BRUKER

Monitoring System

BMS

User Manual

Version 002

BRUKER

The information in this manual may be altered without notice.

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Introduction

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General

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1.1

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The BRUKER MONITORING SYSTEM is a PC based unit used to supervise BRUKER units (i.e BMPC). Using the SBS-bus, the values being monitored are read from the supervised BRUKER unit.

The BRUKER MONITORING SYSTEM (BMS) monitors the following functions:

- When the BMS is started, it first reads the limit values which are necessary to control the supervised unit. It is possible to differentiate three limit value levels for every channel: alarm values, warning values, and normal values, and to define an upper and/or lower limit value for each.

- The BMS continuously reads the present data, compares it to the limit values, displays it on screen and annotates it in a data logbook. It is possible to configure both the frequency of writing and the first point in time that data will be written to the data logbook.

- When the present values are out of range (alarm, warning or normal), this is also annotated in the event logbook.

- In the event of an alarm the BMS tries to telephone employees to inform them about the nature of the problem. The list of employees to be telephoned is defined in a database priority list. The people that are called are given the actual system status, then prompted to confirm that they have received and understand this transmission by entering their authorization code.

- Furthermore, it is possible to transmit an alarm fax containing the most important present and limit values, point of time, and nature of the alarm to various receiving stations. It is also possible to transmit a fax (confirmation fax) when the alarm is reset at the BMS.

- You can telephone the BMS at any time to poll for a fax with the present and limit values for a definable period of time. This is carried out with the help of a voice-box-system.

- All logbooks (data log, event log) and the complete configuration data can be printed out by a printer connected to the BMS. The data logbook can be exported to a simple text file (ASCII), which can be used by other programs.

- There are many configuration options for the system. It is possible to record voice-box files (for example in another language), to redefine the SBS command sequences for reading the present and limit values, to configure the I/O-ports and to edit the telephonebook entries for who receives notification.

The BMS consists of Windows™ based software. Most of its functions within the system can be controlled via mouse, trackball or hotkeys. Access to the various functions can be password-controlled (see).

Introduction

The voice-box-system utilizes a touch-tone telephone or a small touch-tone transmitter for communication and control.

Hardware   1.2

The BMS hardware consists of an industrial PC (IPC) and a modem for the connection to the telephone network.

Industrial-PC   1.2.1

The IPC is delivered in a 19" industrial case with an integrated TFT LC-display. This unit is mounted in a 19" rack with an integrated drawer for the keyboard and trackball. The access door to the operating elements, the floppy-drive and CD-ROM drive is lockable.

The IPC should consist of at least the following configuration:

- Intel Pentium processor, 133MHz
- 32MB memory
- 1 GB harddisk (IDE)
- CD-ROM drive (for software installation)
- Floppy drive 3.5" / 1,44MByte
- Display: LCD-TFT-SVGA, resolution 800x600 pixels (minimum), screen size: 10.4"
- Keyboard with integrated trackball
- 2 serial I/O ports (modem and SBS-bus), 1 parallel port (printer), 1 PS/2 port for trackball / mouse.
- Operating system: Microsoft Windows NT 4.0

Figure 1.1.   BRUKER Monitoring System

LCD-TFT-SVGA Display

CD-Rom-Drive,
Floppy,
Power switch

Keyboard

Trackball

Modem Requirements   *1.2.2*

The modem connects the IPC to the telephone network, and provides voice- and fax functions.

The modem should, at a minimum, consist of the following configuration:

- Voice functions: PN-2986 and/or Rockwell. ADPCM with 4bit/sample, scan rate: 7200 samples/sec.

- Fax functions with fax command set Fax-Class 1.

- Dial mode: pulse and tone (DTMF)

- AT command set (Hayes)

- Maximum 33,600 bits/sec.

- I/O port to IPC: V24 serial

Installation   *1.2.3*

The IPC is delivered pre-assembled, you must only connect the external devices (e.g. keyboard, monitor, printer, modem, etc.) to their resepective ports, as shown in the following diagrams

Figure 1.2.   Rear panel of the IPC - Power line

Power Connector
(AC, 230V, 50Hz)

AC Output
to Modem
(AC, 230V, max. 1A)

Figure 1.3.   Rear panel of the IPC - I/O

Seriell port/COM-2
(normally: modem)

Seriell port/COM-1
(i.e. BMPC)

Trackball connector

External SVGA monitor

Keyboard connector

Printer port/LPT-1
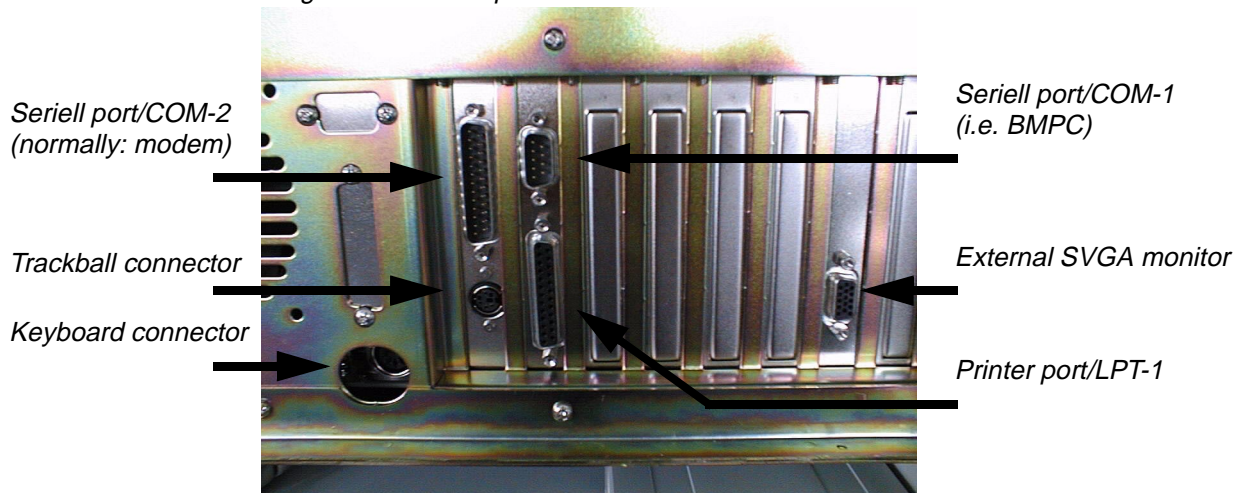
Software   1.3

Installation   1.3.1

Normally the BRUKER monitoring system will be delivered completely installed
and configured. If an installation should be necessary, it can be accomplished
with the included installation program

To start the installation program, use the *Start*, *Run* buttons (Window Taskbar) to
execute the "setup.exe" program from the first installation disk or CD-ROM.

After starting the installation program you will be requested to enter some data.
Once the data has been entered, the installation program begins copying the rele-
vant files to the harddisk. Following the installation procedure the IPC should be
restarted. The BMS program can then be executed using the Windows: "START/
PROGRAMS/BRUKER MONITORING SYSTEM" sequence.

Because of the Autostart function of the BMS, two additional hotkeys are created
in the Windows autostart folder ('Bruker Monitoring System' and 'BMS Watch
Dog') by the installation program.

⇨ *Important: A reinstallation of the BMS software can erase all of the configu-*
ration data from the previous installation. Choose the Setup-type 'Custom'-
at the Setup-program and deselect 'Database & Voc-files' to save the data-
base (i.e. Data-log, Event-Log, Configuration).

Starting the Program   1.3.2

After switching on the IPC, the BMS program will automatically start and be initial-
lized. The program can be started manually using the Windows NT *Start* button in

the Windows Toolbar (START/PROGRAMS/BRUKER MONITORING SYSTEM). To work with the BMS, the user must first authenticate by entering a login password. Depending on which password is entered, you will login as *Supervisor*, *User* or *Service* (see ***"Passwords" on page 41***). If the correct password is not entered within three tries, the program will terminate.

The successfully execution of the program will be documented in the event logbook (Event Log); a successful initialization of the modem will be documented as 'Modem Init OK"; and a successfully connection to the supervised unit following the reading of the limit values will be documented as "Limit values read".

Automatic Restart after System Failure, Power Failure 1.3.3

When the active BMS program (monitoring active) is interrupted due to a power failure, upon power restoration the BMS attempts to restore the program to its previous condition before the failure (see ***"System Setup" on page 31***).

This can only be accomplished when the IPC or parts of the IPC (harddisk, operating system etc.) weren't damaged.

Operation and Program Desktop 1.3.4

Program Desktop

The program desktop can be divided into three parts:

- A menubar

- A window in which the present and limit values, the event logbook and the data logbook will be displayed. It is possible to switch between these three possibilities using functions keys or by selecting them from the menu.

- A statusbar

Menubar

With the help of the menubar nearly all of the functions of the system can be selected. From here it is possible to configure the system, to create printouts, to start and stop the monitoring and so on.

Alternatively, it is possible to select the most important functions using the functions keys (F1 - F12) on the PC keyboard. The function key that corresponds to a specific function is displayed to the right of the function in the menu selections.

The menubar is divided into the following main selections:

File	For the exportation of the data logbook, or to quit the BMS program.
Phonebook	For entering new and editing existing phonebook records, or group assignments (fax, internal, external-1, external-2).
Display	Used to switch between the event logbook, data logbook and present data displays.
Print	For printing the phonebook, event logbook, data logbook and configuration data.
Monitoring	Used to start and stop the monitoring.

Confirm Alarm	Used to reset the alarm and system.
Options	For the system configuration.
Help	For additional help or program information.

The Data Logbook (Data Log), Event Logbook (Event Log), Present/limit Value Display (Present Data)

Data Log	With the help of the data logbook display the present value readings will be sorted by date and time and displayed with their status in tabular form (normal = black, warning = blue, alarm = red). On the right side of the logbook window there is a scrollbar, which is used to scroll through all of the recorded data. The settings for time and data recording intervals can be adjusted using the menu selection *Options/Data Log.*
Event Log	In the event logbook all important actions and events are recorded, sorted by date and time. For example: alarm events, phone calls and so on.
Present Data	In the present data display the present and limit values of the different supervised channels are displayed. With the help of the three radio buttons (top/right), it is possible to display the respective limit values for alarm, warning and normal.

Status Bar

At the bottom of the screen, the present status (monitoring on/off), login status and actions (e.g. reading of data) are displayed.

Figure 1.4.   Program Desktop
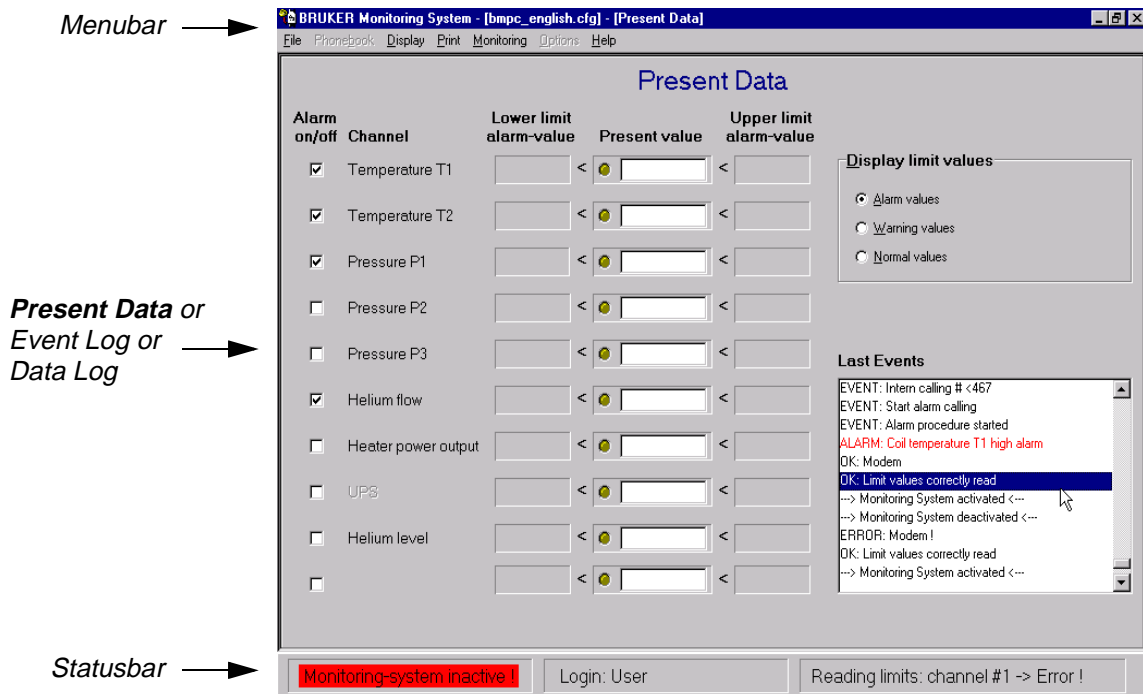
Software Watch Dog (BMS version >= 981012) *1.3.5*

In addition to the main BMS program a second program named 'BMS Watch Dog' is installed during the installation. When the BMS-program is in the monitoring mode, it will continously trigger the 'BMS Watch Dog'. If this does not occur for any reason, the system will reboot after 30 minutes and will try to reenter a regular state (Monitoring).

The 'BMS Watch Dog' is normally automatically started after the system boots (Startup folder). You will see it in the Windows task bar at the right side near by the windows clock.

Introduction

BRUKER

Functions 2

The Menu Bar 2.1

The menubar has the following main items:

- File
- Phonebook
- Display
- Print
- Monitoring
- Confirm Alarm (only visible during alarm event)
- Options
- Help

Figure 2.1. The BMS Menubar
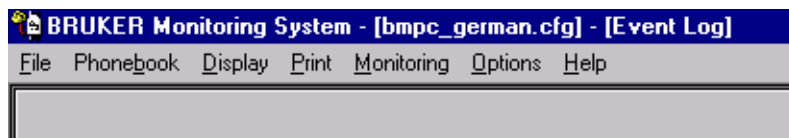
In the following sections, all of the functions of the menubar are explained.

File 2.2

- Export Data-Log
- Login
- Quit

Export Data-Log 2.2.1

The Export Data-log function allows you to export the data log (wholly or in parts) into a simple text file (ASCII), which can be used by other programs.

The 10 channel values (maximum) are written sequentially, in one row, separated by semicolons. The rows with the channels are sorted by date and time (chronologically decreasing). The first row consists of the single *Short-ID's* of the config-

ured channels and is used as a heading. This simple file format can be read by most programs.

Export File Format (example with 5 channels):

T1; T2; P1; P2; HL-FL   ← heading

17000; 17200; 12; 17; 356   ← 1. data row, values separated by semicolons

17000; 12210; 13; 17; 355   ← 2. data row

17001; 12210; 13; 18; 354   ← 3. data row

              :

17001; 12210; 13; 18; 354   ← x. data row

Login   *2.2.2*

Calling this function will open a window requiring you to enter a password. Dependent on which password is entered you will login as Supervisor, User or Service (see **"Passwords" on page 48**). When nothing is entered (only carriage return), the system will switch to *User* login.

Quit   *2.2.3*

Calling this function will close the program, when the correct password is entered.

Figure 2.2.   Dialog - Enter password

Phonebook   *2.3*

- Browse / Edit
- Group assignment external
- Group assignment internal

In the event of an alarm, the people who are listed in the phonebook, that belong to one of the groups *Internal Group*, *External-1 Group* or *External-2 Group,* will be called. Based on the group assignment (*Group Assignment External, Group Assignment Internal*), different people are assigned different priorities. The person with the highest priority will be called first.

When there is an alarm, normally all of the people in the *Internal Group* will be called (once), until a confirmation is received. When no confirmation is received after calling each individual in the Internal Group list, the system will proceed to alternately call (first name in *group-1* list, then first name in *group-2* list, then second name in *group-1* list and so on) the people in the *External-1 Group and External-2 Group* lists*.* When the phone line is busy or the call can not completed, the system will try a second time before proceeding to the next name. This will continue until two people from either of the external groups have made a confirmation.

When the proper confirmation has not been received the entire calling procedure will be repeated.

It is possible to enable or disable each group (see *"Alarm Calls Setup" on page 30*).

Browse/Edit   *2.3.1*

In the event of an alarm people will be informed by telephone or fax based on the entries in the phonebook.

When you select the menu option *Browse/Edit,* a dialog window will open, where it is possible to create new entries or edit and delete existing entries. To edit or delete an entry select the entry with your mouse, then click on the Edit or Delete button. You can select a different entry using the up and down arrows on the keyboard, or with your mouse. To add a new entry click on the New button.

The [Close] button will close the window and return you to the main menu.

Functions

Figure 2.3.   The Phonebook Window
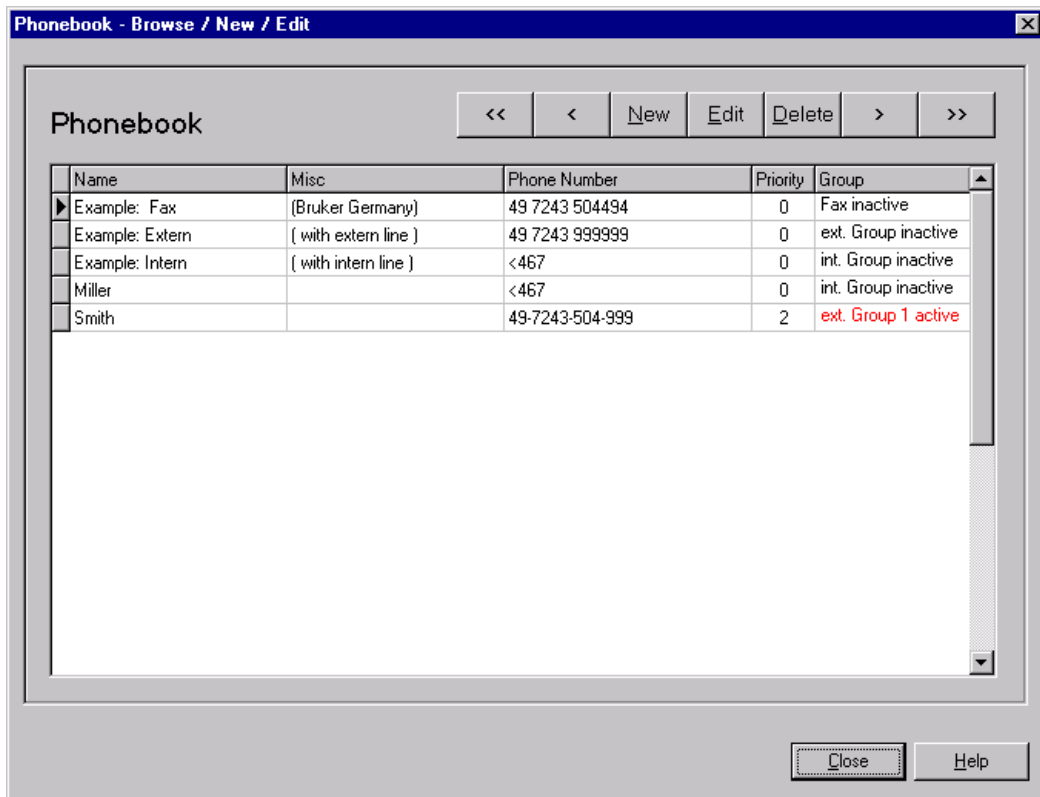
In the upper right side of the window there are seven buttons which provide the following functions:

First Entry (‹‹)

Choosing this function will highlight the first phonebook entry in the alphabetical list.

Move Back one Entry (‹)

Pressing this button will move you back one entry (when possible). When necessary, the list will scroll downwards to display the entry.

Adding a New Entry (New)

Clicking on the new entry button will open a dialog window which will allow you to add data for a new person or fax recipient.

Figure 2.4.   A New Phonebook Entry

Enter the name of the new individual in the *name* field (phonebook entries will be sorted using this field).

Any additional information may be entered in the *Misc.* field*.*

Each new entry must be assigned to one of the active or inactive *External*, *Internal or Fax group's*. Click on the arrow to the right of the *Group* field and select the proper group from the pull-down list.

Enter the telephone number of the receiver in the *Phone number* field. It is recommended that you enter the phone number using the appropriate international form, e.g. 49 721 51610 (for Bruker, Rheinstetten, Germany). For clarity, it is possible to use a hyphen ('-') or spaces to format the phone number (for example: '49-721-5160 0').

It is necessary to distinguish between internal and external numbers. For example: when a phone is connected to an internal telephone line, it may be necessary to dial a special *Prefix* number (for example '0' or '9') to get an outside line. It is possible to adjust the BMS program to do this automatically, see ***"Modem Setup" on page 29***. The BMS program will then always dial this *prefix* automatically before the phone number. If you want the BMS program to call connections in the internal telephone network (i.e. where no dial prefix is necessary), enter the '<' sign before the internal phone number (for example: '<123'). In this case the BMS program will recognize this number as an internal number and leave out the dial prefix.

The default value of the *Priority* field is '0'. The *Priority* field can be only be modified while in the Edit mode.

The *Dialed number field* is a read-only field. It displays the phone number which is actually dialed and is useful for controlling the phone number. This phone number is constructed out of data from the *International Phone Code*, *Country Code*, *Regional Phone Code* (***"System Setup" on page 31***) and *dial prefix* (***"Modem Setup" on page 29***).

To save the new entry press ![OK] ; to cancel the input without saving, choose ![Cancel] .

Editing an Entry (Edit)

To change the values of a phonebook entry, highlight the entry, and click on the Edit button. The same rules will then apply as in making a new entry. In addition, it is now possible to change the *Priority* field. Normally this is not necessary, as this field will be automatically modified by the functions in the *Group Assignment*. The *Priority* field determines in which order people will be called in the event of an alarm.

Double-clicking on an entry in the phonebook list will open the edit window.

Deleting an Entry (Delete)

To delete an entry highlight the entry and press the Delete button. You will be prompted to confirm the deletion.

Advance one Entry (›)

When you press the *Advance one Entry* button › the next entry in the list will be highlighted (when one is available). When necessary the list will automatically scroll down to display the entry.

Last Entry (››)

When you choose this function the last phonebook entry in the alphabetical list will be highlighted.

Group Assignment External   2.3.2

When you select *Group Assignment External,* a new dialog window will appear, which will allow you to assign entries to the *External-1* or *External-2 groups* which contain characteristics from the External Group. This assignment allows you to select which people will be called in the event of an alarm. The order of the entries listed in the *External-1* or *External-2 group* corresponds to the priority of calling (top entry = first call).

Figure 2.5.   Group Assignment (external groups) Window
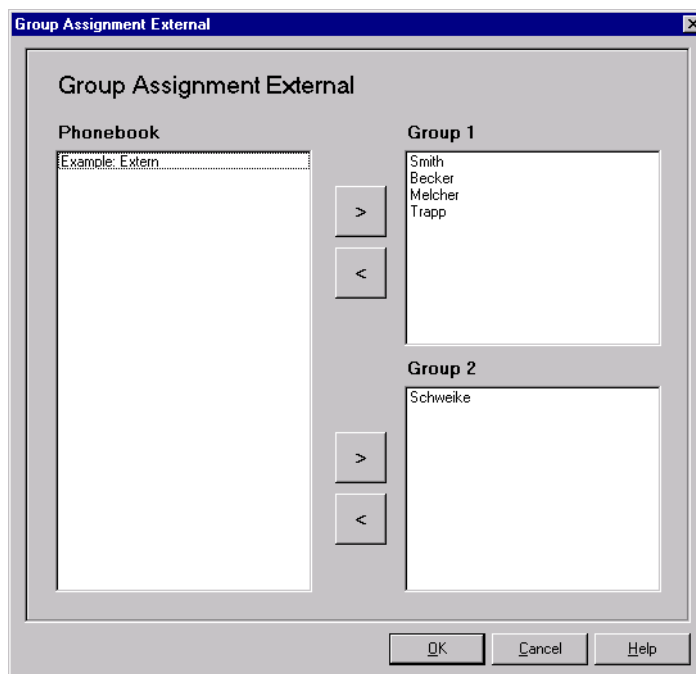
The *phonebook* list box (left side) contains the entries which are currently unas-signed to a group. These entries can be assigned to one of the groups by first highlighting the entry in the *Phonebook* list box and then clicking on the corre-sponding ⟩ buttons. The entry will then be moved from the *phonebook* list box to one of the *external groups*. To return an entry to the *phonebook* list box, use the corresponding ⟨ button.

It is also possible to assign entries by clicking on an entry, holding the left mouse button down while you drag it to the appropriate group, and dropping it into the group by releasing the mouse button (drag & drop). You can also change the or-der of entries inside the *External-1* or *External-2 groups* using this method.

Comment:

It is possible to define which of the external groups will be included in the alarm loop, which is especially useful for testing the loop, refer to *"Alarm Calls Setup" on page 30*.

Before the monitoring system can be started, it is necessary that an activated *Ex-ternal group* contains at least four entries. (see *"Start Monitoring" on page 28*).

Group Assignment Internal   *2.3.3*

To add entries to the *Internal Group* select *Group Assignment Internal* from the *Phonebook* menu selection. This will result in the display of the *Internal Group As-signment* window.

Figure 2.6.   Group assignment (internal group) Window
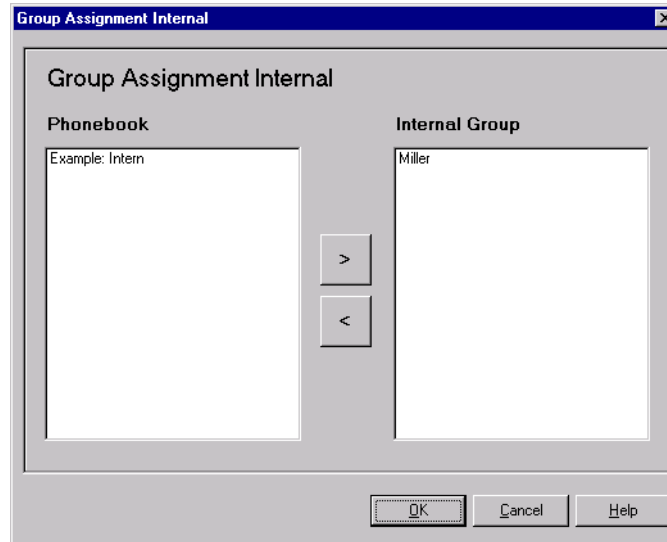
From this window you must only mark the entry and use the arrows (> <) or drag & drop to move the entry to the appropriate box.

Display *2.4*

The various data within the system has been organized into three windows. These windows can be displayed by selecting *Display* and then one of the following selections:

- Event Log
- Data Log
- Present Data (present and limit value)

It is also possible to display all three windows (overlapped) by selecting:

- All (overlapped)

You may also switch from one window to another using the function keys F5..F8.

Event Log *2.4.1*

To display the event log window, select *Display*, *Event Log* or the F6 function key on the computer keyboard.

The following event messages will be displayed including their date and time:

- *ERROR* (error message, for example: modem init failure)
- *ALARM* (alarm limit failure)
- *WARNING* (warning limit failure)
- *NORMAL* (normal values after *ALARM*, *WARNING*)
- *MSG* (message, for example: fax successfully sent, alarm confirmed...)

- *EVENT* (action, for example: calling someone)

- *OK* (confirmation, for example: modem successfully initialized)

- Other messages (for example: program start, start monitoring...)

With the help of the scrollbar on the right side of the window it is possible to scroll through the entire event log file.

Data Log   *2.4.2*

To display the data log window, select *Display*, *Data Log* or the F7 function key on the computer keyboard.

Here the current recorded values with the date and time of the activated channels are displayed. Limit failures are color coded for easy display recognition: red = alarm, blue = warning, black = normal.

With the help of the scrollbar on the right side of the window it is possible to scroll through the entire data log file.

Present Data   *2.4.3*

To display the present data window, select *Display*, *Present Data* or the F5 function key on the computer keyboard.

This window displays the present values and value limits for the channels (***Figure 2.7.***). When you start the monitoring (select *Monitoring, Start* or F9) the system will automatically switch to this display.

The present data window consists of five columns of operating and display elements.

The checkbox's in the first column (left), allow you to switch the alarm function on or off. When the checkbox is selected for a channel, the system will display an alarm message when the limits are reached and initiate the alarm routine (telephone call, fax transmission). When the checkbox is not selected for a channel, the alarm message will be displayed, but the alarm routine will **NOT** be initiated. The check box can only be changed when the system is in the *Monitoring-system inactive* mode.

The second column (*Channel*) displays the description of the configured channels. Configured, but inactive channels are highlighted (see ***"The Present Data Window" on page 26***, Channel 8 - UPS).

The third column displays the lower limit values (alarm, warning, normal) for the supervised unit.

The fourth column displays the present value for the channels. In *"Monitoring-system active"* mode, the present value that is being read is indicated by a green light.

The last column (right) displays the upper limit values (alarm, warning, normal) for the supervised unit.

To switch between the three possible limit values (alarm, warning, normal), select the appropriate radio button under "*Display limit values*".

In the *Last Events* window, the last events that occurred are displayed.

Functions

Figure 2.7.   The Present Data Window
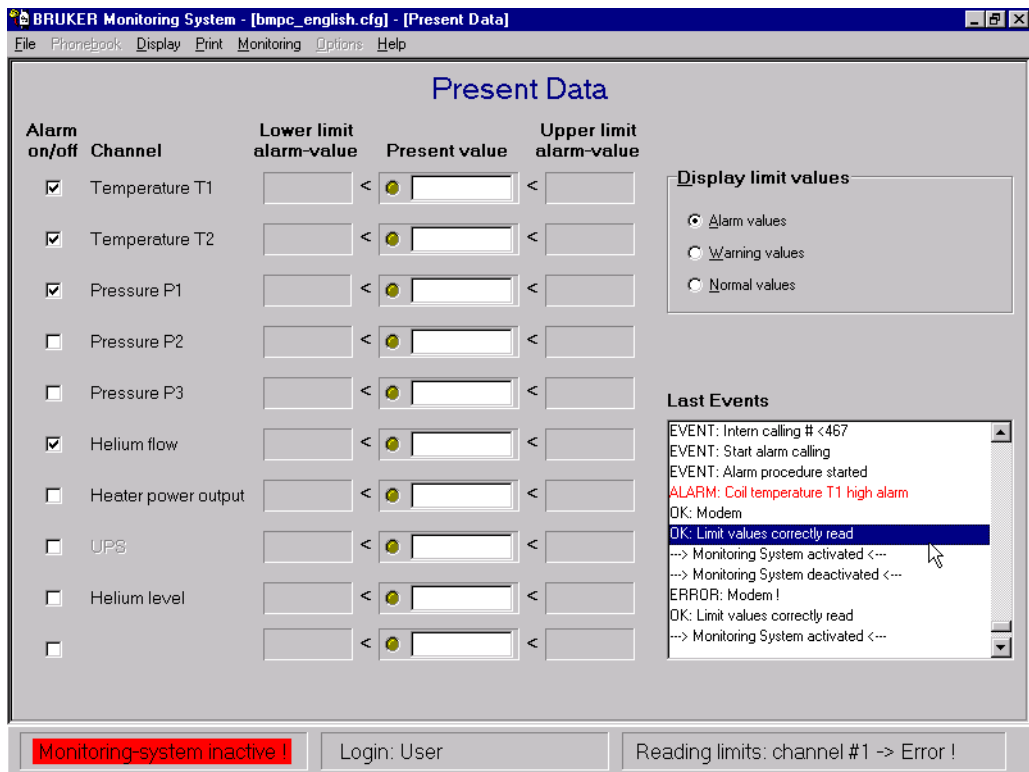
The manner in which the present values are displayed can be adjusted in the channel configuration (see **"Channels / SBS-Command" on page 40**).

Display All   *2.4.4*

With this function, all three of the windows, *Present Data, Data-Log and Event-Log,* are displayed cascading. It is possible to move or resize the windows.

You may also switch to this window using the function keys F8.

Print   *2.5*

Selecting the *Print* menu selection displays the following options:

- Phonebook
- Event Log
- Data Log
- System Parameters
- Setup Printer

Print Phonebook *2.5.1*

Selecting *Print Phonebook* allows you to print out the complete phonebook using the currently selected printer.

Print Event Log *2.5.2*

When you select the *Printer Event Log* window it is possible to print out part, or all of the event log. After selecting this option, a dialog window appears which allows you to select the printer that you want to use from the list of those installed on the Windows NT system (*Printer/Name*), and to select the events that you want to print from the event log (*print/All, print/All-from-to*).

Figure 2.8.   Printer Setup for Event Log
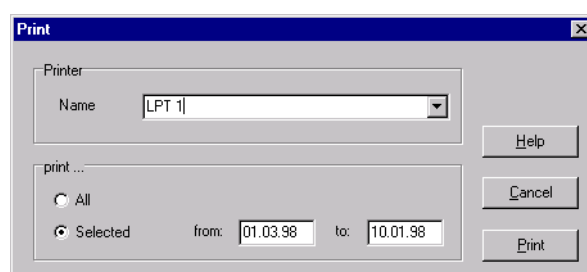
To begin printing click on the ⬚ Print button. To cancel without printing press the ⬚ Cancel button.

Print Data Log *2.5.3*

With the *Data Log* menu selection it is possible to print out part, or all of the data log. After selecting this option, a dialog window appears which allows you to select the printer that you want to use from the list of those installed on the Windows NT system (*Printer/Name*) and to select the data that you want to print from the data log (*print/All, print/All-from-to*).

To begin printing click on the ⬚ Print button. To cancel without printing press the ⬚ Cancel button.

Print System Parameters *2.5.4*

The *System Parameters* window allows you to print out all of the parameters for the BMS program (including I/O ports, modem, channel configuration etc.).

Printer Setup *2.5.5*

The *Printer Setup* window allows you to setup the printer that you want to use (from the list of available printers installed on the Windows NT system).

Functions

Figure 2.9.   Printer Setup Window
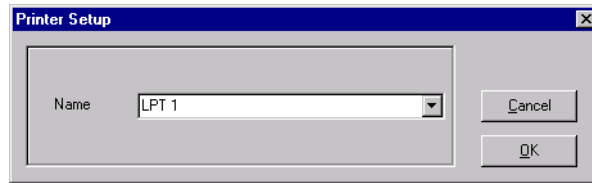
Monitoring   2.6

The *Monitoring* menu selection allows you to:

- Start Monitoring
- Stop Monitoring

Start Monitoring   2.6.1

The *Start Monitoring* menu selection starts the system monitoring. As the system starts, the limit values are read and the modem connection <-> BMS is tested.

It is necessary that all of the enabled *External Groups* have at least four entries (see *"Group Assignment External" on page 22* and *"Alarm Calls Setup" on page 30*)*.* When this condition has been met, the system starts operations.

It is also possible to call this function by pressing the F9 function key.

Stop Monitoring   2.6.2

The *Stop Monitoring* menu selection stops the system monitoring. It is necessary to confirm this function by entering a authentication password.

When an alarm has been initiated it will also be necessary for the user to enter their name, as a confirmation to the system, that they have assumed responsibility for the system.

The system will then reset.

It is also possible to call this function by pressing the F10 function key.

Confirm Alarm   2.7

This window is only visible when an alarm has been initiated, and is the same as the menu selection *Monitoring, Stop Monitoring.*

Options   2.8

- Modem Setup

- I/O Setup

- Alarm Calls Setup

- System Setup

- Data Log Setup

- Event Log Setup

- Save Setup Parameters

- Load Setup Parameters

- Fax Configuration

- Sensors / SBS-Commands

- Messages / Recording

- Passwords

With these selections it is possible to configure the entire BMS system for maximum flexibility.

Modem Setup *2.8.1*

The *Setup Modem* menu selection allows you to set the following modem parameters:

- *COM-Port*: COM1 - COM4 (serial port)

- *Voice-Command-Set*: Rockwell, P/N 2986

- *Dial Mode*: Pulse, Tone

- *Line Mode*: Direct Line, PABX

- *Prefix*: To get external line in the case when Line Mode = PABX

- *Modem init*: Optional modem initialization parameters.

- *Dialtone test*: Test for dialtone availability. See also **_"Fax Configuration" on page 35_** - Fax Header Setup. The functionality of this test is dependent on several technical conditions based on your telephone carrier. If you suspect that you are having difficulties due to your telephone provider then uncheck this box.

Figure 2.10. Modem Setup Window
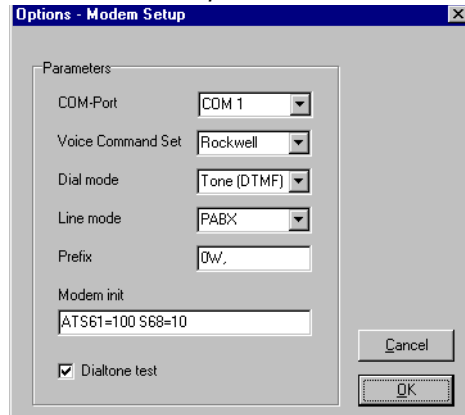
To confirm the data that is entered, click on the [OK] button. When you click on the [Cancel] button, the old values will be restored.

➡️ *Notice: Don't forget to save the values (see <u>"Save Setup Parameters" on page 34</u>).*

I/O Setup   2.8.2

When choosing this function the I/O parameters for the connection between the BMS and the supervised unit (for example BMPC) can be set:

Figure 2.11. I/O-Port Setup Window
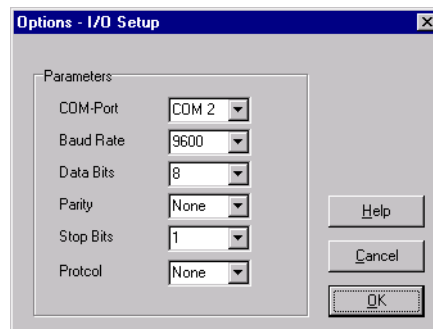
- *COM-Port*: COM-1 - COM-4 (serial port)
- *Baud Rate*: 9600* - 57600 (I/O port transfer rate)
- *Data Bits*: 6,7,8*
- *Parity:* None*, Even, Odd
- *Stop Bits*: 1*,2
- *Protocol*: None*, RTS, XON / XOFF

* Default parameters for the SBS protocol used by the BMPC

To confirm the data that has been entered, click on the ⬚ OK ⬚ button. To cancel the entry and restore the old values, click on the ⬚ Cancel ⬚ button.

➡ *Notice: Don't forget to save the values (see "Save Setup Parameters" on page 34).*

Alarm Calls Setup	2.8.3

In the *Alarm Calls Setup* menu you can define which groups are enabled. Only those people (or fax machines) from an enabled group are called when an alarm is initiated.

The alarm fax will be transmitted after all of the people on the enabled *internal* and/or *external groups* are called. Another fax (confirming fax) will be transmitted, when the alarm has been confirmed by the system.

The system stops calling when at least two people from the *External Group* who are called confirm the alarm, or one person from the *internal Group* confirm the alarm. If this confirmation does not occur, the alarm sequence will be repeated based on the *Repeating Time* setting (adjustable from 1..120 minutes). *alarm delay time.*

Prior to an alarm being initialized, the system will wait a specified amount of time (set in the *Alarm Delay Time* block) and recheck whether an alarm condition exists. If the alarm condition continues the alarm procedure will be initiated; otherwise the alarm procedure will be canceled and the normal condition restored. This feature will help prevent false alarms from being initiated.

For a detailed alarm diagram see **_Appendix A_**.

Figure 2.12. Alarm Calls Setup Window

To confirm the data that has been entered, click on the ⬚ OK ⬚ button. To cancel the entry and restore the old values, click on the ⬚ Cancel ⬚ button.

➡ *Notice: Don't forget to save the values (see "Save Setup Parameters" on page 34).*

Functions

Settings

The *System Setup* menu selection allows you to easily change the configuration setup by using pre-defined configurations for different units (e.g. BMPC, voice box language: english). This includes all voice files and the SBS command sequences. When switching from one configuration to another, the Phonebook and the log files will be automatically changed as well.

The configuration path can be selected by clicking on the *Change* button (to the right of the *Configuration Path* field). You then must only select a new configuration (if available) from the pull-down list.

The *Global System Address* field (standard address of the SBS device) can also be changed. It is possible to enter a value between 0..255 (for example 9 for a BMPC unit). To supervise different devices, it is possible to choose individual addresses for each device, whereas the *(default) Global System Address* will be overwritten.

In order for the system to dial automatically, you need to enter the *International Phone Code* (precode for international access), the *Country Code* (for example: 49 for Germany, 1 for USA) and the *Regional Phone Code* (without the normal leading '0').

Figure 2.13. The System Setup Window - Settings
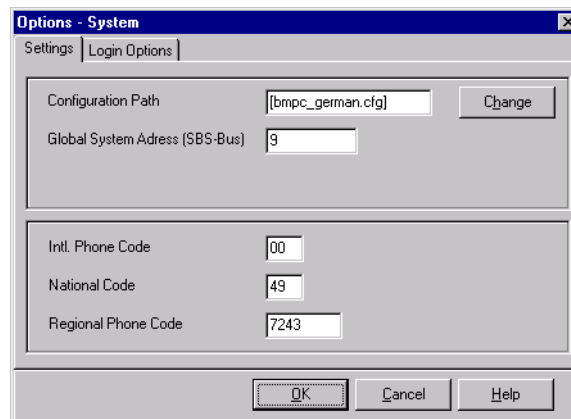
To confirm the data that has been entered, click on the [OK] button. To cancel the entry and restore the old values, click on the [Cancel] button.

Login Options

The *login options* window allows you to enter the proper Windows NT *login name* and to enter the corresponding password. By checking the *Auto-Login* box you can save this configuration which will allow the system to login for you.

Figure 2.14. The System Setup Window - Login
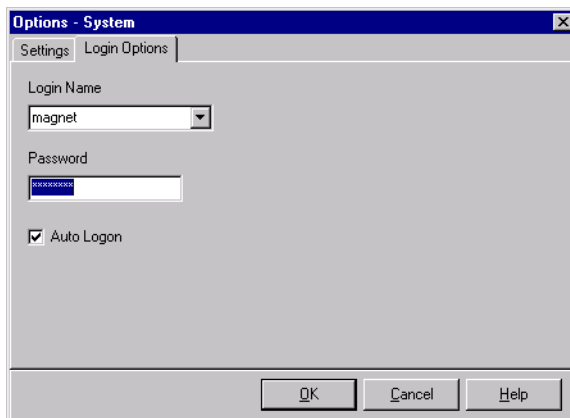
➡️ ***Important: This function must be enabled to activate the autostart function after e.g. a power failure. The system will then try to boot and start the software. Without this function enabled, the system will „hang" at the Windows NT login window.***

➡️ ***Notice: Don't forget to save the values (see "Save Setup Parameters" on page 34).***

Data Log Setup   *2.8.5*

The *Data Log Setup* window allows you to adjust the settings on how the channel data will be recorded.

Figure 2.15. The Data Log Setup Window
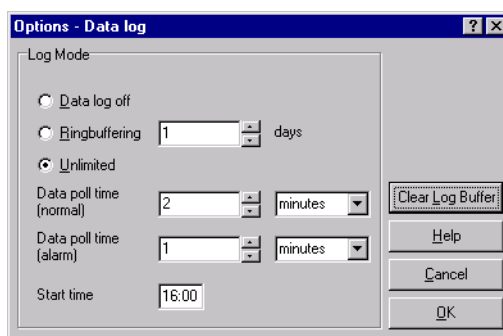
The following settings are possible:

- *Data Log off* → Data logging is disabled

- *Ring buffering* → Data logging is enabled. Data which is older than the entered date is erased.

- *Unlimited* → Data logging is enabled. The user has to control the available harddisk space.

Functions

- *Data poll time (normal)* → Normal data is recorded during this period.

- *Data poll time (alarm)* → Recording period during an alarm.

- *Trigger time* → All other recording time points are calculated from the trigger time.

To delete all of the data in the buffer, click on Clear Log Buffer.

To initiate the new setting click on OK. Pressing Cancel will cancel the changes, and exit the menu.

⇨ **Notice: Don't forget to save the values (see "Save Setup Parameters" on page 34).**

Event Log Setup   *2.8.6*

The settings entered in the *Data Log Setup* menu determine how the event data will be recorded.

Figure 2.16. The Event Log Setup Window
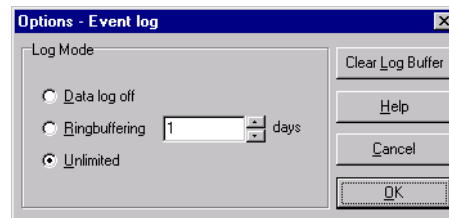
The following settings are possible:

- *Event Log off* → Event logging is disabled.

- *Ring buffering* → Data logging is enabled. Data, which is older than the entered date, is erased.

- *Unlimited* → Data logging is enabled. The user must manually control the available hard disk space.

To delete all of the data in the buffer, click on Clear Log Buffer.

To initiate the new setting click on OK. Pressing Cancel will cancel the changes, and exit the menu.

⇨ **Notice: Don't forget to save the values (see "Save Setup Parameters" on page 34).**

Save Setup Parameters   2.8.7

This function saves the present values of the following parameters to the selected *Configuration Path*:

- Modem Setup
- I/O Setup
- Alarm Calls Setup
- System Setup
- Data Log Setup
- Event Log Setup

The settings for *Sensors/SBS-Commands*, *Messages/Recording, Fax configuration and Passwords* will be immediately saved to the *Configuration Path* upon leaving the window.

Load Parameters   2.8.8

Choosing this function, will reload the pre-saved setting parameters. This feature can be useful in restoring a previously working configuration after changing the parameters.

Fax Configuration   2.8.9

For the successful transmission of alarm-, confirm- and poll faxes it is necessary to configure several parameters. The *Fax Configuration* window is divided into five setup pages (*Fax Assignment*, *Fax Header* etc.). By clicking on the page header you can switch from one page to another.

When you click on ⟨ OK ⟩ the new setting will be initiated; pressing ⟨ Cancel ⟩ will cancel without saving the changes.

Figure 2.17. Example of an alarm fax

```
BRUKER Demolabor, Rheinstetten: 49 721 5161-360 -> 07243504494          26.06.98  11:48:09        Page: 1
  BRUKER Demolabor, Rheinstetten: 49 721 51      -> 07243S            26.06.98  11:48:09        Page: 1
                                    BRUKER MONITORING SYSTEM                    Version 980626

    SYSTEM     Type: S/N: 0000000000          Date of Installation: 12.01.96

    CUSTOMER   Name     : BRUKER Demolabor
               Location : Silberstreifen
                          Rheinstetten
                          Germany

               Phone 1  : 49 721 5161-0        Fax  1: ---
               Phone 2  : ---                   Fax  2: ---

    SYSTEM LOCATION     : Demolabor
               Phone    : ---                   Fax  : ---

    MONITOR LOCATION    : Demolabor
               Phone    : 49 721 5161           Fax  : ---

    LOCAL BRUKER OFFICE: Bruker Rheinstetten
               Phone    : 49 721 5161 151       Fax  : 49 721 5161 297

    INSTALLED BY        : Ruin, Ralf
               Phone    : 49 721 5161-147       Fax  : 49 721 5161 297

    A L A R M  :                   lower      present value       upper
    Channels: Temperature T2         8600 <   1063 mV

    Confirming persons:  Alarm  N O T  confirmed !

  Active channels and limit values:

    1.Temperature T1:  14500 < x              2.Temperature T2:    8600 < x
    3.Pressure P1    :     1 < x < 18         4.Pressure P2    :          x
    5.Pressure P3    :           x            6.Helium flow    :     70 < x
    7.Heater power o:           x             8.UPS            :      1 < x
    9.Helium level   :           x

     Date   Time      T1       T2      P1      P2     HE-FL    HPWR    HE-LEV
  26.06.98 11:52   16617.0   1063.0a  .8.0   1063.0   134.0     0.0    100.0
  26.06.98 11:50   16617.0   1063.0a   8.0   1063.0   135.0     0.0    100.0
  26.06.98 08:00   16617.0  10746.0    8.0   1063.0   134.0     0.0    100.0
  26.06.98 02:00   16617.0  10745.0    8.0   1063.0   135.0     0.0    100.0
  25.06.98 20:00   16611.0  10743.0    8.0   1062.0   134.0     0.0    100.0
  25.06.98 14:00   16618.0  10753.0    8.0   1063.0   134.0     0.0    100.0
  25.06.98 08:00   16611.0  10753.0    8.0   1063.0   135.0     0.0    100.0
  25.06.98 02:00   16230.0  10736.0    8.0   1063.0   134.0     0.0    100.0
  24.06.98 20:00   16019.0  10733.0    8.0   1064.0   133.0     0.0    100.0
  24.06.98 14:00   15952.0  10551.0    8.0   1064.0   132.0     0.0    100.0
  24.06.98 08:00   15921.0  10512.0    8.0   1063.0   132.0     0.0    100.0
  24.06.98 02:00   15915.0  10511.0    8.0   1063.0   131.0     0.0    100.0
  23.06.98 20:00   15882.0  10449.0    8.0   1064.0   131.0     0.0    100.0
  23.06.98 14:00   16240.0  10497.0    9.0   1065.0   146.0     0.0    100.0
  23.06.98 08:00   16616.0  10761.0    8.0   1063.0   131.0     0.0    100.0
  23.06.98 02:00   16617.0  10762.0    8.0   1063.0   130.0     0.0    100.0
  22.06.98 23:29   16639.0  10813.0    6.0   1063.0   195.0     0.0    100.0
  22.06.98 23:29   16639.0  10820.0    6.0   1063.0   195.0     0.0    100.0
  22.06.98 23:29   16642.0  10820.0    6.0   1063.0   195.0     0.0    100.0
  22.06.98 23:29   16642.0  10820.0    6.0   1063.0   195.0     0.0    100.0
  22.06.98 23:28   16619.0  10764.0    8.0   1063.0    58.0a    0.0    100.0
  22.06.98 20:00   16613.0  10757.0    8.0   1063.0   130.0     0.0    100.0
  22.06.98 14:00   16614.0  10761.0    8.0   1063.0   130.0     0.0    100.0
  22.06.98 08:00   16612.0  10755.0    8.0   1063.0   130.0     0.0    100.0
  22.06.98 02:00   16611.0  10755.0    8.0   1063.0   131.0     0.0    100.0
  21.06.98 20:00   16609.0  10755.0    8.0   1063.0   130.0     0.0    100.0
  21.06.98 14:00   16613.0  10756.0    8.0   1063.0   130.0     0.0    100.0
  21.06.98 08:00   16614.0  10755.0    8.0   1063.0   130.0     0.0    100.0

  End of fax        a/A = low/high alarm, w/W = low/high warning (i.e. 130.0w)
```

Labels to the right of the figure:
- FAX-ID
- FAX-Header
- The reason for the alarm
- Limit values
- Last low alarm!
- Data log
- Low alarm!

The following is a description of the five setup pages:

Fax ID

This window allows you to enter information about where the system is located, including the *Fax-ID* and *Fax-Name*. These entries are used as a typical fax header on the top of a transmitted fax (for example: Fax-ID: 49 721 5161999, Fax-Name: BRUKER Demo Labor, Karlsruhe, Germany).

Figure 2.18. Fax configuration: Fax-ID

Fax Assignment

The *Fax Assignment* window allows you to move *Phonebook* entries which are declared as 'Fax' to or from the *Fax Group*. The system will then send alarm or confirm faxes to all people placed in the *Fax Group*.

Figure 2.19. Fax Assignment: Fax List Entries
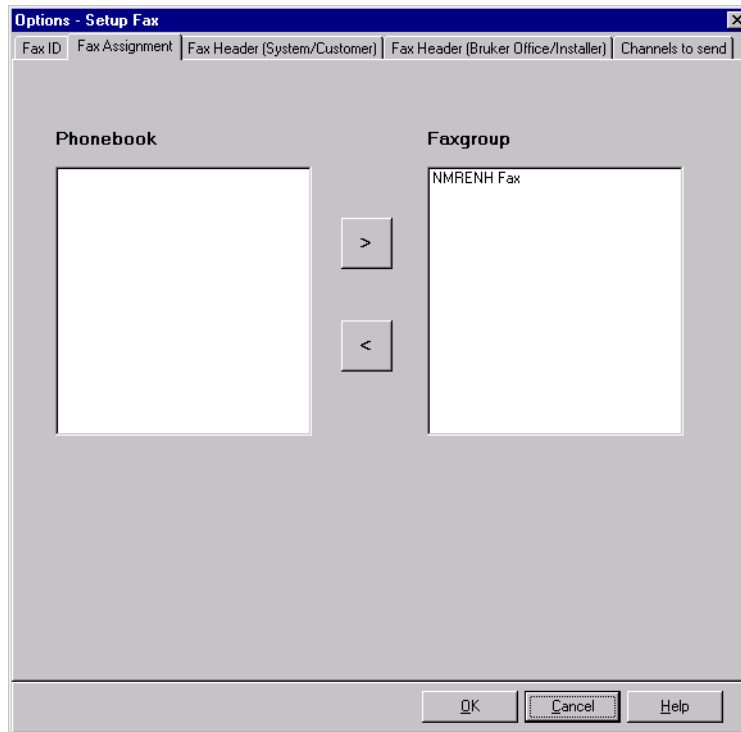
There are two ways to add *Phonebook* entries to the *Fax Group*:

One possibility is to highlight an entry in the phonebook list (left) and then click on the ⟩ button (= add). The entry will be moved to the *Fax Group* (right). Likewise it is possible to move an entry out of the Fax Group to the *Phonebook* by clicking on the ⟨ button (= remove).

The other possibility is to drag and drop the entry from one side to another.

Fax Header (System/Customer)

The Fax Header System/Customer allows you to enter data about the system, that will be monitored, e.g. location, phone number etc., and customer data that will appear on the faxes that are transmitted.

Included in the Customer data is a Fax number for the modem of the monitoring system (*BMS/Fax*). This number is called during the Dialtone Test (see **_"Modem Setup" on page 29_**) to verify the telephone line is operating. It is important that the *International Phone Code*, *National Code*, and *Regional Phone Code* are correctly entered in the **_"The System Setup Window - Settings" on page 32_**.

Figure 2.20. Fax configuration: Fax Header (System/Customer)

Fax Header (BRUKER Office / Installer)

This window allows you to enter contact information for the local BRUKER office, including who has installed the system. This information will also appear on any faxes that are transmitted.

Figure 2.21. Fax configuration: Fax Header (Local Bruker Office)

Channels to Send

This windows allows you to identify which measurement channels will be listed on the alarm or confirm fax *(in the Channels to Send* column). Up to seven channels can be listed at one time on a fax. This can be accomplished using drag & drop or by marking the channel entry and using the ⟩ , ⟨ buttons (see **_"Fax Assignment" on page 36_**).

Regardless of whether the measurement channel is listed under *Channels to Send* or not, the channel which has triggered the alarm will be listed on the fax (even if it must bump one of the other channels off the list).

Figure 2.22. Fax configuration: Channels to send
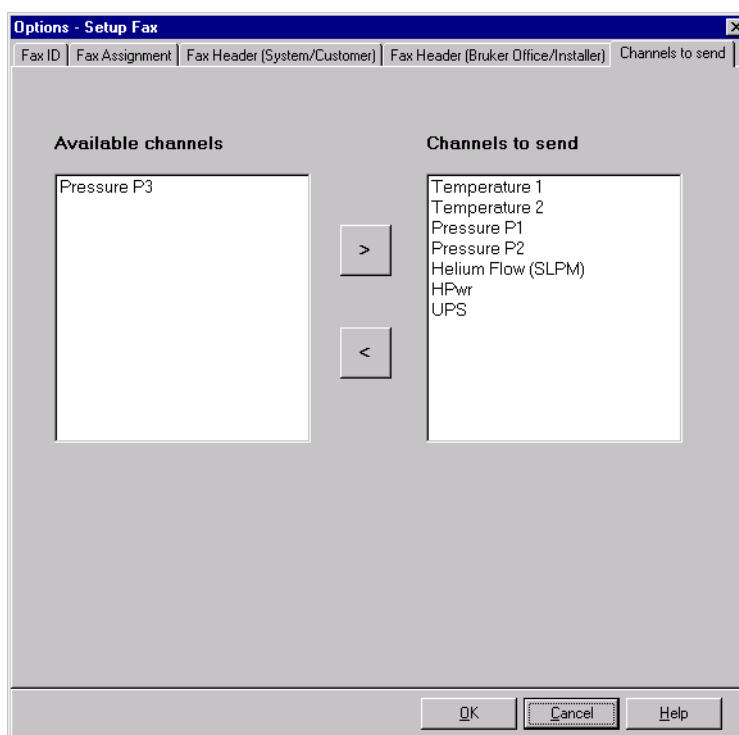
Channels / SBS-Command   *2.8.10*

To supervise a system, it is necessary to read the present and limit values from the system. To accomplish this, SBS command sequences are sent to the system to request the values.

The SBS command window is used to configure the SBS command sequences for the channels. The window is divided into two parts *Channels* and *Limit Values)*. To switch between these two configuration menus, click on the appropriate title.

In the upper part of the windows there is a button bar where you can edit, delete or add new channels to the configuration.

The button bar provides the following functions:

First channel (`<<`)

This button will move you to the first entry in the list.

Skip one channel back (`<`)

This button will move you back one entry (when possible). When necessary the list will scroll down to display the entry.

Add a new channel (New)

This button opens a new window where data for a new channel can be entered.

Adding a new channel based on an existing one (Copy)

The command sequences for the different limit values are sometimes very similar. To add a new channel based on an existing one, highlight the existing channel entry and a click on the Copy button to create the new entry. You must then only modify this new entry as needed.

This last option is only available for the *Limit-Values* configuration.

Edit a channel entry (Edit)

To edit data for a channel, select the entry, and click on the Edit button. Once you have made the necessary corrections press OK to accept the changes or Cancel to return to the main window without saving the changes.

One channel entry forward (`>`)

This button will move you forward one entry (when possible). When necessary the list will scroll down to display the entry.

Last entry (`>>`)

This button will move you to the last entry in the list.

Channels

This configuration window will allow you to install new channels. This includes the description and SBS command sequence for reading the present values.

Figure 2.23. Channel Setup: Present Values
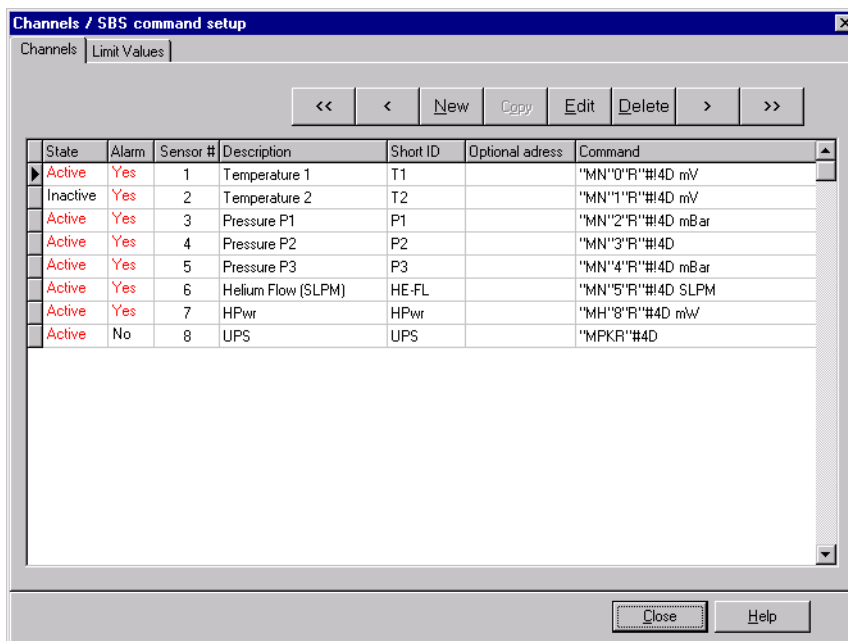
Figure 2.24. Adding a New Channel

In the *New Record* window each new channel should have a separate *Channel Number (max. 10)*. The channels appear in channel number order on the fax and the *Present Value* display. The *Description* indicates what the system will be monitoring, e.g. temperature. This field will also appear in the *Present Value* display. The *Short-ID* is used as a column header for the data log on the alarm, confirm and poll faxes. In addition, it is possible to use an *Optional Address* (SBS device address). This address overwrites the default value (see ***"System Setup" on page 31***). The SBS command sequence is entered in the *Command* field. The channel can be set to active or inactive using the *Status* box.

Limit Values

The *Limit Values* windows allows you to configure the upper and lower limit values for the channels. It is possible to define six different types of *Limit Values:* alarm lower value, alarm upper value, warning lower value, warning upper value, normal lower value, and normal upper value.

Figure 2.25. Channels/SBS Command Setup: Limit Values

When you click on ⎣ New ⎦ , ⎣ Edit ⎦ or ⎣ Copy ⎦ an input window appears with the following fields:

Channel #: This field allows you to assign a unique channel number.

Description: This field allows you to enter a description of the limit value (for example: Temperature 1 high alarm). This description appears on the faxes and in the *Messages/Recording* window.

Type: This field allows you to identify the value type (alarm, warning or normal).

Limit: In this field you can specify whether it is a high or low range (*High*/*Low*).

Command: Here you can enter the SBS command sequence. Refer to the next section.

Command field

In the following paragraphs the syntax for the *Command* field will be described. The examples used here for the command sequences have been taken from the technical manual for the BMPC unit.

A SBS command sequence consists of one or more letters and numeric parameters. A typical command sequence is as follows:

M N X1 X2   (BMPC unit, command: read/write sensor value)

Parameter:X1   Numeric value

        e.g. X1 = 0   Temperature T1 (mV)

        X2   "R" or "W"

        e.g. X2 = "R"   Reading of the value

The SBS protocol "M N" and "R" have to be interpreted as ASCII characters; and X1 (here: X1 = 0) as a numeric value (do not use ASCII characters!). Notice that ASCII characters are enclosed in quotation marks (" ") and numerical values are entered without quotation marks. Several ASCII characters can be enclosed together in quotation marks as a string.

Example:

Transmission: BMS to BMPC:

"MN" 0 "R"   Reading of "Temperature T1" from a BMPC unit

Before sending the SBS sequence, the BMS program automatically adds the length and checksum values to the sequence.

The supervised unit (here: BMPC) responds to a successful transmission by sending the sequence back, along with the requested values. In our example the unit sends four bytes as "Temperature T1":

"MN" 0 "R" B1 B2 B3 B4   B1.. B4 are the requested bytes (value between 0 and $4294967295 = 2^{32}-1$)

Example:

Transmission: BMPC to BMS:

"MN" 0 "R" 0 0 0 123   The value is 123 mV for the "Temperature T1"

For a correct analysis of the values received, it is necessary that the BMS program knows how many bytes are normally send back, and how they are to be interpreted (e.g. integer or float value). This is accomplished by adding additional parameters to the SBS command sequence in the *Command* field.

The format sequence decides how the values on the *Actual Data/Is-Value* are displayed, and how they should be compared with the limit value. Each format sequence begins with a "#" char.

The following format parameters are possible:

#nD   The BMS program waits for an unsigned decimal value with a length of n bytes; e.g. #2D: decimal value with a range from 0.. 65535. #1D: decimal value with a range from 0.. 255 etc.

#nS   The BMS program waits for a signed decimal value with a length of n bytes; e.g. #2D: range from -32768.. + 32767

#nF   The BMS program waits for a floating point value with a length of n bytes; e.g. n-1 bytes = mantissa, 1 byte = exponent

#nC   The BMS program waits for an ASCII string with a length of n characters

If a value consists of more than one byte, the left byte is the most significant byte.

For our example, we now have the following *command* string:

"MN" 0 "R" #4D   This means: Read "Temperature T1" from the BMPC. The requested value is an unsigned decimal number with a length of 4 bytes.

In the example above the answer ("MN" 0 "R" 0 0 0 123) will be displayed in the *Present Data/Present Value* field as "123". To improve readability it is possible to add a space after the format string; e.g. to display the unit of the value. It is recommended that you use this feature only when reading present values (not limit values).

Example: "MN" 0 "R" #4D mV

↑ space!

🠖 ***Notice: The space between the format string and "mV" is necessary for the program, to recognize where the format string ends.***

The value will now be displayed in the *Present Data/Present Value* field as "123 mV"

It is also possible to divide the individual bytes of an answer.

Example:

"GK" 0 "R" #2D Kelvin #1D mV #1D mA

This example shows that a system answer consists of four bytes. Two bytes are a temperature value, another byte is a voltage value and the last byte is a present value.

It is imperative that the sum of bytes that the supervised unit will send, is equal to the sum of bytes which are defined in the format string. The program uses this information as a test for the correct answer.

In the example above it is not clear which value should be recognized as a observed value (limit or present). Because of this, an exclamation mark ('!') should be added after the '#' character in the format string of the value which should be analyzed.

1. Example:

"GK" 0 "R" #!2D Kelvin #1D mV #1D mA

In this example the first two bytes will be analyzed (temperature in kelvin), but all values will be displayed.

2. Example:

"MN" 0 "R" #!4D

Here all four bytes will be analyzed by the BMS program and displayed.

Notice:

- Values will be only analyzed when the '!' character appears after the '#' character!

- In each *command* field only one '!' is allowed.

- The input in a *command* field always starts with an SBS command sequence, followed by a format string (e.g. "command sequence - format sequence - format sequence" is not possible).

Messages/Recording   *2.8.11*

When an alarm is activated, people will be informed from the BMS system by telephone or fax. The Messages/Recording window allows you to record different voice files (e.g. different languages) which can be used for the notification. The system is delivered with english language voice files, so this feature is only necessary when another language is desired.

The window is divided into two parts: *System Voice Messages* and *Channel Voice Messages*.

Figure 2.26. Record and Playback of Voice Files
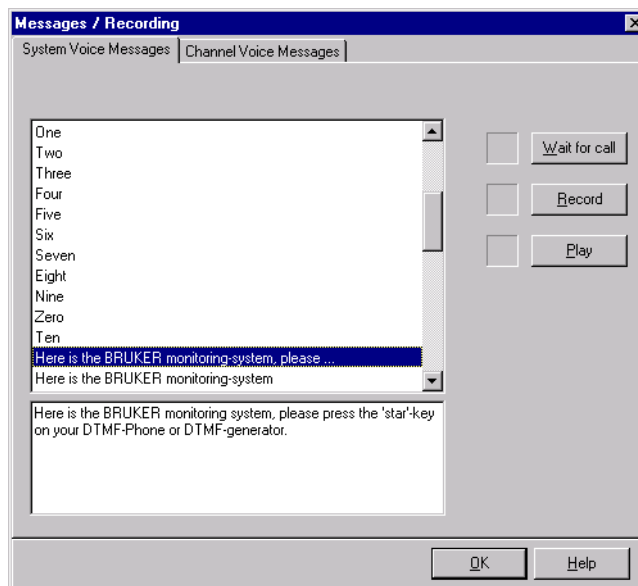
The *System Voice Message* files are voice files which are used to operate with the voice box system (e.g. starting text, voice box menu system etc.). They are independent of the configured channels.

Figure 2.27. Record and Playback of Alarm Messages
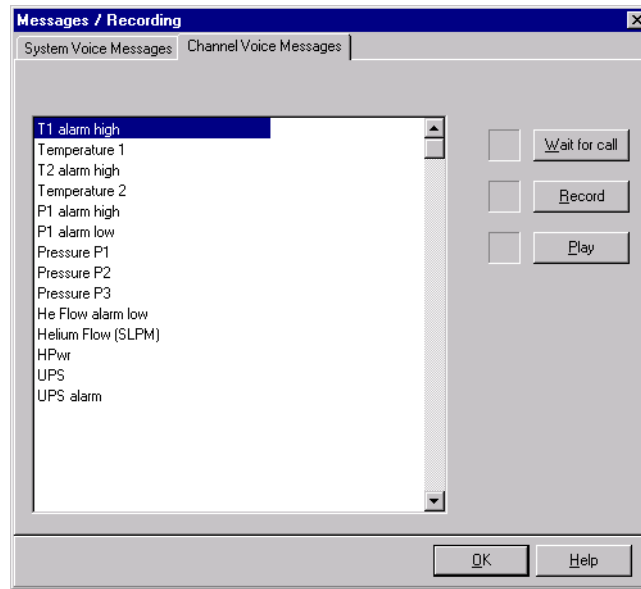
The *Channel Voice Messages* are alarm messages from the different configured channels (e.g. 'Temperature T1 high alarm').

To switch between these two setup windows, you must only click on the window title (*System Voice Message* or *Channel Voice Message*). Each window contains a list of pre-recorded voice files. Each of these voice files may be redefined if required. The following functions apply for both windows.

There are three buttons located in these windows: *Wait for Call, Record* and *Play*. Before you can record or playback voice files, the BMS program must be connected to a telephone line. Once you are connected to a telephone line you must initialize the BMS program by clicking on the [Wait for call] button to place the program into a wait state. This state is indicated by a red box to the left of the *Wait for call* button. You can now call the system to be monitored with your telephone, whereas the system will respond with a voice text greeting.

The system is now ready for the recording and playback of voice files. To verify an existing voice file, highlight the desired voice file in the list box with your mouse and click on the [Play] button. The selected voice file should then be played-back. It is also possible to double click on the entry to start the playback. The playback mode is indicated by a green box to the left of the [Play] button.

To redefine (overwrite) a voice file, highlight the voice file that you want to overwrite from the list box and click on the [Record] button. After a short message ('Please speak after the tone signal') you can record the new voice file. The recording will automatically stop after a two second silence and the voice file will be saved. The recording mode is indicated by a green box to the left of the [Record] button.

When there is no activity, the system will automatically stop the record and playback mode (the *Wait for Call* code will change to gray).

When you wish to exit the window, click on the [OK] button.

Note: There is a 'For testing' voice file in the *System Voice Message* window that can be used for testing your voice or message prior to overwriting a file.

To protect the system against unauthorized access, the BMS system has several different password levels:

- User password (BMS program, low level priority)

- Supervisor password (BMS program, high level priority)

- Service password (BMS program, full access to all functions, only for BRUKER service representatives)

- Authorization codes (voice box system)

To access the program a user has to enter a password. The normal *User* password provides access to only the *File/Login, Monitoring*, *Print* and *Display* menus. To utilize the *File*, *Phonebook*, *Print, Monitoring*, *Options/Alarm Setup*, *Options/Save Setup Parameters* and *Display* menus, the *Supervisor* password must be used.

The *Service* password enables all of the menus and functions.

The Service, Supervisor, and User level passwords allow you to use the *Stop Monitoring* function. To use the *File/Quit* function the Service or Supervisor password is required.

The voice box system uses two different *Authorization Codes,* which the user or the people called enter as authorization to use the voice box system. One code is necessary to use the fax polling functions, the other code is necessary to confirm an alarm. To enter the codes you must have a touch-tone telephone (DTMF).

Figure 2.28. The Password/Codes Setup Window
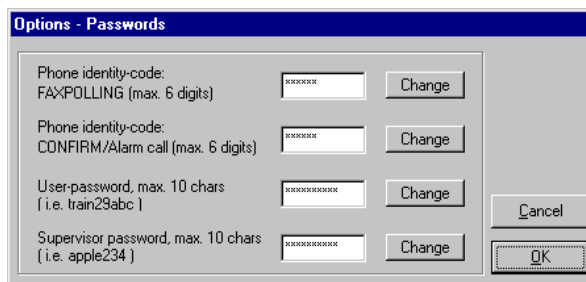
To change a password or code, click on the [Change] button to the right of the password/code you want to change. The window below will appear in which case you can enter the new password/code. You must enter it a second time for verification.

Figure 2.29. Changing a Password/Code

Click on [OK] to close the window and save the password/code, or [Cancel] to quit without saving.

Help *2.9*

- Index
- About BMS

Index *2.9.1*

Pressing the Help button will activate the on-line help. The content of the on-line help is currently the same as the contents of this manual.

About BMS *2.9.2*

When you click on *About BMS*, a windows appears with information about the present program version.

Voice Box System

3

General *3.1*

With the help of the voice box system it is possible to obtain information (e.g. present values, state etc.) from the system being supervised. In the event of an alarm the BMS system calls the people on the *Phonebook* list. These people are informed, via a voice file, about the current status of the BMS system. It is also possible to call the system and poll a fax containing the most recent values (*Data Log)*.

To operate the voice box system it is necessary to enter the proper authorization codes. There are two different authorization codes: One to conform receipt of an alarm call and a second for fax polling (see *"Passwords" on page 48*).

To enter the codes and to use other functions of the voice box system, you will need a touch-tone phone (DTMF). To have the possibility of confirming that the system has recognized an input, the system acknowledges each entry of the data input with a 'beep'.

Functions *3.2*

In the event of an alarm the BMS system begins calling the people on the *Phonebook* list until one internal, or two external confirmation(s) have been received. When a designated person on the list answers the call they will first hear a greeting message, then the current status of the system (e.g. 'Temperature T1 high alarm'). These messages are repeated up to five times. If the user does not interrupt this process by pressing the 'star' button on the touch-tone phone, the system will move on to the next person on the list after the fifth attempt.

After pressing the 'star' button on the touch-tone phone, the user has to enter an authorization code (confirm code) to confirm the receipt of the alarm message. After the correct authorization code has been entered, the system will automatically activate the voice box menu.

If a user calls the system they will first hear a greeting message. This is repeated up to five times (after the fifth call the line will be automatically disconnected), whereas the user must interrupt the transmission by pressing the 'star' button on the touch-tone phone, and enter the authorization code (for polling). The system will then state the current system status and activate the voice box main menu.

Input of the authorization codes can be repeated up to three times. If the correct code isn't entered after the third attempt, the system will disconnect.

Main menu

While in the voice box main menu there are three possible functions that the user can activate by pressing the corresponding button on the touch tone telephone:

- By pressing the '0' button the user can leave the voice box system,

- With the '1' button the user can enter the fax menu,
- With the '2' button the user can repeat the system status.

Fax menu

The Fax menu has four functions which can be activated by pressing the corresponding button on the touch tone telephone:

- '0': Return to the main menu
- '1': Request a report fax (data log) of the last 24 hours
- '2': Request a report fax (data log) of the last 7 days
- '3': Request a report fax (data log) for a defined period

After pressing the '1', '2' or '3' buttons, the user has to enter the phone number of the Fax device to which the fax should be sent. It is recommended that you enter the complete number including the international access code (e.g. 49 721 9515149, BRUKER Rheinstetten, Germany). To indicate the end of the fax number to the system, the user must press the 'star' button after the last number. To verify the number that was entered, the system will repeat it. The user must then press '1' to confirm. You may enter '0' to repeat this procedure.

When menu function '3' is selected, the user has to enter a defined period of time. This is done by entering a start and stop date as a 6 digit number in the form: day, month, year (dd/mm/yy) e.g. for June 10, 1998: 100698.

Once the start and stop date have been entered, the system will disconnect and send the fax.

Figure 3.1.   Example of a report fax (fax polling)


```
BRUKER Demolabor, Rheinstetten: 49 721 5██████ -> 0724350█████        26.06.98  11:48:09        Page: 1

                              BRUKER MONITORING SYSTEM              Version 980626

   SYSTEM    Type: S/N: 0000000000            Date of Installation: 12.01.96

   CUSTOMER  Name      : BRUKER Demolabor
             Location  : Silberstreifen
                         Rheinstetten
                         Germany

             Phone 1   : 49 721 5161-0         Fax 1: ---
             Phone 2   : ---                   Fax 2: ---

   SYSTEM LOCATION     : Demolabor
             Phone     : ---                   Fax  : ---

   MONITOR LOCATION    : Demolabor
             Phone     : 49 721 5161-██        Fax  : ---

   LOCAL BRUKER OFFICE: Bruker Rheinstetten
             Phone     : 49 721 5161 151       Fax  : 49 721 5161 297

   INSTALLED BY        : Ruin, Ralf
             Phone     : 49 721 5161-147       Fax  : 49 721 5161 297

   1.Temperature T1:  14500 < x             2.Temperature T2:   8600 < x
   3.Pressure P1   :      1 < x < 18        4.Pressure P2   :          x
   5.Pressure P3   :          x             6.Helium flow   :     70 < x
   7.Heater power o:          x             8.UPS           :      1 < x
   9.Helium level  :          x

      Data-Log: 22.06.1998 - 26.06.1998

     Date   Time      T1        T2        P1        P2      HE-FL      HPWR     HE-LEV

   26.06.98 08:00   16617.0   10746.0    8.0     1063.0    134.0      0.0      100.0
   26.06.98 02:00   16617.0   10745.0    8.0     1063.0    135.0      0.0      100.0
   25.06.98 20:00   16611.0   10743.0    8.0     1062.0    134.0      0.0      100.0
   25.06.98 14:00   16618.0   10753.0    8.0     1063.0    134.0      0.0      100.0
   25.06.98 08:00   16611.0   10753.0    8.0     1063.0    135.0      0.0      100.0
   25.06.98 02:00   16230.0   10736.0    8.0     1063.0    134.0      0.0      100.0
   24.06.98 20:00   16019.0   10733.0    8.0     1064.0    133.0      0.0      100.0
   24.06.98 14:00   15952.0   10551.0    8.0     1064.0    132.0      0.0      100.0
   24.06.98 08:00   15921.0   10512.0    8.0     1063.0    132.0      0.0      100.0
   24.06.98 02:00   15915.0   10511.0    8.0     1063.0    131.0      0.0      100.0
   23.06.98 20:00   15882.0   10449.0    8.0     1064.0    131.0      0.0      100.0
   23.06.98 14:00   16240.0   10497.0    9.0     1065.0    146.0      0.0      100.0
   23.06.98 08:00   16616.0   10761.0    8.0     1063.0    131.0      0.0      100.0
   23.06.98 02:00   16617.0   10762.0    8.0     1063.0    130.0      0.0      100.0
   22.06.98 23:29   16639.0   10813.0    6.0     1063.0    195.0      0.0      100.0
   22.06.98 23:29   16639.0   10820.0    6.0     1063.0    195.0      0.0      100.0
   22.06.98 23:29   16642.0   10820.0    6.0     1063.0    195.0      0.0      100.0
   22.06.98 23:29   16642.0   10820.0    6.0     1063.0    195.0a     0.0      100.0
   22.06.98 23:28   16619.0   10764.0    8.0     1063.0     58.0a     0.0      100.0
   22.06.98 20:00   16613.0   10757.0    8.0     1063.0    130.0      0.0      100.0
   22.06.98 14:00   16614.0   10761.0    8.0     1063.0    130.0      0.0      100.0
   22.06.98 08:00   16612.0   10755.0    8.0     1063.0    130.0      0.0      100.0
   22.06.98 02:00   16611.0   10755.0    8.0     1063.0    131.0      0.0      100.0

   End of fax           a/A = low/high alarm, w/W = low/high warning (i.e. 130.0w)
```

FAX-ID [1]

FAX-Header [2]

Limit values

Data log

Low alarm !

[1] see **"Fax ID" on page 36**

[2] see **"Fax Header (System/Customer)" on page 37** and **"Fax Header (BRUKER Office / Installer)" on page 39**

Notice:

- Because of varying qualities of phone lines, it is possible that the system needs varying amounts of time to recognize the DTMF. ***Do not enter the DTMF codes too quickly***. A DTMF code that has been successfully recognized is indicated by a short tone signal from the system.

- Most messages from the voice box system can be interrupted by the user, to speed up the operation of the system. For example, it is possible to enter the '1' in the main menu before the message, 'You are now in the main menu. Press '1' to....', ends. The system will interrupt this message and immediately activate the fax menu.
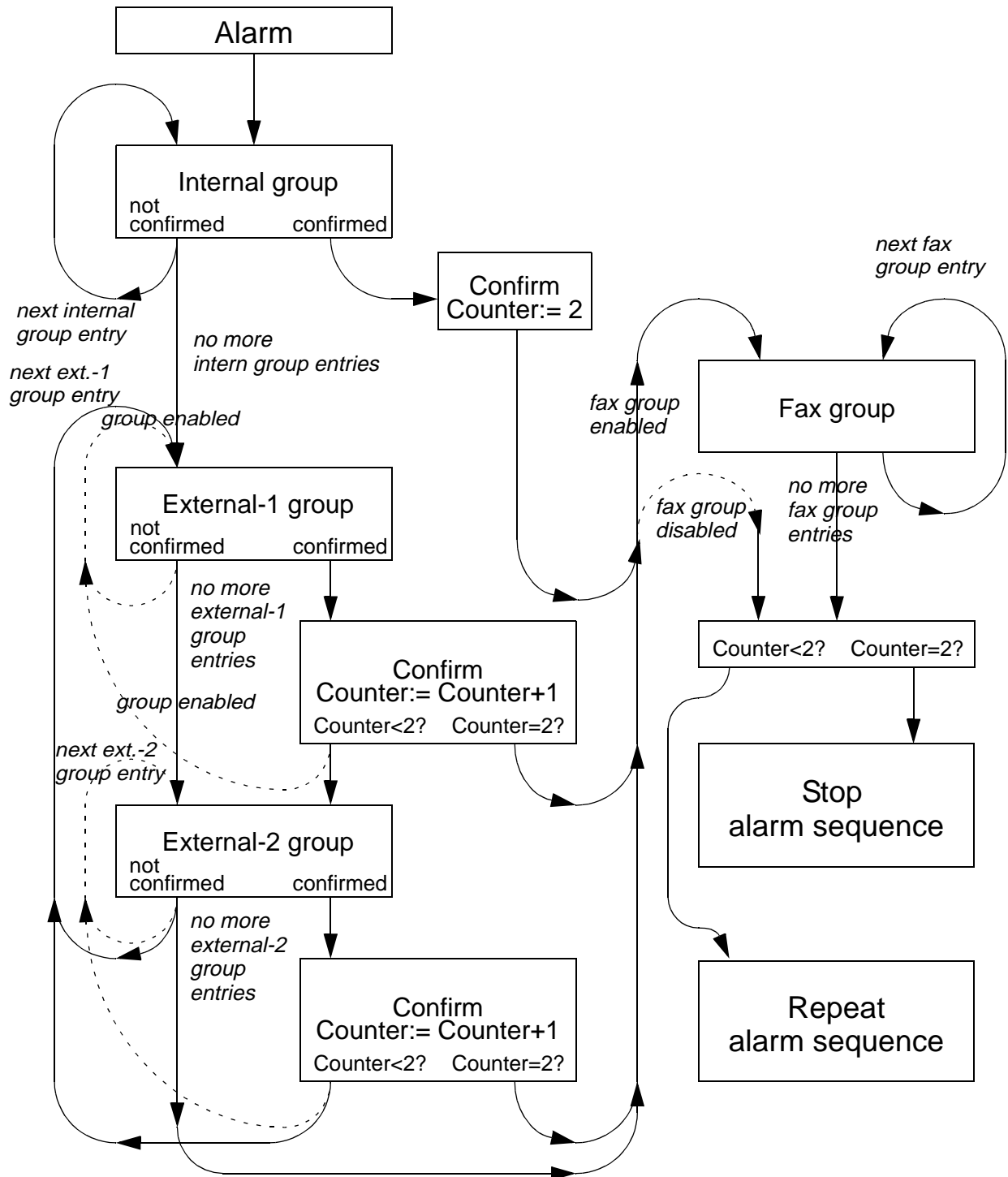
The different messages that are used can be recorded in the BMS program (see **"Messages/Recording" on page 46**). This allows you to switch the voice box system to another language (default: English).

Alarm flow chart

A

Figure A.1. *Alarm Block Diagram*

```
                    ┌──────────────────────┐
                    │        Alarm         │
                    └──────────────────────┘

                    ┌──────────────────────┐
                    │   Internal group     │
                    │ not                  │
                    │ confirmed  confirmed │
                    └──────────────────────┘
```

next internal group entry

next ext.-1 group entry

no more intern group entries

group enabled

```
         Confirm
       Counter:= 2
```

next fax group entry

fax group enabled

```
         Fax group
```

```
    External-1 group
    not
    confirmed   confirmed
```

no more external-1 group entries

group enabled

fax group disabled

no more fax group entries

```
         Confirm
    Counter:= Counter+1
    Counter<2?    Counter=2?
```

next ext.-2 group entry

```
    External-2 group
    not
    confirmed   confirmed
```

no more external-2 group entries

```
Counter<2?    Counter=2?
```

```
         Stop
    alarm sequence
```

```
         Confirm
    Counter:= Counter+1
    Counter<2?    Counter=2?
```

```
         Repeat
    alarm sequence
```

BRUKER

Hierarchy of passwords

<div align="right">

B

</div>

You need several passwords to operate the BRUKER MONITORING SYSTEM. The passwords and their specific use are explained below.

User password:

- delivered as:1234
- use for BMS program, desktop (see table 3.1 below)
- typ: alphanumeric, length: 10

Supervisor password:

- delivered as: 2345
- use for BMS program, desktop (see table 3.1 below)
- typ: alphanumeric, length: 10

Service password:

- delivered as:_____
- use for BMS program, desktop (see table 3.1 below)
- typ: alphanumeric, length: 10

Polling password:

- delivered as:1234
- use for voice box system (to call the system)
- typ: only numeric (3 . .6 digits)

Confirm password:

- delivered as:6789
- use for voice box system (to confirm an alarm)
- typ: only numeric (3 .. 6 digits)

Windows NT administrator password:

- delivered as:magnet

Table 3.1.   Hierarchy of passwords

Menu - function	User	Supervisor	Service
FILE - Export Data-log	-	x	x
FILE - Login	x	x	x
FILE - Quit	-	x	x
PHONEBOOK - Browse / Edit	-	x	x
PHONEBOOK - Group Assignment	-	x	x
DISPLAY - Event Log	x	x	x
DISPLAY - Data Log	x	x	x
DISPLAY - Present Data	x	x	x
DISPLAY - All	x	x	x
PRINT - Phonebook	-	x	x
PRINT - Event Log	-	x	x
PRINT - Data Log	-	x	x
PRINT - System Parameters	-	x	x
PRINT - Setup Printer	-	x	x
MONITORING - Start Monitoring	x	x	x
MONITORING - Stop Monitoring	x	x	x
OPTIONS - Modem Setup	-	-	x
OPTIONS - I/O Setup	-	-	x
OPTIONS - Fax Setup	-	-	x
OPTIONS - Alarm Calls Setup	-	x	x
OPTIONS - System Setup	-	-	x
OPTIONS - Data Log Setup	-	-	x
OPTIONS - Event Log Setup	-	-	x
OPTIONS - Save Setup Param.	-	x	x
OPTIONS - Load Setup Param.	-	-	x
OPTIONS - Sensors/SBS-Comm.	-	-	x
OPTIONS - Messages/Recording	-	-	x
OPTIONS - Passwords	-	-	x
HELP - Index	x	x	x
Help - About BMS	x	x	x

Quick Installation

C

Hardware check list:

- For a trouble free operation of the BMS and BMPC the BMPC requires a firmware version $\geq$ V980430

- For a trouble free operation of the modem (ELSA 33.6TQV) outside of the EU, it must have the firmware version V1.27

- Connect the BMPC („CABLE RD 9P3000 BU/BU RS232, P/N: HZ 3700") to the COM-1 seriell port of the BMS (SUB-D, 9 pins)

- Normally for the mains connection part „KABELBAUM 4 BMPC LINE CONTROL, P/N: HZ04215" is used

- Connect the modem to the telephone socket (RJ11)

Software check list (data dependent on customer location):

- PHONEBOOK - BROWSE/EDIT menu: enter persons and fax receiving stations which should be phoned in the event of an alarm. Assign every entry to internal, external or fax (group field)

- PHONEBOOK - INTERNAL/EXTERNAL GROUP ASSIGNMENT menu

- OPTIONS - MODEM SETUP menu: dial mode (tone or pulse), line mode (direct line or PABX), in the case of PABX: prefix

- OPTIONS - ALARM CALLS SETUP menu

- OPTIONS - SYSTEM/SETTINGS menu: International code, national code, regional phone code

- OPTIONS - FAX CONFIGURATION menu: Fax header, fax assignment, channels to send

- OPTIONS - password menu

Figures

Figures