

RTCU X32 MICRO STANDARD APPLICATION

(Rev: 3.21 – April 2012)

Congratulations!

You are now the owner of the most advanced solution in the world for remote monitoring/control using the GSM-network.

This document describes the installation, setup and use of the RTCU MICRO units pre-programmed with the RTCU Micro Standard Application

What does the RTCU MICRO Standard Application do?

The RTCU MICRO Standard Application has many advanced features for easy implementation of simple control/monitoring applications over the GSM network.

The list of features includes:

- Send status change messages when one of the configured inputs changes their status.
- A configured message can be sent, using SMS to a list of numbers.
- Separate messages can be configured for all inputs, both ON and OFF state.
- Outputs can be controlled (low/high or pulse) by sending a user defined SMS-message.
- Perform user spoken voice calls to a list of telephone-numbers when an input changes state.
- Allows control of outputs by calling the unit and using voice/DTMF interaction.
- User defined list of allowed callers that can use the unit.
- User defined length of pulsed outputs.
- GPS Geographical fence support.
- Temperature monitoring functionality using an external 1Wire temperature sensor.
- Stealth listen-in mode. Allows remote monitoring with a connected microphone.
- Take a photo based on input change, and send it to an email address.*
- User-friendly Windows configuration program available.
- Free upgrade by downloading new firmware free from www.logicio.com.

* Sending an e-mail requires an open GPRS connection. The GPRS connection will only be opened if an APN is set. (See the APN command below)

What is needed for installation of the RTCU unit?

To install the RTCU unit you will need the following, not usually supplied with the unit itself:

- A standard SIM-card supplied by you GSM operator. This must be a 3.3V SIM-card. The SIM card MUST be without PIN code (PIN code disabled)
- A suitable GSM antenna. Please consult the technical manual for the specific unit for details.
- A suitable power supply. Please consult the technical manual for the specific unit for details.
- A unit that supports external 1Wire Temperature sensors (For temperature monitoring only)
- A unit that support external camera (For camera monitoring)
- A suitable microphone connected to the headset connector (only supported on some RTCU units)
- A RTCU X32 unit with at least firmware version 2.00, and internal flash drive.

Installing the RTCU unit

Please consult the technical manual for the specific unit for details.

Setting up the RTCU MICRO Unit

To setup the RTCU MICRO with the standard application there are two alternatives:

- Sending configuration SMS-messages to the unit.
- Using the supplied MicroConfig program.

The MicroConfig program is the cheapest, fastest, most user-friendly method to setup a unit. The disadvantage is that the MicroConfig program requires a PC running Windows and a cable connection to the unit. Sending configuration SMS-messages requires only a GSM-phone. Combining the best from both worlds it is recommended that the initial setup and major changes is done with the MicroConfig program and daily use and minor changes can easily be done by sending configuration SMS-messages.

Setting up the unit using the MicroConfig program.

To install the MicroConfig program, please follow the instruction on the CD-ROM or run setup.exe from the distribution setup directory.

The MicroConfig program contains the same configuration options as possible when sending configuration SMS-messages. Recording of spoken voice messages on the RTCU MICRO products is only possibly from the MicroConfig program and will require a sound card and a microphone.

Setting up the unit by sending configuration SMS-messages.

The following commands can be sent as SMS-messages to the unit.

General setup

ASP=

Configures the list of allowed callers to the unit.

Example: *ASP=+4576250210,+4520289203*

This will allow the listed two telephone-numbers to call the unit and to send SMS messages to the unit. The default is that this list is empty allowing all callers to access the unit.

CASP=

Sets the clear-ASP command. When ANY caller sends the configured command to the unit, the ASP list will be cleared.

Example: *CASP=CLEARME*

By sending the CLEARME command the ASP list will be deleted, enabling all callers to access the unit.

S=

Enters / exits service mode.

'1' Enters service-mode.

'0' Exits service-mode.

Example: *S=1*

In service mode changes on the inputs has no effect.

D=<year><month><day><hour><minute>

Sets the date and time.

<year> 4 digits with the year.

<month> 2 digits with the month.

<day> 2 digits with the day.

<hour> 2 digits with the hour.

<minute> 2 digits with the minutes.

Example: **D=201108241200**

The changes will take effect immediately without the need of a reset.

APN=

Configures the APN name for the GPRS connection.

Example: **APN=www.internet.telia.dk**

The APN name must be supplied by the GSM operator that has supplied the SIM card.

The GPRS connection, which is required for the unit to send e-mails, will only be opened if the APN name is configured. If other GPRS parameters than the APN is required to be set then this must be set using the RTCUProg or RTCU IDE.

The unit will be reset when this command is received.

Input monitoring

IH<xx>=

Sets the input high text for input number <xx>. <xx> must be in the range of the physical number of inputs on the unit and goes from 01..<max. inputs>. This value must be two digits (0=00,1=01, etc.)

Example: **IH01=Door open**

Sets the high-text for input no. 1 to “Door open”. This will be the message that will be sent as an SMS-message when the input goes high. Will also require that the list of telephone-numbers to call has been set (see the **T<xx>** command).

IL<xx>=

Sets the input low text for input number <xx>. <xx> must be in the range of the physical number of inputs on the unit and goes from 01..<max. inputs>. This value must be two digits (0=00,1=01, etc.)

Example: **IL01=Door closed**

Sets the low-text for input no. 1 to “Door closed”. This will be the message that will be sent as an SMS-message when the input goes low. Will also require that the list of telephone-numbers to call has been set (see the **T<xx>** command).

T<xx>=

Sets the list of numbers to be called when input <xx> changes state. <xx> must be in the range of the physical number of inputs on the unit and goes from 01..<max. inputs>. This value must be two digits (0=00,1=01, etc.)

Example: **T03=+4576250210,+4520289203**

Sets the list of numbers to be called when input no. 3 changes state. When the input goes low the message configured with the **IL<xx>** command will be sent to the specified list of phone-numbers. When the input goes high the message configured with the **IH<xx>** command will be sent to the specified list of phone-numbers.

The list specified with the **T<xx>** command is also used when the unit performs a voice call when an input goes low or high (see the **VH<xx>** command).

TV<xx>=

Same functionality as the **T<xx>=** command above, but will send a confirmation SMS to the old list of numbers as well as the new list of numbers as specified with the 'TV' command.

The SMS message sent to the old list is: "You have been removed from the alarm-list".

The SMS message sent to the new list is: "You have been inserted into the alarm-list".

VH<xx>=

Enables/disables the voice call when the specified input <xx> goes high. <xx> must be in the range of the physical number of inputs on the unit and goes from 01..<max. inputs>. This value must be two digits (0=00,1=01, etc.)

'**ON**' denotes that the voice call will be enabled for the specified input.

'**OFF**' denotes that the voice call will be disabled for the specified input.

The default for all inputs is that voice call is disabled (OFF).

To enable voice call a voice message must be present in the unit. The message is a user recorded message and can only be configured from within the MicroConfig program.

Example: **VH05=ON**

Enables voice call when input no. 5 goes high.

Sending **VH05=OFF** will disable voice call when input no. 5 goes high.

VL<xx>=

Enables/disables the voice call when the specified input <xx> goes low. <xx> must be in the range of the physical number of inputs on the unit and goes from 01..<max. inputs>. This value must be two digits (0=00,1=01, etc.)

'**ON**' denotes that the voice call will be enabled for the specified input.

'**OFF**' denotes that the voice call will be disabled for the specified input.

The default for all inputs are that voice call are disabled (OFF).

To enable voice call a voice message must be present in the unit. The message is a user recorded message and can only be configured from within the MicroConfig program.

Example: **VL05=ON**

Enables voice call when input no. 5 goes low.

Sending **VL05=OFF** will disable voice call when input no. 5 goes low.

Output control:

OH<xx>=

Sets the output high text for output number <xx>. <xx> must be in the range of the physical number of outputs on the unit and goes from 01..<max. outputs>. This value must be two digits (0=00,1=01, etc.)

Example: **OH03=Open gate**

Sets the high text for output no. 3 to "Open gate". By sending the message "Open gate" as an SMS-message to the unit the output no. 3 will be set high.

Please note that if the selected output has been configured as a pulsed output (see the **PO=** command) sending the high text will emit a pulse on the output.

OL<xx>=

Sets the output low text for output number <xx>. <xx> must be in the range of the physical number of outputs on the unit and goes from 01..<max. outputs>. This value must be two digits (0=00,1=01, etc.)

Example: **OL03=Close gate**

Sets the low-text for output no. 3 to "Close gate". By sending the message "Close gate" as an SMS-message to the unit will set output no. 3 to low.

R<xx>=

Configures output number <xx> to either a normal output or a pulsed output. <xx> must be in the range of the physical number of outputs on the unit and goes from 01..<max outputs>. This value must be two digits (0=00,1=01, etc.)

‘**O**’ denotes a normal output and ‘**P**’ denotes a pulsed output.

Example: **R07=P**

Sets output no. 7 to a pulsed output. Sending the high-text to a pulsed output emits a pulse with the duration specified with the **PO=** command. Sending the low-text to a pulsed output has no effect. To restore output 7 to its default state as a normal output, send **R07=O** to the unit.

PO=

Configures the duration of the pulse emitted by a pulsed output. The value is specified in ms. And must be in the range 100ms .. 30000 ms.

Example: **PO=500**

Sets the duration of the pulse to 500 ms The default is 1000 ms (1 second)

Temperature monitoring

On RTCU units supporting an external 1-Wire temperature sensor the temperature monitoring functionality described in this section is available. For installation of the 1-Wire temperature sensor please refer to the technical manual for the specific unit.

The temperature monitoring functionality offers the possibility to receive a user defined SMS message to a list of telephone numbers in the case of the temperature going below or above user specified temperature thresholds. When the temperature is within the specified range again another SMS message can be sent. Finally the current temperature can be queried with an SMS message.

TLT=

Sets the temperature low text. The character sequence %% can be used to include the temperature in the resulting SMS.

Example: **TLT=Temperature (%%) to low!**

Sets the low temperature text to “Temperature (-5.3) to low!”. This will be the message that will be sent as an SMS-message when the temperature goes to low. Will also require that the list of telephone-numbers to call has been set (see the **TT** command).

TLRT=

Sets the text send when the temperature rises above the low border again. The character sequence %% can be used to include the temperature in the resulting SMS.

Example: ***TLRT=Temperature (%%) ok!***

Sets the low temperature reset text to “Temperature (5.0) ok!”. This will be the message that will be sent as an SMS-message when the temperature rises after being to low. Will also require that the list of telephone-numbers to call has been set (see the ***TT*** command).

THT=

Sets the temperature high text. The character sequence %% can be used to include the temperature in the resulting SMS.

Example: ***THT=Temperature (%%) to high!***

Sets the high temperature text to “Temperature (21.1) to high!”. This will be the message that will be sent as an SMS-message when the temperature goes to high. Will also require that the list of telephone-numbers to call has been set (see the ***TT*** command).

THRT=

Sets the text to send when the temperature drops below the high border again. The character sequence %% can be used to include the temperature in the resulting SMS.

Example: ***THRT=Temperature (%%) ok!***

Sets the high temperature reset text to “Temperature (10.0) ok!”. This will be the message that will be sent as an SMS-message when the temperature goes to high. Will also require that the list of telephone-numbers to call has been set (see the ***TT*** command).

TH=

Sets the temperature limit before a high alarm is send. When the temperature rises above this level the message configured with the ***IHT*** command will be sent to the specified list of phone-numbers. The temperature limit is given in degrees Celsius.

Example: ***TH=42***

Example: ***TH=+15***

Example: ***TH=-5***

Sets the upper limit to 42 °C, 15 °C and –5 °C respective.

TL=

Sets the temperature limit before a low alarm is send. When the temperature rises above this level the message configured with the **IHT** command will be sent to the specified list of phone-numbers. The temperature limit is given in degrees Celsius.

Example: **TL=42**

Example: **TL=+15**

Example: **TL=-5**

Sets the lower limit to 42 °C, 15 °C and –5 °C respective.

TT=

Sets the list of numbers to be called when the temperature goes out of scope.

Example: **TT=+4576250210,+4520289203**

Sets the list of numbers to be called when the temperature goes out of scope. When the temperature become to low the message configured with the **TLT** command will be sent to the specified list of phone-numbers. When the temperature goes to high the message configured with the **THT** command will be sent to the specified list of phone-numbers.

TVT=

Same functionality as the **TT=** command above, but will send a confirmation SMS to the old list of numbers as well as the new list of numbers as specified with the ‘TV’ command.

The SMS message sent to the old list is: "You have been removed from the alarm-list".

The SMS message sent to the new list is: "You have been inserted into the alarm-list".

TEMP

Requests the current temperature from the unit. The temperature in the reply is given in degrees Celsius.

Remote listen-in.

LPIN=

Set the remote listen-in PIN code. Must be in the interval 1000..9999.

When a voice call is established to the unit the PIN code can be entered and the sound of the surroundings of the RTCU can be heard by the caller. This mode will terminate when the caller hangs up.

Remote listen-in requires a suitable microphone connected to the headset connector.

Camera monitoring

On RTCU units supporting an external camera, the monitoring functionality described in this section is available. For installation of the external camera please refer to the technical manual for the specific unit.

The camera monitoring functionality offers the possibility to receive an email with a photo attached in the case of a input change.

The latest photo taken and successfully saved will not be deleted until it has been send.

When using the camera, the alternative service port will be enabled.

PNOW

Request a photo independent of input state.

Syntax: **PNOW**

Example: **PNOW**

Will request a new photo, as if the input monitored has changed. The monitor must have been configured with the commands below.

PCFG=

Sets the SMTP configuration, to allow sending of emails.

Syntax: **PCFG=<Host>,<Port>,<Sender>,<Use Authentication>,<User>,<Password>**

Example: **PCFG=smp.domain.com,25,unit@domain.com,Yes,user,password**

Sets the SMTP configuration, to allow sending of emails. Field may be left empty to use any previous stored values or default value, please not that encrypted (SSL) communication is not supported.

Field	Default	Description
<Host>	<i>Empty</i>	Name or IP of the mail server which the mail is send though.
<Port>	25	Alternative port to use when connecting to the mail server.
<Sender>	<i>Empty</i>	This will be shown in the mail as the sender address.
<Authentication>	No	Use login and password when connecting to mail server. Only the value “Yes” and “No” is allowed.
<User>	<i>Empty</i>	User name to use when authentication is enabled.
<Password>	<i>Empty</i>	Password to use when authentication is enabled.

If a field is left empty, the default or last value is used until changed.

If the command has not been send the monitoring will not start.

PLST=

Sets the list of email addresses which will receive a photo taken on input change.

Syntax: **PLST=<email>,<email>, ...**

Example: **PLST=add1@domain.com,addr2@domain.com**

Sets the list of email addresses which will receive a photo on input change.

Empty or invalid address will stop the camera monitoring.

If the command has not been send the monitoring will not start.

PMON=

Sets when a photo is to be taken.

Syntax: **PMON=<Input>,<Edge>,<Resolution>,<Text>**

Example: **PMON=3,R,1,Alarm in the greenhouse**

Defines when a photo is to be taken, and what the mail text should be.

Field	Default	Description															
<Input>	0	Digital input to monitor, only the value 0 or higher is allowed If value is "0" the no monitoring will be done, and if the value does not match an input, then the monitor will run but only be activate when a "PNOW" message is received.															
<Edge>	Raising	Define when a photo is to be taken and send. Allowed values are "Raising", "Falling" and "Both".															
<Resolution>	1	This will determine the resolution of the photo Allowed resolution and resulting file size is: <table border="1" data-bbox="597 1207 998 1388"> <thead> <tr> <th>Value</th> <th>Resolution</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>80 x 64</td> <td>1..2 kB</td> </tr> <tr> <td>2</td> <td>160 x 128</td> <td>3..5 kB</td> </tr> <tr> <td>3</td> <td>320 x 240</td> <td>10..15 kB</td> </tr> <tr> <td>4</td> <td>640 x 480</td> <td>35..45 kB</td> </tr> </tbody> </table>	Value	Resolution	Size	1	80 x 64	1..2 kB	2	160 x 128	3..5 kB	3	320 x 240	10..15 kB	4	640 x 480	35..45 kB
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3	320 x 240	10..15 kB															
4	640 x 480	35..45 kB															
<Text>	Input \1	The text to use in subject and body of mail. If the text contain a "\1" this will be substituted with the number of the input which has changed.															

If a field is left empty, the default or last value is used until changed.

If the command has not been send the monitoring will not start.

GPS Functionality

The GPS functionality allows usage of a GPS receiver present on some RTCU products. It is possible to place an “invisible fence” around the object where the RTCU unit (and GPS receiver) is placed. The size of this fence can be programmed from 50 meters to 10000 meters. The shape of the fence is a circle around the home position. The home position can be set using a simple SMS command to the RTCU unit, sent from a normal mobile telephone. The specific command that involves the GPS feature, are listed below:

“SH” : Set Home position:

When the command “SH” is sent, the RTCU unit will use the next GPS fix point as the current home position. Whenever the object moves outside of the invisible fence, an SMS message is sent. The SMS message contains a warning that the object is moved away from the home position and the course and speed of the object (Reported like “POS”). When the command “POS” is sent to the RTCU unit, a response with the current latitude/longitude of the object, together with a bearing and distance to the object from the home position will be sent to the mobile phone that sent the “POS” command.

“CH”: Clear Home:

When the RTCU unit receives this command, it will lower the invisible fence, and if the object moves away from the home position, no alarm messages will be generated.

“POS”: Position:

This command will make the RTCU unit respond with the current latitude/longitude. If the object is further away (outside the fence) from the home position than allowed (set with the “MAX DIST=nnnnn” command), also the bearing and distance to the home position (set with the “SH” command) will be included in the response SMS.

Latitude/longitude is reported as EDD.MM.NNNN where DD is degrees (0..90/180), MM is minutes (0..59), NNNN is decimal minutes (0..9999) and E is the direction (E=East, W=West, N=North and S=South).

Course is reported scaled by 100 (0..35999) and speed is reported in meters/hour.

“MAX DIST=nnnnn”: Set Maximum Distance:

This sets the diameter of the “invisible fence” around the home position in meters. The distance can be set from 50 meters to 10000 meters.

Whenever a command is sent to the RTCU unit, a response will be sent back to the sender. The normal authorization rule for the RTCU Micro program is also in effect for the GPS functions, primarily the “List of allowed callers”. If the default settings are used, nothing special needs to be done in order to use the GPS functions.

Resetting the unit

The unit can be reset in two different ways:

DIPSW 1 – By setting this to ON and resetting the unit the ASP list will be cleared.

DIPSW 2 – By setting this to ON and resetting the unit will be completely restored to factory default.

Please remember to set the dipswitch back to OFF again. Failing to do this will execute the requested operation on each future startup.

(Note: The above requires that the unit is use has DIP-switches available)

Support and upgrade.

For support questions, new software releases and upgrade information please email support@logicio.com or visit our web-site www.logicio.com.