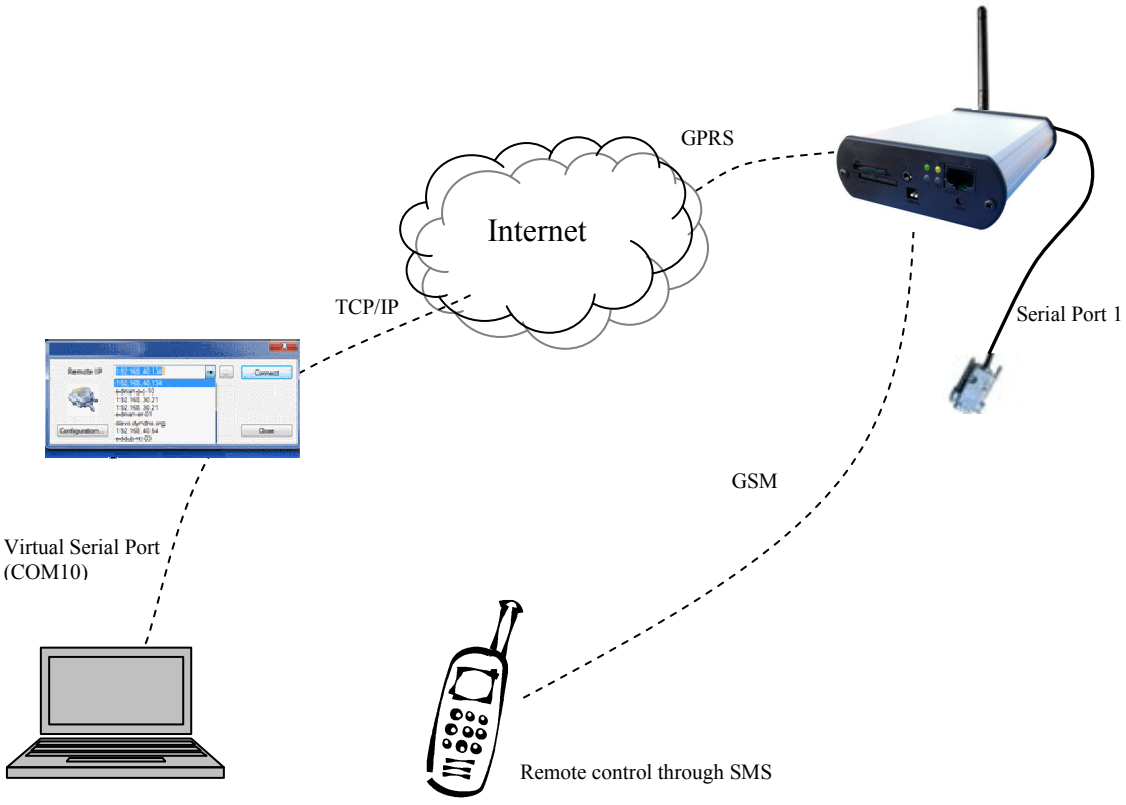
Application Note

Remote Serial Port

Revision 1.0



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Introduction

This application demonstrates how data to and from the serial port of an RTCU can be accessed remotely by forwarding the data to a socket connection.

When the unit is configured, an application like HW VSP[1] can create a virtual COM port on a PC, which has direct access to the serial port of a remote unit, without the PC application being aware of this.

This application also uses the www.dyndns.com service, which allows canonical symbolic names, such as rtcu-1.dyndns.com, to be used instead of a dynamically changing IP address (such as 210.87.12.124). For further details, please see application note LIO-AN1006[2].

The unit is able to operate in three modes.
0 : Idle; does neither search nor attempt to connect to other units.
1 : Server; listens for incoming connections[3].
2 : Client; tries to connect to a remote server.

All of this is configurable through SMS commands.

Information regarding connection will be returned as an SMS to the phone number, which sent a valid configuration message in prior.

1 The "HW Virtual Serial Port" is produced by www.HW-group.com and can be used free of charge.
2 Can be downloaded from http://www.logicio.com.
3 Please note that this is not supported by all GSM providers.

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Configuration

The unit can be configured remotely through SMS commands.

The format of the SMS is a list of options for example:
#Key=123#GW=gw.rtcu.dk,5001,AABBCCDD

The supported options are listed in this chapter and can be combined in any order, the only requirement is that a valid "#KEY=<key>" must be supplied or the SMS will be rejected without notification.

Please notice that space is regarded a normal character and should not be used, and that '#' is used to separate the commands and can only be used to this purpose.

#Key=<key>

Example: #Key=123
This is a security key which will limit unauthorized access to the unit.

There will be no preset key in the unit after an initial install, and any key supplied with the first SMS will be accepted and stored for later use.

To change a key already stored in the unit, the Key-command can be supplied twice in the same SMS (e.g. "#Key=123#Key=543"), the first key (123) is the one already stored in the unit, and the second (543) is the new key value.

A confirmation SMS will always be sent when a new key is stored.

#CFM=1

Example: #Key=123#CFM=1
When this option is specified, a confirmation SMS with recognizable values will be returned after the message has been processed.

No confirmation SMS will be send if not supplied or if the value ('#CFM=<value>') is recognized as a number equal to '0' (e.g. space or zeros).

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#GPRS=<apn>,<auth>

Example: #Key=123#GPRS=www.internet.mtelia.dk,0
This option will configure the GPRS of the unit. The full list of parameters is available and configurable through the RTCU IDE.

The unit must be rebooted before the changes are used (see also '#REBOOT=1').

<apn>	The APN name that is to be used for the connection
<auth>	PPP authentication type. It can have the following values 0 – None 1 – PAP 2 – CHAP 3 – PAP/CHAP

#GW=<IP>,<port>,<key>

Example: #Key=123#GW=gw.rtcu.dk,5001,AABBCCDD
This will configure the RTCU Gateway connection to ensure easy remote access, and allow the unit to monitor the GPRS connection.

The unit will automatically reset if the Gateway is enabled and the GPRS connection lost.

The Gateway configuration will be disabled if a empty IP-address is supplied (e.g. "#Key123#GW=,0,").

The unit must be rebooted before the changes are used (see also '#REBOOT=1').

<IP>	The IP-address, or symbolic name, of the RTCU Gateway.
<port>	The IP-port that the unit should use in order to connect to the RTCU Gateway.
<key>	The password that the unit should use in order to connect to the RTCU Gateway.

#GWP=<mca>,<msr>,<rto>,<afrq>

Example: #Key=123#GWP=3,5,45,300
This configures additional RTCU Gateway settings.

The unit must be rebooted before the changes are used (see also '#REBOOT=1').

<mca >	Max number of connection attempts before the GPRS reconnects.
<msr>	Max number of send-request attempts before send fails.
<rto>	Response wait time in seconds.
<afrq>	Frequency for sending self-transactions in seconds.

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#Mode=<mode >

Example: #Key=123#Mode=0
This alters the way connections are established. The unit will, if possible, try to switch to the new mode immediately. If the specified mode is not configured, the unit will go into idle mode.

If connection is lost, the unit will attempt to reconnect until a connection error occurs.

Modes:
0 – Idle; no connection is initialized.
1 – Listing/Server mode; see option "#M1" for details.
2 – Connecting/Client mode; see option "#M2" for details.

#M1=<ip>,<port>

Example: #Key=123#M1=0,2000
This setting determines how the unit listens for incoming connections, next time the mode is changed to '1'.

Please do note that many GSM-operators are using a firewall. If this is the case all inbound connections to the RTCU may be blocked.

The GPRS setting must also be configured adequately in the unit to allow connection to be established.

<IP >	IP address (in dotted format, e.g. "aaa.bbb.ccc.ddd", or 0 if all is allowed).
<port>	Port number listening on.

#M2=<ip>,<port>

Example: #Key=123#M2=mypc.dyndns.com,2000
This setting will determine how the unit connects to a remote host, next time the mode is changed to '2'.

This method is usually supported by the GSM-operators.

The GPRS setting must also be configured adequately in the unit to allow connection to be established.

<IP >	IP address (in dotted format, e.g. "aaa.bbb.ccc.ddd" or symbolic, e.g. "domain.xyz").
<port>	Port number listening on.

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#SER=<port>,<baud>,<bit>,<parity>,<stopbit>,<rs485>

Example: #Key=123#SER=0,9600,8,0,1,0
Configures which serial port is opened in the unit and how it is setup for communication.

The default port (which is identical to the example) will be open if this command has not been send before a connection is made.

<port>	Selects which serial port to use.
<baud>	Selects the desired baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200. **Note:** 115200 is *only* available in units of the X32 generation.
<bit>	Selects the number of bits/character: 7, 8. **Note:** In X32 generation units, 7 bit only functions when parity is used (even or odd).
<parity>	Selects the desired parity: 0 is none. 1 is even. 2 is odd.
<stopbit>	Selects number of stop bits: 1, 2.
<rs485>	Selects whether the RS485 port is used or not: 1 Communication is through the RS485 port. 0 Communication is through the RS232 port. Please check the technical documentation for the unit to see if RS485 is supported by the port selected.

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#DYNDNS=<userid>,<password>,<domain>,<agent>

Example: #Key=123#DynDNS=usr,pwd,rtcu.dyndns.com,rtcu
This enables automatic update of a DynDNS account with the units IP.

When set the unit will monitor its IP-address and if it changes the specified DynDNS account will be updated with the current IP.

An update can also be forced by resending the command with the same values.

To disable update of the DynDNS account an empty "#DynDNS=" can be send and no further updates will be made.

For full description, please see application note LIO-AN1006, which can be found here: http://www.logicio.com.

<userid>	The username to the DynDNS account
<password>	The password to the DynDNS account
<domain>	This is the hostname (e.g. 'rtcu.dyndns.com') to update and must be specified when updating an account which has multiple domains associated.
<agent>	This updates the 'Company - Device - Version Number' identification of the DynDNS hostname. It is advised that all clients send a well-formed user agent that includes company name, model number, and software build revision.

#REBOOT=1

Example: #Key=123#REBOOT=1
This orders the unit to reboot when it has finished processing the SMS.

#IP=1

Example: #Key=123#IP=1
This sends an SMS with the currently assigned IP address.

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