GE Fanuc Automation

Programmable Control Products

PANELWARE™ Configuration Software

Reference Manual

GFK - 0849A *May 1995*

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Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

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Note

Notes merely call attention to information that is especially significant to understanding and operating the equipment.

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This manual describes how to use the PANELWARE™ Configuration Software (PCS) to program Panels equipped with a C200 or C400 Panel Controller.

Some of the products mentioned or illustrated in this manual may not be released when this document is published. Please do not rely on any references made to these units. Your local GE Fanuc distributor will inform you of any new product releases.

Revisions to this Manual

Changes made to this manual reflect the added features of release 1.8 (May 1995) of PANELWARE Configuration Software (PCS). Additionally, corrections have been made where necessary. The following list describes the major revisions in this manual, as compared to the previous version (GFK-0849).

- Ability to start a project for testing purposes from the **Utilities** menu (Page 3-5)
- A **Messages** function in the **Help** menu that displays the last error or warning message received (page 3-7)
- Enhanced communications error handling (page 4-10)
- **Import** function in the **File** menu for importing projects (page 4-20), pictures (page 5-11), text groups (page 8-6), and variable assignment tables (page 9-11)
- Ability to change size of mask text in pictures using the **Text Attr** function (page 5-5 and the use of ASCII characters in mask text (page 5-6)
- **Output Long signed** (pages 5-7, 6-11) and **Input Long signed** (pages 5-7, 6-22) fields available in the picture editor
- **Export VAT** function (page 9-12) that allows you to export a variable assignment table to an ASCII text file
- Ability to program a Controller's flash memory with a new operating system version (page 10-20)
- New manual structure -- The title of this manual has been changed to *Reference Manual* to better reflect its purpose and a *Quick Start Guide* (GFK-1142) has been added to help you get your PANELWARE system up and running quickly. Also, new *Application Manuals* have been added for the Modicon MODBUS and Siemens L1 drivers, and for Genius protocol.

Content of This Manual

Chapter 1. Introduction provides an overview of PCS and a description of abbreviations and symbols used in PANELWARE user's and reference manuals.

Chapter 2. Operation describes hardware and software requirements, outlines the installation and configuration of PCS, and provides an overview of PCS operating procedures.

Chapter 3. Menus describes the PCS menu structure.

Chapter 4. Project Editor describes the operation and functionality of the project editor.

Chapter 5. Picture Editor describes how pictures can be created and edited for a project. Picture elements such as mask text, input and output fields, and key and LED functions are also explained.

Chapter 6. Field Types, Key Commands, and LED Functions provides detailed information on functions and parameters of input/output fields, key functions, and LED functions.

Chapter 7. Keycode Table Editor explains how the Panel's keys can be defined as control or function keys and how each individual key can have an ASCII character assigned to it.

Chapter 8. Text Group Editor explains how to create and edit text groups.

Chapter 9. Connection List Editor describes how the symbolic names in a project are assigned to a PLC address.

Chapter 10. Creating a Project provides an overview of PCS functionality in the form of a step-by-step description of the procedure for creating a project.

Chapter 11. Alarm System explains the function of alarms and the PLC and Panel formats in which they are presented. The configuration of these alarms is described and procedures for working in an alarm window are provided.

Chapter 12. Scaling, Up/Down Input, Input Locking, and Password Protection provides detailed information on creating and using input and output fields.

Appendix A. Absolute Maximum / Minimum Ratings lists the maximum and minimum limitations of a project and outlines the requirements for PCS operation.

Appendix B. Troubleshooting describes possible system errors and their causes and provides tips for correcting them.

Appendix C. Error Messages contains an alphabetical listing of all error messages that can be caused in the PCS. Error descriptions, causes, corrections, and prevention are provided.

Appendix D. Internal Variables explains the Panel internal variables that are available to the user.

Related Publications

GFK-0848 ***PANELWARE™ Hardware Installation User's Manual***
This manual describes the PANELWARE Operator Panels and contains technical data, hardware installation instructions, and the general information required for putting the Panels into operation.

GFK-0850 ***PANELWARE MMI Application Manual for GE Fanuc Series 90 Protocol (SNP)***
This manual contains specific information on the configuration of PANELWARE Panels that communicate with GE Fanuc Series 90 Protocol.

GFK-0852 ***Series 90 PLC Serial Communications User's Manual***
This manual describes serial communications products for the Series 90 Programmable Logic Controller (PLC). Information is provided to implement a serial communications link between the Series 90 PLC, a host computer, a peripheral device, or another PLC.

GFK-1112 ***PANELWARE Application Manual for Siemens SINEC L1 Driver***
Contains specific information on the configuration of PANELWARE Panels that communicate with Siemens controllers by means of the SINEC L1 protocol.

GFK-1113 ***PANELWARE Application Manual for the Modicon MODBUS (RTU/ASCII) Driver***
Contains specific information on the configuration of PANELWARE Panels that communicate with Modicon controllers by means of the MODBUS protocol.

GFK-1115 ***PANELWARE Application Manual for Genius Protocol***
This manual contains specific information on the configuration of PANELWARE Panels that communicate with GE Fanuc controllers by means of the Genius protocol.

GFK-1142 ***PANELWARE Configuration Software Quick Start Guide***
This guide, which is a companion to the *PANELWARE Configuration Software Reference Manual* (GFK-0849), provides basic information for configuring and using PCS. An example project is also included.

We Welcome Your Comments and Suggestions

At GE Fanuc Automation, we strive to produce quality technical documentation. After you have used this manual, please take a few moments to complete and return the Reader's Comment Card located on the next page.

Libby Allen
Senior Technical Writer

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Chapter 1 Introduction

This chapter provides an overview of PANELWARE Configuration Software (PCS) and a description of abbreviations and symbols used in the PANELWARE user's and reference manuals, and a brief description of PCS operation.

- PCS Overview 1-1
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Note

This manual describes version 1.8 of PCS, which includes drivers for the C200 and C400 Panel Controllers.

PCS Overview

PANELWARE Configuration Software (PCS) is used to configure the modular PANELWARE Panels so that they display data from the PLC on your screen in various formats (numerical values, bar graphs, text). You can enter Panel data to be sent to the PLC. You can also use the Keyblock module to assign a value to a key so that, when the key is pressed, the value will be sent to the PLC.

The configuration for a Panel is called a *project*.

General PCS Operation

PCS allows complex projects to be created by using easy-to-follow, menu-controlled instructions. These projects are programs that are transferred to a Panel and started there via a Panel power-on or reset. The PCS-created Panel program (project) then takes over communication with the PLC and performs the following functions:

- Reads data from the PLC and displays it on the screen in the specified format (values, text, bar-graphs)
- Writes data to the PLC and executes PLC functions
- Displays static data, such as mask text and lines

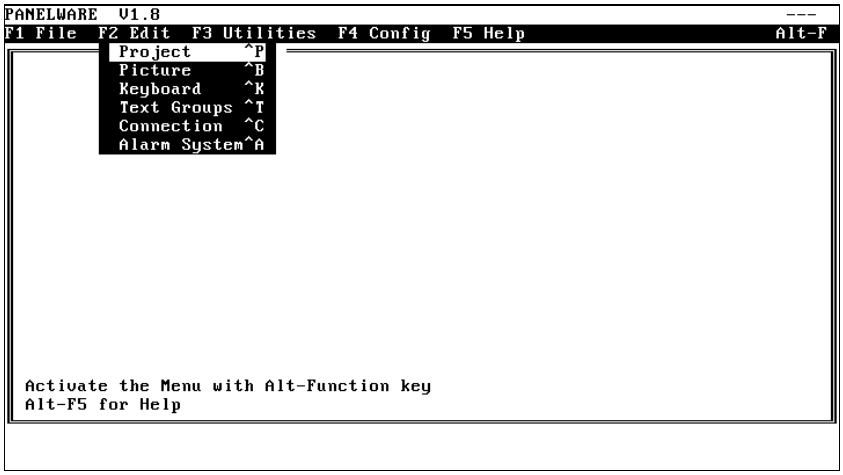
Using PCS, projects can be created for the C200 and C400 Panel Controllers. Table 1-1 lists the components that make up a project. “PCS Operation” in chapter 2 briefly describes the process of creating and editing a project. Chapter 10 contains a detailed, step-by-step description of this process.

Table 1 - 1. PCS Project Component Descriptions

Project Definition	The hardware configuration of the Panel and the picture directory.
Picture Directory	A list of all pictures used in a project.
Pictures	A picture contains the information that will be shown on the Panel display module. Text, input and output fields as well as lines, bars, and curves (trends) on graphic displays can all be components of pictures. Key and LED functions can be defined for different states for each picture.
Keyboard Definition	The key assignments can be defined according to your wishes (function keys, numeric or alphanumeric keys).
Connection List	A list of all connections that the Panel must access or be accessed from. A connection defines the protocol, the interface, and where the Panel will find the data (e.g. which PLC in a network).
Text Groups	A text group consists of a number of text blocks and contains a maximum of 40 characters. By using an output field, a block of text can be taken from a text group and displayed. It is also possible to control this display from the PLC.
Alarm System	The alarm system reads an alarm bit field from the PLC, through which the PLC alarms can signal the Panel. The alarm system in the Panel records the alarm in a list that can be printed. A project can be created with or without an alarm system.

Creating or Editing a Project

Once a project is created, you can edit it using the PCS edit functions. The basic elements of a project, all of which can be edited, are shown in the **Edit** pull-down menu:



Before you can edit a project, either a new project must be created or an existing project must be opened. If a project has been created or opened, the name of the project is displayed in the center of the title line on the screen as shown below (project PNAME):

Figure 1-1 provides an overview of the project development process. Details on how to perform the steps in the process can be found in chapters 3 – 9. Chapter 10 describes what to consider and plan out before you create a project and provides a summary the steps in creating a typical project.

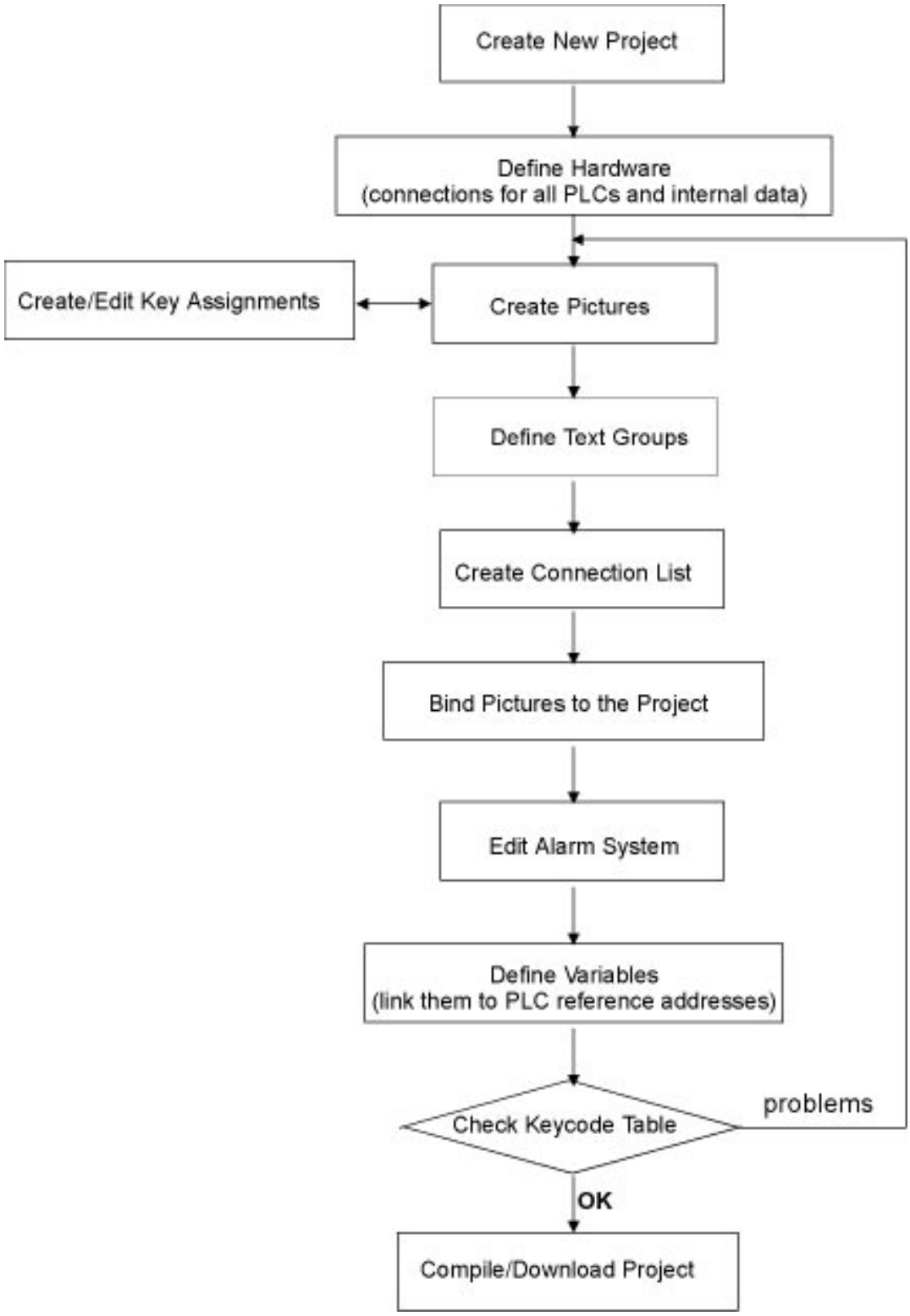


Figure 1 - 1. Project Development Process

Edit Modes

With the functions in the **Edit** pull-down menu and the PCS **Main** menu displayed on the screen, you can switch to the following edit modes. Chapter 4 describes how to use the project editor.

Table 1 - 2. Edit Modes

Edit Mode	Description
Project	Allows editing of the project definition, which includes the number and types of Keyblock modules. Binding the pictures into the project is a project definition function. The linking structure of all pictures that are used in the project must also be defined. This informs the panel which picture to switch to next, and which function key should perform the picture change function.
Picture	Allows new pictures to be created and existing pictures to be edited. In these pictures, mask text, lines, input fields, output fields, LED functions, and key functions can be inserted.
Keyboard	Allows every key on a panel to be user defined and edited. ASCII characters or special functions can be assigned to these keys.
Text Group	Allows text groups (a collection of texts that correspond to a numerical sequence) to be created and edited. The output can also depend on a value from the PLC.
Connections	During the creation of a panel project, symbolic names are allocated to PLC addresses. The connection editor allows you to assign variables to fixed addresses in the PLC.
Alarms	By setting a bit in the PLC, the panel receives a certain alarm when an alarm is executed from the PLC. This alarm can be displayed as text on the display of the panel and/or output to a printer. The alarms editor allows you to create or edit this alarm information.

Document Conventions

Key Symbols

All keys used to operate PCS are shown in bold in this manual:

Table 1 - 3. Key Symbols

Key		Description
German	**English**	
↑	↑	Cursor up
↓	↓	Cursor down
←	←	Cursor left
→	→	Cursor right
↵	↵	Enter (Return)
Bild↑	**PgUp**	Cursor one page up
Bild↓	**PgDn**	Cursor one page down
Einfg	**Ins**	Switches between insert and overwrite modes
Entf	**Del**	The character in the cursor position is deleted
Esc	**Esc**	Exits from the current function; exits the editor or a menu
Space	**Space**	Space (Blank character)
Strg	**Ctrl**	Control key
Shift	**Shift**	SHIFT key
Alt	**Alt**	Alternate key
⇐	⇐	The character to the left of the cursor position is deleted (Back Space)

If two keys are to be pressed simultaneously in order to execute a function, the keys will be connected by the plus (+) character. Example:

`Ctrl + Ins`

Text that is to be entered directly using the keyboard is shown in **bold** and ***italic***. Example:

`panel`

Menu Functions

The names of pull-down menus and menu functions are shown in **bold**. Example:

Edit menu

Chapter 2 Operation

This chapter describes the requirements for software operation, outlines the installation and configuration of PCS, and provides an overview of PCS operating procedures. It includes the following information:

- Hardware and Software Requirements 2-2
- Installation Diskette Contents 2-3
  - 5¼" Diskette 2-3
  - 3½" Diskettes 2-4
- Software Installation 2-5
  - Calling the Setup Program 2-5
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Section 1 Hardware and Software Requirements

PCS is delivered on two 3½-inch disks in 2DD (720K) format and on one 5¼-inch disk in 2S/HD (1.2M) format. The diskette(s) you use to install PCS depends on your PC configuration.

Description	Catalog Number
PANELWARE Configuration Software Includes cable assemblies and adapter (25-pin to 9-pin converter)	IC640HWP950
Cable Assy.	IC750CBL001
Cable Assy. plus adapter (25-pin to 9-pin converter)	IC750CBL002
PANELWARE Configuration Software (can not be ordered separately)	IC641SWP950

Before starting the software installation, make sure the following requirements are met:

- Complete IBM PC compatibility (processor types: 80286 and higher)
- IBM compatible monochrome or color adapter
- One 3½ inch (720 Kbyte) or 5¼ inch (1.2 Mbyte) floppy disk drive
- For the installation, approximately 3 Mbytes must be free on the hard disk. Project operation will require 1 Mbyte disk space for temp files.
- 640 KB RAM, of which at least 512 KB must be available. Memory-resident programs should be removed if necessary to free up the RAM.
- Minimum 1 serial interface (COM1 or COM2)
- MS-DOS version 3.30 or higher
- The CONFIG.SYS file settings for FILES and BUFFERS must be set to a minimum of: FILES=40; BUFFERS=10.

Note

PCS can be executed in a DOS box under Windows 3.1 *only* in offline mode. To download or upload a project to/from a Panel, you must exit Windows and run PCS from the DOS prompt.

Refer to Appendix A for a complete list of system operating limits.

Section 2 Installation Diskette Contents

5¼" Diskette

README File: Your installation software includes a file called `README.US` that contains information concerning product restrictions and a list of known problems. This file can be printed to the screen by entering ***`type README.US`***. You are encouraged to view this file before using the software.

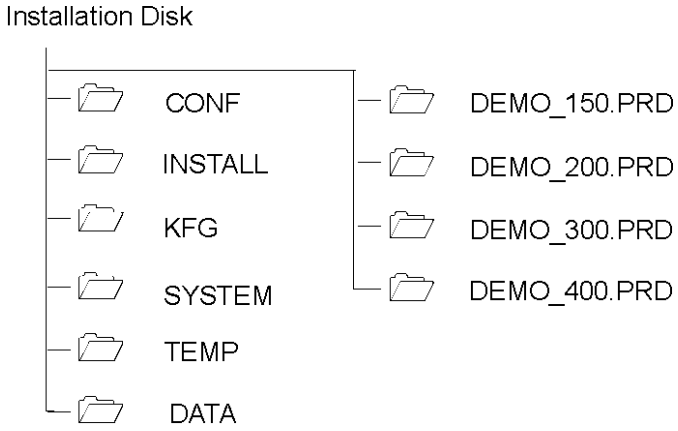


Figure 2 - 1. 5 1/4" Installation Diskette Directory Structure

Table 2 - 1. 5 1/4" Installation Diskette Directory Contents

Directory	Contents			
Root	LHA.EXE README.GR	LHA212.EXE README.US	LOGO.LOG SETUP.EXE	PW.LZH SETUP.I00
CONF	DISP.COL LANG.GR	DISP.LCD LANG.USA	DISP.MON	DISP.PLA
DATA	DATA.LZH			
INSTALL	INSTALL.GR INSTALL.USA	INSTALL.I00	INSTALL.I02	INSTALL.IFO
KFG	KFG.LZH			
SYSTEM	C200SYS.LZH	C300SYS.LZH		
TEMP	PKSUPD1.EXE	PKSUPD2.EXE	DELLST.UPD	VBGLST.UPD
DEMO_150.PRD	DEMO_150.LZH			
DEMO_200.PRD	DEMO_200.LZH			
DEMO_300.PRD	DEMO_300.LZH			
DEMO_400.PRD	DEMO_400.LZH			

3½" Diskettes

README File: Your installation software includes a file called `README.US` that contains information concerning product restrictions and a list of known problems. This file can be printed to the screen by entering ***`type README.US`***. You are encouraged to view this file before using the software.

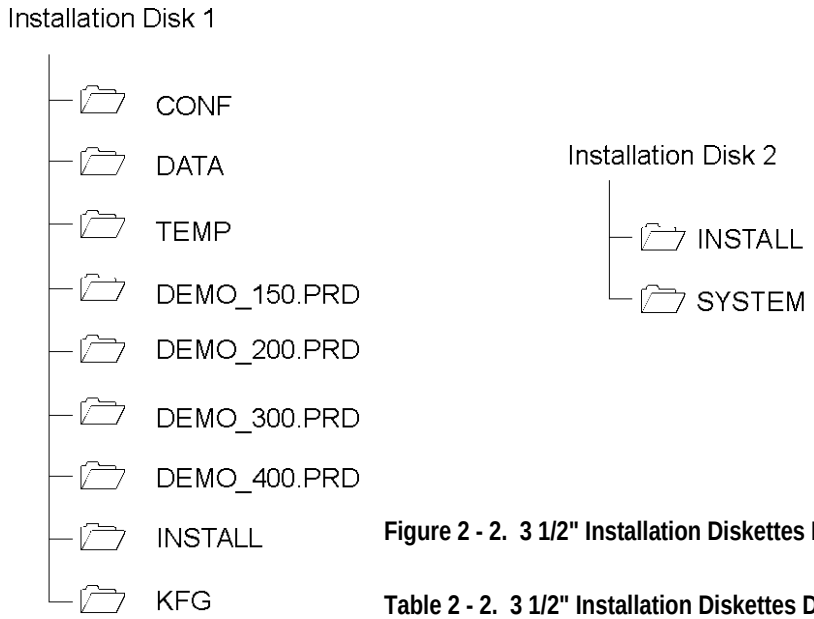


Figure 2 - 2. 3 1/2" Installation Diskettes Directory Structure

Table 2 - 2. 3 1/2" Installation Diskettes Directory Contents

Directory/Disk 1	Contents			
Root	LHA.EXE README.GR	LHA212.EXE README.US	LOGO.LOG SETUP.EXE	PW.LZH SETUP.I00
CONF	DISP.COL LANG.GR	DISP.LCD LANG.USA	DISP.MON	DISP.PLA
DATA	DATA.LZH			
INSTALL	INSTALL.GR INSTALL.USA	INSTALL.I00	INSTALL.I02	INSTALL.IFO
KFG	KFG.LZH			
TEMP	PKSUPD1.EXE	PKSUPD2.EXE	DELLST.UPD	VBGLST.UPD
DEMO_150.PRD	DEMO_150.LZH			
DEMO_200.PRD	DEMO_200.LZH			
DEMO_300.PRD	DEMO_300.LZH			
DEMO_400.PRD	DEMO_400.LZH			
Directory/Disk 2	**Contents**			
Root				
INSTALL	INSTALL.I02			
SYSTEM	C200SYS.LZH	C300SYS.LZH		

Section 3 Software Installation

Calling the Setup Program

Insert PCS distribution diskette into the appropriate floppy disk drive. If you are using the two 3½" diskettes, install the #1 disk first (the system will prompt you when it is time to insert disk #2).

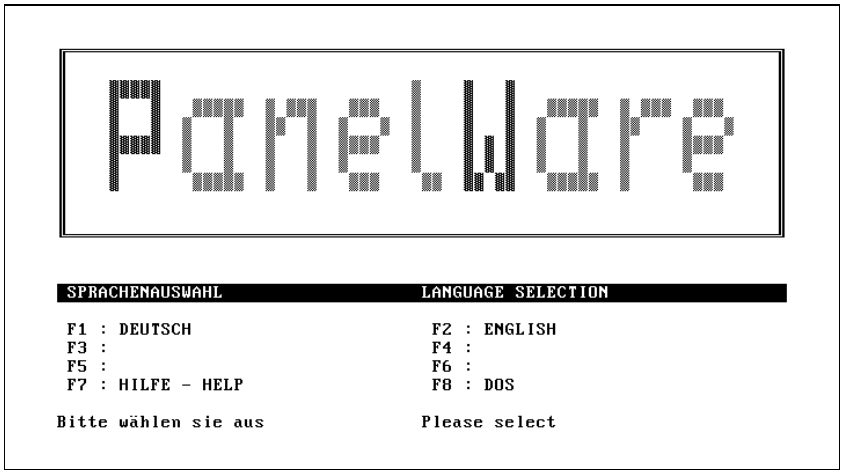
Depending on the floppy drive designation (a or b), enter one of the following commands at the DOS prompt, then press the ↵ (Enter) key:

```
C:\>a:setup ↵
      or
C:\>b:setup ↵
```

After you press ↵, the setup program is called and the menu for language selection appears on the screen.

Language Selection

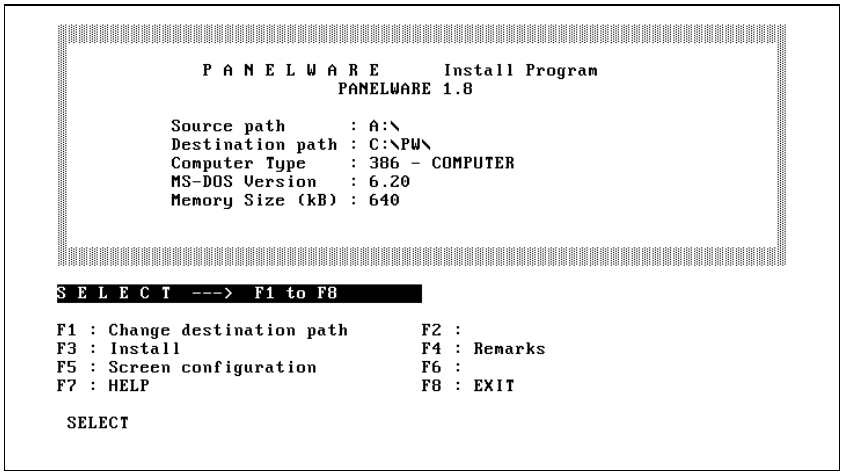
The **Language Selection** menu is used to select the language (English or German/Deutsch) in which you configure PCS during the installation procedure. This language is used as the default selection for PCS.



Press the function key that corresponds to the desired language. When it has been selected, the **Install Program** menu is displayed on the screen.

Installation Menu

All system information that the software requires is entered or displayed in the **Install Program** menu. This information consists of the computer type/specifications used and the source and destination paths of the software. Computer type, DOS version, source path and memory size are entered automatically. You must enter the desired destination path.



From the **Install Program** menu, you can change destination paths, start the installation, configure the screen, and exit the installation.

Changing the Destination Path

The destination path (the directory in which the software is to be installed) is set to the path **C:\PW** by default. By pressing **F1 Change destination path**, you can specify a different disk drive and/or path in which PCS will be installed.

Start Installation

Once the system information is correct in the **Install Program** menu, start the installation process by pressing **F3 Install**.

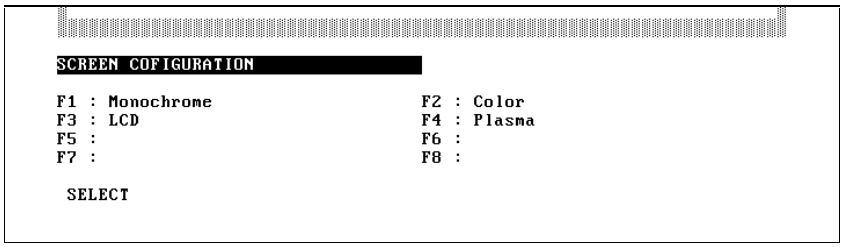
The setup program may recommend changes to the **CONFIG.SYS** file. These changes are only made if you confirm them at the prompt.

Caution

PCS requires the minimum values recommended for *FILES* and *BUFFERS*. If you enter smaller values in the *CONFIG.SYS* file, problems could occur while running PCS.

Screen Configuration

The **Screen Configuration** menu is displayed once the CONFIG.SYS file changes are made.



This screen allows you to set up the appropriate PCS screen type by pressing the function key that corresponds to your computer's display. When you select a display type, the system begins copying PCS files to the destination directory you selected.

After all PCS installation files are copied to the destination directory, the following message is displayed:

```
Installation completed. Press any key to continue _
```

The **Install Program** menu reappears on the screen when any key is pressed.

Note

If the screen type that was selected during installation must be changed after installation, you can access the **Screen Configuration** menu again by pressing **F5 Screen configuration** from the **Install Program** menu and selecting the desired screen type.

Exiting the Installation

The setup (installation) program is exited when you press **F8 EXIT** from any of the menus. Before exiting, the following message will appear on the screen if changes were made to the CONFIG.SYS file:

```
System file modified: RE-BOOT (Y/N)?
```

To start PCS properly, it is necessary to reboot the computer after installation when changes have been made to the CONFIG.SYS file.

Remove the distribution diskette from the floppy drive and press ***Y*** to reboot the computer and put the **CONFIG.SYS** file changes into immediate effect. If you do not remove the diskette from the floppy drive, the system will reboot from the floppy drive rather than the hard drive.

Caution

During the installation, a batch file called PANEL.BAT is created in the root directory of your hard disk. Never delete this file, because it is used to access PCS.

PCS Directory Structure

The following directory structure is created on your PC's hard disk during the installation:

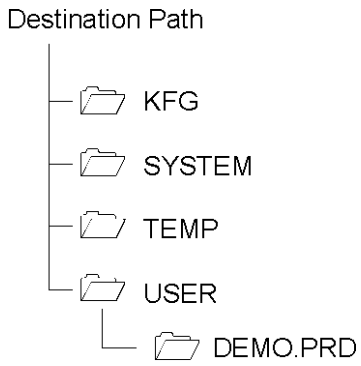


Figure 2 - 3. PCS Hard Disk Directory Structure

Table 2 - 3. PCS Hard Disk Directory Contents

Directory	Contents			
Root	PANEL.BAT			
Destination Path	DISP.CON HELP1.IDX LOGO.CON README.GR MESSAGE.TMP	HELP0.HLP INSTALL.ERR NW_P1_57.BR README.US NW_TAB.CON	HELP0.IDX LANG.CON NW_P2_57.BR TKENGL.$XT	HELP1.HLP LHA.EXE PW.EXE TKGERM.$XT
TEMP				
USER				
DEMO_150.PRD	ALARM.BIL DEMO_150.GRP DEMO_150.VBG INPUT.BIL PASSWORD.BIL	CLOCK.BIL DEMO_150.PRJ ERR_PIC.BIL KEYFUNCT.BIL	DEMO_150.ALA DEMO_150.TTA GLOBAL.GLB MAIN.BIL	DEMO_150.BR INPLOCK.BIL
DEMO_200.PRD	ALARM.BIL DEMO_200.GRP DEMO_200.VBG INPUT.BIL PASSWORD.BIL	CLOCK.BIL DEMO_200.PRJ ERR_PIC.BIL KEYFUNCT.BIL	DEMO_200.ALA DEMO_200.TTA GLOBAL.GLB MAIN.BIL	DEMO_200.BR INPLOCK.BIL
DEMO_300.PRD	ALARM.BIL DEMO_300.GRP DEMO_300.VBG INPUT.BIL PASSWORD.BIL	CLOCK.BIL DEMO_300.PRJ ERR_PIC.BIL KEYFUNCT.BIL	DEMO_300.ALA DEMO_300.TTA GLOBAL.GLB MAIN.BIL	DEMO_300.BR INPLOCK.BIL
DEMO_400.PRD	ALARM.BIL DEMO_400.GRP DEMO_400.VBG INPUT.BIL PASSWORD.BIL	CLOCK.BIL DEMO_400.PRJ ERR_PIC.BIL KEYFUNCT.BIL	DEMO_400.ALA DEMO_400.TTA GLOBAL.GLB MAIN.BIL	DEMO_400.BR INPLOCK.BIL

Table 2 - 3. - Continued

KFG	C110.@	C200.#18	C300.#18	C300LOAD.BR
	C400-GEN.#18	P150.#18	DS_SNP90.BR	GBC9030.DDF
	GBC9070.DDF	GBCFIVE.DDF	GBCSIX.DDF	GCM9030.DDF
	GENINT.DDF	GENIUS.BR	GENIUS.DDF	GENIUS.DRV
	GENIUS0.PPF	GENIUS1.PPF	GENOTHER.DDF	GESNP.DDF
	GESNP0.PPF	GESNP1.PPF	GE_SNP90.BR	GE_SNP90.DRV
	INTVAR.$XT	INT_TASK.BR	LCD16X40.KEY	
	LCDXXXXX.KEY	P150.#18	VBG_DEF.$XT	
SYSTEM	C200SYS.S1	C200SYS.S2	C300SYS.S1	C300SYS.S2

Batch File

PCS setup program creates a batch file called PANEL.BAT and stores it in the root directory of your hard disk. The contents of the batch file can be read by entering the DOS command ***TYPE*** and the file name as shown below, then pressing the ↵ (Enter) key:

```
C:\>type panel.bat↵

C:
cd C:\PW
pw
cd ..

C:\>_
```

The destination path that was entered during the installation is put into the batch file automatically by the setup program. After the installation is complete, this batch file is used to start PCS.

The batch file can always be run from the root directory. To start PCS from another directory, you must perform one of the following steps:

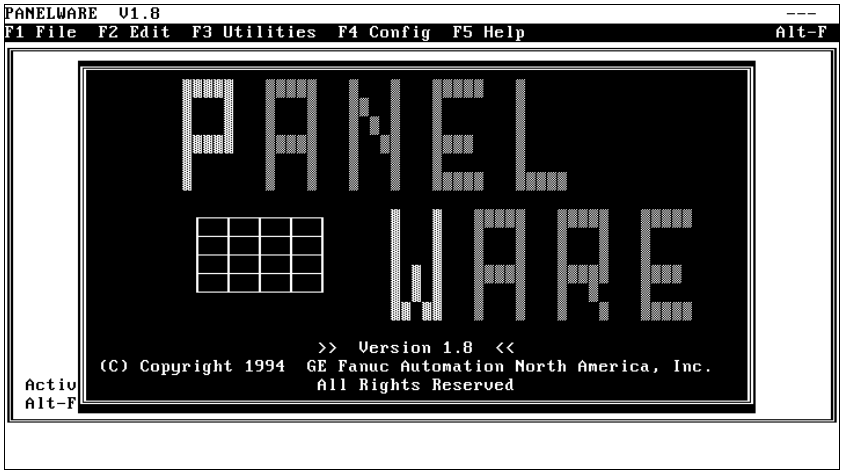
- Copy the PANEL.BAT file into a directory that is defined in the PATH statement.
- Insert the root directory into the PATH statement (normally defined in the AUTOEXEC.BAT system file).

Section 4 Starting PCS

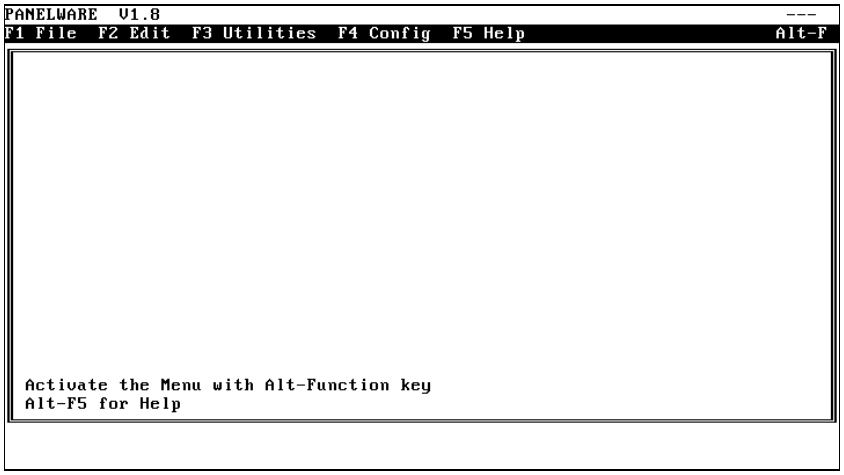
To start PCS, enter the following command at the **C:** prompt. (If you installed the software on a drive other than C, substitute the correct drive ID for **C**:)

```
C:\>panel↵
```

PCS is called up and the following copyright information is displayed on the screen:



After a delay, the main menu, with its pull-down menu line and messages, is displayed:



Section 5 *PCS Operation*

General Procedures

Pull-Down-Menus (Main Menu)

The pull-down menus of the main menu can be opened at any time using two different methods:

- By pressing the **Alt** (alternate) key simultaneously with the desired function key (**F1** to **F5**)
- By pressing the **Alt** key simultaneously with the first letter of the desired menu name

For example, the **F1 File** menu can be opened by pressing either **Alt** + **F1** or **Alt** + **F**.

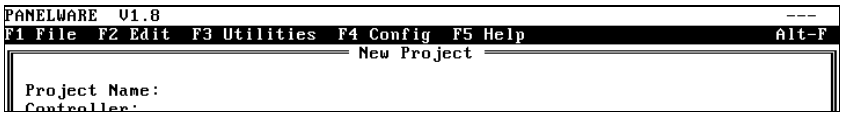
Once a menu is open, select the desired option by highlighting it using the cursor keys and pressing the ↵ (Enter) key. Any resulting window that the option calls up will be displayed in the blank window of the **Main** menu, with its associated function key line displayed below.

Key shortcuts for specific menu entries are displayed on the menu next to the associated entry.

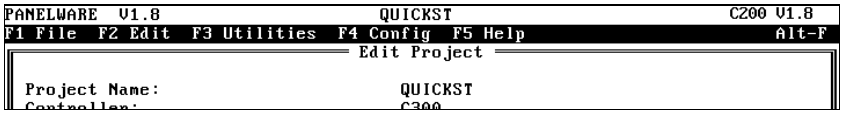
Window Name

Every window that can be displayed within the **Main** menu has a name that is centered inside the top line margin of the window. For example:

- Window name **New Project**



- Window name **Edit Project**



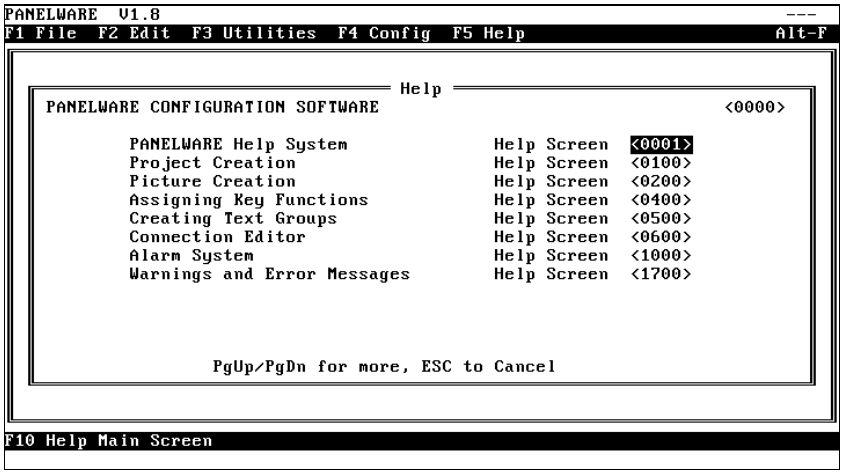
Selection Windows

If the ↵ character is displayed in the bottom line of a screen, a selection window can be opened by pressing the ↵ (Enter) key. A selection can be made from these windows by moving through the list using the cursor keys until the desired entry is highlighted, then pressing ↵ (Enter) key.

Context-Sensitive Help Screens

While using PCS, context-sensitive **Help** screens can be accessed at any time. If you press **Alt** + **F5** or **Alt** + **H** while working in PCS environment, a **Help** screen that corresponds to the current PCS function/activity is displayed. Using the **PgUp** or **PgDn** keys, you can flip forward or backward through the help screens. If all of the help text in a Help screen can not be seen, the Cursor Up/Down keys can be used to scroll through to the end.

On some Help screens, related (cross-referenced) help is indicated by the presence of one or more Help screen numbers (for example., Help Screen <0000>). The first of these numbers will be highlighted. The **Tab** and backtab (**Shift** + **Tab**) keys can be used to highlight a different screen number. When you press ↵ (Enter) key, that highlighted Help screen will be displayed. The **Alt** + **F1** key returns you to the previous Help screen level. Pressing **F10** returns you to the first Help screen <0000> at any time. The following example shows a typical Help screen:



Press **Esc** to exit any Help screen.

Screen Elements

The PCS display contains some basic elements that are displayed at all times:

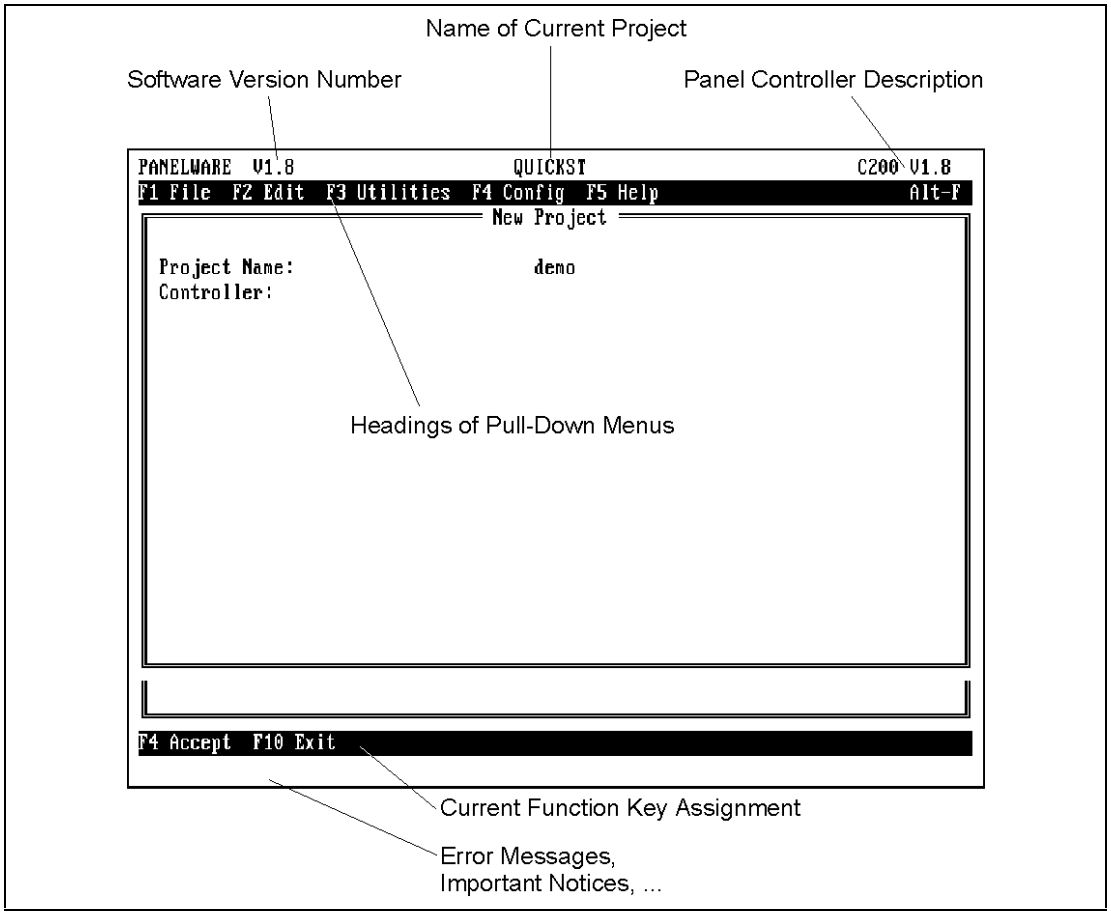


Figure 2 - 4. Basic PCS Screen Elements

- In the top line (title line) of the screen, the software version number is displayed at the left, the name of the current project is in the middle, and the Panel Controller description and operating system version) is on the right.
- The next line down (menu line) contains the headings of the pull-down menus.
- The second to the last line (function line) of the screen displays the current function key assignments.
- The bottom line (message line) contains any error messages, important notices that relate to the project, or the ↵ character to indicate that a selection window can be accessed.

Symbolic Variables

A symbolic variable name is entered for all Tagname and Address prompts. You must assign a PLC address for the variable using the connection list editor (see chapter 9).

Variable names can be a maximum of 10 characters long. A two-character connection identification (ID) can be added, and must be separated from the variable name with a / character. This ID indicates the connection to a specific PLC. If no ID is entered, the default ID **/DD** is used automatically. For example:

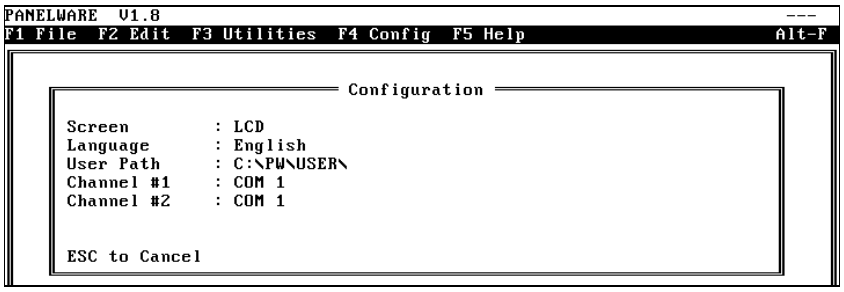
```
PLC-address:   VARIABLE1/M1      -> ID = M1
PLC-address:   VARIABLE1         -> ID = DD
```

The connection ID must be defined before entering the PLC address for the connection.

Displaying and Changing the Configuration

From the **F4 Config** pull-down menu, select the **Show Config.** option to display the current PCS configuration.

The current configuration of PCS is presented in the **Configuration** window:



The **Configuration** window lists the following information:

- **Screen:** The screen type (color, mono, LCD, plasma).
- **Language:** The current selected language.
- **User Path:** The current user path.
- **Channel #1**: Reserved for future development.
- **Channel #2:** The project is loaded via channel #2 to the modular PANELWARE Panel Controller. This entry indicates which PC interface must be connected to the Panel Controller.

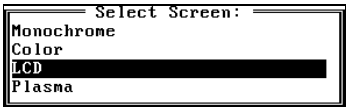
  If necessary, the operating system can also be downloaded through channel #2 to the Panel Controller.

  You are allowed to configure channels #1 and #2 to the same interface. The channel selection is performed automatically when the project is downloaded.

The following sections explain how to change these configuration settings.

Screen Selection

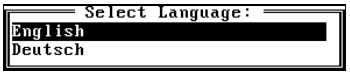
You can select the screen setting that corresponds to your PC monitor by selecting the **Screen** option from the **F4 Config** pull-down menu. The **Select Screen:** window is displayed.



The option that is currently selected will be displayed inversely. To move to another option, use the cursor keys. Once the desired screen driver is selected, install it by pressing the ↵ (Enter) key.

Language Selection

You can select the language (English or German/Deutsch) that PCS uses to display menus, messages, etc. by selecting the **Language** option from the **F4 Config** pull-down menu. The **Select Language:** window is displayed.

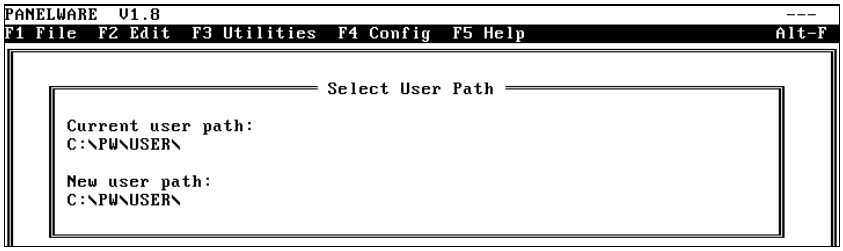


The option that is currently selected will be highlighted. To move to another option, use the cursor keys. Once the desired language is highlighted, select it by pressing ↵ (Enter) key.

The language selection has no other effect on your project.

User Path Entry

You can enter a new user path by selecting the **User Path** option from the **F4 Config** pull-down menu. The **Select User Path** window is displayed.



Enter a new user path destination and press the ↵ (Enter) key.

Note

Any user path you define must already exist. This function does not create a new user path directory for you. For more information on directory structures, and making and using directories and files, please consult your DOS documentation.

PCS creates a new subdirectory under the user path for each new project. This function is useful if you want to separate your work into several project groups.

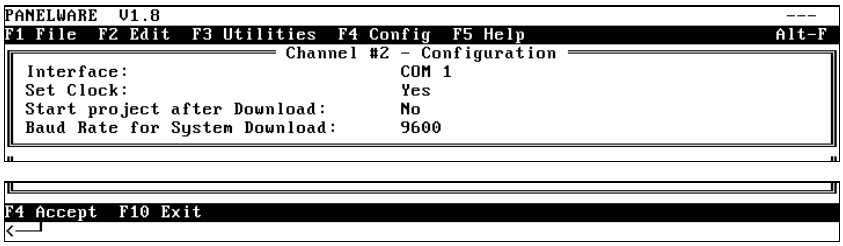
Caution

Apply the User Path function carefully and only if you are familiar with the directory structure of the DOS operating system.

Channel #2 Interface Selection

PCS downloads each project via communications channel #2 to the modular PANELWARE Panel Controller. You can set the desired interface, clock, and baud rate settings for channel #2.

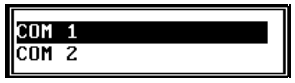
Select the **Channel #2** option from the **F4 Config** pull-down menu. The **Channel #2 - Select Interface** window is displayed.



The following settings can be changed by highlighting an entry and pressing ↵ (Enter) key after each selection is highlighted.

- **Interface:**

  In the selection window that is displayed when you press the ↵ (Enter) key, you can choose whether you want to use COM1 or COM2 for your PC interface.



- **Set Clock:**

  Enter ***Yes*** in this line if the real-time clock on the Panel Controller should be synchronized with the PC's clock the project download. (The default is **No**.)

- **Start project after Download:**

  Enter ***Yes*** in this line if the project should be started immediately after the download is finished. (The default is ***No***.) When enabled, PCS can interrupt a running Panel controller, download a new project to it and restart the Panel Controller without requiring you to change to mode switch or depress the reset button. The mode switch is left in position 7 (Teach Mode) during this process.

  Note

  You should not set this parameter to ***Yes*** if:

  a) a communication protocol is enabled for interface IF0, or

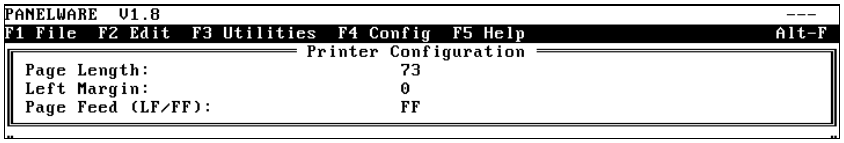
  b) the alarm system printer is enabled for interface IF0 (see "General Printer Parameters" if alarm system is enabled)

- **Baud Rate for System Download**:

  Before downloading the operating system to the Panel Controller, the transfer rate must be defined. The maximum baud rate depends on the serial port hardware of the PC used. Most 386 and 486-based PCs have serial ports capable of at least 19200 KBaud. Higher baud rate settings result in quicker download times from the PC to the Panel. If the project or operating system can not be sent at the selected baud rate, try using a lower baud rate. The Panel Controller adjusts to the set baud rate automatically.

Printer Settings

You can change printer parameters by selecting the **Print** option from the **F4 Config** pull-down menu. The **Printer Configuration** window is displayed.

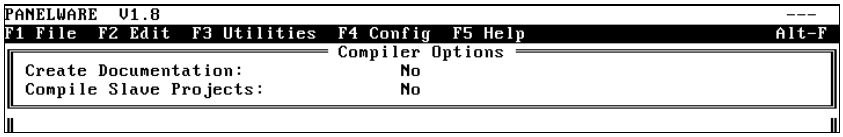


The following parameters for the printer printout file can be set in this window by typing a new valid entry and pressing the ↵ (Enter) key.

- **Page Length:** Enter the number of lines your printer can print on each page. (default = 73 lines, maximum = 99 lines)
- **Left Margin:** Enter the number of spaces that should be used as a left margin. (default = 0 spaces, maximum = 8 spaces)
- **Page Feed (LF/FF):** Set the page feed for either control character **FF** (Form Feed) or the desired number of **LF**s (Line Feed). The user's manual for your printer contains information about the most important control characters.

Compiler Options

You can define the compiler options by selecting the **Compiler Opts.** option from the **Config** pull-down menu:



- **Create Documentation**

  You can select whether the compiler creates documentation about the project. If you choose ***YES***, the compiler creates a DOS text file called **PROJECT_NAME.PRT** in the current project directory. This file can be edited or printed using any text editor.

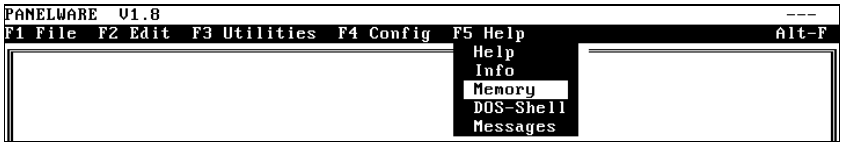
  The format of the .PRT file corresponds to the printer settings parameters (see "Printer Settings").

- **Compile Slave Projects**

  Slave projects are not currently supported. This parameter should always be set to the default value of ***NO***.

Free Memory

To view the amount of PC memory that is currently available, select the **Memory** option from the **F5 Help** pull-down menu.



The **Memory** window that is displayed shows the memory that is currently available on your PC. This information can be helpful if you have a memory management problem with your PC.

Note

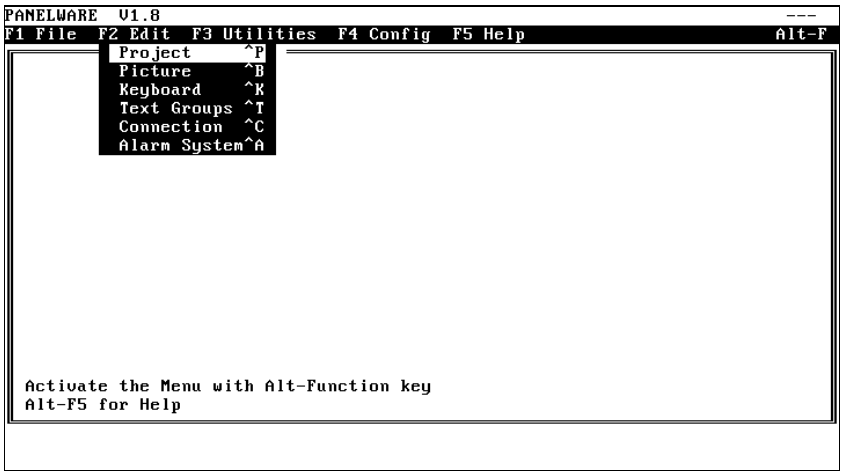
For more information about memory, memory types and requirements, refer to the MS-DOS documentation.

Creating and Editing Projects

Before you can edit a project, either a new project must be created or an existing project must be opened. If a project has been created or opened, the name of the project is displayed in the center of the title line on the screen as shown below (project PNAME):

Chapter 10 describes how to plan a project and chapter 4 describes how to use the project editor

After a project has been created, you can edit it using the various PCS edit functions. The basic elements of a project, all of which can be edited, are shown in the **Edit** pull-down menu in the PCS main menu:



Edit Modes

Using the functions in the **Edit** pull-down menu and the PCS main menu, you can select the following edit modes:

Table 2 - 4. Edit Modes

Edit Mode	Description
Project	Allows editing of the project definition, which includes the number and types of Keyblock modules. Binding the pictures into the project is a project definition function. The linking structure of all pictures that are used in the project must also be defined. This structure determines the sequence of picture changes on the Panel display, and the key function that performs the picture change.
Picture	Allows new pictures to be created and existing pictures to be edited. In these pictures, mask text, lines, input fields, output fields, LED functions, and key functions can be inserted.
Keyboard	Allows every key on a Panel to be user defined and edited. Special functions or ASCII characters can be assigned to these keys.
Text Group	Allows text groups (a collection of texts that correspond to a numerical sequence) to be created and edited. The output can also depend on a value from the PLC.
Connections	During the creation of a Panel project, symbolic names are allocated to PLC addresses. The connection editor allows you to assign variables to fixed addresses in the PLC.
Alarm System	If the Alarm System is enabled for the project, the Panel receives a message when an alarm is executed from the PLC. This message can be displayed on the Panel display and output to a printer. The alarm system editor allows you to create and edit the alarm messages.

Section 6 Environment Variables

Two DOS environment variables must be modified if PCS is installed on a network server.

- Temporary files location:

  A drive and/or directory for storing all temporary files can be defined using the **PW$VIRT** variable. If this variable is not set before PCS is started, or if a directory that does not exist is defined, all temporary files will be stored in the PCS directory (the destination path defined during the installation).

  Make sure that the drive on which the temporary files will be stored has at least 1 MB free space before starting PCS.

- Configuration data location:

  A directory in which PCS searches for and saves configuration data can be defined using the variable **PW$NET**. The following information can be saved:

  - Screen type (mono, color, LCD, plasma)
  - Language (English, German)
  - User path
  - Channel #1 and #2
  - Compiler options
  - Printer configuration

  This variable is used if PCS is saved on a network and used by more than one person on different stations.

In this case, both environment variables refer to the directories of the local work station. If directories on the network are used, you should make sure that they are not used by any other PCS user.

These variables can either be set in the AUTOEXEC.BAT system file or in the PANEL.BAT batch file as shown in the following examples:

AUTOEXEC.BAT: Insert the following commands:

```
set PW$VIRT=c:\temp
set PW$NET=c:\user
```

PANEL.BAT: Insert the following commands:

```
set PW$NET=c:\user
set PW$VIRT=c:\temp
C:
cd C:\PW
pw
cd ..
set PW$NET=
set PW$VIRT=
```

Chapter 3 Menus

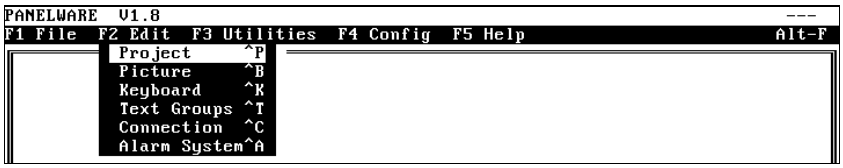
This chapter provides an overview of the PCS menu structure. It includes the following information:

- The Menu Bar 3-2
- File Menu 3-3
- Edit Menu 3-4
- Utilities Menu 3-5
- Config Menu 3-6
- Help Menu 3-7
- Keyboard Shortcuts (Hot Keys) 3-8

The Menu Bar

After PCS has been started, the menu bar shown below is displayed:

The menu bar consists of five labeled pull-down menus. These menus can be activated by pressing **Alt** and the corresponding function key simultaneously or by pressing **Alt** and the first character of the respective menu name. To activate the **Edit** menu for example, either use key combination **Alt** + **F2** or **Alt** + **E**:



Some functions can also be activated directly using a **Ctrl** + ***key*** combination. These combinations, when available, are shown within the pull-down menu to the right of the function name (the ^ character indicates the **Ctrl** key).

The following menus can be opened from the menu bar, and are discussed in detail in the following sections:

F1 File

F2 Edit

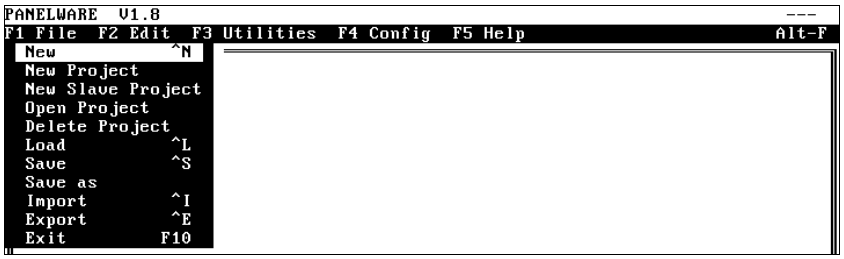
F3 Utilities

F4 Config

F5 Help

File Menu

To open the **File** pull-down menu, press **Alt** + **F1** or **Alt** + **F**:



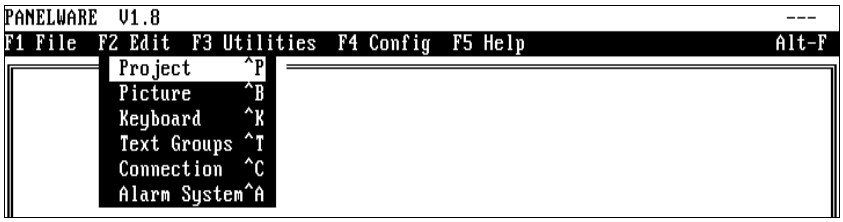
The following table provides an overview of the **File** menu functions.

Table 3 - 1. File Menu Functions

Functions	Description
New	Allows creation of new pictures, key assignments, text groups, etc.
New Project	Allows creation of a new project.
New Slave Project	This feature is not currently supported.
Open Project	Opens an existing project.
Delete Project	Deletes an entire project, including all project data, pictures, etc. Use this function with caution.
Load	Loads projects, pictures, text groups, etc. If you do not know the exact name of the file you want to load, press the ↵ (Enter) key to display a selection list of the valid file names. The desired file name can be selected from this list.
Save	Saves pictures, text groups, etc.
Save as	Saves pictures, text groups, etc. (but not projects) under a new path and/or name. This function can also be used for copying pictures and saving them under another name.
Import	Imports projects, pictures or VATs.
Export	Exports VATs
Exit	Exits the PCS. This function can be selected via the menu or by pressing **F10**.

Edit Menu

To open the **Edit** pull-down menu, press **Alt** + **F2** or **Alt** + **E**:



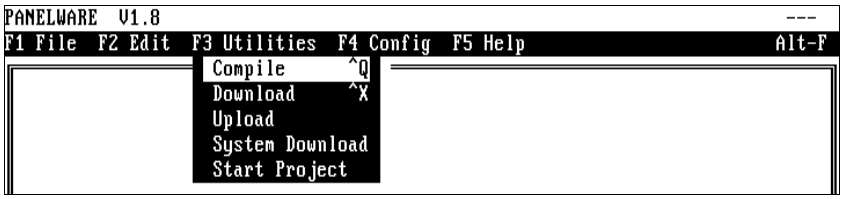
The following table provides an overview of the **Edit** menu functions.

Table 3 - 2. Edit Menu Functions

Functions	Description
Project	Allows existing projects to be edited. The name of the current project is always displayed in the middle of the top line (Title line) on the screen. Projects are always saved automatically upon exiting the editor. When you load a project for which data is missing, the message **Incomplete Project Definition** will appear in the error message line.
Picture	Allows pictures to be created and edited.
Keyboard	Allows the functions of keys to be assigned.
Text Groups	Allows text groups to be defined for the text output fields.
Connection	Allows symbolic variable names to be assigned to actual PLC addresses.
Alarm System	Allows alarms to be defined.

Utilities Menu

To open the **Utilities** pull-down menu, press **Alt** + **F3** or **Alt** + **U**:



The following table provides an overview of the **Utilities** menu functions.

Table 3 - 3. Utilities Menu Functions

Functions	Description
Compile	Translates your project for Panel use.
Download	Downloads a compiled project to the operator Panel.
Upload	Uploads a project from the Panel.
System Download	Downloads a new operating system to the Panel Controller. The Panel must be reset after placeing the mode swith in position 6, prior to initiating the sytem download.
Start Project	A project can be started for testing purposes if the Panel is in Teach Mode.

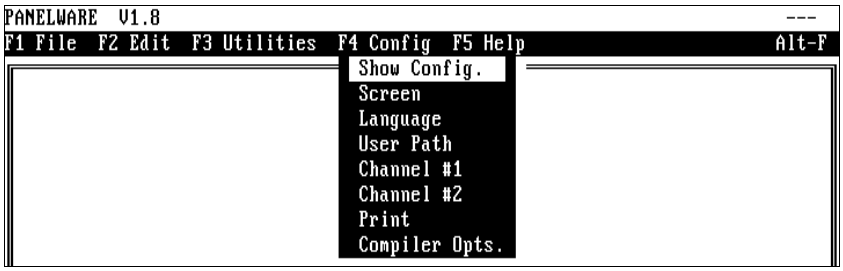
To be able to upload from the Panel, you must create a dummy project (a project without pictures, etc.) using the hardware parameters for your Panel. The name of the current project should be displayed in the middle of the title bar at the top of the screen.

Note

Do not use the upload function if a project other than the dummy one is selected. The uploaded project can be downloaded to another Panel. However, the pictures and other parameters can not be “decompiled”, i.e., you will be unable to edit the project.

Config Menu

To open the **Config** pull-down menu, press **Alt** + **F4** or **Alt** + **C**:



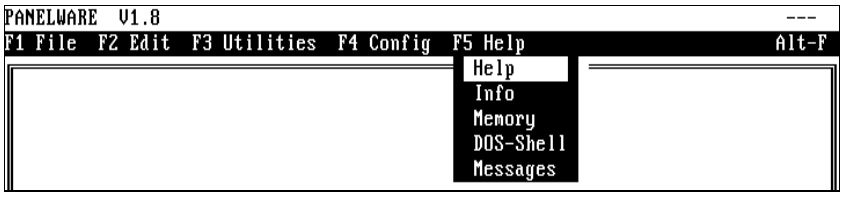
The following table provides an overview of the **Config** menu functions.

Table 3 - 4. Config Menu Functions

Functions	Description
Show Config.	Displays the current configuration settings of the PCS.
Screen	Defines the type of display used on your PC.
Language	Defines the language to be used with the software.
User Path	Defines the user path.
Channel #1	Reserved for future development.
Channel #2	Defines the interface to be used for transferring projects (or the operating system) to a PANELWARE Panel Controller.
Print	Defines the print format of the PCS.
Compiler Opts.	Sets the options available for the compiler.

Help Menu

To open the **Help** pull-down menu, press **Alt** + **F5** or **Alt** + **H**:



The following table provides an overview of the **Help** menu functions.

Table 3 - 5. Help Menu Functions

Functions	Description
Help	Activates the on-line help system for the current activity.
Info	Displays information about the PCS.
Memory	Displays the amount of available memory on your PC.
DOS-Shell	Calls the DOS shell. To return to the PCS, type ***exit*** at the DOS prompt.
Messages	Displays the last messages (errors, warnings etc.)

Keyboard Shortcuts (Hot Keys)

Some key combinations are programmed to provide quick access to specific functions. Instead of using a pulldown menu to activate a function, simply press the desired key combination. Some of the hot keys perform different functions depending on the Edit mode that you are in.

If you accidentally press a key combination that activates a function, simply press **Esc** to leave the function.

Table 3 - 6. Hot Key Assignments and Functions

Key	Edit Modes	Function
Alt + **F5** **Alt** + **H**	Main Menu Others	Opens the Help pull-down menu. Displays context-sensitive help about the current operation.
Ctrl + **A**	Main Menu	Creates and edits the alarm system.
Ctrl + **B**	Main Menu	Creates and modifies pictures.
Ctrl + **C**	Main Menu	Edits the connection list and inserts connections.
Ctrl + **E**	Variable Assignment	Exports variable assignments.
Ctrl + **I**	Project Picture Variable Assignment	Imports a whole project. Imports a picture or a part of a picture. Imports variable assignments.
Ctrl + **K**	Main Menu	Edits the key assignments of the keyblock modules.
Ctrl + **L**	Project Picture Text Group	Loads a project. Loads a picture. Loads a text group.
Ctrl + **N**	Picture Keyboard Text Group	Edits a new picture. An existing picture is saved or deleted only after user acknowledgment. Deletes the current key assignment and reverts to the default assignment. Creates a new text group. An existing text group is saved or deleted only after user acknowledgment.
Ctrl + **P**	Main Menu	Edits a project.
Ctrl + **Q**	Main Menu	Compiles a project.
Ctrl + **S**	Picture Text Group	Saves the current picture. Saves the current text group.
Ctrl + **T**	Main Menu	Creates and modifies text groups.
Ctrl + **X**	Main Menu	Downloads a compiled project.
Ctrl + ↑ **Ctrl** + ↓ **Ctrl** + ← **Ctrl** + →	Picture	Moves a picture element.
F10	Main Menu	Exits PCS.

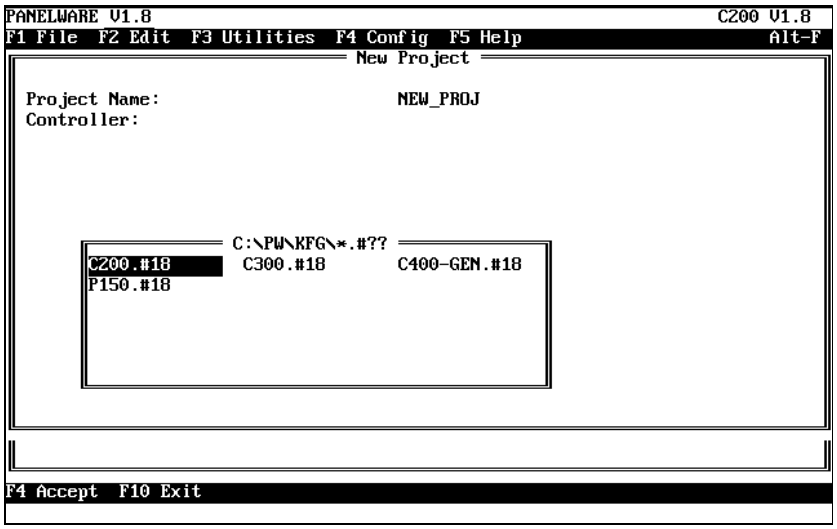
Chapter 4 Project Editor

This chapter describes the operation and functionality of the project editor. It includes the following information:

- Starting a New Project 4-2
- Opening a Project 4-5
- Loading a Project 4-6
- Version Control 4-7
- Editing a Project 4-9
  - Function Key Overview 4-9
  - **F1** - Project Definition 4-10
  - **F2** - Bind Picture 4-15
  - **F3** - Picture List 4-18
  - **F4** - Define Global Init Text 4-19
- Importing a Project 4-20
  - General Information 4-20
  - Example 4-21

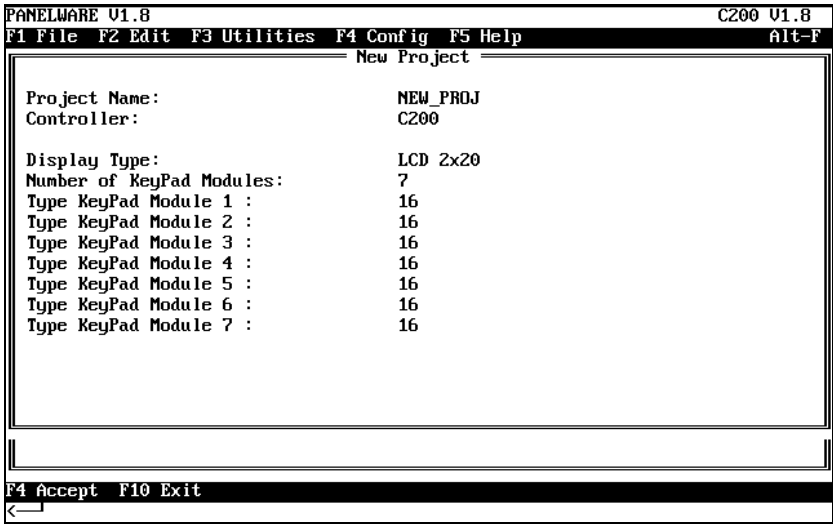
Starting a New Project

A new project can be started by selecting the **New Project** function from the **File** menu. In the **New Project** window that appears, a name for the new project must be entered and the type of Controller used must be selected from the list that is displayed when you press the ↵ (Enter) key:

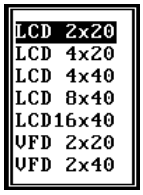


The base of the filename represents the Controller type (for example, C200). The extension of the Panel Controller model number represents the operating system version number (for example, **#18** = version 1.8). The operating system installed in the Panel Controller must be of a version equal to or greater than the selected version to download a compiled project to it.

If you have chosen a modular PANELWARE Panel Controller, you must define the type of display, and the number and types of Keyblocks in this window.



The display and Keyblock modules are selected via selection windows. When the cursor is in the **Display Type** line, the following selection window can be opened by pressing ↵:

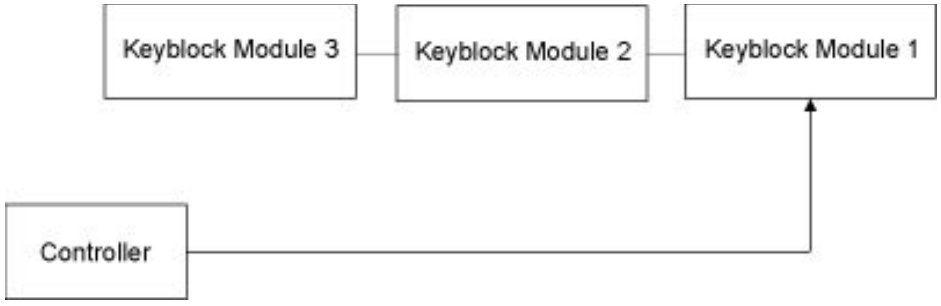


Note

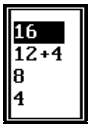
Make sure that you have defined the Controller and display types correctly before proceeding. The only way to change them at a later time is to create a new project file and import the project into the new file. (The number of Keyblocks can be changed at any time.)

After you have selected a display type, the cursor moves to the **Number of Keyblock Modules** line. Enter the number (***1 . . . 7***) of Keyblock modules that will be used and press the ↵ key to confirm your entry.

The individual Keyblock modules must be defined in the order that they are daisy chained from the Controller. As shown in the figure below, the one closest to the Controller is Keyblock Module 1 and is defined first in the **New Project** window.



The cursor should be in the **Type Keyblock Module 1** line. Press the ↵ key to open the selection window that lists Keyblock modules.



This list is explained in the table below:

Entries in the Selection Window	Keyblock Modules
16	16 keys/16 LEDs
12 + 4	Numeric Keyblock module
8	8 keys/8 LEDs
4	4 keys/4 LEDs

Use the cursor key to select the first Keyblock module and press ↵ to confirm your selection and move the cursor to the next line. Define a type for each Keyblock that will be used in your project. (You do not have to define all seven Keyblocks, just the number that you specified in the **Number of Keyblock Modules** line.)

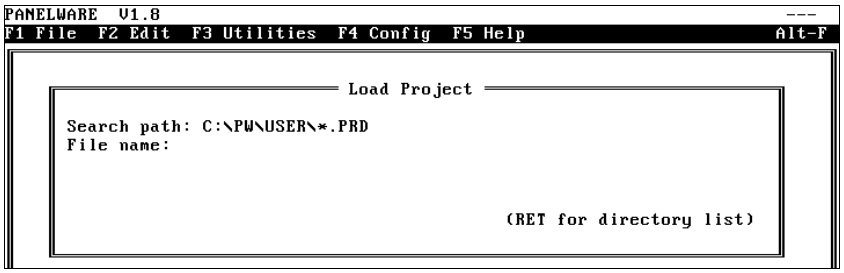
Press **F4** to accept and save the new project. To exit the window without saving the new project, press **Esc** or **F10**. When you save a new project, a directory is created in the user path under the optional name **<Project name>.PRD**; all project-specific data is saved to this location.

Note

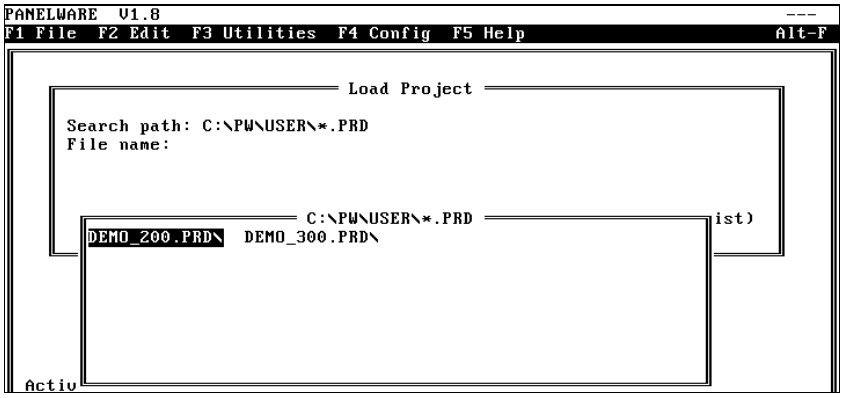
Only *standard* Keyblock modules should be specified here; *special* Keyblock modules are not counted in the Keyblock total, nor do they appear in the Keyblock selection window. See chapter 4 in the *PANELWARE Hardware Installation User's Manual* (GFK-0848) for a listing of all available standard and special Keyblock modules.

Opening a Project

To open an existing project, access the **Open Project** function of the **File** menu. The name of the project can be entered in the **Load Project** window that is displayed:

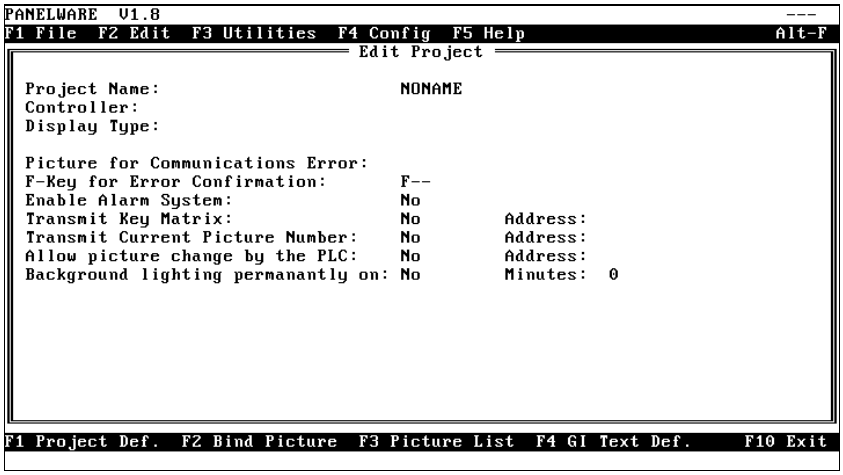


If the name of the project is unknown, you can open a window containing the names of all projects by pressing ↵. Use the cursor keys to highlight the desired project name, then press ↵ to load that project. An example window is shown below:

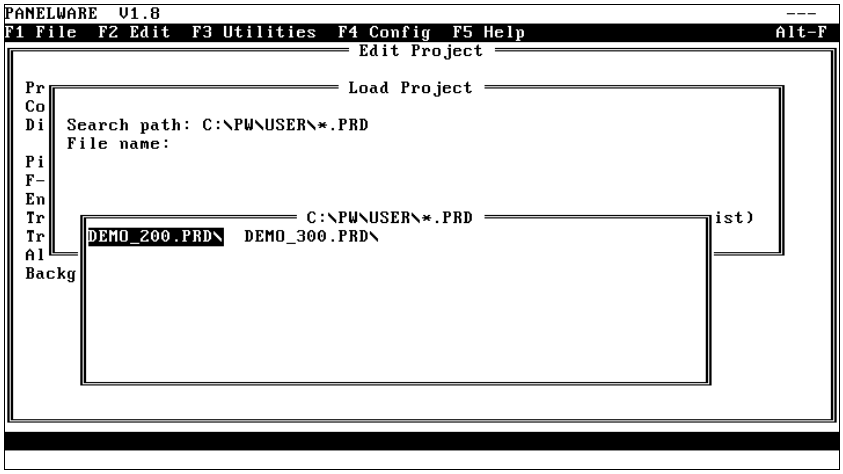


Loading a Project

To open an existing project using the **Load** function of the **File** menu, the project editor must be accessed first. If a project has been opened or loaded previously, that project is displayed in the **Edit Project** window. Otherwise, the **Edit Project** window is displayed after you access the project editor by pressing **Ctrl** + **P** or selecting the **Project** function of the **Edit** menu:



Access the **Load** function or press **Ctrl** + **L** to display a window in which the name of the project to be opened can be entered (press ↵ to display a list of project names):

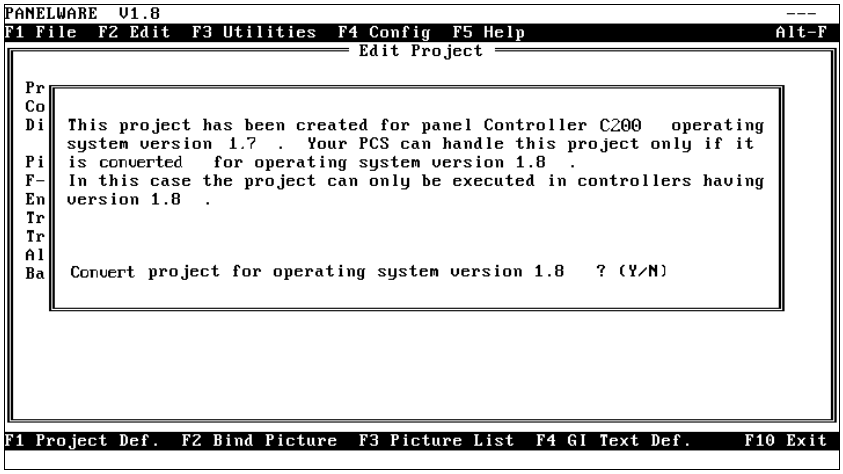


Version Control

If you try to open or load a project that was created by a different version of PCS, a message will be displayed. If one of the following messages is displayed, you should determine whether you have different versions of PCS on your Personal Computer. Remove the old versions of PCS and make sure that you are using the correct one.

Older Versions

If you tried to load a project that was created by an older version of PCS for an older version of the Panel Controller operating system, a message similar to the following will be displayed:



If you open this project, it will be converted for version 1.8. After the project has been converted for version 1.8, it can no longer be executed using an older version of PCS. The project must be recompiled before it can be executed using version 1.8.

Note

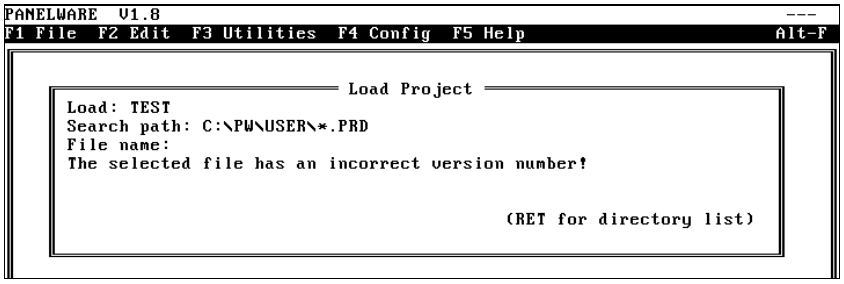
A project that has been converted to 1.8 can only be executed in PANELWARE Controllers that have operating system version 1.8 or higher.

If you do not convert the project, you cannot modify it, but you can download and execute it in Controllers that have older operating systems. Please note that the Controller operating system must be at least the version for which the project has been created.

You can update the operating system of older PANELWARE Controllers using the **System Download** function in the **Utilities** menu at any time.

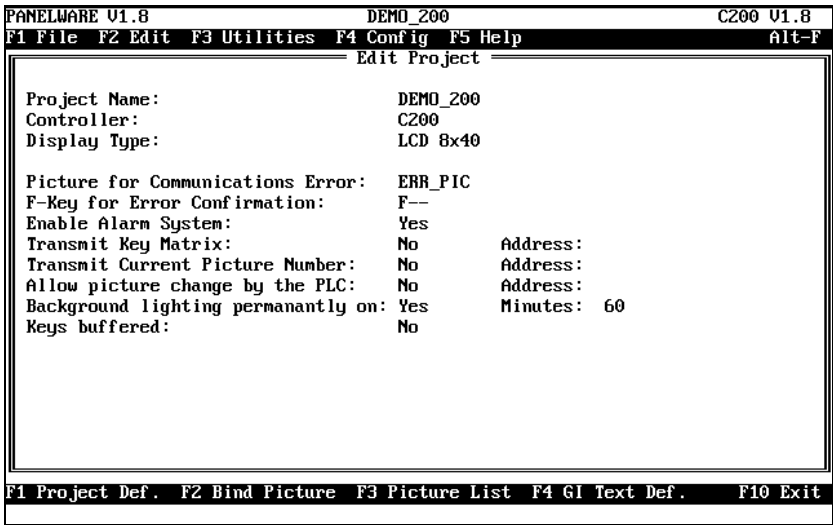
Newer Versions

If you try to open a project that was created using a newer version of PCS, the following screen will appear. You can only open this project using the PCS version with which it was created:



Editing a Project

After a project is loaded or opened, an **Edit Project** window similar to the one below is displayed:



The function key line at the bottom of the screen changes to include the edit functions. The following sections outline these functions and their uses.

Function Key Overview

F1 Project Def. ..... Edits the project definition.

F2 Bind Picture ..... Binds a picture to a project.

F3 Picture List ..... Calls the picture directory (Picture List). All pictures bound to a project are displayed.

F4 GI Text Def. ..... Defines Global Init Text.

F10 Exit ..... Closes the **Edit Project** window and saves all changes automatically. The Main menu is redisplayed.

↵ ..... Pressing the ↵ (Enter) key accepts changes that you have made to a line in the **Edit Project** window and moves the cursor to the next line.

F1 - Project Definition

The most important data for a project definition can be entered or edited using the **Edit Project** window and the **Project Definition** function. When you press **F1**, the cursor is placed initially in the **Picture for Communications Error** line. The cursor can be moved to the other lines using the cursor control keys, allowing the following settings to be made:

- **Picture for Communications Error**

  Enter the name of the picture that is to be displayed when communication with the PLC is interrupted. This picture can contain a short message and the cause of the error (see Appendix D).

  This name must be defined for every project and this picture must be bound in every project.

- **F-Key for Error Confirmation**

  If required, enter the number of the function key that is used to acknowledge the error picture. This is useful for networking applications where multiple connections for PLC communications have been defined. If a connection is lost, pressing this key with the error picture displayed will resume execution of the project for all other connections. Data fields specified for the lost connection will be displayed filled with the "–" character.

- **Enable Alarm System:**

  Enter ***YES*** here if you are going to use the alarm system, and ***NO*** if the alarm system is not required for your project (see chapter 11).

- **Transmit Key Matrix:**

  Enter ***YES*** here and specify a tagname only if the key matrix should be transmitted to the PLC for its processing.

If this function is selected, the key matrix of all Keyblock modules will be transmitted every time the status of a single key is changed (whenever you press or release a key). The transmitted key matrix consists of 8 words; the specified tagname (variable) points to the first word of the 8-word structure.

Enter ***NO*** here if this function is not recognized.

Table 4 - 1. Key Matrix Structure

Assigned PLC Address	PLC Address*	Keyblock**
Tagname	Tagname	Keyblock #1
	Tagname + 1 Word	Keyblock #2
	Tagname + 2 Words	Keyblock #3
	Tagname + 3 Words	Keyblock #4
	Tagname + 4 Words	Keyblock #5
	Tagname + 5 Words	Keyblock #6
	Tagname + 6 Words	Keyblock #7
	Tagname + 7 Words	Reserved (value = 0)

* The Panel controls this register group — it should not be written to by the PCS program or PLC logic.

** If there are only four Keyblock modules connected to the Panel Controller, the words Tagname + 4, Tagname + 5 and Tagname + 6 will contain the value 0.

The status of a key is represented by the corresponding bit in the key matrix, as shown in Table 4-2:

Table 4 - 2. Key Matrix Bits

Keyblock - 16 Keys

Bit 0	Bit 1	Bit 2	Bit 3
Bit 4	Bit 5	Bit 6	Bit 7
Bit 8	Bit 9	Bit 10	Bit 11
Bit 12	Bit 13	Bit 14	Bit 15

Keyblock - 8 Keys

Bit 0	Bit 1	Bit 2	Bit 3
Bit 4	Bit 5	Bit 6	Bit 7
Bit 8	Bit 9	Bit 10	Bit 11
Bit 12	Bit 13	Bit 14	Bit 15

Numeric Keyblock

Bit 0	Bit 1	Bit 2	Bit 3
Bit 4	Bit 5	Bit 6	Bit 7
Bit 8	Bit 9	Bit 10	Bit 11
Bit 12	Bit 13	Bit 14	Bit 15

Keyblock - 4 Keys

Bit 0	Bit 1	Bit 2	Bit 3
Bit 4	Bit 5	Bit 6	Bit 7
Bit 8	Bit 9	Bit 10	Bit 11
Bit 12	Bit 13	Bit 14	Bit 15

Note

The gray shaded bits are set to 0 in the key matrix because there are no associated keys.

Table 4 - 3. Key Bit Descriptions

Keyblock #x															
Bit Nr.:	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	High Byte								Low Byte							

- **Transmit Current Picture Number**:

  Enter ***Yes*** here and specify a tagname if you want to transmit the number of the current picture to the PLC. One byte of storage memory in the PLC will be required. This feature tells the program which picture is being displayed.

  Enter ***No*** here if this function is not required.

- **Allow picture change by the PLC:**

  Enter ***Yes*** here and specify a tagname if you would like the picture to be changed by the PLC.

  This feature allows the process to update the screen. The PLC must write the number of the picture to be displayed to this address to execute the change. One byte of storage memory in the PLC will be required.

  If this function is enabled, the Panel will continuously monitor the specified address for a picture number. Upon reading a picture number, the Panel will change the display to the specified picture (unless the current picture has been configured to block picture change requests; see the discussion concerning **F2 Change Picture** later in this chapter for details) and then write a value of 255 (=idle state) back to the picture change address.

  Invalid picture numbers will be ignored and overwritten with a value of 255.

  Important: Because of this feedback from the Panel, you should ensure that your PLC logic does not continuously write a value to the picture change address. A picture number should be written to the picture change address **only** when a change to a new picture is required. The picture change address must return to the idle state. Otherwise, you won't be able to leave a picture, because the ladder logic will continue to call it.

  Enter ***No*** here if this function is not required.

- **Background lighting permanently on:**

  Enter ***Yes*** here if the display's background lighting should be on all the time.

  Every time that a key is pressed or a picture changes, the background lighting is automatically turned on and the time is restarted. This function has no effect on VFD displays, as VFD displays do not use background lighting.

  Warning

  When the background lighting is turned off, it is difficult to read what is on the display. Exercise caution in pressing keys in this mode because all the keys are still active and will invoke the associated action.

  Enter ***No*** here and define a shut-off time if the background lighting should automatically switch off after a specified period of inactivity.

  Note

  Turning off the background lighting during periods of inactivity will increase the expected life of the display.

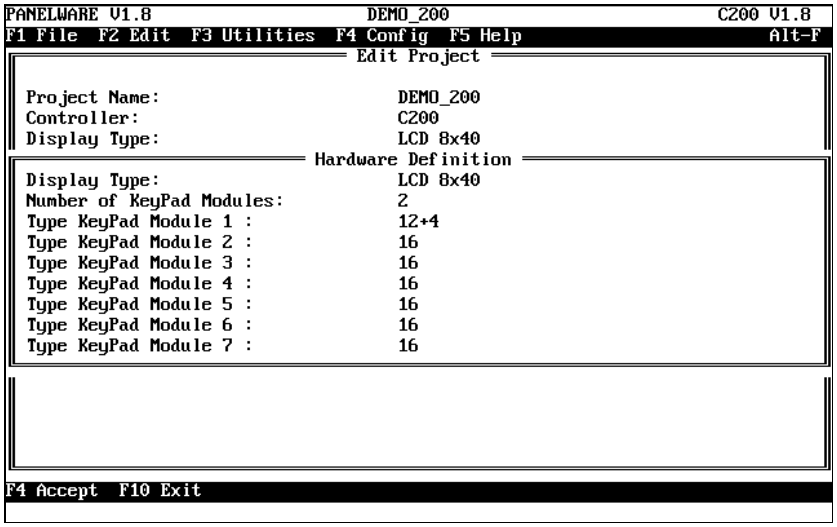
- **Keys Buffered:**

  Enter ***Yes*** here if key presses should be buffered during the time that it takes for the screen build up. After the picture is complete on the display, the key presses are processed. (This was always the case in versions previous to version 1.8, and could not be deselected).

  If ***No*** is entered here, any key presses made between the time that the picture starts to build on the screen and the time that the picture finishes building up are ignored. The first key press after the picture is completely built up on the display is processed as normal.

When you have pressed **F1 Project Def**., the assignments of the function keys in the bottom line change as follows:

F1 Hardware Definition The number and types of Keyblock modules can be changed in the selection window that is displayed. The **Display Type** line is informational only and can not be changed.



Note

When using fewer than seven Keyblock modules, you can ignore the selection types for the unused (higher-numbered) Keyblock modules. Keyblock module 1 is connected directly to the Panel Controller. Subsequent Keyblock modules are numbered sequentially in the order they are connected.

The changes to the hardware definition are accomplished the same as they are for creating a new project (see the “New Project” section in this chapter).

F4 Accept ..... Saves changes to the project definition and changes the function line.

F5 Pictures / **F5 Connection List**

Depending on the position of the cursor, **F5** has either no function or one of the functions shown here.

If the cursor is in the **Picture for Communications Error** line, pressing **F5 Pictures** displays a selection window containing all pictures created for the project. If the cursor is in one of the **Address** positions, pressing **F5 Connection List** calls the connection list, in which the desired connection and a tagname (variable) can be selected.

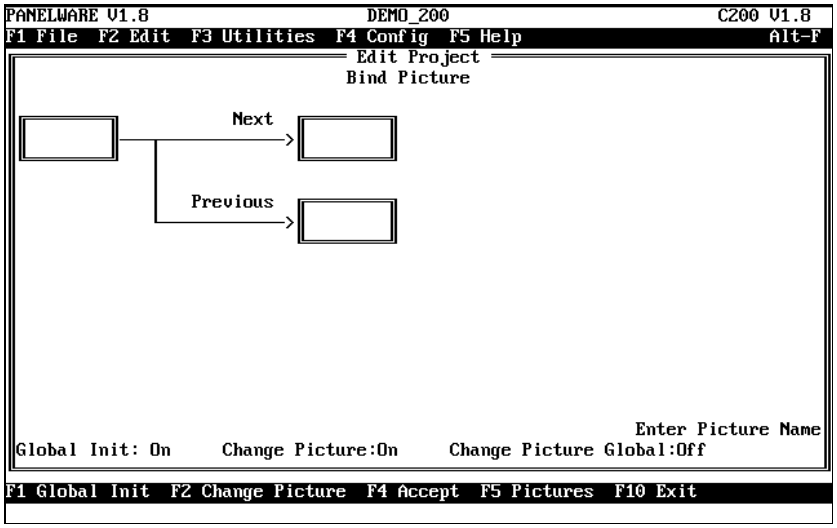
F10 Exit / **Esc** ..... Discards the changes to the project definition and changes the function line.

After pressing **F4** to accept your changes, you must press **F10** to return to the Main menu.

F2 - Bind Picture

Your picture branching structure is displayed graphically when you press **F2** to access the **Bind Picture** window.

The cursor appears in the box on the left-hand border, which displays the picture that is to be bound into the project. The other boxes will display those pictures to which the picture to be bound branches.



Enter the name of the existing picture you want to bind into the project in the box on the left.

To the right of this entry, up to eight other branches (neighboring pictures) can be defined.

Note

At a minimum, the neighboring pictures **Next** and **Previous** must always be defined. If you do not really need a Next or Previous picture to branch to, specify it such that the picture branches to itself. Up to six additional branches, activated via function keys, can be defined for each picture. All pictures making up a project must be completely bound to compile the project successfully.

As long the cursor is in the field in which the picture is to be bound (the box on the left side) the following function keys are available:

F1 Global Init ..... Switches on/off the initialization of the picture (for information on defining global init, see “F4 - Define Global Init” in this chapter).

Caution

Only switch off a picture initialization if you are confident of the result.

F2 Change Picture ..... Blocks a picture change from the PLC when this picture is displayed. In the lower right-hand corner, you can see whether any picture changes are allowed from the PLC. To allow the PLC to change pictures, you must first enable it in the **Edit Project** window.

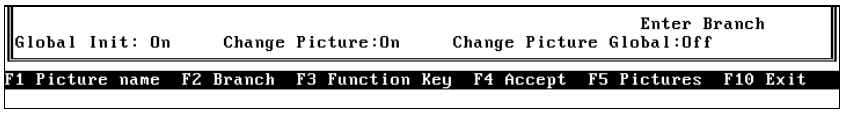
F4 Accept ..... The definitions are saved and the **Edit Project** window reappears on the screen when you press **F4.**
If the picture has not been bound properly (not all picture names have been entered), the following error message appears on the screen:

```
Incomplete branches have been defined! Picture is not accepted.
```

F5 Pictures ..... Displays all pictures that have been created for this project in a selection window.

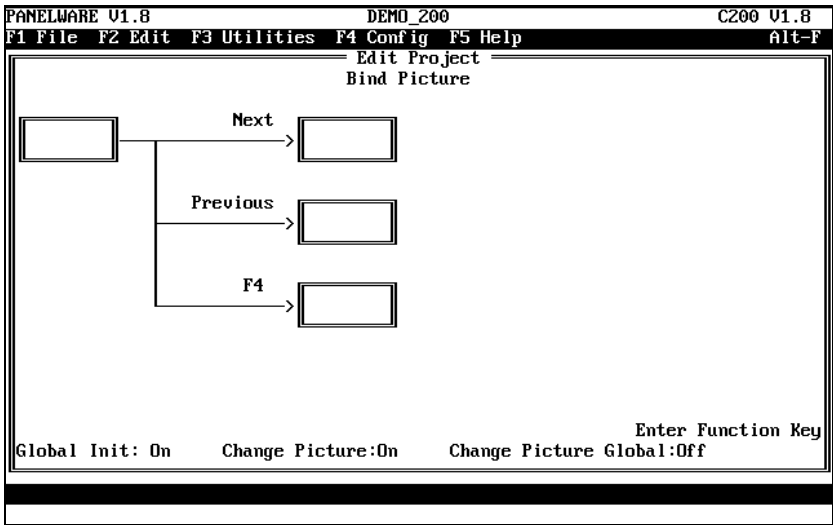
F10 Exit ..... Discards all entries and redisplays the **Edit Project** window.

The fields in the middle and on the right of the screen are used for entering branched pictures (neighboring pictures). When the cursor is in one of these fields, the following function keys are available:



F1 Picture name ..... The cursor is located in the left-hand box and the function line is changed again. You can enter a picture name.

F2 Branch ..... If more pictures are required than the standard two branches shown on the default page, they can be created using this key. When you press **F2 Branch**, a new picture is inserted into the picture structure and PCS waits for the entry of the number of the assigned function key number that will change to this picture:



After the function key that will be used to change to this picture is defined, the picture name can be entered.

F3 Function Key ..... Allows you to change the function keys that are to be used for executing the picture change.

F4 Accept ..... Saves the definitions and redisplays the **Edit Project** window. If the picture is not bound into the project properly (not all picture names entered), the following error message appears:

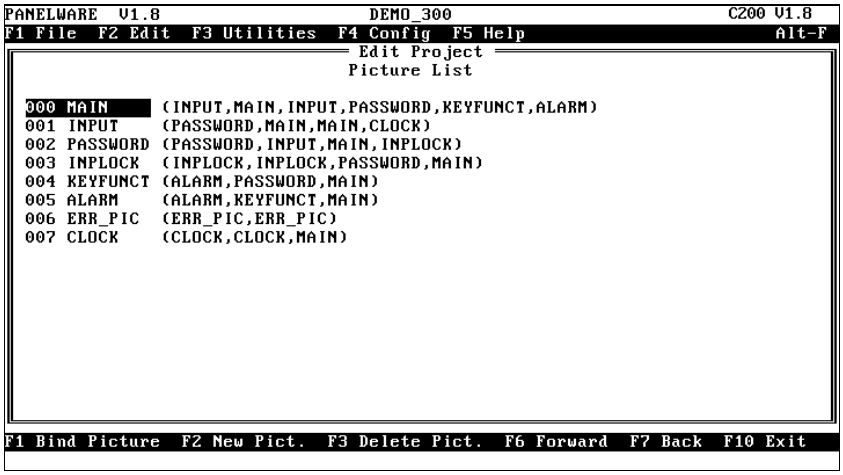
Incomplete branches have been defined! Picture is not accepted.

F5 Pictures ..... If you do not know the exact picture name, pressing **F5 Pictures** calls up a selection window that displays all of the valid picture names.

F10 Exit ..... Discards all entries and redisplays the **Edit Project** window.

F3 - Picture List

When you select **F3** from the **Edit Project** window, all of the pictures bound in the project are displayed in a **Picture List** similar to the one shown below:



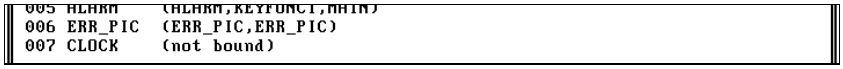
F1 Bind Picture ..... Accesses the **Bind Picture** window, which allows the selected picture to be bound into the project, or the picture structure to be changed.

F2 New Pict. ..... Allows a new picture to be bound into the project.

F3 Delete Pict. ..... Allows selected pictures to be deleted from the list. Only the entries are deleted from this list, the pictures remain in the project directory. These can be rebound into the project again later if desired.

F6 Forward / **F7 Back** Allows the sequence of the pictures to be changed. The highlighted picture is moved in the indicated direction.

Pictures that have not been bound (no neighboring pictures defined), but are referenced by another picture, are indicated as shown below for picture CLOCK:



All pictures must be bound, or at least deleted from the list, before the project can be compiled successfully.

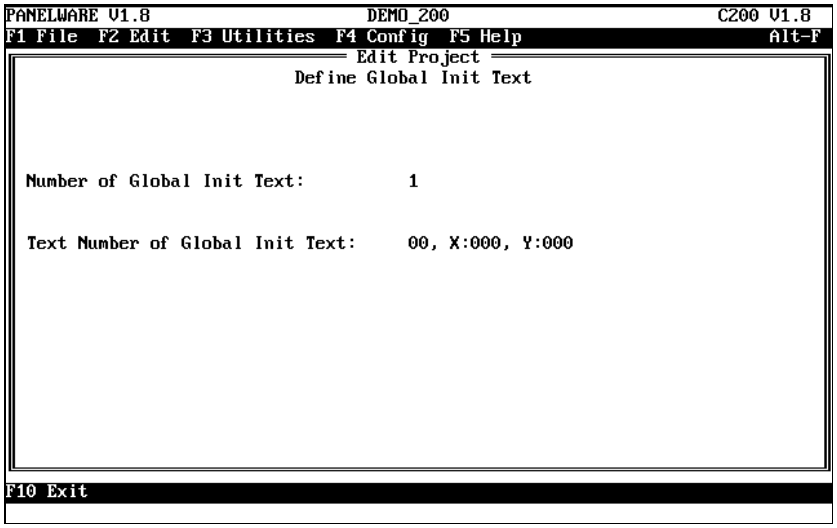
F4 - Define Global Init Text

Every time a picture change is made, the screen is reinitialized by an initialization message. The default initialization message includes a command to clear the screen and another to switch off all key LEDs.

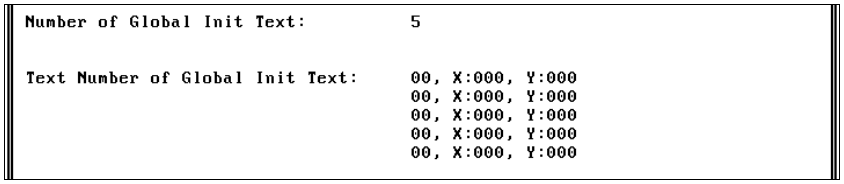
Additional initialization messages can be defined using the **F4** function. The messages are created using the text group editor (see chapter 8). The picture initialization message must be defined in the GLOBAL text group. These messages can be displayed in a picture by means of an Output Text field, described in chapter 6.

The text number and the (column, row) position where the new message is to be output must be defined. Once defined, these will be executed with every picture change.

When you press **F4 GI Text Def.,** the following picture appears:



The values shown in the picture correspond to the default settings. If the number of global init texts is changed, the list is extended as shown below:



In each of the lines, the desired text number of the global init text and the position in which it should appear on the display can be entered. Up to eight global init texts can be defined.

Note

You can block this initialization for any picture. Exercise caution when using this function. Only block a picture initialization if you are confident of its effect.

Do not delete message #0 from the GLOBAL text group. It contains functions that clear the screen with every picture change.

Importing a Project

Using this function you can import a whole project into another one. All project data such as pictures, variable assignments, etc. will be imported. Parts of the target project can be overwritten by a project import.

General Information

- Project data that is hardware-dependent will only be imported if it works on the target hardware.
- The Picture List and Text Groups are imported as a whole, without any changes.
- All pictures from the source project will be imported according to the rules of picture import (see chapter 5 for more information).
- The Keycode Table of the target project will be overwritten by the Keycode Table of the source project.
- Alarm fields and the alarm system will only be imported if the target hardware supports the alarm system.

Note

If you import a project into a newly created project, be sure that the hardware definition of the new project is identical to the source project. Hardware definitions that do not match could cause you to lose information.

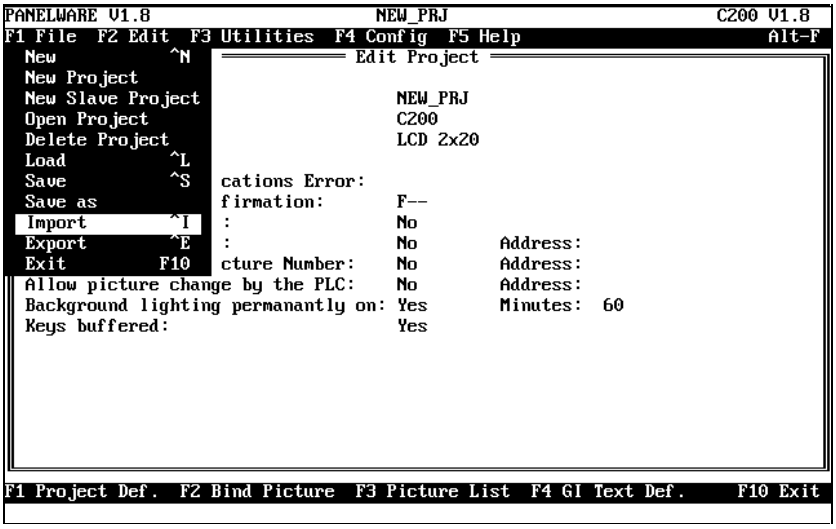
Note

The **Import Project** function can also be used to change the Panel Controller or Display type for an existing project. First, create the new project, and specify the desired new hardware definition. Then import the existing project into the newly created project.

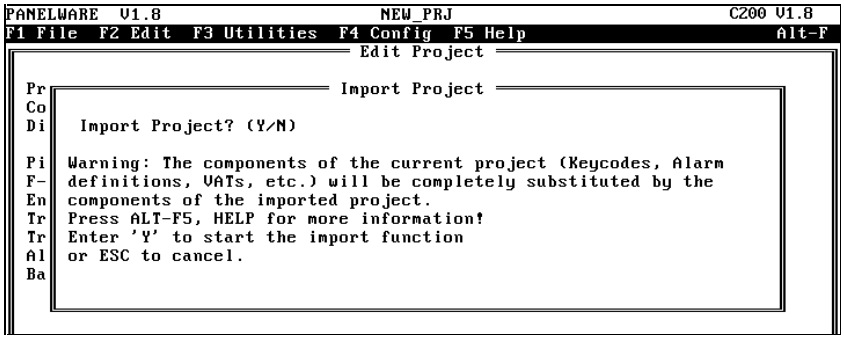
Example

If you want to import the DEMO_200.PRD project (installed on the hard disk with PCS) into another project, follow these steps:

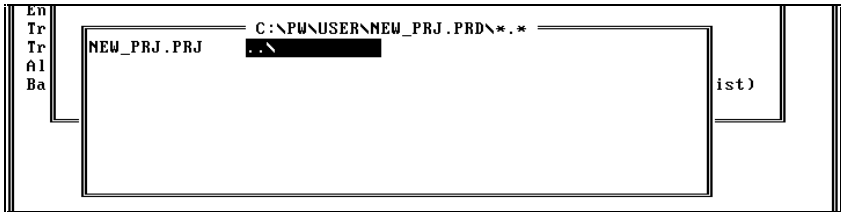
1. Create a new project by selecting the New Project function from the File menu. In the New **Project** window that appears, a name for the new project (***NEW_PRJ***) must be entered.
2. The type of the used Controller must be selected from the list that is displayed when you press ↵.
3. Select the **Import** function from the **File** menu or press **Ctrl** + **I:**



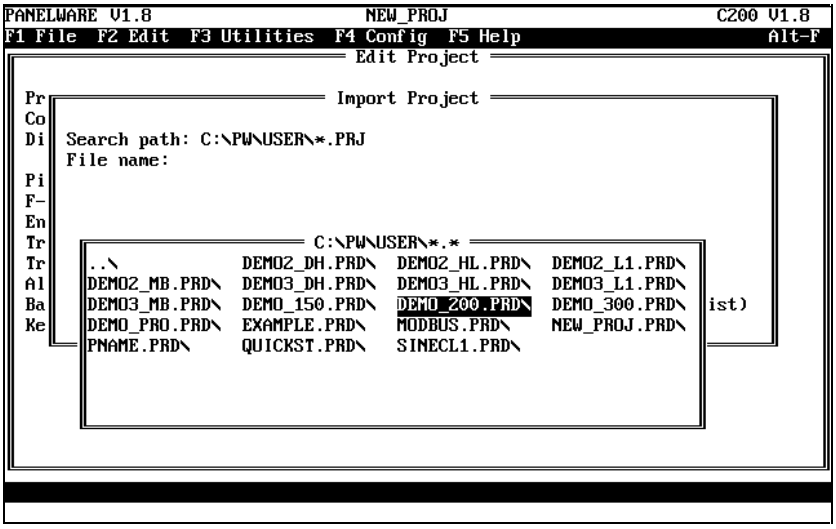
4. In the **Import Project** window a warning message is displayed:



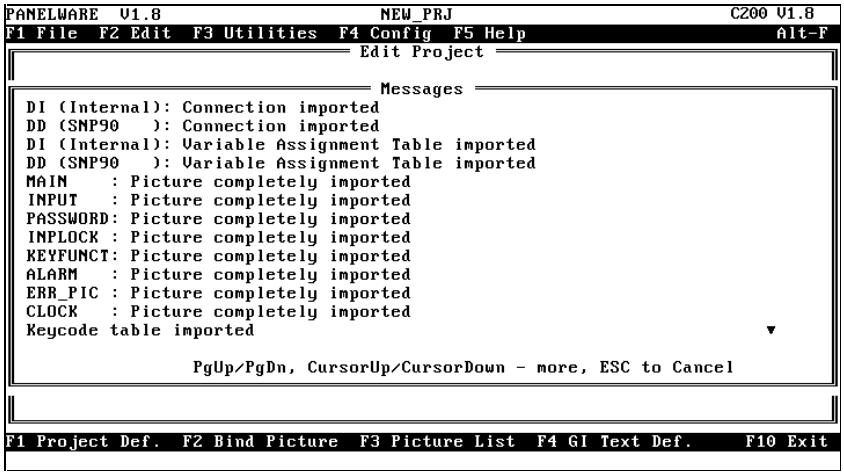
5. If you want to go on and import a project, press **Y**. The next window displays all files that have the extension PRJ in the current project directory `...\NEW_PRJ.PRD`:



6. Now you have to change to the project directory where the source project is located. To switch to the lower directory, choose the entry **..** and press ↵:



7. Now change to the project directory you want to import into the current project (**DEMO_200.PRD**). In this project directory, select the file that has extension PRJ (**DEMO_200.PRJ**) and press ↵ — the chosen project will be imported. After the project has been imported, a message window is displayed, where you can check whether parts of the project were imported **completely** or **partly**:



8. Close the message window by pressing the **Esc** key.

Chapter 5 Picture Editor

This chapter describes how pictures can be created and edited for a project. Picture elements such as mask text, input and output fields, and key and LED functions are also explained. The following information is included:

- General Information 5-1
- Using the Picture Editor 5-2
  - Screen Format 5-3
  - Function Key Overview 5-4
  - F1 - Text 5-5
  - F2 - Field 5-7
  - F3 - Line 5-9
  - F5 - Key and LED Functions 5-10
- Edit Functions 5-11
- Importing a Picture 5-11

General Information

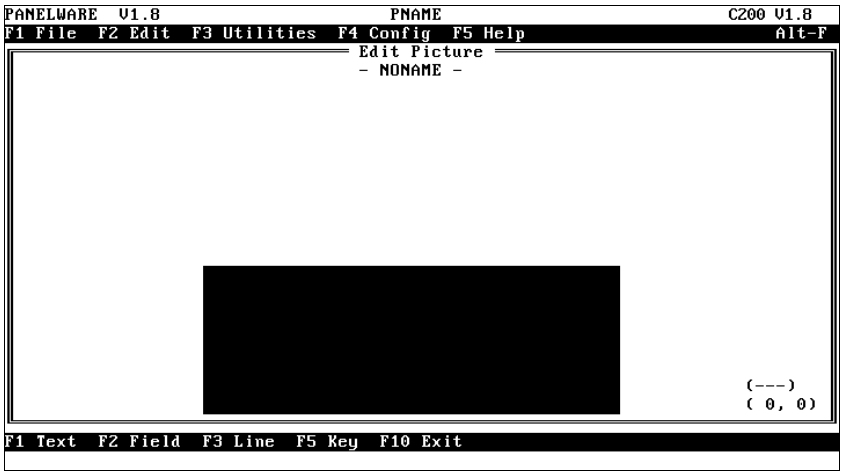
The picture is the base element of a Panel project. Pictures consist of text, lines, fields, key assignments, and LED functions.

- Text (messages) and lines make up the picture *mask*. This static information is always displayed when the picture is displayed.
- Fields are used for entering values to send to the PLC and displaying values from the PLC. The content of fields is dynamic and depends on data both in the PLC and provided by the operator.

You can create and edit pictures for a project using the Picture Editor functions.

Using the Picture Editor

The Picture Editor is accessed by selecting the **Picture** function from the **Edit** menu or the key combination **Ctrl** + **B** (picture edit mode). The **Edit Picture** window is displayed:



When you are in the **Edit Picture** window, an existing picture can be loaded for editing using the **File** menu's **Load** function (**Ctrl** + **L**). (Pressing the ↵ (Enter) key displays a list of picture names.) Also, in this window, a new picture can be created by selecting the **New** function of the **File** menu. Pictures are saved by using the **Save** or **Save As** functions of the **File** menu.

The display module format selected for the project creation is shown on the screen. (The example screen above shows an LCD 8x40 display module cut-out). Text and lines are displayed in the same format as on the Panel. Fields are shown by place holders (markers).

Screen Format

When a new picture is being created, it is assigned **NONAME** by the system for the **picture name** until a new name has been assigned. When an existing picture is loaded, its name is displayed in the Picture Name position.

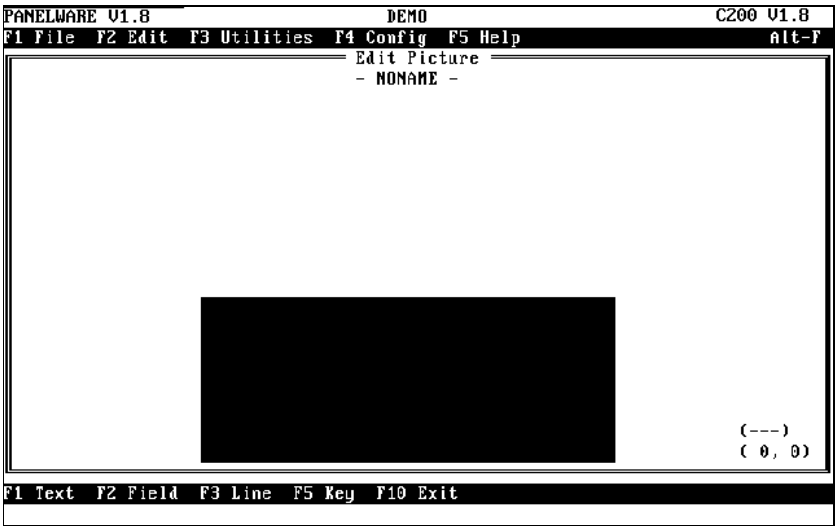


Figure 5 - 1. Edit Picture Screen Elements

If a picture element in the screen is selected using the cursor keys, the name of that element (text, line or field) is displayed in the lower right-hand corner of the display and the selected element is displayed inversely. The selected element can be deleted using the **Del** key or moved within the picture area using the **Ctrl** + cursor keys.

Each input field is displayed with a sequence number, which defines the sequence used for processing the input fields (how the operator can activate the inputs). By using the “forward” and “back” function keys, you can change the selected input field’s position within the sequence. If the field is too short, the sequence number is only displayed in the lower right-hand corner of the screen. Table 5-1 lists the information that is displayed for each picture element when it is selected.

Table 5 - 1. Edit Picture Elements Based on Cursor Location

Cursor Location	Name of Picture Element
Mask text	`Text`
Line	`Line`
OUTPUT Field	`Field`
INPUT Field	`#xx` (Sequence number of the input field)

Function Key Overview

F1 Text ..... Allows text to be entered for a mask.

F2 Field ..... Creates/edits an OUTPUT, INPUT, or ALARM field.

F3 Line ..... Allows you to draw lines using the cursor keys.

F5 Key ..... Allows key or LED functions to be defined or changed.

F10 Exit ..... Closes the **Edit Picture** window but does not save the changes automatically. The following message warns that the changes to the picture have not yet been saved:

You can respond by pressing one of the following keys:

Y The changes are saved and you are returned to the Main menu.

N The changes are not saved and you are returned to the Main menu.

Esc The message box is closed and you can continue editing the picture.

F1 - Text

Mask text can be entered in the position where you want to see it displayed on the Panel screen. To start a text entry in the current cursor position, press either the **F1 Text** key or any ASCII character. Whenever you are entering or editing text, the text area is displayed inversely (on color monitors, the area will be displayed in another color). To the right of the function line, the message **Text Entry** will be displayed to indicate that the Text Entry mode is active:

You can edit the text using the cursor, **Del** and ← (Backspace) keys. When Text Entry mode is active, Insert Mode is always active as well. In Insert Mode, text is inserted at the current cursor position, and the character that was in the cursor position before and all other characters to the right of that character are moved one position to the right.

To end a mask text entry, press the ↵ (Enter) key.

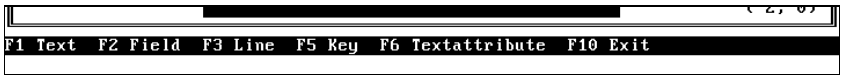
To edit an existing mask text field, first place the cursor on the field and then press the **F1 Text** key.

Note

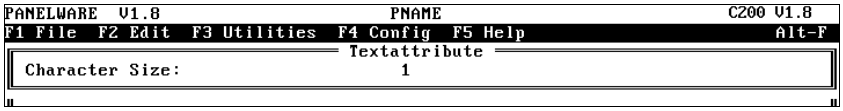
If a mask text is displayed inversely (i.e., the cursor is within the text area) and Text Mode is not active, the Del key will delete all of the mask text. This operation can not be undone; the only way to restore the deleted text is to type it in again.

Character Size

You can change the character size of a mask text using the **F6 Textattribute** key. This key is only active (shown in the function line), if the cursor is in the mask text and Text Mode is active:



In the **Textattribute** window you can enter the character size:



The character size can only be set on graphics-capable displays.

Options:
1.....normal-sized characters
2.....double-sized characters
3.....quadruple-sized characters

ASCII Character Set

When inserting mask text, you can use all ASCII display characters between 32 and 255 (with the exception of 155). To enter an ASCII character code of 127 or greater, you must use a special key combination **ALT** + ***ASCII value***, where ***value*** is a decimal. The **ALT** key must be held down during the entry of the ASCII decimal value. Here is an example for entering the ASCII character 240:

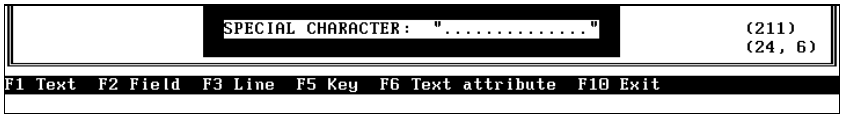
1. Press the **ALT** key and hold it
2. Press the ***2*** key on the number block
3. Press the ***4*** key on the number block
4. Press the ***0*** key on the number block
5. Release the **ALT** key

Normally the **ALT** key and the numeric keypad of your PC keyboard are used for entering ASCII characters. If your keyboard has no numeric keypad, please refer to the keyboard description in your PC manual for an explanation of how ASCII characters are entered.

Note

Because the character set of the PANELWARE display is different from that of a normal PC, all characters that cannot be displayed on a PC are shown on the screen as a dot — **.** — .

When the cursor is in the position of the ASCII character entry, the ASCII code (decimal 211 in the screen cut-out below) is shown in the lower right-hand corner of the screen just over the cursor position display:



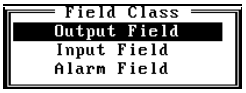
Note

The character set supported varies depending on the display type defined for the project. Refer to Appendix B of the *PANELWARE Hardware Installation User's Manual* (GFK-0848).

F2 - Field

The following sections provide an overview of field classes and input field sequence. Chapters 6 (Output and Input fields), 8 (Output Text fields), and 11 (Alarm fields) provide detailed information about individual field types and functions.

Field Class



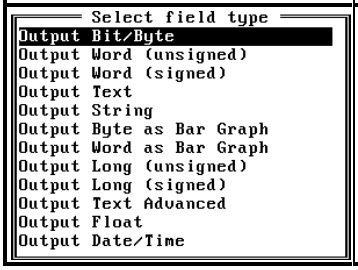
Press **F2** in the **Edit Picture** window to insert a field into the picture. You must first select a field class from the selection window that is displayed:

The following field class types are available, and are selected by highlighting the desired class and pressing ↵ (Enter):

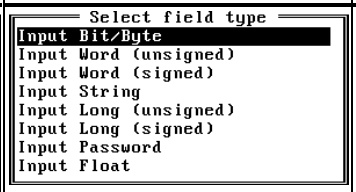
- **Output Field** displays values from the PLC on the Panel screen.
- **Input Field** allows you to enter and set values using alphanumeric keys defined on the Keyblock (see chapter 7).
- **Alarm Field** displays the status of alarms.

Depending on the selected field class, one of the following field type selection windows is displayed:

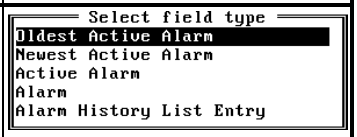
Output Field



Input Field



Alarm Field



Using the cursor keys, highlight the desired field type and press ↵ (Enter).

After you select a field type, another window appears in which the parameters of the field are to be defined. If the cursor is in one of these fields and the **F2 Field** key is pressed, a window listing the field parameters appears. Using this window, you can change these parameters at any time.

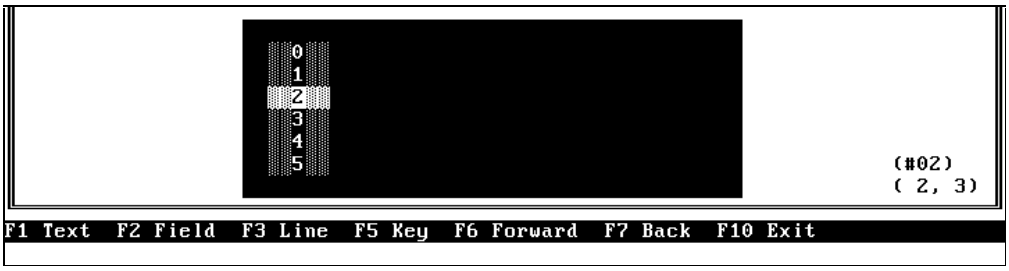
Sequence of Input Fields

INPUT fields are displayed in the picture editor with their sequence numbers. If the field is too small to display the number, the number is also displayed in the lower right-hand corner of the window (see the “Screen Format” section). These numbers define the sequence in which the individual entries are entered in run mode (on a PANELWARE Panel).

The sequence order of a particular field can be modified by first placing the cursor on the field, and then using the **F6 Forward** and **F7 Back** function keys to modify its sequence position either forward or backward, respectively.

Note

The field’s position on the screen is not changed; only the sequence order is modified.



F3 - Line

Note

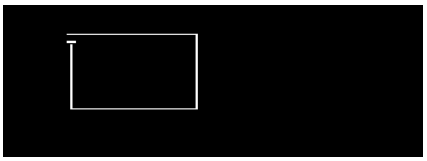
Lines can only be drawn if you are using a graphics-capable display. If a display that is not graphics capable is selected, this function is disabled.

The **F3 Line** function key is used to switch into line drawing mode. The mode is indicated at the right-hand side of the function line by the text **Line Draw**:

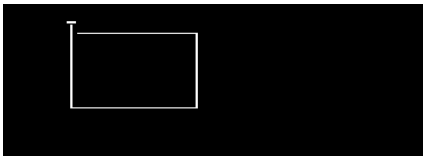
You can draw a line using the cursor movement keys, and end the line by pressing ↵ (Enter). The corners are created automatically when the cursor direction is changed.

For example, to draw a rectangle, the line ends must be closed, i.e., the end of the line must cut across the start of the line. The system accomplishes this as follows:

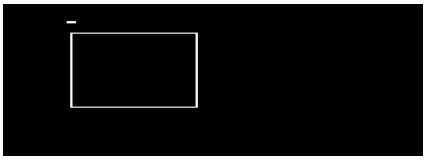
1. Line being drawn does not cut start point:



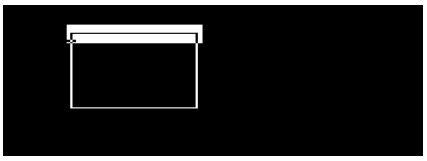
2. Line cuts across start point:



3. The last corner is drawn properly (automatically) after the ↵ (Enter) key is pressed.



4. Deletion of the rectangle must be done in steps, because the most that can be marked is one line segment. If the cursor is moved down one line segment, for example, the top of the rectangle is displayed inverted and can be deleted by pressing **Del**.



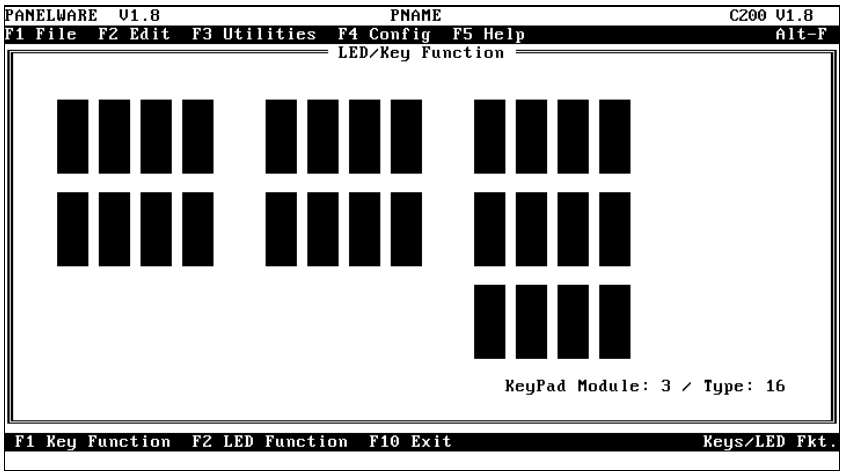
You can not edit an existing line or delete it partially. The entire line must be deleted and redrawn.

F5 - Key and LED Functions

Every picture can contain assigned LED and key functions. These function assignments are valid for one picture only and must be defined for every picture. See chapter 6 for descriptions of key and LED functions.

Important: All keys that have been given key functions must be defined as function keys in the Keycode Table. See chapter 7 for information on assigning function keys to actual keys.

When you press the **F5 Key** function key, the number and layout of Keyblock modules selected in the project definition is displayed in the **LED/Key Function** window. The following figure shows the maximum number of Keyblock modules (seven) that can be defined and assigned:



The number and the type of the Keyblock module in which the cursor is located is displayed in the lower -right corner of the **LED/Key Function** window. The following function keys are active:

F1 Key Function ..... Displays the key functions in a selection window.

F2 LED Function ..... Displays the LED functions in a selection window.

F10 Exit ..... Closes the **LED/Key Function** window and saves all changes automatically. Redisplays the **Edit Picture** window.

You can select the following key and LED functions (Press **F1** to display the **Key Function** list and **F2** to display the **LED Function** list:

Key Function	LED Function
Key Function select Set Bit/Byte Set Word Toggle Bit/Byte Toggle Word Momentary Bit/Byte	LED Function select Key LED switched on Key LED switched off Key LED blinking slow Key LED blinking fast LED Control from PLC

Notes

To redefine an existing key function or LED function assignment, you must first use the **Del** key to remove the existing key or LED function.

Key functions can also be defined through the key matrix (see chapter 4 for details).

Edit Functions

There are several keys and key combinations that can be used to perform picture editing functions. These are outlined in the table below:

Table 5 - 2. Edit Key Functions

Key	Description
Del	If the cursor is in a field, in mask text, or on a line, the picture element is deleted. If the cursor is in a mask field and the Text Entry mode is active, the character in the cursor position is deleted and all characters to the right are moved one position to the left.
Ctrl + ↑	The picture element is moved one line up.
Ctrl + ↓	The picture element is moved one line down.
Ctrl + →	The picture element is moved one character position to the right.
Ctrl + ←	The picture element is moved one character position to the left.

Importing a Picture

You can import a picture or parts of a picture into the current one, using the **Import** function from the **File** menu.

Picture elements such as text, lines or fields will only be imported if they fit as a whole into the display area of the target Panel. Picture elements that are outside of the target display area will not be imported.

Variables assigned to imported fields will be inserted into the VAT with the same Connection ID as in the source picture. If no VAT that has this Connection ID exists, the variables will be inserted into the connection **/DD**.

Chapter 6 Field Types

This chapter provides detailed information on functions and parameters of input/output fields, key functions, and LED functions. It includes the following information:

- General Information 6-2
  - General Field Parameters..... 6-2
  - Function Key Overview 6-3
- Field Types/Descriptions 6-4
  - Output Bit/Byte 6-5
  - Output Word Unsigned..... 6-6
  - Output Word Signed..... 6-7
  - Output Byte as Bar Graph..... 6-8
  - Output Word as Bar Graph..... 6-9
  - Output Long Unsigned 6-10
  - Output Long Signed 6-11
  - Output Float 6-12
  - Output Text 6-13
  - Output Text Advanced..... 6-14
  - Attribute Word 6-15
  - Output String..... 6-16
  - Output Date/Time..... 6-17
  - Input Bit/Byte..... 6-18
  - Input Word Unsigned 6-19
  - Input Word Signed 6-20
  - Input Long Unsigned 6-21
  - Input Long Signed 6-22
  - Input Float 6-23
  - Input String 6-24
  - Input Password..... 6-25
- Key Functions..... 6-26
  - General Information..... 6-26
  - Set Bit/Byte..... 6-27
  - Set Word..... 6-28
  - Toggle Bit/Byte..... 6-29
  - Toggle Word..... 6-30
  - Momentary Bit/Byte..... 6-31
- LED Functions..... 6-32
  - General Information..... 6-32
  - Key LED Switched On..... 6-33
  - Key LED Switched Off..... 6-33
  - Key LED Blinking Slowly..... 6-34
  - Key LED Blinking Rapidly 6-34
  - LED Control from PLC..... 6-35

Section 1 General Information

General Field Parameters

Parameters must be defined for every field and every key or LED function. These parameters are defined in a window that is opened when you try to create or change a field, or when a key or LED function must be defined for a picture (see chapter 5). Several parameter settings are the same for many fields and key/LED functions, as shown in the following table:

Table 6 - 1. General Field Parameter Descriptions

Field Parameters	Description
Position	Shows the (column, row) position of a field. This position is displayed as a reference to the left-most character in the field.
Number of digits or characters	The total number of digits or characters this field can contain, including all character positions before and after the decimal point, but not including the decimal point or sign.
Places after dec. point	The number of digits to be allowed after the decimal point.
Character size	The character size can only be set on graphics-capable displays. Options: 1 ..... normal-sized characters 2 ..... double-sized characters 3 ..... quadruple-sized characters
<Field Width>	Displays the width of the field, which is calculated automatically. Field width depends on the number of characters, decimal point, sign, and character size.
Tagname	The PLC addresses entered here are the values/parameters that the fields read from the PLC. Some fields and functions (e.g., key functions) have READ and WRITE access to the PLC address. **Tagname** is the symbolic name of the PLC address (see "Symbolic Variables" in chapter 2) where the value is found in the PLC. The value is read from this address and displayed in a field.
Tagname for Completion (only for INPUT fields)	The **Tagname for Completion** parameter is overwritten with the completion value after the input is terminated. **Tagname** is the symbolic name of the PLC address (see the "Symbolic Variables" section in chapter 2) where the value is found in the PLC. If you do not want to use the Tagname for Completion parameter, leave the entry blank so that this function is not executed.
Value for Completion (only for INPUT fields)	The value that will be written to the **Tagname for Completion** parameter (permitted values: 0 to 255). If you do not want to use the Tagname for Completion parameter, leave the entry blank so that this function is not executed.
Display leading zeros	Pressing either ***Y*** or ***N*** selects whether the value is displayed with zeros filling the unused field positions on the left-hand side of the value.
Scaling	Pressing either ***Y*** or ***N*** selects whether scaling for this field will be used (see chapter 12).
Up/Down input (only for INPUT fields)	Pressing either ***Y*** or ***N*** selects whether the Up/Down option for this field will be enabled (see chapter 12).
Locking active (only for INPUT fields)	Pressing either ***Y*** or ***N*** selects whether input locking, requiring the use of a password, for this field will be used (see chapter 12).

Function Key Overview

When you are entering the parameters for a field, the following functions are available, depending on the parameters that are active, and the cursor position:

F1 Up/Down Input ..... If Up/Down Input is activated in the field parameters, press **F1 Up/Down Input** to display a window in which two keys are defined to increment and decrement the INPUT field value. These settings are only used if an INPUT field is declared as Up/Down field in the field parameters.

F2 Locking ..... If Input Locking is activated in the field parameters, press **F2 Locking** to display a window in which the configuration for locking the INPUT field is defined. These settings are only used if Input Locking is activated in the field parameters,

F3 Scaling ..... If scaling is switched on in the field parameters for a field, press **F3 Scaling** to display a window to define the parameters for scaling the value to engineering units. These settings are only used if scaling for the INPUT field is switched on in the field parameters.

F4 Accept ..... Closes the window that is open for entering and defining field parameters and saves any changes. The completed field is then displayed in the picture.

F5 Text Groups ..... If the cursor is at the **Text Group** parameter (**Output Text Advanced**), press **F5 Text Groups** to display a selection window in which all text groups are displayed for the current project.

F5 Connections ..... If the cursor is at the **Tagname** parameter (**Output Bit/Byte**), press **F5 Connections** to display a selection window in which all connections for the current project are displayed. For each connection, the variable assignment table (VAT) can be opened for choosing the desired variable.

F10 Exit ..... Closes the window and ignores (discards) all changes. The field is not displayed in the picture.

Section 2 Field Types/Descriptions

In Table 6-2 and the discussion that follows, the "Description" section refers to the function of the field on a PANELWARE Panel that is in Run mode and communicating with a PLC.

Table 6 - 2. Field Type Overview

Numerical Output Field	Description (display values)
Output Bit/Byte	unsigned byte data from the PLC This field is also used if a bit variable should be displayed numerically (0 or 1).
Output Word (unsigned)	unsigned word data from the PLC
Output Word (signed)	signed word data from the PLC
Output Byte as Bar Graph	unsigned byte data from the PLC in bar form
Output Word as Bar Graph	unsigned word data from the PLC in bar form
Output Long (unsigned)	unsigned long words from the PLC
Output Long (signed)	signed long words from the PLC
Output Float	floating point numbers from the PLC The numbers must be in IEEE format in the PLC.

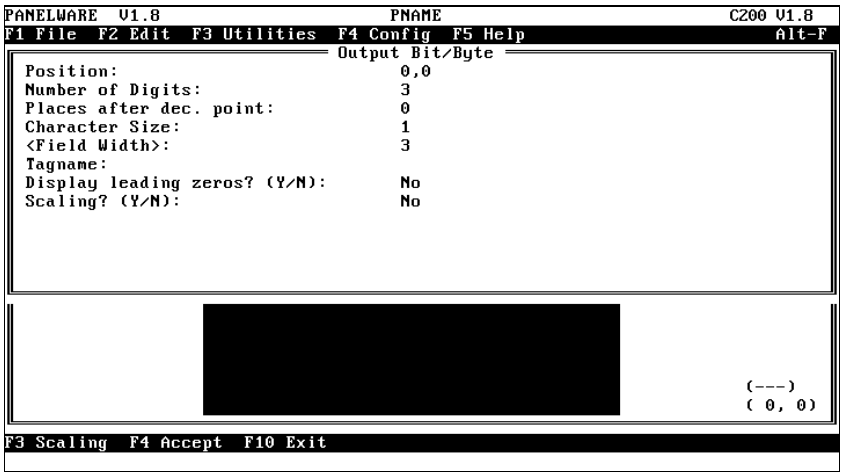
Non-numerical Output Field	Description (display values)
Output Text	text from the GLOBAL text group only
Output String	ASCII strings from the PLC
Output Text Advanced	text from any text group
Output Date/Time	internal time and/or date of the Panel

Numerical Input Field	Description (input values)
Input Bit/Byte	numerical entries to be sent to the PLC
Input Word (unsigned)	enter numerical values for unsigned WORD variables and send them to the PLC
Input Word (signed)	enter numerical values for signed WORD variables and send them to the PLC
Input Long (unsigned)	enter values for unsigned LONG variables and send them to the PLC
Input Long (signed)	enter values for signed LONG variables and send them to the PLC
Input Float	enter values for FLOAT variables and send them to the PLC

Non-numerical Input Field	Description (input values)
Input String	ASCII strings to be sent to the PLC
Input Password	In this field, the user can be requested to give a password before access is given and the password level is sent to the PLC. The password level can be used to lock input fields.

Note: Each input field has an associated sequence number that determines the order in which individual entries are entered in run mode on a PANELWARE Panel. (See "Fields" in chapter 5.)

Output Bit/Byte

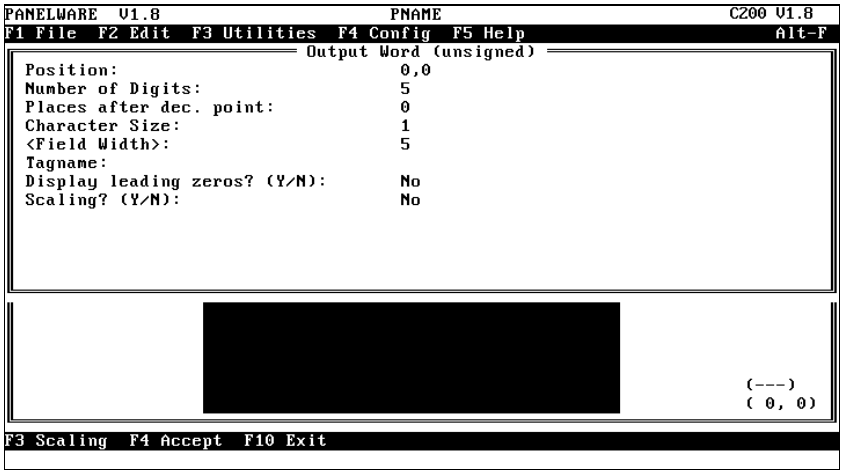


Field Description

This field is used to display unsigned byte data from the PLC. If a bit variable should be displayed numerically (0 or 1), this field is also used.

This field can be scaled (for more information about scaling, see chapter 12).

Output Word Unsigned

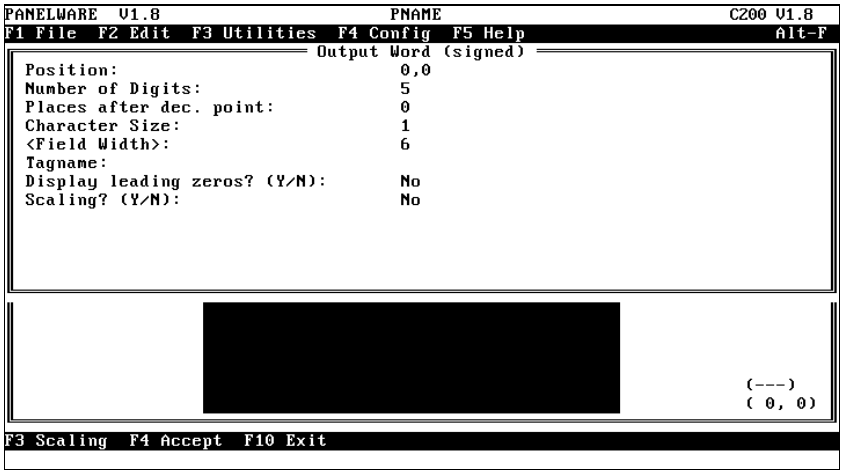


Field Description

This field is used to display unsigned word data from the PLC.

This field can not be scaled. If your values should be displayed scaled to engineering units, use the **Output Word (signed)** field.

Output Word Signed



Field Description

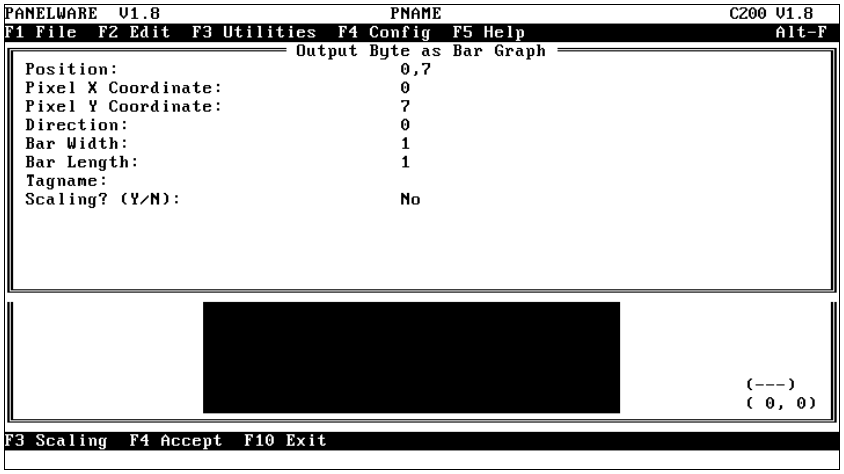
This field is used to display signed word data from the PLC.

This field can be scaled (for more information about scaling, see chapter 12).

Output Byte as Bar Graph

Note

This field is only available for graphics-capable displays.



Field Description

This field is used to display unsigned byte data from the PLC in bar graph form. This field can be scaled (for more information about scaling, see chapter 12).

Field Parameters

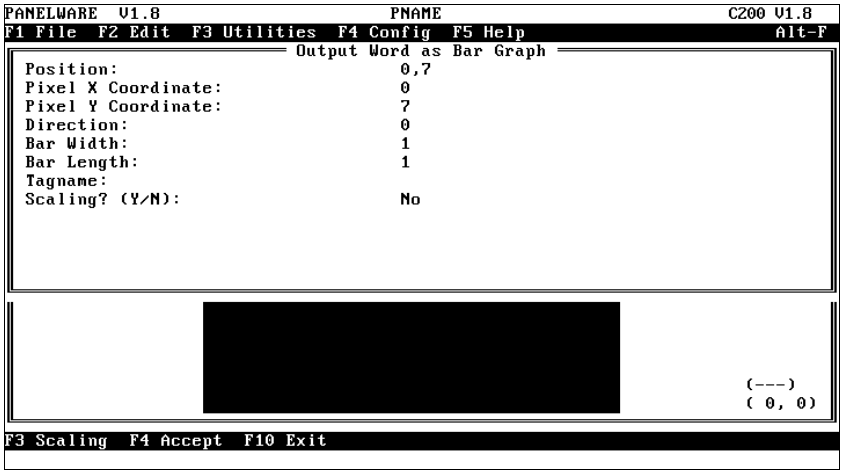
Table 6 - 3. Field Parameters—Output Byte as Bar Graph

Field Parameter	Description
Position	Displays the position (reference point) of the field, which depends on the direction.
Pixel X Coordinate Pixel Y Coordinate	The pixel coordinates are given according to the position of the cursor, but can be changed in order to position the bar correctly. These coordinates refer to the reference point (see Direction field). The upper left corner of the display has coordinates 0,0.
Direction	The reference position of the bar depends on the following direction specifications: Direction: 0.....Bar to the right, reference point lower left corner of bar 1.....Bar upward, reference point lower left corner of bar 2.....Bar to the left, reference point lower right corner of bar 3.....Bar downward, reference point upper left corner of bar
Bar Width	Defines the dimensions of the bar in pixels perpendicular to the bar direction.
Bar Length	Defines the maximum length of the bar in pixels (at 100% PLC value).

Output Word as Bar Graph

Note

This field is only available for graphics-capable displays.



Field Description

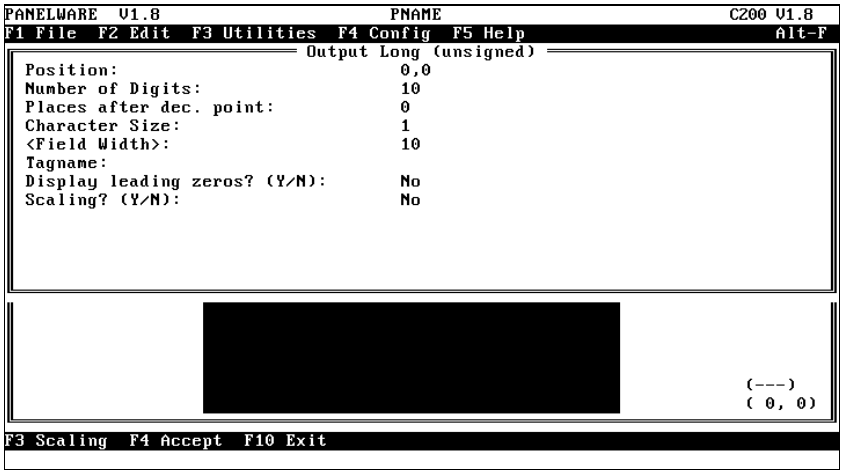
This field is used to display unsigned word data from the PLC in bar graph form. This field can be scaled (for more information about scaling, see chapter 12).

Field Parameters

Table 6 - 4. Field Parameters—Output Word as Bar Graph

Field Parameter	Description
Position	Displays the position of the field (left side of the field).
Pixel X Coordinate Pixel Y Coordinate	The pixel coordinates are given according to the position of the cursor, but can be changed in order to position the bar correctly. These coordinates refer to the reference point (see Direction field). The uppermost left corner of the display has coordinates 0,0.
Direction	The reference position of the bar depends on the following direction specifications: Direction: 0.....Bar to the right, reference point lower left corner of bar 1.....Bar upward, reference point lower left corner of bar 2.....Bar to the left, reference point lower right corner of bar 3.....Bar downward, reference point upper left corner of bar
Bar Width	Defines the dimensions of the bar in pixels perpendicular to the bar direction.
Bar Length	Defines the maximum length of the bar in pixels (at 100% PLC value).

Output Long Unsigned

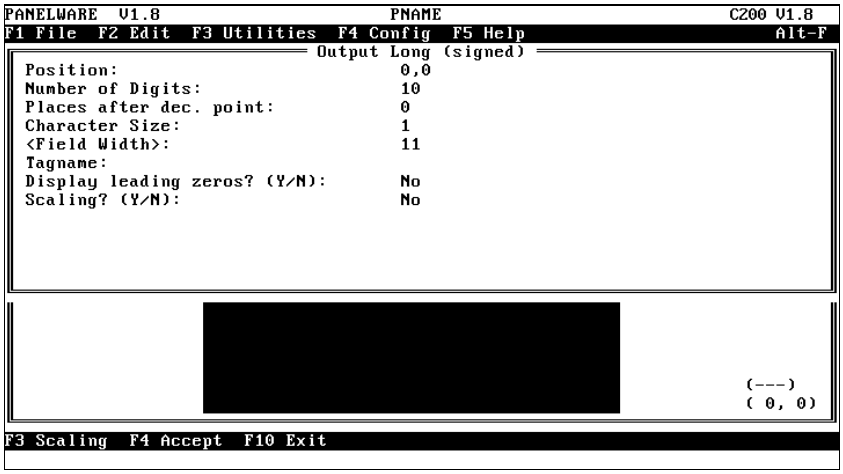


Field Description

This field is used to display unsigned long word data from the PLC.

This field can be scaled (for more information about scaling, see chapter 12).

Output Long Signed

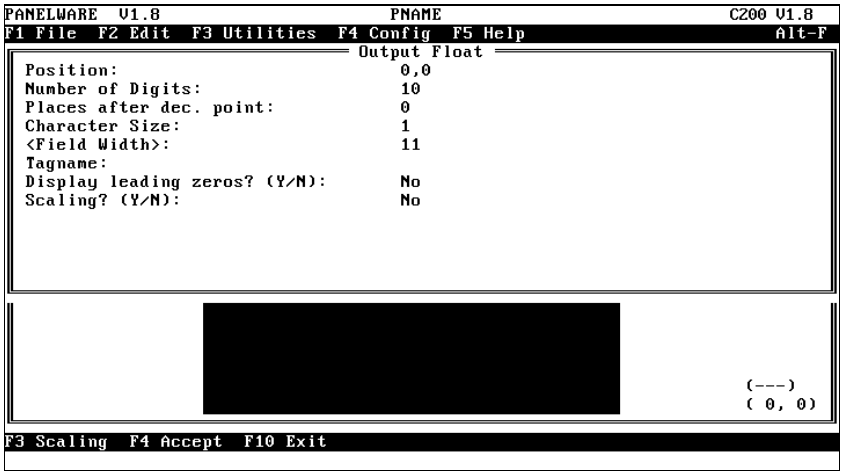


Field Description

This field is used to display signed long word data from the PLC.

This field can be scaled (for more information about scaling, see chapter 12).

Output Float

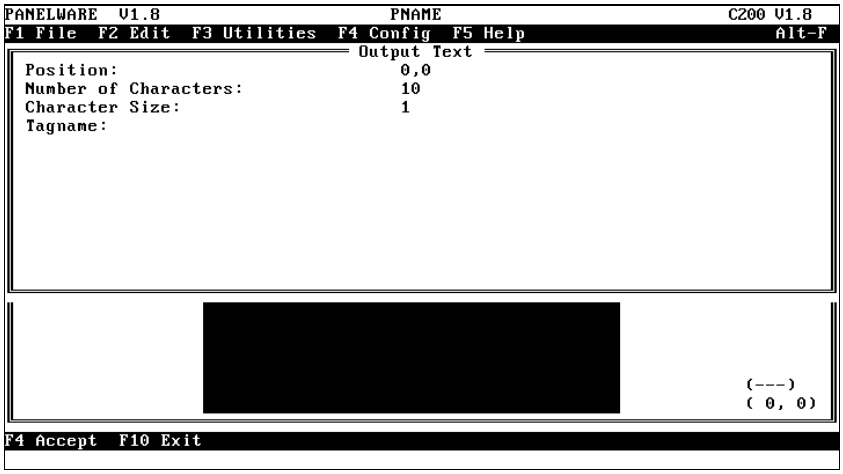


Field Description

This field is used to display floating point numbers from the PLC. The numbers must be in IEEE format in the PLC.

This field can be scaled (for more information about scaling, see chapter 12).

Output Text

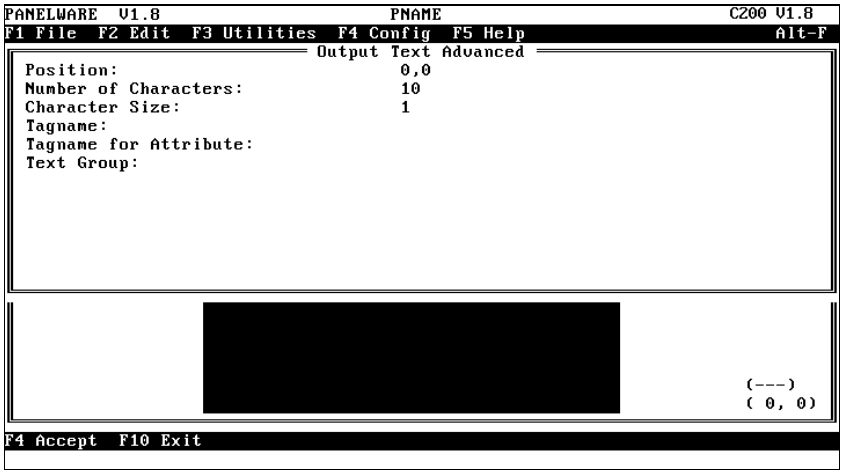


Field Description

This field is used for displaying text from the GLOBAL text group only. The text that corresponds to the text number in the Tagname address is displayed.

If text from any text group other than the GLOBAL text group should be displayed, or if text attributes should be used, use the **Output Text Advanced** field.

Output Text Advanced



Field Description

This field is used for displaying text from a text group. The text that corresponds to the text number in the Tagname address is displayed. The text can be output with attributes **Blinking** and **Inverse**. The text number and the attribute are given from the PLC.

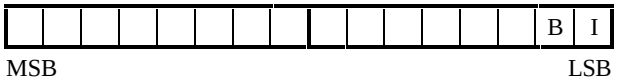
Field Parameters

Table 6 - 5. Field Parameters—Output Text Advanced

Field Parameter	Description
Tagname for Attribute	Symbolic name of the PLC address (see “Symbolic Variables” in chapter 2) at which the attribute word is found in the PLC. If the Tagname for attributes is not defined, the text output will have no attributes (normal, not blinking).
Text Group	A text group that was defined for the project can be selected in a window. Text groups must be created using the Text Group Editor (see chapter 8).

Attribute Word

The attributes for the text shown on the display are defined in the attribute word:



Bits I and B are interpreted as follows:

Table 6 - 6. Text Attributes

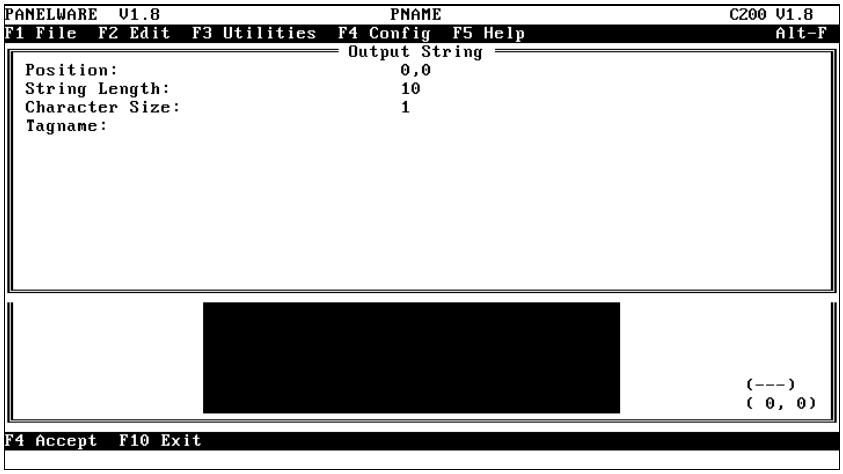
Bit	State	Description
I	0	Text is displayed normally
	1	Text is displayed inverse
B	0	Text is displayed not blinking
	1	Text is displayed blinking

The states of the remaining bits have no influence on the displayed text.

Note

Not all display module types can use these attributes.

Output String



Field Description

This field allows ASCII strings to be displayed from the PLC. Starting at the Tagname, the number of characters that can be read is the same as the number given for String Length. A null character in the string is not recognized as a string terminator, but is displayed as a space (blank character).

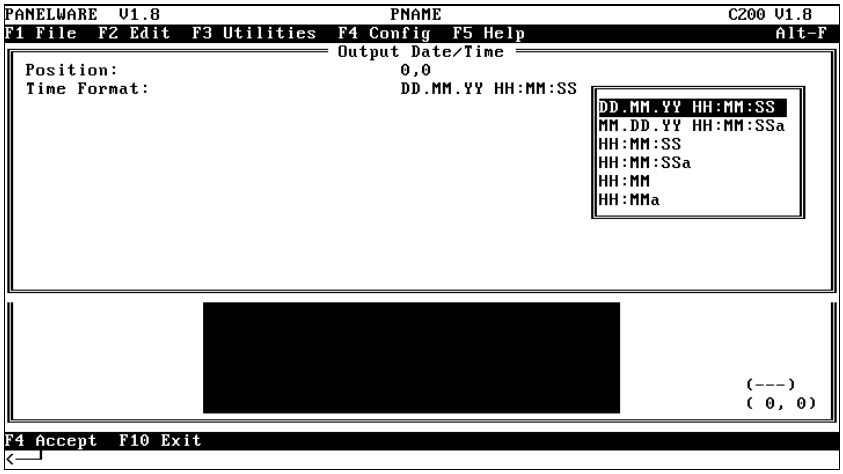
The extended codes (20 hex to FF hex) for the ASCII character set are described in the "Character Sets" chapter in the *PANELWARE Hardware Installation User's Manual* (GFK-0848).

Field Parameters

Table 6 - 7. Field Parameters — Output String

Field Parameter	Description
String Length	The maximum number of characters read from the PLC.
Character Size	The character size can only be set on graphics-capable displays as follows: Options: 1 ..... normal-sized characters 2 ..... double-sized characters 3 ..... quadruple-sized characters

Output Date/Time



Field Description

This field is used for displaying the internal time of the Panel.

Field Parameters

Table 6 - 8. Field Parameters—Output Date/Time

Field Parameter	Description
Time Format	Pressing the ↵ (Enter) key causes a list of time formats to be displayed (see picture above).

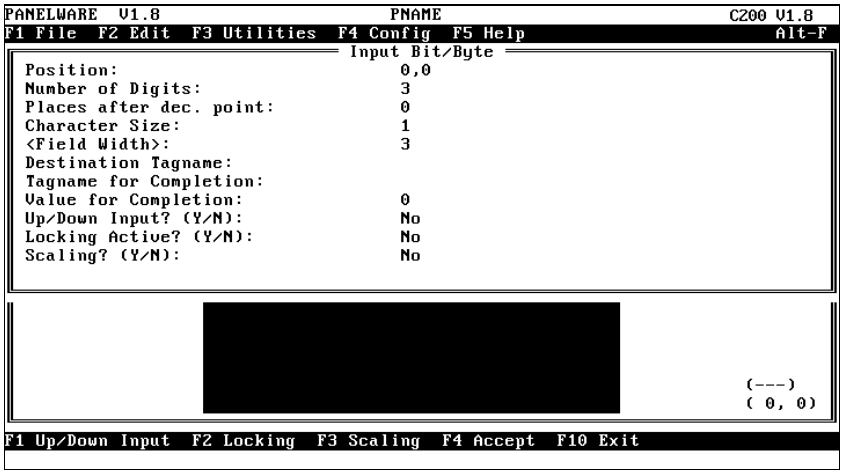
By default, every project transfer from the PC causes the clock time to be set with the PC's internal clock value. This feature can be disabled using the Channel #2 function of the Config menu.

For more information on changing the internal clock time from the Panel, see Appendix D.

Note

This time is local to the PANELWARE Controller. It is not the PLC time or date.

Input Bit/Byte



Field Description

In this field, numerical entries (bit or unsigned byte) can be made. If an entry is confirmed by pressing the **+E+** key and the ↵ key, the entered value is written to the destination address and the value for completion is written to the Tagname for completion (if specified) in the PLC.

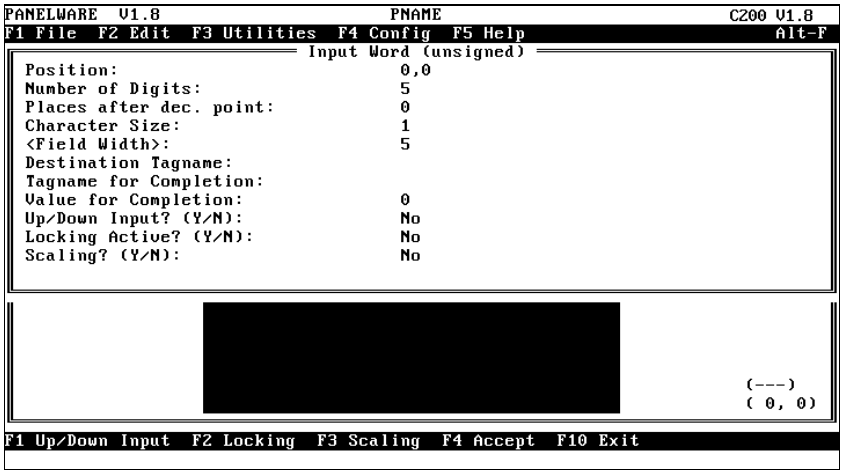
If the **INPUT** field is not the current field of entry, the value is read from the PLC (destination address) and displayed.

The following options are available for this field:

- Up/Down Input
- Input Locking
- Scaling

For more information on these options, see chapter 12.

Input Word Unsigned



Field Description

In this field, numerical entries (unsigned word) can be made. If an entry is confirmed by pressing the **+E+** key and the ↵ key, the entered value is written to the destination address and the value for completion is written to the Tagname for completion (if specified) in the PLC.

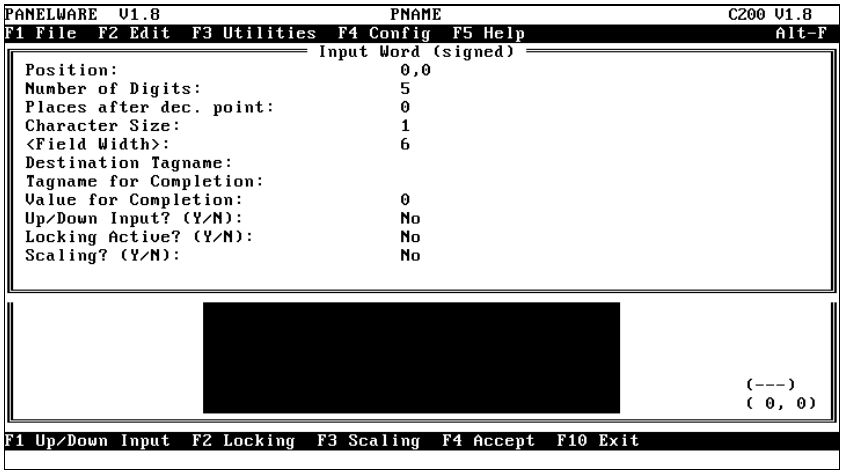
If the INPUT field is not the current field of entry, the value is read from the PLC (destination address) and displayed.

The following options are available for this field:

- Up/Down Input
- Input Locking
- Scaling

For more information about these options, see chapter 12.

Input Word Signed



Field Description

In this field, numerical entries (signed word) can be made. If an entry is confirmed by pressing the **+E+** key and the ↵ key, the entered value is written to the destination address and the value for completion is written to the Tagname for completion (if specified) in the PLC.

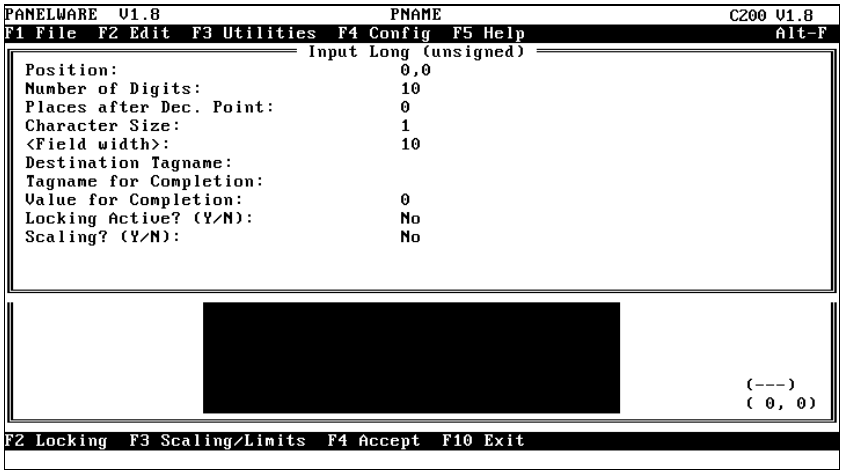
If the INPUT field is not the current field of entry, the value is read from the PLC (destination address) and displayed.

The following options are available for this field:

- Up/Down Input
- Input Locking
- Scaling

For more information about these options, see chapter 12.

Input Long Unsigned



Field Description

In this field, you can enter values for unsigned long variables. If an entry is confirmed by pressing the **+E+** key and ↵, the entered value is written to the destination address and the value for completion (if specified) is written to the Tagname for completion in the PLC.

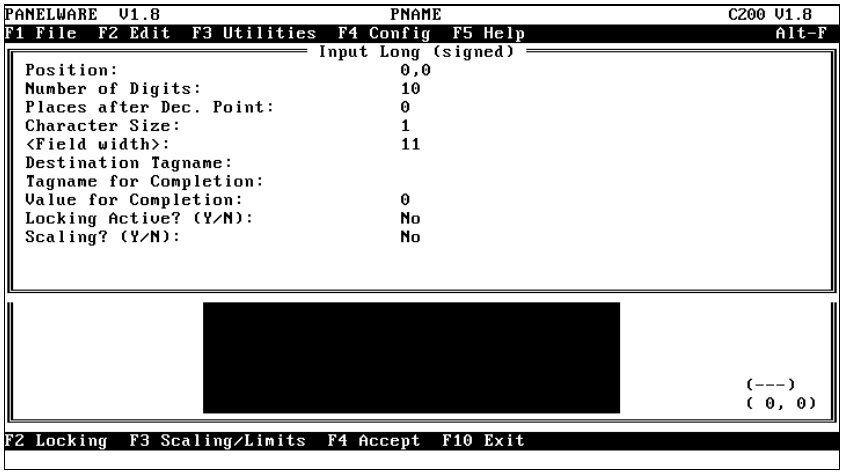
If the INPUT field is not the current field of entry, the value is read from the PLC (destination address) and displayed.

The following options are available for this field:

- Input Locking
- Scaling or Limits

For more information about these options, see chapter 12.

Input Long Signed



Field Description

In this field, you can enter values for signed long variables. If an entry is confirmed by pressing the **+E+** key and the ↵ key, the entered value is written to the destination address and the value for completion (if specified) is written to the Tagname for completion in the PLC.

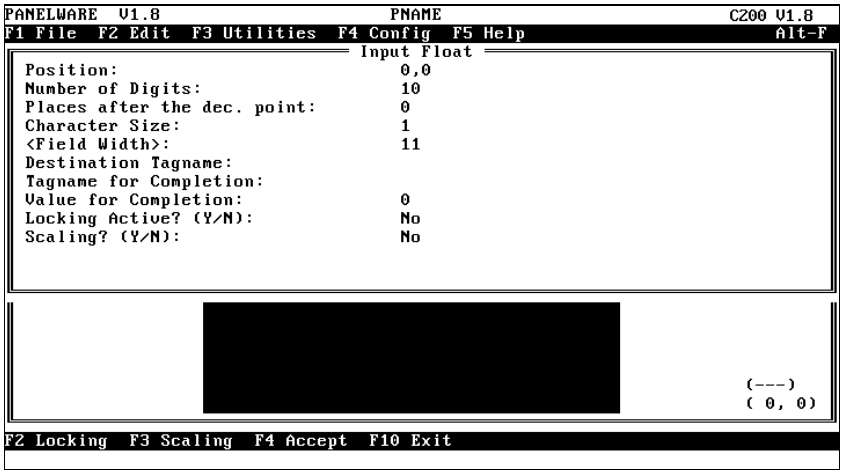
If the INPUT field is not the current field of entry, the value is read from the PLC (destination address) and displayed.

The following options are available for this field:

- Input Locking
- Scaling or Limits

For more information about these options, see chapter 12.

Input Float



Field Description

By pressing this field, you can give values for FLOAT variables (IEEE format). If an entry is confirmed by pressing the **+E+** key and the ↵ key, the entered value is written to the destination address and the value for completion (if specified) is written to the Tagname for completion in the PLC.

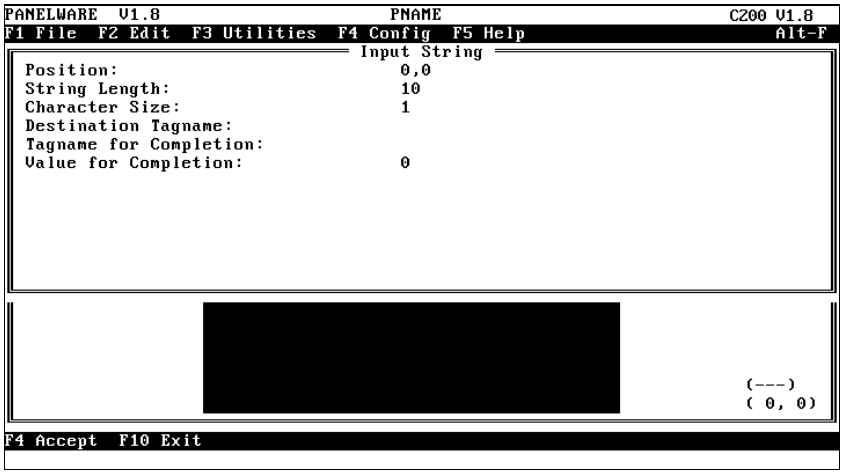
If the INPUT field is not the current field of entry, the value is read from the PLC (destination address) and displayed.

The following options are available for this field:

- Input Locking
- Scaling

For more information about these options, see chapter 12.

Input String



Field Description

In this field, ASCII characters can be entered. If the entry is confirmed by means of the **+E+** key and the ↵ key, the string is written to the Destination Tagname in the PLC and the Value for Completion is written to the Tagname for completion (if specified) in the PLC.

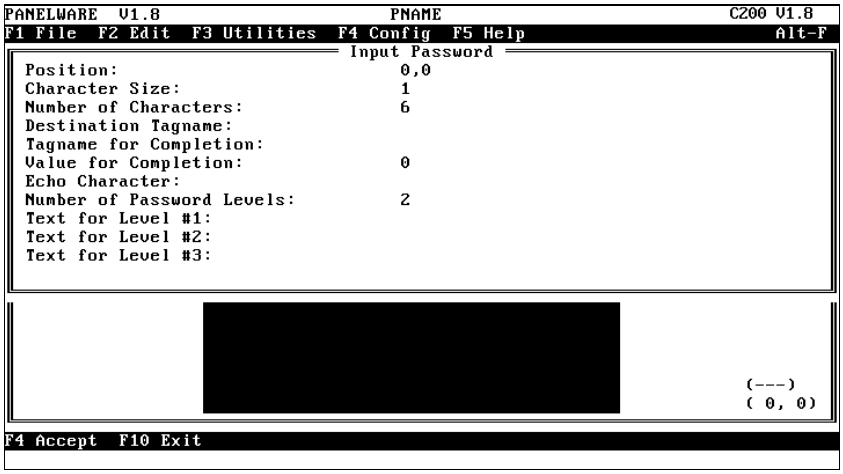
The number of characters sent corresponds to the number defined for the String Length. The string is not terminated with an ASCII null (00) character. Blank spaces at the end of the string are filled with space characters (32).

If the INPUT field is not the current field of entry, the value is read from the PLC (Destination Tagname) and displayed.

Note

The numbers above should be interpreted as hexadecimal (base 16) values, not decimal values.

Input Password



Field Description

This field is used to request the operator to give a password before access is given. The field sets the Destination Tagname with the appropriate password level and the value for completion is written to the Tagname for completion (if specified) in the PLC. If the wrong password is entered, the Destination Tagname is set to zero. Level #0, therefore, has no password. The password level can be used to lock input fields.

While the entry is being made, only the echo character can be seen instead of the character entered.

For more information about passwords, See chapter 12.

Field Parameters

Table 6 - 9. Field Parameters—Input Password

Field Parameter	Description
Echo Character	While the entry is being made, only the echo character can be seen instead of the character entered.
Number of Password Levels	This position is used for changing the total number of password levels supported (permitted values: 2, 3 and 4).
Text for Level #x	Password for level x. A password can be a maximum of 6 characters long.

Section 3 Key Functions

One key function can be assigned to each key for a picture (a key can have different functions in different pictures). To assign key functions, press **F5** from the **Edit Picture** window (see chapter 5 for more information).

Important: All keys that have been assigned key functions must be defined as function keys in the Keycode Table (see chapter 7).

General Information

Table 6 -10 Key Function Descriptions

Key Function	Description
Set Bit/Byte	This function sets a data byte or a data bit in the PLC to the configured value when the user presses the key.
Set Word	This function sets an unsigned data word in the PLC to the configured value when the user presses the key.
Toggle Bit/Byte	This function is used to switch a data bit or a data byte in the PLC between two configured values.
Toggle Word	An unsigned data word in the PLC can be switched between two configured values with this function.
Momentary Bit/Byte	This function is used to send the state of a key to the PLC. As long as the key is held down, the value of Operand 1 is sent to the Tagname address. If the key is released a zero is sent. The value for completion is only written to the Tagname for completion (if specified) after the key is released.

Function Key Overview

While you are defining key functions, the following functions are available:

F4 Accept ..... The key function for the current key (current cursor position) is saved. A defined key function is indicated by a **T** character.

F5 Connection List If the cursor is at the **Tagname** parameter line (**Output Bit/Byte**), press **F5 Connection List** to display a selection window in which all connections for the current project are displayed. For each connection, the variable assignment table (VAT) can be opened for choosing the desired variables.

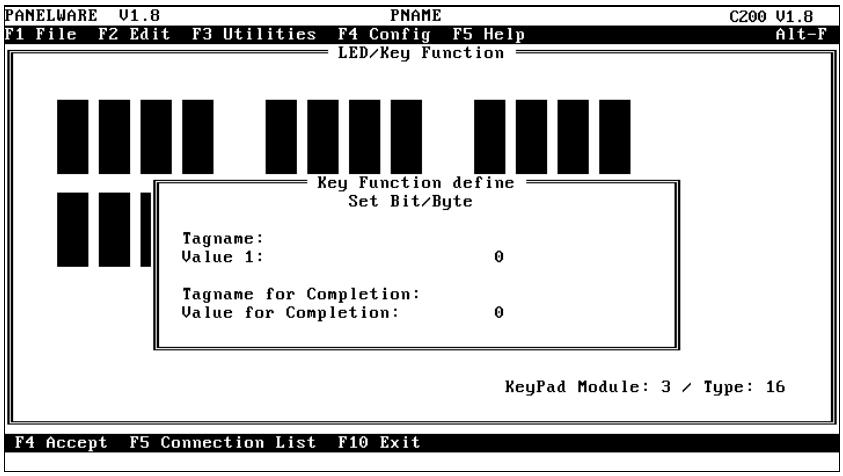
F10 Exit ..... The selected key function is saved. PCS returns to the **Edit Picture** window.

Notes

To change an existing key function assignment, you must first use the **Del** key to delete the existing key function.

Key functions can also be assigned through the key matrix (refer to “Project Editor” in chapter 4 for details).

Set Bit/Byte



Description

This function sets a data byte or a data bit in the PLC to **Value 1** when the function key is pressed.

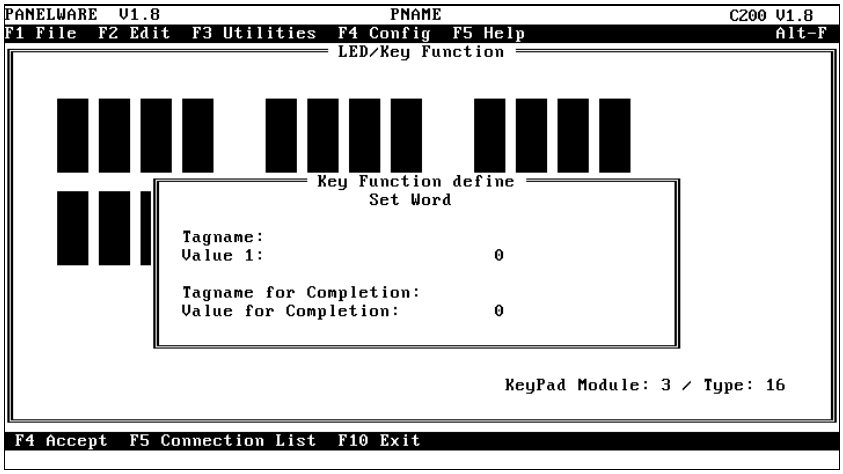
For Tagname, Tagname for Completion, and Value for Completion information, see "General Field Parameters" on page 6-2.

Field Parameters

Table 6 -11 Field Parameters—Set Bit/Byte

Field Parameter	Description
Tagname for Completion	The Tagname for Completion (if defined) is written after every key press.
Value 1	This position is used for entering a value (0 to 255) that is to be sent to the address (Tagname) in the PLC every time that the assigned key is pressed.

Set Word



Description

This function sets a data word in the PLC to a **Value 1** when the function key is pressed.

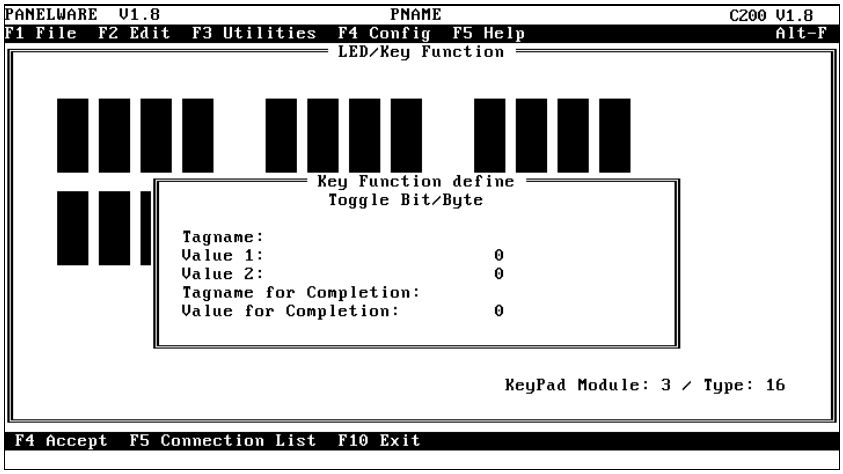
For Tagname, Tagname for Completion, and Value for Completion information, see the "General Field Parameters" on page 6-2.

Field Parameters

Table 6 - 12 Field Parameters—Set Word

Field Parameter	Description
Tagname for Completion	The Tagname for Completion (if defined) is written after every key press.
Value 1	This position is for entering a value (0 to 65535) that will be sent to the Tagname in the PLC every time that the assigned key is pressed.

Toggle Bit/Byte



Description

This function is used to switch a data bit or a data byte in the PLC between two configured values.

The field compares the contents of the Tagname to **Value 1**. If they are the same, **Value 2** is written to the PLC; if they are different, **Value 1** is written.

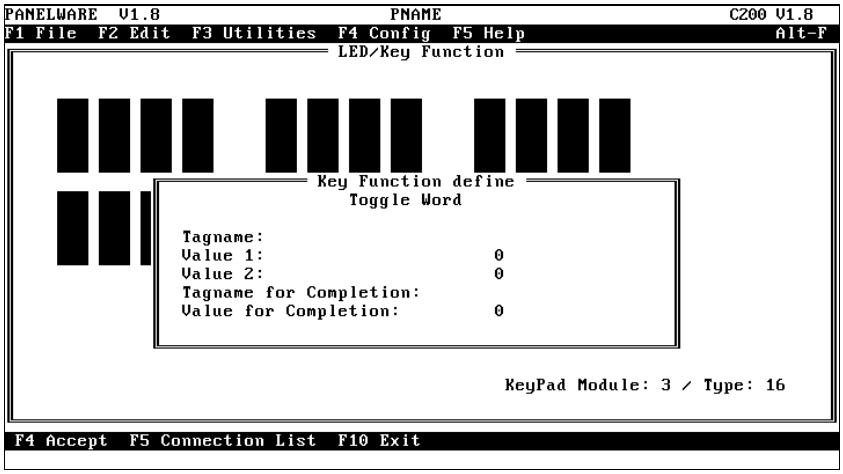
For Tagname, Tagname for Completion, and Value for Completion information, see “General Field Parameters” on page 6-2.

Field Parameters

Table 6 - 13 Field Parameters—Toggle Bit/Byte

Field Parameter	Description
Tagname for Completion	The Tagname for Completion (if defined) is written after every key press.
Value 1 Value 2	Two values, in the range 0 to 255, are entered here. They are compared to the Tagname and one is sent to the PLC Tagname every time the assigned key is pressed.

Toggle Word



Description

This function is used to switch a data word in the PLC between two configured values.

The field compares the contents of the Tagname to **Value 1**. If they are the same, **Value 2** is written to the PLC; if they are different, **Value 1** is written.

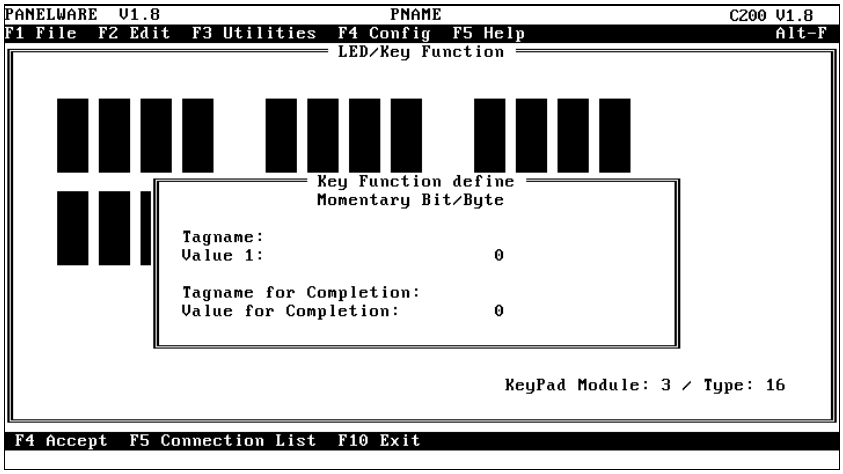
For Tagname, Tagname for Completion, and Value for Completion information, see “General Field Parameters” on page 6-2.

Field Parameters

Table 6 - 14 Field Parameters—Toggle Word

Field Parameter	Description
Tagname for Completion	The Tagname for Completion (if defined) is written after every key press.
Value 1 Value 2	Two values in the range 0 to 65535 are entered here that will be switched between and sent to the PLC Tagname every time the assigned key is pressed.

Momentary Bit/Byte



Description

This function is used to send the state of a key to the PLC. When the key is first pressed, a user-configured value is sent to the Tagname address; when the key is released, a zero is sent.

For Tagname, Tagname for Completion, and Value for Completion information, see “General Field Parameters” on page 6-2.

Note

The Tagname must be initialized in the PLC. The PLC address must be set to 0 in the PLC initialization phase.

Field Parameters

Table 6 - 15 Field Parameters—Momentary Bit/Byte

Field Parameter	Description
Tagname for Completion	The Value for Completion is only written to the Tagname for Completion after the key is released.
Value 1	A value in the range 0 to 255 is entered in this position that will be written to the PLC Tagname when the assigned key is pressed.

Section 4 LED Functions

One LED function can be assigned to each key for a picture (a key can have different functions in different pictures). To assign LED functions, press **F5** from the **Edit Picture** window (see chapter 5 for more information).

Note

Up to 32 keys can be illuminated simultaneously.

General Information

Table 6 - 16. LED Function Descriptions

Key Function	Description
Key LED switched on	The LED of the selected key is switched on.
Key LED switched off	The LED of the selected key is switched off. This is also the default state of every key LED.
Key LED blinking slow	The LED of the selected key is switched to a slowly blinking status (2 Hz rate).
Key LED blinking fast	The LED of the selected key is switched to a fast blinking status (4 Hz rate).
LED Control from PLC	Using this command, the status of a key LED can be controlled by the PLC. The LED is switched according to a value in the PLC.

If one of the functions shown above is selected, a window appears in which the desired function is shown again. If the **LED Control from PLC** function is selected, PCS will prompt for a PLC address (Tagname) entry.

The following functions are used to either save or disregard any changes made:

F4 Accept ..... The LED function for the current key LED (current cursor position) is saved. A defined LED function is indicated by a ***** character.

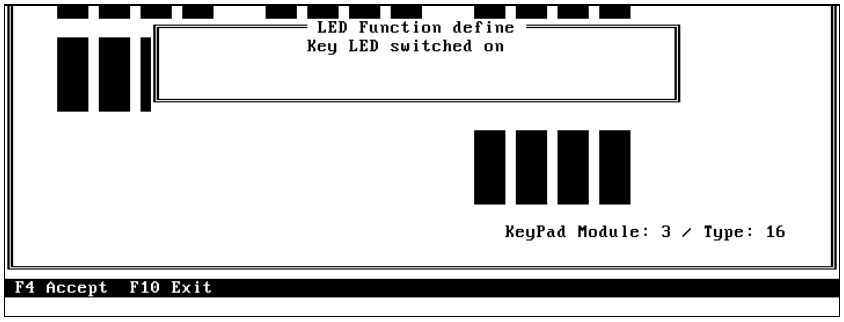
F5 Connection List (**LED Control from PLC** function only) If the cursor is at the **Tagname** parameter line, press **F5 Connection List** to display a selection window in which all connections for the current project are displayed. For each connection, the variable assignment table (VAT) can be opened for choosing the desired variables.

F10 Exit ..... The selected LED function is not saved.

Note

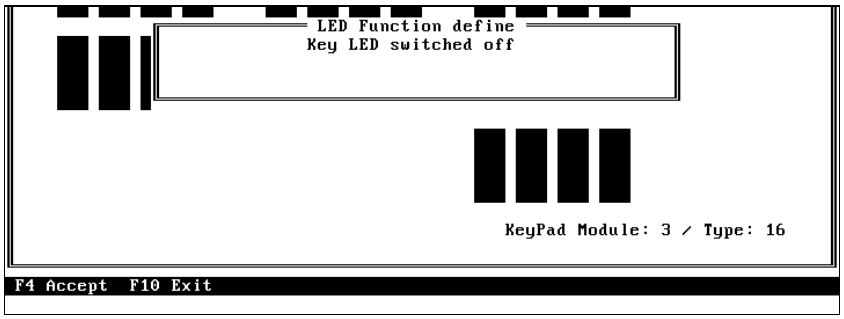
The LED functions, with the exception of **LED Control from PLC**, are executed once after a picture change. The **LED Control from PLC** function is executed cyclically like a field.

Key LED Switched On



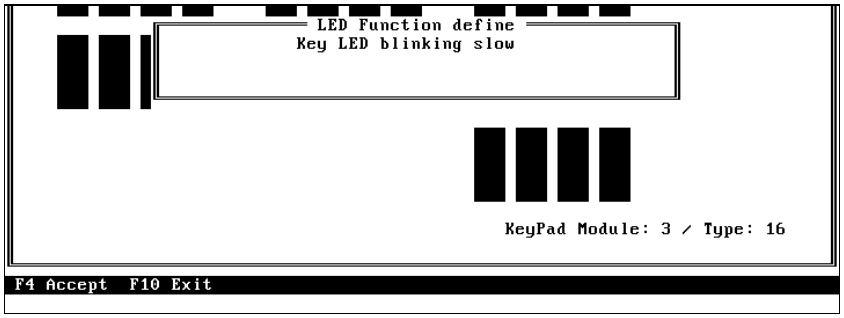
The LED of the selected key is switched on.

Key LED Switched Off



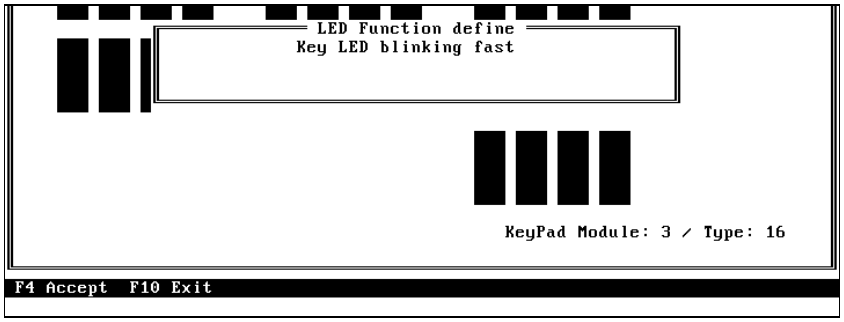
The LED of the selected key is switched off. This is also the default state of every key LED.

Key LED Blinking Slowly



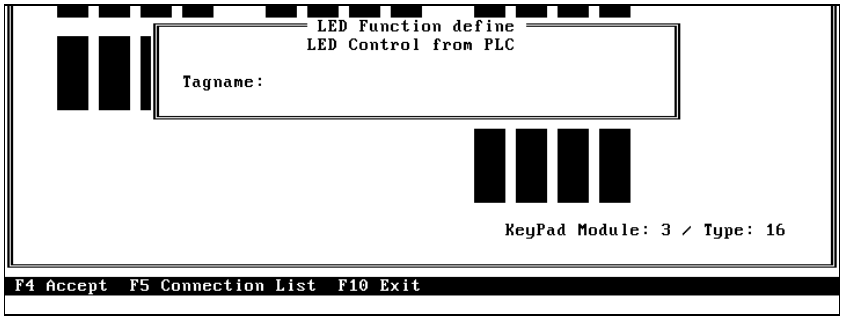
The LED of the selected key is switched to a slowly blinking status (2 Hz).

Key LED Blinking Rapidly



The LED of the selected key is switched to a fast blinking status (4 Hz).

LED Control from PLC



With this command, the status of a key LED can be controlled by the PLC. The LED is switched according to the following values in the PLC.

Table 6 - 17. PLC Values for LED Functions

Value in the PLC	LED Function
0	LED switched off
1	LED switched on
2	LED blinks slow
3	LED blinks fast

The LED functions, with the exception of **LED Control from PLC**, are executed after a picture change. The **LED Control from PLC** function is executed cyclically like a field.

Chapter 7

Keycode Table Editor

This chapter explains how the Panel's keys can be defined as control or function keys and how each individual key can be assigned a certain ASCII character. It includes the following information:

- General Information 7-1
- Using the Keycode Table Editor 7-2
  - Screen Format 7-3
  - Function Key Overview 7-4
- Numeric/Alphanumeric Keycode Tables 7-5
  - F1 - NumTab (Numerical Keyboard) 7-5
  - F2 - AlphaTab (Alphanumeric Keyboard) 7-5
- F3 - Control Key 7-6
- F4 - Function Key 7-7
- ASCII Characters 7-7

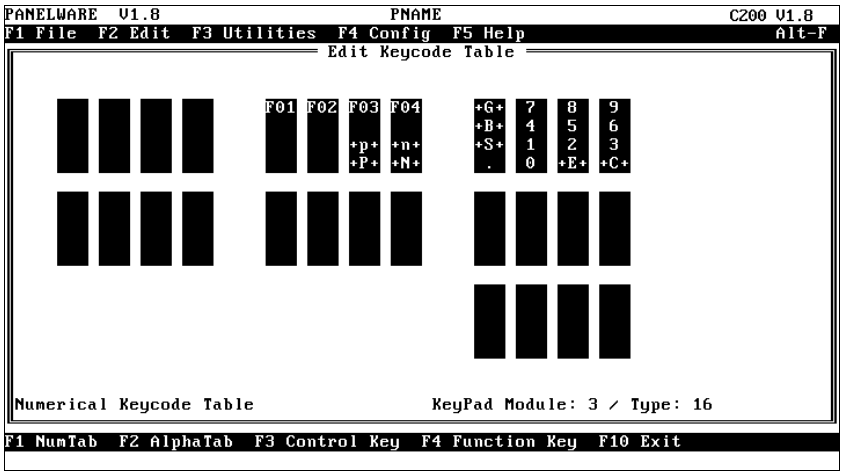
General Information

Key assignments must be defined for every project. Functions to be used in every picture can be assigned to every key in each Keyblock module. When you create a new project, some default key functions are already assigned. You can change these assignments to meet your needs.

Keyblock modules are numbered sequentially from 1 to a maximum of 7; Keyblock #1 is the one connected directly to the Controller. All standard Keyblock modules **must** be defined in the Keycode Table; all special Keyblock modules **must not** be defined. See chapter 4 of the *PANELWARE™ Hardware Installation User's Manual* (GFK-0848) for a listing of available standard and special Keyblock modules.

Using the Keycode Table Editor

The **Edit Keycode Table** window is opened by selecting either the **Keyboard** function of the **Edit** menu or the key combination **Ctrl** + **K**:



The Keyblocks are displayed on the screen as they are defined in the project hardware definition. The upper right-hand Keyblock is Keyblock #1, and must be the first Keyblock connected to the Panel Controller.

In the lower right-hand area of the **Edit Keycode Table** window, the number and the type of Keyblock module that the cursor is currently in is displayed. The Keyblock modules are numbered as shown in the following illustration:

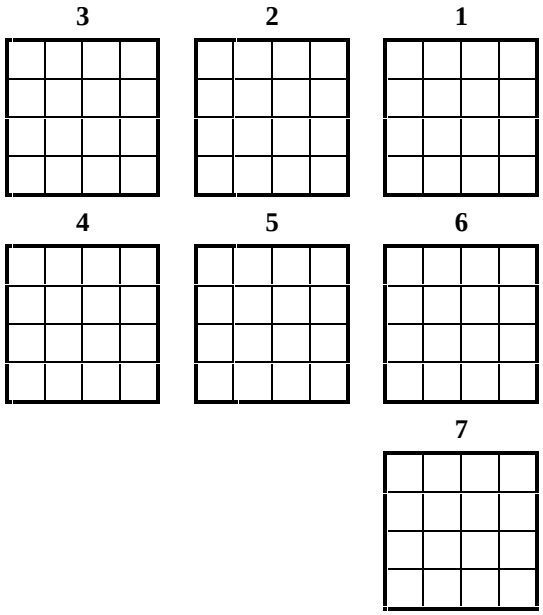


Figure 7 - 1. Keyblock Module Numbering Scheme

Screen Format

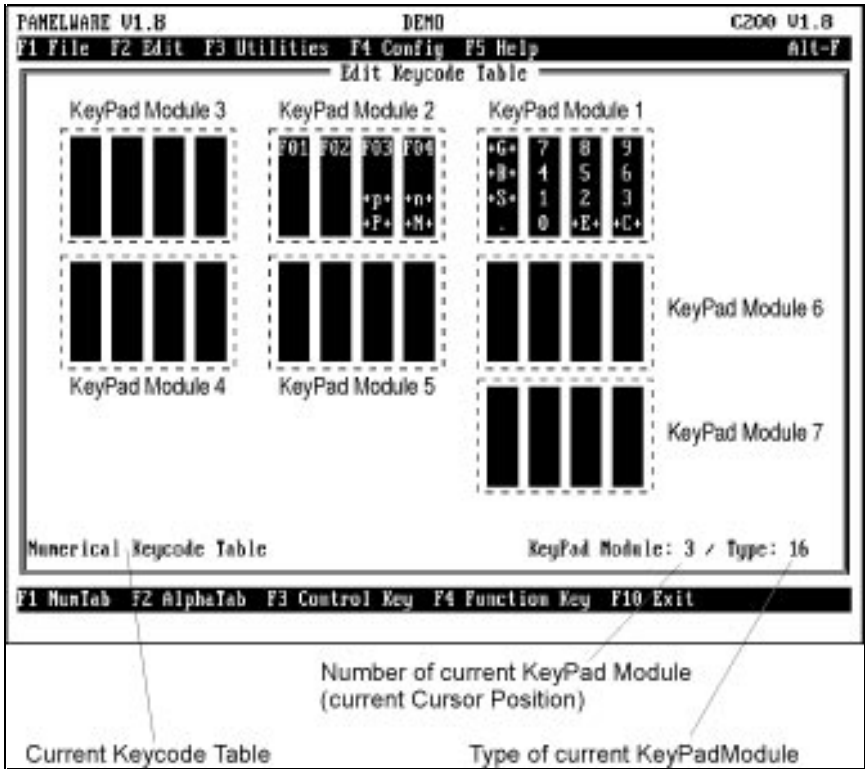


Figure 7 - 2. Edit Keycode Table Screen Format/Content

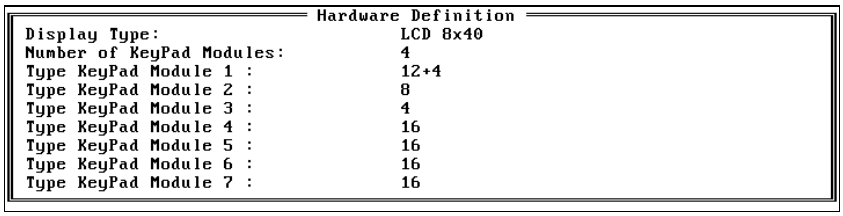
The Keyblock modules defined in the project definition are represented on the screen. If, for example, only four Keyblock modules are defined, four Keyblock modules appear on the screen.

In the lower part of the **Edit Keycode Table** window, the following information is displayed:

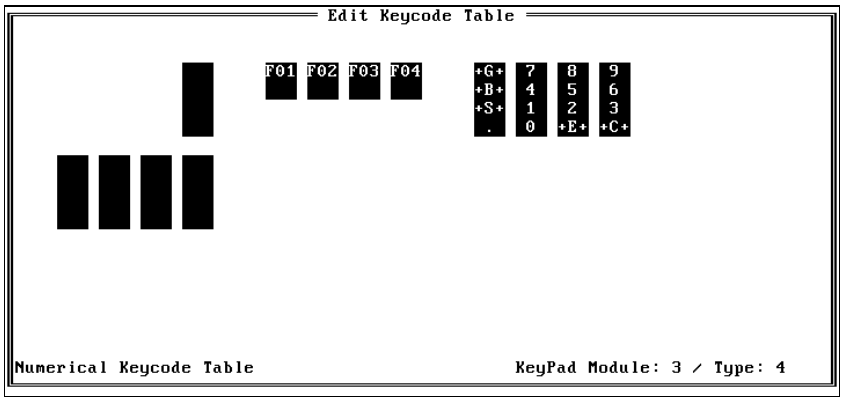
- **Current Keycode Table:**
  Using function keys **F1 NumTab** and **F2 AlphaTab**, you can switch between the **Numerical** and **Alpha** keycode tables.
- **Type of Keyblock Module:**
  The type of Keyblock module that is selected on the screen.
- **Number of Current Keyblock Module:**
  The number of the Keyblock module that is selected on the screen.

Each of the four possible types of standard Keyblock modules is displayed differently on the screen. The pictures that follow are an example of one possible project definition:

Example project definition:



The respective screen display would look like the following:



Function Key Overview

The following function key functions are displayed at the bottom of the **Edit Keycode Table** window:

F1 NumTab ..... Displays the numerical key assignments.

F2 AlphaTab ..... Displays the alphanumeric key assignments.

F3 Control Key ..... Defines the key that the cursor is currently on as a control key.

F4 Function Key ..... Defines the key that the cursor is currently on as a function key.

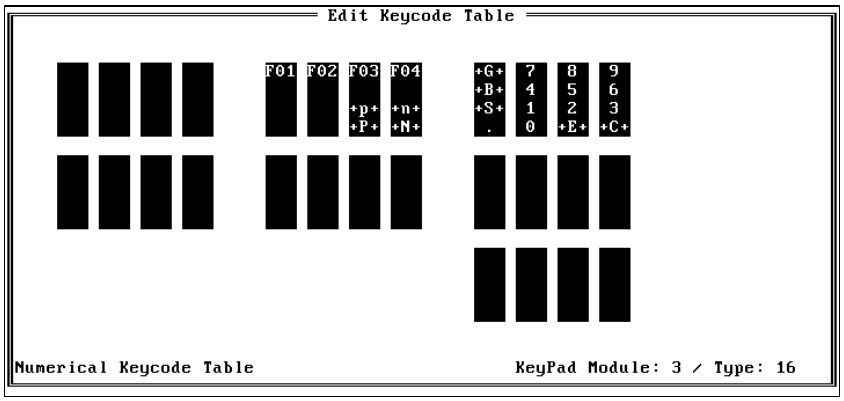
F10 Exit ..... Closes the **Edit Keycode Table** window and saves all changes automatically, then redisplays the **Main** menu.

Numeric/Alphanumeric Keycode Tables

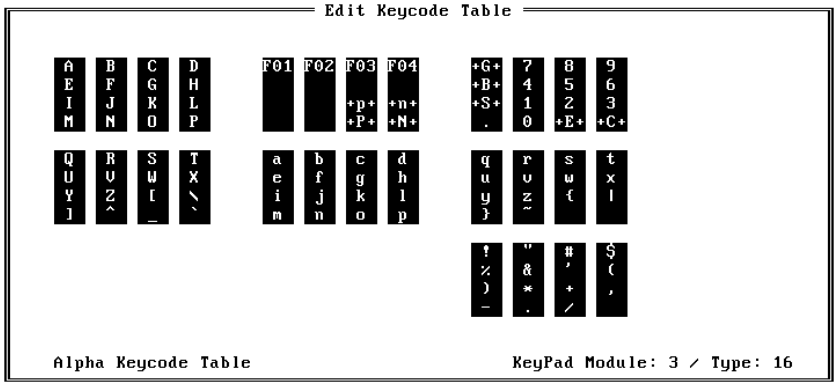
For every project, two keycode tables are defined:

- The **numerical** keycode table is used with numerical input fields.
- The **alphanumeric** keycode table is used for string entries with the **Input String** and **Input Password** fields...

F1 - NumTab (Numerical Keyboard) — Default Assignment



F2 - AlphaTab - Alphanumeric Keyboard — Default Assignment



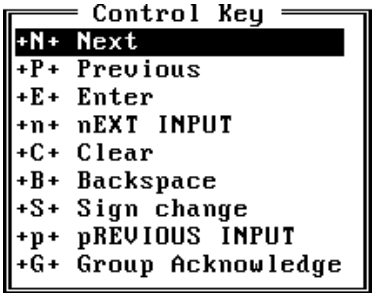
F3 - Control Key

You can assign control keys that can be used by the operator to influence the behavior of the Panel directly. The following control keys are available and can be assigned to any key:

Table 7 - 1. Control Key Functions

Key	Function	Description
+N+	**N**ext Picture	Changes to the next picture. The definition of the next picture is done by binding it properly (see chapter 4).
+P+	**P**revious Picture	Changes to the previous picture. The definition of the previous picture is done by binding it properly (see chapter 4).
+n+	**n**ext Input	Changes the cursor to the next input field. The next input field is defined in the picture editor (see chapter 5).
+p+	**p**revious Input	Changes the cursor to the previous input field. The previous input field is defined in the picture editor (see chapter 5).
+E+	**E**nter	Confirms input (entry). In most cases, the Panel monitors whether the entry is in the proper area and sends the given value to the defined Destination Tagname. The cursor is then moved to the next input field.
+C+	**C**lear	Deletes/clears the contents of the input field.
+S+	**S**ign Change	Changes the sign (only input fields).
+B+	**B**ackspace	Deletes the last character (only input fields).
+G+	**G**roup Acknowledge	Group acknowledges all alarms of the same group.

There is no requirement to define all control keys in a project. The control keys are always entered automatically to both keyboard tables (see “Screen Format” in this chapter). If **F3 Control Key** is pressed, a selection window appears.



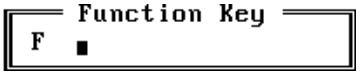
Note

The control key assignments are entered in both tables (numerical and alphanumeric).

F4 - Function Key

When the user presses a key, the function that you have assigned to it will be activated.. The function keys are numbered from **F01** to **F99**, but need not be assigned sequentially.

Every key that has at least one key function in one picture or is used for a picture change must be defined as a function key. For more information about key functions, see “Key and LED Functions” in chapter 5 and “Field Types, Key Functions, and LED Functions” in chapter 6.



When **F4 Function Key** is pressed, a selection window appears in which the number of the selected function key is to be entered.

Note

The function keys are only entered in the current keycode table (numerical or alphanumeric).

ASCII Characters

To assign an ASCII character to the key on which the cursor is currently located, simply press the desired key on your PC keyboard. In the numerical keycode table, only the ASCII characters 0 to 9 and the decimal point can be entered.

Note

ASCII characters are only entered in the current keycode table (numerical or alphanumeric). Characters that have an ASCII value of 128 or higher are entered using key combination *ALT* + *`ASCII code`*.

Chapter 8

Text Group Editor

This chapter explains how to create and edit text groups. It includes the following information:

- General Information 8-2
- Screen Format 8-3
- Function Key Overview 8-4
- F1/F2 - Inserting/Editing a Text Group 8-5
- Importing a Text Group 8-6

General Information

You can use text groups to convert a numeric value accessed from the PLC into a user-configured representative text string. For example, a numeric value in the PLC might represent a paint color. Instead of displaying **0**, **1**, or **2** on the display, you could use a text group to convert the value to **YELLOW**, **BLUE**, or **RED**.

Groups of text are created using the Text Group Editor. Each text group consists of up to 2000 text strings of up to 40 characters each (any other limitations are outlined in Appendix A). The text strings in a text group are sequentially numbered by PCS, beginning with 0.

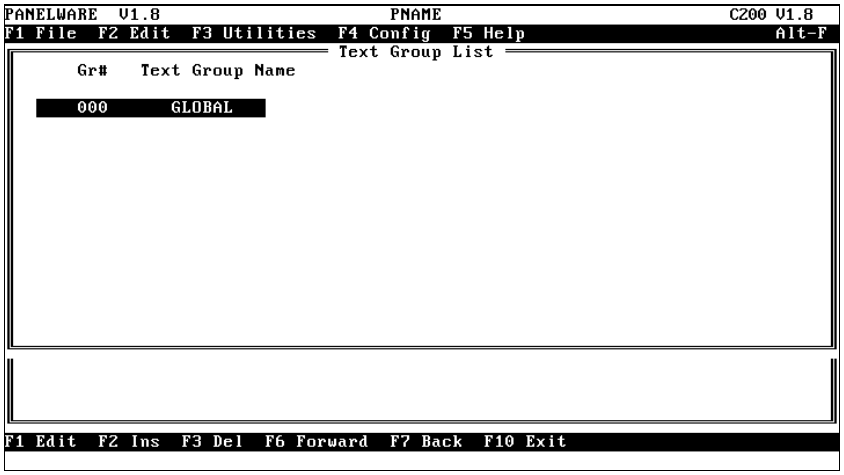
A text group with the name **GLOBAL** exists for every project and cannot be deleted. This text group contains commands for clearing the display and the key LEDs (Text Number #0) that are executed with every picture change. The output of text from the GLOBAL group (only) is done using the **Output Text** output field (see chapter 6 for details).

Caution

The GLOBAL text group cannot be deleted. Text #0 from the text group GLOBAL should only be changed if you completely understand the consequences.

The output of text from all groups other than GLOBAL is done using the **Output Text Advanced** output field (see chapter 6 for details).

The text group editor is accessed by selecting the **Text Groups** function of the **Edit** menu or the key combination **Ctrl** + **T** (text group edit mode). A list of all text groups is displayed in the **Text Group List** window:



Use the cursor keys to select a text group, then move the text group around within the list, or edit or delete it as you wish. More text groups can be inserted here (maximum number of text groups is 255).

Screen Format

All text groups existing for the project are listed in the **Text Group List** window. If the list is longer than the window provides space for, it can be paged through using the **PgUp** and **PgDown** keys. The cursor up and down control keys move the list up and down by one line if the cursor is in the top or bottom line of the window respectively.

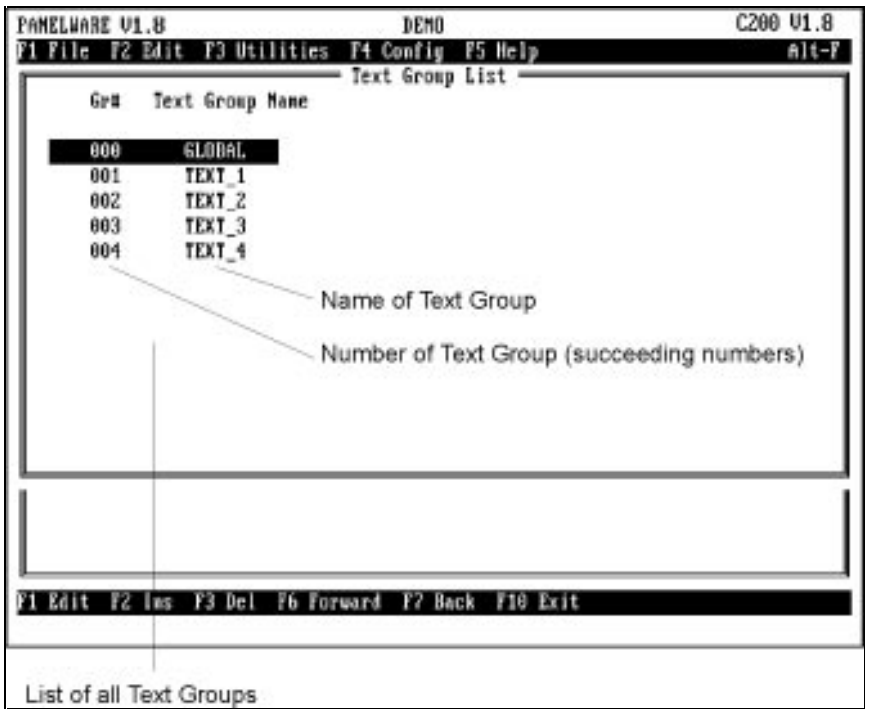


Figure 8 - 1. Text Group List Screen Elements

Function Key Overview

The following function keys, listed at the bottom of the **Text Group List** window are used in the Text Group Editor:

F1 Edit ..... Edits the selected text group.

F2 Ins ..... Inserts a new text group.

F3 Del ..... Deletes the selected text group from the **Text Group List** window.

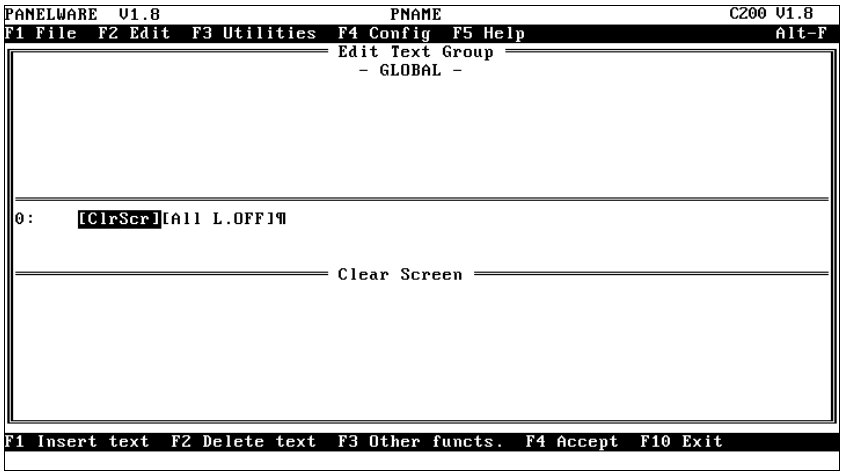
F6 Forward ..... Moves the selected text group up one position in the list (switches places with the entry above it).

F7 Back ..... Moves the selected text group down one position in the list (switches places with the entry below it).

F10 Exit ..... Closes the **Text Group List** window and saves all changes automatically. Redisplays the **Main** menu.

F1/F2 - Inserting/Editing a Text Group

A new or existing text group can be edited using the **F1 Edit**/**F2 Ins** functions. The **Edit Text Group** window appears on the screen, with the selected text group (if any) displayed:

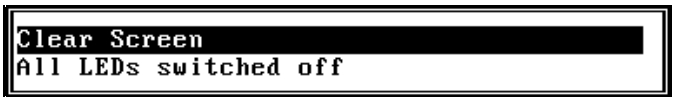


The text that can be edited is displayed in the middle marked area of the screen. You can edit the text as desired using the cursor keys to move to the previous or next text in the marked area.

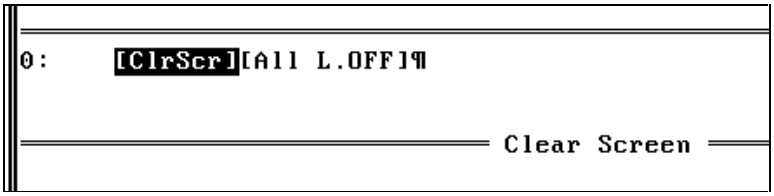
F1 Insert text ..... Inserts another text block into the text group at the cursor location.

F2 Delete text ..... Deletes the text that is selected.

F3 Other functs. ..... Allows extra functions to be inserted into a text block by displaying the following selection window:



Select the desired function using the cursor keys, then press the ↵ (Enter) key to insert the function into the text.



If the cursor is located on a function, the name of the function is displayed under the command text (**Clear Screen** in the picture above).

F4 Accept ..... Saves the changes to the current text group and closes the **Edit Text Group** window. The **Text Group List** window is redisplayed.

F10 Exit / **Esc** ..... Closes the **Edit Text Group** window but does not save the changes automatically. The following prompt screen warns that the changes to the text group have not yet been saved.

Press one of the following keys:

Y ..... The changes are saved and the text group list appears.

N ..... The changes are not saved and the text group list appears.

Esc .... The message box is closed and you can continue editing the text group.

Importing a Text Group

You can import an existing text group into the current text group list by using the **Import** function in the **File** menu.

1. From the **Text Group List** window, press **F2 Ins**. The **Edit Text Group** window appears.
2. Select **Import** from the **File** menu, or press **Ctrl** + **I**. The **Import Text Group** window appears.
3. Press ↵ to open a selection window that lists existing text groups (*.GLB files). Select the ..\ entry in the list and press ↵ to see a list of other projects..
4. Select the text group that you want and press ↵ . Press **F4** to accept the imported text. PCS will prompt you for a new text group name.
5. Enter a name for the imported text group or press ↵ for a list of text groups in your project. (If you select a text group name from the list, it will be overwritten.)
6. Press ↵ . PCS returns to the **Text Group List** window, which now contains the text group that you imported and renamed.

Chapter 9

Connection List Editor

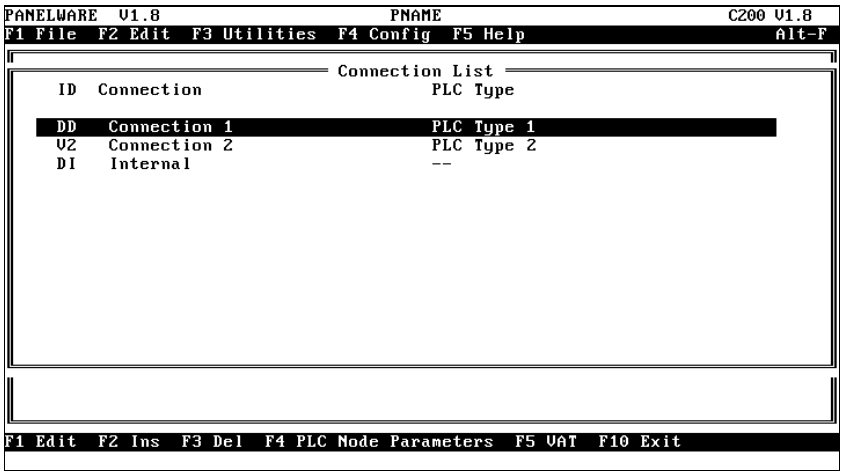
Every PLC connected to the Panel must be defined in the project's connection list. Each of these entries is attached to a separate list called the variable assignment table (VAT) in which all variables of a connection (Tagnames) are assigned to a PLC address. All variables (symbolic variable names) to be used in a project must be assigned to specific addresses in the PLC CPU, unless they refer to internal Panel memory.

This chapter describes how to create a connection list for a project using the connection list editor. It also describes how to edit to VAT to assign symbolic variable names to a PLC addresses for each connection. The following information is included:

- Editing the Connection List 9-2
- Screen Format 9-3
- Function Key Overview 9-4
  - F1/F2 - Editing/Inserting Connections 9-5
  - F3 - Deleting Connections 9-6
  - F4 - Editing PLC Network Parameters for a Connection 9-6
  - F5 - Editing the Variable Assignment Table (VAT) 9-7
    - Elements of the VAT 9-7
    - Function Keys for the VAT 9-8
    - F1/F2 - Editing/Inserting Variable Assignments 9-9
    - F3 - Deleting Variable Assignments 9-10
    - F6 - Marking Unused Variables 9-10
- Importing a VAT 9-11
- Exporting a VAT 9-12

Editing the Connection List

In order to edit connections, the Connection List must be accessed by selecting the **Connection** function of the **Edit** menu or the key combination **Ctrl** + **C** (connection edit mode). *The connection list can only be called if a project is loaded.*



Screen Format

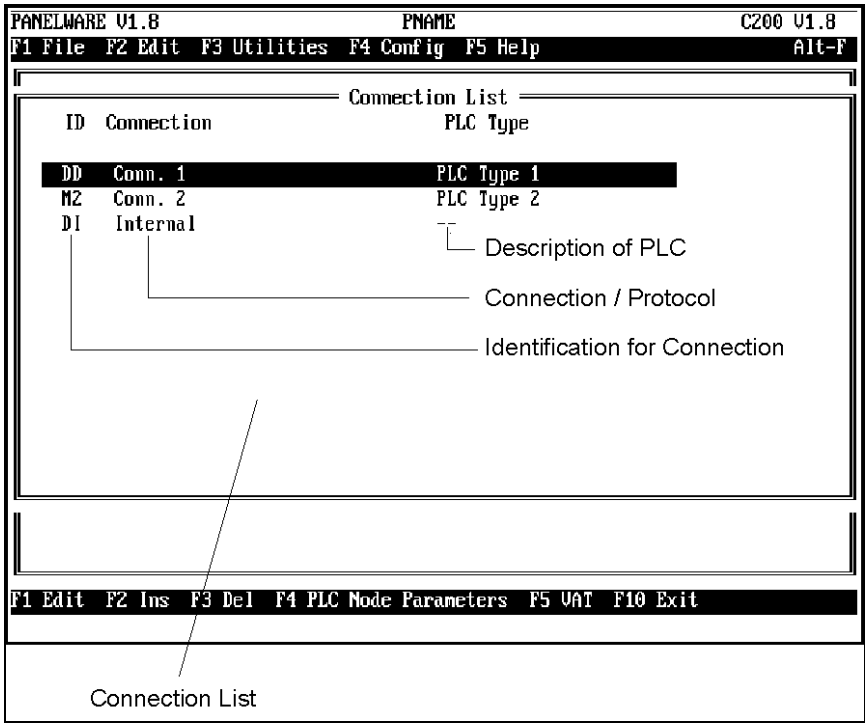


Figure 9 - 1. Connection List Elements

Each entry in the connection list consists of three parts:

- Identifier for a connection (PLC substation). The assignment of a variables to a connection is done through the ID. If input or output fields are defined as part of a picture, the Tagname must be entered with the ID (for example, VALUE1/ID). See chapter 6 for more information about field types.

  Note

  Variable names without an ID are automatically assigned the default connection **DD**.

- Connection: Type of connection.

  Conn. x Any connection to a PLC is displayed here. The possible connections that can be displayed depends on the drivers installed.

  Internal Internal variables are found within the Panel. A list of internal variables is provided in Appendix D.

- PLC Type: Detailed description of the PLC type supported.

After a new project is created, the ID **DD** is automatically placed in the connection list. The connection used for it depends on the drivers installed.

Function Key Overview

F1 Edit ..... **Editing Connections**
Changes the selected connection (use the cursor keys to select).

F2 Ins ..... **Inserting Connections**
Inserts a new connection.

F3 Del ..... **Deleting Connections**
Deletes the selected connection (only if the VAT is empty).

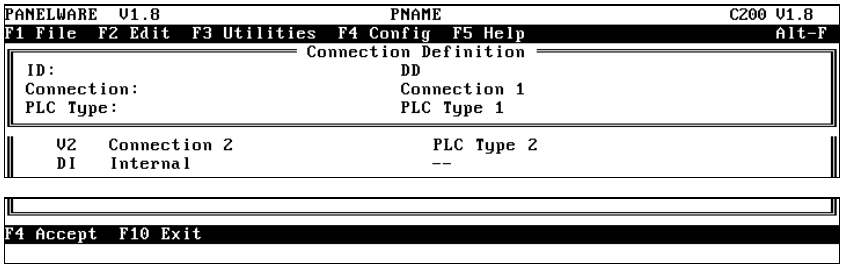
F4 PLC Node Parameters **Editing PLC Node Parameters**
Allows the protocol parameters of the selected connection to be edited.

F5 VAT ..... **Variable Assignment Table (VAT) Editing**
Displays the variable assignment table of the selected connection so that it can be edited.

F10 Exit ..... **Closes the Connection List**
Closes the **Connection List** window and redisplays the **Main** menu.

F1/F2 - Editing/Inserting Connections

When you press **F1 Edit** or **F2 Ins**, the following window appears, in which the connection definition can be entered or modified:



F4 Accept .....Saves and then closes the connection definition.

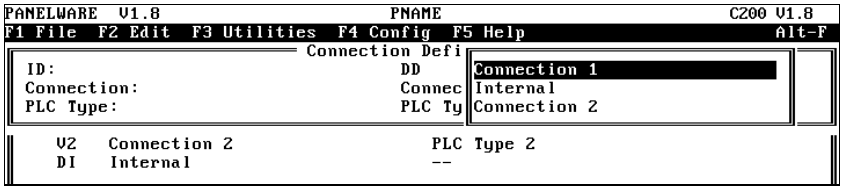
F10 Exit .....Closes the connection definition without saving.

Defining/Changing the ID

If the cursor is in the **ID** line, the identification code can be changed to any one or two alphanumeric character identifier.

Defining/Changing the Connection

If the cursor is in the **Connection** line, a selection window can be called by pressing the ↵ (Enter) key. From this list, you can choose the type of connection required:

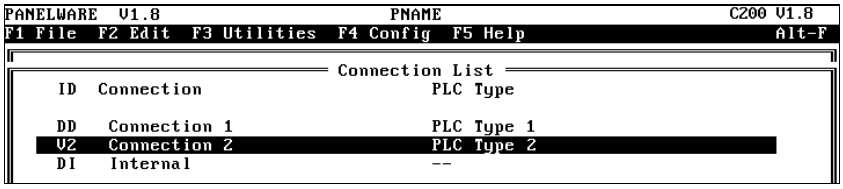


Note

The connections available for selection depend on the PLC drivers currently installed on your PC.

F3 - Deleting Connections

A connection can be deleted from the connection list by selecting it using the cursor keys, then pressing **F3 Del**:



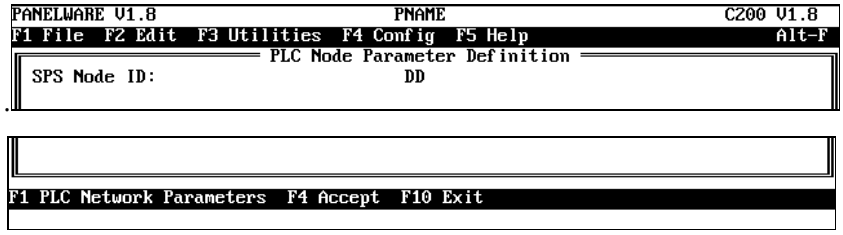
After **F3 Del** is pressed, the selected connection disappears from the list.

Note

A connection can not be deleted if it contains valid Tagnames.

F4 - Editing PLC Node Parameters for a Connection

Protocol parameters for a connection must be defined in the **PLC Node Parameters** window.



The parameters that appear in these windows vary, depending on the type of connection (PLC Driver) that is selected. For some software drivers, the protocol parameters require a second window, **PLC Network Parameters,** which is accessed from the **PLC Node Parameters** window.

Refer to the appropriate *Application Manua*l for a detailed description of these parameters.

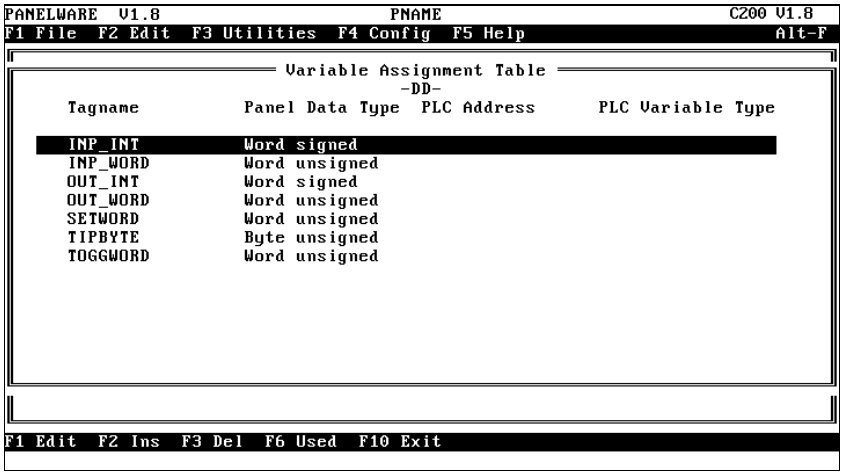
Note

The **F4 PLC Node Parameters** function key has no effect on internal connections.

F5 - Editing the Variable Assignment Table

The Variable Assignment Table (VAT) is used to assign symbolic variables to absolute PLC addresses. All connection variables that are entered as PLC addresses during the project creation are listed in the **Variable Assignment Table.**

When you press the **F5 VAT** key from the connection list, the VAT screen for the selected connection is displayed. The following screen is an example:



Elements of the VAT

The VAT for any connection consists of the following elements:

- Tagname: Symbolic name as follows:
  - Entered for PLC addresses in the project definition with the ID for this connection (PLC address for transmit key matrix, transmit current picture number, and/or allow picture change by the PLC).
  - Entered for an input or output field as the PLC address with the ID for this connection. Can also be used for key/LED commands.
  - Entered for PLC addresses of the alarm system with the ID for this connection (PLC address for the alarm bit field, global alarm and/or bypass image).
- Panel Data Type: Indicates (automatically) the data type of the field or command that the variable uses for example, Byte unsigned for Output Byte). The variable inherits its data type from the field or command that references it. Every variable is assigned a specific Panel data type that can not be changed by the user.
- PLC Address: You must enter the PLC address using the syntax and format that the connected PLC will understand (see the appropriate Application Manual for the selected connection).

Note

The PLC address can not be entered for internal connections.

- PLC Variable Type: You must enter the data type of the variable in the PLC (in many cases, it will be identical to the Panel data type). For different data types, a data conversion must be performed (this is done automatically). PCS only makes those data types available that the Panel can display or convert for the PLC address.

Note

The PLC variable type can not be entered for internal connections.

Function Keys for the VAT

F1 Edit ..... **Editing a variable assignment**
Allows the selected variable to be changed.

F2 Ins ..... **Inserting a variable assignment**
Inserts a new variable.

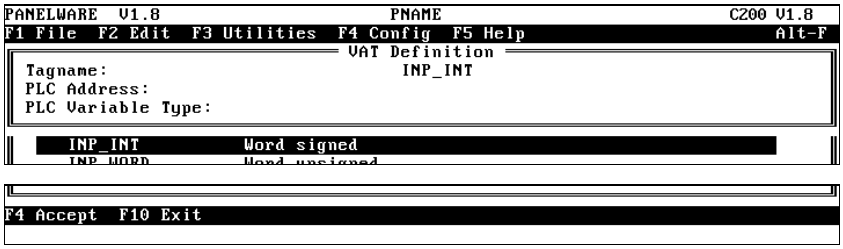
F3 Del ..... **Deleting a variable assignment**
Deletes the selected variable.

F6 Used ..... **Marking an unused variable**
All variables that are displayed in the VAT but not used in the project can be marked with a ***** character using this function and then later deleted using the **F3 Del** function. This function only gives valid information after a successful compilation.

F10 Exit ..... **Closing the VAT**
Closes the **Variable Assignment Table** window and redisplays the **Connection List** window on the screen.

F1/F2 - Editing/Inserting Variable Assignments

When you press the **F1 Edit** or **F2 Ins** key from the **VAT** window, the following window appears to allow a variable assignment to be entered or changed:



F4 Accept .....Saves and closes the VAT definition window.

F10 Exit .....Closes the VAT definition window without saving.

Entering/Changing the Tagname

If the cursor is in the **Tagname** line, the symbolic variable name can be changed or entered. Names that are already used in the VAT cannot be used twice and will be rejected with the following error message: **`Variable name already exists!`**

Note

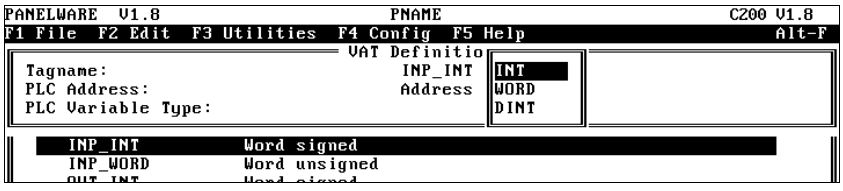
Changing the Tagname in the variable editor does not change any references made to the original Tagname by the project or any picture.

Entering/Changing PLC Addresses

If the cursor is in the **PLC Address** line, the PLC address can be entered or changed using the syntax and format that the connected PLC requires.

Entering/Changing PLC Variable Types

If the cursor is in the **PLC Variable Type** line, a selection window can be opened by pressing ↵. This window lists the data types that are permitted for this PLC address.



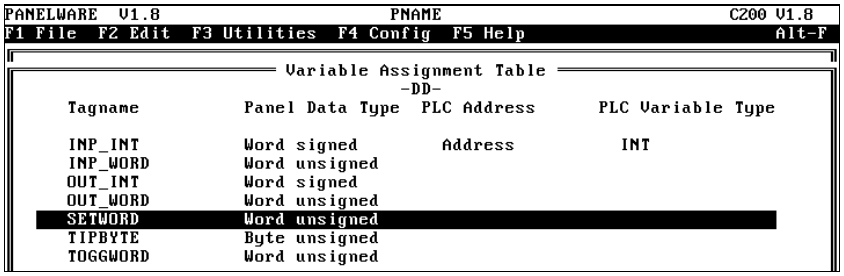
Note

You can not enter the PLC variable type for a variable that you are inserting into the VAT. Attempting to do so will result in the following error message:

`Tagname not used in any field yet!`

F3 - Deleting Variable Assignments

Variable assignments can be deleted from the VAT by selecting an entry and pressing the **F3 Del** function key.



After the **F3 Del** key is pressed, the selected variable disappears from the list.

F6 - Marking Unused Variables

All variables that are not used in a project but still exist in the VAT can be marked with a ***** character by means of the **F6 Used** function. These can later be deleted using the **F3 Del** function. To mark all unused variables, simply press the **F6 Used** function key.

Note

The **F6 Used** function provides valid information only after a successful (error free) compilation of the project.

After the compiler is successfully finished, a list of all UNUSED variables is made by PCS. All variables that are in a VAT but are not used at any point (picture, alarm system, ...) in the project are recognized as being UNUSED.

These variables can be deleted from the VAT if you will not be using them at any other time in the project. If you use a variable that is marked as being UNUSED (for example, to display a value in a picture), it will be marked as USED after another successful compile.

Importing a VAT

Using the **Import** function from the **File** menu (or press **Ctrl** + **I** from the **Variable Assignment Table** window), you can import variable assignments into the current VAT. General information about VAT import:

- You can import variable assignments only in existing VATs
- If the imported variable already exists in your VAT, only the PLC address and the PLC data type will be imported and respectively overwritten.
- The validity of the PLC address and of the PLC data type is checked for each imported variable. Illegal PLC addresses and data types will be erased.
- A *.DIF file can be created using an ordinary DOS editor. This file is a plain ASCII file that can be imported into a VAT file. The two examples below show the layout of a *.DIF file. Any entries can be left out but the commas must remain between the sections in the file.

Example 1.

Tagname	Panel data type	PLC address	PLC variable type
ALARM	, Bit	, %M001	, BIT
COMPLETE	, Byte unsigned	, %R0101	, INT
INPUT#1	, Word unsigned	, %R0010	, WORD
INPUT#2	, Word unsigned	, %R0011	, WORD
INP_INT	, Word signed	, %R0002	, INT
INP_WORD	, Word unsigned	, %R0001	, WORD
OUT_INT	, Word signed	, %R0002	, INT
OUT_WORD	, Word unsigned	, %R0001	, WORD
PASSWORD	, Byte unsigned	, %R0100	, INT
SETWORD	, Word unsigned	, %R0005	, WORD
TIPBYTE	, Byte unsigned	, %R0007	, WORD
TOGGWORD	, Word unsigned	, %R0006	, WORD

Example 2.

Tagname	Panel data type	PLC address	PLC variable type
	, Bit	, %M001	, BIT
COMPLETE	, Byte unsigned	, %R0101	, INT
INPUT#1	,	, %R0010	
INPUT#2	, Word unsigned	, %R0011	, WORD
INP_INT	, Word signed	,	, INT
INP_WORD	,	,	, WORD
OUT_INT	, Word signed	, %R0002	, INT
OUT_WORD	, Word unsigned	, %R0001	
	, Byte unsigned	, %R0100	
	,	, %R0005	, WORD
TIPBYTE	, Byte unsigned	, %R0007	, WORD
TOGGWORD	, Word unsigned	,	, WORD

Exporting a VAT

Using the **Export** function from the **File** menu (or press **Ctrl** + **E** from the **Variable Assignment Table** window), you can export the current VAT. PCS puts the exported data into a file (plain ASCII text file) with extension .DIF in the corresponding project directory. The whole VAT is always exported.

The exported VAT from the demo project DEMO_200.PRD would look like ...

```
ALARM          , Bit             , %M001          , BIT
COMPLETE       , Byte unsigned   , %R0101         , INT
INPUT#1        , Word unsigned   , %R0010         , WORD
INPUT#2        , Word unsigned   , %R0011         , WORD
INP_INT        , Word signed     , %R0002         , INT
INP_WORD       , Word unsigned   , %R0001         , WORD
OUT_INT        , Word signed     , %R0002         , INT
OUT_WORD       , Word unsigned   , %R0001         , WORD
PASSWORD       , Byte unsigned   , %R0100         , INT
SETWORD        , Word unsigned   , %R0005         , WORD
TIPBYTE        , Byte unsigned   , %R0007         , WORD
TOGGWORD       , Word unsigned   , %R0006         , WORD
```

Chapter 10

Creating a Project

This chapter provides an introduction to the functionality of the PCS. It includes the following information:

- General Information 10-2
- Constructing a Project 10-3
  - Preparing a Concept 10-3
  - Creating a New Project 10-4
  - Defining Connections 10-6
  - Defining Key Assignments 10-7
  - Creating/Editing Pictures 10-8
  - Defining Text Groups 10-9
  - Defining Project Variables 10-10
  - Binding the Project 10-10
  - Editing the Alarm System 10-14
  - Compiling the Project 10-15
- Downloading the Project to the Operator Panel 10-16
  - Version Control 10-17
  - Starting the Project Automatically 10-17
  - Starting the Project Manually 10-17
  - Connecting the PLC and the Panel 10-18
- Uploading a Project 10-19
- System Download 10-20

General Information

Your project can be constructed using PANELWARE Operator Panels — without extra work involving the PLC. The modular construction of PANELWARE hardware allows you to put together a configuration to suit most requirements that could arise in your application.

A Panel project consists of the following elements:

- Project Definition
- Picture Directory
- Pictures
- Keyboard Definition
- Connection List
- Text Groups (optional)
- Alarm System (optional)

This chapter introduces the basic functions of PCS. Refer to the *PANELWARE™ Configuration Software Quick Start User's Guide* (GFK-1142) for a sample PCS project. Refer to the appropriate *Application Manual* for additional information pertaining to a specific protocol.

Constructing a Project

The list below shows the steps involved in creating a new project. Items 3 — 11 do not have to be performed in any rigid order – in fact, you might work on some steps (particularly 4 and 5) concurrently, or go back and forth among several tasks. However, careful planning (step 1) can eliminate unnecessarily repeating tasks. The flowchart in Figure 1-1 shows a typical process for creating a project.

1. Prepare a basic concept before you start.
2. Create the new project.
3. Define connections for all PLCs and internal data.
4. Define key assignments.
5. Create the required pictures.
6. Define your text groups.
7. Bind pictures to the project.
8. Edit the alarm system.
9. Define project variables (link them to PLC reference addresses).
10. Check for errors, particularly in the keycode table.
11. Compile your project.
12. Download the project to the Panel.

The following sections describe these functions.

Preparing a Concept

Before you create a new project using PCS, you should form a concept based on the answers to the following questions:

- What information should be displayed?
- What do you need to enter using the Keyblocks?

For modular PANELWARE Panels, the first two questions will help you determine the type of Display and number of Keyblock modules required.

- How many pictures do you need and how do you need to branch from one picture to another?
- Which memory locations in the PLC are to be accessed? (Make a list of the variables required for every picture.)

Creating a New Project

A new project can be started by selecting the **New Project** function from the **File** menu. The following project hardware information must be available before you begin:

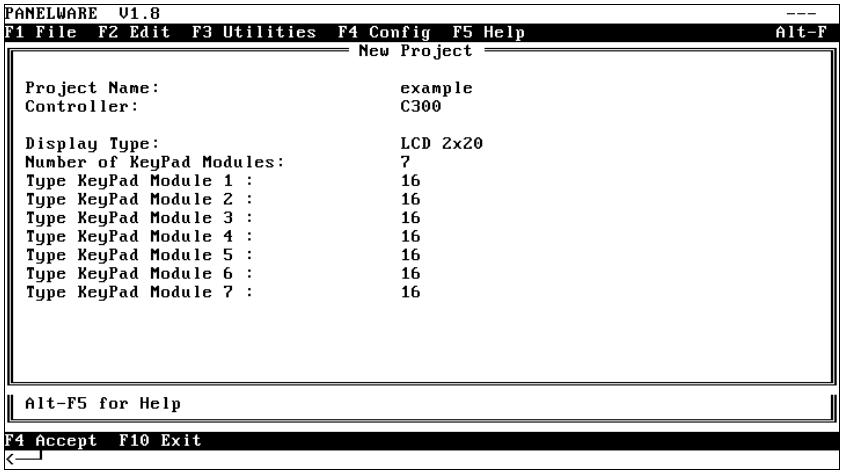
- Project name
- Controller type
- Display type
- Number of Keyblock modules
- Type of each Keyblock module

Caution

It is important to define the Project name, Controller, and Display Type before the project is created because these definitions can not be changed later. If any of these definitions needs to be changed later, the project must be reconstructed. Number and Type of Keyblock Modules can be changed at any time.

Perform the following steps to create a new project:

1. Select the **New Project** function from the **File** menu.
2. Enter the project's name in the **Project Name** line and confirm the entry by pressing the ↵ (Enter) key. This moves the cursor to the next line.
3. Press ↵ again to display a selection window from which you can choose the type of Panel Controller that you have.
4. Press ↵. The software accepts your entries and displays the following window on the screen:



5. In the **Display Type** line, press ↵. Another selection window appears that allows you to choose the display module using the cursor keys and ↵.

6. Enter the desired number of Keyblock modules. The entry must be confirmed by pressing ↵, otherwise it is ignored. This moves the cursor to the next line.
7. Press ↵ to display another selection window that contains all types of Keyblock modules. Use the cursor keys to select one and press ↵ to confirm your entry.
8. Repeat step 7 until all of the Keyblock modules that you require have been defined.
9. When you have defined all of the entries that are required to start your project, confirm the entire definition by pressing **F4 Accept**. This will save the project definition as is, close the window, and return to the **Main** menu (with the new project name at the top of the screen).

   If you press **Esc** or **F10 Exit** instead, all entries will be ignored and the project is not saved.

Note

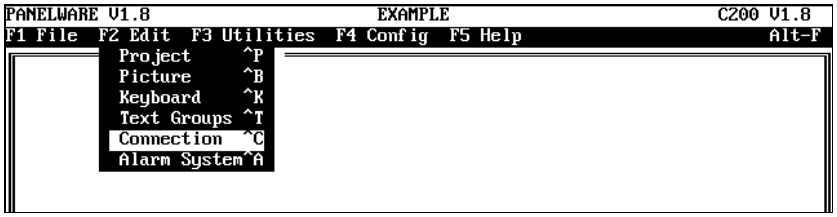
All hardware data for the project must be defined first. When this is done, the elements that are needed in the project (pictures, connections, key assignments, alarms, etc.) can be constructed.

Additional information about using the project editor is provided in chapter 4.

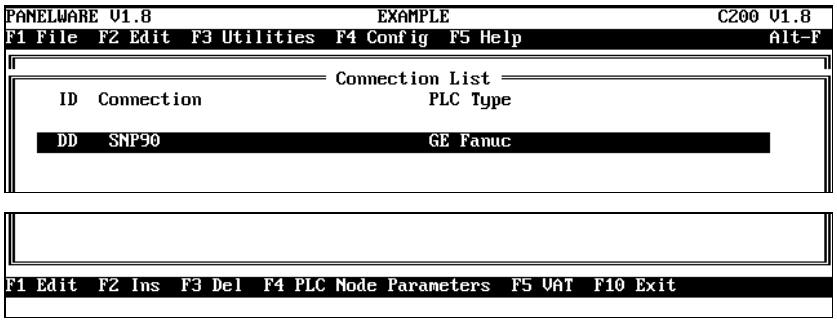
Defining Connections

Every PLC connected to the Panel must be defined in the connection list. Each of these entries has an additional separate list, called the variable assignment table (VAT), in which all variables of a connection are assigned to a PLC address (Tagname). If you have made a list of all variables you want to use in the project, these variables can be inserted into the VATs of the corresponding connection ID by performing the following steps:

1. Select the **Connection** function from the **Edit** menu to display the **Connection List** window. All defined connections are shown in this list. A default entry (**DD**) is made after a new project is created (see "Project Editor" in the appropriate *Application Manual*).



2. Change the default connection **DD**, if necessary. (Press **F1 Edit**.)



3. Insert additional connections you will need for your project (be sure to define the ID and the connection). Press **F2** to insert a connection; **F3** to delete.

4. Configure protocol parameters (**F4 PLC Node Parameters)** for each connection.

Note

The configuration of protocol parameters varies depending on the software driver that you are using. For some software drivers, there is a second protocol parameters window, **PLC Network Parameters**, that is accessed by pressing **F1** in the **PLC Node Parameters** window. For details, see the appropriate *Application Manual* for the software driver(s) you are using.

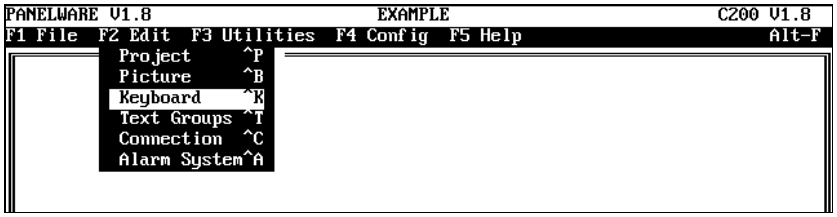
5. Exit the **Connection List** window by pressing **F10 Exit**.

All variables used in the project must be connected to specific addresses in the PLC CPU. This is done for each connection in the project using the Variable Assignment Table editor. See "Defining Variables" in this chapter. Also, refer to chapter 9 for details concerning the Connection Editor.

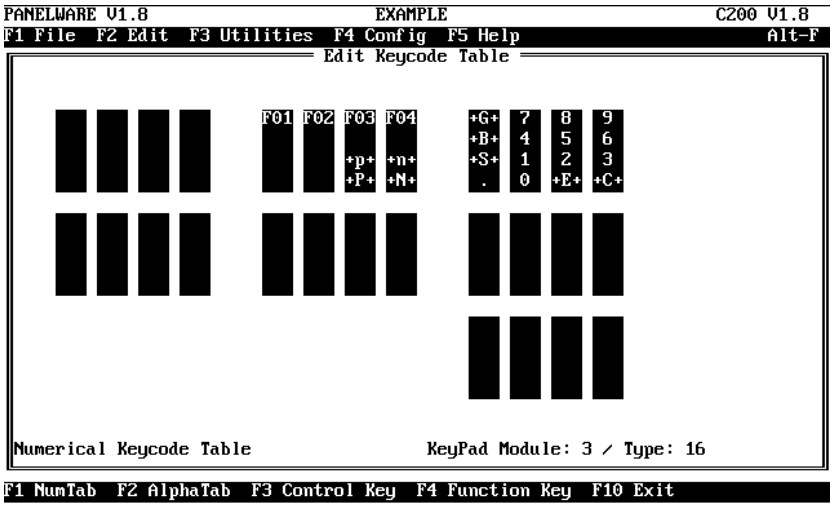
Defining Key Assignments

Perform the following steps to define the key assignments:

1. Select the **Keyboard** function from the **Edit** menu to display the **Edit Keycode Table** window.



2. Define all the control keys required. Control keys are always entered in both tables (numerical **and** alphanumeric keycode table).



3. Define all the function keys required. Function keys are only entered in the current keycode table (numerical or alphanumeric). If a function key should be entered in both tables, you must define it twice.

4. Assign the ASCII characters to the respective keys.

5. Exit the **Edit Keycode Table** window by pressing **F10 Exit**.

Refer to chapter 7 for details on the Keycode Table editor.

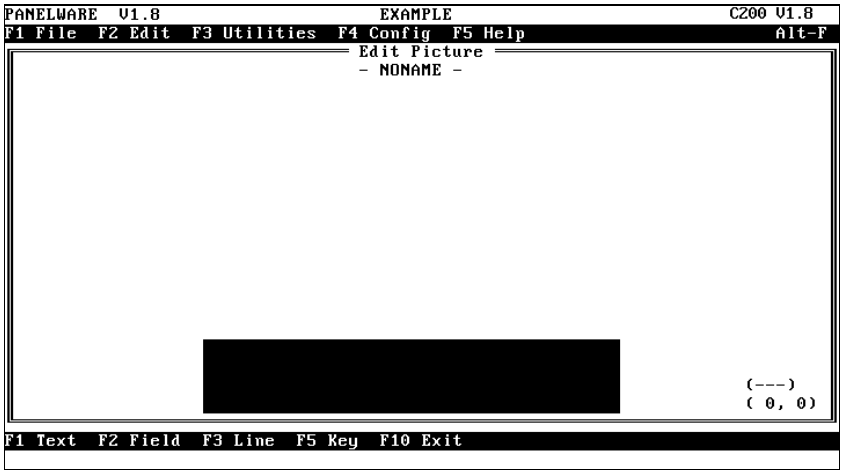
Creating/Editing Pictures

The picture is the basis of a Panel project. Pictures consist of text, lines, fields, key functions and LED functions. These elements can be separated into two groups: *static elements*, such as text and lines[1], and *dynamic elements* such as input and output fields.

- Static text and lines make up the *mask*.
- Output fields contain values from the PLC and are used to display information (such as temperature, RPM, ...) that is updated as defined. Input fields are used to enable the user to make entries to the process using the Keyblock keys.

The maximum number of fields, keys and LED functions that can be used in a picture are specified in Appendix A.

Before you can create a new picture, a project must first be loaded or created (the name of the project must be displayed at the top of the screen). If the **Main** menu is active, select the **Picture** function from the **Edit** menu or the key combination **Ctrl** + **B** to open the **Edit Picture** window.



The size of the dark rectangle corresponds to the selected display type (display type LCD 4x40 is shown, therefore, the rectangle consists of 4 lines and 40 columns). Text or fields can now be entered into this rectangle.

When either the **F10 Exit** or **Esc** key is pressed, and the picture has not been saved, PCS will prompt you to save the picture.

[1] Lines can only be inserted in a picture, if a graphic display has been selected in the project definition.

If you want to create pictures that are similar to an existing picture:

1. An existing picture can be modified by calling it up using the **Load** function in the **File** menu, and then saving it under a new name using the **Save as** function. After a different name has been assigned, the picture can be modified. All pictures required for a project can be created in this way.

2. You can import a picture or parts of a picture into the current one, using the Import function from the File menu.

   Picture elements such as text, lines or fields will only be imported if they fit as a whole into the display area of the target Panel. Picture elements that are outside of the target display area will not be imported.

   Variables assigned to imported fields will be inserted into the VAT with the same Connection ID as in the source picture. If no VAT that has this Connection ID exists, the variables will be inserted into the connection **/DD**.

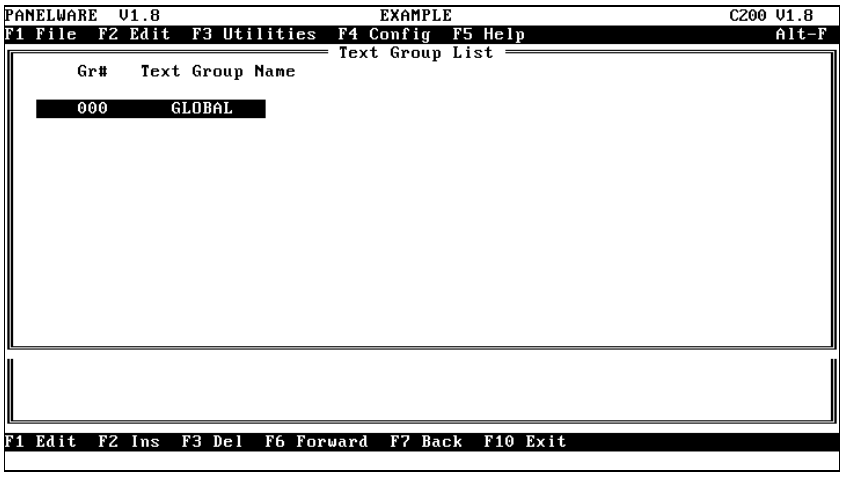
Additional information about using the picture editor is provided in chapter 5.

Defining Text Groups

A text group with the name **GLOBAL** exists for every project and can not be deleted. These text groups contain commands for clearing the display and the key LEDs (Text Number 0) that are executed with every picture change.

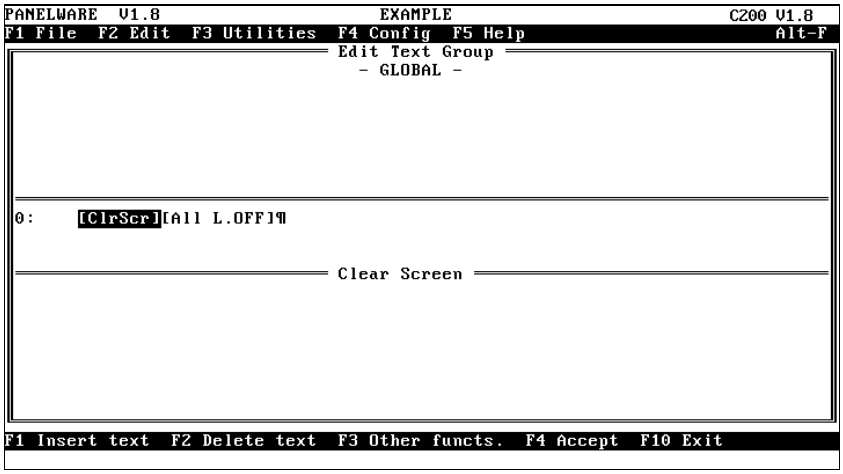
More text groups can be created. The output of a text group is accomplished using the **Output Text Advanced** OUTPUT field (see chapter 6). This makes it possible to display text according to the values of a PLC variable, which is useful for monitoring the operating status of a PLC.

In order to create/edit a new/existing text group, a project must be loaded or newly created (the name of the project must be displayed in the title line). If the **Main** menu is active, select the **Text Groups** function from the **Edit** menu or the key combination **Ctrl** + **T** to open the **Text Group List** window, which displays a list of all existing text groups.

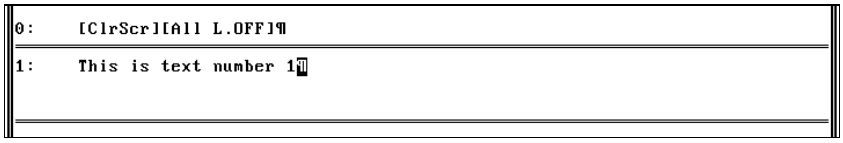


Press **F1 Edit** to edit the selected (inverse displayed) text group. Press **F2 Ins** to create a new text group and insert it into the list.

If GLOBAL text should be inserted into the **Text Group List** window, you must first select the text group and then press **F1 Edit**. The screen should look like the following figure:



After you press ↵, the text can be entered:

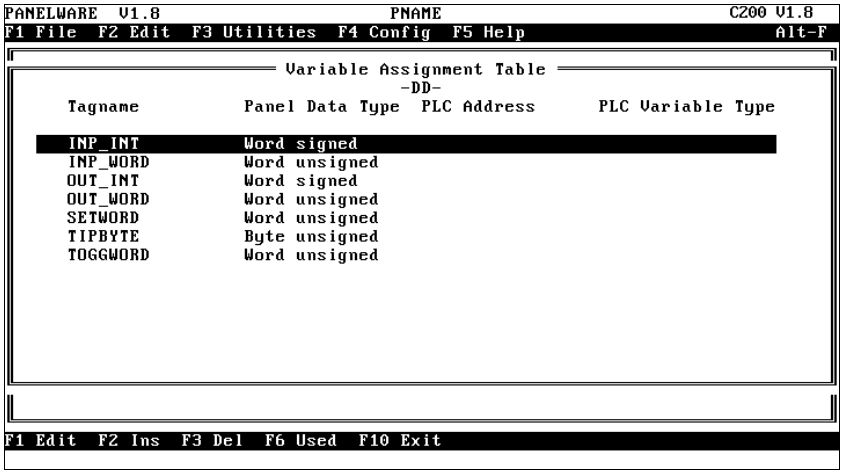


Press **F4 Accept** to save all changes and close the text group editor. The **Text Group List** is redisplayed.

More information about using the text group editor and creating text groups can be found in chapter 8.

Defining Project Variables (Editing Connections)

All variables used in the project must be assigned to a PLC address in the Variable Assignment Table, which is accessed by pressing **F5** in the **Connection List Editor** window. Special information on this subject is contained in the appropriate *Application Manual*. General connection information can be found in chapter 9.

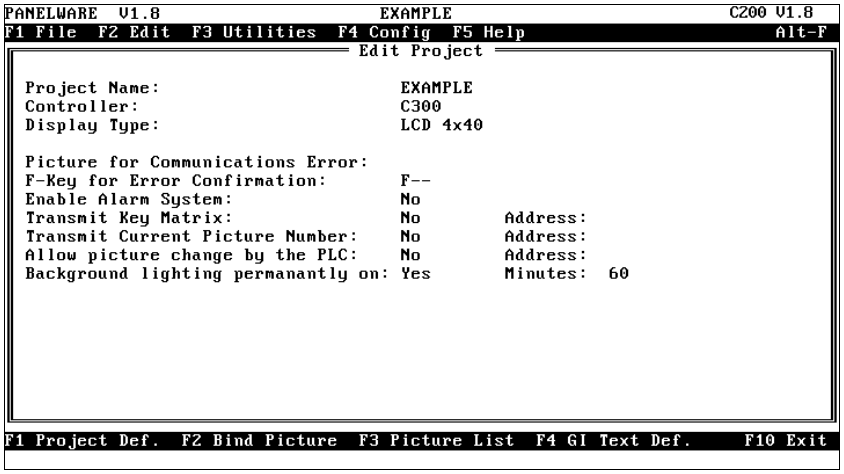


Binding the Project

Every picture that is used in a project must be bound to the project. Binding pictures is performed using the Project Editor (see chapter 4).

Error Picture

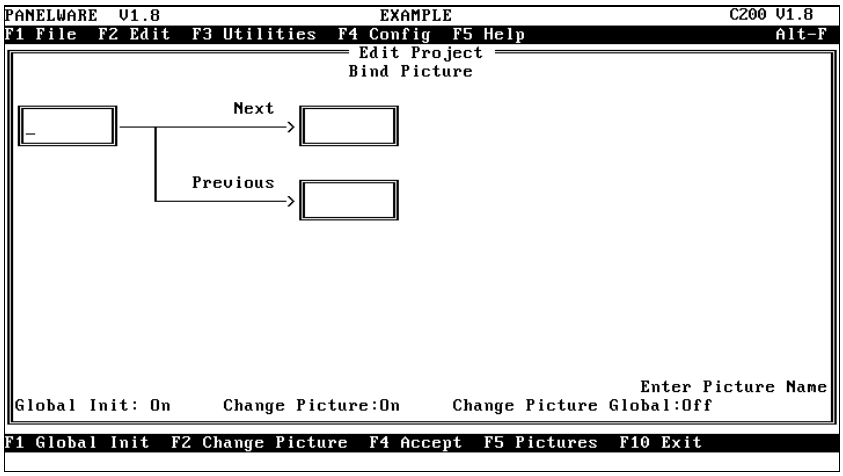
The name of the error picture is entered in the main menu of the Project Editor, which is called up by selecting the **Project** function from the **Edit** menu or using the key combination **Ctrl** + **B**. The **Edit Project** window appears on the screen:



1. Press the **F1 Project Def.** function key and enter the name of the error picture. If the **F5 Pictures** key is pressed, a selection window appears that contains all of the names of the pictures created for this project. One of these pictures can be selected using the cursor keys and confirmed as the error picture by pressing ↵.
2. Press **F4 Accept** to close and save the project definition.
3. The error picture must be bound into the project as described in “Binding Pictures”, as with any other picture.

Binding Pictures

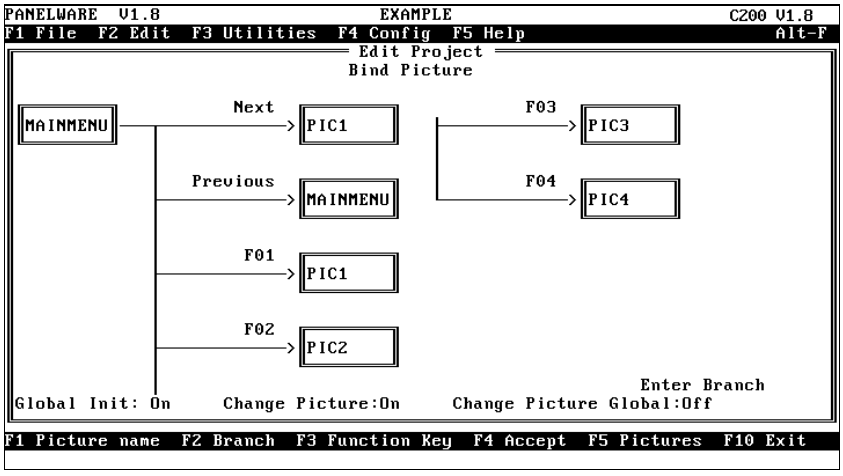
The pictures that are to be used to display process information or enter process data (commands) through the keyboard are bound into the project by accessing the **Bind Picture** window using the **F2 Bind Picture** function key:



The name of the picture to be bound is entered in the box on the left-hand side of the screen. Other pictures can be switched to from this picture.

On the next page, the **Main** menu picture (picture name **MAINMENU**) should branch to four other pictures by using function keys **F1** through **F4**. The **Next** key should switch to picture **PIC1** and the **Previous** key should switch back to the **Main** menu itself (i.e., this key performs no picture change).

Binding the MAINMENU picture into the project in this example should look like the screen cut-out shown below in the graphic display of the PCS:

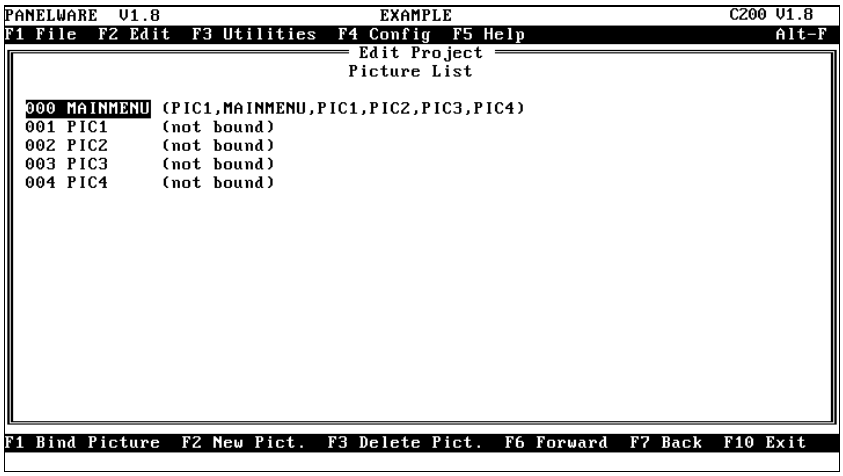


Press **F4 Accept** to bind this picture and return to the **Edit Project** window.

All pictures are bound in this way.

Start-up Picture

When you press the **F3 Picture List** function key, all of the pictures bound into the project are listed. If however, as in this example, the only picture bound is the one shown above, the list would look like the one below:



The start-up picture is the picture that will be displayed first on the PANELWARE screen upon power-up or after a reset in run-mode. The picture that is entered in the first position in the picture directory (entry 000) is always used as the start-up picture. The **F6 Forward** and **F7 Back** keys are used to move the highlighted picture to the desired position in the list.

Caution

Make sure that the picture that is in the first position in the picture directory is never the error picture defined in the project editor.

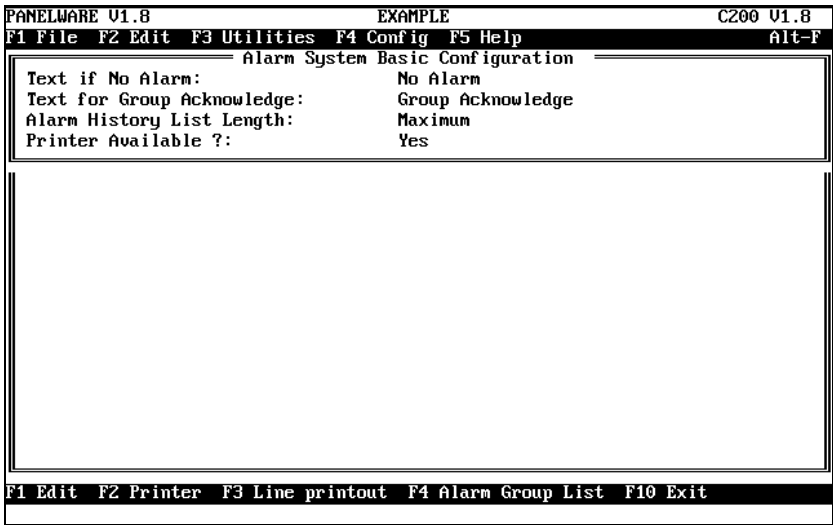
In the picture directory, it is easy to see which pictures are not yet bound into your project (see the figure on the previous page), because unbound pictures are indicated by the following message:

not bound

More information on the use and operation of the project editor can be found in chapter 4.

Editing the Alarm System

To access the Alarm System Editor, select the **Alarm System** function from the **Edit** menu, or press **Ctrl** + **A**. From this window, you can change the alarm system's basic configuration, select printer parameters and print format, and edit the **Alarm Group List**.



The **Alarm Group List** window (accessed by pressing **F4** in the **Alarm System Basic Configuration** window) lists all the alarms in the project, and allows you to edit and insert alarms and alarm groups.

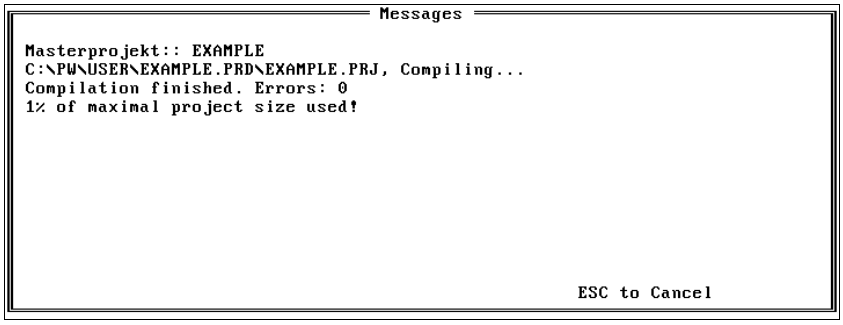
Refer to chapter 11 for more information about using the Alarm System Editor.

Compiling the Project

In order to transfer a project to a PANELWARE Panel, it must first be compiled. Only a loaded project (with project name in the title line) can be compiled.

The compilation procedure is started by selecting the **Compile** function from the **Utilities** menu or by pressing the key combination **Ctrl** + **Q**.

The progress of the compilation procedure is displayed in the **Project Compiler** window. If the project is compiled successfully, the following message appears:



The amount of memory the project uses in the user bank (FlashPROM on the Panel) is also displayed after the compilation procedure is completed. Press **Esc** to close the window and redisplay the **Main** menu.

For information on how setting up the compiler to create project documentation, refer to "Compiler Options" in chapter 2.

Note

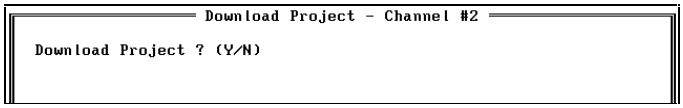
If, during the compilation, error messages appear in the Project Compiler window, consult Appendix C.

Downloading the Project to the Operator Panel

Before the download process can be started, the following steps must be completed (see the *PANELWARE™ Hardware Installation User's Manual* — GFK-0848 for more information):

1. Apply power to the Panel by connecting the 24 VDC cable.
2. Connect the PC and the Panel
3. Set the operating mode to *Teach-Mode* (operating mode switch to position 7).
4. Press the RESET button on the Panel.
5. Wait until the **`Teach-Mode`** message is displayed on the Panel screen.

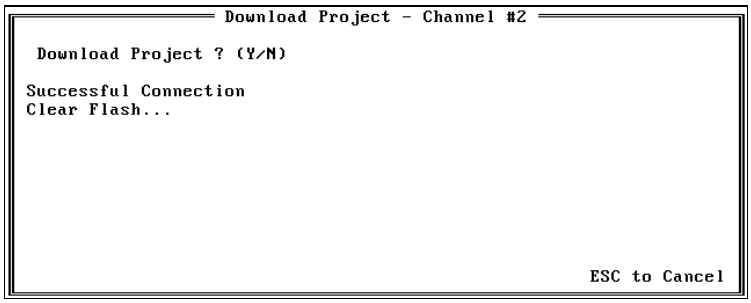
Once these steps have been performed, the download process can be started by selecting the **Download** option from the **F3 Utilities** pull-down menu or by pressing **Ctrl** + **X**:



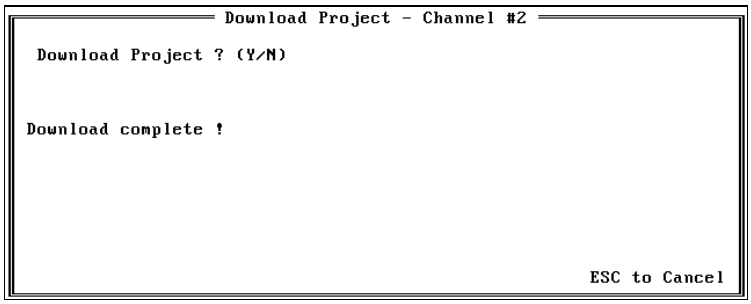
A window that has the **Download Project** title and the number of the channel (**Channel #2**) in its top margin appears on the screen to prompt you to begin the process.

Start the download process by pressing ***Y*** in answer to the prompt.

To begin the download, the PCS tries to make a connection with the Panel. If the connection is successful, the following messages are displayed on the screen:



When the compiled project has been loaded to the Panel successfully, the message **`Download complete!`** is displayed.



Press **Esc** to close the **Download Project** window and return to the **Main** menu.

Version Control

If you try to download a project that was created for a different version of the Controller operating system, a version conflict will occur.

- If you try to download a project that was created for an older version of a Panel Controller operating system, **the project can be downloaded and executed without any restrictions.** If you want to use the advanced functionality of the newer Controller software version or if you want to modify the project, you must open the project and recompile it. This converts it to the newer version (see also "Version Control" in chapter 4 when loading/opening projects).
- It is not possible to download a project that was created for operating system 1.8 into a PANELWARE Controller that has an older operating system. If you update your Controller with operating system 1.8, you can load and execute the project. See "System Download**"** for further information about operating system updates.

Starting the Project Automatically

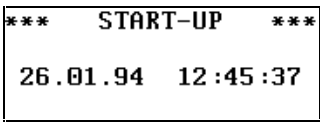
If you have chosen ***YES*** for the option **Start project after download** in the **Channel #2 - Configuration**, the project will be automatically started after the complete project download.

Starting the Project Manually

- If the project has been downloaded completely, the application can be started by selecting the function **Start Project** from the **Utilities** menu. Be sure that the PC is still connected to the Panel and the operating mode of the Panel is set to *Teach-Mode*.
- If the project has been downloaded completely, the application can be started after the following steps are completed:

  1. Connect the PLC and the Panel.
  2. Set the operating mode to *Run-Mode* (operating mode switch to position 5).
  3. Press the RESET button on the Panel.

After switching the Panel on or pressing the RESET button, the Start-up picture appears on the Panel display:



Connecting the PLC and the Panel

In order to have communication between the Panel and the PLC CPU, the proper connection must be made, as shown in the following example.

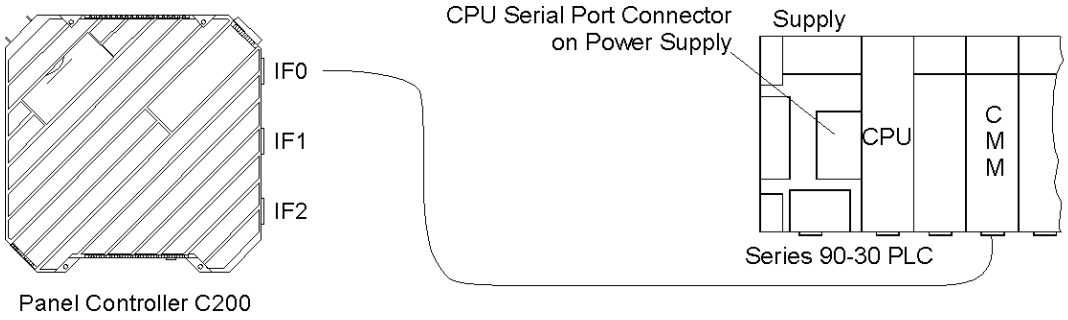


Figure 10 - 1. Panel to PLC Connection Example

The cable specifications are described in Appendix A of the appropriate *Application Manual*.

Uploading a Project

To be able to upload from the Panel, you must create a dummy project (a project without pictures, etc.) using the hardware parameters for your Panel.

The name of the current project should be displayed in the middle of the title bar at the top of the screen.

Note

Do not use the upload function if a project other than the dummy one is selected. The uploaded project can be downloaded to another Panel. However, the pictures and other parameters can not be “decompiled”, i.e., you will be unable to edit the project.

The upload is started by selecting the **Upload** function from the **Utilities** menu.

System Download

This function is used to load a new version of the operating system to the Panel Controller. You must do this if you have Controllers with older versions of the operating system and you want to use the advanced capabilities of the newer operating system.

Note

The mode switch of the Controller must be in position 6 to be able to update the operating system.

In order to download the operating system to the Panel, the Panel must first be connected to the PC. The connection and the cable to be used are described in Appendix A of the *PANELWARE Hardware Installation User's Manual*. The same cable is used for project download.

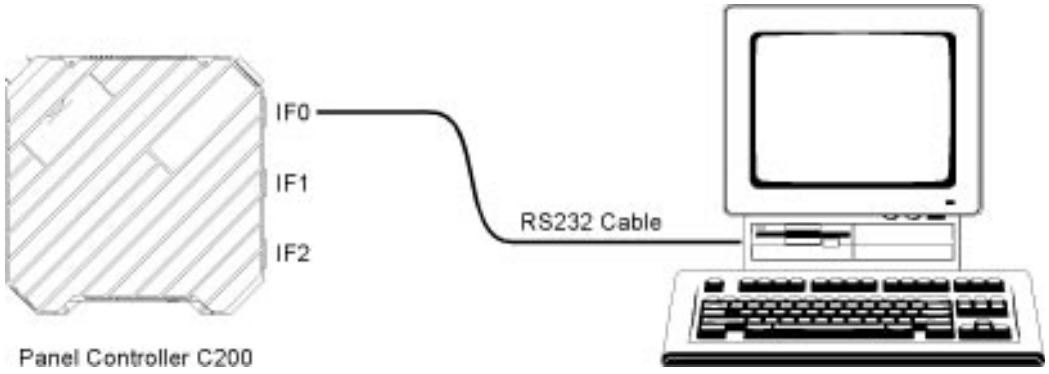
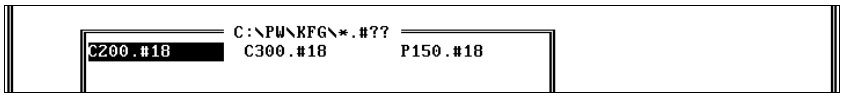


Figure 10 - 2. Panel to PC Connection

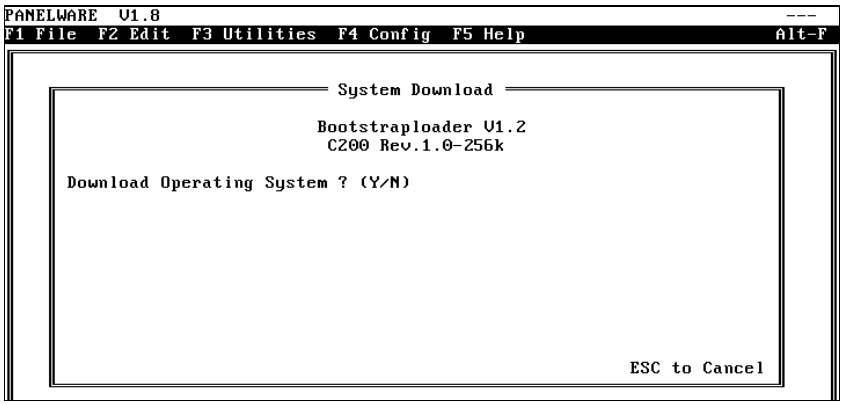
It is unnecessary to load the operating system to the Panel before every project download.

The version number of the operating system can be read from the display when the Panel is switched on (in Teach Mode). The version number of the Panel description file can be read while creating a project, as the extension of the selected Panel type (#18 => Version 1.8):



Before the download is started, the following steps must be completed (see the *PANELWARE Hardware Installation User's Manual* for details):

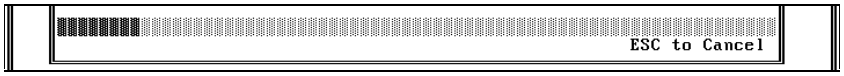
1. Apply power to the Panel.
2. Connect the PC and the Panel as shown above.
3. Change the operating mode switch to position 6.
4. Press the RESET button on the Panel.
5. Select the **System Download** function from the **Utilities** menu. The **System Download** window appears on the screen.



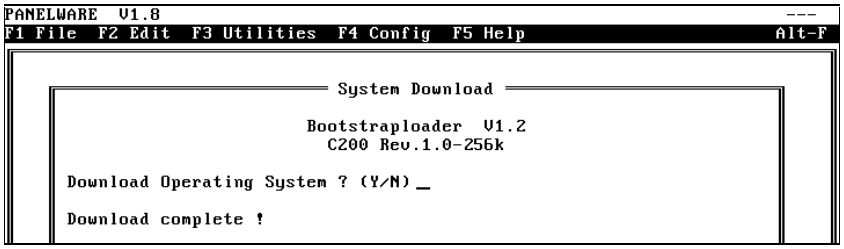
6. Start the download by pressing ***Y***.

The PCS tries to make a connection with the Panel. If it is not successful, a message appears on the screen.

A bar indicates the continued successful download process as shown below:



When the operating system has been loaded to the Panel successfully, the message **`Download complete!`** appears.



7. Press **Esc** to close the **System Download** window. The **Main** menu is called up again.

A system download can take a few minutes to complete. Transmission time depends on the baud rate set for channel #2.

Before the operating system is downloaded to the Panel Controller, the baud rate must be defined. The maximum baud rate depends on the capability of the PC's communications chip. If the operating system can not be sent with the set baud rate, try using a lower one. The Panel Controller automatically adjusts to the set baud rate.

Chapter 11 Alarm System

This chapter provides information about the alarm system, including definitions of all alarm fields and procedures that outline how to edit alarms. The following information is included:

- General Information 11-2
- Editing the Alarm System 11-3
  - Function Key Overview 11-3
  - F1 - Basic Configuration 11-4
  - F2 - General Printer Parameters 11-5
  - F3 - Print Format Definition 11-6
  - F4 - Alarm Group List 11-8
    - F1/F2 - Group Parameters 11-10
    - F4 - Alarm Definition 11-15
  - F5 - Alarm List 11-17
- Alarm Fields 11-18
  - General Parameters 11-18
  - Symbolic Variables 11-18
  - Function Keys — Field Parameters 11-19
  - Field Types/Descriptions 11-19
    - Oldest Active Alarm 11-20
    - Newest Active Alarm 11-22
    - Active Alarm 11-23
    - Alarm 11-25
    - Historical Alarm List Entry 11-27

General Information

Alarms are represented as alarm bits in the PLC. These alarm bits must be in a contiguous bit field in the PLC. The Panel reads the alarm bit field from the PLC at the configured scan rate and enters the changes in the alarm list. An alarm printout is optional.

Alarms are separated into alarm groups. Each group has its own alarm bit field, scan rate and priority. A maximum of 252 user alarm groups can be defined. The alarm groups **System Alarms** and **Group Alarms** exist automatically.

As they occur, the alarms are entered into the **Current Alarm List**, which contains all active alarms and any alarms that have been reset without an acknowledge. An alarm is considered to be active when it is **on** (1) and reset when it is **off** (0). You can configure the conditions that will allow an alarm to be removed from this list.

An alarm bit change occurs when an alarm is added to or removed from the current alarm list. An entry is made in the **Historical Alarm List** for each alarm bit change. This list forms the basis for an alarm printout.

The alarms and the alarm lists are shown on the Panel display by means alarm fields in the pictures. The following alarm fields are available:

- Oldest Active Alarm
- Newest Active Alarm
- Active Alarm
- Alarm
- Historical Alarm List Entry

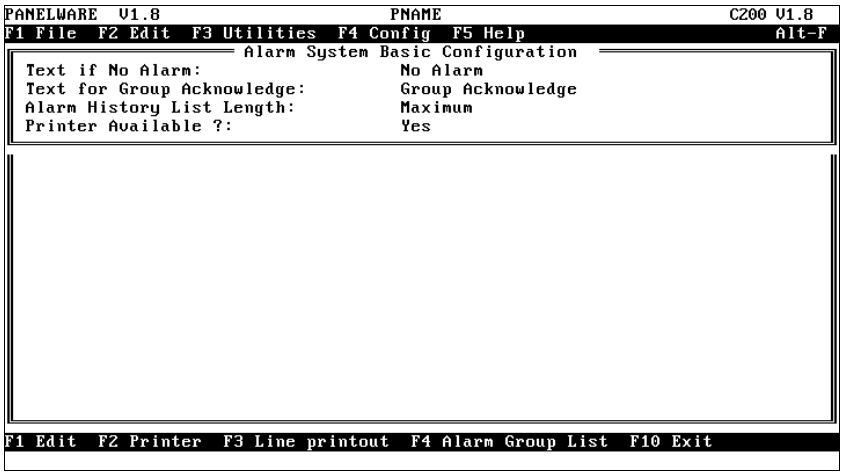
Parameters for each type of alarm field are described in the “Alarm Fields” section of this chapter.

Note

To use the alarm system in a project, it must be enabled in the project definition. See chapter 4 for details.

Editing the Alarm System

To create or edit project alarms, access the **Alarm System** function of the **Edit** menu or press **Ctrl** + **A**. The **Alarm System Basic Configuration** window shown below is displayed:



Function Key Overview

F1 Edit ..... Allows you to edit the alarm system's basic configuration

F2 Printer ..... Allows you to edit the general printer parameters

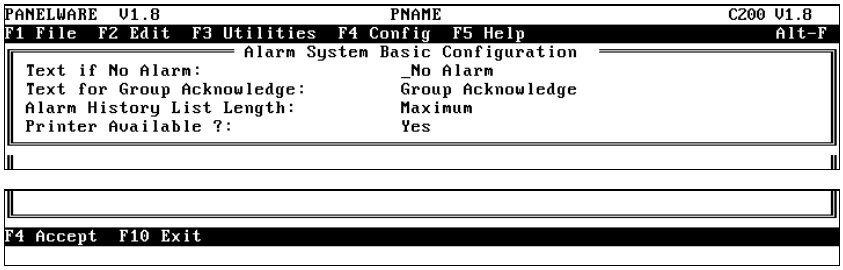
F3 Line printout ..... Allows you to edit the alarm printout format

F4 Alarm Group List .... Allows you to edit the alarm group list

F10 Exit ..... Closes the **Alarm System Basic Configuration** window and redisplays the **Main** menu

F1 - Basic Configuration

To edit the basic configuration of the alarm system, press **F1 Edit**. This will allow you to change the configuration displayed in the **Alarm System Basic Configuration** window:

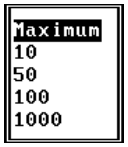


The following general alarm system parameters can be set here:

- **Text if no alarm**
  This message text is displayed in the alarm fields **Oldest Active Alarm**, **Newest Active Alarm**, or **Active Alarm** if there is no alarm set in the system and the current alarm list is empty. Although it is not recommended, you can change this text by highlighting the entry and typing a new one.

- **Text for Group Acknowledge**
  If the group acknowledge key is pressed, the printer will print out this message text instead of the alarm message. Although it is not recommended, you can change this text by highlighting the entry and typing a new one.

- **Historical Alarm List Length**
  You can set the maximum number of events to be stored in the historical alarm list. This entry is particularly important if there is no printer connected to the Panel.

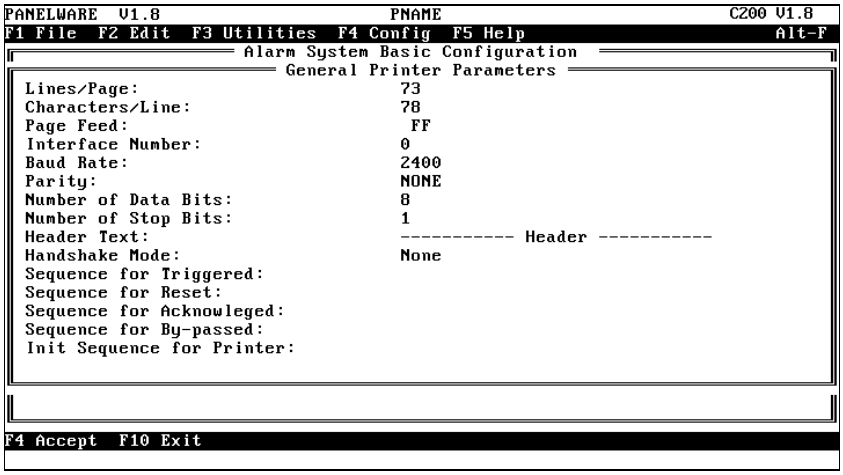
  Different lengths can be selected from a selection list that is displayed when you highlight the field and press the ↵ (Enter) key.

- **Printer available ?**
  You can specify whether or not there is a printer connected to the Panel. Set this parameter to NO if you are not using a printer.

The **F4 Accept** and **F10 Exit** functions appear at the bottom of the screen. Press **F4 Accept** to save any changes you make to the **Alarm System Basic Configuration** window and return to the **Main** menu. Press **F10 Exit** to close the **Alarm System Basic Configuration** window without saving any changes.

F2 - General Printer Parameters

A printer can be connected to the Panel to print alarm reports. To edit general printer parameters, press **F2 Printer** to access the configuration that is shown in the **General Printer Parameter** window:



The following parameters can be set for the printer and the printer interface by highlighting the entry and typing a new one, or pressing ↵ to select a new entry from the selection list:

- **Lines/Page, Characters/Line**
  Both of these parameters must correspond to the paper format of your printer.

- **Page Feed**
  You can set the page feed to be either control character FF (Form Feed) or the desired number of LFs (Line Feeds). The user manual for your printer contains information about these important control characters.

- **Interface Number**
  You can choose the interface to which the printer is connected (0=IF0, 1=IF1, etc.) See the *PANELWARE™ Hardware Installation User's Manual* (GFK-0848) for the printer interfaces supported by your Panel Controller. Typically, a printer is connected to IF0 on a C200 controller.

- **Baud Rate**
  You must set the serial transmission rate here. The printer must be set for the same baud rate.

- **Parity, Number of Data Bits, Number of Stop Bits**
  These parameters set the operation mode of the serial printer interface. Please use the settings recommended in the user manual that was supplied with your printer.

- **Header Text**
  The text you enter here (30-character limit) is printed at the top of every page as a header.

- **Handshake Mode**
  This parameter sets the operation mode of the serial printer interface. Use the settings recommended in the user manual that was supplied with your printer. (In some printer manuals, setting **XON/XOFF** is referred to as *software handshaking* and setting **RTS/CTS** as *hardware handshaking*.)

- If your printer has several colors or fonts, you can set the format of particular messages.

If you want to specify a sequence for any of the items below, you should supply sequences for all of them. Specify your printer's default sequence for those items you wish to print using the normal color/font selection.

- **Sequence for Triggered**
  The control sequence can be entered to be sent before the printout of the triggered alarms. You can leave this blank if it is not needed (see Table 11-1).
- **Sequence for Reset**
  You can set the control sequence to be sent to the printer before the alarm reset message (see Table 11-1).
- **Sequence for Acknowledged**
  You can set the control sequence to be sent to the printer before the alarm acknowledged message (see Table 11-1).
- **Sequence for By-passed**
  You can set the control sequence to be sent to the printer before the alarm bypassed message (see Table 11-1).
- **Init Sequence for the Printer**
  You can set the control sequence to be sent to the printer when the Panel is booted (see Table 11-1).

Table 11 - 1. Sequence Code Characters

Control Code	ASCII	HEX
<NULL>	0	00
^A	1	01
:	:	:
^Z	26	1A
<ESC>	27	1B
<FS>	28	1C
<GS>	29	1D
<RS>	30	1E
<US>	31	1F
printable characters	32	20
	:	:
	126	7E
<DEL>	127	7F

Example:

```
<ESC>^A
```

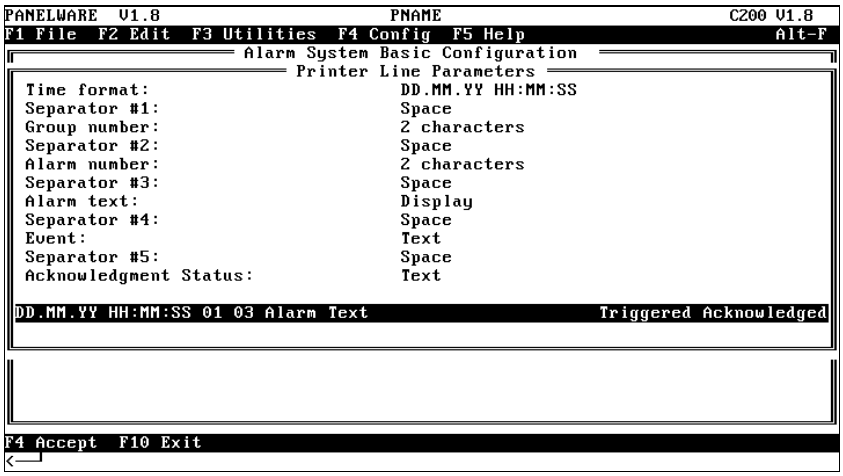
corresponds to the control sequence

```
27 01
```

The **F4 Accept** and **F10 Exit** functions appear at the bottom of the screen. Press **F4 Accept** to save any changes you make to the **Alarm System Basic Configuration** window and return to the **Main** menu. Press **F10 Exit** to close the **General Printer Parameters** window without saving any changes.

F3 - Print Format Definition

The printer produces a single line printout for each event in the alarm system. To edit these printer line parameters, press **F3 Line Printout** to change the parameters shown in the **Printer Line Parameters** window:



You can set the following parameters for each printer line by highlighting the entry and typing a new one, or pressing ↵ to open a selection window:

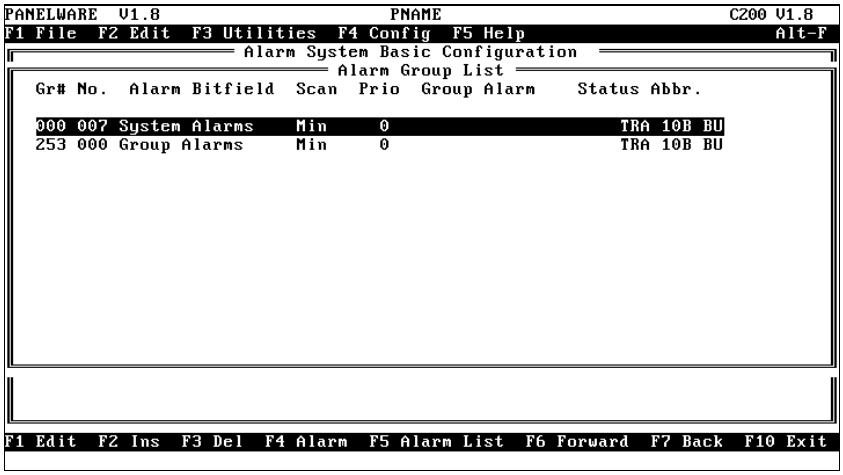
- **Time Format**
  Determines the format in which the time will be printed.
- **Group Number, Alarm Number**
  Enables printing of group and alarm numbers and determines the format in which they will be printed.
- **Alarm Text**
  Determines whether the alarm text should be printed out.
- **Event**
  An event occurs when an alarm is triggered, reset, acknowledged, bypassed or bypass is canceled. The event can be printed out in text form or as a character. The printout in text form uses the alarm status text as defined in the alarm group definition. The printout in character form uses the character from the status abbreviation as defined in the alarm group definition (see the “Group Alarm Definition” section).
- **Acknowledgment Status**
  The Acknowledgment status can be printed out in text form or as a character, or it can be suppressed. The Acknowledgment status is only printed out when the reset and bypassed events are printed.
- **Separators**
  The separator characters separate the fields on the printout line. You can choose a space, a period or a hyphen from the selection window.

The preview at the bottom of the window shows how the printer line will look when printed out.

The **F4 Accept** and **F10 Exit** functions appear at the bottom of the screen. Press **F4 Accept** to save any changes you make to the **Alarm System Basic Configuration** window and return to the **Main** menu. Press **F10 Exit** to close the **Printer Line Parameters** window without saving any changes.

F4 - Alarm Group List

The **Alarm Group List** window shows an overview of all alarm groups for the project. To edit this list, press **F4 Alarm Group List**. The **Alarm Group List** window appears on the screen:



The alarm groups are displayed with the following attributes:

- **Gr # (Alarm Group Number)**
  This is the number of the alarm group. Group #000 is reserved for the system alarms and group #253 is reserved for the group alarms.

- **No. (Number of alarms in the group)**
  The number of alarms that are in this group. Normal groups can have up to 128 alarms. This number is updated automatically by the software.

- **Alarm Bit Field**
  Symbolic Tagname (with connection ID) of the alarm bit field. For system alarms and group alarms, the text **`System Alarms`** or **Group Alarms** is displayed.

- **Scan Rate**
  The scan rate defines how often the alarm bit field is read from the PLC. It is possible to enter different scan rates for each alarm group, but the Panel only uses the lowest scan rate, as shown in the table below:

Table 11 - 2. Alarm Scan Rates

Connection	Entered Scan Rate	Used Scan Rate
ID1	Alarm group #1: Min Alarm group #2: 1 sec. Alarm group #3: 1 sec. Alarm group #4: 10 sec.	Minimum
ID1	Alarm group #1: 1 sec. Alarm group #2: 10 sec. Alarm group #3: 1 sec. Alarm group #4: 10 sec.	1 sec.

- **Priority**
  Priority rating of the group. The priority may range from 0 (lowest) to 9 (highest).
- **Group Alarm**
  An optional Tagname can be specified, to be set when any configured alarm in the group is active, and reset when all configured alarms in the group are inactive (reset). Individual alarms in the group may be configured as to whether or not they affect the group alarm. This entry should be blank when it is not being used.
- **Status Abbr.**
  Shows characters that are used in the alarm fields or for the printer if the abbreviated form is used (see the "Status Abbreviations" section).

Function Keys

The function keys for editing alarm group parameters are defined as follows:

F1 Edit ..... Allows you to edit the definition of the selected alarm group

F2 Ins ..... Inserts a new alarm group at the selected location

F3 Del ..... Deletes the selected alarm group

F4 Alarm ..... Allows you to define a new alarm for the selected alarm group (not possible for System and Group Alarms)

F5 Alarm List ..... Displays the list of all alarms within an alarm group

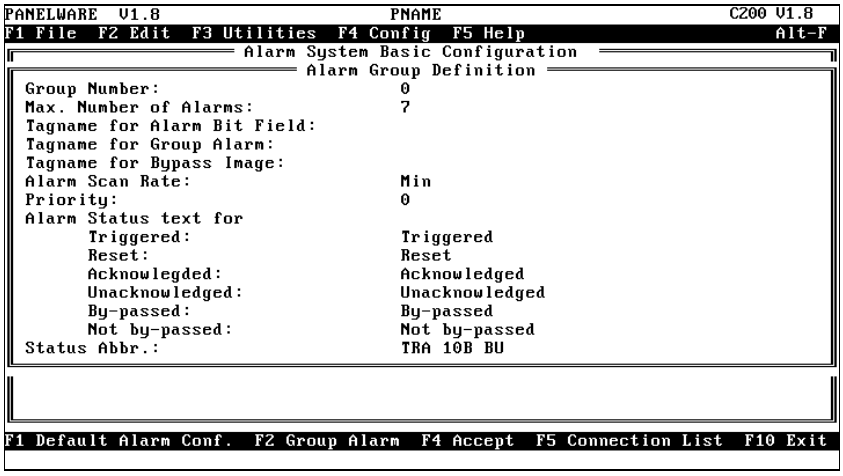
F6 Forward ..... Moves the selected alarm group up one position in the list

F7 Back ..... Moves the selected alarm group down one position in the list

F10 Exit ..... Closes the **Alarm Group List** window and redisplays the **Main** menu

F1/F2 - Group Parameters

To define the parameters for a selected alarm group, press **F1 Edit**. Press **F2 Ins** to insert a new alarm group. The **Alarm Group Definition** window appears on the screen:



You can set the group parameters in the alarm group definition as follows:

- **Group Number/Max. Number of Alarms**
  Both of these entries are informational only; and can not be changed.

- **Tagname for Alarm Bit Field**
  You must enter the symbolic Tagname (with connection ID) of the alarm bit field.

- **Tagname for Group Alarm**
  You can enter a symbolic Tagname (with connection ID) of the group alarm here. The group alarm bit is sent to this address. This is left blank if the group alarm is not used.

  The data type of the group alarm is BYTE. A 0 or a 1 is sent, depending on the status of the group alarm.

- **Tagname of the Bypass Image**
  You can enter a symbolic Tagname (with connection ID) here for the bypass image. This address must point to a bit field in the PLC where the current bypass status is to be sent. This entry is left blank if alarm bypassing is not used or is not to be sent back to the PLC.

- **Alarm Scan Rate**
  You must select the frequency at which the alarm bits are read from the PLC. It is possible to enter different scan rates for each alarm group, but the Panel only uses the lowest scan rate, as shown in Table 11-2. You should define only as high a scan rate as your application really needs. Fast scan rates can adversely affect the communications performance between the Panel and the PLC.

- **Priority**
  You must enter the priority of the alarm group here. The priority may be in the range between 0 (lowest priority) and 9 (highest priority).

- **Alarm Status Text**
  These messages are used in the printout. You can define a different message for each event in each alarm group as follows:

Table 11 - 3. Alarm Status Text Default Entries

Text [No.]	Alarm Status	Default Text
0	Alarm triggered	Triggered
1	Alarm reset	Reset
2	Alarm acknowledged	Acknowledged
3	Alarm unacknowledged	Unacknowledged
4	Alarm bypassed	Bypassed
5	Alarm bypass canceled	Not bypassed

Overview of the status messages used in printouts:

- Text [0], [1], [2], [4] or [5] as Event
- Text [2] or [3] as Acknowledgment Status

Note

The Acknowledgment status is printed only when the Reset and bypassed events are printed.

- **Status Abbreviation**
  The status abbreviation is a 10-character string that is used in alarm fields and printouts. These characters are used to indicate that the status and events are in the following order:

Table 11 - 4. Alarm Status Abbreviation Defaults

Character [No.]	Alarm Status	Status/Event	Default Abbreviation
0	Alarm triggered	event	T
1	Alarm reset	event	R
2	Alarm acknowledged		A
3	Alarm unacknowledged		<Space>
4	Alarm is on	status	1
5	Alarm is off	status	0
6	Alarm bypassed	status	B
7	Alarm not bypassed	status	<Space>
8	Alarm bypassed	event	B
9	Alarm not bypassed	event	U

Overview of alarm fields and the status abbreviation used:

- Field for the first or last active alarm:
  Characters [2] or [3] as Acknowledgment Status
- Field for active alarm:
  Characters [2], [3] or [1] as Info
- Field for alarm:
  Characters [2] or [3] as Acknowledgment Status
  Characters [4] or [5] as Alarm Status
  Characters [6] or [7] as Bypass Status
- Field for Alarm history entry:
  Characters [0], [1], [2], [8] or [9] as Event
  Characters [2] or [3] as Acknowledgment Status

Function Keys — Alarm Group Definition

F1 Default Alarm Conf. Allows you to edit the default alarm configuration.

F2 Group Alarm ..... Allows you to define a group alarm for the selected alarm group.

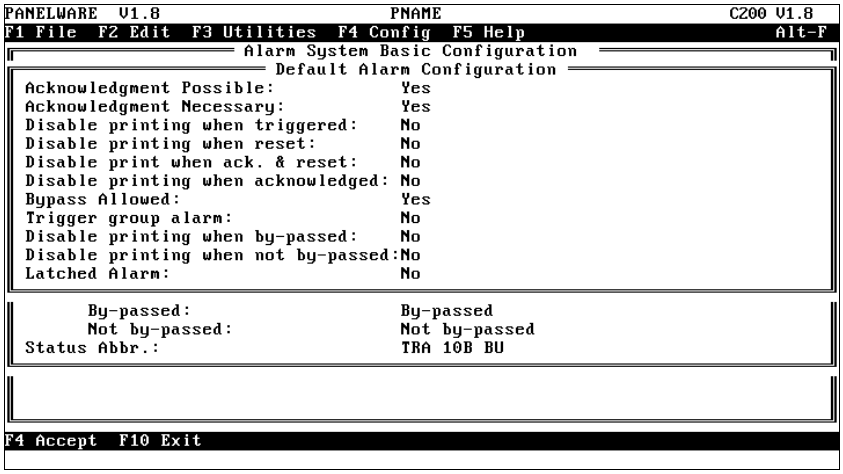
F4 Accept ..... Confirms the entries/changes and closes the **Alarm Group Definition** window.

F5 Connection List ..... If the cursor is in a **Tagname for ...** line, a connection list that lists all connections for the current project is displayed. For each connection, the variable assignment table (VAT) can be opened for choosing the desired variables. Refer to the appropriate *PANELWARE Application Manual*.

F10 Exit ..... Closes the **Alarm Group Definition** window and redisplays the **Alarm Group List** window.

F1 - Default Alarm Configuration

You can set default configurations for the alarms of each alarm group. If you enter an alarm in the group later, it will receive these default attributes. Press **F1 Default Alarm Conf.** to display the following screen:

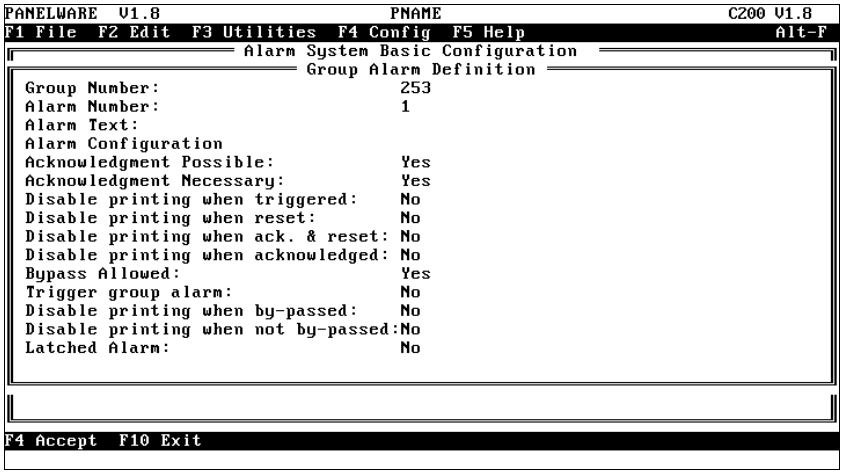


The parameters of the **Default Alarm Configuration** window are described in the "Alarm Definition" section.

F2 - Group Alarm Definition

Every alarm group has a special alarm called the Group Alarm. This alarm is triggered if any alarm (with group alarm enabled) in the group becomes active. For each individual alarm, you can set whether or not a group alarm is triggered. Group alarms can not be bypassed, can not trigger other group alarms, and can not be latched. If the group alarm is acknowledged, all alarms that triggered the group alarm are also acknowledged.

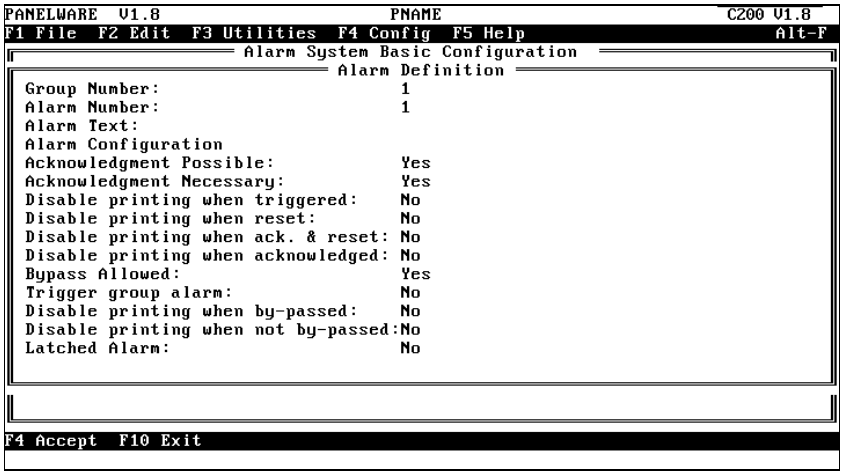
To define a group alarm, press **F2 Group Alarm**. The **Group Alarm Definition** window will appear on the screen:



The parameters of the **Group Alarm Definition** window are described in the "Alarm Definition" section.

F4 - Alarm Definition

To define a new alarm for an alarm group, press **F4 Alarm**. The **Alarm Definition** window is opened:



You can set the following parameters for each alarm in the alarm definition:

- **Group Number, Alarm Number**
  The group number is informational only and the alarm number is entered automatically. You can only change the order of the alarm number in the alarm list (see the "Alarm List" section for details).

- **Alarm Text**
  You enter the alarm message here. This text appears in each field and on the printer.

- **Alarm Configuration**
  The alarm configuration contains the following 11 parameters that can be set for each individual alarm. The default values are taken from the default alarm configuration that you defined for the alarm group (see the "Default Alarm Configuration" section).

- **Acknowledgment Possible**
  You must specify here whether this alarm can be acknowledged.

- **Acknowledgment Necessary**
  If you enter ***Yes*** here, the alarm is removed from the current alarm list only after it has been acknowledged. This alarm stays displayed until the operator acknowledges it, independently of whether the alarm bit is reset.

- **Disable printing when triggered**
  Disable printing when reset
  Disable printing when ack. & reset
  Disable printing when acknowledged
  You can disable these specific printing functions. If you enter ***Yes*** for an entry, there is no printout for that entry.

- **Bypass Allowed**
  If you enter ***Yes*** here, the alarm can be bypassed (i.e., turned off).

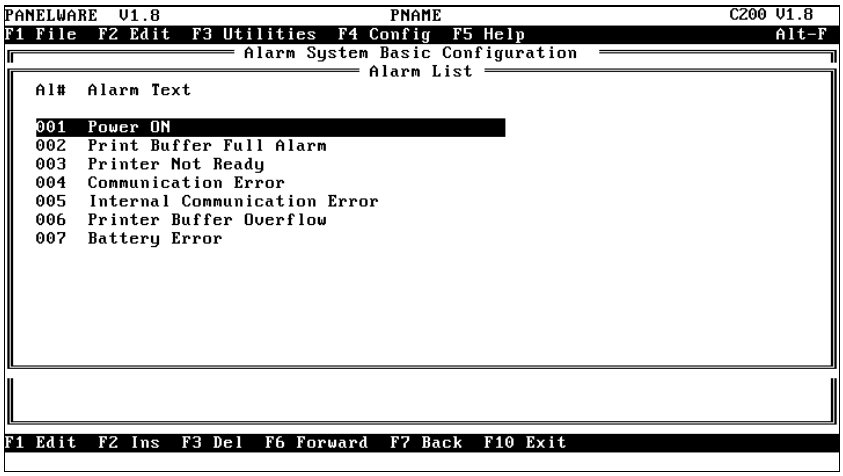
- **Trigger Group Alarm**
  Any alarm that has **Yes** in this entry will trigger the group alarm.

- **Disable printing when by-passed**
  Disable printing when not by-passed
  You can disable the printout function for bypassed and bypass canceled alarms.

- **Latched Alarm**
  A latched alarm is an alarm that remains in the current alarm list after the first occurrence. Enter ***Yes*** here if you want the first occurrence to be displayed even if the alarm comes and goes. These alarms must be set as **Acknowledgment Necessary**.

F5 - Alarm List

To display all alarms in an alarm group and to edit them, press **F5 Alarm List**, from the **Alarm Group List** window. The **Alarm List** window appears on the screen (the figure below shows the system alarm list):



All of the alarms of an alarm group are shown in the alarm list.

The figure above displays the predefined alarms of the alarm group **System Alarms**. You can not delete one of these alarms or insert new alarms but you can change the Alarm Definition of the predefined System Alarms.

Function Keys — Alarm List

F1 Edit ..... Allows you to edit the alarm text and alarm configuration of the selected alarm

F2 Ins ..... Inserts a new alarm

F3 Del ..... Deletes the selected alarm

F6 Forward / **F7 Back** Changes the order of the selected alarm and the alarm number as well

F10 Exit ..... Closes the **Alarm List** window and redisplays the **Alarm Group List** window

Alarm Fields

The following sections define the various alarm fields that can be specified in a picture. To insert an alarm in a picture, in the **Edit Picture** window, press **F2 Field** and select **Alarm Field** from the **Field Class** window. Refer to chapter 5 for more information about using the picture editor.

General Parameters

Parameters must be defined for every alarm field inserted in a picture. Many of the alarm parameter settings are the same for the different types of alarm fields. The following table describes these similar parameters:

Table 11 - 5. General Alarm Field Parameters

Field Parameters	Description
Position	Shows the (column, row) position of a field. This position is displayed as a reference to the character on the left-hand side of the field.
<Field Width>	Shows the width of the field in characters. This setting can be modified. The format of the key field is shown at the bottom of the window.
Function Key for ... F-Key for ...	The number of a function key that is used to execute a specific function is entered in this position. This function key must be defined in the key assignment (see chapter 7).
Address of ...	The PLC addresses entered here are the values/parameters that the fields read from the PLC. A symbolic name of the PLC address (see the “Symbolic Variable” section) should be entered, where the value is found in the PLC. The value is read from this address.

Symbolic Variables

For the Tagnames (PLC addresses), a symbolic variable name is entered. Assigning a PLC address for the Tagname is performed in the connection editor (see chapter 9).

Variable names can be a maximum of 10 characters long. A two-character connection identification (ID) can be added and must be separated from the variable name with a `/` character. This ID indicates the connection to a specific PLC. If no ID is entered, the default ID **/DD** is used automatically.

```
Example:    PLC address:   VARIABLE1/M1      -> ID = M1
            PLC address:   VARIABLE1         -> ID = DD
```

The connection ID must be defined before you can enter the PLC address for the connection (see chapter 9).

Function Keys — Field Parameters

While entering the parameters for a field, the following functions are available:

F1 Field Format ..... Allows you to change the field format (only for the field **Historical Alarm List Entry**).

F2 Filter Code ..... The filters can be enabled or disabled and the format of the filter time can be selected. Allows you to define the way that the filter interprets (only for the field **Historical Alarm List Entry**).

F4 Accept ..... Closes and saves any field/parameter changes made in the open window. The field is then displayed in the picture.

F5 Connections ..... If the cursor is at the **Address of ...** parameter line, displays a connection list that lists all connections for the current project. For each connection, the variable assignment table (VAT) can be opened to choose the desired variables. See chapter 4 in the appropriate *PANELWARE Application Manual*.

F10 Exit ..... Closes the open window and ignores all changes. The field is not displayed in the picture.

Field Types/Descriptions

In the field descriptions that follow, the Field Description section refers to the function of the field on a PANELWARE Panel that is in Run mode.

The following alarm fields are described:

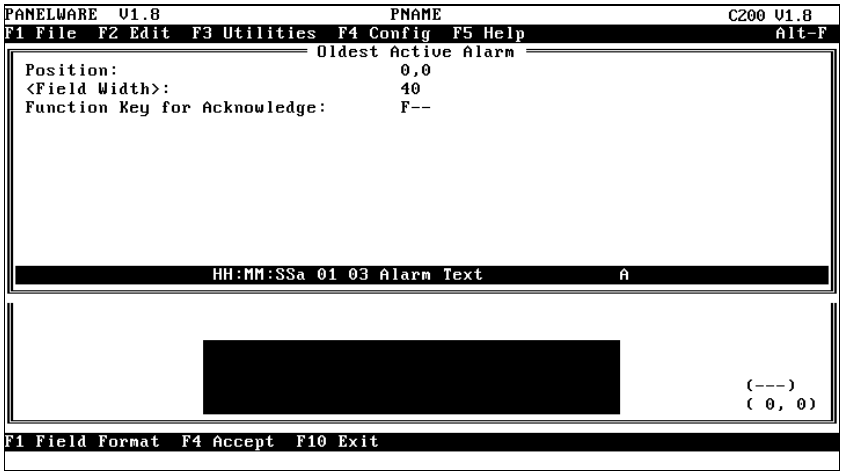
Table 11 - 6. Alarm Field Descriptions

Alarm Field	Description
Oldest Active Alarm	This field shows the oldest unacknowledged alarm in the system.
Newest Active Alarm	This field shows the newest (youngest) unacknowledged alarm with the highest priority.
Active Alarm	This field shows an active alarm. You can use these fields several times, one after another, in a picture to see a list of active alarms.
Alarm	This field shows an alarm regardless of its status. You can use this field several times in a picture to create a list of all alarms configured in the project.
Alarm History	This field displays an entry from the history list. You can have several of these fields, one after another, in a picture, to produce a list of all alarms in the projects.

Note

When multiple alarm fields are used in a picture to create a list, each field may be defined with a different field format, if desired.

Oldest Active Alarm



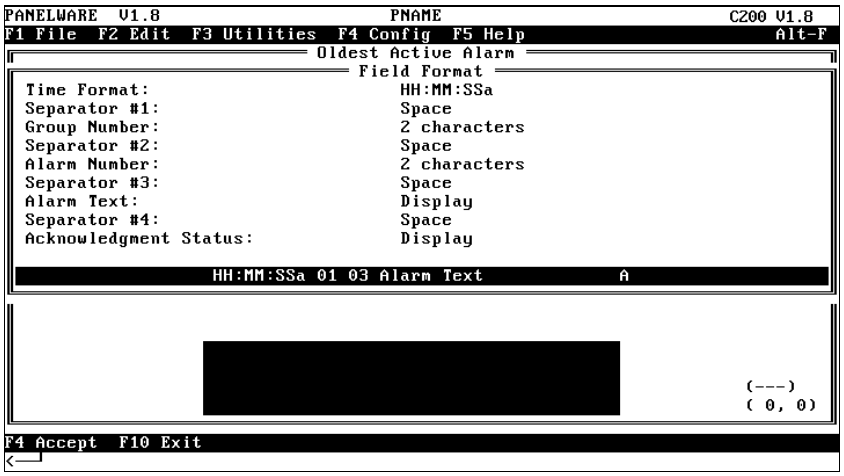
Field Description

This field shows the oldest unacknowledged alarm in the system. If all alarms are acknowledged, the oldest acknowledged alarm is displayed. If there is no alarm active in the entire system, the **No Alarm** message, as defined in the alarm system basic configuration, is displayed (see the "Basic Configuration" section).

You can acknowledge the displayed alarm by pressing the defined function key. This field works regardless of priority but can only be used once per picture.

F1 - Field Format

If you press **F1 Field Format**, the **Field Format** window appears to allow you to change the field format of the field as follows:

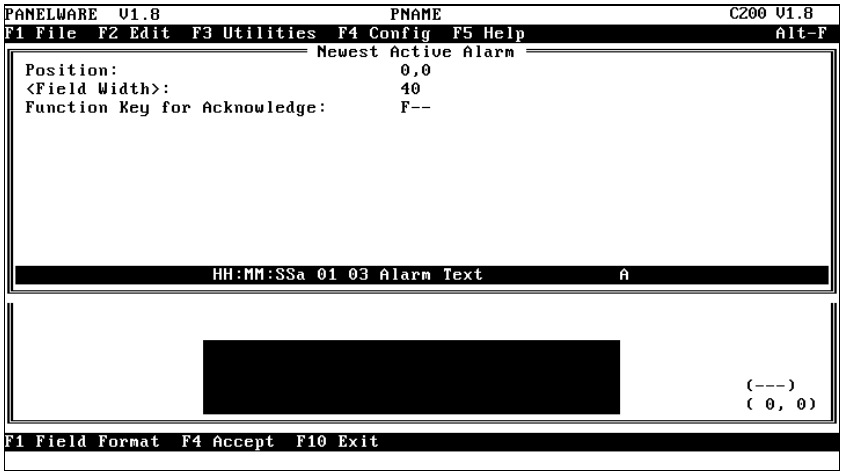


- **Time Format**
  You can select the desired time format from a selection window by pressing ↵.
- **Group Number, Alarm Number**
  You can select if and how the group number and the alarm number should be displayed.
- **Alarm Text**
  You can select if and when the alarm message should be displayed.
- **Acknowledgment Status**
  You can select whether or not the Acknowledgment status should be displayed. The characters [2] or [3] from the Status Abbreviation are used to display the Acknowledgment status (see the “Status Abbreviation” section).
- **Separators**
  Separator characters are used to separate the fields. You can use a space, a period or a hyphen.

There is a preview at the bottom of the window, showing how the alarm field will look on the display.

The **F4 Accept** and **F10 Exit** functions appear at the bottom of the screen. Press **F4 Accept** to save any changes you make. Press **F10 Exit** to close the window without saving any of the changes you make.

Newest Active Alarm



Field Description

This field shows the newest (youngest) unacknowledged alarm that has the highest priority. If all alarms are acknowledged, the newest acknowledged alarm with the highest priority is displayed.

If there is no alarm active in the entire system, the **No Alarm** message, as defined in the alarm system basic configuration, is displayed (see the “Basic Configuration” section).

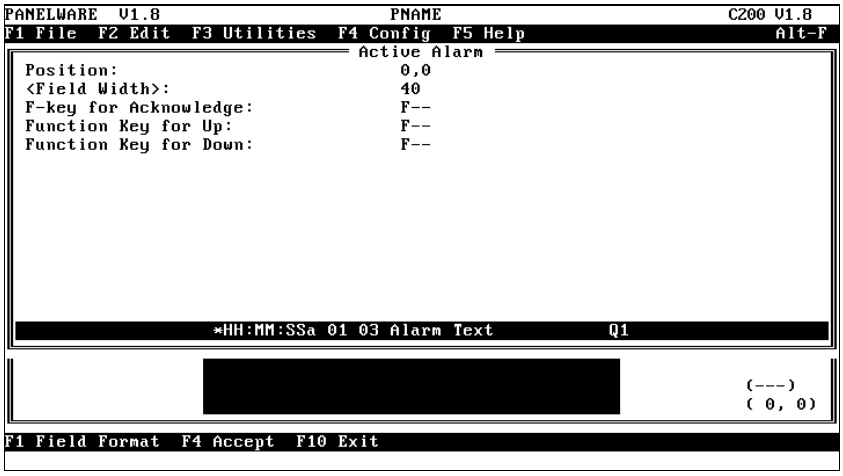
You can acknowledge the displayed alarm by pressing the defined function key. You can only use this field once per picture.

F1 - Field Format

This field format is defined exactly the same as the **Oldest Active Alarm** field.

The **F4 Accept** and **F10 Exit** functions appear at the bottom of the screen. Press **F4 Accept** to save any changes you make. Press **F10 Exit** to close the window without saving any of the changes you make.

Active Alarm



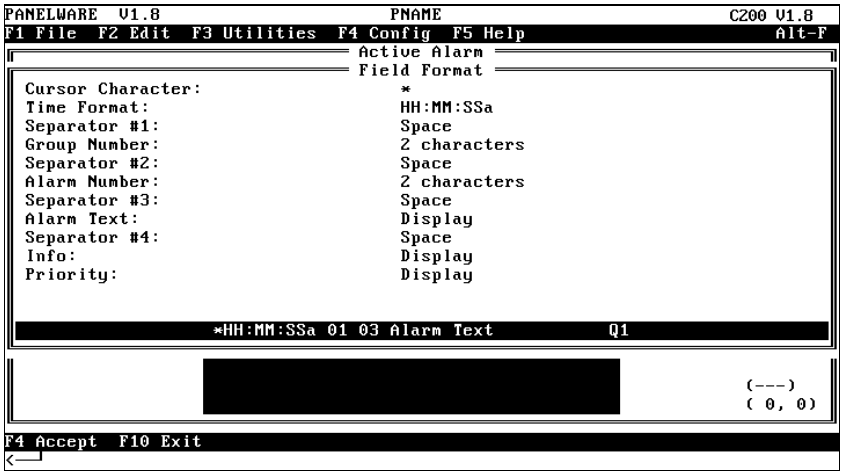
Field Description

This field shows an active alarm. You can use this field several times, one after another, in a picture to display a list of active alarms. If there are more active alarms than can be displayed in the fields, you can scroll up and down.

Using the defined function keys, you can scroll through the list and acknowledge the selected alarm. In pictures where this field is used, you cannot have fields for the oldest or newest active alarms.

F1 - Field Format

If you press **F1 Field Format,** the **Field Format** window is displayed to allow you to change the format of the field:



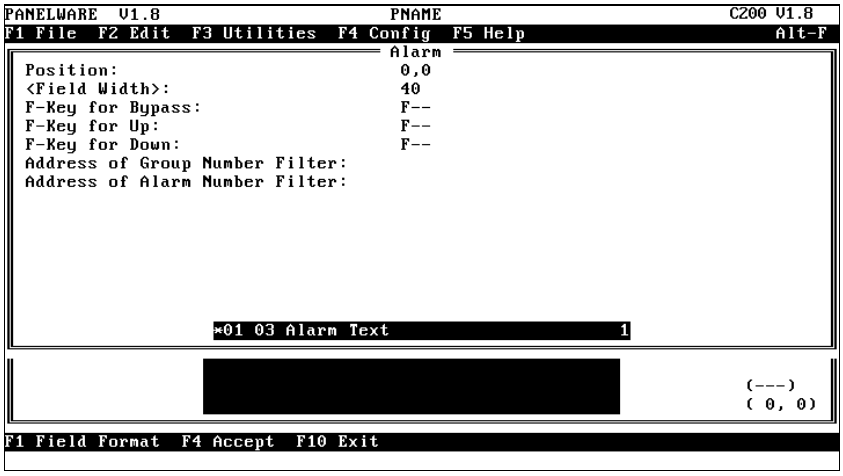
- **Cursor Character**
  The selected alarm is indicated with the cursor character. You can also select INVERSE, which causes the alarm background and text colors to be swapped, from a selection window that is activated when you press ↵.
- **Info**
  You can select whether the following Info entries should be displayed:
  - Character [1], if the alarm is reset without Acknowledgment (only for alarms that require Acknowledgment)
  - Character [2], if an active alarm is acknowledged
  - Character [3], if the active alarm is unacknowledged, or is unacknowledgeable
- The characters [1], [2] or [3] are taken from the status abbreviation.

A preview at the bottom of the window shows how the field will look on the display.

The remaining parameters are defined exactly the same as for the **Oldest Active Alarm** field.

The **F4 Accept** and **F10 Exit** functions appear at the bottom of the screen. Press **F4 Accept** to save any changes you make. Press **F10 Exit** to close the window without saving any of the changes you make.

Alarm



Field Description

This field shows an alarm regardless of its status. You can use this field several times in a picture, creating a list of all alarms in the project. It is possible to scroll through the list using two function keys.

You can bypass an alarm in this field by defining a function key for bypassing and two more for scrolling through the list.

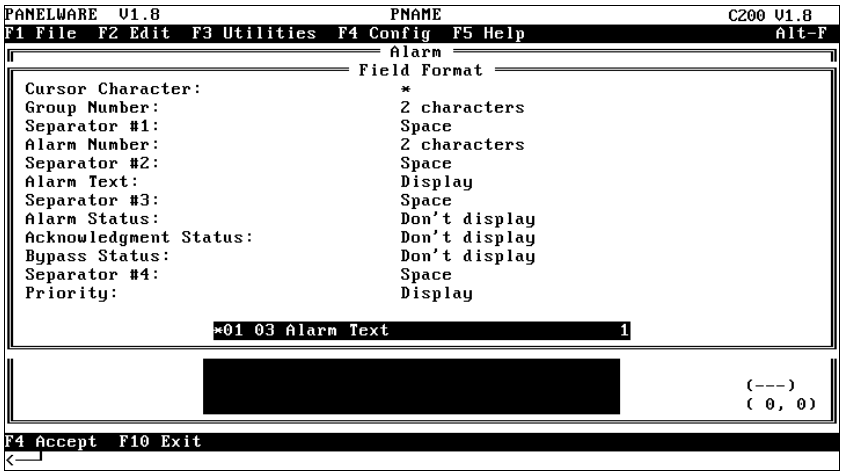
Field Parameters

Table 11 - 7. Alarm Field Parameters

Field Parameter	Description
Address of Group Number Filter	A group number is read from this PLC address. If the number read is a valid group number, only alarms of this group are displayed. Otherwise, this filter is deactivated.
Address of Alarm Number Filter	The alarm number read from the PLC address is handled in a manner similar to the Group Number Filter. This procedure can be used to display alarms from all groups that have certain numbers or other combinations.

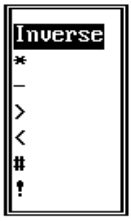
F1 - Field Format

If you press **F1 Field Format,** the **Field Format** window is displayed to allow you to change the display characteristics for the alarm field:



- **Cursor Character**

  The selected alarm is indicated with the cursor character. You can also select **INVERSE**, which causes the alarm background and text colors to be swapped, from a selection window that is activated when you press ↵.



- **Alarm Status**
  You can choose whether or not the alarm status should be displayed. The alarm status is displayed as the condition of the alarm bits before bypass. You can also see if a bypassed alarm would actually be active if it was not bypassed. The characters [4] and [5] from the status abbreviation are used for display (see the "Status Abbreviation" section).

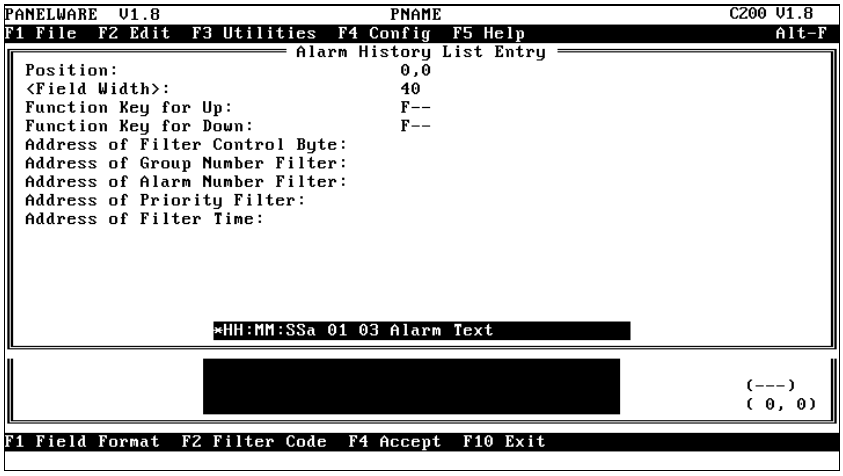
- **Acknowledgment Status**
  You can choose whether or not the Acknowledgment status should be displayed. The characters [2] or [3] from the status abbreviation are used for the display of the Acknowledgment status (see the "Status Abbreviation" section).

- **Bypass Status**
  You can choose whether or not the bypass status should be displayed.

A preview at the bottom of the window shows how the field will look on the display.

The remaining parameters are defined exactly the same as for the **Oldest Active Alarm** field.

Historical Alarm List Entry



Field Description

The Panel creates an Historical Alarm List that contains the same entries that alarm printout has. This field displays an entry from the history list. You can insert several of these fields, one after another, into a picture, producing a list of all alarms in the projects.

Using the two defined function keys, you can scroll through the list.

Field Parameters

Table 11 - 8. Historical Alarm List Field Parameters

Field Parameter	Description
Address of Filter Control Byte	The Filter Code defines the types of filters that the field will use. The filter that will be active is selected by the Filter Control Byte, which is read once per cycle from the PLC address. For the filter to be active, it must be enabled by the Filter Code functions and selected using the Filter Control Byte. For the codes to be used for the Filter Control Byte, see “Filter Control Byte.”
Address of Group Number Filter	A group number is read from this PLC address. If the number read is a valid group number, only alarms of this group are displayed. Otherwise, this filter is deactivated.
Address of Alarm Number Filter	The alarm number read from the PLC address is handled similar to the Group Number Filter. This procedure can be used to display alarms from all groups having certain numbers or other combinations.
Address of Priority Filter	A priority number is read from the PLC. If the number read is valid (0-9), only entries having that priority or a higher priority are displayed. If an invalid number is read from the PLC, all alarms are displayed.
Address of Filter Time	A clock time (6 bytes) is read from the PLC. Depending on the contents of the Filter Control Byte (see “Filter Control Byte”), only alarms that are either younger or older than the time read from the PLC address are displayed. The time format in the PLC must be SS:MM:HH:DD:MM:YY.

Filter Control Byte

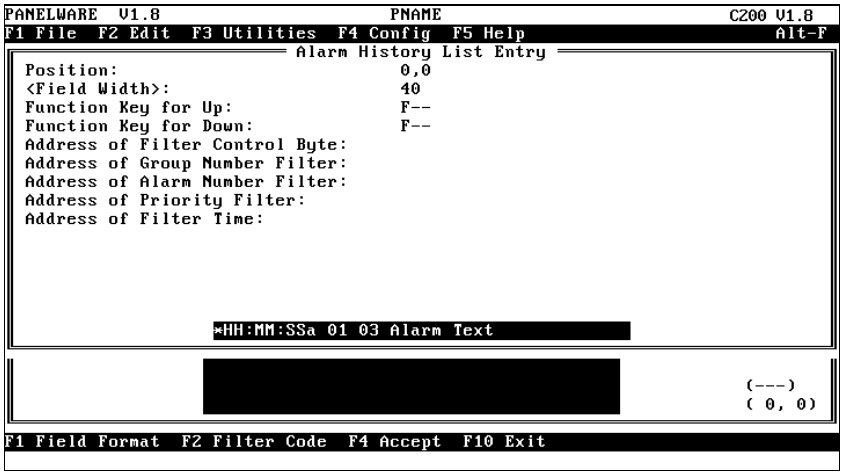
The Filter Control Byte selects the filter type that will be active.

Table 11 - 9. Filter Control Byte Types

Value	Filter Type
0	No filter
1	Time Filter “younger than”
2	Time Filter “older than”
3	Group Filter
4	Priority Filter
5	Time Filter “younger than” and Group Filter
6	Time Filter “older than” and Group Filter
7	Time Filter “younger than” and Priority Filter
8	Time Filter “older than” and Priority Filter
9	Time Filter “younger than” and Group Filter and Priority Filter
10	Time Filter “older than” and Group Filter and Priority Filter
11	Group and Priority Filter

F1 - Field Format

If you press **F1 Field Format**, the **Field Format** window is displayed to allow you to change the format of the field:



- **Cursor Character**
  The selected alarm is indicated with the cursor character. You can also select **INVERSE**, which causes the alarm background and text colors to be swapped, from a selection window that is activated when you press ↵.

- **Event**
  An event is included if an alarm is triggered, reset, acknowledged, bypassed or not bypassed. The characters [0], [1], [2], [8] and [9] from the status abbreviation are used for display (see the “Status Abbreviation” section).

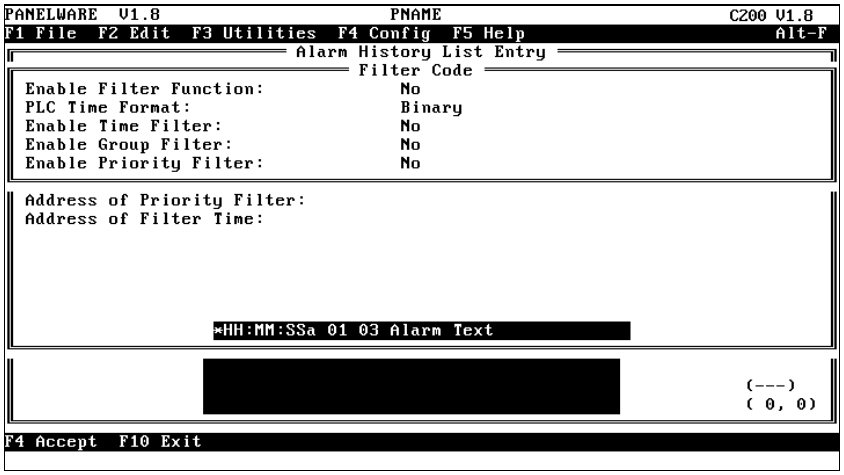
- **Acknowledgment Status**
  The Acknowledgment status at the time of an event is always shown. The characters [2] or [3] from the status abbreviation are used for the display of the Acknowledgment status (see the "Status Abbreviation" section).

A preview at the bottom of the window shows how the field will look on the display.

The remaining parameters are defined exactly the same as for the **Oldest Active Alarm** field.

F2 - Filter Code

If you press **F2 Filter Code**, the **Filter Code** window appears to allow you to change the configuration of the filters.



The **F4 Accept** and **F10 Exit** functions appear at the bottom of the screen. Press **F4 Accept** to save any changes you make. Press **F10 Exit** to close the window without saving any of the changes you make.

Chapter 12

Scaling, Up/Down Input, Input Locking, Password Protection

Scaling, Up/Down Input, Input Locking, and Password Protection are features that can be enabled for input and output fields. Refer to the descriptions for each feature to determine which fields it applies to. This chapter includes the following information:

- Scaling 12-2
  - General Information 12-2
  - Output Fields 12-3
  - Input Fields 12-4
- Up/Down Input 12-7
- Input Locking 12-8
- Password Protection for Inputs 12-10

Scaling

General Information

Both Output and Input fields can be scaled. The value that is to be shown is converted to the desired units of measurement by means of a user-defined linear function.

The following fields can be scaled:

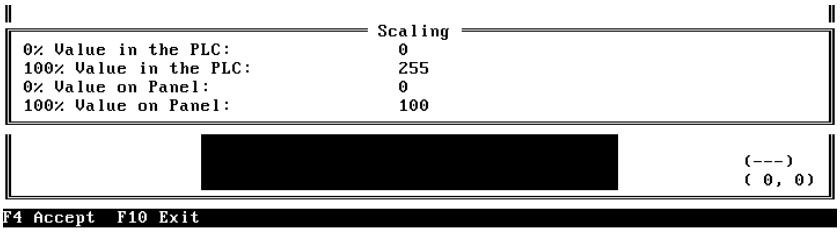
Table 12 -1. Scaleable Fields

OUTPUT Fields
Output Bit/Byte
Output Word (unsigned)
Output Word (signed)
Output Byte as Bar Graph
Output Word as Bar Graph
Output Long (unsigned)
Output Long (signed)
Output Float

INPUT Fields
Input Bit/Byte
Input Word (unsigned)
Input Word (signed)
Input Long (unsigned)
Input Long (signed)
Input Float

Output Fields

If the window in which the field parameters are entered is active, press the **F3 Scaling** function key to display the **Scaling** window:



The values entered in the **Scaling** window are only converted if scaling is switched on (by a **Yes** value) in the field parameters of an **OUTPUT** field. If scaling is switched off (by a **No** value), these values are ignored and the value read from the PLC will be shown in its original state. The following values can be converted:

- 0 % value in the PLC; 100 % value in the PLC
  Enter the low and high ends of the PLC value range.
- 0 % Value on panel; 100 % Value on panel
  Enter the values that should be displayed on the Panel in engineering units.

Conversion: 0 % Value in the PLC => 0 % Value on the Panel
100 % Value in the PLC => 100 % Value on the Panel
All other values can be converted by linear interpolation, using the following diagram:

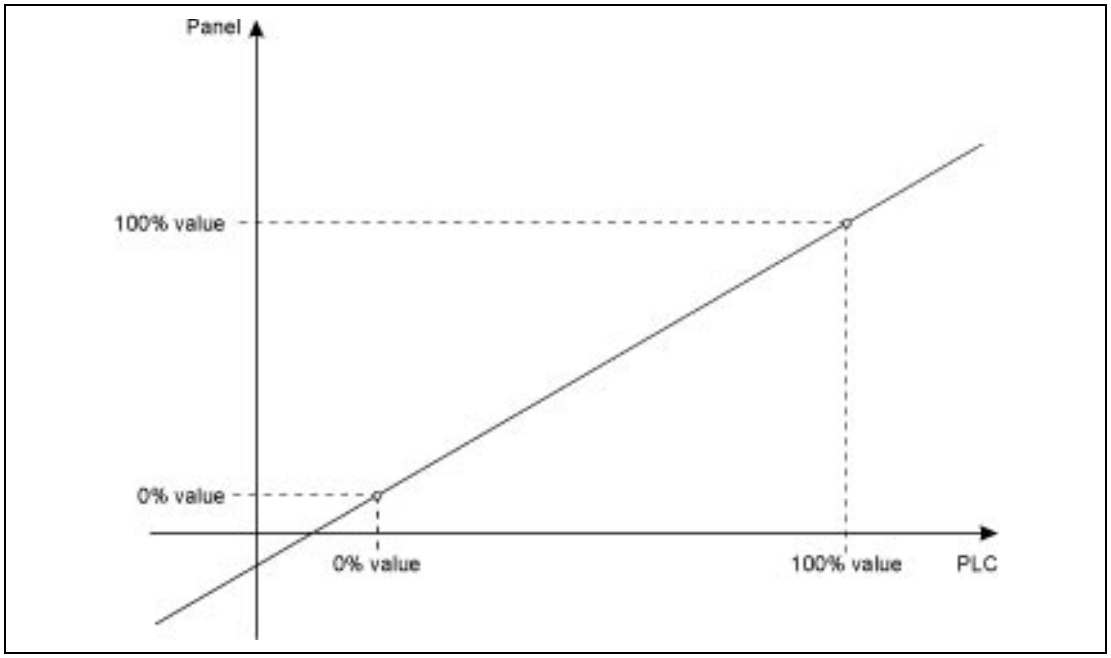


Figure 12 - 1. Scaling Output Values via Linear Interpolation

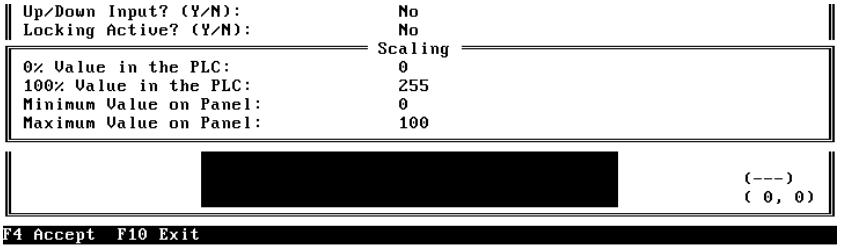
Notes

It is possible for the scaled values to lie outside the value range (this range depends on the Panel data type) of the Panel variables. These scaled values are then limited to values within the permitted range. If the scaled value can not be displayed because the field width is too small, the OUTPUT field is filled with asterisks — *********.

For OUTPUT fields **OUTPUT Byte** and **Word as Bar Graph**, the values **0 % Value on panel** and **100 % Value on panel** cannot be entered. These values are defined by the length of the bar. **0 % value in the PLC** corresponds to a bar length of 0 Pixels and **100 % value in the PLC** corresponds to the full bar length that you defined in field parameters (**Bar Length**).

Input Fields

If the window in which the field parameters are entered is active, press the **F3 Scaling** function key to display the **Scaling** window:



The values entered in the **Scaling** window are converted only if scaling is switched on (by a **Yes** value) in the field parameters of an Input field. If scaling is switched off (by a **No** value), these values are ignored and the value read from the PLC will be shown in its original state. The following values can be converted:

- **0 % value in the PLC; 100% value in the PLC**
  Enter the low and high ends of the PLC value range.
- **Minimum Value on panel; Maximum Value on panel**
  Enter the values that will be displayed on the Panel in engineering units. These scaling values are also used to limit the input by the user. The Panel allows no values smaller than the minimum or larger than the maximum value.

Conversion: 0 % Value in the PLC <=> Minimum Value on the Panel
100 % Value in the PLC <=> Maximum Value on the Panel
All other values can be converted by linear interpolation, using the following diagram:

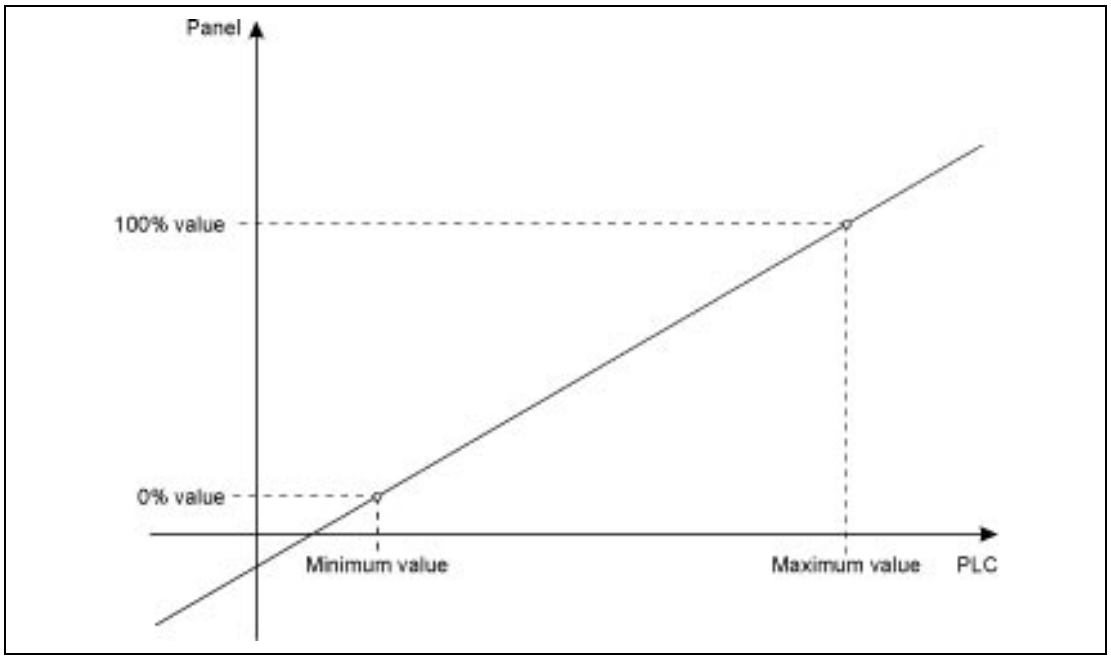


Figure 12 - 2. Scaling Input Values via Linear Interpolation

It is possible to have input entries in two directions. Therefore, conversions of the data entered for scaling can also be made in both directions.

If the cursor is in an Input field, a value can be entered through the Keyblock of a Panel. All entries that exceed the minimum or maximum values are limited to the minimum or maximum value. For example, if a value of 1600 is entered where the maximum is set at 1500, the Panel limits the entry to 1500 after the **+E+**[1] key is pressed. The value is only scaled and sent to the PLC after the **+E+** is pressed again.

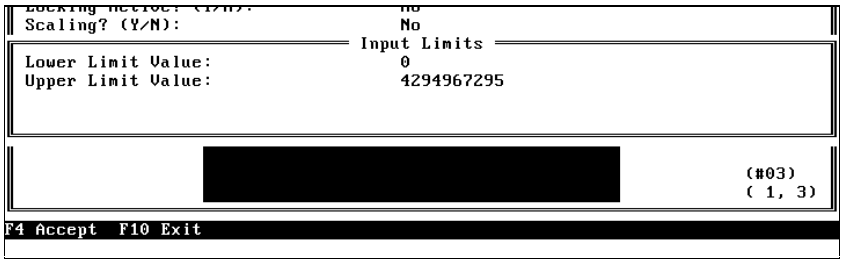
Input fields, other than the one in which the cursor is located, work exactly the same as every Output field. Depending on the value in the PLC, values that lie outside of the maximum and minimum limits can also be displayed in these fields.

When you are scaling values, it is a good idea to have data type limitations and value ranges in mind. When converting PLC variables to Panel variables or Panel variables to PLC variables, it is possible for the scaled value to lie outside of the permitted Panel or PLC variable value range (these are then limited to the highest or lowest permitted value).

1 Key abbreviations, codes and meanings are explained in chapter 7 “Key Assignments”.

Input Limits

If the scaling is switched off (by a **No** value) in the field parameters of the INPUT fields **Long (signed)** or **Long (unsigned)**, a different window is opened when the **F3 Scaling** function key is pressed:

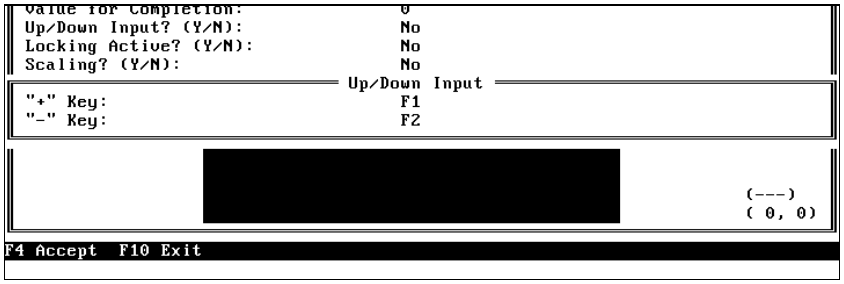


The Panel allows no values smaller than the **Lower Limit** or larger than the **Upper Limit Value**.

Up/Down Input

Up/Down inputs can be incremented/decremented by using two function keys. All numerical input fields, with the exception of Input Floats, can be configured as Up/Down inputs. Two function keys, used to increment or decrement the value must be defined for every Up/Down input. While the key is pressed, the value in the PLC changes as well. The longer the key is depressed, the faster the change rate becomes. The **Tagname for Completion** is overwritten when the key is released.

If the window in which the field parameters are entered is active, press the **F1 Up/Down** function key to display the **Up/Down Input** window:



The function keys defined here can only be used for incrementing/decrementing if the Input field is declared as an Up/Down input (by a **Yes** value) in the field parameters. If the Up/Down function is switched off (by a **No** value), the definition of the function keys is ignored and the Up/Down function is inactive.

Note

If an input field is defined to be an up/down input, you can change only the field's value via the up and down function keys. You can not directly enter a new value into an Up/Down input field as you can in normal input fields.

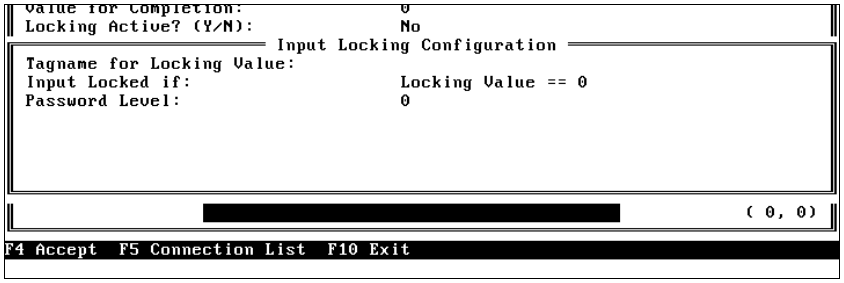
Input Locking

The ability to enter values can be blocked for Input fields, creating a locked field. A locked input field behaves like an output field and no input is possible. The following fields can be locked:

Table 12 - 2. Lockable Input Fields

INPUT Fields
Input Bit/Byte
Input Word (unsigned)
Input Word (signed)
Input Long (unsigned)
Input Float

If the window in which the field parameters are entered is active, press the **F2 Locking** function key to open the **Input Locking Configuration** window:



Field entries are only blocked according to the set parameters if the locking function is switched on (by a **Yes** value) in the field parameters of the Input field. If the locking function is switched off (by a **No** value), the Input field is not locked and entries can be made from the Keyblock as usual.

- **Tagname for locking value**

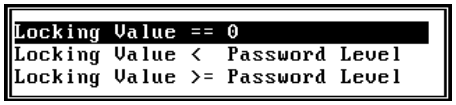
  The input field reads the address specified for the Tagname before an entry can be made.

  Depending on the value that is read and the locking condition, a decision is made as to whether or not the entry can be made.

  For an input field that is password protected, the same address that is defined for the password value under **Input Password** should be entered.

- **Input Locked if (Locking condition)**

  The locking condition can be chosen from a selection window that is displayed when you press the ↵ (Enter) key.



  - ❏ Locking Value == 0
    An input is only possible if a locking value that is not equal to zero is read from the PLC. At zero, the input remains locked. In this condition, you can lock and enable inputs from the PLC program. The password level has no effect in this case.

  - ❏ Locking Value < Password Level
    If the locking value in the PLC is less than the password level, there is no input possible. If the value is the same or larger, input is possible. This condition is used for password-protected input fields.

  - ❏ Locking Value >= Password Level
    If the locking value in the PLC is the same as or larger than the password level, no input is possible.

- **Password Level**
  For input fields that have password protection, the protection level from which the input can be enabled is entered here.

Password Protection for Inputs

To provide password protection for input fields, you must do the following:

- All input fields that are to be protected by the same password field are assigned the same Tagname for Locking Value (PLC address).
- The Input Password field is assigned the same address for the Destination Tagname as the protected input field's Tagname for Locking Value.
- Input fields are configured to have the locking condition **Locking Value < Password Level**.
- The desired password level is entered.

Note

See "Input Password" in chapter 6 for detailed information on input password fields.

Appendix A

Operating Limits

This appendix lists the maximum and minimum requirements for projects and the PC that operates PCS. It includes the following information:

- Maximum Ratings for Projects.....A-2
- Minimum PC Ratings and Requirements.....A-3

Maximum Ratings for Projects

When creating a complete project, you must adhere to the following software limits:

Table A - 1. Maximum Software Limitations

Parameter	Limits
Maximum Pictures per Project	250
Maximum Global Init Texts	8
Maximum Texts per Text Group	2000
Maximum Text Length per Text Group	20480 Bytes
Maximum Text Groups	256
Maximum Length of Texts	40 Characters
Maximum Variables per Connection	500
Maximum Variables per Project	500
Maximum Length of Variable Name	10 Characters
Maximum Connections per Project	32
Maximum Lines per Picture	64
Maximum Texts per Picture	64
Maximum Fields	64
Key Functions	99
LED Functions	99
Maximum Alarm Groups per Project	254
Maximum Alarms per Alarm Group	128
Maximum Alarms per Project	1024
Maximum Function Keys per Project	99

Minimum PC Ratings and Requirements

Table A - 2. Minimum PC Requirements

Parameter	Limits
Minimum RAM for PCS	512 KB
Minimum free hard disk space required to install PCS	3 MB
Minimum free hard disk space for running PCS	1 MB
Minimum FILES in CONFIG.SYS	40
Minimum BUFFERS in CONFIG.SYS	10

Appendix B

Troubleshooting

This appendix lists error messages and potential system trouble areas, and outlines possible causes and corrective actions. It includes the following information:

- Errors During the Installation B-2
- Errors During Program Start B-3
- Errors While Working in PCS B-4

Errors During the Installation

Installation could not be ended properly!
Setup program cannot be called!

Check the following:

- PC processor type must be an 80286 (12 MHz) or higher.
- At least 4 MB space must be free on the hard disk.
- Does the PC have enough free memory? If not, remove the memory-resident programs.

Errors During Program Start

PCS cannot be started!

Check the following:

- PC processor type must be an 80286 or higher.
- Does the PC have enough free memory? If not, remove the memory-resident programs.

PCS Error Message Fatal Error, PANELWARE requires 1 MB on drive c:

- In order to start PCS, at least 1 MB must be free on the hard disk.

Errors While Working in PCS

Error messages are either displayed on the bottom line of the screen (the function key line) or in the current window.

Faults running PCS!

Check the following:

- FILES and BUFFERS in the CONFIG.SYS file should be set to at least the following values:

  BUFFERS = 10
  FILES = 40

- During the installation, the SETUP program makes these settings automatically. The modifications in the CONFIG.SYS file are only made, however, if you responded positively by pressing ***Y*** during the installation. If these values are smaller in the CONFIG.SYS file, please change them to the above values before trying to run the PCS again.

Invalid Project Name

- This error message appears in the last line if a new project is given a name that already exists. Either change the new name or delete the existing project.

`<File name>` *cannot be written*

- When you are entering project names or saving pictures, text groups or key definitions, only file names that fill the following conditions may be given:
  - 1. Maximum length of the name: 8 characters
  - 2. Only standard MS-DOS characters are allowed. Characters such as .*****: or the space character are not permitted.

`<File name>` *cannot be read*

- This error message appears if a name that does not exist is entered when you are trying to load a project or picture, this error message appears. If no name is entered and the ↵ (Enter) key is pressed, all project names or picture names that exist appear in a selection window. By moving the cursor with the cursor keys, the desired project/picture can be selected and loaded.

Error! Error picture and first picture cannot be the same!

- The compilation of a project is interrupted by this error message if the error picture is defined in the first position of the picture directory. The start-up picture must be in the first position of the directory (see chapter 2).

Cannot make connection with panel!
Please check cable and installation!

After calling the **Download** function, this message appears if the connection to the panel cannot be made. Check the following:

- Is the PC connected to the panel?
- Is the panel properly supplied with power?
- Are all cables connected to the proper interfaces?

  IF0 on the panel

  COM1 or COM2 on the PC, depending on the PCS configuration (see chapter 2).

- Is the panel in *Teach Mode*?

Other Error Messages

Other PCS error messages are described, along with an explanation of possible causes and solutions in Appendix C.

Appendix C

Alphabetical List of Error Messages

This appendix lists (alphabetically) and provides explanations of possible PCS error messages. It includes the following information:

- General Information C-1
- List of Error Messages C-2

General Information

While working with PCS, various error messages and warnings may be displayed on the screen. These messages are either displayed on the bottom line of the screen or in the active window. A list of these error messages is provided in alphabetical order on the following pages. A short description of each message, along with steps to correct and prevent the error, is provided.

List of Error Messages

A **Address not allowed for this field type!**

- The given address is not allowed for this field type. Check the address entry and enter another address. Refer to the appropriate *PANELWARE Application Manual* for information about the PLC addresses and field types allowed for the PLC protocol you are using.

B **Background lighting is not installable for this panel!**

- The Panel either does not support background lighting or it is always switched on.

C **Cannot make connection with panel!**

- The PC cannot establish a connection with the Panel. Check your cables and connectors, as well as the settings (channel #1 or channel #2). Make sure the Panel is in the proper mode for the operation.

Cannot write to panel memory!

- Your Panel has an error in the memory or has an invalid operating system.

Contains a field with reference to unknown text group:

- Check to see if all text groups exist. Either correct your entry or create the missing text group.

Contains key functions with invalid keys

- The loaded/compiled project contains key functions for keys that do not exist.

D **Deletion denied, alarm group contains valid alarms!**

- You can only delete alarm groups if you have previously deleted all alarms from the group.

E

Error while compiling a text group

- This error message can be caused by the following errors:
  - Your Global Text File cannot be read (Read error).
  - Your Global Text File is from an older version of PCS.
  - Your PC does not have enough application memory. (For more information on memory requirements, see chapter 2.)
  - Your Global Text File belongs to another project.
  - The compiled project is too long.
  - You have exceeded the maximum allowed number of texts.

Error while compiling the keycode tables

- This error message can be caused by the following errors:
  - The key assignment file can not be read (Read error).
  - You are using a key assignment file from an older PCS version.
  - Your PC does not have enough application memory. (For more information on memory requirements, see chapter 2.)
  - The key assignment file belongs to another project.
  - The compiled project is too long.

Error while compiling the pictures

- This error message can be caused by the following errors:
  - A picture file can not be read (Read error).
  - The picture you are using comes from an older PCS version.
  - Your PC does not have enough application memory. (For more information on memory requirements, see chapter 2.)
  - The picture that you are using belongs to another project.
  - The compiled project is too long.

Error while saving the object file

- Your PCS can not save an object file while compiling either because more space is required on your hard disk, or because your access rights do not allow you to overwrite an existing object file.

Error! Error picture and first picture cannot be the same!

- You have defined the first picture (start-up picture) as the communication error picture in the project definition. Check this entry or change the picture sequence in the picture directory.

Error! Incomplete project definition!

- Entries are missing from your project definition. You cannot compile your project in its present state. Check for the missing entries and correct them.

F

Field is too large to fit on the display!

- The field that you have just created is too wide and there is not enough space in the defined position on the display. Move the field to the left in order to make the required space available.

Field type already exists, only 1 allowed per picture!

- This field may only be used one time per picture.

Fields are not allowed in the error picture on this panel!

- Only mask text is allowed in the error picture on this Panel.

File/Directory does not exist!

- The directory of the project that you have tried to delete is either write protected or does not exist. Disable the write protect and check your access rights.

G

Group Acknowledge Key is not allowed on this panel!

- This key can not be used on this Panel (only on Panels without alarm systems).

I

Illegal connection!

- You must select a valid connection before a connection definition can be accepted.

Illegal Tagname

- The name or the connection ID of the entered PLC address is invalid. Check whether the name that you have entered is correct.

Incomplete branches have been defined! Picture is not accepted.

- You must fill every branch displayed in the branch structure with a picture name.

Internal Compiler Error!

- Should this error occur, contact GE Fanuc Technical Support for instructions.

Invalid multiple use of a function key

- Only one function may be defined per picture and function key. Remove the double assignment (for example, a picture change function *and* a key function that have the same key).

Invalid or missing driver description file (PPF-file)!

- Your PCS software installation is incomplete. Perform the install process again using the original installation diskette(s).

Invalid variable name !

- You must use valid variable names. Check the variable names you have entered.

K

Keyboard Error Code 7511

- The daisy chain connecting the keyboard units in your system is incomplete. Check the following items:

Caution

Remove power from the system before disconnecting and connecting cables.

- ❑ Make sure all Keyblock cables are securely installed and fully seated. (A simple click does not mean secure installation.)
- ❑ Verify that the Keyblock cable termination plug is installed (it is shipped in the Controller box).
- ❑ Use the process of elimination to detect a failed keyboard module: Move the termination to the first Keyblock in the daisy chain and check for the error code. If the first Keyblock is OK, add one Keyblock at a time, checking for the error code each time, to determine if one of them (or its connecting cable) is defective.

M

Max. 20kB text is possible for one global text group!

- You are allowed a maximum of 20,480 characters per text group. Split your text into more groups.

Maximum number of alarms per group reached!

- No more alarms can be defined for this alarm group.

Maximum number of alarms reached!

- No more alarms can be defined for this project.

Maximum number of connections reached!

- No more connections are allowed for this Panel.

Maximum number of groups reached!

- No more alarm groups can be created for this project.

Maximum number of Tagnames per connection reached!

- No more variables are allowed for this connection.

A max. of 250 pictures are allowed in a project! Picture is not accepted.

- Binding more pictures into this project is not possible. Try creating your project using fewer pictures.

Missing Controller!

- You must select a controller if you are creating a new project.

Missing object file! Please compile!

- Before loading a project to the Panel, it must first be compiled successfully.

Module could not be burned!

- Your Panel has an error in the FlashPROM memory or the operating system is invalid.

N

No graphics possible on this panel

- Panels that do not have graphic display capabilities do not support graphic functions such as bars graphs or lines.

No LED functions are possible on this key

- You can only activate LED functions on keys that are equipped with an LED.

No memory available! Function cannot be executed!

- Your PC does not have enough memory to execute this function. Ensure that the PCS memory prerequisites have been fulfilled before starting PCS again. Any memory resident-programs that are not required should be removed.

No more fields are possible in this picture

- You have defined the maximum number of fields that are allowed in this picture.

No more lines are possible in this picture

- You have drawn the maximum number of lines allowed for this picture. Check to see whether a line is segmented in the picture. This problem can sometimes be remedied by deleting segmented lines and replacing them with a single continuous line.

No more text is possible for this global text group!

- You can define a maximum of 2000 texts per text group. Split your texts up into more groups.

No more text is possible in this picture

- You have entered the maximum amount of characters allowed for this mask text in the picture. By creating a new text, you can enter more text in the same line if desired.

No Picture elements deleted

- You have tried to execute a function (for example, **Del**) without first selecting an element of the picture.

No PLC address defined for this Tagname!

- You can only define the PLC variable type if the variable is used in a field first.

No PLC data type defined for this Tagname!

- You have used a symbolic PLC address (variable) that is not assigned in the VAT. Enter it in the VAT.

Not allowed for this group!

- This function is not allowed for the system alarm or global alarm groups.

O

Oldest or Newest Alarm not allowed in conjunction with Active Alarm field!

- You may not use an **Active alarm** field in a picture that has a **Newest active alarm** field or an **Oldest active alarm** field.

Only function keys from F1 to Fnn are possible!

- The Panel only supports “nn” function keys.

Only INTERNAL variables are allowed in the error picture!

- You may only use variables of the **internal** connection type in the error picture. An example is provided in the demo project that is supplied with your PCS.

P

Picture change by the PLC is not allowed on this panel!

- The **Picture Change from PLC** function is not supported by this Panel.

Picture list missing!

- You do not have a picture directory and no picture branching structure has been defined. You must create a picture directory and bind the pictures for every project.

PLC data type is unknown for this connection!

- The compiler is telling you that your project contains PLC data types that can not be used by your software. Ensure that you have the latest release of PCS. If not, install it.

Please choose an edit mode first (Project, Picture, Text Groups)!

- Before you activate a Load or Save function, you must select an editing mode from the **F2 Edit** pull-down menu.

Please define a project first!

- Editing functions (such as Edit Picture) can only be used if you have first defined a picture. Either create a new project or load an existing one using the **Project** functions in the **F1 File** pull-down menu.

R

Reference to unknown connection ID!

- The compiled project contains a variable that has an undefined ID. Check your connection and variable assignment tables.

T

Tagname already exists!

- You have tried to make a new connection using an ID that already exists elsewhere. Each connection must have its own ID.

Tagname already exists with different data type

- The variable name entered has already been used for another field that has a different data type. Choose another variable name or delete the unused variable name from the VAT.

Tagname includes unknown connection

- Variables can only be defined with existing connection IDs. Select **F5 Connection** to choose an existing connection or to create a new one.

Tagname not used in any field yet!

- You have put a (new) variable into the VAT that is not used in a field. You can only assign this variable if you have used it in a field because the PCS must know the data type of the field.

The file has the wrong ID !

- The file that you have selected has probably been changed by another user, or does not belong to a PANELWARE project.

The last picture cannot be deleted!

- You cannot delete the last picture in a picture directory.

The previous input key is invalid for this panel!

- This key does not exist on older Panels. Contact GE Fanuc Technical Support for instructions.

The selected file has an incorrect version number!

- The selected file has been created by a newer version of PCS than yours. Install the new PCS version.

This branch cannot be deleted!

- You cannot delete the first two picture branches “Next” and “Previous”. If you do not need these branches, just define them to branch to themselves (by entering the same name as the main picture name on the left).

This field type is not possible for this panel!

- Certain fields are not supported by all Panels.

This panel has no alarm functions!

- Alarms are not handled by this Panel.

U

Unused mark is only valid after error free compilation!

- If you press **F6 Used** in the VAT window, variables that are not assigned to any field are marked as unused. If a project has been changed since the last compilation, these markers may be invalid. The **F6 Used** function should only be used directly after a successful, error-free compilation.

User module does not exist

- You have tried to upload a project from a Panel that contains no project. No project can be uploaded from this Panel.

V

Version Conflict: File cannot be edited!

- The compiler has found a version conflict in a picture. You can either recreate the picture or remove it.

Version Conflict: Please load and save project !

- You have loaded a project from an older PCS version. In order to load the project and edit it, you must first save it using the current version of PCS.

Version Conflict: Please load and save the .TTA file !

- You have edited a project from an older PCS version. To continue, you must save the key assignments.

W

Warning: Text Group contains characters and ESC Sequences

- The text group contains ESC sequences that should only be used when you completely understand what the result will be. The *PANELWARE Hardware Installation User's Manual* (GFK-0848) provides the correct sequences. You can also fully use all of the PANELWARE system functions without having to use ESC sequences.

Warning: Incomplete control key definition!

- This warning appears if you have not defined all control keys. Do not worry about this message, as NOT all control keys must be defined for a project to function correctly.

Warning! Not all pictures are bound!

- Your project contains pictures that are not shown in the picture directory or are not bound. You must bind all pictures in the picture directory (i.e., define the neighboring pictures), although you do NOT have to use all pictures that you have created in the project.

Warning! Not INTERNAL variable!

- You have used a variable name with an internal connection that the Panel does not recognize as an internal variable. Either remove this variable or correct the names. A list of the internal variables is provided in Appendix D.

Warning: Picture contains overlapping fields

- Your picture contains fields that overlap. In Run mode, this leads to an undefined display. Change or remove these fields.

Warning! The comm. error picture is not in the project definition!

- You must enter the name of the picture that should appear for an error in communication in the project definition mask.

Warning! The connected picture is not in the picture list!

- Your picture branching structure calls pictures that are not in the picture directory. All pictures called in the picture branching structure must be inserted into the picture directory and bound.

Write error while saving the configuration!

- Please check your diskette and hard disk. If a write error occurred on your hard disk, please contact a qualified computer technician before you continue.

Appendix D

Internal Variables

This appendix lists the various internal system and user variables. It includes the following information:

- General Information D-2
- Internal System Variables D-3
  - Error Information D-3
  - Reading Date/Time D-4
  - Setting Date/Time D-4
- Internal User Variables D-5

General Information

The connection editor, described in chapter 9, can used to define “internal” connections, as well as external connections. Internal connections refer to variables inside PANELWARE Panels. These variables fall into two categories:

- System variables distribute user information such as the date, time, error number or error name. The internal real-time clock of the Panel can also be set with system variables.
- User variables are variables that are for your use. These can be used if the data that would put additional communication load between the Panel and the PLC does not influence and is not affected by the PLC.

  You could, for example, construct the entire Password Protection function with user variables, as long as those variables do not need any information from the PLC. To do so, you would define **Tagnames for Locking Value** in all input fields that should be blocked from user entries and define **Destination Tagname** in the **Input Password** field using the same internal user variables.

  Note

  When using internal variables, make sure the data type of the field is identical to that of the variable. Also, the format of the variable name must always be matched exactly.

Internal System Variables

Error Information

If an error occurs during PANELWARE Panel operation, error information is stored in the following variables. It is possible to display the variable in the error picture.

Table D - 1. Error Information Variables

Variable Name	Data Type	Comments
Error Information for Controller C200		
ERR_NR	Byte unsigned	Error number: 0 no error 1 communication error 2 access to non-existent variable 4 Data type error 5 no access This error occurs if the Panel tries to write to a PLC variable, which only can be read.
ERR_CODE	Word unsigned	Same information as ERR_NR
ERR_NODE	String (2 Byte)	If a communication error (error 1) occurs, the ID of the connection can be read in this variable.
ERR_NAME	String (10 Byte)	If an error 2 occurs, the symbolic name of the variable can be read in this string.

Reading Date/Time

The following variables can be used to display the date and time of the internal real-time clock:

Table D - 2. Reading Date/Time Variables

Variable Name	Data Type	Comments
DATE_YY	Word unsigned	Year (Format **19xx**)
DATE_MM	Byte unsigned	Month
DATE_DD	Byte unsigned	Day
TIME_HH	Byte unsigned	Hours (24-hour format)
TIME_MM	Byte unsigned	Minutes
TIME_SS	Byte unsigned	Seconds

Setting Date/Time

The internal real-time clock can be set using the following variables:

Table D - 3. Setting Date/Time Variables

Variable Name	Data Type	Comments
DATE_YY_S	Word unsigned	Year (Format **19xx**)
DATE_MM_S	Byte unsigned	Month
DATE_DD_S	Byte unsigned	Day
TIME_HH_S	Byte unsigned	Hours (24-hour format)
TIME_MM_S	Byte unsigned	Minutes
TIME_SS_S	Byte unsigned	Seconds
DATE_SET	Byte unsigned	Assigning a value other than zero to this variable, causes the date of the real-time clock to be overwritten with the values of the variables DATE_YY_S, DATE_MM_S and DATE_DD_S.
TIME_SET	Byte unsigned	Assigning a value other than zero to this variable, causes the date of the real-time clock to be overwritten with the values of the variables TIME_HH_S, TIME_MM_S and TIME_SS_S.

Note

When a project is downloaded, by default, the internal real-time clock is set automatically to the clock time and date of the PC. This may be disabled via the **Channel #2** function of the **Config** menu.

Internal User Variables

The following internal user variables can be written and read according to the user's wishes:

Table D - 4. Internal User Variables

Variable Name	Data Type	Comments
USERBYTE00 : USERBYTE99	Byte unsigned	100 BYTE Variables Value range: 0...255
USERWORD00 : USERWORD99	Word unsigned	100 WORD Variables Value range: 0...65,535
USERLONG00 : USERLONG09	Long unsigned	9 LONG Variables Value range: 0...4,294,967,295
USERFLOAT00 : USERFLOAT09	Float	9 FLOAT Variables Value range: $\pm 1.401298 \times 10^{-45}$ ... $\pm 3.402823 \times 10^{+38}$ 7 digits of precision
USERSTRING00 : USERSTRING09	String	10 STRING Variables Maximum of 40 characters each

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