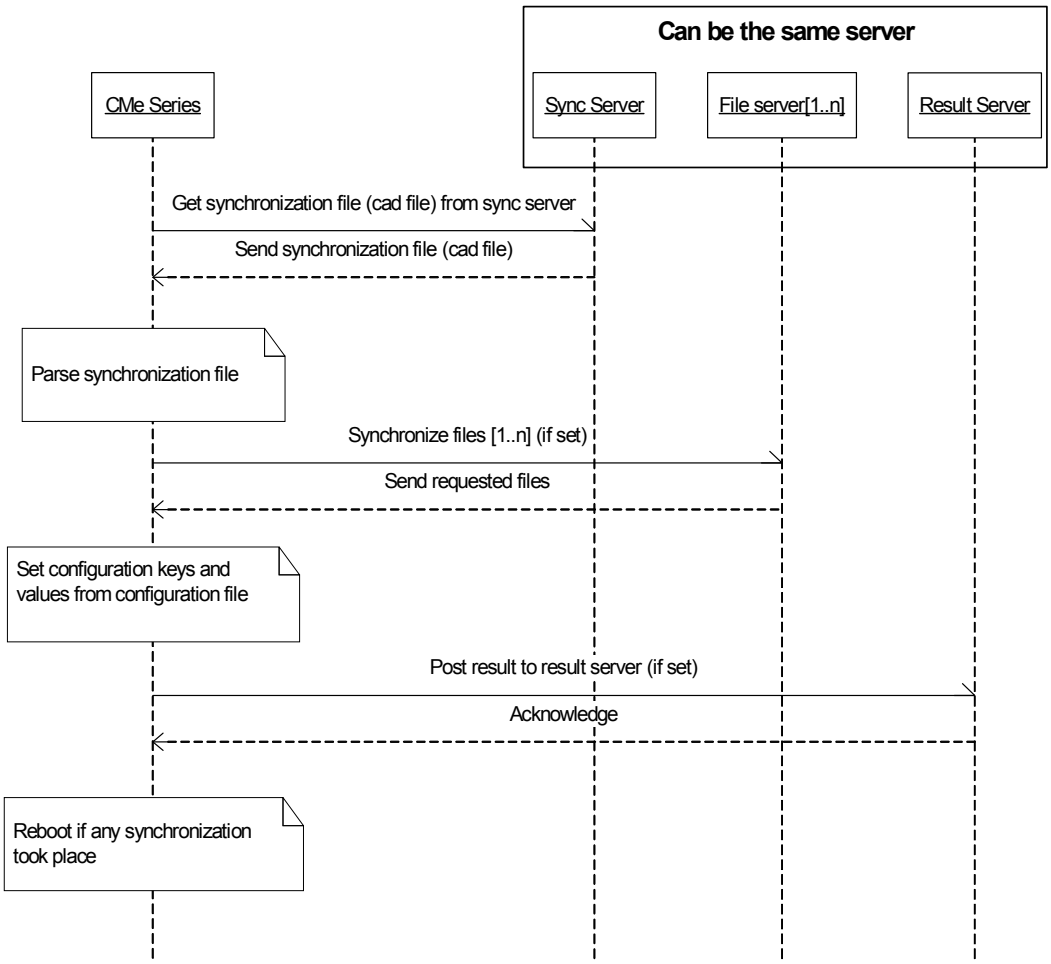


Figure 2 Synchronization overview

The CMe2100 starts with requesting a synchronization file. The synchronization file contains parameters to synchronize files and configuration keys to set in the product. When the synchronization of files and configuration are complete (or incomplete), the product will send a result to a specified result server. The result server can be specified in the cad file.

6.7.3.2 HTTP GET/POST

To identify the product, the HTTP header User-Agent is filled with the following information:

```
User-Agent=TC65i/<imei> Profile/IMP-NG Configuration/CLDC-1.1
Model/<model> Hardware/<hw> Firmware/<fw> Application/<sw>
Serial/<serial>
```

Parameter description

<imei>
15 digit product module IMEI number
<model>
Product model, i.e. CMe2100

<hw>
Product hardware version, i.e R4A
<fw>
Product module firmware version, i.e. 01.100
<sw>
Product software version, i.e. 1.1.0
<serial>
10 digit product serial number, i.e. 0006000000

6.7.3.3 Synchronization file (cad file)

The cad file contains the actual information to synchronize. See table Table 22 for synchronization parameters. All cad files must have the extension .cad.

Parameter	Description
Sync-Mode	Synchronization mode, must be set to "server" Syntax: Sync-Mode: server
Sync-Notify-URL	Result server URL. Notifications will be sent to this server address. Can be left out. Syntax: Sync-Notify-URL: <notify url>
Sync-File-[0..n]-URL	Files to synchronize. The index must start at 0 and be continuous. Can be left out. Syntax: Sync-File-[0..n]-URL: <remote url>,<local file>[,<direction>] Where <direction>: put = Transfer local file from product to server get = Transfer server file to product Default is get.
Sync-Config-[0..n]	Configuration keys and values to synchronize. The index must start at 0 and be continuous. Can be left out. Syntax: Sync- Config-[0..n]: <key>=<value>

Sync-Id	Identification which will be parsed into the result notification. Can be left out. Syntax: Sync-Id: <id>

Example of cad file

```
Sync-Mode: server
Sync-Notify-URL: http://dist.elvaco.se/RequestLogger/index.aspx
Sync-File-0-URL:
http://dist.elvaco.se/product/cme2100/R4B/cota/latest/appdata/currentconfig/command/balanceevent.cfg,a:/appdata/currentconfig/command/balanceevent.cfg
Sync-File-1-URL:
http://dist.elvaco.se/product/cme2100/R4B/cota/latest/appdata/currentconfig/command/device.cfg,a:/appdata/currentconfig/command/device.cfg
Sync-Id: 1
Sync-Config-0: common.branding.company=Elvaco AB
Sync-Config-1: common.branding.address1=Energigatan 9
```

Table 22 Synchronization file (cad file)

Parameter description

<notify url>
URL where to post notifications
<remote file>
URL where to get remote file
<local file>
Local path and filename where to put downloaded file
<key>
Configuration key to set
<value>
Configuration key value
<id>
User specific identification for this synchronization

6.7.3.4 Result notifications

If the parameter Sync-Notify-Url is set in the cad file, the product will post result information to given URL. The post is a standard HTTP post with a body containing the result information. Please see possible results in table Table 23.

Result	Description
900 Success	Synchronization completed successfully
920 Incompatible synchronizing mode	The Sync-Mode was not set to “server”

921 Error synchronizing files. <error>	Generic synchronization error.
Example of a notify post result body	
900 Success Sync-Id: 1	

Table 23 Result notification post

Parameter description

<error>
Human readable description of the error

6.7.4 System

6.7.5 Reboot – Reboot product

Reboot restarts the product.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	YES	1

Syntax

Execute command reboot
Response(s) reboot started. OK or <error description> ERROR
Example 1 Execute – Reboot product reboot
Example 1 Response Reboot started. OK

Parameter description

Used configuration

Configuration	Default value

6.8 Status commands

6.8.1 Status – Request status information

Status command is used to request status information from the product.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command

```
status [<request>]
```

Response(s)

On **<request>** =common or not given:

```
Time:<date>
Signal:<sig> of 10
Operator:<operator>
Gprs:<gprs info>
Apn:<apn>
Smtp:<smtp server>
OK
```

Or on **<request>** =prepaid

```
Updated:<date>
Credits:<credits>
Currency:<currency>
Expires:<date>
OK

Or

Updated:-
OK
```

Or on **<request>** =net

```
Operator:<operator>
Cell:<cellid>
Signal:<sig dbm> dBm
Gprs:<gprs info>
```

```
Ip:<ip address>
```

Or on **<request>** =module

```
Imei:<imei>
SimId:<simid>
Imsi:<imsi>
```

Or on **<request>** =ver

```
Hw:<hw version>
Sw:<sw version>
Module:<module version>
Production date:<date>
```

or

```
<error description>
ERROR
```

Example 1 Execute – Get common status information

```
Status
```

Example 1 Response

```
Time:2009-05-01 10:00:05
Signal:1 of 10
Operator:TELIA
Gprs:Yes
Apn:online.telia.se
Smtp:smtprelay1.telia.com
Ftp:
Http:
OK
```

Parameter description

<request>
Request type of information. Valid requests are: prepaid, net, module, ver, common. Leaving blank will return common information.
<date>
Date/time in format: YYYY-MM-DD hh:mm:ss
<sig>
GSM signal. Valid values are 1 to 10, where 10 is the highest value.
<sig dbm>
GSM signal in dBm.

<operator>
Current operator name.
<gprs info>
GPRS coverage information. Valid values are No, Yes and Attached. Yes indicates that GPRS is available in the network but the product is currently not attached.
<apn>
Currently used APN for GPRS communication.
<smtp server>
SMTP Server used to send E-Mail reports.
<currency>
Currency of credits/balance
<credits>
Current credits/balance left on Prepaid SIM card
<cellid>
4 digits ASCII hex value of current operating cell
<imei>
15 digit International Module Equipment Identification
<simid>
SIM identification number
<imsi>
International Mobile Subscriber Identity
<hw version>
Hardware version of the product. Format is R<major><minor>. <major> - Major version in digit format <minor> - Minor version in alphabetic format Example: R2A
<sw version>
Software version of the product. Format is <major>.<minor>.<build> <major> - Major version in digit format <minor> - Minor version in digit format <build > - Build in digit format Example: 1.0.0
<module version>
Version of the GSM/GPRS module. Format is <manufacturer> <revision> <manufacturer> - Name of the manufacturer <revision> - Revision of the module Example: CINTERION TC65i 1.10
<ip address>
Last known local IP address.

Used configuration

Configuration	Default value

6.9 Report commands

6.9.1 Report,Report1..Report5 – User definable reports

Report and Report1 to report5 is user definable reports. A report can be any of available report templates. When executing command report and report1..report5, the execution will start directly and the user will be informed about report generation is started. On completion of the report, status information will be returned to the user.

When using no input parameters for schedule and template id, the information stored in command configuration report respectively report1..5 are used.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	YES	1

Syntax

Execute command

```
Report[<report id>] [<schedule>] [<template id>]
```

Response(s)

On successful start:

```
report started.
OK
```

or

On unsuccessful start:

```
<error description >
ERROR
```

On successful completion:

```
report completed successfully.
OK
```

or

On unsuccessful completion:

```
<error description>
ERROR
```

Example 1 Execute – Run report1

```
report1
```

Example 1 Response

```
Report started.
```

OK
Example 2 Execute – Run report1 and set E-Mail recipient to recipient@mydomain.com and copy to recipient2@mydomain.com report1 email.to=recipient@mydomain.com email.cc=recipient2@mydomain.com
Example 2 Response report started. OK
Example 3 Execute – Run report1 with default configuration but send values for last day report1 1day
Example 3 Response report started. OK
Example 4 Execute – Run report and use template id 1105 and get device values between 2009-01-01 and 2009-02-01 report 1105 filter.mode=interval filter.param=20090101,20090201
Example 4 Response report started. OK

Parameter description

<report id>
User defined report. Valid values are 1 to 5.
<schedule>
Schedule and filter settings for a command. Filters settings only applies to reports where a time interval is used to select values. **1min** – Every minute, all values are included in report of last minute **5min** – Every 5 minute, all values are included in report of last 5 minutes **10min** – Every 10 minute, all values are included in report of last 10 minutes **15min** – Every 15 minute, all values are included in report of last 15 minutes **20min** – Every 20 minute, all values are included in report of last 20 minutes **30min** – Every 30 minute, all values are included in report of last 30 minutes **1hour** – Every hour, all values are included in report of last hour **12hour** – Every 12th hour, all values are included in report of last 12 hours **1day** – Every day (00:00), all values are included in report of last day **1week** – Every week (Mondays 00:00), all values are included in report of last week **1month** – Every month (1st 00:00), all values are included in report of last month
<template id>
A valid template id, please see table 7 which templates are included in your CMe2100.

Used configuration

Configuration	Default value

schedule.retrymax	5
schedule.retryoffset	300
sms.enabled	Command specified, false
sms.response	Inherit from common
sms.to	Inherit from common
sms.template	Command specified, blank
email.enabled	Command specified, false
email.to	Inherit from common
email.cc	Inherit from common
email.bcc	Inherit from common
email.server	Inherit from common
email.port	Inherit from common
email.user	Inherit from common
email.password	Inherit from common
email.from	Inherit from common. Blank will use product name or blank product.name will use product.pnr
email.template	Command specified, 1104
ftp.server	Inherit from common
ftp.port	Inherit from common
ftp.user	Inherit from common
ftp.password	Inherit from common
ftp.remotedir	Inherit from common
ftp.template	Command specified, blank
http.url	Inherit from common
http.user	Inherit from common
http.password	Inherit from common
http.authmode	Inherit from common
http.template	Command specified, blank
http.header	Inherit from common
filter.device	Command specified, blank
filter.value	Command specified, * * * * *
filter.mode	Command specified, day
filter.param	Command specified, 1

6.9.1.1 Requesting reports with different time interval

The schedule parameter (1hour, 1day etc) is basically an easy way of setting internal parameters of which data to be sent. These parameters can be overloaded to request specific data and also be stored in the report configuration for repeated use. See Table 24 for which configuration keys to overload to request specific data and time interval.

Configuration	Default value
filter.value	A cron match filter. Matching value data will be included in the report. See section 6.5.21 for description of the cron format string.
filter.mode	The filtering mode to be used. **Minute(s) back** Used to set time interval from now and a number of minutes back. filter.mode=minute filter.param=<minutes> **Hour(s) back** Used to set time interval from now and a number of hours back. filter.mode=hour filter.param=<hours> **Day(s) back** Used to set time interval from now and a number of days back. filter.mode=day filter.param=<days> **Month(s) back** Used to set time interval from now and a number of month back. filter.mode=month filter.param=<months> **Date from-to** Used to set time interval to a specific from- and to-date. filter.mode=interval filter.param=<datefrom>,<dateto> **Auto** Automatically send all data since last connection filter.mode=auto filter.param=<blank>

filter.param	Depends on filter.mode <minutes> - Number of minutes <hours> - Number of hours <days > - Number of days <months > - Number of months <datefrom> - From date in format YYYYMMDD <dateto> - To date in format YYYYMMDD

Table 24 Filter value parameters

6.9.2 Momreport – Read device values and send report

Momreport is a predefined system value report which will read device values and send a report. When executing command momreport, the execution will start directly and the user will be informed about report generation is started. On completion of the report, status information will be returned to the user.

When no input parameters are used, formation stored in command configuration momreport will be used as default.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	YES	1

Syntax

Execute command

```
Momreport [<template id> [<device list>]]
```

Response(s)

On successful start:

```
momreport started.
OK
```

or

On unsuccessful start:

```
<error description>
ERROR
```

On successful completion:

```
momreport completed successfully.
OK
```

or

On unsuccessful completion:

```
<error description>
```

ERROR
Example 1 Execute – Run report1 momreport
Example 1 Response Momreport started. OK
Example 2 Execute – Run momreport and use template id 1107 momreport 1107.
Example 2 Response momreport started. OK
Example 3 Execute – Run momreport and use template id 1106 and select devices with secondary address 12345678 and 00112233 momreport 1106 12345678,00112233
Example 3 Response momreport started. OK

Parameter description

<template id>
A valid template id, please see table 7 which templates are included in your CMe2100
<device list>
Comma separated list of devices which should be included in the report. If not given, all devices are included.

Used configuration

Configuration	Default value
sms.enabled	Command specified, false
sms.response	Inherit from common
sms.to	Inherit from common
sms.template	Command specified, blank
email.enabled	Command specified, false
email.to	Inherit from common
email.cc	Inherit from common
email.bcc	Inherit from common
email.server	Inherit from common
email.port	Inherit from common
email.user	Inherit from common
email.password	Inherit from common

email.from	Inherit from common. Blank will use product name or blank product.name will use product.pnr
email.template	Command specified, blank
ftp.server	Inherit from common
ftp.port	Inherit from common
ftp.user	Inherit from common
ftp.password	Inherit from common
ftp.remotedir	Inherit from common
ftp.template	Command specified, blank
http.url	Inherit from common
http.user	Inherit from common
http.password	Inherit from common
http.authmode	Inherit from common
http.template	Command specified, blank
filter.device	Command specified, blank
filter.value	Command specified, * * * * *
filter.mode	Command specified, table
filter.param	Command specified, 1

6.9.3 Logreport – System log report

Logreport is a predefined system log report. When executing command logreport, the execution will start directly and the user will be informed about report generation is started. On completion of the report, status information will be returned to the user.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	YES	1

Syntax

Execute command

```
logreport
```

Response(s)

On successful start:

```
logreport started.
OK
```

or

On unsuccessful start:

```
<error description >
ERROR
```

On successful completion:

```
logreport completed successfully.
OK
```

or

On unsuccessful completion:

```
<error description>
ERROR
```

Example 1 Execute – Run log report

```
logreport
```

Example 1 Response

```
logreport started.
OK
```

Parameter description

Used configuration

Configuration	Default value
schedule.retrymax	5
schedule.retryoffset	300
sms.enabled	Command specified, false
sms.response	Inherit from common
sms.to	Inherit from common
sms.template	Command specified, blank
email.enabled	Command specified, false
email.to	Inherit from common
email.cc	Inherit from common
email.bcc	Inherit from common
email.server	Inherit from common
email.port	Inherit from common
email.user	Inherit from common
email.password	Inherit from common
email.from	Inherit from common. Blank will use product name or blank product.name will use product.pnr
email.template	Command specified, 1004
ftp.server	Inherit from common
ftp.port	Inherit from common

ftp.user	Inherit from common
ftp.password	Inherit from common
ftp.remotedir	Inherit from common
ftp.template	Command specified, blank
http.url	Inherit from common
http.user	Inherit from common
http.password	Inherit from common
http.authmode	Inherit from common
http.template	Command specified, blank

6.9.4 Sysreport – System configuration report

Sysreport is a predefined system configuration and status report. When executing command sysreport, the execution will start directly and the user will be informed about report generation is started. On completion of the report, status information will be returned to the user.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	YES	1

Syntax

Execute command

```
sysreport
```

Response(s)

On successful start:

```
Sysreport started.
OK
```

or

On unsuccessful start:

```
<error description >
ERROR
```

On successful completion:

```
sysreport report completed successfully.
OK
```

or

On unsuccessful completion:

```
<error description>
```

```
ERROR
```

Example 1 Execute – Run system report

```
sysreport
```

Example 1 Response

```
sysreport started.
OK
```

Parameter description

Used configuration

Configuration	Default value
schedule.retrymax	5
schedule.retryoffset	300
sms.enabled	Command specified, false
sms.response	Inherit from common
sms.to	Inherit from common
sms.template	Command specified, blank
email.enabled	Command specified, false
email.to	Inherit from common
email.cc	Inherit from common
email.bcc	Inherit from common
email.server	Inherit from common
email.port	Inherit from common
email.user	Inherit from common
email.password	Inherit from common
email.from	Inherit from common. Blank will use product name or blank product.name will use product.pnr
email.template	Command specified, 1003
ftp.server	Inherit from common
ftp.port	Inherit from common
ftp.user	Inherit from common
ftp.password	Inherit from common
ftp.remotedir	Inherit from common
ftp.template	Command specified, blank
http.url	Inherit from common
http.user	Inherit from common
http.password	Inherit from common
http.authmode	Inherit from common

http.template	Command specified, blank

6.10 Security commands

6.10.1 Login – Login in Console mode

Login is used to login to the product when security access is enabled. The default password for security level 1 is blank. Please see section 6.5.4 for default password for security level 2 and 3.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command `login <password>`

Response(s)
`Login failed.`
`OK`
 	
or
 	
`Login OK.`
`ERROR`

Example 1 Execute – Login using password secret `login secret`

Example 1 Response
`Login OK.`
`OK`

Parameter description

`<password>`
Password in clear text. Depending on password given, different security levels can be accessed. Configuration key common.security.password1 gives access to security level 1, common.security.password2 to security level 2 and common.security.password3 to security level 3

Used configuration

Configuration	Default value
security.password1	Inherit from common
security.password2	Inherit from common

security.password3	Inherit from common

6.11 Installation and maintenance commands

6.11.1 Install – Find and install connected devices

Install command is used to find and update the internal device list of the product. The install command also sends installation reports and is useful when installing and updating connected devices.

Install can also update specific configuration of the product with a synchronization server. The synchronization identity can be specified as a parameter. The identity is normally provided by Elvaco AB, but can be configured to use a specified synchronization server, see section Sync – Synchronize configuration with HTTP server 6.7.3.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax

Execute command

```
install [<devices> [<syncid> [<name> [<keep>] [<clean>]]]]
```

Response(s)

On successful start:

```
install started.
OK
```

On unsuccessful start:

```
<error description>
ERROR
```

On successful completion:

```
<success information>
OK
```

On unsuccessful completion:

```
<error description>
ERROR
```

or

```
<error description>
ERROR
```

Example 1 Execute – Run install and find maximum 5 devices

```
Install 5
```

Example 1 Response
`install started.`
`OK`

Example 2 Execute – Run install and find maximum 5 devices and keep status of selected devices Install 5 keep
Example 2 Response install started. OK
Example 3 Execute – Run install and find maximum 5 devices and delete all existing devices Install 5 clean
Example 3 Response install started. OK
Example 4 Execute – Run install and find maximum 5 devices, synchronize with syncid “elv” and delete all existing devices Install 5 elv clean
Example 4 Response install started. OK

Parameter description

`<devices>`
Maximum number of devices to search for. Useful when numbers of devices are known on the bus to speed up the search process.
`<syncid>`
Synchronization id to use to synchronize product settings, see section 6.7.3.
`<name>`
Use this parameter to easy set common.product.name during installation.
<keep>
Giving this parameter will keep all device status, i.e. not changing the status of an existing device to passive when not found.
<clean>
Giving this parameter will delete all existing device information before starting search.

Used configuration

Configuration	Default value
schedule.retrymax	5
schedule.retryoffset	300
sms.enabled	Command specified, true
sms.response	Inherit from common
sms.to	Inherit from common

sms.template	Command specified, 1
email.enabled	Command specified, true
email.to	Inherit from common
email.cc	Inherit from common
email.bcc	Inherit from common
email.server	Inherit from common
email.port	Inherit from common
email.user	Inherit from common
email.password	Inherit from common
email.from	Inherit from common. Blank will use product name or blank product.name will use product.pnr
email.template	Command specified, 1001
ftp.server	Inherit from common
ftp.port	Inherit from common
ftp.user	Inherit from common
ftp.password	Inherit from common
ftp.remotedir	Inherit from common
ftp.template	Command specified, blank
http.url	Inherit from common
http.user	Inherit from common
http.password	Inherit from common
http.authmode	Inherit from common
http.header	Inherit from common
http.template	Command specified, blank
time.ntp.server	Inherit from common
time.ntp.port	Inherit from common
time.ntp.localport	Inherit from common
time.ntp.timeout	Inherit from common
time.acceptdiff	Inherit from common
time.daytime.server	Inherit from common
time.daytime.port	Inherit from common
time.utcoffset	Inherit from common
time.mode	Inherit from common
device.mbus.searchmode	Inherit from common
device.mbus. searchstart	Inherit from common
device.mbus. searchend	Inherit from common
device.mbus. searchidmask	Inherit from common
device.mbus. searchmanmask	Inherit from common
device.mbus. searchgenmask	Inherit from common
device.mbus. searchmedmask	Inherit from common

device.mbus. searchbaud	Inherit from common
device.mbus. responsetimeout	Inherit from common
device.mbus. nkesleep	Inherit from common
device.mbus. busrecoverytime	Inherit from common
device.mbus. idleduration	Inherit from common
device.mbus. retry	Inherit from common
device.mbus. fcbmode	Inherit from common
device.mbus. telegramcount	Inherit from common
device.mbus. buswatch	Inherit from common
device.mbus. maxdevices	Inherit from common
device.mbus. clean	Inherit from common
device.mbus. keepstatus	Inherit from common
timesync.enabled	True, set false to disable time synchronization on install
system.cota.urlbase	Inherit from common
system.cota.url	Inherit from common
system.cota.user	Inherit from common
system.cota.password	Inherit from common
system.cota.authmode	Inherit from common

6.11.2 Maintenance – Handles clean up tasks and surveillance

Maintenance command will clean up old meter data information, request Prepaid data from the network (if available) and log system memory information into the system log. Maintenance command will clean the oldest meter data first, but not until the disk space is low.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	YES	1

Syntax

Execute command

```
maintenance
```

Response(s)

On successful start:

```
maintenance started.
OK
```

On unsuccessful start:

```
<error description>
ERROR
```

On successful completion:
`<success information>`
`OK`
 	
On unsuccessful completion:
`<error description>`
`ERROR`
 	
or
 	
`<error description>`
`ERROR`

Example 1 Execute – Run maintenance task `maintenance`

Example 1 Response
`Maintenance started.`
`OK`

Parameter description

Used configuration

Configuration	Default value

6.11.3 Timesync – Synchronize time with internet time server

Timesync command is used to synchronize the product time with an internet time server. If time is outside the accepted time difference, time will be set and the product will restart. See section 6.5.11 for accepted time difference default value. The default time synchronization schedule is every 12th hour.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	YES	1

Syntax

Execute command `timesync`

Response(s)
On successful start:
`timesync started.`
`OK`

On unsuccessful start:
<error description>
ERROR

On successful completion:
<success information>
OK

On unsuccessful completion:
<error description>
ERROR

or

<error description>
ERROR

Example 1 Execute –Synchronize with time server
timesync

Example 1 Response
timesync started.
OK

Parameter description

Used configuration

Configuration	Default value
schedule.retrymax	5
schedule.retryoffset	300
time.ntp.server	Inherit from common
time.ntp.port	Inherit from common
time.ntp.localport	Inherit from common
time.ntp.timeout	Inherit from common
time.acceptdiff	Inherit from common
time.daytime.server	Inherit from common
time.daytime.port	Inherit from common
time.utcoffset	Inherit from common
time.mode	Inherit from common
runonerror	Command specified, reboot

6.11.4 Storevalue – Read and store values for installed devices

Storevalue command is used to read and store values for installed devices. Executing storevalue with no parameters will read and store values of all active devices once and return result information to user. The default schedule is to read and store active device values every hour.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	YES	1

Syntax

Execute command
`storevalue`

Response(s)
On successful start:
`Storevalue started.`
`OK`

On unsuccessful start:
`<error description>`
`ERROR`

On successful completion:
`<success information>`
`OK`

On unsuccessful completion:
`<error description>`
`ERROR`

or

`<error description>`
`ERROR`

Example 1 Execute –Read and store value of connected devices
`Storevalue`

Example 1 Response
`storevalue started.`
`OK`

Parameter description

Used configuration

Configuration	Default value
schedule.retrymax	Inherit from common
schedule.retryoffset	Inherit from common
device.mbus. responsetimeout	Inherit from common
device.mbus. nkesleep	Inherit from common
device.mbus. busrecoverytime	Inherit from common
device.mbus. idleduration	Inherit from common
device.mbus. retry	Inherit from common
device.mbus. fcbmode	Inherit from common
device.mbus. telegramcount	Inherit from common
device.mbus. buswatch	Inherit from common
device.mbus. maxdevices	Inherit from common
device.mbus. clean	Inherit from common
device.mbus. keepstatus	Inherit from common
device.includelist	Command specified, blank
device.command.runbefore	Inherit from common
device.command.runbeforesleep	Inherit from common

Additional information

There are M-Bus slaves, which need a specific command to be run before executing the actual readout command REQ_UD2. Set device.command.runbefore to the device command to run before the actual REQ_UD2. Available device commands can be found in section 6.11.5.

6.11.5 Device – Send command to devices

Device command is used to send specific command to devices. A device command can be to change an M-Bus slave device from 300 baud to 2400 baud or read an M-Bus slave device current value.

Access

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	YES	1

Syntax

Execute command

```
device <device list> <command>
```

Response(s)

On successful start:

```
Device started.
OK
```

On unsuccessful start:

```
<error description>
```

ERROR On successful completion: <success information> OK On unsuccessful completion: <error description> ERROR or <error description> ERROR
Example 1 Execute –Change baud rate of slave with secondary address 00112233 to 2400 baud. device 00112233 baud2400
Example 1 Response device started. OK
Example 2 Execute –Change breaker status on M-Bus slave device with primary address 1 to on. device 1 bron
Example 2 Response device started. OK

Parameter description

device list
The M-Bus slave devices to send command to, comma separated. The address can be primary or secondary; CMe2100 automatically detects correct address.
command
The command to send to <device list>. See table below.

Available commands

Name	Description	M-Bus data Starting a M-Bus C-Field
auxoff	Turn auxiliary relay off	0x73aa518140fd1a80
auxon	Turn auxiliary relay on	0x73aa518140fd1a40
baud2400	Change M-Bus slave device baud rate to 2400	0x53aaBB
baud300	Change M-Bus slave device baud rate to 300	0x53aaB8
broff	Turn breaker relay off	0x73aa5101FD1A80
bron	Turn breaker relay on	0x73aa5101FD1A40

read	Read M-Bus slave device user data	0x7Baa

Used configuration

Configuration	Default value
schedule.retrymax	Inherit from common
schedule.retryoffset	Inherit from common
device.mbus.responsetimeout	Inherit from common
device.mbus.nkesleep	Inherit from common
device.mbus.busrecoverytime	Inherit from common
device.mbus.idleduration	Inherit from common
device.mbus.selectretry	Inherit from common
device.mbus.requestretry	Inherit from common
device.mbus.fcbmode	Inherit from common
device.mbus.telegramcount	Inherit from common
device.mbus.buswatch	Inherit from common
device.mbus.maxdevices	Inherit from common
device.mbus.clean	Inherit from common
device.mbus.keepstatus	Inherit from common
device.includelist	Command specified, blank

6.12 Events

Events are triggered and executed in special scenarios. Events can be configured but not scheduled. When an event is fired, configured event receivers are listening for the event and execute specified command.

6.12.1 Rebootevent - Unexpectedly reboot event

This event is executed when the product unexpectedly rebooted. This event will generate an event report, which can be set by user.

Access (change configuration)

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax of changing configuration

See command cfg, section 6.6.5.

Used configuration

Configuration	Default value
enabled	Command specified, false
command	Command specified, report
event	Command specified, rebootunexpected
schedule.retrymax	Inherit from common

schedule.retryoffset	Inherit from common
sms.enabled	Command specified, false
sms.response	Inherit from common
sms.to	Inherit from common
sms.template	Command specified, blank
email.enabled	Command specified, true
email.to	Inherit from common
email.cc	Inherit from common
email.bcc	Inherit from common
email.server	Inherit from common
email.port	Inherit from common
email.user	Inherit from common
email.password	Inherit from common
email.from	Inherit from common. Blank will use product name or blank product.name will use product.pnr
email.template	Command specified, 1005
ftp.server	Inherit from common
ftp.port	Inherit from common
ftp.user	Inherit from common
ftp.password	Inherit from common
ftp.remotedir	Inherit from common
ftp.template	Command specified, blank
http.url	Inherit from common
http.user	Inherit from common
http.password	Inherit from common
http.authmode	Inherit from common
http.header	Inherit from common
http.template	Command specified, blank

6.12.2 Balanceevent – Low credits/balance of Prepaid SIM card event

This event is executed when the product is using Prepaid SIM card and the credits/balance is decided to be low. This event will generate an event report, which can be set by user.

Access (change configuration)

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax of changing configuration

See command cfg, section 6.6.5. Use common configuration key event.balance.low to set low water mark for this event.

Used configuration

Configuration	Default value
enabled	Command specified, false
command	Command specified, report
event	Command specified, balanceevent
event.balance.low	50
schedule.retrymax	Inherit from common
schedule.retryoffset	Inherit from common
sms.enabled	Command specified, false
sms.response	Inherit from common
sms.to	Inherit from common
sms.template	Command specified, blank
email.enabled	Command specified, true
email.to	Inherit from common
email.cc	Inherit from common
email.bcc	Inherit from common
email.server	Inherit from common
email.port	Inherit from common
email.user	Inherit from common
email.password	Inherit from common
email.from	Inherit from common. Blank will use product name or blank product.name will use product.pnr
email.template	Command specified, 1005
ftp.server	Inherit from common
ftp.port	Inherit from common
ftp.user	Inherit from common
ftp.password	Inherit from common
ftp.remotedir	Inherit from common
ftp.template	Command specified, blank
http.url	Inherit from common
http.user	Inherit from common
http.password	Inherit from common
http.authmode	Inherit from common
http.header	Inherit from common
http.template	Command specified, blank

6.12.3 Fwupdate – Firmware updated event

This event is executed when the product firmware has been updated. This event will generate an event report, which can be set by user.

Access (change configuration)

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax of changing configuration

See command cfg, section 6.6.5.

Used configuration

Configuration	Default value
enabled	Command specified, false
command	Command specified, report
event	Command specified, fwupdate
schedule.retrymax	Inherit from common
schedule.retryoffset	Inherit from common
sms.enabled	Command specified, false
sms.response	Inherit from common
sms.to	Inherit from common
sms.template	Command specified, blank
email.enabled	Command specified, true
email.to	Inherit from common
email.cc	Inherit from common
email.bcc	Inherit from common
email.server	Inherit from common
email.port	Inherit from common
email.user	Inherit from common
email.password	Inherit from common
email.from	Inherit from common. Blank will use product name or blank product.name will use product.pnr
email.template	Command specified, 1005
ftp.server	Inherit from common
ftp.port	Inherit from common
ftp.user	Inherit from common
ftp.password	Inherit from common
ftp.remotedir	Inherit from common
ftp.template	Command specified, blank
http.url	Inherit from common
http.user	Inherit from common
http.password	Inherit from common
http.authmode	Inherit from common
http.header	Inherit from common

http.template	Command specified, blank

6.12.4 Swupdate – Software updated event

This event is executed when the product software has been updated. This event will generate an event report, which can be set by user.

Access (change configuration)

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax of changing configuration

See command cfg, section 6.6.5. .

Used configuration

Configuration	Default value
enabled	Command specified, false
command	Command specified, report
event	Command specified, swupdate
schedule.retrymax	Inherit from common
schedule.retryoffset	Inherit from common
sms.enabled	Command specified, false
sms.response	Inherit from common
sms.to	Inherit from common
sms.template	Command specified, blank
email.enabled	Command specified, true
email.to	Inherit from common
email.cc	Inherit from common
email.bcc	Inherit from common
email.server	Inherit from common
email.port	Inherit from common
email.user	Inherit from common
email.password	Inherit from common
email.from	Inherit from common. Blank will use product name or blank product.name will use product.pnr
email.template	Command specified, 1005
ftp.server	Inherit from common
ftp.port	Inherit from common
ftp.user	Inherit from common
ftp.password	Inherit from common
ftp.remotedir	Inherit from common

ftp.template	Command specified, blank
http.url	Inherit from common
http.user	Inherit from common
http.password	Inherit from common
http.authmode	Inherit from common
http.header	Inherit from common
http.template	Command specified, blank

6.12.5 Swupdatesynchandler– Software updated synchronize configuration event

This event is executed when the product software has been updated and will start command sync to synchronize product with latest resources.

Access (change configuration)

SMS	TELNET	SCHEDULABLE	SECURITY
YES	YES	NO	1

Syntax of changing configuration

See command cfg, section 6.6.5. .

Used configuration

Configuration	Default value
enabled	Command specified, false
command	Command specified, sync
event	Command specified, swupdate
schedule.retrymax	Inherit from common
schedule.retryoffset	Inherit from common

7 Monitoring

From software version 1.2.0 the product can take own decisions and actions on values read from M-Bus slave devices and other available product information, such as GSM signal strength etc.

The product can handle up to five (5) different monitor configurations (monitor[1..5].cfg) simultaneously. The monitor configuration describes the condition that the product should evaluate, and also the commands which should be executed when the condition evaluates to true or false.

The monitor evaluates every time an M-Bus slaves is read, i.e. when running command **storevalue**. The command **monitor** can be scheduled to run down to every minute, but will not store any value as command **storevalue** does. This function is very useful when a high interval of readout of M-Bus slaves is needed for monitoring functions, but the values read should not be stored permanently.

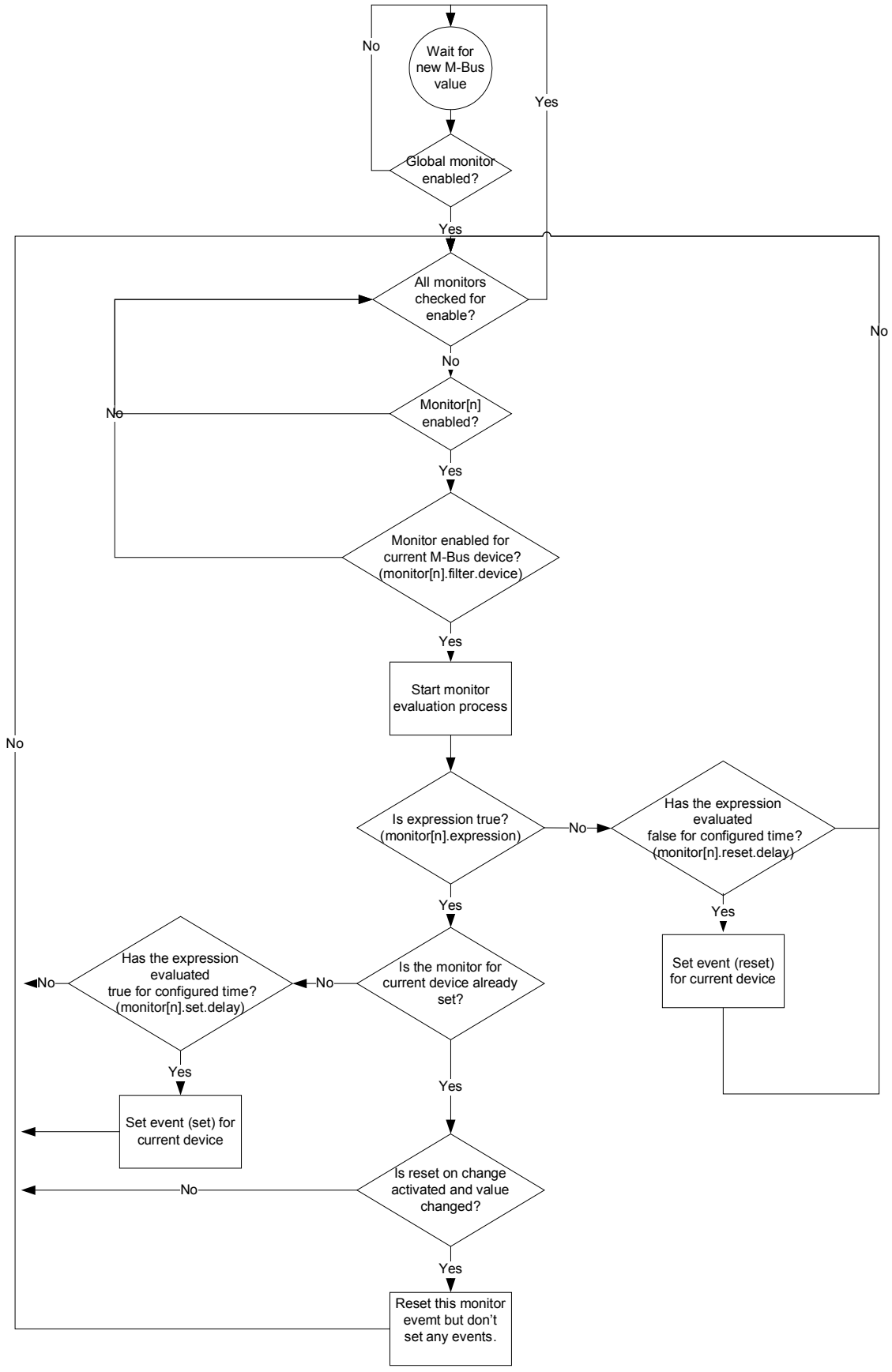
7.1 The monitoring process

The monitor process must be globally enabled by setting the configuration key common.monitor.enabled to true. When the monitor process is enabled, individual monitors can be enabled and configured. The monitors are configured the same way as normal reports and commands, using command **cfg** and command **set** to configure specific keys.

Following properties can be configured of a specific monitor:

1. The expression which will return a true or false value
2. The commands which should be executed when the expression returns true
3. The commands which should be executed when the expression returns false
4. The hysteresis (delays) before an expression triggers the event which forces the commands to run
5. The value, on change, which may reset the monitor triggered state without setting the reset event of the monitor

Please see the flowchart on next page for a logical overview of the monitoring process.


Wait for new M-Bus value
No
Yes
Global monitor enabled?
Yes
All monitors checked for enable?
No
No
Monitor[n] enabled?
Yes
Monitor enabled for current M-Bus device? (monitor[n].filter.device)
Yes
Start monitor evaluation process
No
Is expression true? (monitor[n].expression)
No
Has the expression evaluated false for configured time? (monitor[n].reset.delay)
Yes
Set event (reset) for current device
No
Yes
Is the monitor for current device already set?
No
Has the expression evaluated true for configured time? (monitor[n].set.delay)
No
Yes
Set event (set) for current device
Yes
Is reset on change activated and value changed?
No
Yes
Reset this monitor evemt but don't set any events.
No

7.2 Values which can be monitored

All values which are read from M-Bus slave devices with addition of all internal product variables can be used in the monitor functions. Identification of M-Bus slave device values are divided in two parts: M-Bus header values and M-Bus record values.

7.2.1 M-Bus header values

The M-Bus header values are information sent in every M-Bus telegram. Example of information in the M-Bus header is manufacturer, status information, telegram count etc. The M-Bus header values are identified using `mbus.header.<header value>`, where <header value> is the M-Bus header value which is of interest. Please see TODO for a complete listing of available M-Bus header values.

Header value	Data type	Description
cfield	Integer	M-Bus C-Field
afield	Integer	M-Bus A-Field
cifield	Integer	M-Bus CI-Field
byteordermode	Integer	M-Bus byte order mode (LSByte or MSByte)
identification	Integer	M-Bus secondary address
manufacturer	Integer	M-Bus manufacturer number
manufacturerstring	String	M-Bus three character decoded manufacturer string
version	Integer	M-Bus version/generation field
devicetypestring	Integer	M-Bus device type in decoded string
devicetype	Integer	M-Bus device type
accessnumber	Integer	M-Bus access number
status	Integer	M-Bus status code
statusstring	String	M-Bus status code decoded string
Signature	Integer	M-Bus signature
Example 1 Accessing the manufacturer string `mbus.header.manufacturerstring`		

7.2.2 M-Bus record values

The M-Bus record values are the DIB parts included in an M-Bus telegram, i.e. energy, flow, temperatures etc. These values are identified using `mbus.dib.<record description>`, where <record description> is the qualified name of the M-Bus record value of interest. The record description is dynamically built up during the internal M-Bus decode process, but in most cases the M-Bus slave implementation is using standard description field which can be identified within the M-Bus standard. If the description is a manufacturer specified string, the description of the M-Bus record name can be obtained by inspecting the standard installation report of the product. Please see table below for standard M-Bus record descriptions.

⚠ **IMPORTANT**

When accessing M-Bus records where description contains characters – (minus) and / (division), the character must be replaced with underscore (_).

Name
Energy
Volume
Mass
on-time
op-time
Power
volume-flow
volume-flow-ext
mass-flow
flow-temp
return-temp
diff-temp
ext-temp
Pressure
Date
Datetime
units-for-HCA
avg-duration
act-duration
fabrication-no
enhanced-id
Address
reactive-energy
cold/warm-temp-limit
cum-cnt-max-power
Credit
Debit
access-number
device-type
Manufacturer
parameter-set-id
model/version
hw-version
fw-version
other-sw-version
customer-location
Customer
access-code-user
access-code-operator
access-code-system-operator

access-code-developer
Password
error-flags-dev-spec
error-mask
digital-output
digital-input
Baudrate
response-delay-time
Retry
remote-control-dev-spec
first-storage-for-cyclic-storage
last-storage-for-cyclic-storage
size-of-storage-block
storage-interval
time-point
duration-since-last-readout
start-of-tariff
duration-of-tariff
period-of-tariff
Dimensionless
Voltage
Current
reset-counter
cum-counter
control-signal
day-of-week
week-number
time-point-of-day-change
state-of-param-activation
special-supplier-information
duration-since-last-cum
operation-time-battery
datetime-of-battery-change
day-light-saving
listening-window-management
cold/warm-temp-limit
remaining-battery-lifetime
count-meter-stop
Reserved
manufacturer-specific
no-error

too-many-DIFE
storage-number-not-impl
unit-number-not-impl
tariff-number-not-impl
function-not-impl
data-class-not-impl
data-size-not-impl
too-many-VIFE
illegal-VIF-group
illegal-VIF-exponent
VIF/DIF-mismatch
unimpl-action
no-data-available
data-overflow
data-underflow
data-error
premature-end-of-record
inc-per-input-pulse-on-input-channel-0
inc-per-input-pulse-on-input-channel-1
inc-per-output-pulse-on-input-channel-0
inc-per-output-pulse-on-input-channel-1
start-date/time-of
uncorrected-unit
acc-only-if-pos-contr
acc-of-abs-value-only-if-neg-contr
lower-limit-value
exceeds-lower-limit-value
datetime-of-begin-of-first-lower-limit-exceeded
datetime-of-end-of-first-lower-limit-exceeded
datetime-of-begin-of-last-lower-limit-exceeded
datetime-of-end-of-last-lower-limit-exceeded
upper-limit-value
exceeds-of-upper-limit-value
datetime-of-begin-of-first-upper-limit-exceeded
datetime-of-end-of-first-upper-limit-exceeded
datetime-of-begin-of-last-upper-limit-exceeded
datetime-of-end-of-last-upper-limit-exceeded
duration-of-first-lower-limit-exceeded
duration-of-last-lower-limit-exceeded
duration-of-first-upper-limit-exceeded
duration-of-last-upper-limit-exceeded

duration-of-lower-limit-exceeded
duration-of-upper-limit-exceeded
value-during-lower-limit-exceeded
leak-values
datetime-of-first-begin
datetime-of-first-end
value-during-upper-limit-exceeded
overflow-values
datetime-of-last-begin
datetime-of-last-end
future-value

Table 25 Standard description property values

7.3 Expressions

The expression (monitor[n].expression), is the actual logic which must result in a value of true or false. The expression can contain calculations (addition, subtraction, division etc) and must have an evaluation part. One of the following evaluation parts must separate the left and right side of the expression: >, >=, <, <=, ==, !=.

Example of an expression which evaluates if the power is greater than 10:

```
set monitor1.expression=$mbus.dib.power>10
```

Example of an expression which evaluates if the volume flow is less than 110:

```
set monitor1.expression=$mbus.dib.volume_flow<110
```

If the expression evaluates true for specific hysteresis (delay), the set event for this monitor and device will be set.

7.4 Set/reset delays of the monitor events

In most cases, immediate changes of a value should not result in an immediate event. This can be configured by setting the set delay and reset delay of the monitor. These settings are in seconds and be configured by the properties `monitor[n].set.delay` and `monitor[n].reset.delay`.

Example of changing the set delay of monitor1 to two minutes:

```
set monitor1.set.delay=120
```

Example of changing the reset delay to take immediate action:

```
set monitor1.reset.delay=0
```

7.5 Set commands for monitor events

When the monitor expression results in a set event or a reset event, specified commands will be executed. The commands can be a single command or a combination of commands. The command list which should be executed on a set event or a reset event can be configured by the properties `monitor[n].set.command` and `monitor[n].reset.command`. If more than one command should be executed, the commands should be separated with semicolon (;).

Example of changing the set event to send a monitor event report by e-mail:

```
set monitor1.set.command=report 1008
```

Example of changing the set event to send a monitor event report by e-mail and send breaker off to all connected CMeX40 M-Bus IO modules:

```
set monitor1.set.command=report 1008;device 254 broff
```

7.6 Using monitor templates

To enable fast and easy setup of the sophisticated monitoring functions, monitor templates can be used. The syntax of using a monitor template is the same as for setting up a report, but the monitor templates has the prefix character m.

Example of setting up monitor1 by using monitor template m1:

```
cfg monitor1 m1
```

Monitor templates are constantly developed and added and in addition customer specific templates can be developed by Elvaco to meet varying customer demands.

8 Report Templates

Following list shows the default templates which are installed from factory. More templates are available and templates can also be manufacturer specific made. Please contact Elvaco for information.

Please download report template description reference documentation from Elvaco website at http://www.elvaco.com.

Template Id	Description	Reference documentation
SMS Reports		
1	SMS installation report	Report Template Description Template 1.pdf
2	SMS monitor event report	Report Template Description Template 2.pdf
101	SMS value report with selected information	Report Template Description Template 101.pdf
E-Mail Reports		
1001	E-Mail installation report HTML format	Report Template Description Template 1001.pdf
1002	E-Mail Installation report PLAIN text format	Report Template Description Template 1002.pdf
1003	E-Mail system report HTML format	Report Template Description Template 1003.pdf
1004	E-Mail system log report HTML format	Report Template Description Template 1004.pdf
1005	E-Mail event report HTML format	Report Template Description Template 1005.pdf
1006	Email log report HTML format Log file contained in attached CSV file.	Report Template Description Template 1006.pdf
1007	Email monitor event report HTML format	Report Template Description Template 1007.pdf
1101	E-Mail value report HTML format Values contained in body of E-Mail in readable format	Report Template Description Template 1101.pdf
1102	E-Mail value report HTML format Values contained in body of E-Mail in raw data format	Report Template Description Template 1102.pdf
1103	E-Mail value report HTML format Values contained as attached CSV file	Report Template Description Template 1103.pdf

	per device in raw data format	
1104	E-Mail value report HTML format Values contained as attached CSV file per device in readable format	Report Template Description Template 1104.pdf
1105	E-Mail value report HTML format Values contained as attached CSV file per device in readable format with extra header information	Report Template Description Template 1105.pdf
1106	E-Mail value report with zip extension HTML format Values contained as attached zip file per device in readable format with extra header information. Useful when having spam filters removing all other files than zip.	Report Template Description Template 1106.pdf
1107	E-Mail value report energy consumption HTML format Values contained as attached CSV file per device in readable format with extra header information.	Report Template Description Template 1107.pdf
1108	E-Mail value report extended HTML format Values contained as attached CSV file in readable format with extra header information.	Report Template Description Template 1108.pdf
1109	E-Mail value report extended plus HTML format Values contained as attached CSV file per device in readable format with extra header information. Including M-Bus header information.	Report Template Description Template 1109.pdf
1110	E-Mail value report extended plus HTML format Values contained as attached CSV file in readable format with extra header information. Including M-Bus header information.	Report Template Description Template 1110.pdf
	FTP Reports	
2001	FTP installation report M-Bus raw format	Report Template Description Template 2001.pdf
2002	FTP Installation report PLAIN text format	Report Template Description Template 2002.pdf
2005	FTP event report PLAIN text format	Report Template Description Template 2005.pdf
2006	FTP log report PLAIN text format Log file contained in CSV file.	Report Template Description Template 2006.pdf

2007	FTP status report PLAIN text format	Report Template Description Template 2007.pdf
2101	FTP value report Values put to FTP server as CSV file. All values in one file in readable data format	Report Template Description Template 2101.pdf
2102	FTP value report Values put to FTP server as CSV file. All values in one file in raw data format	Report Template Description Template 2102.pdf
2103	FTP value report Values put to FTP server as CSV file. One file per device in raw data format	Report Template Description Template 2103.pdf
2104	FTP value report Values put to FTP server as CSV file. One file per device in readable format	Report Template Description Template 2104.pdf
2105	FTP value report Values put to FTP server as CSV file. One file per device in readable format with extra header information	Report Template Description Template 2105.pdf
2108	FTP value report extended PLAIN text format Values put to FTP as CSV file in readable format with extra header information.	Report Template Description Template 2108.pdf
2109	FTP value report extended plus PLAIN text format Values out to FTP as CSV file per device in readable format with extra header information. Including M-Bus header information.	Report Template Description Template 2109.pdf
2110	FTP value report extended plus PLAIN text format Values put to FTP as CSV file in readable format with extra header information. Including M-Bus header information.	Report Template Description Template 2110.pdf
	HTTP Reports	
3001	HTTP installation report Values posted to HTTP server as one post with all values in raw data format	Report Template Description Template 3001.pdf
3002	HTTP Installation report Values posted to HTTP server as one post with all values in readable data format	Report Template Description Template 3002.pdf
3005	HTTP event report Values posted to HTTP server as one post in readable format	Report Template Description Template 3005.pdf
3006	HTTP log report Log file posted to HTTP server as one	Report Template Description Template 3006.pdf

	post in readable format	
3007	HTTP status report Values posted to HTTP server as one post in readable format	Report Template Description Template 3007.pdf
3101	HTTP value report Values posted to HTTP server as one post with all values in readable data format	Report Template Description Template 3101.pdf
3102	HTTP value report Values posted to HTTP server as one post with all values in raw data format	Report Template Description Template 3102.pdf
3103	HTTP value report Values posted to HTTP server as one post per device in raw data format	Report Template Description Template 3103.pdf
3104	HTTP value report Values posted to HTTP server as one post per device in readable format	Report Template Description Template 3104.pdf
3105	HTTP value report Values posted to HTTP server as one post per device in readable format with extra header information	Report Template Description Template 3105.pdf
3106	HTTP value report raw extended Values posted to HTTP server as one post per device in m-bus raw value format.	Report Template Description Template 3106.pdf
3108	HTTP value report extended Values posted to HTTP server as one post in readable format with extra header information.	Report Template Description Template 3108.pdf
3109	HTTP value report extended plus Values posted to HTTP server as one post per device in readable format with extra header information. Including M-Bus header information.	Report Template Description Template 3109.pdf
3110	HTTP value report extended plus Values posted to HTTP server as one post in readable format with extra header information. Including M-Bus header information.	Report Template Description Template 3110.pdf

9 Troubleshooting

9.1 All LEDs are permanently off

There is a problem with the supply voltage. Please verify 100-230 VAC. If the problem persists, the product may be malfunctioning. Please contact Elvaco support.

9.2 Red LED is permanently on

This indicates an error on the M-Bus 2-wire bus.

Please verify no short-circuit of the M-Bus bus. The voltage of the bus should be between 24 VDC and 30 VDC.

9.3 Red LED flashing 800 ms on / 800 ms off

This indicates SIM card error. Please verify:

- SIM card has no PIN code activated
- SIM card is activated
- SIM card contact areas are clean

9.4 Red LED flashing 100 ms on / 1500 ms off

This indicates no GSM network coverage or the product is unable to attach to a GSM network. Please verify:

- Antenna installation
    - Installation with bad network coverage sometimes require an external antenna
    - Do not mount antenna inside metallic cabinets
- SIM card activated
- SIM card contact areas are clean

9.5 The product does not respond to SMS requests

This error may depend on many things. Please verify:

- Product is powered up
- LEDs are showing normal operation and network coverage
- Security access codes may be used; verify correct access code
- If a prepaid SIM-card is used, balance may be zero

If the problem persists, try resetting the product to factory defaults, see section 5.4.

9.6 Install command does not find any meters

Please verify your M-Bus slave device configuration:

- Voltage over M-Bus slave device should be between 24 VDC and 30 VDC
- All M-Bus slave devices must have unique secondary addresses
- M-Bus slave device baud rates

- Default search baud is 2400, please see command **qset mbus**, section 6.6.1.5 how to change the searched baud rates

9.7 Status report says no APN

This may be due to Auto APN detection has no information about your network provider. Please contact your network provider for the following information internet access information:

- APN
- Optional APN username
- Optional APN password
- Optional DNS

Set network parameters manually using command **qset net**, see section 6.6.1.4.

9.8 E-Mail report is configured but no E-Mails are sent

This may be due to the following reasons:

- No SMTP server is Auto detected. Please verify command status, see section 4.3.1. If the SMTP server is not set, please set the SMTP server manually using command **qset email**, see section 6.6.1.1.
- No valid recipients set. Set recipients with command **qset email**, see 6.6.1.1.
- Report is not correctly activated, please configure E-Mail reports with command **sch,** see section 6.6.4.

If you still have problems getting your CMe2100 running, please contact Elvaco support, see contact information section 1.2.

10 Examples

10.1 Change to read and store device values every 10 minute

How to change the product to read and store values of connected devices every 10min using SMS:

SMS from user to CMe2100	
Message	Description
`sch storevalue 10min`	Schedule storevalue command every 10 minute

Table 26 SMS request to change storevalue schedule to every 10 minute

SMS from CMe2100 to user	
Message	Description
`sch completed successfully OK`	Request response from product

Table 27 SMS response of storevalue schedule change

10.2 Activate report 1105 to send all values every hour

How to change the report template to 1105 of report1 to send all values every hour using SMS:

SMS from user to CMe2100	
Message	Description
`sch report1 1hour 1105`	Schedule report1 to run every hour and send last hourly values using report template 1105

Table 28 SMS request to change report1 to run every hour and use report 1105

SMS from CMe2100 to user	
Message	Description
`sch completed successfully OK`	Request response from product

Table 29 SMS response of report1 schedule change

10.3 Enable balance low event

How to enable the low balance report using SMS:

SMS from user to CMe2100	
Message	Description

`cfg balanceevent on`	Enable balance event

Table 30 SMS request to enable balance event reports

SMS from CMe2100 to user	
Message	Description
`cfg completed successfully OK`	Request response from product

Table 31 SMS response of balance event configuration change

10.4 Disable installation report

How to disable the installation report using SMS:

SMS from user to CMe2100	
Message	Description
`cfg install off`	Disable installation reports

Table 32 SMS request to disable installation reports

SMS from CMe2100 to user	
Message	Description
`cfg completed successfully OK`	Request response from product

Table 33 SMS response of installation report configuration change

10.5 Change installation report to 1002

How to change the installation report template to 1002 using SMS:

SMS from user to CMe2100	
Message	Description
`cfg install 1002`	Change installation report to 1002

Table 34 SMS request to change installation report to 1002

SMS from CMe2100 to user	
Message	Description
`cfg completed successfully OK`	Request response from product

Table 35 SMS response of installation report configuration change

10.6 Schedule report to specific recipient

How to set a specific recipient for report1 using SMS:

SMS from user to CMe2100	
Message	Description
`sch report1 1day 1105 email.to=recipient@mydomain.com`	Schedule report1 every day at 00:00 with template 1105 and send to recipient recipient@mydomain.com

Table 36 SMS request to set schedule of report1 to every day with template 1105 to recipient@mydomain.com

SMS from CMe2100 to user	
Message	Description
`sch completed successfully OK`	Request response from product

Table 37 SMS response of schedule report1 configuration change

10.7 Remove specified E-Mail recipient for a report

How to remove a specific recipient for report1 using SMS:

SMS from user to CMe2100	
Message	Description
`set report1.email.to=del`	Remove configuration key email.to and all of its contents and use common configuration.

Table 38 SMS request to change report1 retry settings

SMS from CMe2100 to user	
Message	Description
`Email.to=null OK`	Request response from product

Table 39 SMS response of report1 retry settings change

10.8 Change retries for report1

If a command fails, the product can retry the command as specified by the uses. The configuration keys used are `schedule.retrymax` and `schedule.retryoffset`.

How to change retries of report1 using SMS:

SMS from user to CMe2100	
Message	Description

`set report1.schedule.retrymax=5 report1.schedule.retryoffset=300`	Change report1 command retries to 5 and the product idle time to 300 seconds before next retry will run. If the command fails for the first time it runs, the product will retry the command for 5 extra times.

Table 40 SMS request to change report1 retry settings

SMS from CMe2100 to user	
Message	Description
`report1.schedule.retrymax:5 report1.schedule.retryoffset:300 OK`	Request response from product

Table 41 SMS response of report1 retry settings change

11 Technical specifications

11.1 Characteristics

Type	Value	Unit	Comments
Mechanics			
Casing material	Polyamide	-	
Protection class	IP20	-	
Dimensions	100x66x36	mm	
Weight	120	g	
Connection M-Bus	Pin terminal	-	Solid wire 0.6-0.8 Ø mm
Power supply	Screw terminal	-	Cable 0-2.5 mm^2, 0.5 Nm tightening torque
Electrical			
Nominal voltage	100-240	VAC	
Voltage range	-20% to +15%		Of nominal voltage
Frequency	50/60	Hz	
Power consumption (Max)	<2.5	VA	
Power consumption (Nom)	<1	VA	
Installation category	CAT 4	-	
GSM/GPRS			
GPRS Class	12	-	In application mode, only GPRS Class 8 used
Band	850/900/1800/ 1900	MHz	
Environmental			
Operating temperature range	-25 to +60	°C	
Storage temperature range	-40 to +85	°C	
Operating humidity max.	80	%RH	Temperatures up to 31°C, decreasing linearly to 50%RH at 40°C
Pollution	Degree 2	-	
Operating altitude	0-2000	Meters	
Indoor use only	Yes		Can be extended with IP67 enclosure for outdoor use
User interface			
LED Indication	Green LED Yellow LED Red LED	-	
Push button	-		Minimum of 1 seconds press to take action
M-Bus			

M-Bus standard	13757-1, 13757-2 and 13757-3	-	Full M-Bus decoder implemented
M-Bus baud rate	300 and 2400	Bit/s	
Transparent M-Bus	Listening server on TCP and GSM data	-	
Maximum connected M-Bus devices	8	-	Can be extended using CMeX Series.
Maximum cable length	1000	Meters	Or maximum 100nF
M-Bus over IR	Yes	-	ABB compatible IR interface for all ABB electricity meters with IR support Used for expansion module series CMeX (up to 5 CMeX series modules).
General			
Data storage	~1.4	MByte	Data storage for meter data and custom report configuration.
Real Time Clock Backup	0.5	Days	Number of days Real Time Clock resumes running without power.
Real Time Clock Accuracy	<2	Sec/ Day	
Data storage	1.3	MByte	Available for meter data, customer specific report templates etc.
Script Engine	-	-	Intelligent script engine for active content generation
Firmware update	Using GPRS HTTP	-	Updateable module firmware over-the-air
Software update	Using GPRS HTTP	-	Updateable software over-the-air
Configuration and resource update	Using GPRS HTTP	-	Updateable configuration and resources over-the-air
Communication protocols			
E-Mail using SMTP with authentication mode HELO, EHLO FTP passive mode with authentication and remote directory change HTTP POST and GET GSM data Transparent M-Bus @ 300 and 2400 baud GSM data Console for configuration SMS for configuration NTP Internet time synchronization using UDP Daytime Internet time synchronization using TCP TCP Transparent M-Bus @ 300 and 2400 baud TCP Console for configuration			

Table 42 Technical specifications

12 Type approvals

CMe2100 is designed to comply with the directives and standards listed below.

Approval	Description
EMC	EN 61000-6-2, EN 61000-6-3
Safety	EN 61010-1, Cat 4

Table 43 Type approvals

13 Safety and environment

13.1 Safety precautions

The following safety precautions must be **observed** during all phases of the operation, usage, service or repair of any CMe2100 product. Users of the product are advised to convey the following safety information to users and operating personnel and to incorporate these guidelines into all manuals supplied with the product. Failure to comply with these precautions violates safety standards of design, manufacture and intended use of the product. Elvaco AB assumes no liability for customer's failure to comply with these precautions.

When in a hospital or other health care facility, observe the restrictions on the use of mobiles. Switch the product off, if instructed to do so by the guidelines posted in sensitive areas. Medical equipment may be sensitive to RF energy.

The operation of cardiac pacemakers, other implanted medical equipment and hearing aids can be affected by interference from cellular terminals or mobiles placed close to the product. If in doubt about potential danger, contact the physician or the manufacturer of the product to verify that the equipment is properly shielded. Pacemaker patients are advised to keep the product away from the pacemaker, while it is on.

Switch off the product before boarding an aircraft. Make sure it cannot be switched on inadvertently. The operation of wireless appliances in an aircraft is forbidden to prevent interference with communications systems. Failure to observe these instructions may lead to the suspension or denial of cellular services to the offender, legal action, or both.

Do not operate the product in the presence of flammable gases or fumes. Switch off the product when you are near petrol stations, fuel depots, chemical plants or where blasting operations are in progress. Operation of any electrical equipment in potentially explosive atmospheres can constitute a safety hazard.

Your product receives and transmits radio frequency energy while switched on. Remember that interference can occur if it is used close to TV sets, radios, computers or inadequately shielded equipment. Follow any special regulations and always switch off the product wherever forbidden, or when you suspect that it may cause interference or danger.

IMPORTANT!

CMe2100 operate using radio signals and cellular networks. Because of this, connection cannot be guaranteed at all times under all conditions. Therefore, you should never rely solely upon any wireless product for essential communications, for example emergency calls.

Remember, in order to make or receive calls, the cellular product must be switched on and in a service area with adequate cellular signal strength.

14 Document History

Version	Date	Description	Author
1.2	2009-06-05	- First draft	David Vonasek
1.3	2009-06-15	- First release	David Vonasek
1.4	2009-08-10	- Changed M-Bus 7E1 to 8E1	David Vonasek
1.5	2009-08-20	- Removed command log,clear,help. No longer implemented.	David Vonasek
2.0	2009-10-05	- Release Web	David Vonasek
2.1	2009-11-16	- Update for software version 1.1. - Added section momreport - Updated section install - Removed appendix A - Added section branding - Updated section sync - Added section device - Updated section characteristics. - Added section to describe how to request report with specific intervals - Updated section cfg,sch for overloading configuration - Changed abbreviation “device” to “M-Bus slave device”	David Vonasek
3.0	2009-11-20	Release Web	David Vonasek
3.1	2009-12-15	Updated layout	David Vonasek
3.2	2010-03-19	Updated specifications	Carl-Henrik Carlsson
3.3	2012-01-01	Major updates to comply with software version 1.3	David Vonasek
3.4	2013-05-17	Corrected error in product overview	Ericha Bloom
3.5	2013-06-24	Added a cron pattern in 6.5.21.1	Ericha Bloom

14.1 Document software and hardware appliance

Type	Version	Date	Comments
Hardware	>R4A	2009-05	Released
Software	>=1.3.0	2012-01	Released

15 References

15.1 References

[1] EN-13757-1, EN-13757-2, EN-13757-3
Communication System for meters and remote reading of meters – Part1, Part2 and Part3

[2] Report Template Description Template *.pdf

15.2 Terms and Abbreviations

Abbreviation	Description
AMR	Automatic Meter Reading
Product	In this document CMe2100
OTAP	Over The Air Provisioning
DIB	Data Information Block (M-Bus data block)
DIF	Data Information Field (M-Bus data block information)
VIF	Value Information Field (M-Bus value block information)
Device	In this document; M-Bus slave or other metering slave

15.2.1 Number representation

Decimal numbers are represented as normal number, i.e. 10 (ten).

Hexadecimal numbers are represented with prefix 0x, i.e. 0x0A (ten)

Binary numbers are represented with prefix 0b, i.e. 0b00001010 (ten)