

GenAccess 1.0

Installation and Operation Manual



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Document: GenAccess

Issue Date: 04/99

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Contents

1. INTRODUCTION.....	1
2. SOFTWARE SETUP.....	1
3. HARDWARE SETUP.....	3
3.1 Direct cable link.....	3
3.2 Remote connection via modem	4
3.3 Other issues.....	4
4. A BASIC OPERATION TUTORIAL.....	4
5. COMMANDS REFERENCE.....	8
5.1 File menu commands.....	8
5.2 Configure menu commands.....	8
5.3 Windows menu commands.....	8
5.4 Floating pop-up menu commands.....	8
5.5 Help menu commands.....	8
5.6 Other commands	9
APPENDIX A - COMMUNICATION ERROR CODE.....	10
APPENDIX B - SPECIFICATIONS OF COMMUNICATION PROTOCOL.....	11

1. INTRODUCTION

GenAccess software package consists of two sets of three 3.5" setup disks. The software can be installed on either Windows 95 or Windows NT platforms.

GenAccess 1.0 can be used:

- To establish communications with the Access series of digital control panels (DCP);
- To monitor up to 16 generator sets in operation;
- To control up to 16 generator sets.

Using the computers RS232 serial port, the software can establish a serial communication protocol link between the computer and the connected Access digital control panels. The software can also be configured to operate through a modem for long distance communications.

The software can display more information than the Liquid Crystal Display (LCD) in the control panel. Most parameters are displayed as analog gauges together with digital meters. This makes the software very familiar to those accustomed to conventional control panels. There are three main views: Over View, Engine Information, and Generator Information. The Alarm Log window displays the latest 20 alarms logged. If a file name is specified in the configuration menu, alarms can also be saved continually onto the hard disk.

Generator sets can be operated from the computer screen by clicking the control buttons.

The software is designed to be user friendly, it fully adopts MS Windows™ standard operations. Users with experience in Windows can therefore manipulate this software easily.

2. SOFTWARE SETUP

The primary task of setup is to transfer the application files from the setup disks to the end user's computer. It also performs the following tasks:

- Obtain information from the system.
- Obtain information from the user.
- Set up shortcuts, folders, program groups, and items.
- Update the Windows registry.
- Set up the application for uninstallation.
- Display the product information.

Before setup, users should select the diskettes either labeled GenAccess 1.0 for Windows 95 or GenAccess 1.0 for Windows NT, according to their platform. The setup process is given below.

Step 1. Run setup.exe: Insert disk 1 of 3 into floppy drive A. Select Run from the Start Menu and enter "A: setup.exe" into the dialog box. Then click OK. You can also launch the setup from the Start | Programs | Windows Explorer window. When this file is running, a splash screen (Figure 2.1) will briefly appear.



Figure 2.1 The splash screen of setup.

Step 2. Click Next on the Welcome dialog box: After displaying the splash screen and startup message box, the screen stops at the Welcome dialog box shown in Figure 2.2. This is the first dialog box in the setup process. The information inside the box tells what to do with this dialog. Click Next to continue the setup process. Clicking on Cancel will end the setup process.

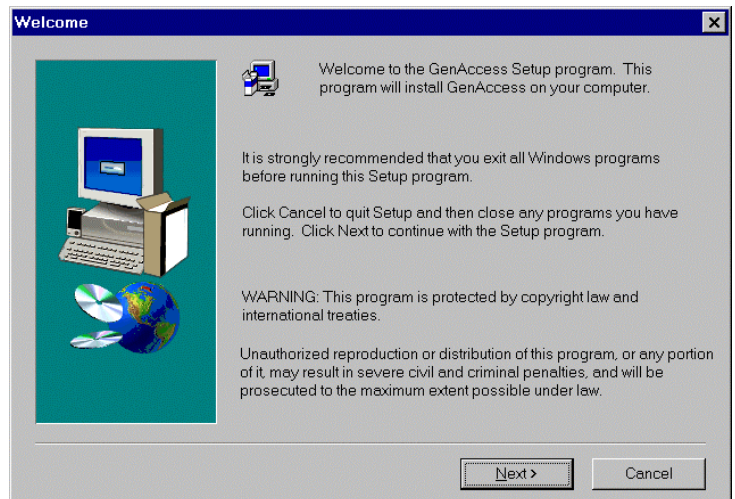


Figure 2.2 The welcome dialog box.

Step 3. Click Yes in the License Agreement dialog box: The next dialog box to appear is the Software License Agreement dialog box. The license agreement for the software is displayed in the box. You should read it carefully. If you accept the terms of the license agreement, click Yes and the setup process will continue. If you click No setup will terminate. To see the previous dialog box, click Back.

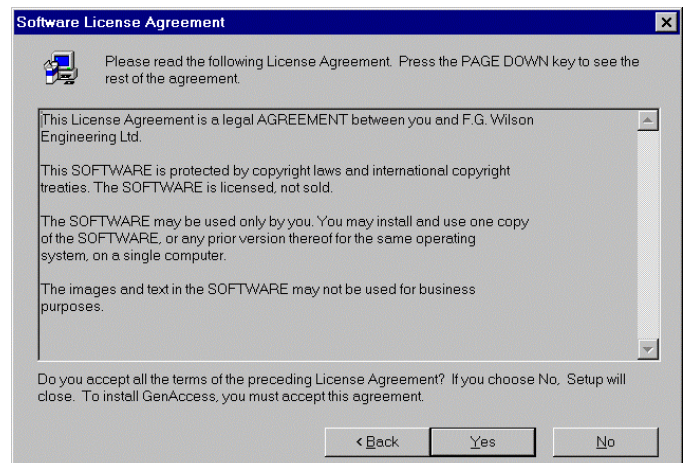
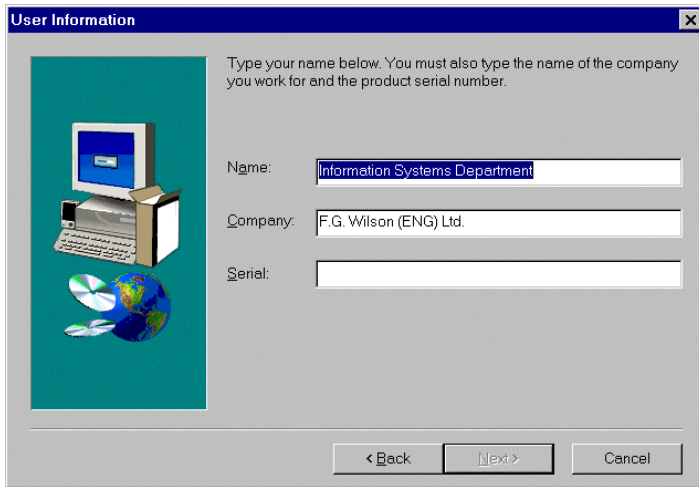


Figure 2.3 The software license agreement dialog box.

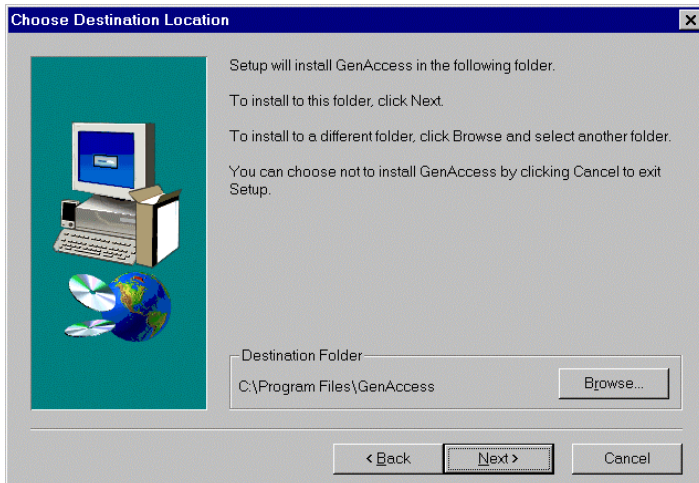
Step 4. Input user information: User information is required for the setup process. This includes user name, company name, and software serial number. (See Figure 2.4) You must specify all these items before clicking on Next, otherwise you will be unable to continue the setup process. The serial number is a 10 character code designed to prevent illegal installation of the software. Therefore if the serial number is wrong, the setup process will be terminated.



The 'User Information' dialog box has a title bar with a close button. On the left is a graphic of a computer and diskettes. The main area contains instructions: 'Type your name below. You must also type the name of the company you work for and the product serial number.' Below this are three input fields: 'Name:' with 'Information Systems Department', 'Company:' with 'F.G. Wilson (ENG) Ltd.', and 'Serial:' which is empty. At the bottom are '< Back', 'Next >', and 'Cancel' buttons.

Figure 2.4 The user information dialog box.

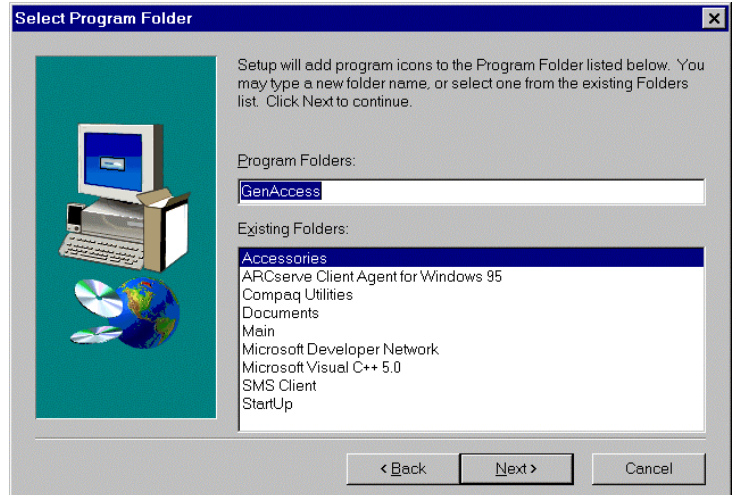
Step 5. Select destination location: The folder into which the software will be installed can be selected from the Choose Destination dialog box (See Figure 2.5). The default folder is C:\Program Files\GenAccess. You can choose a different folder by clicking Browse. Similarly, clicking on Cancel will terminate the setup process, and clicking on Back will go to the previous dialog box.



The 'Choose Destination Location' dialog box has a title bar with a close button. On the left is a graphic of a computer and diskettes. The main area contains instructions: 'Setup will install GenAccess in the following folder. To install to this folder, click Next. To install to a different folder, click Browse and select another folder. You can choose not to install GenAccess by clicking Cancel to exit Setup.' Below this is a 'Destination Folder' section showing 'C:\Program Files\GenAccess' and a 'Browse...' button. At the bottom are '< Back', 'Next >', and 'Cancel' buttons.

Figure 2.5 The dialog box that requests a destination location.

Step 6. Select Program Folder: The default program folder is GenAccess. You may type a new one or select one from the existing Folders list. When this folder is selected, setup will add program icons to this folder. This can be accessed from the Start\Programs menu when setup is completed. Figure 2.6 shows this dialog box.

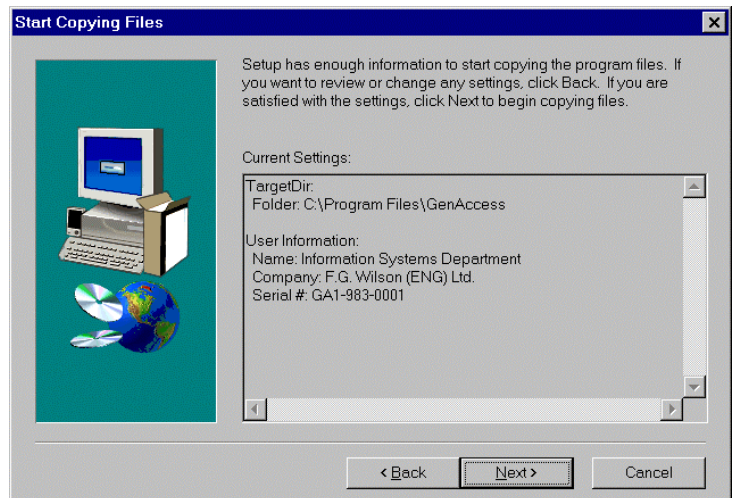


The 'Select Program Folder' dialog box has a title bar with a close button. On the left is a graphic of a computer and diskettes. The main area contains instructions: 'Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing Folders list. Click Next to continue.' Below this are two sections: 'Program Folders:' with a text box containing 'GenAccess', and 'Existing Folders:' with a list box containing 'Accessories', 'ARCserve Client Agent for Windows 95', 'Compaq Utilities', 'Documents', 'Main', 'Microsoft Developer Network', 'Microsoft Visual C++ 5.0', 'SMS Client', and 'StartUp'. At the bottom are '< Back', 'Next >', and 'Cancel' buttons.

Figure 2.6 The Select Program Folder dialog box.

Note: The Program Folder is the folder that the setup will add the program icon to. You may execute the program by selecting the icon in the Start\Programs menu. The Destination Folder is the directory that the setup will copy files to. You may create a shortcut on the desktop from the Destination Folder.

Step 7. Start Copying Files dialog box: When setup has got enough information, it is ready to start copying files to the destination location. The summary of settings is listed in this dialog box (See Figure 2.7). If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to start file transfer.



The 'Start Copying Files' dialog box has a title bar with a close button. On the left is a graphic of a computer and diskettes. The main area contains instructions: 'Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.' Below this is a 'Current Settings:' section with a list box showing 'TargetDir: Folder: C:\Program Files\GenAccess'. Below that is a 'User Information:' section showing 'Name: Information Systems Department', 'Company: F.G. Wilson (ENG) Ltd.', and 'Serial #: GA1-983-0001'. At the bottom are '< Back', 'Next >', and 'Cancel' buttons.

Figure 2.7 The Start Copying Files dialog box.

During copying files, setup displays a set of indicators to show the progress of file transfer. When the first disk is completed, setup will inform you to insert the second disk. The file transfer process is finished when all files on the three diskettes are transferred to the destination location.

Step 8. Complete Setup: When file transfer is finished, the setup complete box is displayed on screen. You may view the README file or launch GenAccess by selecting the corresponding option and then clicking Finish. If you just click Finish, the setup is completed.

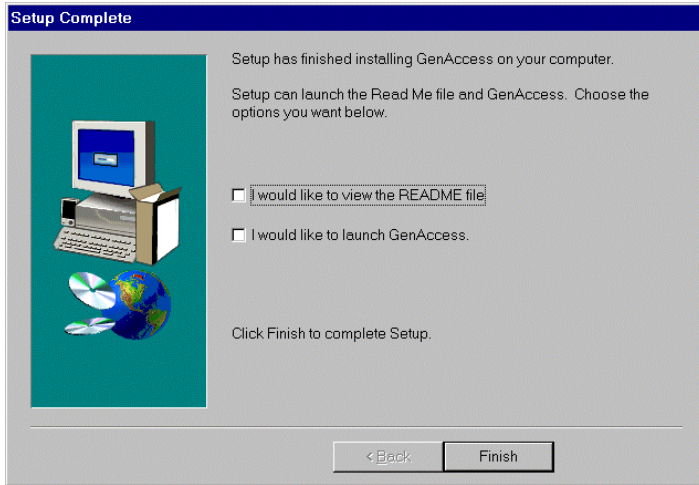


Figure 2.8 The setup complete dialog box.

Once the software is successfully installed on the computer, it will reside on the hard drive. To run the program, you may click GenAccess from the Start/Programs menu or double click the shortcut icon from the desktop. The software can be run on-line or off-line (see Chapter 4). For on-line operation, hardware installation is required before making connections. Chapter 3 describes the hardware installation.

To remove the software from your computer, the following steps are required:

1. Select Add/Remove Programs from the Control Panel;
2. Click the Install/Uninstall tab;
3. Select GenAccess from the item list;
4. Click OK.

Step9. Setting Screen Display: The DCP screen is viewed better by setting the screen area to 1024 x 768. This can be set by accessing Control Panel | Display | Settings.

3. HARDWARE SETUP

Once the software is installed, the hardware connections need to be made before on-line operation. The hardware can be setup in two ways: direct cable link or remote connection via modem.

3.1 Direct cable link

The software in the micro-controller allows both two wire and four wire communications. This can be set using the keypad on the control panel. You should consult the relevant manual before doing this. The communication with two wires is slower than that using four wires.

The computer usually has at least one RS232 communication port. Due to the different signal standard, a RS232/RS422 converter is required.

Four wire cable link: Communication on four wires operates in full duplex mode. Figure 3.1 shows a four wire master-slave network. In this network, two wires are used for transmission and the other two wires used to receive. Unlike the two-wire system, the receive lines of the control panels should be connected to the transmission line, and their transmission lines should be connected to the receive line.

The software in the control panel should be configured to four wires before running the GenAccess on your computer. You should refer to the relevant manual for this operation.

Two wire cable link: The communication on two wires operates in half duplex mode. Figure 3.2 shows a two-wire network. The transmission line should be terminated on both ends of the line.

The terminating resistance should be equal to the wire impedance which is usually about 120 Ω . On the digital control panel side, the transmission line needs to be connected to the receive line, that is Terminal 64(or TX+) to Terminal 61(or RX+) and Terminal 63 (or TX-) to Terminal 62(or RX-).

Biasing resistors are used to bias the wire when the drivers are disabled so as to prevent the bus from going into an unknown state. This is achieved by fitting resistors between VCC and RX/TX+, and between GND and RX/TX-. Biasing should be at only one location on the line. These resistors are internal to the ACCESS 4000 and are set using dip switches. (Please refer to Control Panel Operation Manual section 3.2.12)

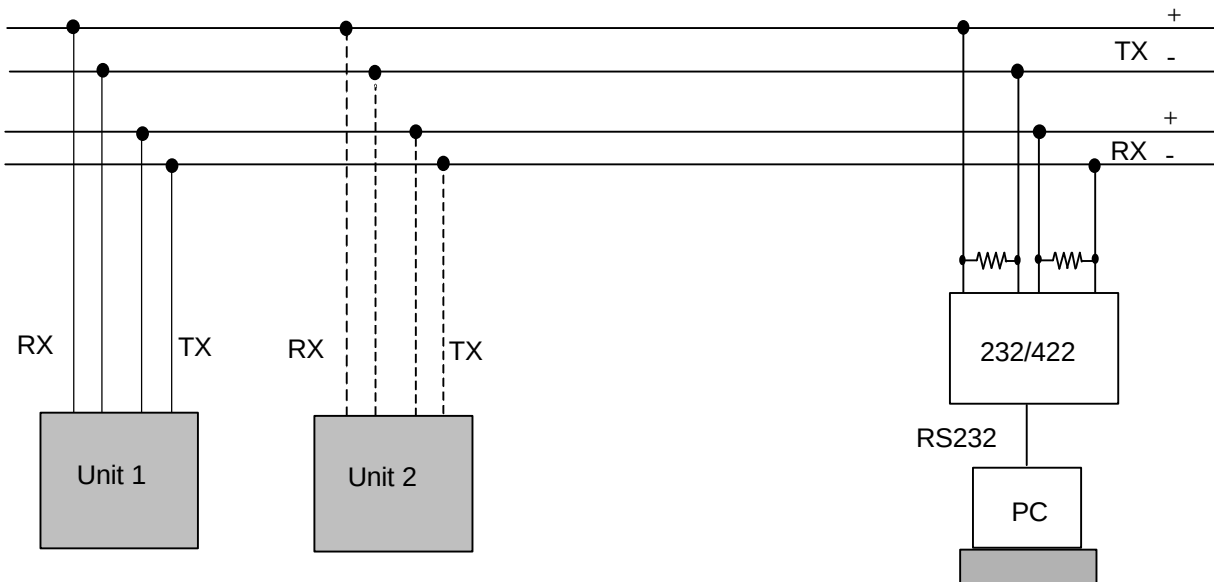


Figure 3.1 Four wire cable link network.

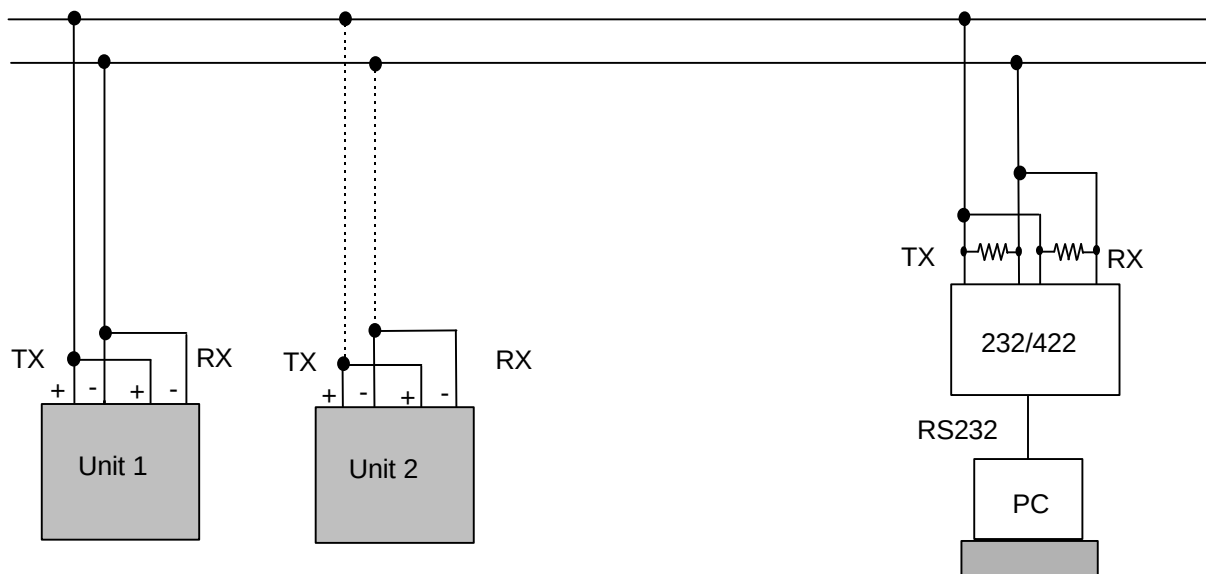


Figure 3.2 Two wire cable link.

3.2 Remote connection via modem

The connections using a modem are very similar, with a modem required both at the computer and at the Access 4000 side before the converter. At the computer side, the modem can be internal or external type. At the control panel side, the modem must be an external type, and should be configured as follows:

- **Serial Port Speed:** the same as that configured in control panel.
- **DTR Control:** OFF
- **Auto Answer:** ON
- **Smart Mode (if applicable):** ON
- **Handshaking:** OFF

For more information, please consult the relevant manual. The connection using modem is shown in Figure 3.3.

3.3 Other issues

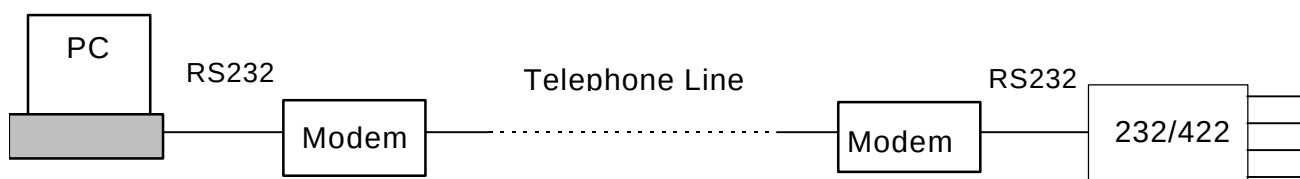
The software configuration in the Access 4000 must be compatible with the hardware setup. It is strongly suggested that the following items be checked after hardware setup.

- **Speed:** With direct link, it must be the same as that on the ACCESS 4000; With a modem, it must be the same as that set within the receiving modem
- **Wires:** Specify two wire or four wire;
- **Address:** Specify the address for each unit, it is a unique number from 0 to 15.
- **Access password:** This password must be given on the computer side for connection. The default password is "9999". If more than one unit is connected, you need to set the same password for all units.

4. A BASIC OPERATION TUTORIAL

This chapter is designed as a tutorial that you can work along with at your computer. It takes you step by step through the operation for both monitoring and control. You'll get to know your way around this package. If the hardware is not available, you may just want to run the software off-line. In this case, you can skip to Step 6: View DCP after Step 1.

Step 1. Launch GenAccess: To begin this tutorial, launch GenAccess by clicking the GenAccess icon, which is located in the Start\Programs menu. When you launch GenAccess, it appears on screen with its main frame window and status bar, as shown in Figure 4.1. There are four menus on the window namely File, Configure, Windows, and Help



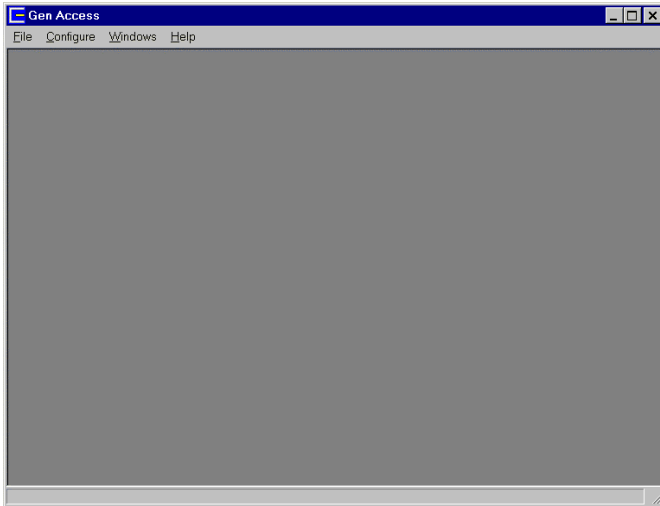


Figure 4.1 The main frame window of GenAccess1.0.

Step 2. Configure Network: From the configure menu, click Network. The dialog box shown in Figure 4.2 will appear on screen.

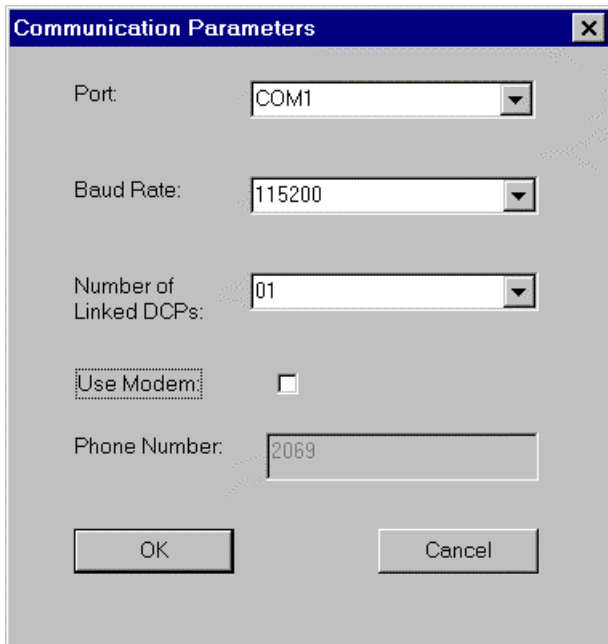


Figure 4.2 Network configuration dialog.

The first parameter is the communication port. From the drop down list you can select COM1, COM2, COM3, or COM4 according to your cable link.

The second parameter is Baud Rate. The options available from the drop down list are 115200bps, 56000bps, 38400bps, 19200bps or 9600bps. Alternatively, you may enter another speed by typing a value directly in the box. When using a modem, the speed does not need to be the same as that configured in the Digital Control Panel. With a direct 485/422 link, the speed specified must be the same as that configured in DCP. To make full use of the speed transfer rate, you may try increasing data speed upward starting from the lowest speed (9600bps).

The third parameter in this dialog box is the number of linked DCPs. Before giving this number, you need to be sure how many DCPs are connected to your PC and they are all switched on. If you are not sure of this number, specify the maximum number 16. Under this condition, the software will check for you. However, this will take a longer time.

If you are using a modem, click in the "Use Modem" box and type the telephone number.

All these parameters will be saved on exit. If you use the same parameters, you will not be required to perform the configuration again.

After entering all the parameters, click OK.

Step 3. Configure Password: From the configure menu, click Password. A dialog box (shown in Figure 4.3) appears on screen to ask for current password. If the password entered is incorrect, you are not given an opportunity to change it. The software comes with a default password "4001" which can be used the first time. We strongly recommend setting a unique password for each site to prevent unauthorized access.

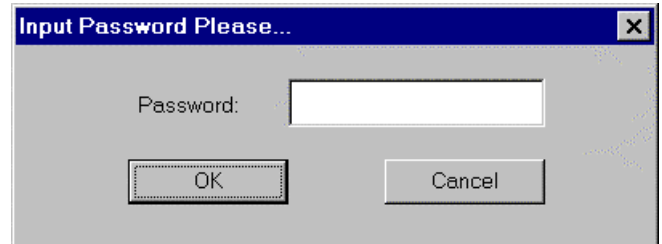


Figure 4.3 Input password dialog.

If the password is correct, a Set Up Password dialog shown in Figure 4.4 will appear on screen. Your new password should be the same as the Access Password configured in the control panel, as this password will be sent to the DCP. If it is different from the Access Password, connection to the DCP will be rejected.

Type the Access Password for the connected DCPs, then click OK.

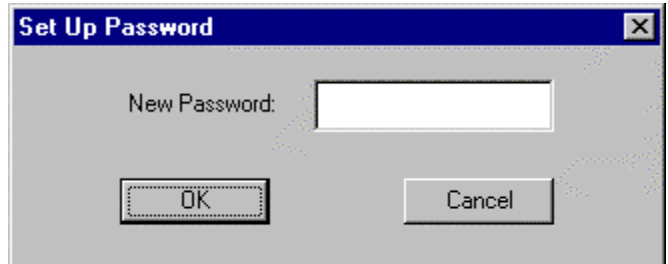


Figure 4.4 Password setup dialog.

Step 4. Configure Alarm Log: From the Configure menu, select Alarm Log, a dialog box as shown in Figure 4.5 will appear on your screen.

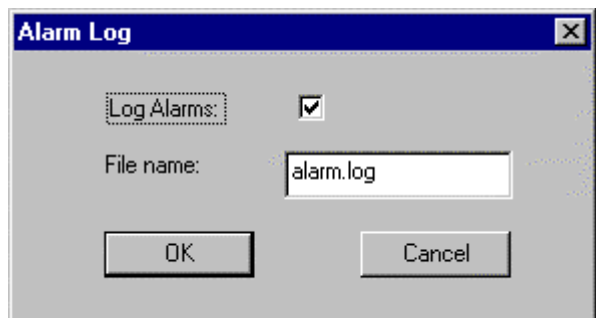


Figure 4.5 Alarm Log dialog box.

When the Log Alarms box is checked, a file name may be entered in the File name box. This will allow all alarms to be saved in this file under the current directory. Before doing this, the hard disk space needs to be checked to ensure there is enough space to log alarms. If you do not want to log alarms to file, ensure the Log Alarms box is not checked.

Check/Uncheck the Log Alarm box, and click OK.

Step 5. Make connection to DCPs: Select Connect from the File menu. An Input Password dialog box as shown in Figure 4.3 will appear on screen. Enter the password, and click OK. If the

password is correct, the software will start to build a connection for you. If you use a modem, the software will first initialize the modem, then dial the telephone number. When dialing, a progress bar as shown in Figure 4.6 will appear on screen.

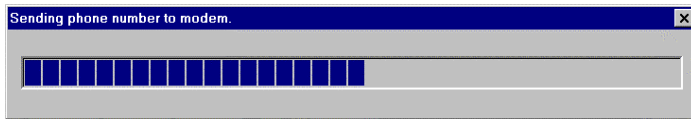


Figure 4.6 Progress bar for connection with modem.

At this stage, the software will check the connected DCPs. It begins with address 0, then 1, 2, 3, ... 15. If the number of DCPs found equals the number given in the Network configuration dialog box, the software will stop checking, and start to receive data from the connected DCPs.

If the number of DCPs found is not zero but different from the number specified, a warning message will appear on screen. In this case, the software will only communicate with the found DCPs.

When the connection check is completed, the message "Receiving data from Unit ..." appears in the status bar. This means that communication is in progress. You can now monitor the generating set's operation.

Step 6. View DCP: Select View DCP from the file menu. A dialog box as shown in Figure 4.7 will appear on screen, asking about the Unit Number or Address (0-15) to be viewed.

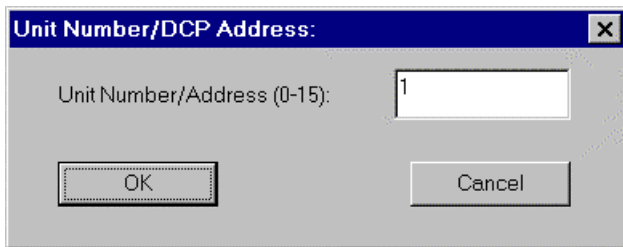


Figure 4.7 Unit number dialog box.

Type a unit number and click OK. A main view (shown in Figure 4.8) will appear on screen. The first view from this dialog box is always the Over View screen. Although you can view as many as 16 DCPs on screen, only connected DCPs show data changes.

GenAccess has three main views, namely Over View, Generator Information and Engine Information. You can switch from one view to another. When a new view is displayed, the old view disappears. This prevents too many views in the window.

The Over View is divided into four parts. The top left part shows generator information which includes voltages, currents, and frequency. Below the voltage meter, there are six small buttons which can be used to select the phase or line voltage to be displayed. Below the current meter, there are three small buttons used to selecting each phase. The bottom left part of the Over View shows engine information which includes coolant temperature, battery voltage, and oil pressure. The top right part indicates any active alarms, alarms that are active will be highlighted yellow. The bottom right section shows buttons which include Start, Stop, Reset Alarm, Emergency Stop and Auto indication. There is also a software icon in this area.

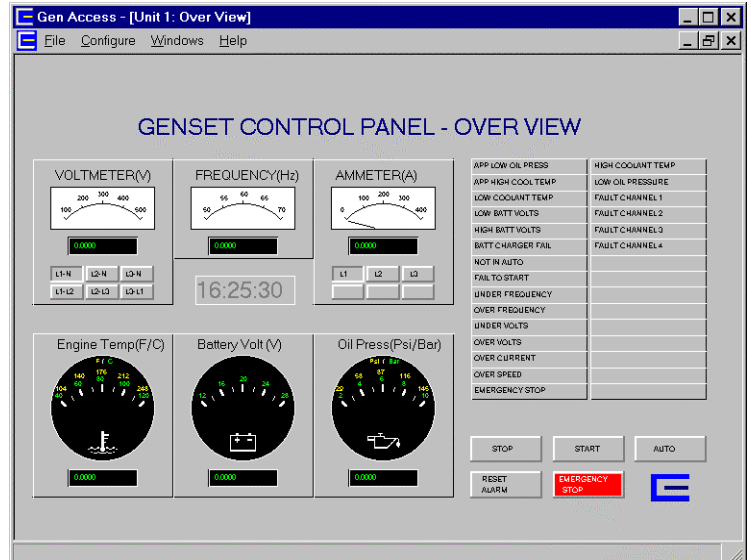


Figure 4.8 Over View screen.

Step 7. Switch to Generator Information view: To change views right click with your mouse in the Over View window, a pop-up menu as shown in Figure 4.9 appears. There are four items on this menu, Over View, Generator Information, Engine Information and Alarm Log. Since the Over View is active, this command is disabled in the pop-up menu.

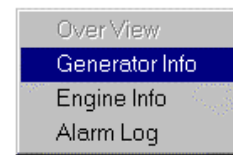


Figure 4.9 The pop-up menu.

Click Generator Info from the menu. The Over View will be replaced by the Generator Information view (Figure 4.10).

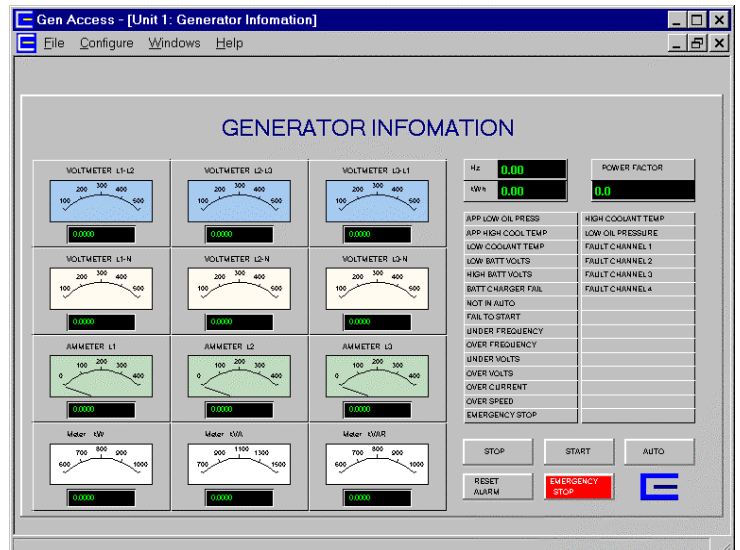


Figure 4.10 The Generator Information view.

In this view, the gauges in the first row are line voltage meters. Phase voltage meters are in the second row. The third row displays current meters. The kW, kVA, and kVAR meters are located in the fourth row. Frequency, kWhr, and power factor are displayed on the top right in digital mode. The alarms and buttons are the same as those in the Over View screen.

Step 8. Switch to Engine Information view: Right click on your mouse in the Generator Information window to bring up the pop-up menu. Select Engine Info from the menu (this time the command Generator Info is disabled). An Engine Information view appears on the screen (Figure 4.11).

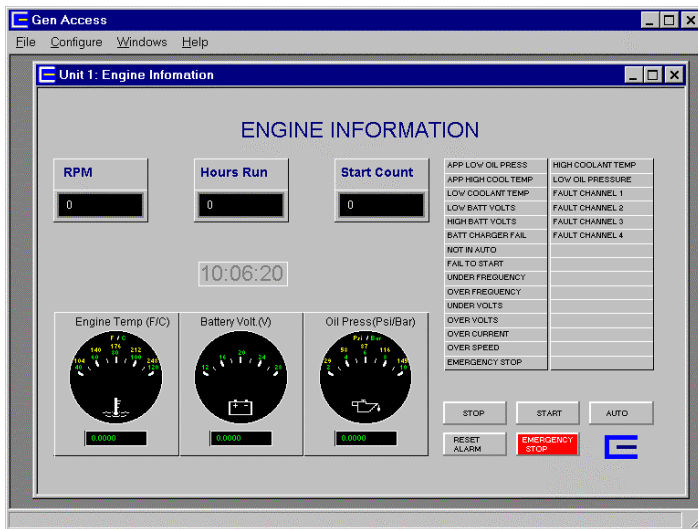


Figure 4.11 The Engine Information view.

The first row on the left in this view are digital meters for RPM, hours run and start count. The second row displays engine temperature, battery voltage and oil pressure. The temperature meter displays both Celsius and Fahrenheit values, and the pressure is displayed in Bar and PSI. The right part of this view is the same as that in Over View.

Step 9. Display Alarms: Right click in the Engine Information window to bring up the pop-up menu, then select Alarm Log from the menu. The Alarm Log window appears on the screen. Since Alarm Log is not a main view, it can exist together with a main view window, see Figure 4.12.

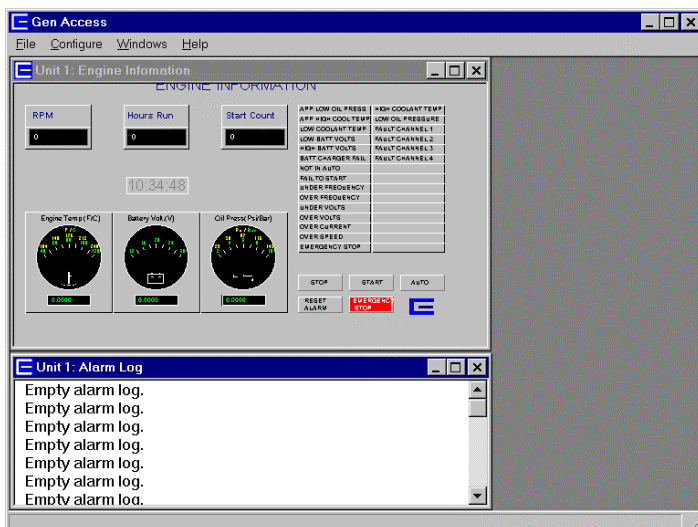


Figure 4.12 The Alarm Log window and the Engine Information window.

The Alarm Log window has a vertical scroll bar which can be used to view the 20 most recent alarms. If you want to view more historical alarms, you need to check your alarm log file, provided this file has been specified in the Configure menu.

Step 10. Change meter scales: If the value displayed is out of range, i.e. the needle in the meter can not be viewed on screen, a scale change is required. Move the mouse cursor to the meter whose scale you want to change. You will see the cursor changes from an arrow to a hand. Clicking in the meter, a dialog box as

shown in Figure 4.13 appears on the screen. The title of the dialog gives the name of the parameters to be changed and its unit in use.

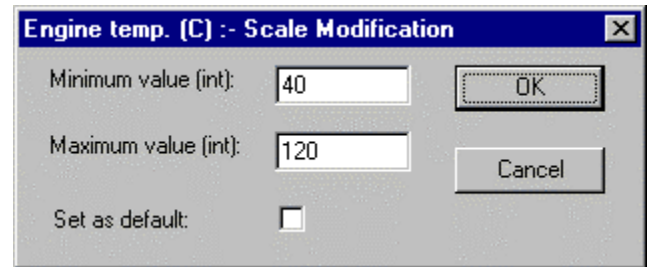


Figure 4.13 The scale modification dialog box.

In this dialog box, you can modify the minimum and maximum values shown on the meter. It should be noticed that these values should be given as integers. The modification will take effect immediately when you click OK. If you want to use these values from now on, you should check the 'Set as default' box. All meters in the main views can be modified this way.

Type 20 in the minimum value box and click OK, you can see the change right away.

Step 11. Display Unit 2 on screen: Click View DCP from the File menu to activate the dialog shown in Figure 4.7, then type 2 into the Unit Number box and click OK, the Over View window of Unit 2 will appear on screen. If Unit 2 is connected, the values should show changes. Otherwise, all values are zero.

Step 12. Bring Unit 1's Engine Information window on top: Now since the Unit 1's Engine Information window is behind the Unit 2's Over View window, you cannot see it. To put it on top, you may move Unit 2's Over View away and click the Unit 1's Engine Information window. You can also use the Windows menu to do this.

Another way to achieve this is to click Windows, when a menu bar (shown in Figure 4.14) will appear on screen. All the created windows are listed here. If there are no child windows, the menu is empty.

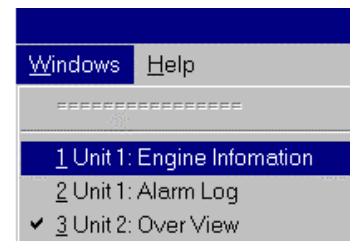


Figure 4.14 The Windows menu bar.

From this menu, you can see that there are three windows and the window 'Unit 2: Over View' is on top. Click 'Unit 1: Engine Information', this window will be brought on top. This method is very useful if you have many windows on screen.

Step 13 Control generator set (only for on-line operation): Generator sets can be controlled from the main view using the control buttons. When the mouse cursor moves into a button area, it changes to a hand. If you click the button, a corresponding command will be sent out to the generator set.

The START button is used to start the generator set. If this command is received by the generator set, the button will be displayed as pressed. Otherwise, you can try to click the button again. It should be noted that there is possibly a few seconds delay before your PC gets the response. Starting the generator set through communication can only be achieved when the panel's control switch is in the AUTO position.

The STOP button is used to stop the generator set. If the command is successfully received by the generator set, the button will be displayed as pressed. Otherwise, you need to have another try. If

the AUTO button is shown released, the command will not stop the generator set.

The AUTO button is not related to any control command. Its status is totally decided by the generator set control panel.

The RESET ALARM button is used to clear the logged alarms. The result of this command can be seen from the main view and Alarm Log Window. The first click leaves the button pressed, the second click will release the button. The command will be transmitted when it is pressed.

The EMERGENCY STOP button is used to stop the generator set in an emergency situation. If the command is successful, the button will be shown pressed. Otherwise, there will be no change. You may click it again. This command can be used whether the AUTO button is shown pressed or not.

5. COMMANDS REFERENCE

This chapter is designed to describe all available commands under each menu.

5.1 File menu commands

File menu offers four commands, Connect, Disconnect, View DCP, and Exit.

5.1.1 Connect command: Use this command to connect to DCPs. The connection will be made using the parameters given in the Networks dialogue under Configure menu. When performing a connection, the program firstly initializes the communication port. Secondly, it will try to communicate with the remote modem if the Use Modem box is checked. Thirdly, the program will look for the number of connected DCPs. Finally, if the found DCPs are the same as that specified, the program will receive data from all the connected DCPs.

When connection is successfully completed, the Connect command in the menu will be disabled to prevent any further click. At this time, the data communication is being carried out in the background. To display the data, you need to click View DCP. This operational sequence is called "Connect and View". The reverse sequence, i.e. "View and Connect" also works for this software.

5.1.2 Disconnect command: Use this command to disconnect your computer from all DCPs. If you click Disconnect when the program is performing communication, a message box may appear on the screen saying that the program is quitting, wait and try again. You can disconnect or close your program when the cursor changes from a wait glass to an arrow or when the message "It is now safe to close" appears on the status bar.

When disconnected, the Disconnect menu item will be disabled and the connect menu item will be enabled again.

5.1.3 View DCP command: Use this command to monitor a generator set. You may view a DCP either before you connect to it or after. When you click this command, a dialogue box will appear to ask about the Unit number or address (0 - 15). You can view as many as 16 DCPs on the screen. However only those connected show data changes. The first window is always the Generator set Over View. You can switch between the three main views using the pop-up menu.

5.1.4 Exit command: Use this command to exit the program. Apart from the function that the Disconnect performs, it also closes down the program.

5.2 Configure menu commands

The Configure menu offers three commands, Network, Password, and Alarm Log. Each command activates a configuration dialogue.

5.2.1 Network command: Use this command to configure network and communication. The first parameter on the dialogue is the communication port. From the list you can

select COM1, COM2, COM3, or COM4 according to your cable link.

The second parameter is Baud Rate. You can select from the list or type your own. When using a modem, the speed does not have to be the same as that in DCP. However, the speed must be the same as that in DCP if you use a direct cable link.

The third parameter in this dialogue is the number of linked DCPs. Before giving this number, you need to be sure how many DCPs are connected to your PC and that they are all switched on. If you are not sure, you may use the maximum number 16. Under this condition, the program will check all out for you. However, this is going to take a longer time.

If you use a modem, you need to make the Use Modem box is checked and enter the telephone number.

All these parameters will be saved on exit.

5.2.2 Password command: Use this command to set up your password. When you click this item, a dialogue box appears to ask for your password. If you input a wrong password, you are not allowed to change it. The software comes with a default password "4001" which can be used the first time you set up your own password. Your new password should be the same as that configured in the DCPs. Otherwise the connection to the DCPs will be rejected.

5.2.3 Alarm Log command: Use this command to log alarms into a disk file. When the item "Log Alarms" is checked, a file name can be input in the box "File name". All alarms will be saved in this file under current directory. Before doing this, the hard disk space needs to be checked to make sure there is enough space to log alarms. If you do not want to log alarms to file, just unchecked the "Log Alarms" box.

5.3 Windows menu commands

This menu keeps the record of all opened windows like main views or alarm log. When there are no child windows the menu is empty. This menu is very useful when there are numerous child windows on screen, you can choose which one is on top from the windows list.

5.4 Floating pop-up menu commands

A floating menu pops up when you right click inside a main view window. Four commands offered are Over View, Generator Info, Engine Info and Alarm Log.

5.4.1 Over View command: Use this command to switch back to the Over View from any one of the other two main view windows. The Over View is the default main view. When you change back to Over View, the previous main view will disappear automatically to avoid too many views on screen.

5.4.2 Generator Info command: Use this command to switch to the Generator Information window from any one of the other two views. When the Generator Information window appears, the previous view disappears.

5.4.3 Engine Info command: Use this command to switch to the Engine Information window from any one of the other two main views. When the Engine Information windows appears, the previous view disappears.

5.4.4 Alarm Log command: Use this command to view the most recent 20 alarms. To view more historical alarms, you need to use the Alarm Log command in Configure menu. The alarm log window can exist together with a main view window.

5.5 Help menu commands

5.5.1 Index command: Use this command to display the opening screen of Help. From the opening screen, you can jump to step-by-step instructions for using GenAccess software and various types of reference information.

Once you open Help, you can click the Contents button whenever you want to return to the opening screen.

5.5.2 About command: Use this command to display the copyright notice and version number of your copy of GenAccess.

5.6 Other commands

5.6.1 Change meter scale command: The scales of all the analogue meters on a main view window can be modified by left clicking the corresponding meter. When the cursor moves into the command valid area, it changes its shape from the "arrow" to a "hand". In this case, a left click can bring up a dialogue box showing the parameter to be changed and its unit in use.

In this dialogue, you can modify the minimum and the maximum values. These values should be given as integers. The modification will take effect immediately when you click OK. However, if you want to use these values as default, then you need to check the "Set as default" box.

5.6.2 Control commands: These commands are used to control generator sets from the main view window. There are five buttons at the right bottom corner of the main view. When the cursor moves into a valid button area, it changes to a "hand" shape. You can then click the button to send out a command to the corresponding generator set unit.

The START button is used to start the generator set. You can press this button only when the AUTO button is shown

pressed. Usually there are a couple of seconds delay before you can see the running of generator set. If the command fails to start the generator set, you can try to click the button again.

The STOP button is used to stop the generator set. If the generator set stops running, the button will be displayed as pressed. Otherwise, you need to have another try. This command also requires the AUTO button shown pressed.

The AUTO button is not related to any control command. Its status is totally decided by the generator set control panel. If the status on the PC screen is different from that on the control panel side, you should change the AUTO switch position twice.

The RESET ALARM button is used to clear the logged alarms. The result of this command can be seen from both the main view and the Alarm Log Window. For this button, the first click makes it pressed, and the second click makes it released. The command will be transmitted when it is pressed.

The EMERGENCY STOP button is used to stop the generator set under emergency situations. If the command is successful, the button will be shown pressed. Otherwise, there will be no change. You may click it again. EMERGENCY STOP works no matter if the local control switch is in the AUTO, ON or OFF position.

APPENDIX A - COMMUNICATION ERROR CODE

Receive data from slave

- Error 11: Canceled by slave when waiting for header;
- Error 12: Header time out six times;
- Error 13: Header is NAKed 10 times due to time out or CRC error;
- Error 14: Too many CRC errors in header;
- Error 15: Sequence/address error in packet;
- Error 16: Canceled by slave when waiting for the first character of a packet;
- Error 17: Packet is NAKed 10 times due to time out or CRC error;
- Error 18: Too many CRC errors in packet;
- Error 19: Canceled by slave when waiting for the last character (EOS);
- Error 20: User cancel;

Send command to slave

- Error 20: User cancel;
- Error 21: Canceled by slave when waiting for ACK;
- Error 22: Time out six times in waiting for ACK;
- Error 23: Time out in waiting for command ACK;
- Error 24: Canceled by slave when waiting for command ACK;
- Error 25: Too many NAKs received.

Note: CRC = Cyclic Redundancy Check;
 ACK = Acknowledge;
 NAK = Negative acknowledge;
 EOS = End of Send.

APPENDIX B - SPECIFICATIONS OF COMMUNICATION PROTOCOL

The communication protocol is one of the protocols supported by the Access 4000 series control panel. Since it is specially designed for generator sets communication, this protocol is fast and reliable in performing monitoring and control.

B1. CODING SYSTEM

The data is transferred in binary mode.

B2. FRAME FORMAT

Data frame: - data transmission.

SOH	SEQ	ADDR	STX	...DATA...	ETB	CRC
-----	-----	------	-----	------------	-----	-----

The first and intermediate data frame.

SOH	SEQ	ADDR	STX	...DATA...	ETX	CRC
-----	-----	------	-----	------------	-----	-----

The last data frame.

SOH = 0x01;

SEQ = Sequence number of data block;

ADDR = address, 0x30 - 0x3F;

STX = 0x02, start of text;

DATA = 82 bytes data, (see variable list),

ETB = 0x17, end of block;

ETX = 0x03, end of text;

CRC = error check, 2 bytes for Cyclic Redundancy Check.

ACK	NAK
-----	-----

The positive and negative acknowledgment frame.

ACK = 0x06;

NAK = 0x15.

Supervisory frames: - communication control

0x3F (?)	ADDR	X	X	X	X	CR
----------	------	---	---	---	---	----

The start frame.

ADDR = address 0x30 - 0x3F, corresponding to 0 - 15;

X = password in ASCII code;

CR = 0x0d, carriage return.

EOT	ADDR	P/S	ENQ
-----	------	-----	-----

The Poll/Select frame.

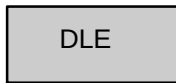
EOT = 0x04;

P/S = Poll/Select;

ENQ = 0x05.



The positive and negative acknowledgment frames.



The end of transmission frame.

DLE = 0x10.



Cancel frame, when too many errors occur.

CAN = 0x18.



Exit frame(when the master is quitting).

ESC = 0x1B.

Command frame:- operation command for the generator sets.



FC = function code, defined as:

FC	FC	Description
01	FE	Emergency Stop
02	FD	Start Generator set
08	F7	Stop Generator set
05	FA	Reset Alarm
reserved	reserved	reserved

B3. A SIMPLE EXAMPLE

PC (as Master)

Digital Control Panel (as Slave 1)

(1) Monitoring

Send start frame	→	Is address and password right?
Receive ACK	←	Yes, send ACK
Send Poll frame	→	Is Poll frame right?
Receive packet 1	←	Yes, send data frame-packet 1
Packet OK, send ACK	→	Receive ACK
Receive packet 2	←	Send packet 2
Packet OK, send ACK	→	Receive ACK
Receive DLE, end	←	End of data frame, send DLE

(2) Control

Send start frame	→	Is address and password right?
Receive ACK	←	Yes, send ACK
Send Select frame	→	Is Select frame right?
Receive ACK	←	Yes, send ACK
Send command frame	→	Is function code OK?

Receive ACK, end. ← Yes, send ACK, execute command.

B4. STATE TRANSITION DIAGRAMS

The diagrams for transmitting and receiving data are shown in Figures 1 and 2.

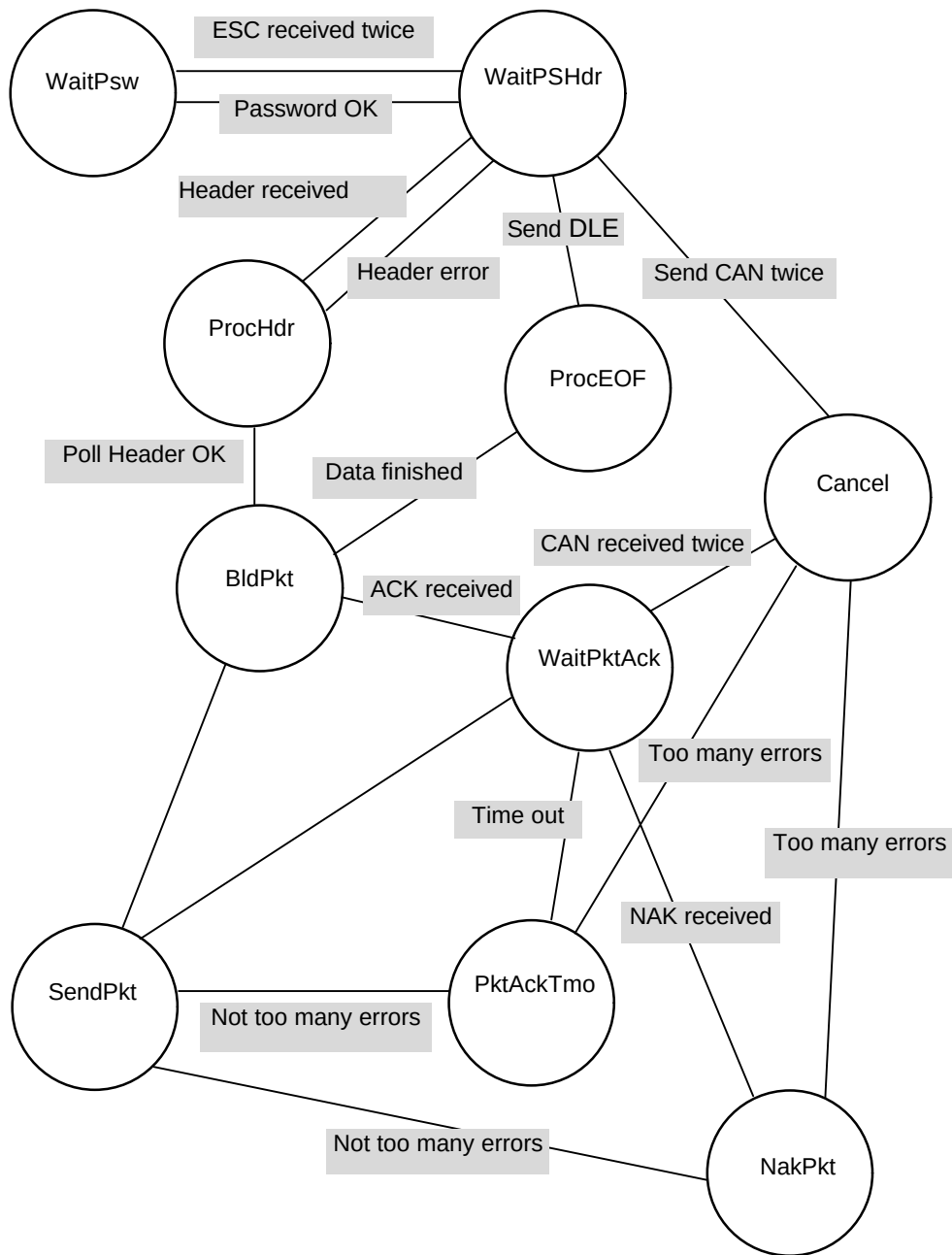


Fig. 1. State transition diagram for transmitting data.

WaitPsw	=	Wait for password;	WaitPSHdr	=	Wait for Poll/Select header frame;
ProcHdr	=	Process header frame;	BldPkt	=	Build a packet;
ProcEOF	=	Process end of file;	WaitPktAck	=	Wait for packet acknowledge;
SendPkt	=	Send a packet;	PktAckTmo	=	Time out for acknowledge;
NakPkt	=	Packet is not acknowledged;	Cancel	=	Cancel transmission.

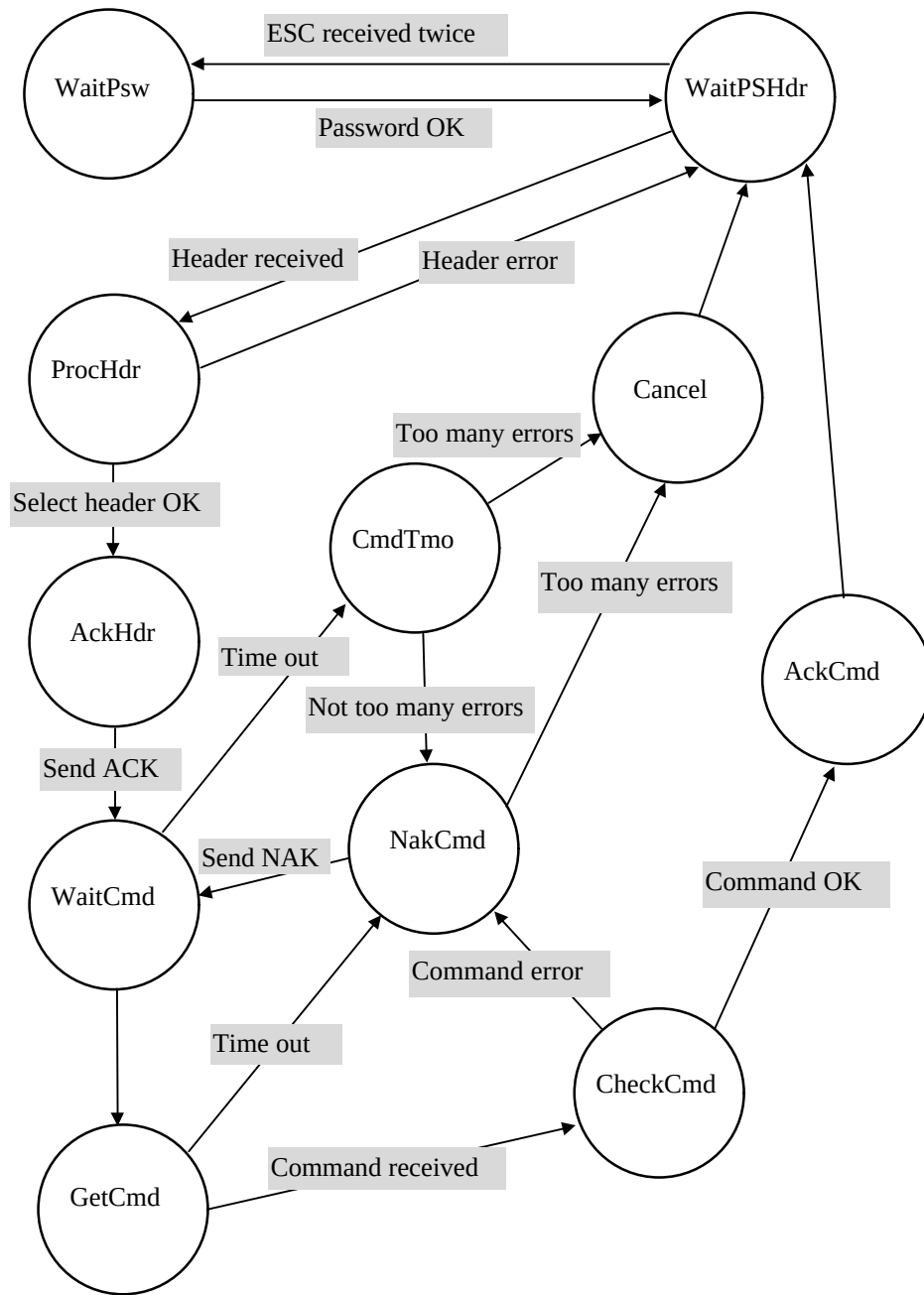


Fig.2 State transition diagram for receiving control commands.

WaitPsw	=	Wait for password;	WaitPSHdr	=	Wait for Poll/Select header;
ProcHdr	=	Process header;	AckHdr	=	Acknowledge header;
WaitCmd	=	Wait for command;	GetCmd	=	Get command frame;
CheckCmd	=	Check command frame;	AckCmd	=	Acknowledge command;
NakCmd	=	Not acknowledge command;	CmdTmo	=	Time out in waiting for command;
Cancel	=	Cancel the receiving process.			

B5. VARIABLE LIST

Variable Description	No.	Name	Local Type	Multiplier	Type to send	Bytes
Water Temp	0	coolant_temp	int	1	char	1
Oil Pressure	1	oil_pressure	float	10	char	1
Power factor	2	pf_ave	float	10	char	1
spare	3		char	1	char	1
Switch position	4	calculated from PRAM91&PRAMA1		1	char	1
spare	5		char	1	char	1
spare	6		char	1	char	1
spare	7		char	1	char	1
RPM	8	speed	float	10	unsigned short	2
Batt. Volts	9	volts_in	float	10	unsigned short	2
Hours Run	10	timer_counter	int	1	unsigned short	2
Starts	11	starts	short	1	unsigned short	2
Phase A Volts	12	phase_A_rms_volts	int	1	unsigned short	2
Phase B Volts	13	phase_B_rms_volts	int	1	unsigned short	2
Phase C Volts	14	phase_C_rms_volts	int	1	unsigned short	2
Line AB Volts	15	line_AB_rms_volts	float	10	unsigned short	2
Line BC Volts	16	line_BC_rms_volts	float	10	unsigned short	2
Line CA Volts	17	line_CA_rms_volts	float	10	unsigned short	2
Phase/Line A Amps	18	phaseA_rmcurrent	float	10	signed short	2
Phase/Line B Amps	19	phaseB_rmcurrent	float	10	signed short	2
Phase/Line C Amps	20	phaseC_rmcurrent	float	10	signed short	2
Frequency	21	frequency	float	10	unsigned short	2
Total kW	22	KW	float	10	signed int	4
Total kVA	23	KVA	float	10	signed int	4
Total kVAr	24	KVAr	float	10	signed int	4
Total kWh	25	kWh	float	10	signed int	4
spare	26		float	10	signed int	4
spare	27		float	10	signed int	4
Fault status	28	latch	int	1	int	4
List of faults	29	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	30	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	31	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	32	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	33	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	34	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	35	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	36	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2

Variable Description	No.	Name	Local Type	Multiplier	Type to send	Bytes
List of faults	37	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	38	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	39	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	40	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	41	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	42	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	43	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	44	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	45	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	46	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	47	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2
List of faults	48	code+ack	char	1	char	1
		time	short	1	unsigned short	2
		spare	short	1	unsigned short	2

Notes:

(1) Packet size = 82 data bytes + 7 header bytes = 89 bytes

Code + ack =

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

bit 7 = ack

bit 6 - bit 0 = code

Fault status =

31	30	29	28	27	26	...	8	7	6	5	4	3	2	1	0
----	----	----	----	----	----	-----	---	---	---	---	---	---	---	---	---

bit 31 = 1: fault status changes. Two packets are transmitted.

bit 31 = 0: no change in fault status. One packet is transmitted.

(2) Data Types

Type	Bytes	Min Value	Max Value			
char	1	-128	127		signed	
		0	255		unsigned	
short	2	-32768	32767		signed	
		0	65535		unsigned	
int	4	-2.147E+09	2.147E+09		signed	
			4.295E+09		unsigned	
long	4	-2.147E+09	2.147E+09		signed	
			4.295E+09		unsigned	
pointer	4	0	4.295E+09			
float	4	*	*			
double	8	*	*			

(3) Fault Codes

Fault Code	Fault Description
0x00	Approaching Low Oil Pressure
0x01	Approaching High Engine Temperature
0x02	Low Coolant Temperature
0x03	Low Battery Voltage
0x04	High Battery Voltage
0x05	Battery Charger Failure
0x06	Not in Auto
0x07	Fail to Start
0x08	Fail to Start
0x09	Under Frequency
0x0a	Under Voltage
0x0b	Over Voltage
0x0c	Over Current
0x0d	Overspeed
0x0e	Emergency Stop
0x0f	High Engine Temperature
0x10	Low Oil Pressure
0x11	Fault Channel 1
0x12	Fault Channel 2
0x13	Fault Channel 3
0x14	Fault Channel 4