

AIDE

Apparently Integrated Development Environment

User Manual

AIDE

User manual

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Software

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Package Number:	
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What is AIDE?

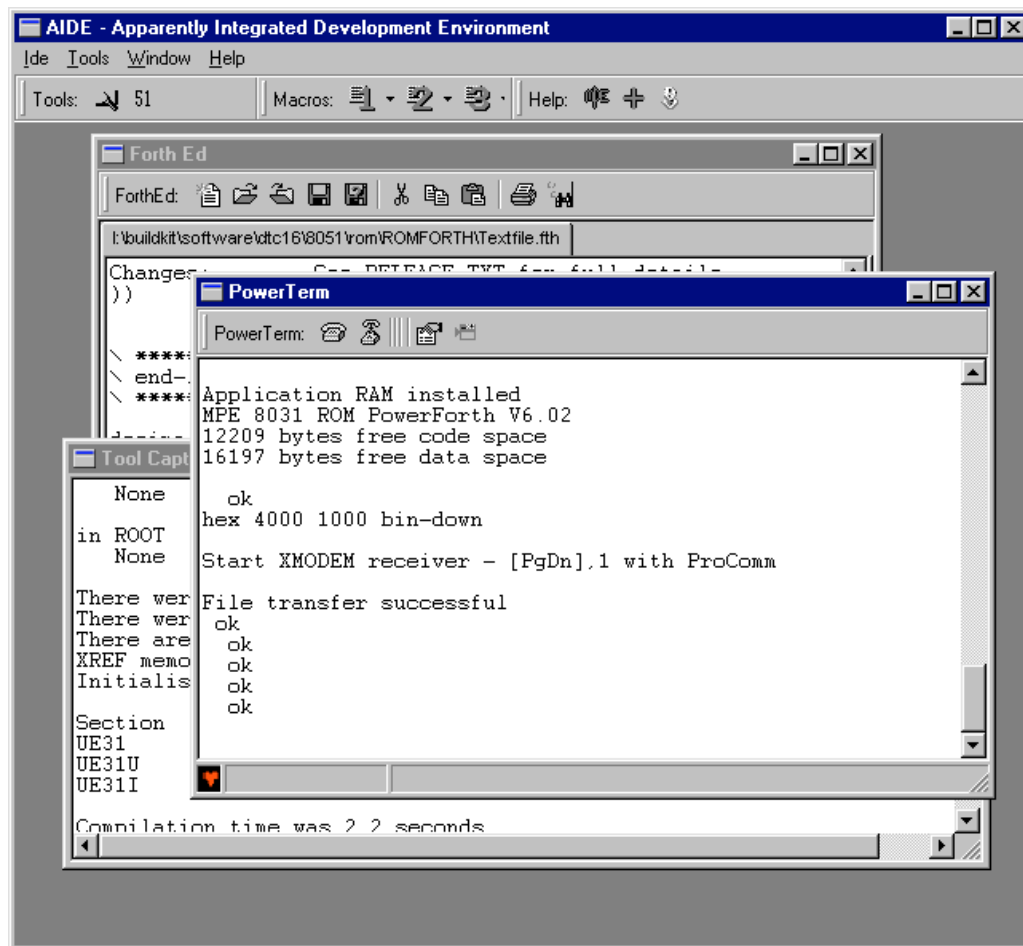
Pronounced “AIDE”

AIDE is a modular integrated development environment for the MPE series of tools and compiler. It provides a framework from which to use three types of tools.

1. MPE supplied compiler tools
2. External User tools
3. Plugins

What's a Plugin?

A plugin is a windowed tool, which runs as part of the IDE to increase functionality. The plugin mechanism is similar to that used by popular web-browsers.



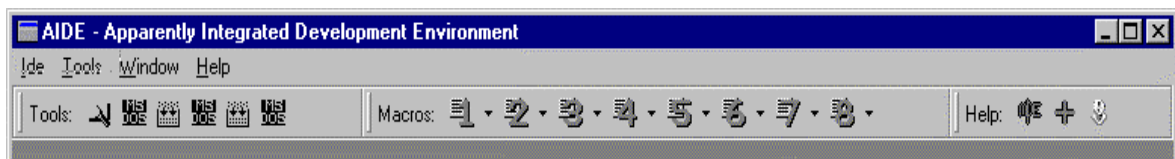
The Main IDE Frame

The main IDE consists of a single window frame with a “Tool Capture Display” Window (*See Capturing External Tools*).

The IDE provides the necessary functionality to:

- Launch both MPE and User supplied tools (*See External Tools*)
- Configure text substitution macros for use in command lines to launch tools.
- Automatically include and maintain “plugin” tools.

The Main Menu Bar



The IDE Menu

This menu provides options for general configuration of the IDE. Available sub options are:

Configure

Setup general IDE options, especially the editor and LOCATE facilities. Within the editor configuration string ‘f’ will be replaced by the file name and ‘l’ will be replaced by the line number, for example:

WinEdit	%f% -# %l%
Ed4Windows	-l -n -l %l% "%f%"
	N.B. the first is minus l
CodeWright	"%f%" -g%l%
EMACS	+%l% "%f%"

Macro Management

Alter the names and alternatives for the built in text macros

External Tools

Configure and manage external tool options.

Exit

Closes AIDE.

The Tools Menu

This menu contains a list of the currently configured external tools. Selecting an item here will run the specified tool. This menu is also reflected as a toolbar within the IDE.

The Utilities Menu

This menu contains internal tools. Selecting an item here will run the specified tool. The default options are:

Calculator

Run the usual Windows calculator.

Ascii Chart

Display the ASCII table in hex, decimal, and control code descriptions.

Go Online

Launch your web browser.

The *Window* Menu

This menu contains options to control the placement and focus of internal tool windows. The options provided are:

Tile Horizontal

Tile all active child windows with a bias given to horizontal alignment.

Tile Vertical

Tile all active child windows with a bias given to vertical alignment.

Cascade

Stagger all active child windows from top left towards bottom right.

“Each Internal Tool Window”

Each installed internal tool as an option on this menu which when selected will either bring that window to the foreground (if active) or activate it (if non-active).

N.B

An inactive window is an internal tool window, which has been minimized. It is not possible to actually close any tool window.

The *Help* Menu

This menu provides various information and help options such as MPE contact details and product version information.

The Main Window “CoolBar”



In addition to the main window menu the IDE frame also provides three toolbars organized in a “coolbar” format. Two of these toolbars echo the functionality and options of the ***Tools*** and the ***Help*** sub-menus. The third toolbar provides control for the text substitution macros. (*See Text Substitution Macros*)

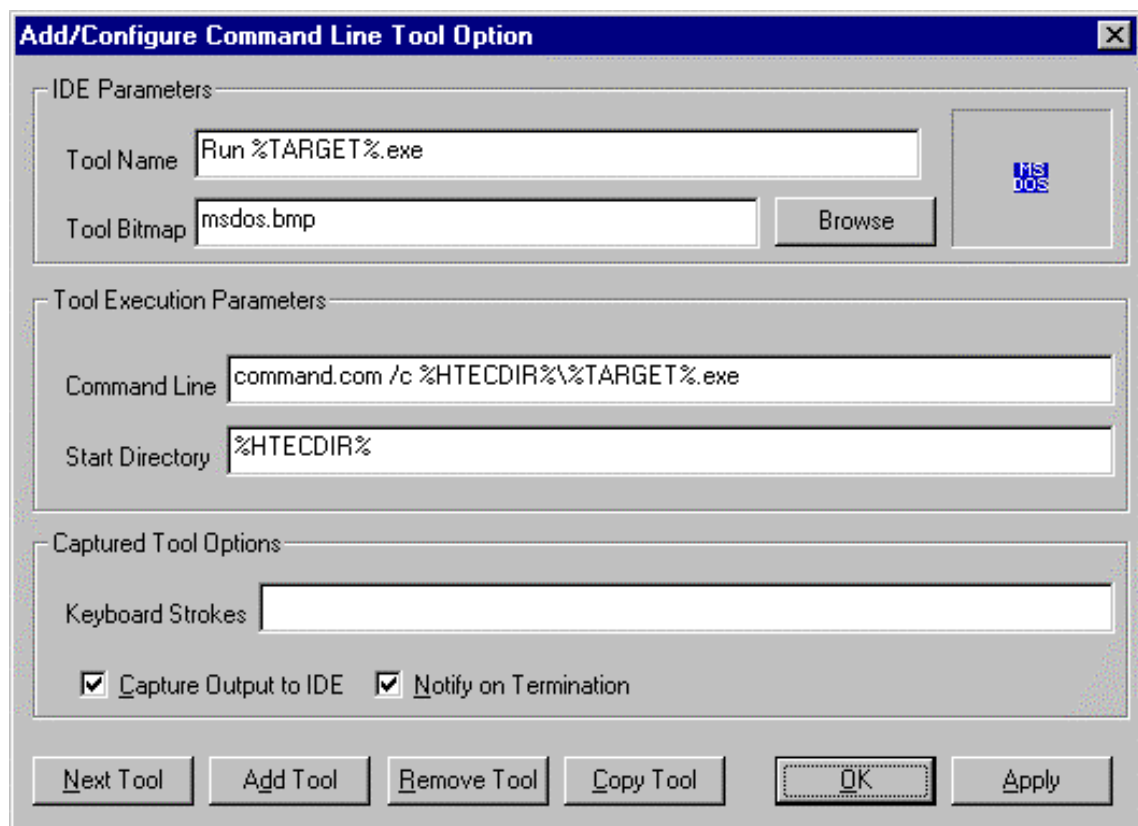
Configuring and Maintaining External Tools

About External Tools

An *External Tool* is simply a program outside the IDE which is invoked in a specified manner from within the framework. These tools can be DOS tools, Console Mode apps or Windows GUI applications. Simple “fire-and-forget” tools such as MAKE can have their IO routines revectorred into an IDE window rather than a separate console.

You must use the Apply button rather than the OK button to accept the changes.

There is no upper limit on the number of tools, which can be added to the IDE. The tool management dialog is invoked by the “*External Tools*” option on the *IDE* menu.



The dialog box is titled "Add/Configure Command Line Tool Option" and contains three main sections: "IDE Parameters", "Tool Execution Parameters", and "Captured Tool Options".

- IDE Parameters:** Includes a "Tool Name" field with the text "Run %TARGET%.exe", a "Tool Bitmap" field with the text "msdos.bmp", and a "Browse" button. To the right of the "Tool Bitmap" field is a small icon of a floppy disk with "MS DOS" written on it.
- Tool Execution Parameters:** Includes a "Command Line" field with the text "command.com /c %HTECDIR%\%TARGET%.exe" and a "Start Directory" field with the text "%HTECDIR%".
- Captured Tool Options:** Includes a "Keyboard Strokes" field and two checked checkboxes: "Capture Output to IDE" and "Notify on Termination".

At the bottom of the dialog are several buttons: "Next Tool", "Add Tool", "Remove Tool", "Copy Tool", "OK", and "Apply".

IDE Parameters

These are the options which control how the tool is represented within the main IDE Frame.

Tool Name

The name is the tool name as it will appear on the *TOOL* menu.

Tool Bitmap

A path to the image file to use on the toolbar to represent the tool. A **Browse** button is supplied for locating bitmap images. The bitmap must be 16 color (Windows) and must be 16*16 pixels in size.

Help Item checkbox

If this box is checked, the tool will appear on the Help menu. Because there are number of help engines, a command line still has to specified. For Windows help files, the command line:

```
winhelp foo.hlp
```

will launch the standard Windows help engine on file foo.hlp. Note that any program can be launched this way, and so this is a useful way of accessing project information such as chip data sheets which are normally provided as Acrobat PDF files.

Tool Execution Parameters

These parameters control how the tool is to be launched.

Command Line

The complete command line for executing the tool. This can be either a full path or a path relative to the *Start Directory* as defined below. Command Line options can be added and text macros can be used to form part or all of the command line.

Start Directory

This represents a full path which will form the current working directory when the tool is launched.

Captured Tool Options

These parameters control input/output redirection of command line tools to the IDE.

Keyboard Strokes

Only valid for a captured tool. Any text in this box is passed to STDIN of the tool when it is first launched.

Capture Output To IDE

When checked, an attempt will be made to redirect all console IO for this tool to the IDE capture window.

Notify on Termination

When checked, a banner is displayed in the capture window when this tool terminates.

Act on Command Channel

Enables AIDE to react to AIDE-specific commands from the tool. The MPE Forth Cross Compilers use this feature to launch the editor and to display the source for Forth words.

Other Buttons

Next Tool

Cycle display on to the next defined external tools.

Add Tool

Add a new blank tool entry. The options can then be filled in.

Remove Tool

Delete the current tool entry. Note that the last tool in the list (Explorer) cannot be removed.

Copy Tool

Create a new tool entry and pre-fill it's configuration with that of the existing tool.

OK

Leave this dialog.

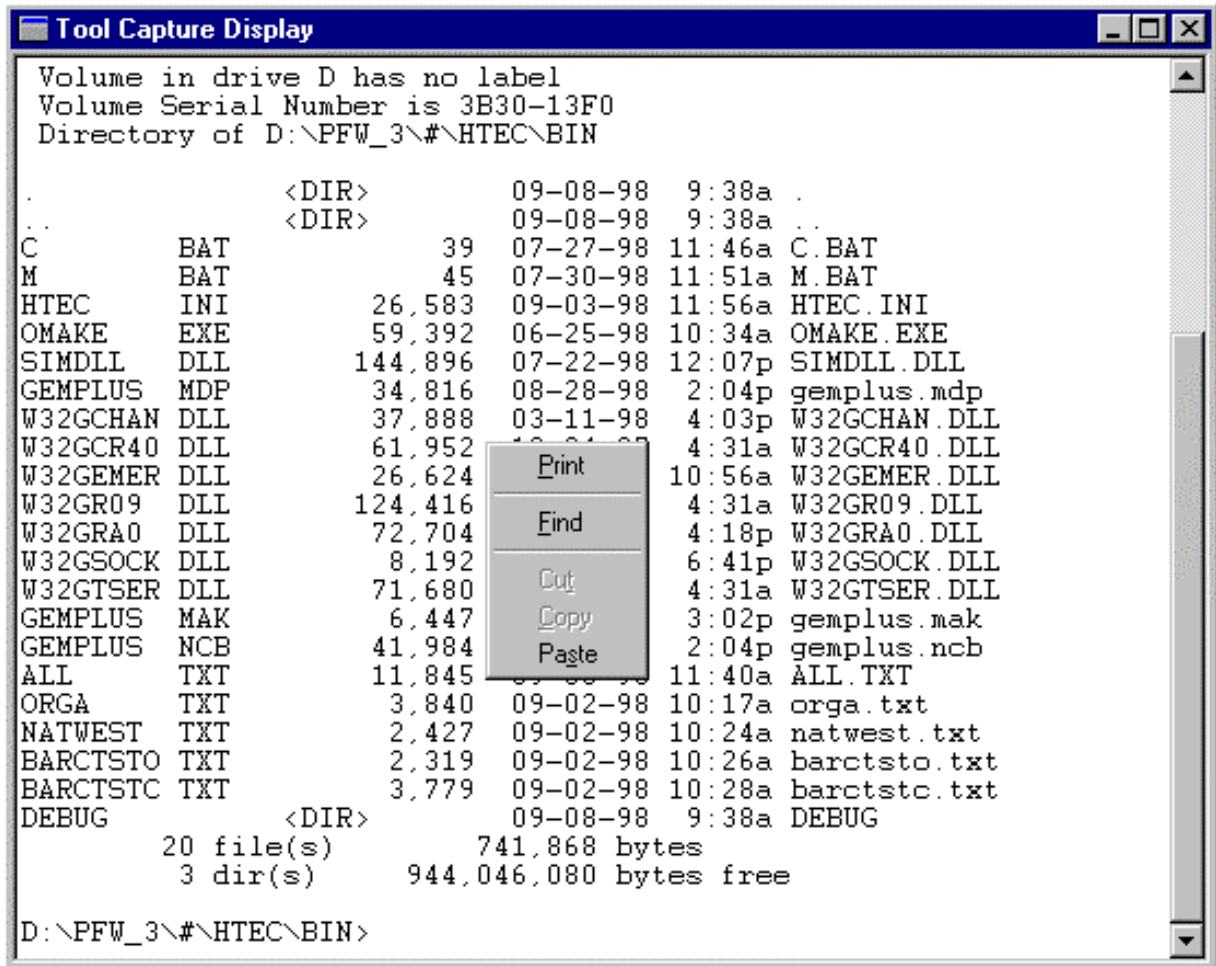
Apply

Apply changes to current tool. NOTE: Changes are not committed any other way. If you fail to *Apply* changes before using Add,Next etc. **they will be forgotten.**

The Tool Capture Display Window

This window is a part of the IDE framework by default. It provides a console, which can act as the IO device for a captured external tool. (See previous section). This window also handles the Windows standard cut/copy and paste keyboard shortcuts and has a context menu.

Pressing the right hand mouse button within the capture window will pop-up a menu giving Cut/Copy/Paste options as well as Print and Text Search facilities.



```
Tool Capture Display
Volume in drive D has no label
Volume Serial Number is 3B30-13F0
Directory of D:\PFW_3\#\HTEC\BIN

.                <DIR>          09-08-98   9:38a .
..               <DIR>          09-08-98   9:38a ..
C                BAT            39      07-27-98  11:46a C.BAT
M                BAT            45      07-30-98  11:51a M.BAT
HTEC             INI           26,583   09-03-98  11:56a HTEC.INI
OMAKE            EXE           59,392   06-25-98  10:34a OMAKE.EXE
SIMDLL           DLL          144,896   07-22-98  12:07p SIMDLL.DLL
GEMPLUS          MDP           34,816   08-28-98   2:04p gemplus.mdp
W32GCHAN         DLL           37,888   03-11-98   4:03p W32GCHAN.DLL
W32GCR40         DLL           61,952   03-11-98   4:31a W32GCR40.DLL
W32GEMER         DLL           26,624   03-11-98  10:56a W32GEMER.DLL
W32GR09          DLL          124,416   03-11-98   4:31a W32GR09.DLL
W32GRA0          DLL           72,704   03-11-98   4:18p W32GRA0.DLL
W32GSOCK         DLL           8,192    03-11-98   6:41p W32GSOCK.DLL
W32GTSER         DLL           71,680   03-11-98   4:31a W32GTSER.DLL
GEMPLUS          MAK            6,447   03-11-98   3:02p gemplus.mak
GEMPLUS          NCB           41,984   03-11-98   2:04p gemplus.ncb
ALL              TXT           11,845   03-11-98  11:40a ALL.TXT
ORGA             TXT           3,840    09-02-98  10:17a orga.txt
NATWEST          TXT           2,427    09-02-98  10:24a natwest.txt
BARCTSTO         TXT           2,319    09-02-98  10:26a barctsto.txt
BARCTSTC         TXT           3,779    09-02-98  10:28a barctstc.txt
DEBUG           <DIR>          09-08-98   9:38a DEBUG
                20 file(s)         741,868 bytes
                3 dir(s)       944,046,080 bytes free

D:\PFW_3\#\HTEC\BIN>
```

Text Macro Substitutions

About Text Macros

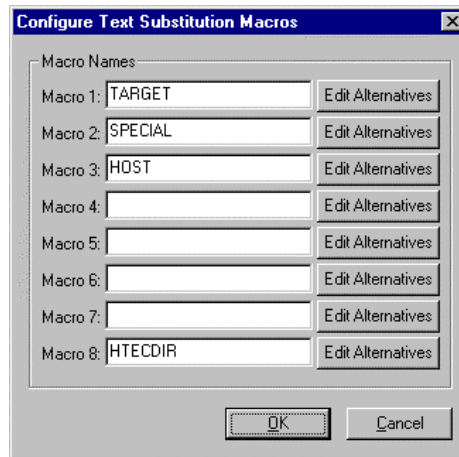
All strings used in the configuration of the IDE and the External tools can have text macro expansion. The IDE provides 8 user definable text macros, each of which can have up to 8 different translations depending on user selection.

Text macros are used by placing their names (surrounded by percentage marks %) within a text string. IE a text-macro called *FRED* could form the path to a command line using:

```
%FRED%\command.exe
```

Changing Macro Names

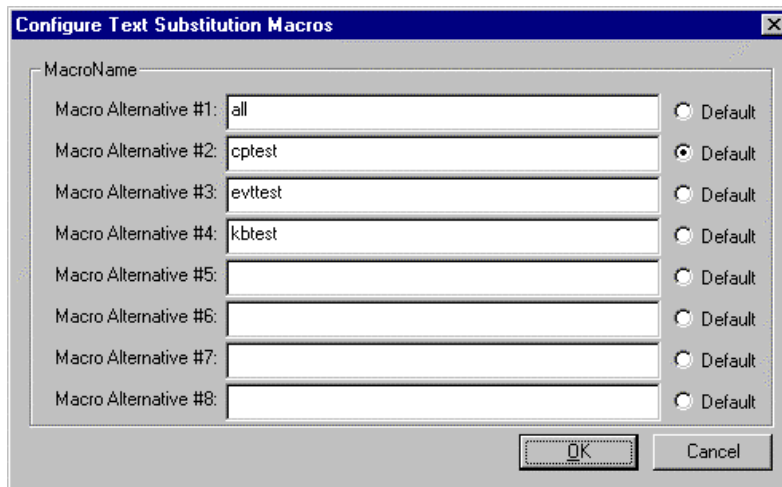
The IDE provides 8 text macros. The names for these macros can be edited using the dialog provided by the menu option **Macro Management** on the **IDE** sub-menu.



This dialog allows you to change the name of each text macro.

Editing Macro Alternatives

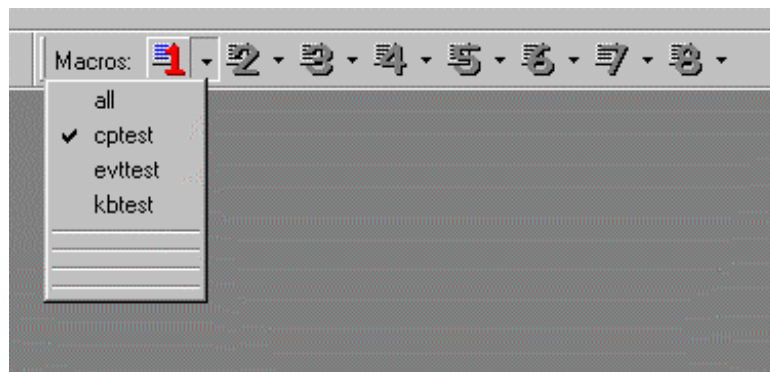
The **Edit Alternatives** buttons allow you to configure the 8 possible alternatives to the translation of each macro.



Selecting Active Macro Translation

Since each of the 8 text macros can have up to 8 possible alternative translations the IDE needs to provide a method of switching translations. This can be achieved by entering the **Configure Text Substitution Macros** dialog as before but can also be done via the main IDE “coolbar”.

On the main coolbar each macro has a button which can drop-down a menu. The dropdown menu lists the possible alternatives and places a tick next to the currently selected translation. Simply click on the required translation to change.



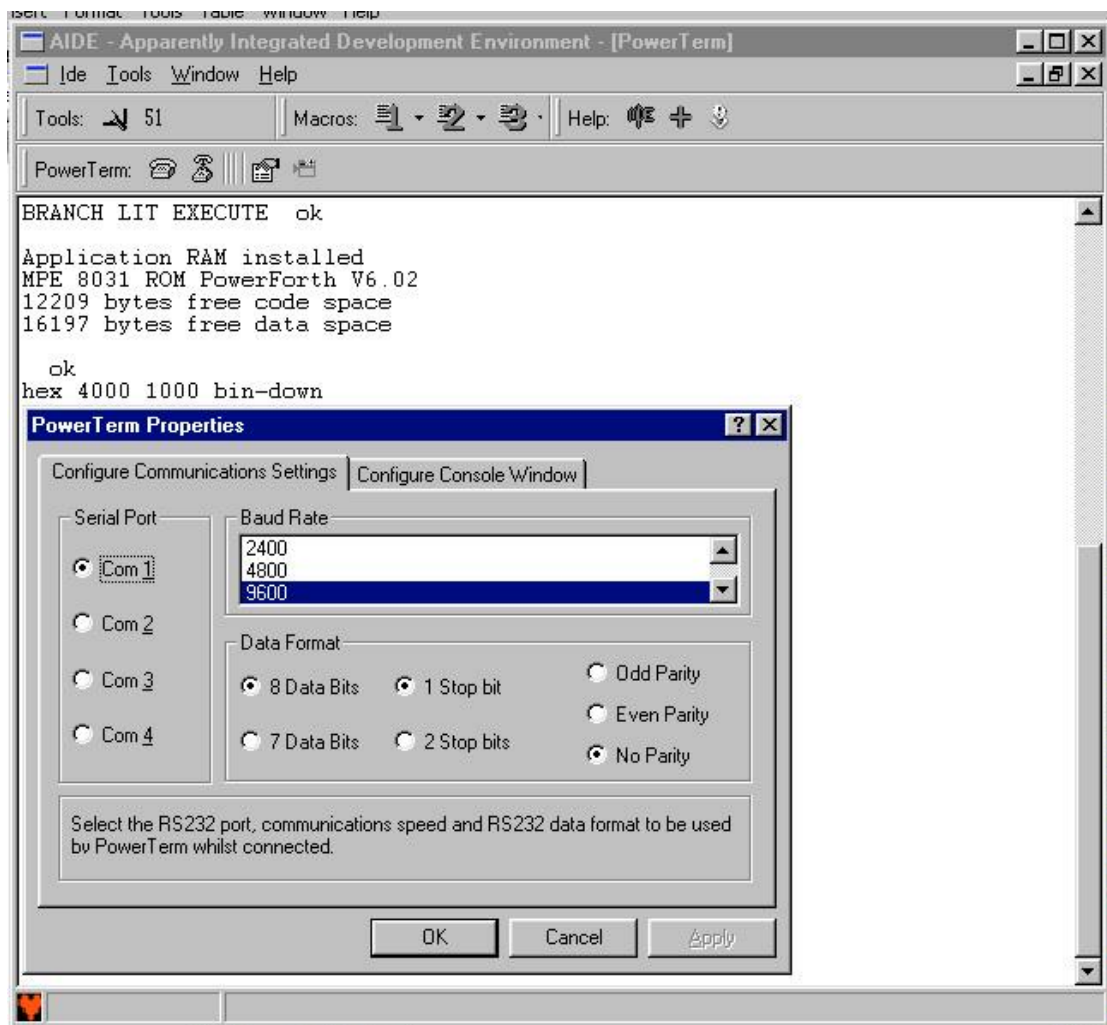
MPE Supplied Plugin #1: PowerTerm

About PowerTerm

PowerTerm is an RS232 ASCII Terminal plugin for AIDE.

The PowerTerm window has 3 major parts.

1. The toolbar. This provides the Connect/Disconnect, Configure and Logging options
2. The Main Terminal display Window
3. The Status display.



Toolbar Buttons



Connect

This option will attempt to open the configured serial port.



Disconnect

Close any currently open serial port.



Configure

Change the current configuration of both the console window and serial port. Console window configuration includes enabling and disabling of the file server facilities, which can be used by target hardware using the MPE ROM PowerForth code (usually in the COMMON\ROMFORTH directory). These facilities are documented in the ROM PowerForth manual.



Log console to file

This is a toggle that controls logging of the console to a file. When logging is enabled, you will be presented with a file selector dialog to select the file for logging. This toggle can also be activated by pressing ^T.

The Status Bar

In the bottom left hand corner of the display is the connection life beat. This is a small 'heart' image which will beat whilst a serial port is open. During transfer of data the heart will beat faster.

The second panel is used to display the line number of the current file during source file transfers to ROM PowerForth targets.

The third panel is used to display the file name of the file being transferred.

Gotchas

The target should be set up to send the CR character (ASCII code 13) before the LF character (ASCII code 10) for correct display. Unfortunately Windows does not recognise LF before CR as a valid sequence, leading to the display of a curious character instead.

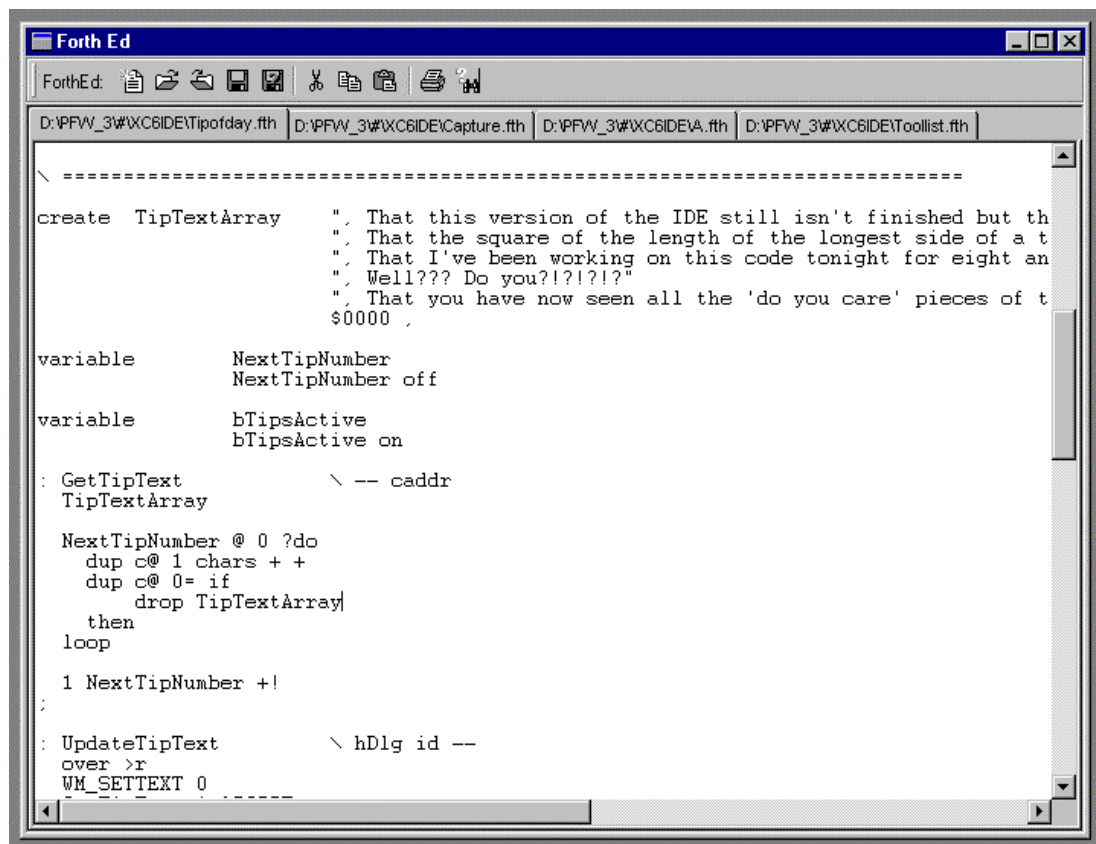
When the file server is enabled, some control characters will trigger the internal file server. If you are debugging a target system that is prone to crash or produce erratic characters, you should disable the file server.

MPE Supplied Plugin #2: Forth Ed

About ForthEd

ForthEd is a simple ASCII text editor supplied as an AIDE plugin module. It allows the simultaneous editing of up to 16 files with full text search, clipboard access and printer support.

ForthEd is also linked to remote commands from the tool capture window. If you have enabled the "Act on command channel" checkbox in the external tool configuration, the MPE cross compiler **LOCATE** command will show the source code of the word in ForthEd.



Display/Edit Window

The editors main display window consists of a tabbed control area. Each file currently open has a tab, which you can use to navigate from file to file.

Toolbar Buttons



New File

Create a new blank file and select it.



Open File

Create a new tab window and load in the contents of a given text file.



Close File

Close the currently active text file. This option does **not** perform a *Save*.



Save File

Save the current text file. The name to be used for the destination file is the same as the tab control title. The file is **not** closed.



Save File As

Save the current text file. The editor will ask for a filename.



Cut

Cut the selected text into the Windows clipboard.



Copy

Copy the selected text to the Windows clipboard.



Paste

Paste text from the Windows clipboard to the current cursor position.



Print

Print the current file.



Search

Search the current file for text strings.

Shortcut keys

The following shortcut keys are available while editing:

^S - save

^C - copy to clipboard

^X - copy to clipboard and delete

^V - paste from clipboard

^F - Find/Search

^N - New

^O - Open

^P - Print

MPE Forth6 Cross-Compiler and AIDE

Running the Cross Compiler through the IDE

The MPE Forth6 Family of Cross-Compilers have built-in support for the AIDE development environment.

The cross-compiler is a standalone Windows GUI program by default, but there are two switches which can be appended to the cross-compiler command line in order to run it as a captured external tool from within AIDE.

The two relevant switches are:

/PAUSEOFF	Close down compiler when compilation complete.
/IDE	Run compiler as a Win32 Console Application. (Must be the last entry on the command line)

These two switches should be placed at the end of the normal cross-compiler command line when running the compiler through the IDE.

ForthEd can be linked to remote commands from the compiler. If you have enabled the “Act on command channel” checkbox in the external tool configuration, the cross compiler **LOCATE** command will show the source code of the word in ForthEd. Setting the **INTERACTIVE** and **+XREFS** switches in your control file, and then using the **XREF <name>** and **LOCATE <name>** facilities provides very powerful and quick source management facilities.

Umbilical Forth Serial Comms

When using the Umbilical Forth system you should not use the plug-in “*PowerTerm*” to access the target board. If then terminal is active the live-Forth in the cross-compiler cannot use that serial port to make the umbilical link. **Disconnect PowerTerm when using Umbilical Forth.**

Stand-alone Forths

PowerTerm can be used with all MPE stand-alone Forths.

ROM PowerForth

PowerTerm includes facilities that allow targets built by the MPE Forth6 and VFX cross compilers to compile source code directly from the host PC. These are described fully in the ROM PowerForth manual. Note that the Forth6 target ROMFORTH code is **not** compatible with the code for the earlier XShell front ends.

UP-LOAD (--)

PowerTerm will ask you which file you wish to send, and the file will then be compiled. Note that because this protocol also works with other terminal emulators, the last line in the file **must** include the word **END-UP-LOAD**.

GET <filename> ("<filename>" --)

INCLUDE <filename> ("<filename>" --)

Running these on the target triggers the file server to download source code which is compiled by the target. Files may be nested and require no special terminating condition.

HEX-DOWN (addr len --)

Transmits an intel hex file to the host. PowerTerm can capture this using the logging function.

BIN-DOWN (addr len --)

Triggers the XMODEM receiver in PowerTerm. The name of the file to be created will asked for by PowerTerm.

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