

# GSM-Control Getting Started Quickly

for M2M remote control in automation  
applications using GSM communications

## User Guide

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# GSM-CONTROL

## Getting Started Quickly

### Overview

**GSM-CONTROL** SMS Gateway is a Microsoft Windows software used for 2-way remote control in automation and other applications using standard GSM (Global System for Mobiles) cellular phones and GSM network. Based on the standard GSM cellular phones and other GSM-capable devices, GSM-Control offers a low-cost and easy alternative to create wireless control and monitoring applications. Implementation of GSM network's SMS (SMS Message Service) technology secures reliable transmission even in the most error-sensitive applications.

The main task of GSM-Control software is to work as a **gateway** between GSM environment at one side (interfacing with GSM environment by sending/receiving SMS messages) and MS Windows environment (by using DDE (Dynamic Data Exchange), OPC (OLE for Process Control), SQL (Structured Query Language) or Wonderware MXAccess (Lmx Proxy interface to Application Server) interfaces) at another side.

The GSM-Control runs on a PC and accesses operator interface applications or directly field devices by using DDE, OPC or MXAccess interfaces. GSM-Control also supports the reading/writing of data from/to SQL databases. The remote control is based on GSM SMS messages two-direction communication, where the GSM-modem (preferable models are Siemens TC35T/MC35T) is connected to the computer's standard (RS-232) serial port and GSM cellular phone (remote GSM phone) is used by remote operator(s). Also the communication between two GSM-modems is supported, i.e. remote GSM-modems can be used instead of remote GSM phone.

The GSM-Control software includes two MS Windows application programs: GSM-Control Configuration Program (**GSMCFG**) and GSM-Control Communication Program (**GSMCTRL**, further in the text also **GSM-Control**). The GSMCFG is used to prepare the source information and GSMCTRL is used to perform the GSM SMS communications and DDE/OPC/SQL/MXAccess data exchange on the basis on information prepared by GSMCFG. These two application programs are completely independent, i.e. each can work separately and doesn't need another program to be started. The data prepared by GSMCFG is saved in GSM-Control configuration file - XML (eXtensible Markup Language) format file used as an

input file for GSMCTRL program. As many GSM-Control configuration files can be created as necessary.

Basically, the data exchange through GSM-Control can be initiated both from GSM and MS Windows environments:

- 1 From **GSM** environment - by sending SMS message to GSM-Control, where the received message is checked and processed according the GSM-Control current configuration. The received SMS message can contain some data to be transferred via DDE, OPC, SQL or MXAccess from GSM-Control to other MS Windows applications (e.g. to PC operator interface applications or field devices through appropriate communication servers) or databases. This SMS message received can have the corresponding response message configured (also possibly containing data values obtained by via DDE, OPC, SQL or MXAccess) - in this case GSM-Control will respond with SMS message to the sender.
- 2 From **MS Windows** environment - when some alarm or event occurs in MS Windows application (e.g. in PC operator interface application or directly in the field device) and the corresponding alarm or event condition is specified in GSM-Control. In this case GSM-Control will send the correspondingly configured SMS message (possibly containing also some data obtained via DDE, OPC, SQL or MXAccess) to remote GSM operator or device linked to this alarm or event condition. The receiver of such SMS message can respond to GSM-Control - for example, send some acknowledgment SMS message possibly containing some data for delivery via DDE, OPC, SQL or MXAccess.

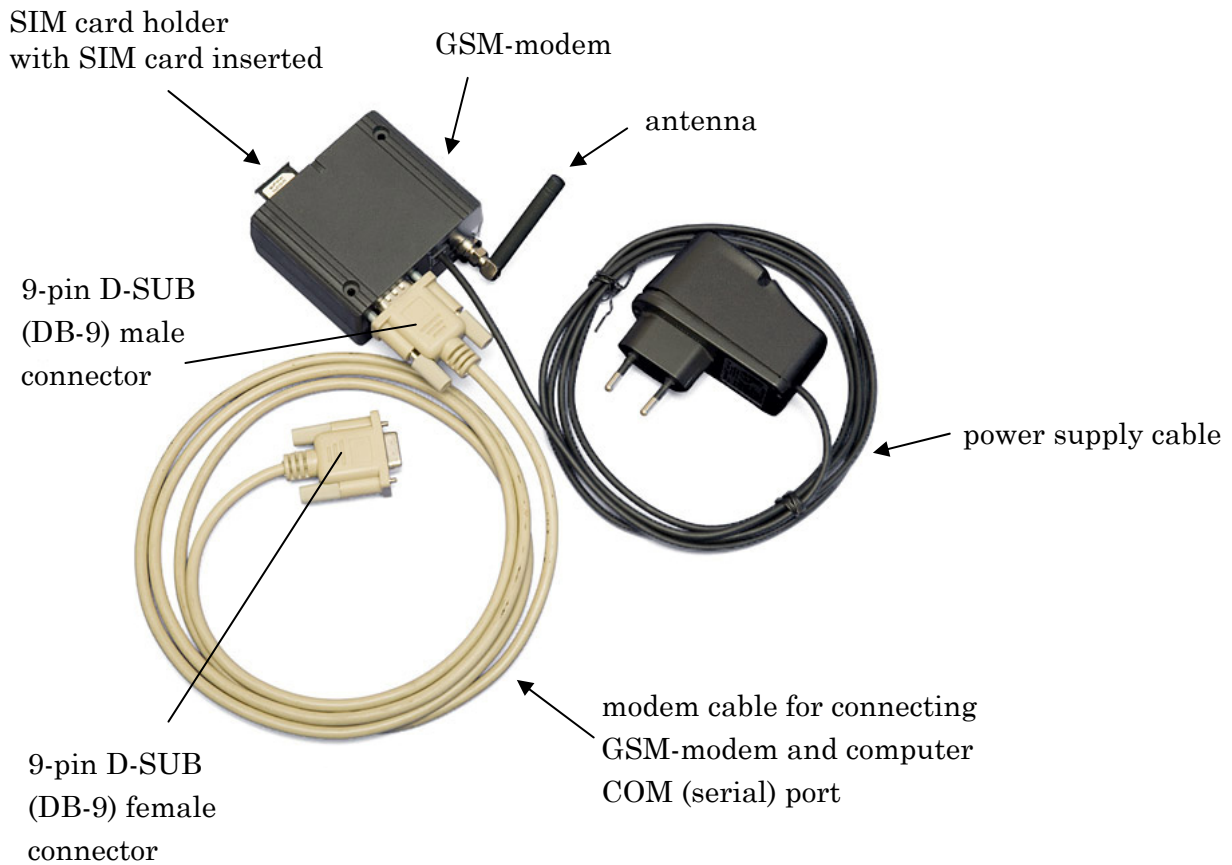
Moreover, it is possible to send (manually or automatically through DDE, OPC or MXAccess) any pre-configured text message ("standard 1-way messages") from GSM-Control to remote GSM operator or device. The SMS messages also can be received from any (not configured) phone number (so called "ANYUSER" feature) and correspondingly replied with information depending on contents of received message.

The GSM-Control can be used on Internet - it is possible to send SMS messages by e-mails from GSM-Control to GSM network and to receive SMS messages as e-mails from GSM network. In this case GSM-Control may run without GSM-modem connected - modem is replaced by e-mail connection.

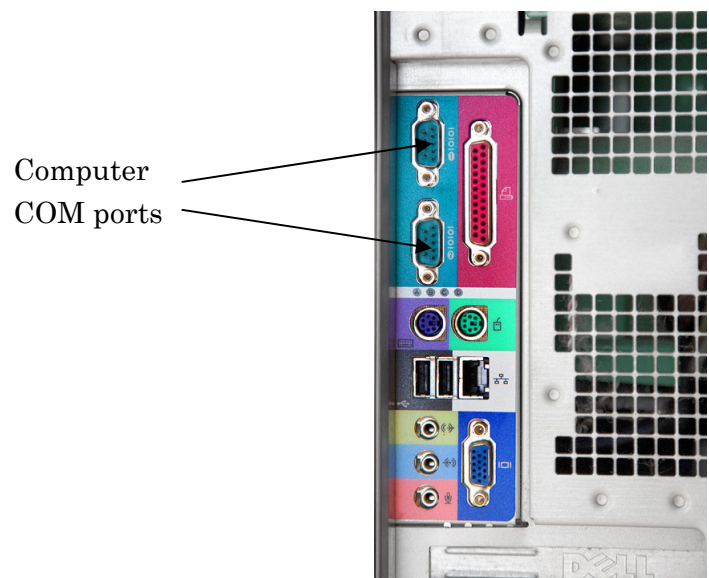
The GSM-Control may be accessed by any Microsoft Windows (NT, 2000, XP) program working as a DDE or OPC Server (or DDE or OPC Client in case of direct sending/receiving of SMS Messages via GSM-Control). The GSM-Control has extended functions and support for Wonderware **InTouch (for MMI)**, **Application Server (via MXAccess)** and for **I/O Servers (for field interfacing)** developed with Wonderware I/O Server Development Toolkit.

## GSM-modem and accessories

The main function of GSM-Control is receiving and sending SMS-messages. For this purpose the external GSM-modem must be connected to computer where GSM-Control software is running:

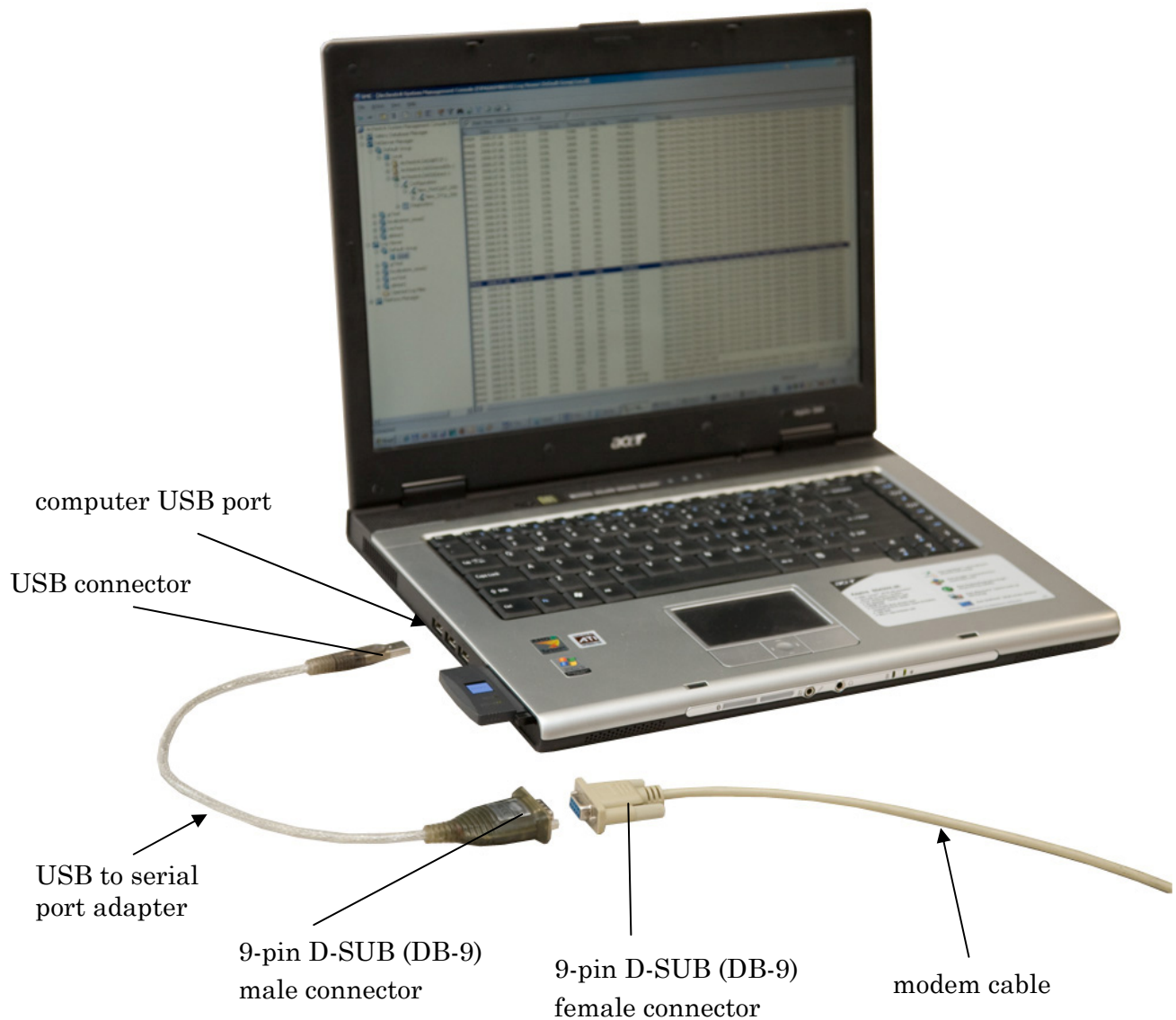


The GSM-modem and all necessary accessories (antenna, power supply cable and modem cable) are already included in **PC GSM SET** package provided by Wonderware Finland & Baltics.



The modem cable 9-pin D-SUB (DB-9) female connector must be inserted into computer COM (serial) port socket (9-pin D-SUB (DB-9) male), usually located on the rear panel of the computer:

If the computer where GSM-Control is running has no COM (serial) port, an additional **USB to serial port adapter** is needed (not included in PC GSM SET package and not supplied by Wonderware Finland & Baltics). The adapter must have a 9-pin D-SUB (DB-9) male connector which must be connected to the modem cable 9-pin D-SUB (DB-9) female connector:



There are different kinds of USB to serial port adapters available on the market, as a rule also the corresponding USB/serial driver software is supplied – after installing the driver, the new virtual COM port (physically using USB port) is added to the computer; this COM port must be selected in GSM-Control as a COM port where GSM-modem is connected.

## Installing the GSM-Control

The GSM-Control installation package is supplied as a self-extracting archive P067\_xxx.EXE, where xxx is the current (latest) version of GSM-Control.

To install the GSM-Control from the self-extracting archive, run the P067\_xxx.EXE and proceed as directed by the GSM-Control Setup program.

When installation is finished, the subdirectory specified as a folder where to install the GSM-Control files will contain the following files:

<b>GSMCTRL.EXE</b>	The GSM-Control Communication Program. This is a Microsoft Windows 32-bit application program.
<b>GSMCFG.EXE</b>	The GSM-Control GSM-Control Configuration Program. This is a Microsoft Windows 32-bit application program.
<b>GSMCFG.HLP</b>	The GSM-Control Help file.
<b>OPCLIB.DLL</b>	Dynamic Link Library necessary for GSM-Control OPC part.
<b>LMXLIB.DLL</b>	Dynamic Link Library necessary for GSM-Control MXAccess (Lmx Proxy) part.
<b>KLSERVER.DLL</b>	Dynamic Link Library necessary for GSM-Control OPC Server part.
<b>GSMCSQL.DLL</b>	Dynamic Link Library necessary for GSM-Control SQL part.
<b>DEFAULT.XML</b>	An example default configuration file.
<b>EXEXCEL.XML</b>	An example configuration file for using GSM-Control with MS Excel.
<b>EXEXCEL.XLS</b>	An example MS Excel spreadsheet file to be used together with EXEXCEL.XML.
<b>EXWW.XML</b>	An example configuration file for using GSM-Control with Wonderware InTouch.
<b>EXWW.ZIP</b>	An example Wonderware InTouch application (packed) to be used together with EXWW.XML.
<b>USRDLL.ZIP</b>	An example user extension DLL source code written by Microsoft Visual C++ 6.0. User extension DLL allows to perform special user defined tasks when SMS is sent or received. This feature is optional.
<b>EXOPC.XML</b>	An example configuration file for using GSM-Control with M90 OPC Server.
<b>EXLMX.XML</b>	An example configuration file for using GSM-Control with Wonderware Application Server via MXAccess (Lmx) interface.

<b>GSMCtrlTestGalaxy Dump.csv</b>	An example Application Server Galaxy dump file for using GSM-Control with Wonderware Application Server via MXAccess (LMX Proxy) interface.
<b>EXSQL.XML</b>	An example configuration file for using GSM-Control SQL interface with MS Access.
<b>EXSQL.MDB</b>	An example MS Access database to be used with GSM-Control EXSQL.XML configuration file.
<b>EXFORW.XML</b>	An example configuration file for forwarding received SMSmessage to e-mail
<b>LICENSE.TXT</b>	Wonderware Finland & Baltics software license file.

The following files will be copied (only if same or newer versions are not yet there) to MS Windows system directory (e.g. to C:\WINNT\SYSTEM32\ ) and if necessary also will be automatically registered in the system:

<b>OPCPROXY.DLL</b>	Proxy/stub DLL used for marshalling interfaces to local or remote OPC Servers. This DLL is provided from OPC Foundation.
<b>OPCENUM.EXE</b>	OPC Foundation OpcEnum Module necessary for OPC browsing.
<b>OPCCOMN_PS.DLL</b>	OPC Foundation Common Interfaces 1.0 Proxy.

To **uninstall** the GSM-Control, start Control Panel, select “Add/Remove Programs” and select the “GSM Control SMS Gateway” from the list of available software products. Click on “Add/Remove...” and proceed as directed by the UnInstallShield program.

**Notes:**

1. To run GSM-Control, you need the **Microsoft Internet Explorer** version **5.0** (starting from version 5.00.3315.1000) or later to be installed on same computer where GSM-Control is used - GSM-Control uses Microsoft system libraries **MSXML.DLL** (XML OM (Object Model) for Win 32) and **MSXMLR.DLL** (XML Resources for Win 32) to process the GSM-Control configuration files, which are in the XML format.
2. The **HASP key** is needed for full time running of GSM-Control. The HASP key is the parallel key (dongle) to be installed into PC parallel port and needs the HASP Driver to be used. The HASP Driver setup is performed during the GSM-Control setup. Without HASP key installed the GSM-Control Communication Program will run 1-hour in **demo mode** (in 1-hour demo mode only one “User” is supported). After purchasing the GSM-Control, the appropriate HASP key is delivered and no re-installation of GSM-Control is needed. The GSM-Control Configuration Program does not need the presence of HASP key.

## Getting started quickly with GSM-Control

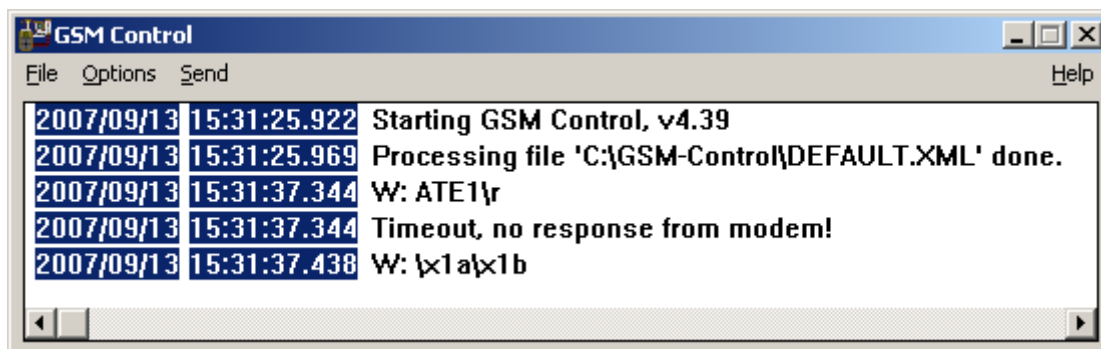
The easiest way to start with GSM-Control is to use the default configuration (default configuration file DEFAULT.XML) supplied with GSM-Control distribution package. The following very basic can be done by using the default configuration: if SMS message “?” is sent to GSM-Control then GSM-Control will respond with SMS message “Value:X” where X is the current value from cell A1 (DDE address R1C1) in MS Excel.

To use the default configuration, the MS Excel always should be started before GSM-Control Communication Program (GSMCTRL.EXE) because within GSM-Control default configuration the GSM-Control acts as a DDE client requesting data from MS Excel acting as a DDE server.

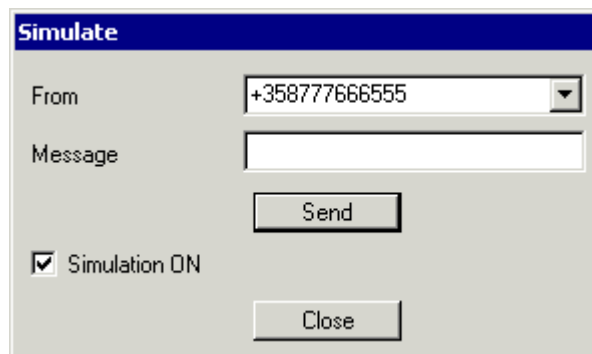
### Getting started in simulation mode (without GSM-modem connected)

The following sequence can be used to start quickly with GSM-Control in simulation mode, i.e. without GSM-modem connected and without real sending/receiving of SMS messages:

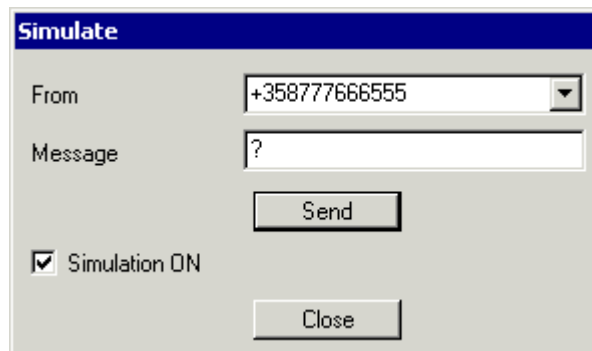
- 1 Start MS Excel. Enter some value (e.g. 33) in the cell A1 of default Sheet1.
- 2 Start GSM-Control Control Communication Program (GSMCTRL). The window like following will appear:



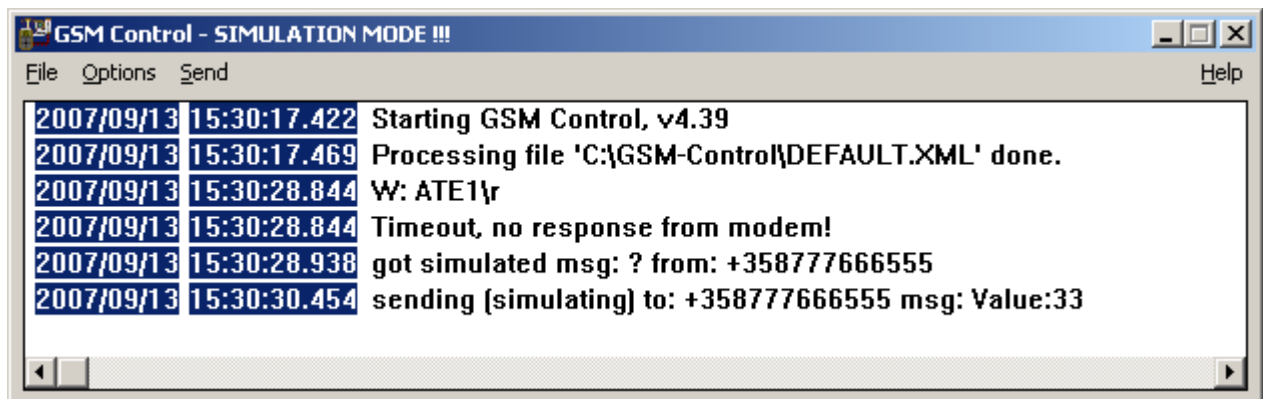
- 3 Open the “Simulate” dialog box by selecting *Send/Simulate* from GSM-Control main menu. Select the “Simulation ON” option - the GSM-Control will change to simulation mode (the GSM-Control main window title bar will change correspondingly). Now we are ready to simulate the sending of SMS message:



- 4 Enter the “?” in the “Simulate” dialog box “Message” field and press the **Send** button:



- 5 The following will appear on GSM-Control main window:



The information logged to GSM-Control main window informs about the following:

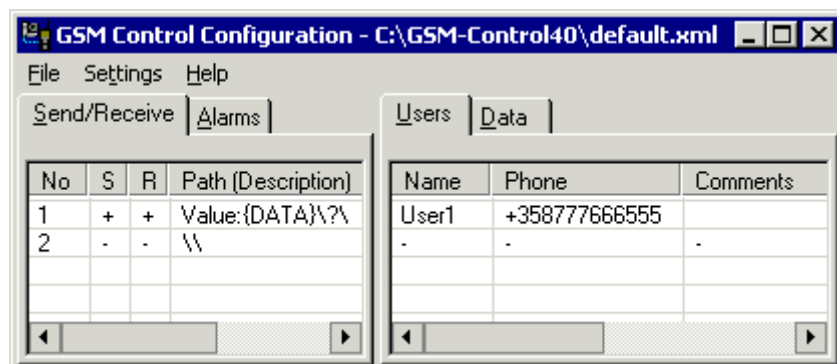
- at 15:30:28.938 the simulated message “?” was received (simulated) from “+358777666555”;
- at 15:30:30.454 the GSM-Control responded to “+358777666555” with simulated message “Value:33”, where value 33 was obtained from MS Excel cell A1 (DDE address R1C1).

- 6 Now, if changing values in MS Excel, the receiving of new values can be simulated by sending again simulated “?” from “Simulation” dialog box.

## Getting started with GSM-modem connected

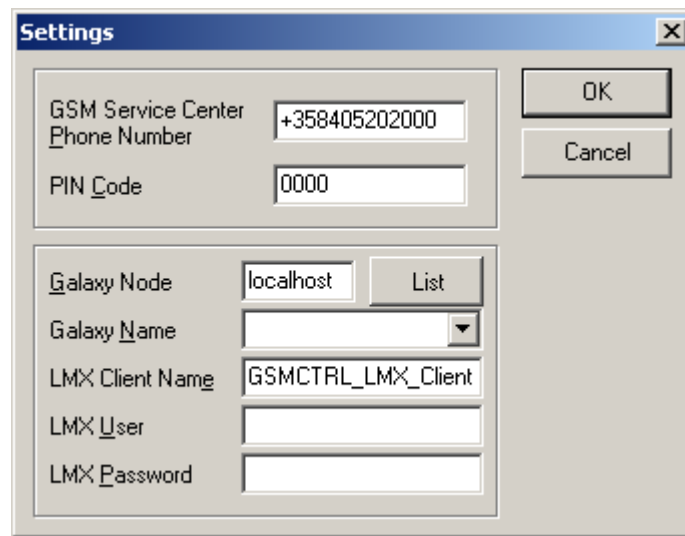
The following sequence to start quickly with GSM-Control by using GSM-modem and sending/receiving of SMS messages by mobile phone:

- 1 Find out and remember the PIN code, phone number and GSM Messages Service Center Number of the SIM card to be used with GSM-modem. The GSM Messages Service Center Number can be found by inserting SIM card into the mobile phone and selecting menu sequence like “Messages/Message Setup/Service Center” or similarly.
- 2 Insert the SIM card into the GSM-modem. Connect GSM-modem to computer serial port, e.g. to COM1 and power-up the GSM-modem. It is assumed the GSM-modem has default serial port configuration: baud rate 19200, 8 data bits, 1 stop bit, no parity, no flow control. If GSM-modem settings differs from default then it is necessary to restore the default settings - it can be done e.g. by Windows HyperTerminal program by issuing AT&F (“Set all current parameters to manufacturer defaults”) command.
- 3 Start GSM-Control Configuration Program. The window like following will appear:



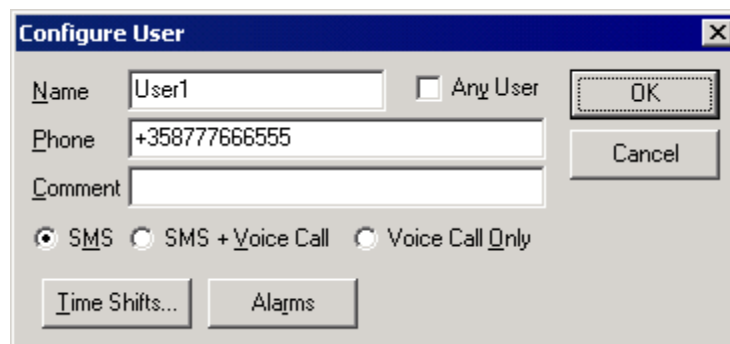
Now it is necessary to change some settings according to your current environment:

- 3.1. Open the “Settings” dialog box by selecting *Settings* from GSM-Control Configuration Program main menu:



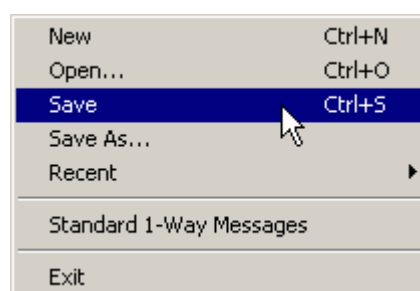
Enter your current settings in the *GSM Service Center Phone Number* and *PIN Code* fields. Click **OK**.

- 3.2. Click on *Users* page control to select “Users” page (if not already selected) and open the “Configure User” dialog box by double-clicking on User1:

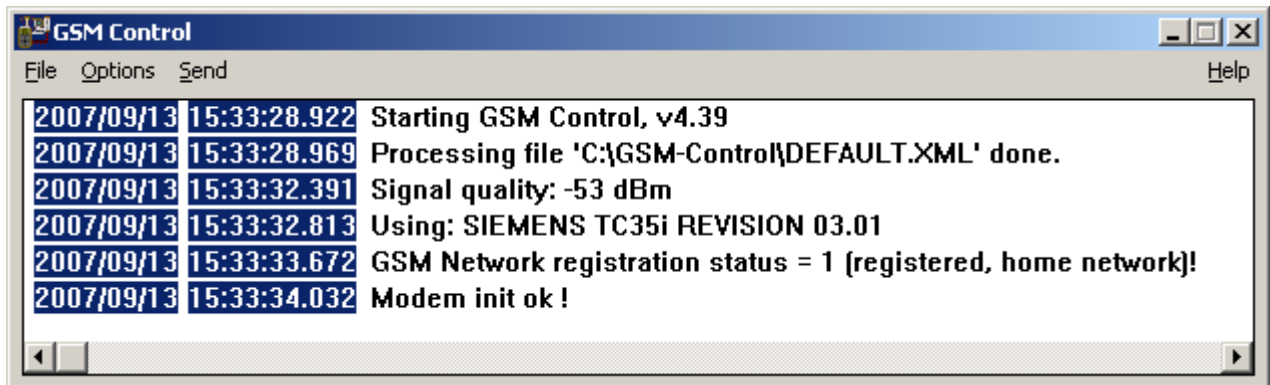


Replace the default *Phone* number “+358777666555” with your mobile phone number (the number of mobile phone from where you are going to send/receive SMS messages to/from GSM-Control) and press **OK**.

- 3.3. Select *File/Save* from GSM-Control Configuration Program main menu to save the modified GSM-Control configuration under the same file name *default.xml*:

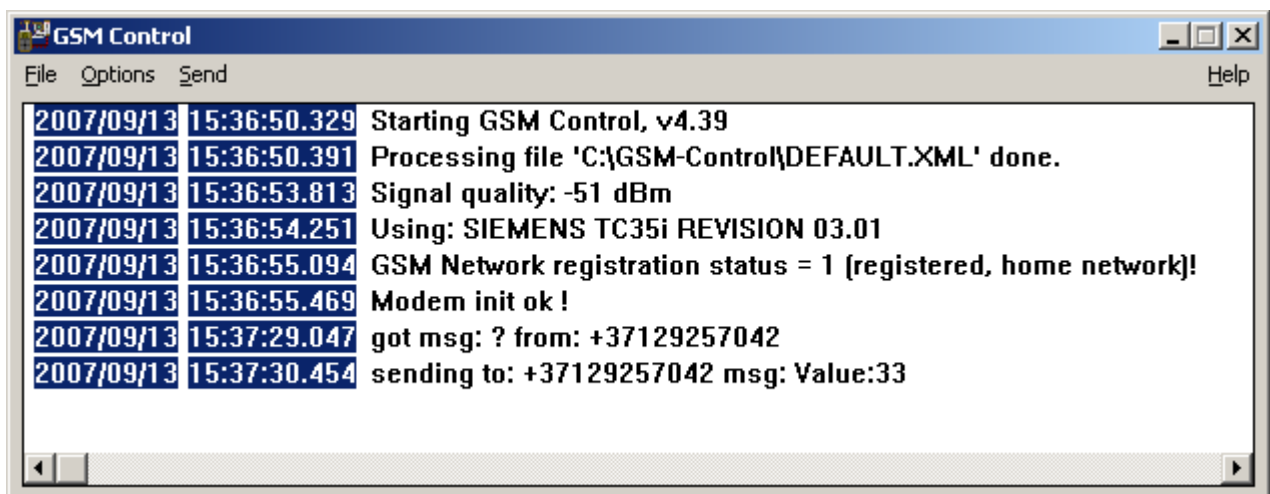


- 4 Start MS Excel. Enter some value (e.g. 33) in the cell A1 of default Sheet1.
- 5 Start GSM-Control Control Communication Program. The window like following will appear:



If there is no errors logged on GSM-Control Communication Program main window and last message logged is “Modem init ok!” then it means GSM-Control is ready to receive and send SMS messages.

- 6 Send the SMS message consisting only from one character “?” from your mobile phone to GSM-Control (to the phone number of the SIM card inserted into GSM-modem). GSM-Control will respond and on your mobile phone you will receive the SMS message “Value:33”, where value 33 is the current value from MS Excel cell A1 (DDE address R1C1). The information like following will appear on GSM-Control main window:



The information logged to GSM-Control main window informs about the following:

- at 15:37:29.047 the SMS message “?” was received from mobile phone with number “+37129257042”;
  - at 15:37:30.454 the GSM-Control responded to “+37129257042” with SMS message “Value:33”, where value 33 was obtained from MS Excel cell A1.
- 7 Now, if changing values in MS Excel, the receiving of new values is possible by sending SMS messages “?” again.

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Revision History

Jul 2008    Rev 1.0    First Release