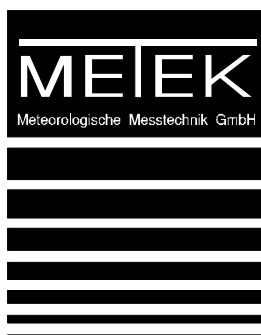


SODAR Control

User Manual

Version 2.2



Oe 07.09.2004

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System Requirements:

You will need an IBM compatible personal computer running Microsoft Windows NT 3.51 or higher. The screenshots in this manual have been made on a Windows NT 4.0 system.

Table of Contents

Table of Contents	5
1 Introduction.....	7
1.1 Communication- and Error Service	8
1.2 Data Service	9
1.3 User Interface	10
2 Installation of the Software.....	11
2.1 Installation on a Windows 2000 System.....	11
2.2 Deinstallation on a Windows 2000 System.....	12
2.3 Registry Entries.....	12
2.4 Adapting the Registry.....	13
3 The User Interface.....	15
3.1 The Main Menu.....	16
3.2 Control Commands.....	17
3.3 Output Parameters	18
3.4 General Device Parameters	20
3.5 Port Parameters.....	23
3.6 Parameter Set Management	24
3.7 Services	26

1 Introduction

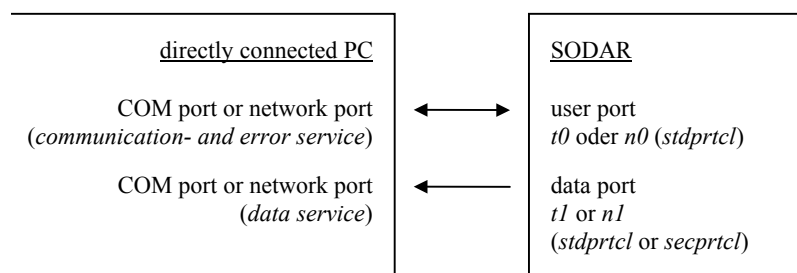
The control program allows the operation of METEK-SODARs using a graphical user interface. It provides the complete control of the device and gives you a context sensitive help text to all possible settings. An operation is also possible, if the device is not connected to the local PC on which this control program is running. For this reason the software is divided into four components :

- Communication- and Error Service
- Data Service
- User Interface

The service program communicates directly with the connected measuring device, the user interface however is the real control program. By means of this the user for example can ask for the system status or change it. This part of the software in its turn uses the service program.

Service programs are software components, which are started automatically when the machine is turned on and the Windows operating system boots. They offer their 'services' e.g. control functions and data to other programs. The management of those programs is provided by the operating system. The starting of a service program needs no manual operation. Only take care that the corresponding service is not deactivated (this can be checked in the `service` menu from the administrative tools of Windows).

Each of the services belonging to this software occupies an own serial- or network port of the connected SODAR. These ports are assigned to services as shown below :



1.1 Communication- and Error Service

This service is used for the communication between the user (using the user interface) and the control port of the SODAR. This control port is implemented as a serial or a network interface. Using this service the system settings of the SODAR can be retrieved and any changes demanded by the user are translated into the corresponding commands and transmitted to the SODAR.

For a proper communication with the SODAR some settings must be adjusted manually at the SODAR before the installation of this software. This concerns to the selection of the data protocol (*stdprtcl*), the setting of a *prompt* for the command interpreter of the SODAR in the form of "*xxx >* " and the activating of all existing antennas (acoustic and electromagnetic) as a *default*. Note : "*xxx*" means any alphanumeric not containing a space or any special character. If a serial port is used, the baud rate of the SODAR port *t0* must be set to 9600 baud, 8 bit, no parity (factory setting).

The second function of the service is the recording of all error messages, which are caused by the operation of the SODAR, except messages which are generated from user input errors.

The error recording is done by the event logging function of the operation system. At the item `application` you find a chronological sorted list of error messages, which occurred during the operation. Use the Windows event viewer to look at the messages or to store them in other formats. You also can define, how the system shall act if more than the storable number of errors occur. The event viewer is located in the program group `Administrative Tools`. The logged events can be dumped to a text file with the Microsoft program `Dumpel.exe`.

1.2 Data Service

This service is needed for the recording of the averaged or instantaneous measured data of the SODAR. The recording is done ASCII formatted, so that it is directly readable. The data transmission can be performed either with the standard protocol *stdprtcl* or with the secured standard protocol *secprtcl*. The used protocol will be recognized automatically, the format of the registered data remains unchanged in both cases. The service program creates one file each day, whose name is constructed from the actual month, the day (2 characters each) and an additional extension. The boundary between two days is defined as 0:00 CET. Other time zones in the recorded data are considered as well. The file name extension is the identifier of the data generating system (e.g. *.SDR for a SODAR with the identifier SDR). All files of a month are stored in a separate directory which will be created automatically if necessary. The names of the directories are constructed from the actual year (4 digits) and month (2 digits). The basic path name for the data registration may be changed with the MS Windows registry editor (*regedit.exe*) at the key

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SodarData\Parameters

Default pathnames are

D:\Data for averaged data and

D:\Rawdata for instantaneous data.

Example: The file D:\Data\200408\0826.SDR would contain the averaged data from August, 26th of 2004.

The use of this service requires the activation of the needed protocol (*stdprtcl*) at the corresponding port of the SODAR (*t1* resp. *n1*). If a serial port is used, the baud rate of the SODAR port *t1* must be set to 9600 baud, 8 bit, no parity (factory setting).

1.3 User Interface

This part of the software provides the access to the SODAR using the communication service. The correct installation and the (usually automatic) start of the service program is required for a successful start of the user interface program.

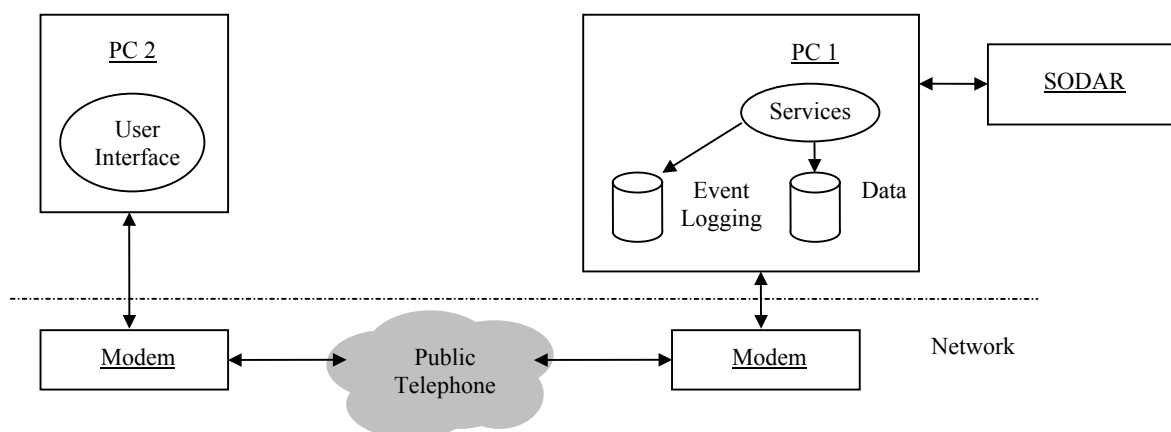
The advantage of the user interface is that the SODAR can be operated by PCs which are not connected directly to the measuring device.

It is only necessary that there is a network connection to that PC, at which the communication service was started. This network connection may be either a local connection (ethernet) or a remote access connection (RAS) which is built up using the public telephone. Remember that you have purchased the required number of program licenses.

Due to this mode of operation a login at the communication service which provides the connection to the SODAR is necessary when you start the program (e.g. by a mouse click on a program icon you have created before, or by the command line `C:\Metek\SodarCtrl`). This ensures that only one user is accessing the device.

There are no special network installations needed, because no network protocol dependent functions are used between the service and the user interface.

The following picture shows an example for a remote access, where the network connection is performed by a RAS connection. The communication of the user interface on PC #2 with the SODAR uses the network and the communication service program on PC #1. The data registration and the event logging is executed on PC #1 which is connected directly to the SODAR:



2 Installation of the Software

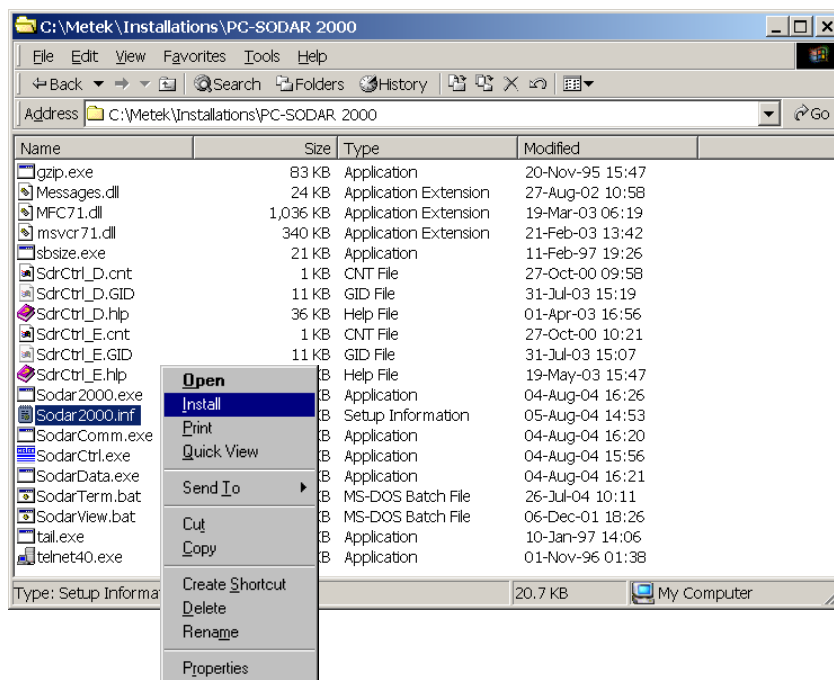
The software is usually preinstalled on your system and also stored under C:\Metek\Installations\SODARCtrl or on PC-Sodar systems as a part of ..\PC-SODAR 2000. It is also supplied on a CD containing the following files :

SODARComm.exe	SODARView.bat	msvcr71.dll
SODARData.exe	tail.exe	SDRCTRL_D.hlp
SODARCtrl.exe	sbsize.exe	SDRCTRL_E.hlp
SODAR-Lan.inf	SetColor.exe	SDRCTRL_D.cnt
SODAR-Ser.inf	Messages.dll	SDRCTRL_E.cnt
SODAR2000.inf	MFC71.dll	

2.1 Installation on a Windows 2000 System

If you want to install this software, login as an administrator, insert the CD, open the program group `my computer` (icon on the desktop) and open the folder for the CD device. With the right mouse key you must click on one of the files `SODARxxxx.inf`. Now you can activate the `install` menu. The files are copied and the registry of the PC is actualized.

The file `SODAR-Lan.inf` must be used for SODAR systems which use a network port,
The file `SODAR-Ser.inf` must be used for SODAR systems which use a serial port,
The file `SODAR2000.inf` must be used for PC-SODAR 2000 systems.



When the copy process was finished, the PC must be booted again before the modifications become effective.

2.2 Deinstallation on a Windows 2000 System

If you want to remove the program you must be logged in as an administrator. If still active you must stop the SODARData service and the SODARComm service program using the Services menu in the Administrative Tools program group. Activate the folder Add/Remove programs (in the control panel menu), select the entry METEK Sodar Software and press the button Add/Remove. If no longer needed, you may manually remove the empty directory (C:\METEK), its subdirectories and possibly some data files and their directories.

2.3 Registry Entries

An installation which is executed with one of the SODARxxxx.inf files, creates the following entries in the Windows registry. Some of these keys may be changed by the user to adapt the system (see next chapter).

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\

SodarComm	Description	REG_SZ	Interface to the SODAR control program
	DisplayName	REG_SZ	SODARComm
	ErrorControl	REG_DWORD	0x00000001 (1)
	FailureActions	REG_BINARY	00 00 00 00 ...
	ImagePath	REG_EXPAND_SZ	%MetekRoot%\SodarComm.exe
	ObjectName	REG_SZ	LocalSystem
	Start	REG_DWORD	0x00000002 (2)
	Type	REG_DWORD	0x00000010 (16)
+ Enum	0	REG_SZ	Root\LEGACY_SODARCOMM\0000
	Count	REG_DWORD	0x00000001 (1)
	NextInstance	REG_DWORD	0x00000001 (1)
+ Parameters	Port	REG_SZ	127.0.0.1:5000
	BaudRate	REG_DWORD	0x00002580 (9600)
	TimeSync	REG_DWORD	0x00000001 (1)
SodarData	Description	REG_SZ	Writes SODAR data to files
	DisplayName	REG_SZ	SODARData
	ErrorControl	REG_DWORD	0x00000001 (1)
	FailureActions	REG_BINARY	00 00 00 00 ...
	ImagePath	REG_EXPAND_SZ	%MetekRoot%\SodarData.exe
	ObjectName	REG_SZ	LocalSystem
	Start	REG_DWORD	0x00000002 (2)
	Type	REG_DWORD	0x00000010 (16)
+ Enum	0	REG_SZ	Root\LEGACY_SODARDATA\0000
	Count	REG_DWORD	0x00000001 (1)
	NextInstance	REG_DWORD	0x00000001 (1)
+ Parameters	AveragedDataFile	REG_EXPAND_SZ	D:\ActData\Data%s
	AveragedDataPath	REG_EXPAND_SZ	D:\Data
	InstantaneousDataFile	REG_EXPAND_SZ	D:\ActData\RawData%s
	InstantaneousDataPath	REG_EXPAND_SZ	D:\RawData
	Port	REG_SZ	127.0.0.1:5001
	BaudRate	REG_DWORD	0x00002580 (9600)
	TimeCorrection	REG_DWORD	0x00000000 (0)

The shown example represents a PC SODAR installation. The Baudrate entries are only used for serial ports (Port = COMx) which are connected to an external standard SODAR

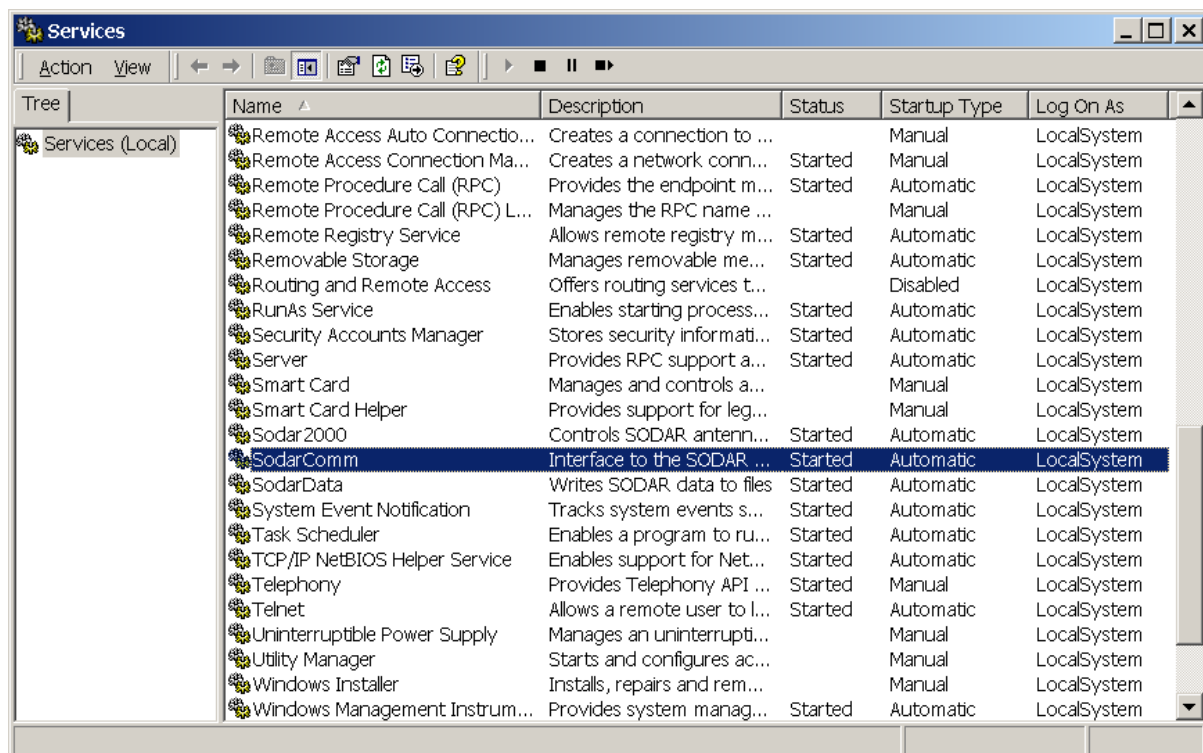
2.4 Adapting the Registry

If you have not modified the `SODARxxxxx.inf` file to your special purposes, you can also modify the registry after the installation of the software. You can configure

- 1st the PC port(s) to the SODAR
- 2nd the pathnames of the data files.

All other entries should stay unchanged.

For this modification you must use the Windows registry editor (type `regedit.exe` on the command line). To apply your modifications to the running service it must be stopped and restarted again. Open the `Services` menu from the program group `Administrative Tools`. Select the `SODARData` service and the `SODARComm` service, stop and restart them again.



The data port and the communication port from your PC to the SODAR may either be a serial port (e.g. COM1) or a TCP/IP network address of the connected SODAR, followed by a colon and the TCP/IP port number. Symbolic names are not accepted by the services. Examples

Serial configuration : SODARComm : Port = COM1
 SODARData : Port = COM2

Network configuration : SODARComm : Port = 192.168.1.10:23
 SODARData : Port = 192.168.1.10:5001

PC SODAR configuration : SODARComm : Port = 192.168.1.10:5000
 SODARData : Port = 192.168.1.10:5001

The corresponding baud rate for serial ports is stored as a number in the key `BaudRate`.

The data service needs 5 further keys :

The keys `AveragedDataPath`
and `InstantaneousDataPath`
define the pathnames for the recorded averaged and instantaneous data files.

The keys `AveragedDataFile`
and `InstantaneousDataFile`
define the pathnames and filenames for the recorded last dataset files.

The key `TimeCorrection`
is an optional number which defines, whether the time stamp from the SODAR data will be substituted by a time stamp from the PC (`TimeCorrection=1`) and/or if there should be any rounding to full minutes for averaged data (`TimeCorrection=2`).

The communication service has another key :

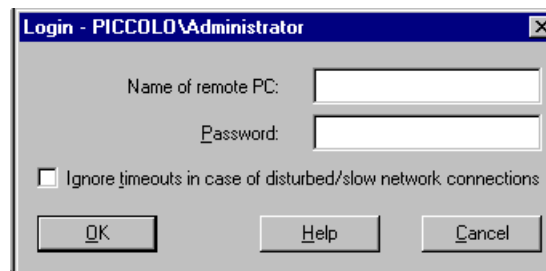
`TimeSync` is an optional numeric value which defines whether the service shall try to synchronize the SODAR's clock with the PC-clock.

All these parameters are only evaluated when the services start. To get a change in the system you must stop and start again the concerning service program.

The parameters `TimeCorrection` and `TimeSync` do not exist after installation. They are created by the graphical user interface of this SODAR-Control software when they are changed the first time. In this case changes will be recognized immediately.

3 The User Interface

As mentioned above in chapter 1.3, it is necessary to login to the communication service which must be started before. Don't confuse this with the login to the operating system. If the program is started without any command line parameter, the shown dialog window appears:



At the item *Name of remote PC* the name of that computer is expected to which the SODAR is connected directly and where the communication service program was started. If this entry is omitted, this dialog assumes a local login. This means your own computer is connected to the SODAR. Alternatively the name of the local computer or simply a point may be entered at a local login.

The *Password* entry field is only useful if the remote computer is a member of another Windows domain, because in this case a connection can be built up only if a user name and the matching password is given. The user name is set automatically (see the header of the dialog window).

The network connection to the remote computer usually is a LAN- or a RAS connection. RAS connections using the public telephone net are mostly not very efficient, especially cellphone connections. Considering that circumstances, the login dialog provides the use of time-out-values which are adjusted to the maximum delay times for the responses from the remote PC. Using a direct LAN or a local login, this feature is not needed.

If the program was started by a command line input, the information concerning the login window can be handed over as a parameter. Example:

```
C:\METEK\SODARCTRL SODAR-XX secret /t
```

This entry would try to build a connection to a computer with the name `\\SODAR-XX`. The password is `secret`, the time-out-values are set for slow WAN connections (`/t`). The parameter `/t` is optional, the computer name and the password however must be given always. This is also needed for local logins (the password will not be checked).

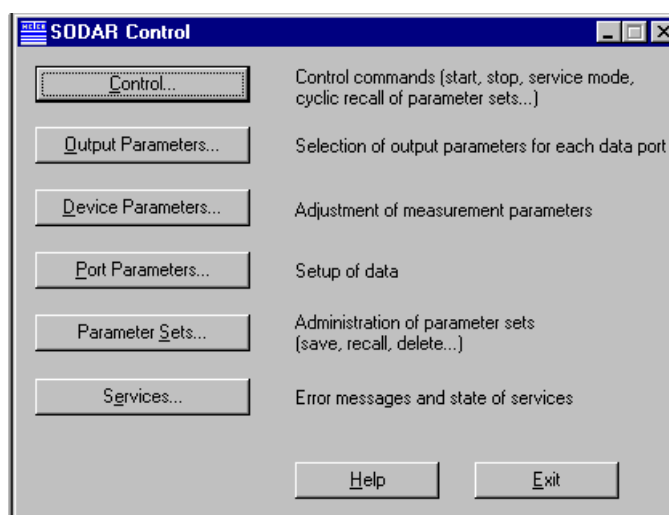
The command line can be extended by another parameter. This parameter must be the name of a parameter set which is known to the SODAR system. If such a name is given, the corresponding parameter set will be loaded immediately. In this case no user interface window will appear on the screen.

This starting mode may be used for example in order to lower the acoustic level of the SODAR system during the night. The appropriate parameter set must be defined before (see chapter 3.6). They can be activated alternately on certain times.

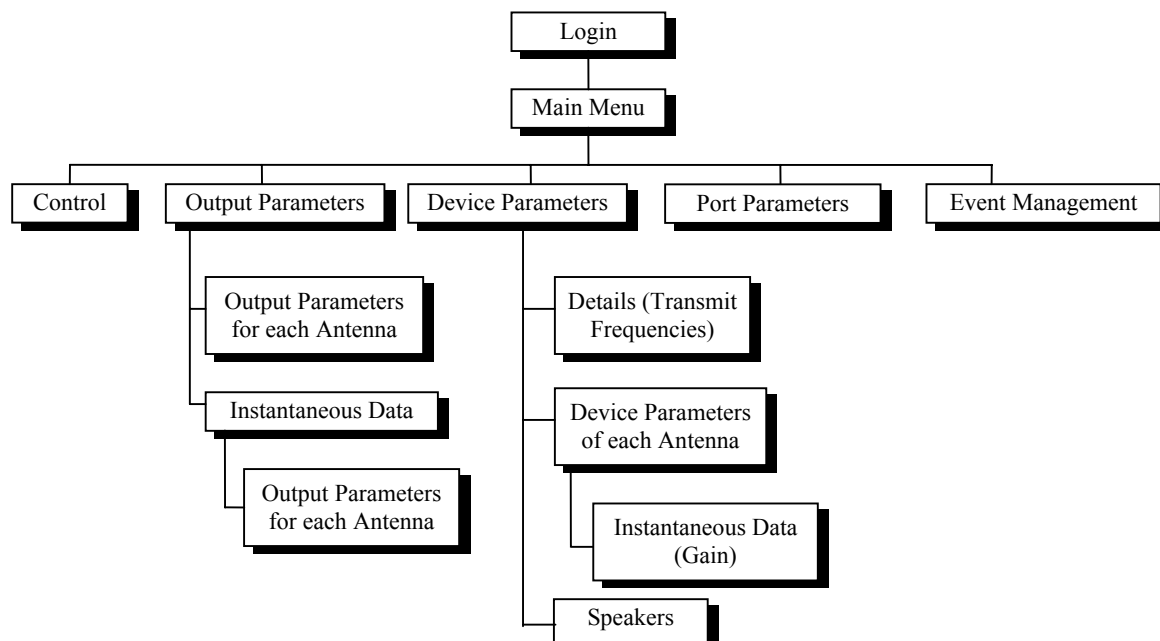
To execute a time controlled command on a Windows 2000 system use it's at-command.

If no parameter name was given and the connection to the communication service could be built up, the entire status of the SODAR is read out first. This can take some seconds, on RAS connections even some minutes. After this the following menu is shown:

3.1 The Main Menu

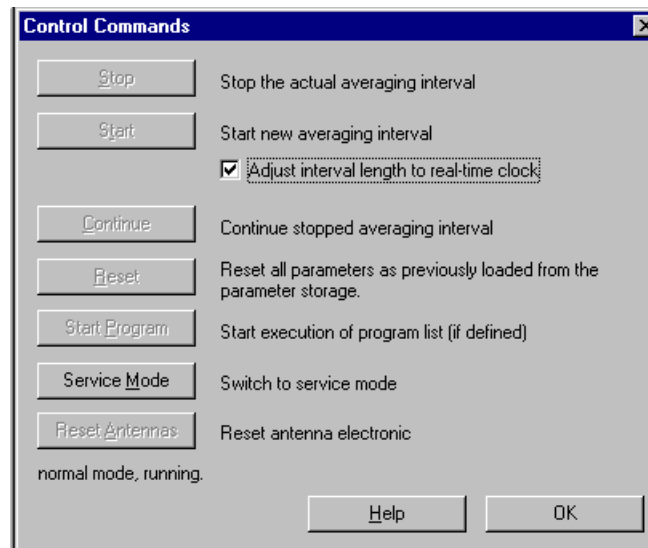


The main menu shows buttons for the menus *Control*, *Output Parameters*, *Device Parameters*, *Port Parameters*, *Parameter Sets*, and *Servicec*. With the *Exit* button you can leave the program. The *Help* button provides a Windows conforming help text. The following picture shows the menu structure (without *Services*):



3.2 Control Commands

Selecting this menu item, the following dialog appears:



This dialog provides general functions to control the SODAR.

With the *Stop* button the actual measuring cycle will be stopped. This means, the measurement only will be interrupted for some time. This action is only possible in the service mode.

The *Start* button will undo a previous *Stop* command. In any case the running measuring cycle will be stopped and a new one started. Also this action is only possible in the service mode.

The check box *Adjust interval length to real-time clock* enables a synchronization of the SODAR. The actual measuring interval is shortened or extended that the future outputs of averaged data will occur at 'round' times (i.e. the time in seconds modulo average time is 0). If the actual interval would be shortened to less than the half of the original length, the interval will be extended. If the averaging interval was set to 0 in order to obtain only instantaneous data, the synchronization becomes ineffective.

The *Continue* button will undo a previously given *Stop* command. The measurement will be continued then. This command is only available in the service mode.

The *Reset* button will restore all parameters and settings with either those which were loaded by the last entered *Load* command or those which are stored in the first parameter set entry of the program list. Also this command is only available in the service mode.

The *Start Program* button starts the measuring program. By means of a program list different parameter settings can be activated in a cyclic order (see also the *Service*

command). This list consists of one or more user defined parameter settings for the SODAR. After each measuring intervall which is defined by the active parameter set the system takes the next entry from the program list and loads the corresponding settings. When reaching the end of the list, the system starts over to the first entry. The button will be hidden for system not supporting a programmed operation.

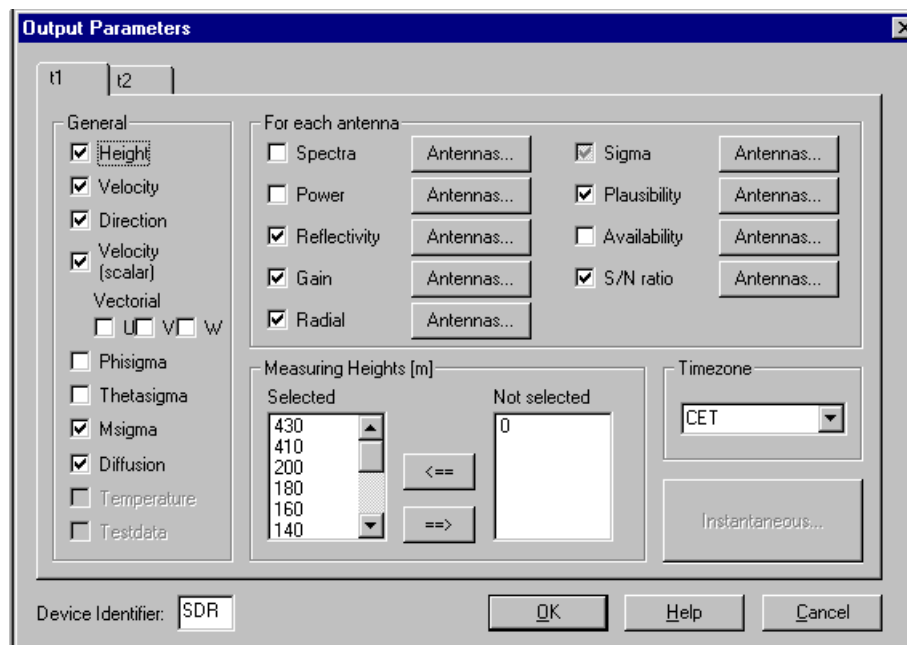
The *Service* button sets the SODAR into the service mode. The measuring system can be operated in two modes. The normal operation mode which allows only a limited control, and the service mode with full control capability. The purpose of these two operation modes is to avoid any unintentionally parameter modifications to obtain an uninterrupted measurement. The *Service* mode can be left with the *Reset* button. Another way is to recall a certain set of parameters using the *Load* command.

Reset Antennas can be used to reset the antenna electronic. This button is for phased array antennas not available.

The dialog can be left with the Ok button. The *Sodar Control* main menu appears again.

3.3 Output Parameters

Selecting this menu item, the shown dialog appears:



The actual appearance of this window may differ from the shown example, because an output information is only shown for those ports for which an output protocol was activated (see chapter 3.5). On the other hand not every SODAR provides all possible options. This concerns especially to the parameter selection, i.e. devices

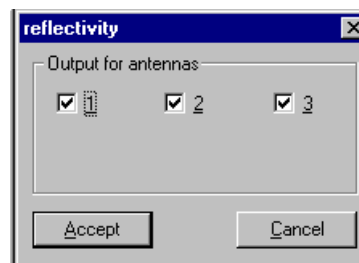
without RASS option cannot give temperature profiles and devices without an analog output do not support test values. Something like that applies to the output and the selection of instantaneous data for which a separate dialog form is available by the *Instantaneous Data* button in the *Output Parameters* dialog.



The selection made in this dialog correlates with the last selected port in the dialog *Output Parameters*. Changes made in this dialog become valid when you click the *Apply* button and then the higher level dialog *Output Parameters* was left with the *Ok* button. If you click on the *Abort* button in this menu or in the *Output Parameters* menu, all changes you have made in the *Instantaneous data* form are discarded.

Both dialogs are used for the definition of the *Output Parameters* for each data port separately. The available ports are symbolized as file tabs. Clicking on a tab you select the setting form for the corresponding port. The possible settings are equal for each port, as a matter of output performance you should not select instantaneous data on a serial port.

The selection of a parameter is made by marking the corresponding check box. Some parameters can be calculated in an antenna specific way. In this cases the style of the checkbox marking shows if the parameter was selected for all antennas (showing a hook or a hair cross on white background), only for some antennas (the same on a light gray background), or for no antenna (no marking). In order to define settings for each antenna separately, another window can be opened for each parameter. The appearance of these windows depends on the actual number of connected antennas. An example for 3 antennas (without RASS) :



Besides the selection of the output parameters this dialog provides the possibility to select the measuring height step and the used time zone (CET, CEST, UTC or GMT).

The time zone is irrelevant for the data recording and their subdivision into files and directories. It is only used for the internal representation of the data, which on the

other hand is relevant for the data output to other programs or devices using serial ports.

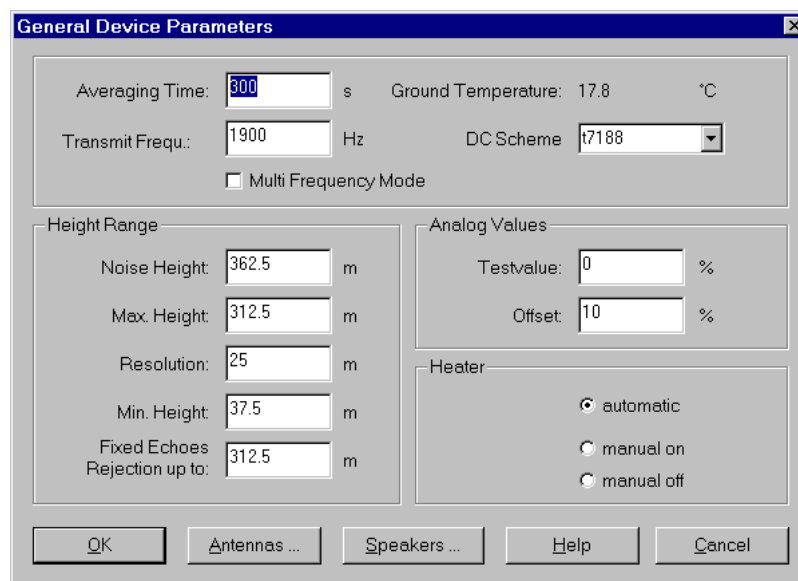
The height steps are shown in two lists including the selected and the not selected height steps separately. If you want to transfer sets of height steps between the lists the according set (one or more height steps) must be marked in the source list. The movement will be performed when the arrow button is pressed pointing to the target list.

The device identifier is used to mark the header line of each data set. It is used by the data service for generation of file names.

The changes you have made in this entry form become valid when you click the *Ok* button, if you click on the *Abort* button, all changes are discarded.

3.4 General Device Parameters

Selecting this menu item, the shown dialog appears:



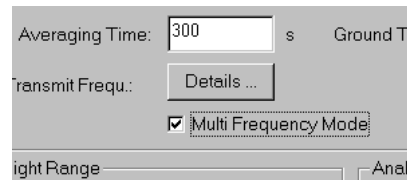
The actual appearance may vary from the above shown example, because not every SODAR provides the same options. This concerns especially to

- the availability of the multi frequency mode,
- the possibility of selecting speakers,
- the setting of the heating, and
- the parameters of the analog data output;
- the *speakers* button is only present, if the device has a single-speaker-control.

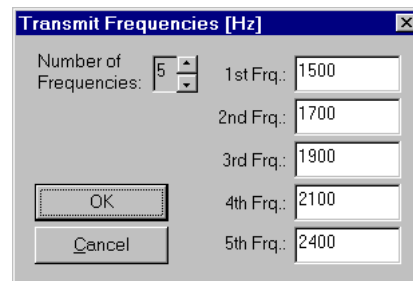
All the other fields are always available.

The changes you have made in this entry form become valid and will be sent to the SODAR when you click the *Ok* button, if you click on the *Abort* button, all changes are discarded.

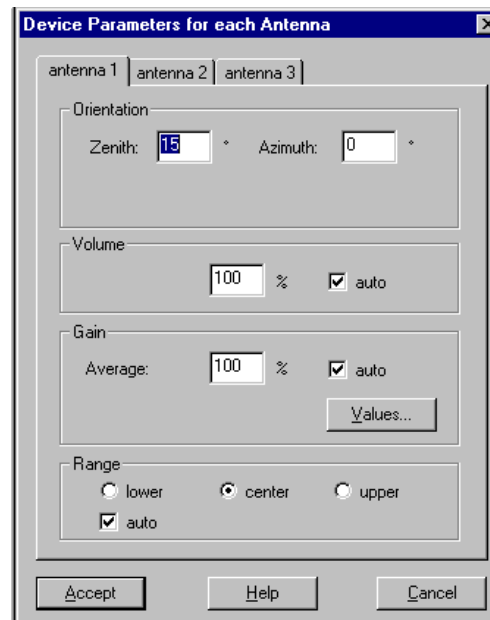
Enabling the multi frequency mode (if available) will make a special button available (labeled *Details*).



Clicking this button will open a dialog box for the definition of up to 5 frequencies which will be transmitted as a series of immediately following single pulses instead of one pulse for each radial measurement / each antenna direction:



A click on the *Antenna* button (*General Device Parameters*) leads to the submenu *Device Parameters for each Antenna*:



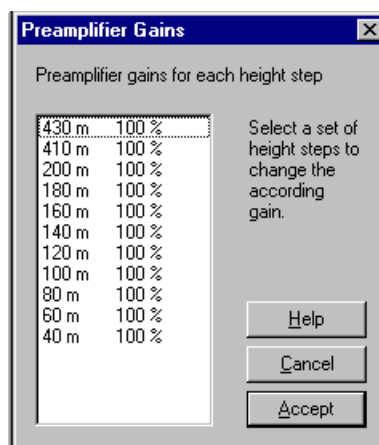
Here you can control the antenna-specific device parameters for each single antenna. The available antennas are consecutively arranged like index cards. Depending on the special device and whether the options are present some fields of this dialog

cannot be modified separately or changed at all. This restriction especially affects the antenna orientation :

You cannot set an *azimuth* angle for vertical antennas. For phase-array-antennas you cannot set the azimuth angle separately because the difference of the *azimuth* angles of 90° is given by the design of the antenna. For this types of SODARs the *zenith* angle(s) cannot be set as well, cause it/they depend on the adjusted transmit frequency(ies).

RASS antennas however are always assumed to be orientated vertically. For this antennas no *range* can be set. In return for these antennas the parameter *distance* is supported, which gives the distance between the electromagnetic transmit- and receive unit. This parameter is available in the setting category *orientation*.

The actual values of the *Preamplifier Gains* of the single antennas are shown as an average over all height steps. If you change this value it is changed for all height steps together. In order to modify the gain for each height step individually you should use the *single-value* submenu, which can be activated by a button of the same name in the *gain* category:



If in this list of gain levels one or more lines are selected, the dialog changes its appearance. The help text on the right side is replaced by scroll bar by which the gain of the selected height steps can be adjusted.

If you leave this dialog with the *apply* button, the changes will be sent to the SODAR, when the higher level dialogs *Parameters of Single Antennas* and *Device Parameters* will be left with the *Ok* button too, if you click on the *Abort* button, all changes are discarded.

Above that the individual functions of the single speakers can be adjusted by the *Device Parameters* dialog. The submenu which is used for this can be activated with the *Speakers* button if the connected SODAR supports this option:



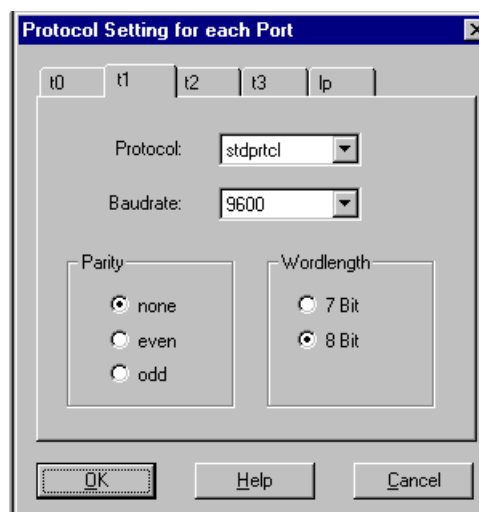
The arrangement of the speakers corresponds to the back view of a standard Metek-SODAR antenna with 7 speakers. Devices with different speaker arrangements and phase-array antennas don't provide this feature and are not supported.

The speakers for each discrete antenna (represented by the selectable tabs of the shown index cards) can be set individually as a receiver and/or a transmitter. If the automatic change is activated, the speakers which are defined as receivers are used as transmitters at the next sending pulse and vice versa.

If you leave this dialog with the *apply* button, the changes will be sent to the SODAR, when the higher level dialog *Device Parameters* will be left with the *Ok* button too. If you click on the *Abort* button, all changes are discarded.

3.5 Port Parameters

Selecting this menu item, the shown dialog appears:



The number and the type of the ports, whose parameters can be changed by this dialog depend on the connected SODAR. Not every device provides the same ports and not every port supports the same settings. The setting forms for the different

ports are available when clicking on the corresponding tab at the top of the main form. Baud rate, parity, and word length e.g. are only available for serial ports. Moreover not all port can support all protocols. Protocols which require a bidirectional communication are only available on serial- and network ports. Other ports like *dac* or *bin* only support two different protocols. Other restrictions exist for the control ports *t0* and/or *n0*.

In addition these facilities are restricted by the service programs because they can communicate only with certain protocols. If the connected device does not provide any unused serial port or at least one of the ports *dac*, *bin*, and *lp*, this dialog is not necessary for the common user.

With you press the *Ok* button, the changes you have made become effective. With the *Abort* button you can undo any changes you have made.

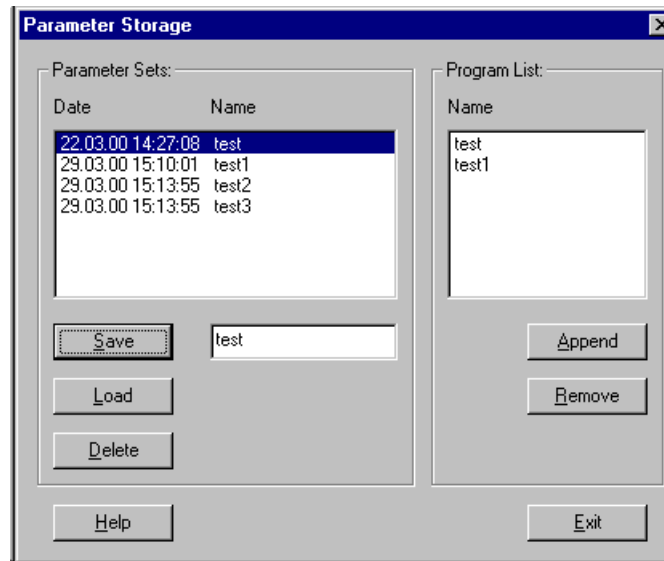
3.6 Parameter Set Management

The parameter memory of the SODAR is used to keep parameter sets for a simplified adaption to often repeated measurement tasks. Each parameter set may be stored with any name you like. Afterwards the parameter set may be recalled by this name at any time. The SODAR then will be in exact the same state as it was at the moment when storing this set.

A parameter set consists of the actual device parameters, output parameters, and the calibration data as calculated by the last calibration procedure.

Parameter sets which are included in this list will be processed successively cyclic. This means everytime the actual averaging interval is finished, the next entry will be loaded from the list. When reaching the end of this list, the program starts over with the first entry again.

When selecting the item *Parameter Set Management* from the main menu, the following dialog appears:



This dialog is used to manage the stored parameter sets. The left choice list shows the names of all stored parameter sets together with the date and time of their creation or last modification.

To load a parameter set, select it from the left list. Its name appears in the text field below the list. If you activate the *load* button, this parameter set becomes active immediately.

The deleting of a parameter set is done analogously. Instead of the *load* button you must activate the *delete* button. Also this action is carried out immediately.

Alternatively to the parameter selection with a mouse click, you can enter the set name into the text entry field using the keyboard.

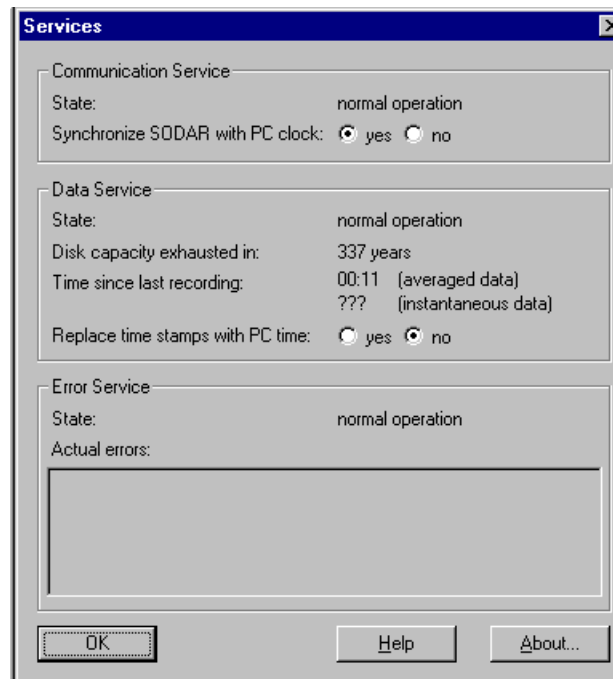
The saving of the present settings is done similar to the loading and deleting procedure. You must use the text entry field to create a new set name entry. It is also possible to redefine an existing entry. After the manual input of the set name, the *save* button must be activated.

Parameter sets which are included in the program list (right choice list) can neither be change nor deleted. To remove the set from the program list, select it in the right list and activate the *remove* button. Notice that the same set name may appear at several places in the right choice list. This depends on the way, the program list was created:

To create a program list, mark a parameter set in the left choice list (with a mouse click or a manual entry) and activate the *append* button. The selected parameter set, represented by its name, will be added at the end of the existing program list. The list which is created or modified in this way will become active immediately.

3.7 Services

Selecting this menu item, the shown dialog appears:



The following information you can take from this dialog:

In which state the service program was at the time of the program start. Three states are possible:

- *Normal operation* :
No problems occurred.
- *Erronous operation* :
One component of the service could not be installed. Either any conflict exists between programs, which e.g. try to access the same port, or hardware errors occurred.
- *No answer* :
The service program does not give any answer. Either the connection to the control unit is broken or the service itself is no longer working or was not started.

Additionally the remaining free space on the disk for the data recording is shown. The calculation is based on the averaged sizes of the last received measuring protocol and the actual free disk space.

The communication service and the data service offer several options for time synchronization and manipulation:

- First the time of the SODAR system can be synchronized to the time of the controlling PC. The communication service will adjust the time of the SODAR if this option is selected. The adjustment is done whenever a significant time shift (more than 15 seconds) is recognized between the PC clock and the SODAR clock.
- On the other hand the time stamp produced by the SODAR can be replaced on reception by the actual time of the PC. This manipulation is done by the data service.
- Independently the data service can round the time to full minutes before writing the data to the disk. This option applies just to averaged data.

In the lower window you find a list of errors which occurred during the measuring operation. Errors which occurred before the start of the user interface can be retrieved from the event logging (Windows NT).

The *About* button shows the copyright and the program version number:

