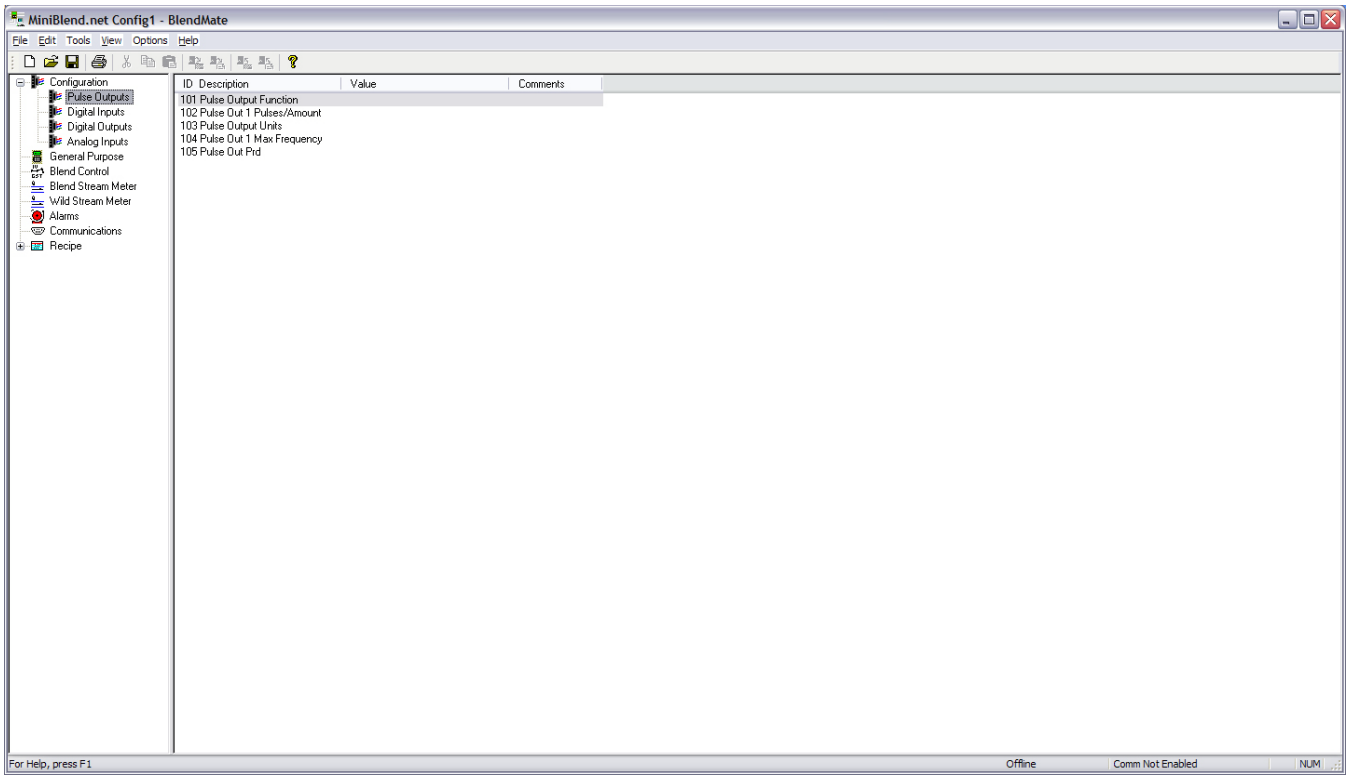
MiniBlend.net Config1 - BlendMate
File Edit Tools View Options Help
Configuration
Pulse Outputs
Digital Inputs
Digital Outputs
Analog Inputs
General Purpose
Blend Control
Blend Stream Meter
Wild Stream Meter
Alarms
Communications
Recipe
ID Description
Value
Comments
101 Pulse Output Function
102 Pulse Out 1 Pulses/Amount
103 Pulse Output Units
104 Pulse Out 1 Max Frequency
105 Pulse Out Prd
For Help, press F1
Offline
Comm Not Enabled
NUM

Caution

The default or operating values used in this manual and in the program of the miniBlend.net are for factory testing only and should not be construed as default or operating values for your metering system. Each metering system is unique and each program parameter must be reviewed and programmed for that specific metering system application.

Disclaimer

FMC Technologies Measurement Solutions, Inc. hereby disclaims any and all responsibility for damages, including but not limited to consequential damages, arising out of or related to the inputting of incorrect or improper program or default values entered in connection with the miniBlend.net.

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Product Description

BlendMate for miniBlend.net is a Windows application that facilitates configuration of the Smith Meter miniBlend.net series of electronic presets. BlendMate allows the user to configure existing parameters, create custom reports, translate miniBlend.net interface text, and create custom equation sets.

BlendMate supports context-sensitive help. Press "F1" from any location for detailed help on a particular feature, or select "Index" from the Help menu to browse the index.

A CRC table is maintained for each revision of miniBlend.net. When communication is established with a unit, the revision is examined. Any discrepancies, such as an unknown revision or a type mismatch, are reported to the operator.

BlendMate allows the user to work with several files simultaneously. In the context of the BlendMate, a "file" is the data associated with one miniBlend.net. When multiple files are open, the currently active window is the one that will be affected by menu choices and toolbar options.

Modes of Operation

Offline Mode

In the Offline mode of operation, the BlendMate can be used to completely set up a data file or edit an existing file. This file can then be saved for future use. By switching to Online mode, the file can be downloaded to the miniBlend.net.

Online Mode

The Online and Read Only modes of operation require that the miniBlend.net and the BlendMate's communications port are configured with the same baud rate, parity, protocol, and address. In addition, a file should be created for each miniBlend.net with which the BlendMate is to communicate. A file is created by selecting "File" in the upper left-hand corner of the BlendMate's toolbar, then selecting "New," then "miniBlend.net Data File."

Read Only Mode

Read Only mode is used to read information from the miniBlend.net. The program may enter the Read Only mode for one of several reasons, including insufficient security access, transaction in progress, already in program mode at keypad, or an incorrectly programmed communications port control. An error message will appear. If the operator clicks "OK" and presses "ENTER" on the computer keyboard, the BlendMate will automatically go into the Read Only mode and no data will be exchanged.

Once the setup is complete, communications can be established and information can be passed between the BlendMate and the miniBlend.net.

When in the Online mode, the BlendMate can be used to configure the miniBlend.net, read information from the miniBlend.net, and dump directories or entire files to the miniBlend.net. Information is sent to the miniBlend.net by using the "dump" icons on the BlendMate toolbar.

Online Help

To access BlendMate's built-in help function, type Alt-H from the keyboard or click on "Help" at the top right of the BlendMate screen. These actions display the Help menu. Select "Contents" for an index of built-in help topics. The operator can also press F1 at any time for context-sensitive help.

System Requirements

The BlendMate will operate on an IBM-PC compatible computer operating in a Windows environment (Windows 95 or later) with at least 4M of memory. The hard drive should have at least 2M of free disk space. BlendMate is available for download over the internet at http:// www.fmctechnologies.com/measurementsolutions/onlineservices/software.aspx.

Installing BlendMate

To download the BlendMate over the Internet, do the following:

1. Go to http://www.fmctechnologies.com/measurementsolutions/onlineservices/software.aspx.
2. Select BlendMate for miniBlend.net
3. Select the version required.
4. When prompted with ‘Do you want to run or save this file?”, select Run.

Follow the prompt to complete the download and installation of BlendMate.

Program Files

During the installation process, the following files will have been copied to the PC's hard drive. These files may be viewed by opening Windows Explorer and selecting the BlendMate directory.

BlendMate for miniBlend.net

- blendMate.cnt
- blendMate.exe (*launches the program*)
- blendMate.hlp (*contains online help*)
- blendMate.gid
- blendMate Data Template.xlsm
- Default Settings.MLB
- Default Prove Report.RPB
- Default Trans Report.RPB
- Sample Display.DPB
- Sample Equations.EQB
- Uninst.ISU

Contact a Smith distributor if any of these files are missing, or if there are any other problems with the BlendMate installation.

File Extensions

miniBlend.net file names are typically followed by a two- or three-letter extension (e.g., .MLB). The extension indicates the nature of the file.

- .MBL files – miniBlend.net configuration files
- .RPB files – miniBlend.net configurable report definition files
- .DPB files – miniBlend.net display definition files
- .EQB files – miniBlend.net equation files.
- .LGB files – miniBlend.net translation files

Establishing Communications

In order for communications to function, the miniBlend.net and BlendMate setups must be compatible and the communications cable correctly wired. Several miniBlend.net parameters (including communications port, baud rate, data bits, and parity) must be properly set to enable communications. The BlendMate setup must then be configured to match the miniBlend.net parameters.

Serial Communication Cable Wiring

Select an available communications port. COM1 is configured for the BlendMate by default in the miniBlend.net. Only three wires are necessary for EIA-232 serial communications. They must be connected as shown in the diagrams below.

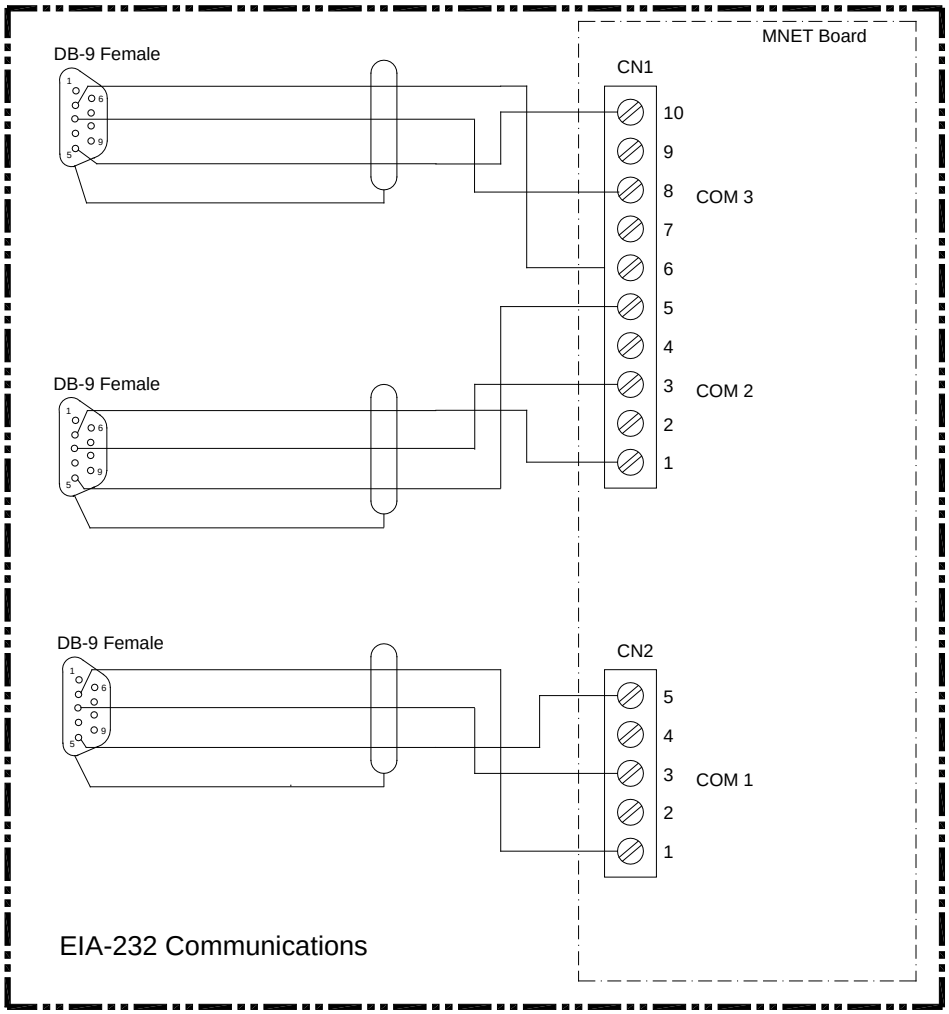

Figure 1. Nine Pin Communications Connector Wiring

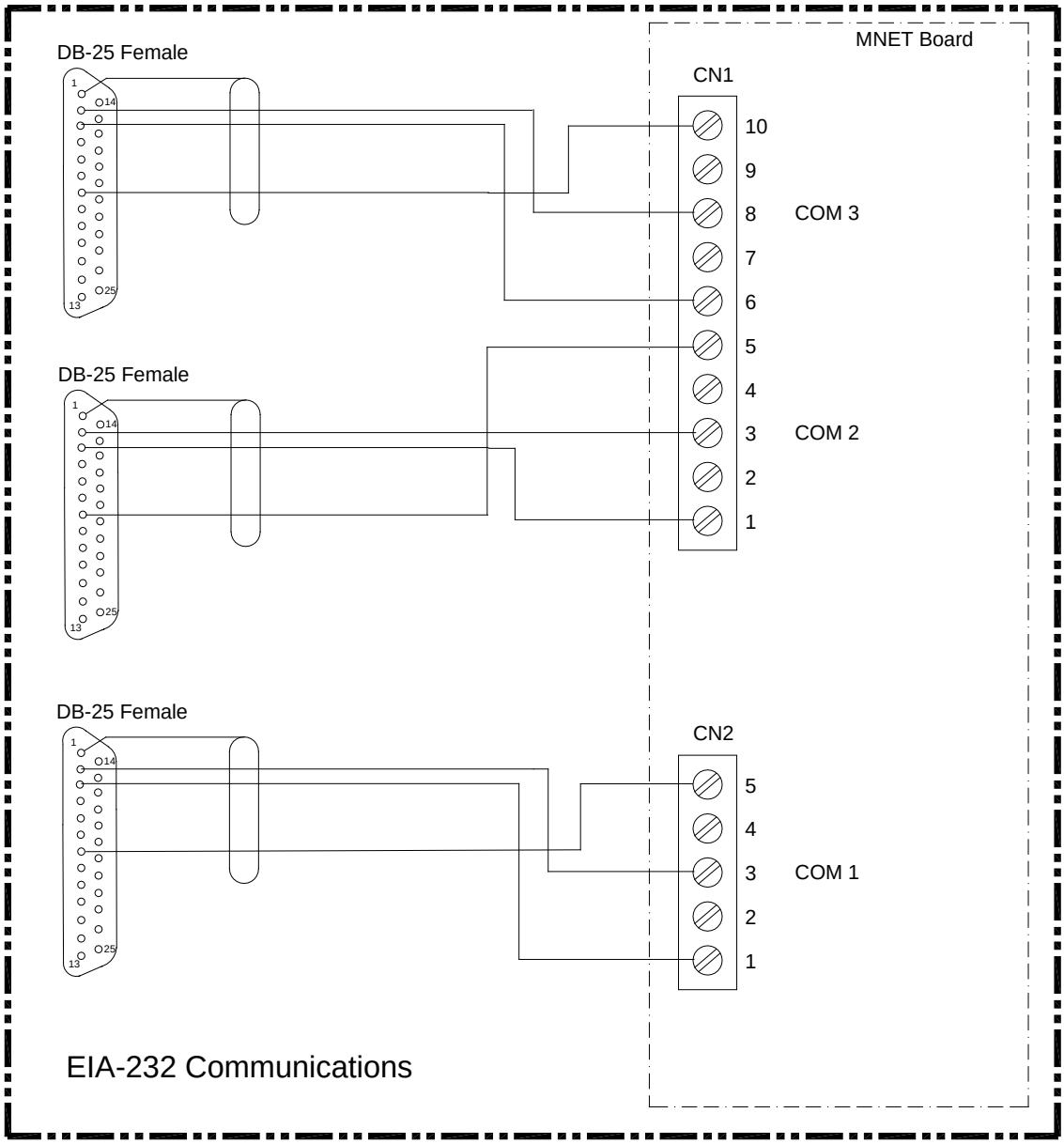

Figure 2 25 Pin Communication Connector Wiring

Good shielding practices are recommended when wiring communications cables. The DB-25 connector has a pin dedicated to shield (Pin 1). *Pin 1 is not a shield pin on the DB-9 connector.* Connect (solder) the shield conductor to the DB-9 connector's metal case. If that is impractical, in most cases it is acceptable to terminate the shield at Pin 5 along with the signal ground. It is **not** recommended that shield wiring be terminated at the miniBlend.net, especially in multi-drop environments.

Due to the fact that the miniBlend.net serial ports have additional hardware to allow multiple units to share a single EIA-232 port, the PC's receive pin is left in a floating state during idle time. This can result in some PCs (especially laptop computers) being susceptible to echo, which can interfere with the serial communications reliability. Sometimes installing a resistor (~1K) between miniBlend.net TX and COM can improve communications in these situations. For example, on miniBlend.net COM1, the resistor would be installed (like a jumper) from CN2-1 to CN2-5.

Ethernet Cable Wiring

Ethernet cable must meet the requirements of CAT5 at a minimum. Direct Ethernet connections between computer and miniBlend.net require a crossover cable configuration. Standard straight cable configuration is used where the miniBlend.net units are networked through a hub or switch. An Ethernet connection at the miniBlend.net is made by a RJ-45 connector labeled CN-8 located on the MNET circuit board.

Communications Port Setup

Each miniBlend.net file stores the address used for communications, the PC port to which it is attached, and other important information. Because each miniBlend.net has its own file, there is no need to change communications settings when moving among multiple miniBlend.nets connected to the same PC (as in a load rack environment, for example). All miniBlend.nets on the same PC comm port must have the same port settings and protocol (either terminal or minicomputer).

To begin communicating with the BlendMate, set up the communications port using the *Options*|*Options for this miniBlend.net…* menu choice. The dialog presented allows for setup of both the communications port and the communications protocol.

Ethernet users need only select “TCP/IP” from the Com Port dropdown list and enter the IP address of the miniBlend.net in the “miniBlend.net Address” data. No further “Comm Settings” are required.

To set up a serial communications port, first determine the available communications ports on the PC. If COM1 is available (not connected to a mouse, modem, or some other device), connect your communications line to the COM1 (Serial Port 1) connector on the back of the PC. Select COM1 in the combo box. (See Figure 3.) If both are in use, select either COM3 or TCP/IP if present. Be aware that in most PCs, COM1 and COM3 cannot be used simultaneously, nor can COM2 and COM4 be used simultaneously. Extender boards for serial communications (e.g., DigiBoards) can be used as long as they support the Windows communications API standard.

Another alternative is to use SLIP (Serial Line Internet Protocol). SLIP uses a miniBlend.net serial communications port to employ TCP/IP communications with a minicomputer type device. (Refer to miniBlend.net Communictions Manual MNMB004, Appendix VI for information on setting up SLIP communications.)

To configure the communications settings, open an existing miniBlend.net file or create a new one, then select *Options*|*Options for this miniBlend.net...* Click the "Comm Settings" button on the dialog box to select the desired baud rate (38,400 is recommended), using the same baud rate for both the BlendMate and the miniBlend.net. Data/Parity must be 8 Bits, No Parity (8 Bits None). Because some data transfers are binary, all eight bits are needed for the data.

Figure 3 Communications Setup

Initiating Communications with the miniBlend.net

To configure the miniBlend.net for communications, do the following:

1. Connect the selected PC communications port to a miniBlend.net communications port.

2. Select an existing miniBlend.net file, or create a new one, by choosing "Open" or "New" under "File" on the BlendMate toolbar.

3. A display similar to that shown below will appear on the computer screen. Communication configuration program codes are in the "700" System Communications group, as shown in Figure 4..

4. To configure an option, use the mouse to select the appropriate program code and then double click. A dialog box will appear that allows the user to enter information for that parameter.

   Example: To specify the comm address for a specific miniBlend.net, choose "704: miniBlend.net Comm 1 Control." From the pulldown list select the degree of control to be exercised from Comm. 1 and click "OK." The miniBlend.net's Control Mode will appear in the right-hand column labeled "Value."

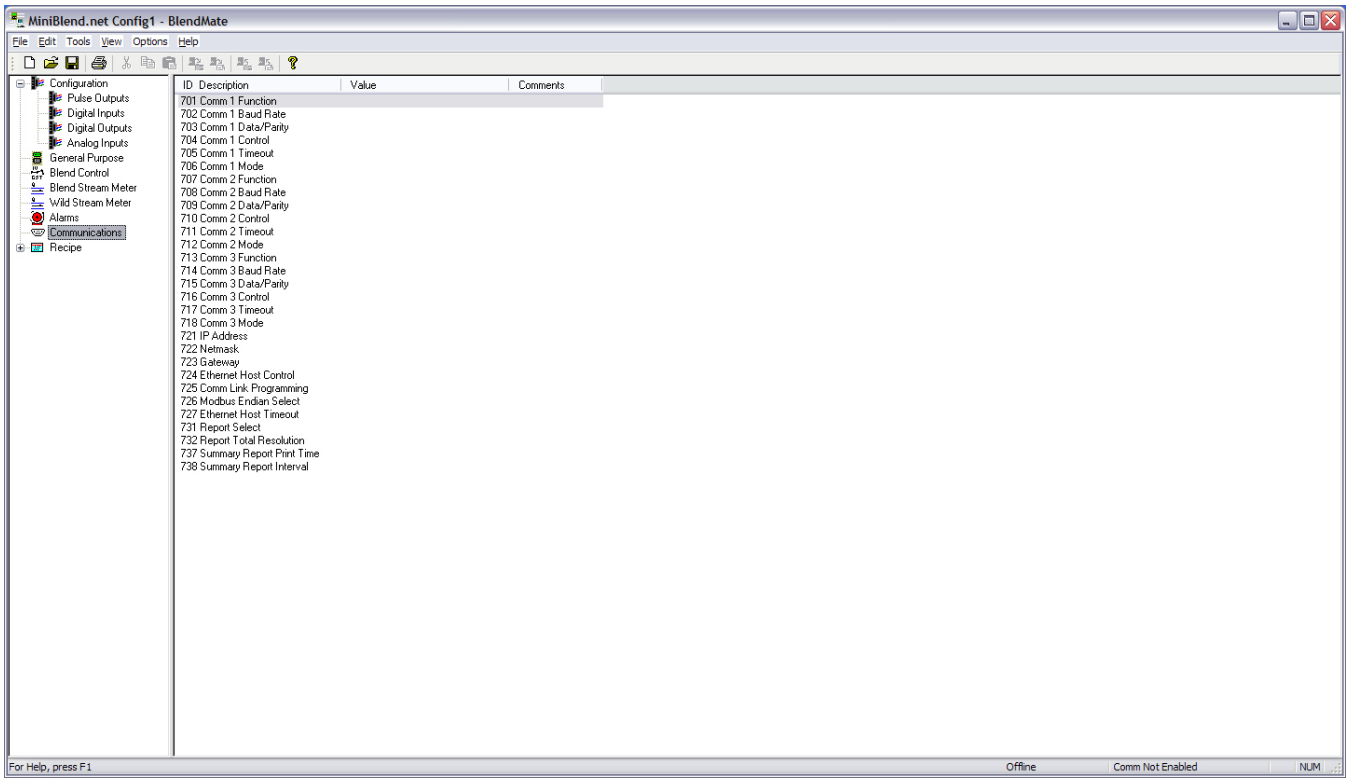

Figure 4 Communications Directory

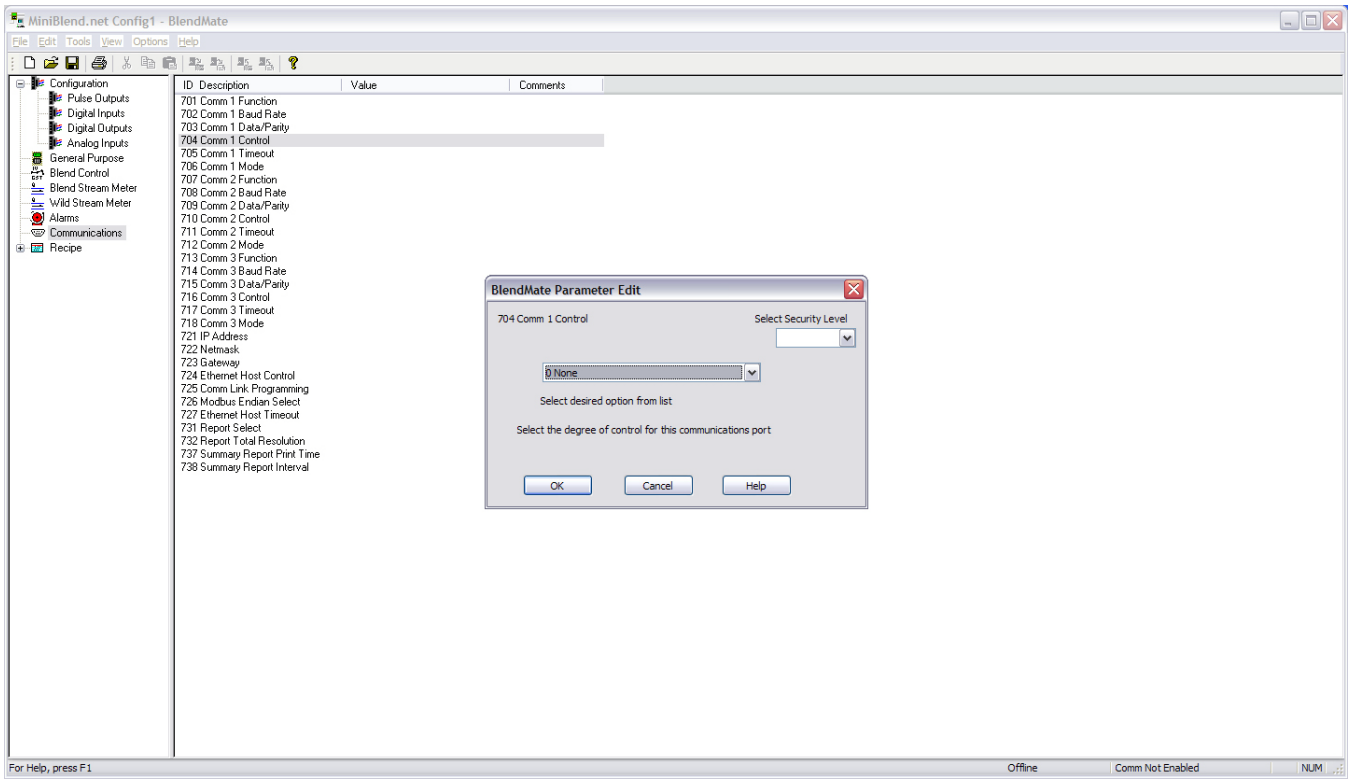

Figure 5 Comm Control Example

Note: *Unless automation level control is desired, choose Poll & Program for the BlendMate in the Comm Control parameter. Poll & Program is also a good selection for demonstrations, since it allows batches to be run without remote authorization.*

For detailed information about program codes, refer to the miniBlend.net Operator Reference Manual, MNMB002.

Once the communications configuration is complete, do the following:

1. Open a miniBlend.net data file. Select *Options*|*Options for this miniBlend.net*, and verify the miniBlend.net address.

2. Verify that the communications port is set to the port on the PC, and that the selected protocol matches that programmed at the miniBlend.net.

3. If the parity and baud rate are not correct, change them using the "Comm Settings" button in the dialog box.

4. Close the "Options" dialog.

If all is working properly, the status bar text (at the bottom of the screen) should change from "Offline" to "Online" mode. If the status bar indicates "Read Only," verify that the miniBlend.net is not in Program mode at the keypad, and that all programmed security requirements have been met at the miniBlend.net.

Troubleshooting

If difficulty is encountered, verify the accuracy of the following:

- Communications setup at the BlendMate
- Communications setup at the miniBlend.net
- Port, baud rate, and parity
- Protocol (Terminal or Minicomputer); minicomputer is recommended
- miniBlend.net address
- Wiring between the miniBlend.net and the PC (Are transmit and receive connections reversed? Is the cable connected to the proper comm port at both the miniBlend.net and the PC?).

Program Startup [start here]

The BlendMate, when launched, will open to a screen similar to that shown in the figure below. An operator can work with more than one file at a time. In the context of the BlendMate, a "file" is the data associated with one specific miniBlend.net. Multiple miniBlend.net files can be open at one time as separate documents on the desktop.

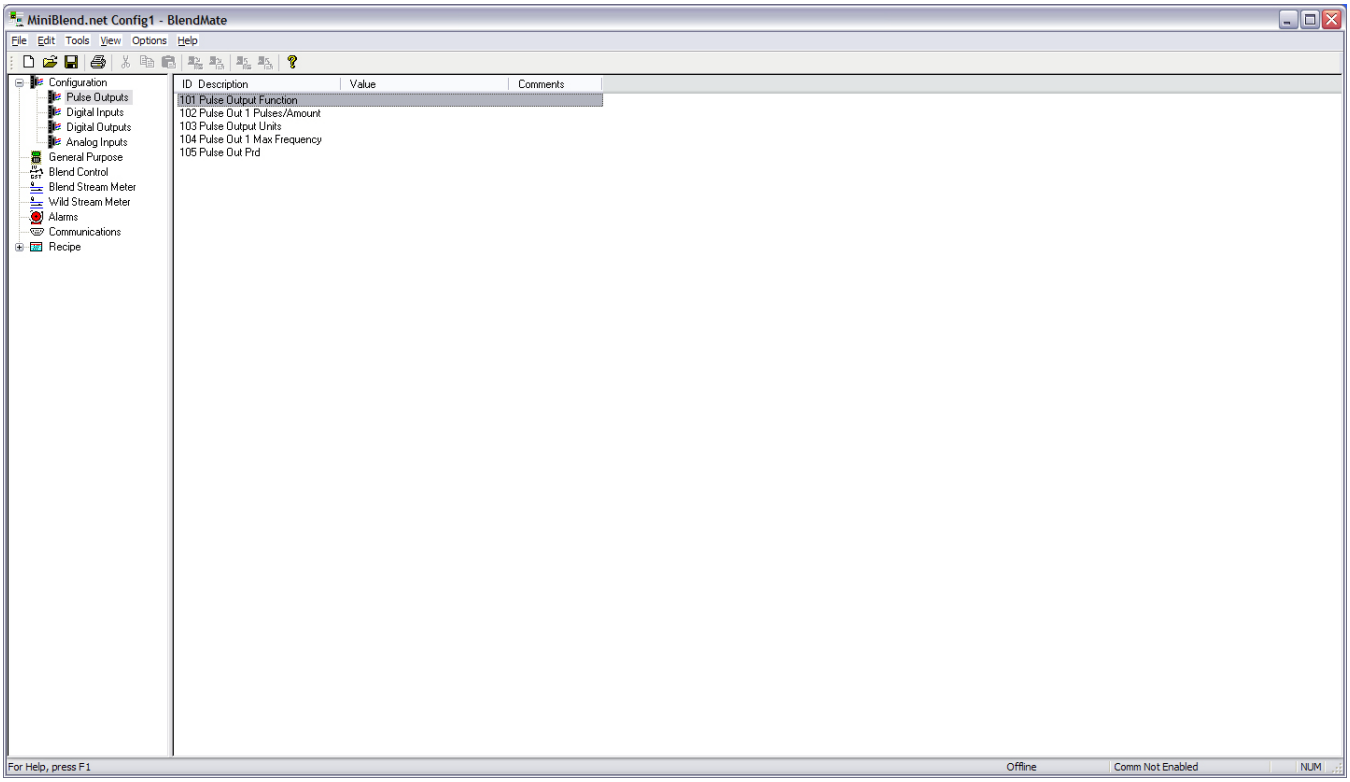

Figure 6 BlendMate Startup

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Data and Functions

The data and functions that can be accessed or accomplished from this screen are as follows.

File Menu

Access the File menu by clicking "File," which appears at the far left of the BlendMate menu bar (at the top of the BlendMate screen).

New: A new miniBlend.net data file will be created. (Other functions available under "New," including "Report Configuration," "Translation," "Equation Set" and “Display Configuration” will be discussed in other sections of this manual.).

Open: Opens an existing miniBlend.net file.

Close: Closes an open miniBlend.net file.

Save: Saves changes to the current file to disk.

Save As: Displays a dialog box that allows a new name to be assigned to a file.

Print: Prints either the current directory or all the parameters in the active miniBlend.net file.

Print Preview: Displays a preview on the screen of what would be printed.

Print Setup: Displays a dialog box which provides means for altering printer properties and settings.

Exit: Exits the program.

Edit Menu

Access the Edit menu by clicking "Edit" on the BlendMate menu bar.

Cut: Removes the selected text and places it on the clipboard.

Copy: Copies the selected text and places it on the clipboard.

Paste: Inserts the text stored on the clipboard at the location of the cursor.

Read Selected Folder: Loads values from the miniBlend.net into the currently selected directory or sub-subdirectory. "Read Selection" can also be activated by clicking its icon on the BlendMate toolbar. From either of these options, the operator can choose to read a specific directory from the active miniBlend.net. When the data reading is complete, the program will return to the previous screen.

Read All: Reads all values associated with the active file from the miniBlend.net. "Read All" can also be activated by clicking its icon on the BlendMate toolbar. From either of these options, the operator can choose to read all data from the active miniBlend.net. When the data reading is complete, the program will return to the previous screen.

Dump Selected Folder: Sends the current selection to the miniBlend.net. "Dump Selection" can also be activated by clicking its icon on the BlendMate toolbar. From either of these options, the operator can choose to download a specific directory to the active miniBlend.net. When the data transfer is complete, the program will return to the previous screen.

Dump All: Sends all data in this file to the miniBlend.net. "Dump Selection" can also be activated by clicking its icon on the BlendMate toolbar. From either of these options, the operator can choose to download all data from the BlendMate to the active miniBlend.net. When the data transfer is complete, the program will return to the previous screen.

Tools Menu

The Tools menu is accessed by clicking "Tools" on the BlendMate menu bar. (This menu is only available for .MLB files)

Terminal Emulator (Alt-F10): The Terminal Emulator is a "smart" terminal emulator that formats commands to be sent to the miniBlend.net. It is accessed by selecting *Tools*/*Terminal Emulator* from the BlendMate toolbar. Terminal Emulator supports both Terminal and Minicomputer modes, and processes all required framing characters. The operator types only the actual command and any associated command qualifiers. From this interface, the operator can send any of the commands in the miniBlend.net repertoire.

The Terminal Emulator features a pull-down menu, Commands, on the toolbar. From this menu, the operator can browse all commands in the miniBlend.net command set. As each command is highlighted, information about the command will appear on the application's status bar. Once an item is selected, pressing "F1" will display the help message for that particular command. If a command requires no additional information, it will be sent immediately. The pull-down menu at the upper right-hand corner of the terminal emulator display allows the operator to select the arm with which communications will interact.

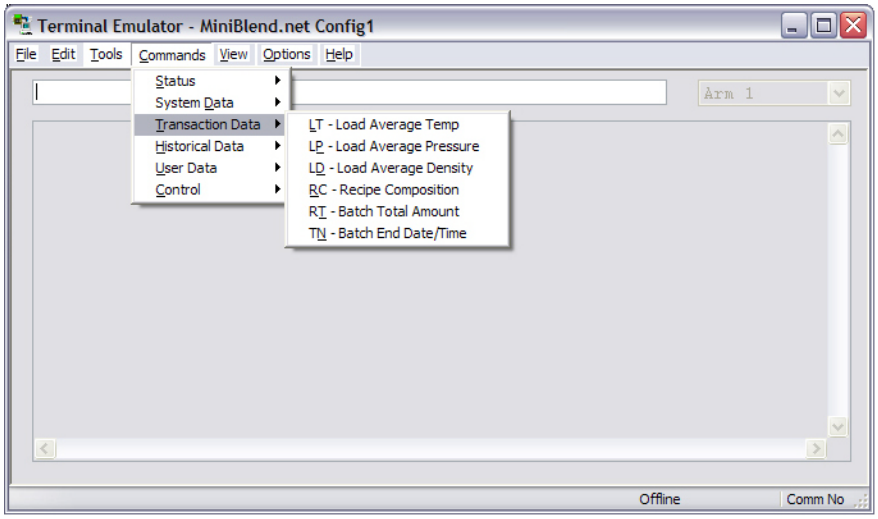


Figure 7 Terminal Emulator Commands

Refer to the miniBlend.net Communications Manual, MNMB004, for additional information about miniBlend.net commands.

Transaction Log to File…: This feature creates a backup of transaction data on disk. Its purpose is to prevent complete loss of data when reinitializing a miniBlend.net, such as when upgrading software. Because initialization erases the miniBlend.net's flash memory, the transaction log is destroyed.

When "Transaction Log to File" is selected, the operator will be prompted to select a file name. The default name is (*miniBlend filename*)-TransLog.txt. The file will be saved in a comma-delimited text format that may be opened in a spreadsheet program, such as Microsoft Excel, that sorts the data into readable columns based on the placement of commas in the text.

Note: *This option is only available when the miniBlend.net is online and its file is open and active on the BlendMate.*

Event Log to File…: This feature creates a backup of event data on disk. Its purpose is to prevent complete loss of data when reinitializing a miniBlend.net, such as when upgrading software. Because initialization erases the miniBlend.net's flash memory, the event log is destroyed.

When "Event Log to File" is selected, the operator will be prompted to select a file name. The default name is (*miniBlend filename*)-EventLog.txt. The file will be saved in a comma-delimited text format that may be opened in a spreadsheet program, such as Microsoft Excel, that sorts the data into readable columns based on the placement of commas in the text.

Note: *This option is only available when the miniBlend.net is online and its file is open and active on the BlendMate.*

Audit Trail Log to File…: This feature creates a backup of audit trail data on disk. Its purpose is to prevent complete loss of data when reinitializing a miniBlend.net, such as when upgrading software. Because initialization erases the miniBlend.net's flash memory, the audit trail log is destroyed.

When "Audit Trail Log to File" is selected, the operator will be prompted to select a file name. The default name is (*miniBlend filename*)-AuditLog.txt. The file will be saved in a comma-delimited text format that may be opened in a spreadsheet program, such as Microsoft Excel, that sorts the data into readable columns based on the placement of commas in the text.

Note: *This option is only available when the miniBlend.net is online and its file is open and active on the BlendMate.*

Retry Communications: This feature sends a status request to the miniBlend.net to determine the viability of communications between the BlendMate and the miniBlend.net. This command is generally used after changes to communications settings to ascertain the current communication status, or after using the "Go Offline" command.

Go Offline: Terminates communications between the BlendMate and the miniBlend.net, allowing the operator to make changes to the file that do not immediately affect the miniBlend.net.

Upgrade Firmware…: There are occasions where new features / enhancements are made to the miniBlend.net software package, requiring the end user to perform an upgrade procedure to obtain these new features. Because each revision of miniBlend.net firmware released by Smith Meter is accompanied by a revision to BlendMate, upgrade both BlendMate and miniBlend.net together (There may be rare exceptions to this, in which case some notification will be made). The following recommendations are designed to ease this operation and ensure that the upgrade goes smoothly:

1. Back up all data on the miniBlend.net using BlendMate before upgrading anything. Make sure your .mlb file representing the miniBlend.net settings is up to date: Open the appropriate miniBlend.net (.mlb) file. Perform a Read All. Save the file.

2. If any of the following items exist at the miniBlend.net (and you do not already have them stored) read and store them as well: Report Configuration(s) (.RPB), Translation (.LGB) and custom Boolean/Algebraic equation set (.EQB). (Note: To read these items, you must be in the appropriate editor for the item… so create a dummy file, then select read all. For example, if you want to read out the current Report Configuration, select File | New | Report Configuration once you are online and then, while the new file is active, select Read from the Edit menu or toolbar)

3. Retrieve the event and transaction logs using BlendMate if desired via the Tools menu. This information will be lost when the miniBlend.net is initialized.

4. Install the new BlendMate revision. Install to the same directory as your original revision for best results. You may wish to back up the directory beforehand.

5. Select Tools | Upgrade Firmware from the BlendMate menu and follow the instructions.

6. Enter Program Mode, go to the Diagnostics menu, and perform a factory database initialization. This will erase the program configuration database, and set all program codes to known values. You can then re-enter program mode (the passcode will be 0 again)

7. Via the miniBlend.net keypad, program the communications port for BlendMate communications. (See Initiating Communications with the miniBlend.net). Enter a valid K-Factor (Product directory program code 301). Re-enter any security codes you had programmed. Exit Program mode via the keypad.

8. In BlendMate, open the .ml file that you saved in step 1. Verify that communications is established (unit should be in ONLINE mode). Select Dump All.

9. Download any files stored in step 2 in the same manner.

Browse miniBlend…: Browses the miniBlend.net's web page with a web browser. The miniBlend.net acts as a simple embedded server for the page. Current run data may be viewed from the page.

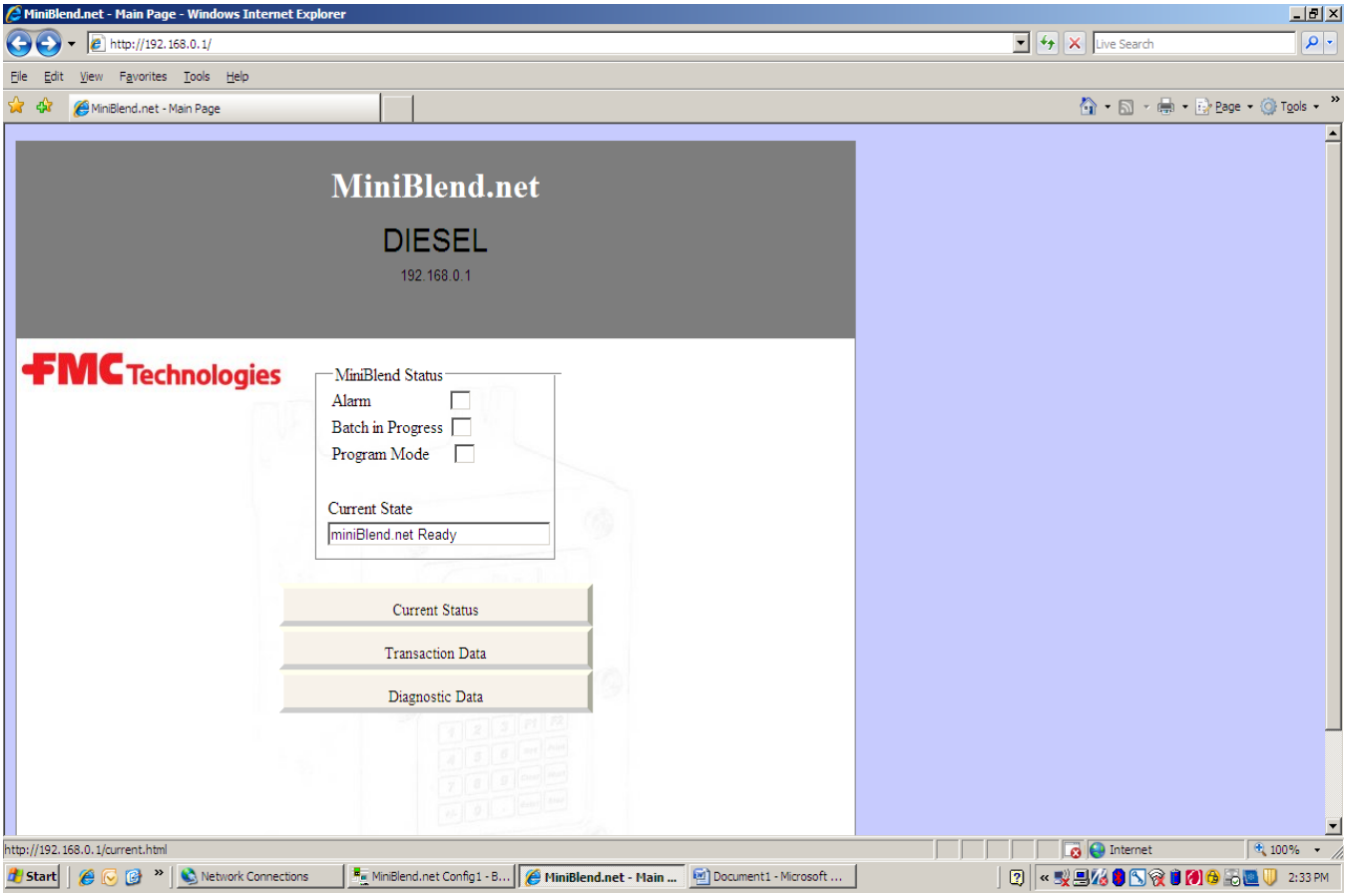


Figure 8 miniBlend.net Browser

Options Menu

Access the Options menu by clicking "Options" on the BlendMate menu bar.

Options for this miniBlend.net…: This selection allows the operator to configure communication settings for a specific miniBlend.net.

General…: Display and printing options can be selected by modifying entries in the Options dialog box (shown in Figure 10). The Options dialog box is accessed by selecting *Options*/*General…* .

Display Options: Click with the mouse in the box beside "Display Security Level in List View" to add the Security Level for the parameter to the parameter list view. Click again to suppress this option.

Printing Options: Click with the mouse in the box beside "Suppress Printing Unused Recipes" to avoid printing recipes that are programmed as "Not Used" in Recipe Parameter 001. Click again to suppress this option.

Click with the mouse in the box beside "Include Security Level on Printout" to add the Security Level for the parameter to the printed list. From the pull-down menu to the right of "Limit printout of parameters to:", select the security level that determines which parameters are to print. Click again to suppress this option.

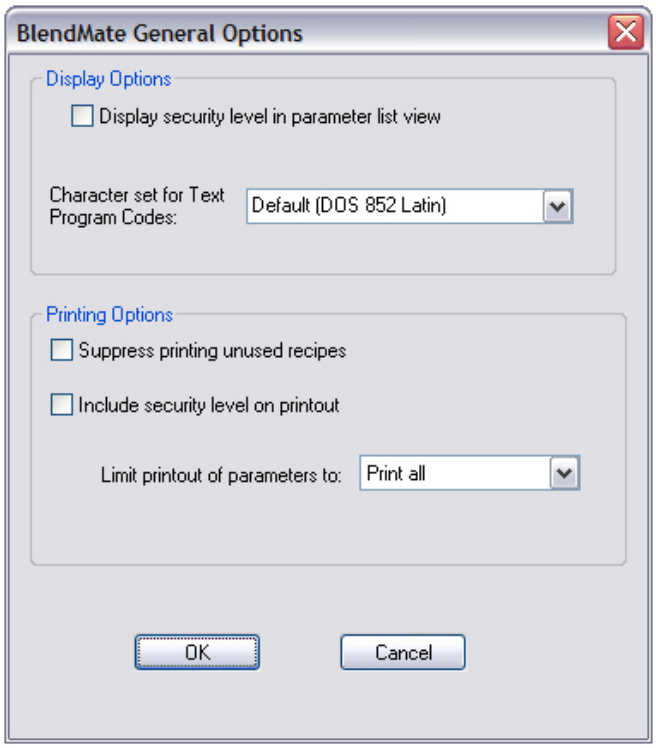


Figure 9 General Options

View Menu

Access the View menu by clicking "View" on the BlendMate menu bar.

Toolbars: Shows or hides the toolbar near the top of the BlendMate screen.

Status Bar: Shows or hides the status bar at the bottom of the BlendMate screen. The status bar indicates whether the BlendMate is online or offline, as well as the current communications settings and status.

Split: Allows the user to allocate space between the BlendMate Panes being displayed.

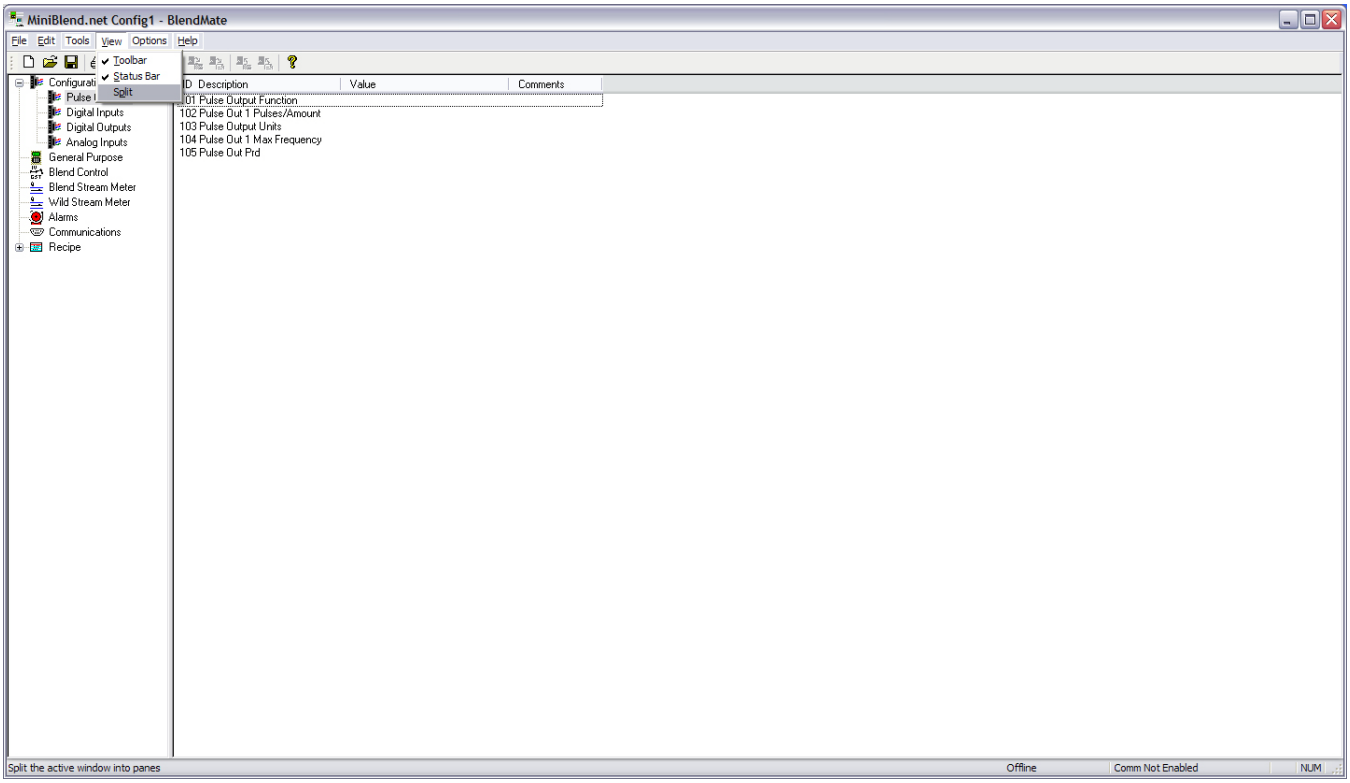


Figure 10 View Menu

Editing Program Code Data

To edit program code data, first open a new or existing miniBlend.net data file. Do this by selecting "New" or "Open" from the File menu on the BlendMate toolbar. If "New" is selected, choose "miniBlend.net Data File" from the pop-up menu. If "Open" is selected, choose an existing miniBlend.net file from the File dialog menu. Mini-Blend.net files are designated by the file extension ".mlb".

A list of directories will appear on the left of a split screen in the active miniBlend.net window. (Refer to the Operator Reference Manual, Bulletin MNMB002 for detailed information about directories and the program codes within each directory, or click on "Help" at the far right of the BlendMate toolbar.) Clicking on "Communications," for example, causes a listing of all program codes within the Communications Directory to appear on the right-hand screen, as shown in Figure 11. Double-click on one of these program codes to display a dialog box.

This dialog box, "Edit Program Code Data," contains information about the selected program code. For the currently-selected code, this dialog box provides a pull-down menu with all valid options and value ranges, or a text box for text program codes. When new information is selected from the pull-down menu, the new value appears on the active miniBlend.net data file screen.

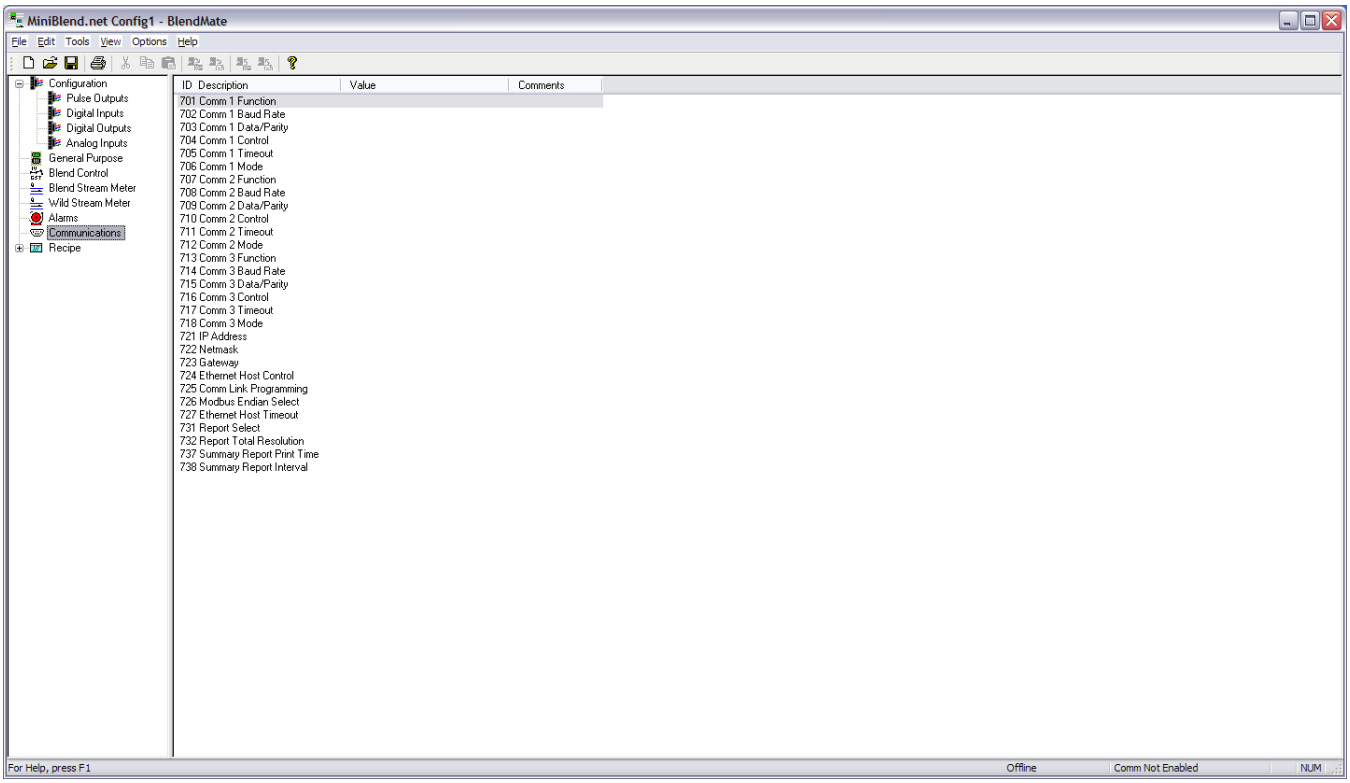


Figure 11 Communications Directory

To access the program code dialog box shown in Figure 12 select "Configuration" | “Pulse Outputs” then double-click on "101 Pulse Output Function" in the right-hand window. The dialog box will then appear.

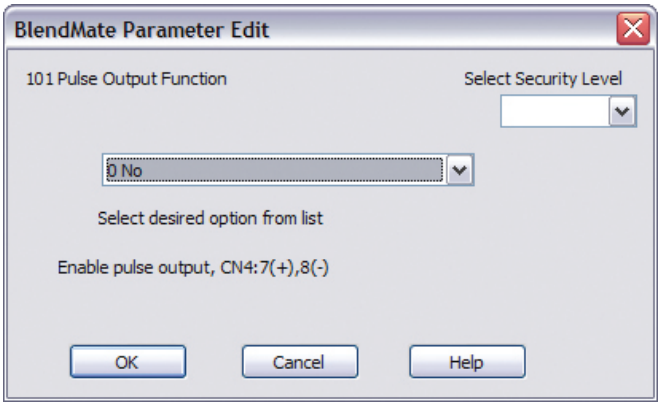


Figure 12 Parameter Editing

The program code shown in Figure 12 has a pull-down pick list. To access the pick list, use the mouse to click on the down arrow at the right of the box labeled "New," then highlight the desired option and click OK.
If the miniBlend.net is currently online and communication with the BlendMate is active, the new value will be effective after a few seconds; otherwise, the value change will have to be dumped to the miniBlend.net when communication is established.

Other dialog boxes require the operator to type in alphanumeric data. An example of this is the box shown in Figure 13. This particular box is selected by clicking on "General Purpose," then highlighting "112 Flow Rate Descriptor" from the menu of program codes in the window on the right. The resulting dialog box prompts the operator to type up to three characters (in any combination of letters and/or numbers) in the box labeled "Enter New Value." Once the updated information has been typed in the box, the operator clicks on OK to save the current data. The new data will appear in the "Value" column in the window on the right.

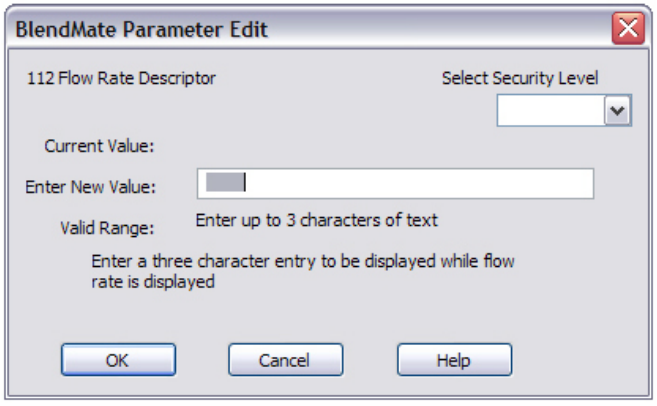


Figure 13 Parameter Editing

The third type of dialog box allows only numeric entries. An example of this type of box is shown in Figure 14. This particular box is selected by clicking on the “General Purpose” menu, then highlighting "131 Dynamic Display Timeout." The dialog box prompts the operator to enter a number from zero to 99. Once the updated information has been typed in the box, the operator clicks on OK to save the current data. All boxes of this type display help messages that include the range of the entry and other pertinent information.

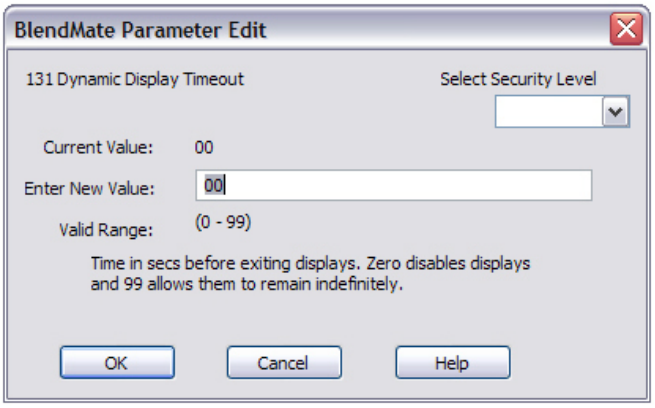


Figure 14 Parameter Editing

Finally, there is the dialog box listing available options selectable with check boxes, as shown in Figure 15. To activate an option, the operator uses the mouse to position the cursor in the box to the left of the desired option, then clicks once in the box. A checkmark appears to indicate that the option has been selected. To deactivate an option, position the cursor on the check and click once with the mouse. The checkmark will disappear. Click on "OK" to store changes. The new selection will appear in the value column in the window on the right. Access the dialog box by choosing “Alarms," then "System 642 Low Density Alarm."

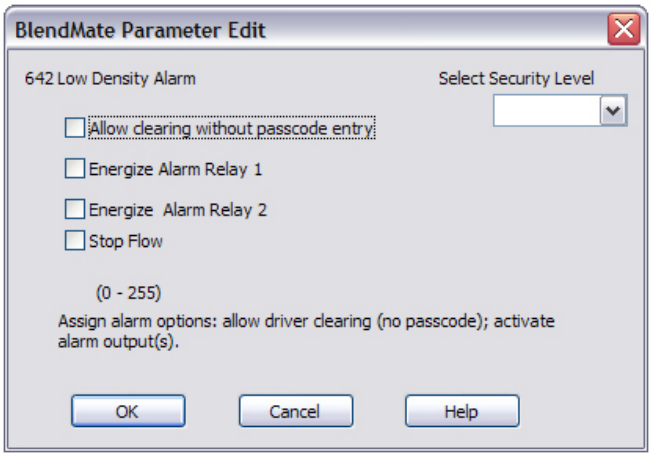


Figure 15 Parameter Editing

Using the Terminal Emulator

The Terminal Emulator is a "smart" terminal emulator that formats commands to be sent to the miniBlend.net. It is accessed by selecting *Tools*/*Terminal Emulator* from the BlendMate toolbar. Terminal Emulator supports both Terminal and Minicomputer modes, and processes all required framing characters. The operator types only the actual command and any associated command qualifiers. From this interface, the operator can send any of the commands in the miniBlend.net repertoire.

The Terminal Emulator adds a new pull-down menu, "Commands," to the menu bar. From this menu, the operator can browse all commands in the miniBlend.net command set. As each command is highlighted, information about the command will appear on the application's status bar. Once an item is selected, pressing "F1" will display the help message for that particular command. If a command requires no additional information, it will be sent immediately.

Refer to the miniBlend.net Communications Manual, MNMB004, or the imbedded “HELP” feature for additional information about miniBlend.net commands.

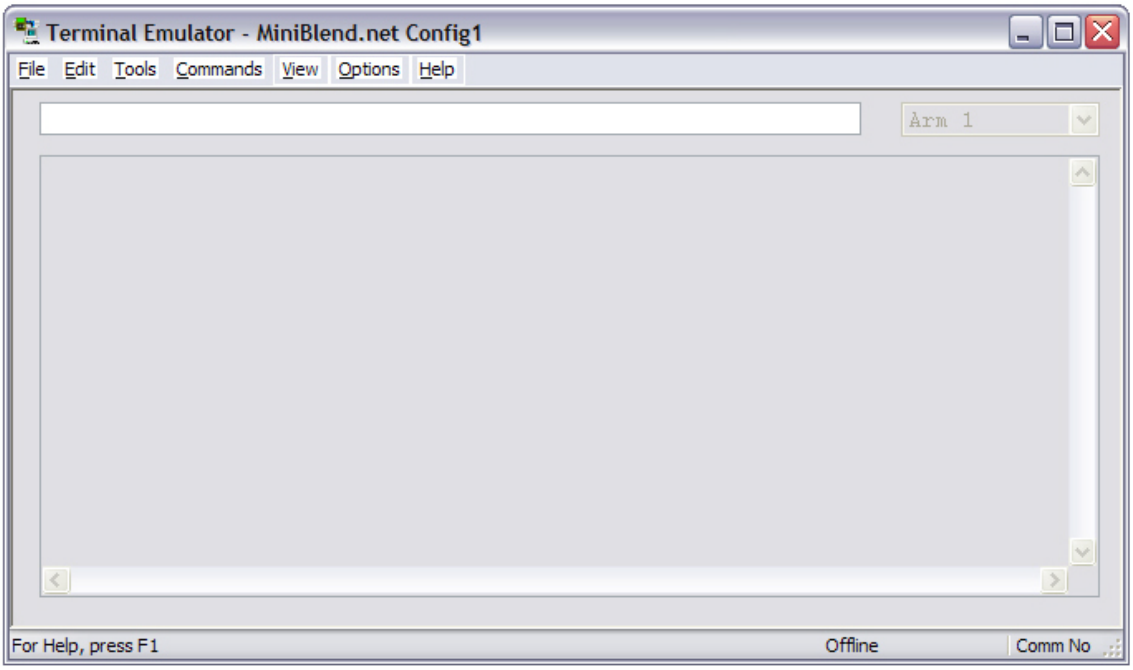


Figure 16 Terminal Emulator Window

Report Editor

The Report Editor uses a combination of basic Windows commands (e.g., Cut, Copy, and Paste) and simple value descriptions to create customized reports. Access the Report Editor by selecting *File*|*New*|*Report Configuration* from the BlendMate menu bar.

"Insert New Item," "Edit Selected Item," "Cut," "Copy," and "Paste" are accessed by clicking "Edit" on the BlendMate toolbar, then selecting the desired option from the pull-down menu.

Insert New Item — Opens a dialog box from which a new item can be added to the report.

Edit Selected Item — Opens a dialog box from which an existing report item, when highlighted, can be modified.

Cut — The item highlighted on the Report Editor will be cut from the display and stored on the clipboard.

Copy — The item highlighted on the Report Editor will be copied to the clipboard.

Paste — The information stored on the clipboard will be pasted to the Report Editor window at the specified row and column.

Read Report from miniBlend.net — Uploads a report from the miniBlend.net. (This option is only available when the BlendMate is online.)

Dump Report to miniBlend.net — Downloads a report to the miniBlend.net. (This option is only available when the BlendMate is online.)

"Line," "Column," "Item Type," "Item Value," and "Format String" are accessed by moving the cursor to the appropriate option on the "Edit Report Item" dialog box. The "Edit Report Item" box appears whenever an existing report item on the Report screen is double-clicked.

Line — Indicates the row on which the data to be displayed is entered.

Column — Indicates the column in which the data to be displayed is entered.

Item Type — Selects the type of data to be entered on the screen. The choices are as follows:

- **User-defined text entry** — Displays text typed in the Item Value entry. (24 characters max.)
- **Database value** — Displays the database value for a selected register.
- **Database Description** — Displays the database descriptive text for a selected register.

Item Value — Displays the current value of the register; or, if a user-defined text entry is selected as Item Type, the text is entered here.

Format String — The format string designates the type of data to be displayed. The strings used in the miniBlend.net are based on ISO 'C' language standards and are as follows:

- **%uc** — Data labeled as "Byte" miniBlend.net (unsigned character)

- **%f** Data labeled as "DP Float" or "Double Precision Floating Point." Specify the length of the numeric data in this field. (The miniBlend.net stores all double precision floating point data as ten digits.) Using the number 0.2 between the "%" and the "f" right-justifies the data five places and truncates the data to two decimal places (i.e., %0.2f). This field can be used to line up the numerical data on the screen by entering an "8" between the "%" sign and the "f" (i.e., %8f). If the requirement is to both line up the data and truncate to two decimal places, the entry would be %8.2f.

- **%d** Data labeled as an integer in the miniBlend.net database.

- **%s** Data labeled as a string in the miniBlend.net, consisting of multiple characters.

Note 1: *The "Edit Report Item" dialog box may also be opened by right-clicking on an existing report item, then selecting "Properties."*

Note 2: *Existing report items may be moved from one location to another on the Report screen by clicking the item with the mouse, then dragging it to another position. Hold "Ctrl" while dragging to copy an entry. This method may also be used to move or copy items to another report.*

Note 3: *The Report Item "REPRINT" should always be included as the first item on any report.*

To create a customized report, do the following.

1. Access Report Editor by selecting *File*|*New*|*Report Configuration* from the BlendMate menu bar. A display similar to that shown in Figure 17 below will appear.

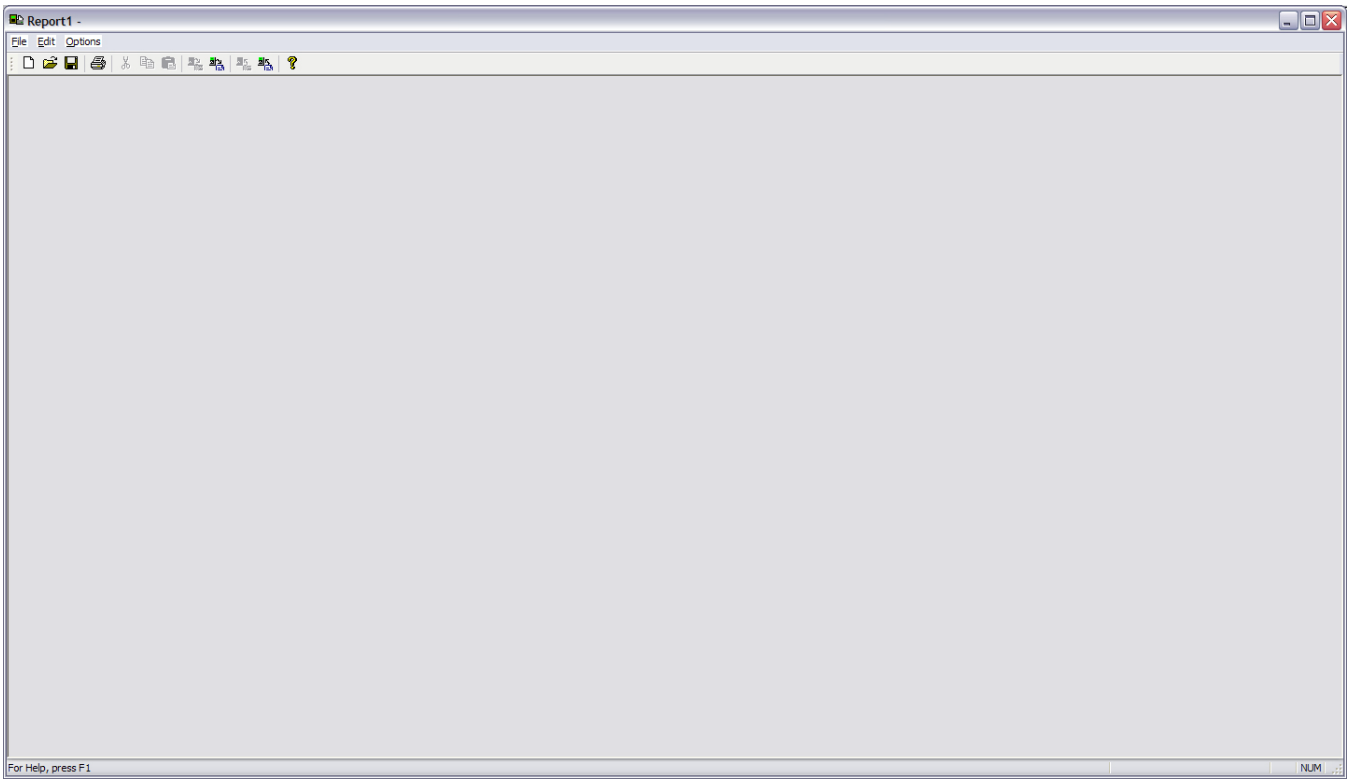


Figure 17 Report Configuration

2. Next, select *Edit*|*Insert New Item…* from the BlendMate menu bar. An "Edit Report Item" dialog box will appear, similar to that shown in Figure 18.

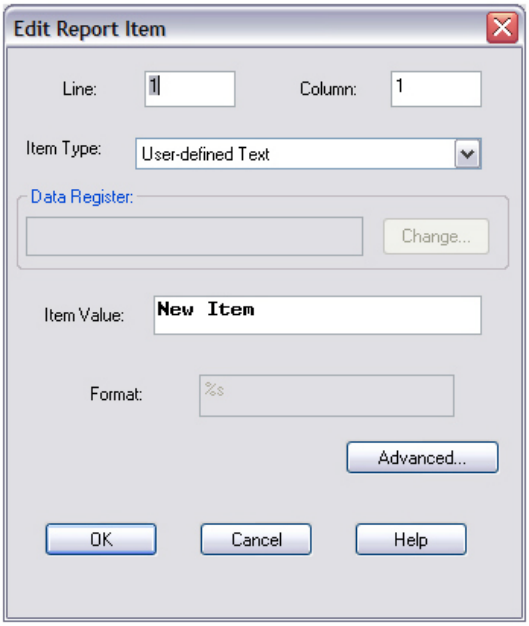


Figure 18 Insert/Edit Report Items

3. In the boxes labeled "Line" and "Column," indicate the position of the new report item. In box labeled “Item Value” enter the text to be displayed in that position, Line 1, Column 1 – is the upper left-hand corner of the report. There are 60 lines and 80 columns on a single page of a BlendMate report.

4. Next, select "Item Type" from the pull-down menu shown in Figure 18. There are three options: "Run/Program Data Value," "Run/Program Data Description," and "User-defined Text." More about these options appears later in this subsection.

5. To display custom information such as a company name, select "User-defined Text," type the desired information in the "Item Value" box, and click "OK." The text will appear in the appropriate position on the report screen shown in Figure 18.

6. If "Run/Program Data Value" or "Run/Program Data Description" is selected, click on "Change" beside the "Data Register" box. A menu of selections will appear. Choose an item by highlighting and double-clicking.

7. Note that the format of the new entry must be appropriate for its type. A sample report appears in Figure 20. A corresponding table immediately following the figure details the item, entry type, register, format string, position, and location for each element on the report.

Advanced Report Options

BlendMate's Report Editor offers certain advanced configuration features that allow the operator to modify format strings, as well as the number of digits to be printed. Normally, no modification is required. BlendMate follows the "C" programming language standard for the "printf" function format string.

To access the Report Editor's advanced features, choose *Edit* / *Insert New Item…* from the BlendMate toolbar. A dialog box, similar to that shown in Figure 18, will appear. Use the mouse to click on the "Advanced" button in the lower right-hand corner of the screen to obtain the dialog box shown in Figure 19.

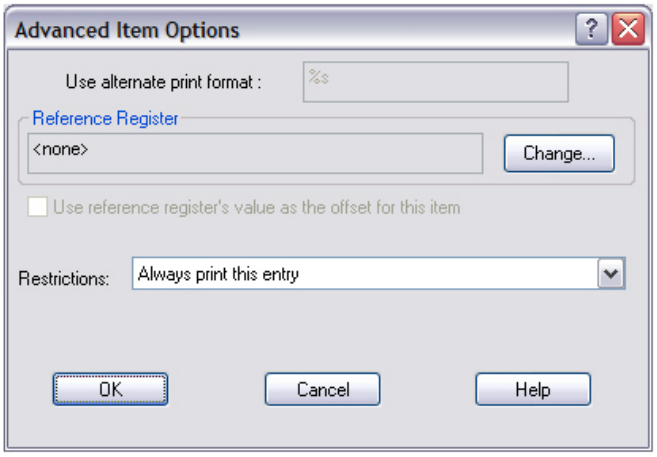


Figure 19 Edit Report Item

Use Alternate Print Format

The primary benefit to the "Use Alternate Print Format" feature is the option of editing field sizes. For example, the designation %8.3f indicates a total field size of eight characters, with three numbers to the right of the decimal point. The printed report format is XXXX.XXX. To eliminate one decimal place in this example, use the mouse to highlight the "3", then type "2". The format string for this report item is now %8.2f and the printed report format is XXXXX.XX.

Reference Register

This feature allows the selection of an alternate database point that may be used to either determine the offset to use for the report item, or aid in determining whether the report item should be suppressed for this printing.

Use Reference Register Value as Offset for this Item

If checked, the database value offset specified for this report item (the register specified on the previous dialog) will be replaced. The actual offset used to determine the value printed is the value of the reference register. The typical application for this feature would be to print the correct recipe name. On the base dialog, the database value "Recipe ID" may have been selected. On the report, the operator may wish to print the recipe name of the recipe delivered for this batch; however, the batch data contains only the recipe number. To print the actual recipe name, specify the Batch x Recipe number for the reference register and select this checkbox.

Restrictions

This combo box allows the selection of a test function. The miniBlend.net may either print or skip this report item, depending on the result of the specified conditional. The default is to always print the entry.

Always print this entry – The default option.

Print if value is nonzero – Only print this entry if the value of the entry is greater than zero (database entry types only).

Print if reference value is nonzero – Only print this entry if the value of the database entry specified by the reference register is zero (any entry type can use this restriction).

Print if indicated batch was delivered – Only print this entry if the batch offset associated with the entry was delivered in the transaction (only valid for database entries with a "batch #" offset).

Print if reference register's batch was delivered – Only print this entry if the batch offset associated with the reference register's batch was delivered in the transaction (the reference register must be a database register with a "batch #" offset).

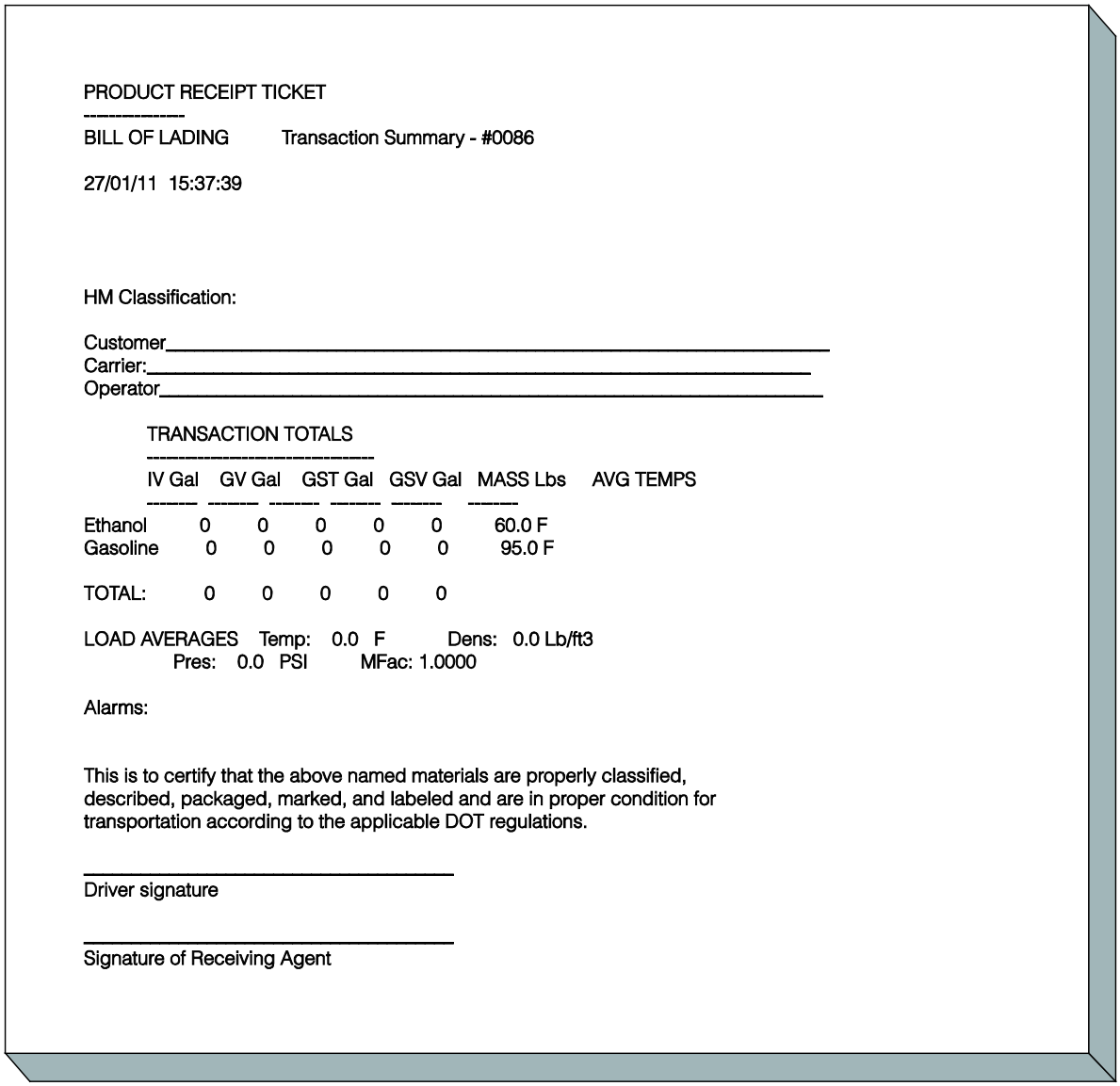
Print if this product was delivered – Only print this entry if the product offset for this entry was a product delivered in this transaction (only valid for database entries with a "product #" offset).

Print if reference register's product was delivered – Only print this entry if the product offset for the reference register was a product delivered in this transaction (reference register must be a database entry with a "product #" offset).

Print if this recipe was delivered – Only print this entry if the recipe offset for this entry was a recipe delivered in this transaction (only valid for database entries with a "recipe #" offset).

Print if reference register's recipe was delivered – Only print this entry if the recipe offset for the reference register was a recipe delivered in this transaction (reference register must be a database entry with a "recipe #" offset).

Sample Report



PRODUCT RECEIPT TICKET

BILL OF LADING Transaction Summary - #0086

27/01/11 15:37:39

HM Classification:

Customer_____
Carrier:_____
Operator_____

TRANSACTION TOTALS

	IV Gal	GV Gal	GST Gal	GSV Gal	MASS Lbs	AVG TEMPS
Ethanol	0	0	0	0	0	60.0 F
Gasoline	0	0	0	0	0	95.0 F
TOTAL:	0	0	0	0	0	

LOAD AVERAGES Temp: 0.0 F Dens: 0.0 Lb/ft3
Pres: 0.0 PSI MFac: 1.0000

Alarms:

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable DOT regulations.

_____
Driver signature

_____
Signature of Receiving Agent

Figure 20 Sample Report

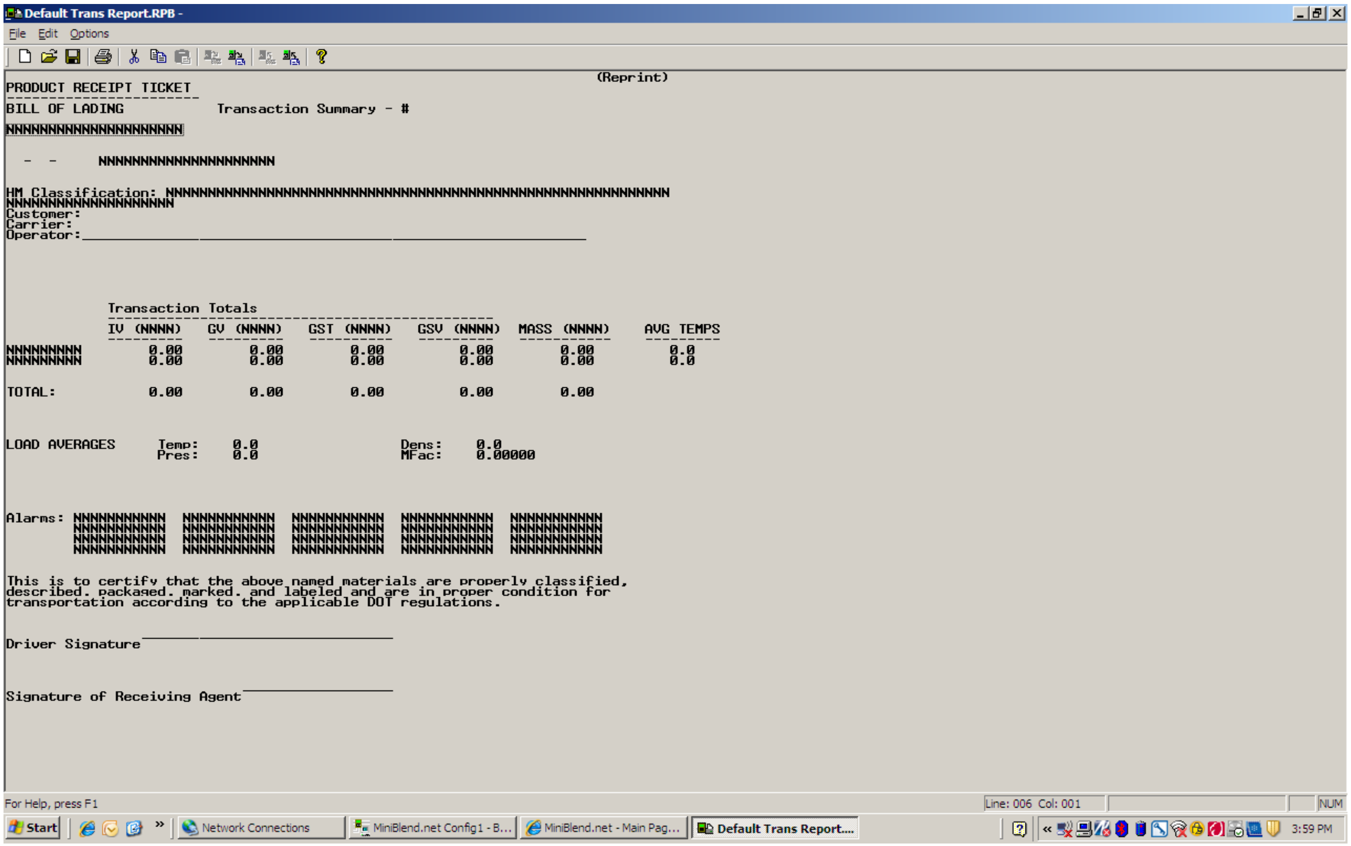


Figure 21 Sample Report Generation

Item	Type	Format String	Row	Column	Where Found
PRODUCT RECEIPT TICKET	User-defined Text	%s	2	1	
(Reprint)	User-defined Text	%s	1	71	
-----------------------	User-defined Text	%s	3	1	
BILL OF LADING	User-defined Text	%s	4	1	
Transaction Summary - #	User-defined Text	%s	4	26	
Transaction End Time	Run/Program Data Value	%s	6	1	Transaction Data
Transaction Start Time	Run/Program Data Value		9	1	Transaction Data
HM Classification:	User-defined Text	%s	12	1	
102 HM Class Part 1(1)	Run/Program Data Value	%s	12	20	Product Configuration
103 HM Class Part 2(1)	Run/Program Data Value	%s	12	40	Product Configuration
104 HM Class Part 3(1)	Run/Program Data Value	%s	12	60	Product Configuration
105 HM Class Part 4(1)	Run/Program Data Value	%s	13	1	Product Configuration

Customer:_____	User-defined Text	%s	14	1	
Carrier: _____	User-defined Text	%s	15	1	
Operator:_____	User-defined Text	%s	16	1	
Transaction Totals	User-defined Text	%s	23	13	
----------	User-defined Text	%s	24	13	
----------	User-defined Text	%s	24	36	
IV (	User-defined Text	%s	25	13	
114 Volume Descriptor	Run/Program Data Value	%s	27	17	System Configuration
)	User-defined Text	%s	25	21	
GV (	User-defined Text	%s	25	25	
114 Volume Descriptor	Run/Program Data Value	%s	25	29	System Configuration
GST (	User-defined Text	%s	25	37	
114 Volume Descriptor	Run/Program Data Value	%s	25	42	System Configuration
)	User-defined Text	%s	25	46	
GSV (	User-defined Text	%s	25	50	
114 Volume Descriptor	Run/Program Data Value	%s	25	55	System Configuration
)	User-defined Text	%s	25	59	
MASS (	User-defined Text	%s	25	62	
114 Volume Descriptor	Run/Program Data Value	%s	25	68	System Configuration
)	User-defined Text	%s	25	72	
AVG TEMPS	User-defined Text	%s	25	77	
---------	User-defined Text	%s	26	13	
---------	User-defined Text	%s	26	25	
---------	User-defined Text	%s	26	37	
---------	User-defined Text	%s	26	50	
---------	User-defined Text	%s	26	62	
---------	User-defined Text	%s	26	77	
101 Product ID(1)	Run/Program Data Value	%s	27	1	Product Configuration
Batch P1 Indicated Volume (IV)(1)	Run/Program Data Value	%10.2f	27	12	Product Run Data for Batch
Batch P1 Gross Volume (GV)(1)	Run/Program Data Value	%10.2f	27	24	Product Run Data for Batch

Batch P1 Gross @ Std Temp (GST)(1)	Run/Program Data Value	%10.2f	27	36	Product Run Data for Batch
Batch P1 Gross @ Std Temp & Press (GSV)(1)	Run/Program Data Value	%10.2f	27	49	Product Run Data for Batch
Batch P1 Mass Total(1)	Run/Program Data Value	%10.2f	27	61	Product Run Data for Batch
P1 Average Temperature(1)	Run/Program Data Value	%6.1f	27	77	Product Run Data for Batch
101 Product ID(2)	Run/Program Data Value	%s	28	1	Product Configuration
Batch P2 Indicated Volume (IV)(1)	Run/Program Data Value	%10.2f	28	12	Product Run Data for Batch
Batch P2 Gross Volume (GV)(1)	Run/Program Data Value	%10.2f	28	24	Product Run Data for Batch
Batch P2 Gross @ Std Temp (GST)(1)	Run/Program Data Value	%10.2f	28	36	Product Run Data for Batch
Batch P2 Gross @ Std Temp & Press (GSV)(1)	Run/Program Data Value	%10.2f	28	49	Product Run Data for Batch
Batch P2 Mass Total(1)	Run/Program Data Value	%10.2f	28	61	Product Run Data for Batch
P2 Average Temperature(1)	Run/Program Data Value	%6.1f	28	77	Product Run Data for Batch
TOTAL:	User-defined Text	%s	31	1	
Indicated Volume (IV)	Run/Program Data Value	%11.2f	31	11	Transaction Data
Gross Volume (GV)	Run/Program Data Value	%11.2f	31	23	Transaction Data
Gross @ Std Temp Volume (GST)	Run/Program Data Value	%11.2f	31	35	Transaction Data
Gross @ Std Temp & Press (GSV)	Run/Program Data Value	%11.2f	31	48	Transaction Data
Mass	Run/Program Data Value	%11.2f	31	60	Transaction Data
LOAD AVERAGES	User-defined Text	%s	36	1	
Temp:	User-defined Text	%s	36	19	
Average Temperature	Run/Program Data Value	%6.1f	36	25	Transaction Data
Dens:	User-defined Text	%s	36	48	
Average Density	Run/Program Data Value	%6.1f	36	54	Transaction Data
Pres:	User-defined Text	%s	37	19	
Average Pressure	Run/Program Data Value	%6.1f	37	25	Transaction Data
MFac:	User-defined Text	%s	37	48	
Average Meter Factor	Run/Program Data Value	%7.5	37	57	Transaction Data
Alarms:	User-defined Text	%s	43	1	
1st Alarm in Transaction	Run/Program Data Value	%s	43	9	Transaction Data
2nd Alarm in Transaction	Run/Program Data Value	%s	43	22	
3rd Alarm in Transaction	Run/Program Data Value	%s	43	25	
4th Alarm in Transaction	Run/Program Data Value	%s	43	48	
5th Alarm in Transaction	Run/Program Data Value	%s	43	61	

6th Alarm in Transaction	Run/Program Data Value	%s	44	9	
7th Alarm in Transaction	Run/Program Data Value	%s	44	22	
8th Alarm in Transaction	Run/Program Data Value	%s	44	35	
9th Alarm in Transaction	Run/Program Data Value	%s	44	48	
10th Alarm in Transaction	Run/Program Data Value	%s	44	61	
11th Alarm in Transaction	Run/Program Data Value	%s	45	9	
12th Alarm in Transaction	Run/Program Data Value	%s	45	22	
13th Alarm in Transaction	Run/Program Data Value	%s	45	35	
14th Alarm in Transaction	Run/Program Data Value	%s	45	48	
15th Alarm in Transaction	Run/Program Data Value	%s	45	61	
16th Alarm in Transaction	Run/Program Data Value	%s	46	9	
17th Alarm in Transaction	Run/Program Data Value	%s	46	22	
18th Alarm in Transaction	Run/Program Data Value	%s	46	32	
19th Alarm in Transaction	Run/Program Data Value	%s	46	48	
20th Alarm in Transaction	Run/Program Data Value	%s	46	61	
This is to certify that…	User-defined Text	%s	49	1	
the above named material	User-defined Text	%s	49	25	
ls are properly classif	User-defined Text	%s	49	48	
ied,	User-defined Text	%s	49	71	
described, packaged, ma	User-defined Text	%s	50	1	
rked, and labeled and a	User-defined Text	%s	50	24	
re in proper condition	User-defined Text	%s	50	47	
For	User-defined Text	%s	50	70	
transportation accordin	User-defined Text	%s	51	1	
g to the applicable DOT	User-defined Text	%s	51	24	
regulations.	User-defined Text	%s	51	48	
_____	User-defined Text	%s	54	1	
_____	User-defined Text	%s	54	24	
Driver Signature	User-defined Text	%s	55	1	
_____	User-defined Text	%s	59	24	
Signature of Receiving	User-defined Text	%s	60	1	
Agent	User-defined Text	%s	60	24	

Note: *The first entry on any report should be the text "Reprint." This text will only appear on reports that are reprinted; it will not appear on the first report printed.*

Translation Editor

The BlendMate's Translation Editor makes it possible to replace any of the text literals in the miniBlend.net with customized text. The interface consists of a list view with the original text in the left-hand column and an edit space in the right-hand column, as shown in the figure below. The Translation Editor is accessed by selecting *File*|*New*|*Translation* from the BlendMate toolbar or by opening an existing translation (.LGB) file.

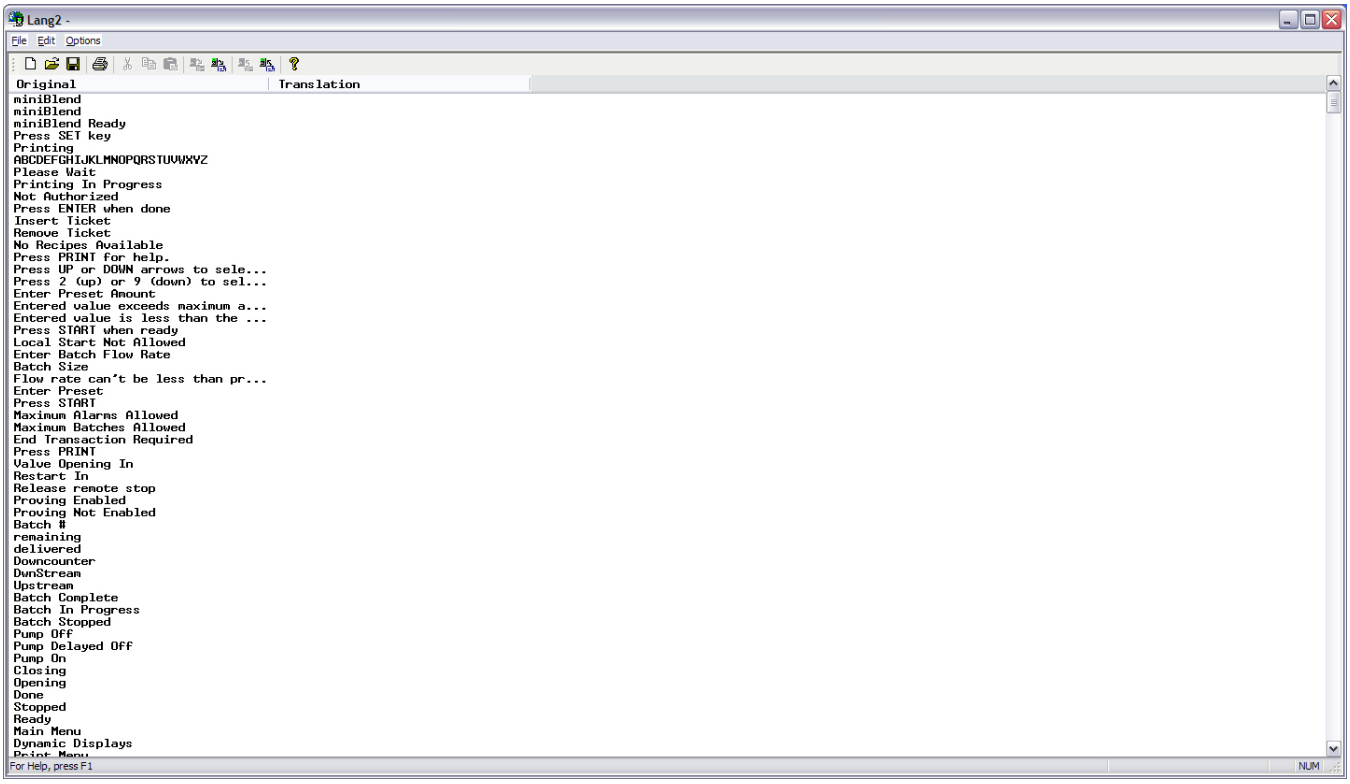


Figure 22 Translation

A search feature allows the operator to quickly locate a specific entry by matching the text in either the original or translated literal. To use the search feature, select *Edit*/*Find* (with the Translation Editor open). A dialog box similar to that shown in the figure below will appear on the screen.

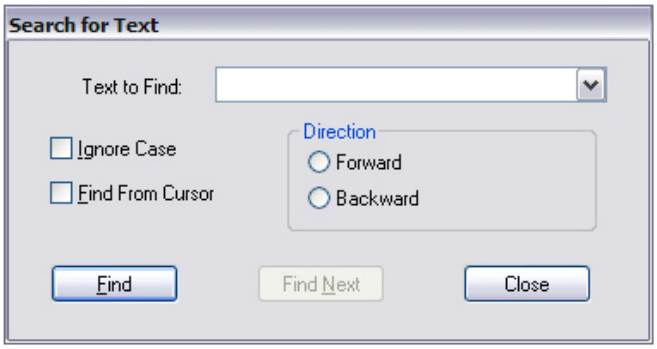


Figure 23 Search for Text

To conduct a search, type the desired text in the "Text to Find" box, specify the direction of the search, and click "Find." The specified text will be highlighted. Additional search options, "Ignore Case" and "Find From Cursor," are located on the left-hand side of the dialog box. Select these options, if desired, by using the mouse to click in the box to the left of each option. An "x" will appear in the box.

To change a text literal, take the following steps.

1. Double-click on the literal to be edited. A dialog box, similar to that shown in Figure 24, will appear on the screen.

2. Type the new text in the space on the bottom half of the dialog box.

3. Click "OK" to exit and save changes, "Cancel" to abandon the change, or "Help" for more information about this function. Assuming that new text was entered, it will appear to the right of the Translation Editor screen, as shown in Figure 25. The new literal, once downloaded to the miniBlend.net, will appear in place of the original literal.

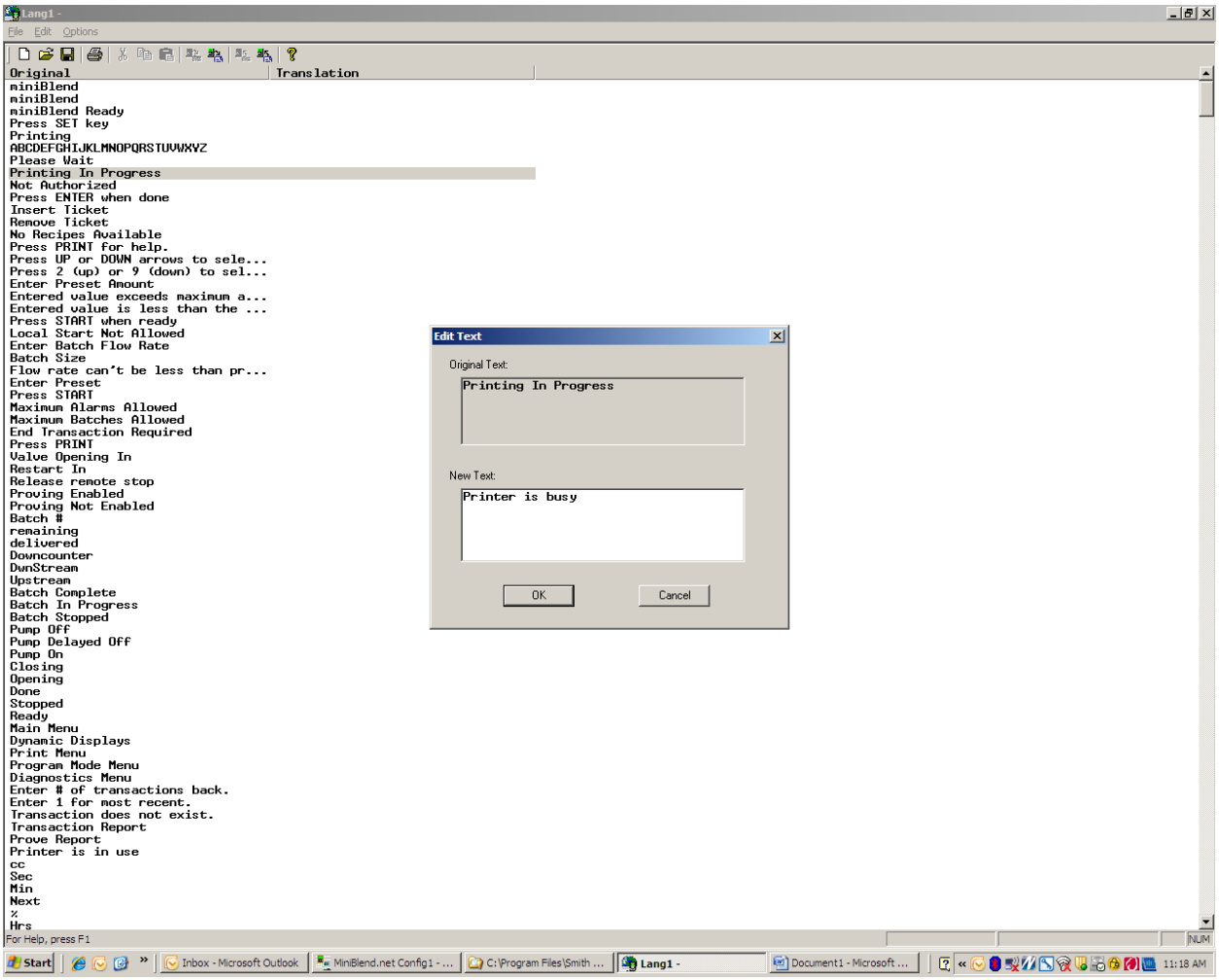


Figure 24 Editing Text

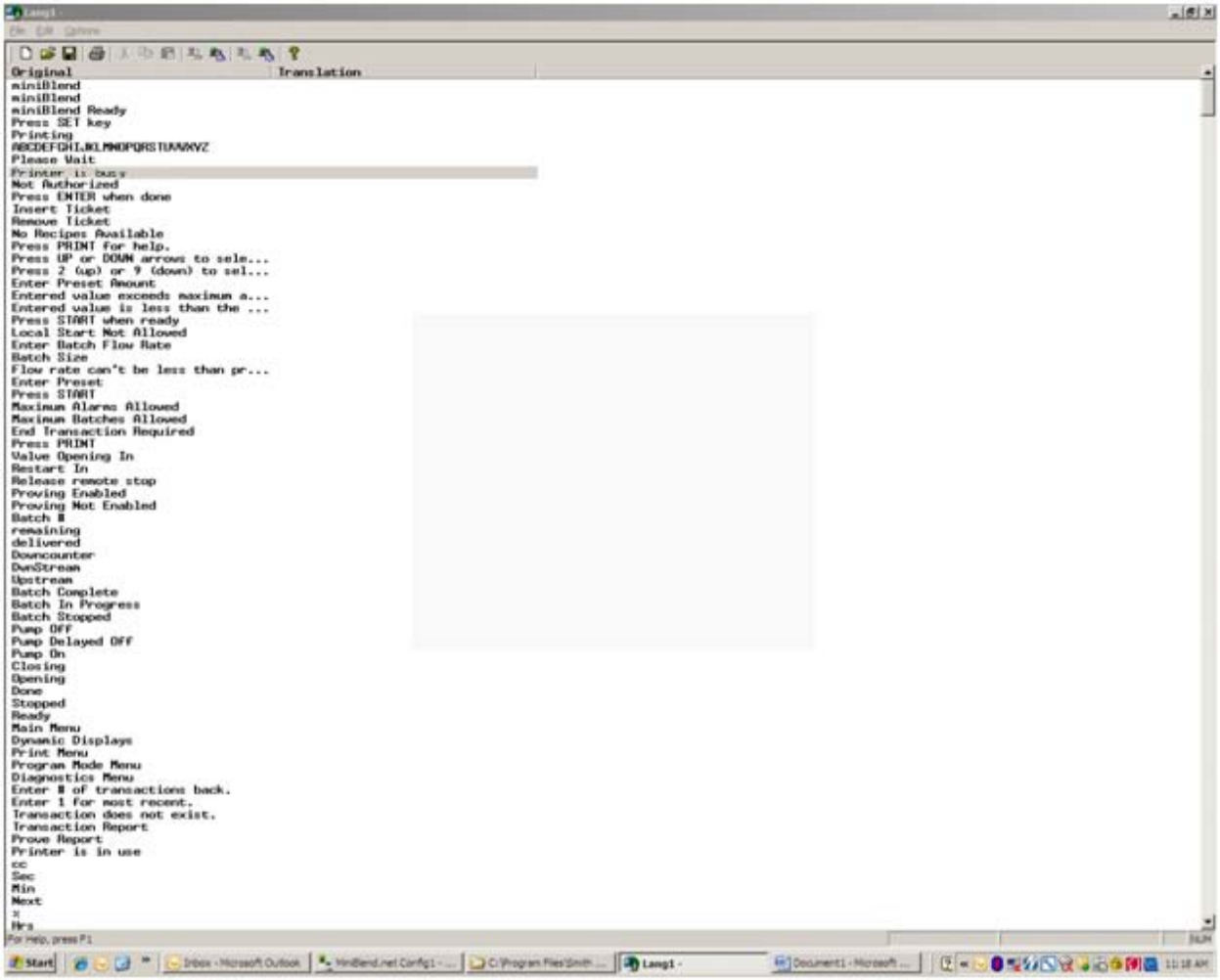


Figure 25 Translation Screen

Display Configuration Editor

The Display Configuration Editor allows the user to customize the layout of the miniBlend.net's Run Display. The Display Configuration is very similar in functionality to the Report Editor. The Display Configuration workspace is limited to 8 lines and 21 columns. Access the Report Editor by selecting *File*|*New*|*Report Configuration* from the BlendMate menu bar.

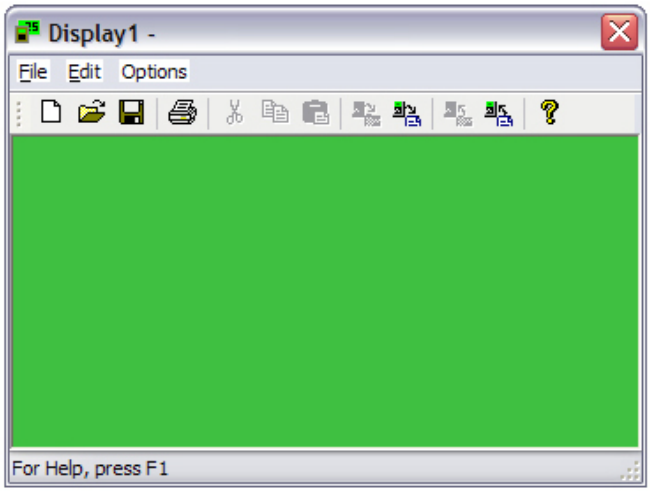


Figure 26 Display Configuration

Like the Report Editor, the Display Configuration process uses a dialog box to define each of the items found on the display.

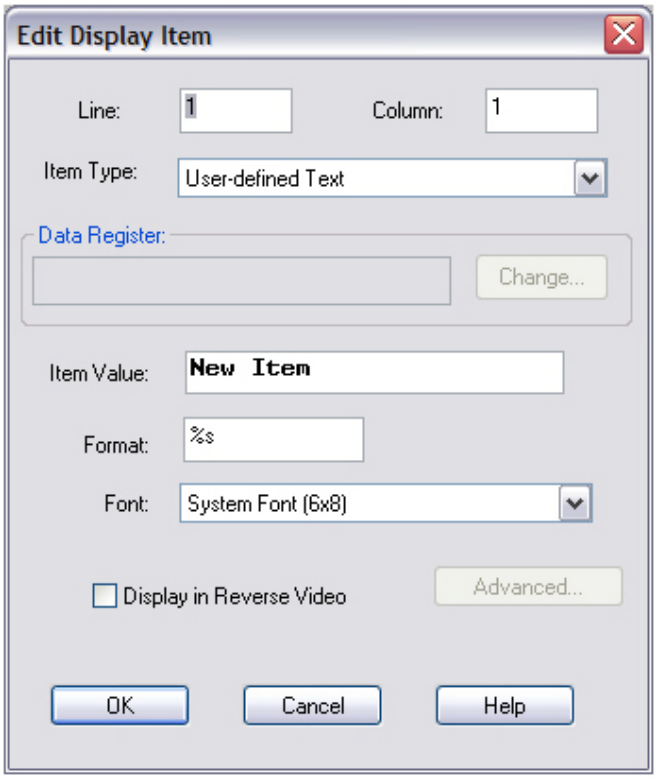


Figure 27 Display Item

BlendMate Equation Editor

The BlendMate makes it easy for the operator to direct the miniBlend.net to perform certain functions that are executed on a periodic basis. The BlendMate Equation Editor allows the operator to create application specific calculations, as well as to insert, delete, reorder, and edit existing equation lines. The Equation Editor is accessed by selecting *File*|*New*|*Equation Set*. Doing so will result in a display similar to that shown in the figure below.

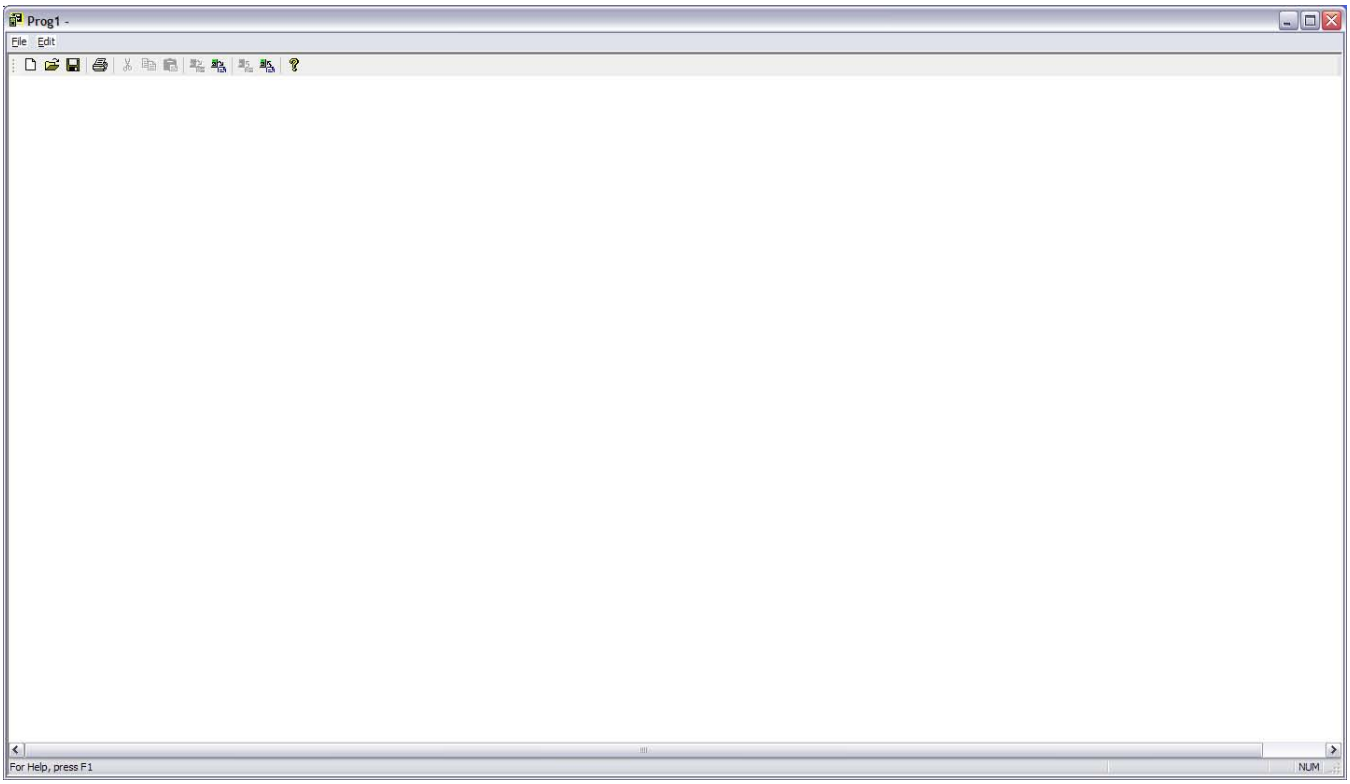


Figure 28 Equation Programming Screen

Next, select *Edit*|*Insert New* to obtain the dialog box shown in Figure 29. Use the pull-down menu at the top of the display to indicate the type of equation to be set. An explanation of Boolean and algebraic expressions is included in the next subsection of this manual.

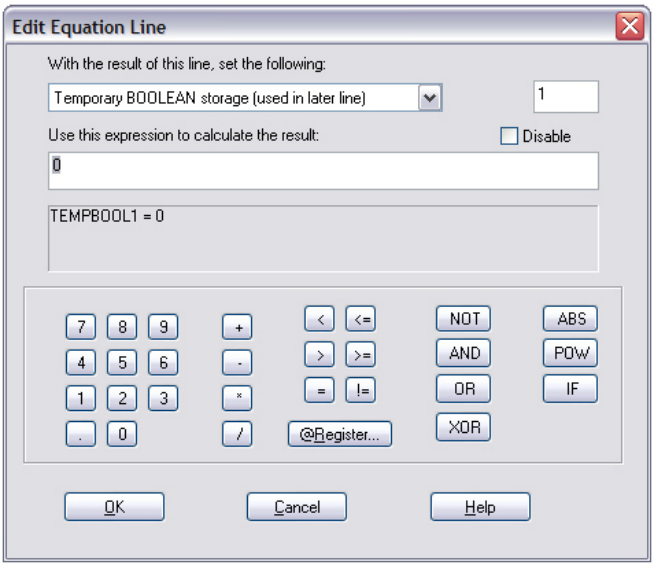


Figure 29 Equation Editor

Boolean/Algebraic Statements

Boolean statements have two conditions: “true” or “false.” They may also be represented as "on" or "off," or as integer values from 0 to 255. Any non-zero value is considered true; zero is false. Boolean statements can be used to create customized instructions to monitor inputs, control outputs, and calculate report values. The instructions are defined at the BlendMate, then downloaded to the miniBlend.net. The different ways of expressing Boolean statements are shown below:

TEMPBOOL1 = true
TEMPBOOL1 = on
TEMPBOOL1 = 1

→ Equivalent statements

TEMPBOOL2 = false
TEMPBOOL2 = off
TEMPBOOL2 = 0

→ Equivalent statements

The logical operators used in conjunction with Boolean statements are “NOT”, “AND”, “OR”, and “XOR”.

Refer to these definitions when studying the examples below:

- TEMPBOOL1 = True
- TEMPBOOL2 = True
- TEMPBOOL3 = False

NOT A Boolean logic operator indicating negation. A variable designated with a “NOT” in front of it will be the opposite of its current value. It is a switching function for one variable.

Example: TEMPBOOL4 = NOT TEMPBOOL3 (True)

AND A Boolean logic operator. If two variables are involved, both must be true for the output to be true.

Example: TEMPBOOL5 = TEMPBOOL1 AND TEMPBOOL2 (True)
Example: TEMPBOOL6 = TEMPBOOL1 AND TEMPBOOL3 (False)

OR A Boolean logic operator. Using two variables, only one needs to be true for the output to be true.

Example: TEMPBOOL7 = TEMPBOOL1 OR TEMPBOOL3 (True)

XOR An exclusive or Boolean logic operator in which the output is true if either of two variables is true but not if both are true.

Example: TEMPBOOL8 = TEMPBOOL1 XOR TEMPBOOL3 (True)
Example: TEMPBOOL9 = TEMPBOOL1 XOR TEMPBOOL2 (False)

Algebraic operators used in conjunction with algebraic statements are as follows:

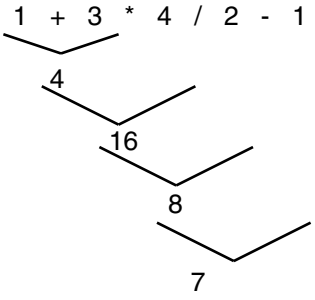
- " + " - Used to add two numerical values (2 + 2 = 4)
- " - " - Used to subtract two numerical values (4 - 2 = 2)
- " * " - Used to multiply two numerical values (2 * 2 = 4)
- " / " - Used to divide two numerical values (1/2 = 0.5)
- "ABS" - Used when the absolute value of a number is required (| -2 | = 2)
- "POW" - Used to take a number to a power (2POW2 = 2^2)

Conditional operators used in conjunction with Boolean and algebraic statements are as follows:

- "IF" - Used in statements where if a condition exists, then another event is to occur
- " < " - Less than (1 < 2)
- " > " - Greater than (2 > 1)
- " <= " - Less than or equal to (1 <= 2)
- " >= " - Greater than or equal to (2 >= 2)
- " = " - Equal to (1 = 1)
- " != " - Not equal to (1 ! = 5)

All processing is from left to right and top to bottom

Example:



There are 50 Boolean registers and 50 float registers. The maximum number of instruction lines per equation set is 50, and the maximum number of operations per statement is 4. All Boolean and algebraic equations for a mini-Blend.net must be stored in a single file, and all changes to equations must be made in this file.

Specific Boolean Expressions

When constructing a set of equations that take action based on a level value (such as a temperature, a status value, the state of a digital I/O point, or any other value that may change between the evaluation of one equation and the next), read the value into a temporary or user-defined variable (Boolean or float, as applicable) and use the variable, not the actual value, in multiple equations.

Boolean equations can be more clearly expressed as a result of an evaluated expression than by assigning a value conditionally. For example, let us assume that we want to turn on a digital output when the product temperature of the meter is between 70° and 90°, inclusive, and turn the same digital output off again when the temperature is no longer within that range. Because of the left-to-right evaluation of Boolean and algebraic expressions, it is recommended that the expressions be broken down into simple expressions so that the results are as expected.

TEMPBOOL1 = Product Run Data (1) Current Product Temperature >=70
TEMPBOOL2 = Product Run Data (1) Current Product Temperature <=90
OUTPUT1 = TEMPBOOL1 AND TEMPBOOL2

Setting a Timer

Eight timers are available in the miniBlend.net. The breakdown is as follows:

- 2 - 0.1 (Tenth) Second
- 2 - 1 (One) Second
- 2 - 1 (One) Minute
- 2 - 1 (One) Hour

A timer can be started by writing a 1 to it, and reset by writing a 0. Timers will hold values from 0 to 65535. To instruct a time to count down, set it to a negative number. For example, if Timer3 is set to –20, it will stop in 20 seconds. If a continuously running timer is desired, include a line in the expression that resets the timer to 1 when it stops.

Timer3 = 1 IF Timer3 = 0

Setting an Alarm

Five user alarms are available in the miniBlend.net. These alarms are programmable, and clearable in Run or Ready mode. A text string of up to 18 characters may be associated with each alarm. The set commands available are as follows:

- Set Alarm Output #1
- Set Alarm Output #2

Inputs and Outputs

The miniBlend.net can monitor any of the 3 digital and 2 analog inputs, and control any of the 6 digital outputs using operator-configured Boolean commands. Outputs can be configured for general purpose applications, and can be turned on or off by equations.

Variables and Registers

Temporary variables include the following:

- TEMPBOOL1 to TEMPBOOL50
- TEMPFLOAT1 to TEMPFLOAT50
- Place holders used by other instruction lines.

User memory consists of the following:

- USERBOOL1 to USERBOOL50
- USERFLOAT1 to USERFLOAT50.

All variables and registers can be read and written to by equations. They can also be accessed via BlendMate communications and their values included in user-configured reports.

Possible Boolean Applications

In addition to the applications listed above, several other operations can be initiated or controlled using Boolean equations. These include the following:

- Temperature calculations (C, F or K)
- Temperature monitor to turn output on.

Example A: Turn on digital output #1 when the product temperature is between 175° and 250°.

TEMPBOOL1 = Product Run Data (1) Current Product Temperature >= 175
TEMPBOOL2 = Product Run Data (1) Current Product Temperature <=250
TEMPBOOL3 = TEMPBOOL1 AND TEMPBOOL2
OUTPUT1 = ON if TEMPBOOL3
OUTPUT1 = OFF if NOT TEMPBOOL3

or

TEMPBOOL1 = Product Run Data (1) Current Product Temperature >=175
TEMPBOOL2 = Product Run Data (1) Current Product Temperature <=250
OUTPUT1 = TEMPBOOL1 AND TEMPBOOL2

Both of these groups of statements will yield the same results. Note that Product Run Data (1) Current Product Temperature appears as Register 68092929 when selected and before moved to the file.

Example B: Convert the current temperature (Celsius) to Fahrenheit

USERFLOAT1 = Product Run Data (1) Current Temperature * 1.8 + 32

Note that the current temperature register is 68092929.

Algebraic Expressions

The miniBlend.net converts all algebraic values to double precision floating point values prior to performing calculations.

Calculations may be defined using positive or negative whole numbers, fractional numbers, or a combination. Algebraic expressions are evaluated from left to right and all operators (+, -, /, *) have the same precedence. Multiplication does not take place before addition, etc. The following expression has a result of 54.

TEMPFLOAT1 = 4 + 5 * 6 (Result 54, 4 + 5 = 9 * 6 = 54)

Algebraic processing will allow out of range values, such as division by zero, or evaluations of expressions whose results are greater than the range of a double precision floating point variable. It is the responsibility of the user to ensure that valid expressions are used.

Section VI – Related Publications

BlendMate for miniBlend.net

BlendMate for miniBlend.net Installation/Operation..... Bulletin MNMB006

miniBlend.net

Specification ..... Bulletin SSMB001
Installation ..... Bulletin MNMB001
Operator Reference ..... Bulletin MNMB002
Operations ..... Bulletin MNMB003
Communications ..... Bulletin MNMB004
Modbus Communications ..... Bulletin MNMB005

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