



# Magnetek Material Handling IMPULSE<sup>®</sup>•LINK 4.1 Basic

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## Instruction Manual

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**MAGNETEK**  
MATERIAL HANDLING

March 2013  
Part Number: 140-10350 R6  
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# Warning and Caution

## DISCLAIMER OF WARRANTY

Magnetek's Electromotive Systems, hereafter referred to as Company, assumes no responsibility for improper programming of a drive that resulted from use of this software. This software should only be used by a trained technician who has read and understands the contents of this manual. Normal use of this software may result in the drive parameters becoming modified. Improper programming of a drive can lead to unexpected, undesirable, or unsafe operation or performance of the drive. This may result in damage to equipment or personal injury. Company shall not be liable for economic loss, property damage, or other consequential damages or physical injury sustained by the purchaser or by any third party as a result of the use of this software. Company neither assumes nor authorizes any other person to assume for Company any other liability in connection with the sale or use of this software.

## WARNING

1. Read this user manual in its entirety before installing IMPULSE®•LINK 4.1 Basic or operating the IMPULSE®•G+/VG+ Series 4, IMPULSE®•G+/VG+ Series 3, IMPULSE®•G+/VG+ Series 2, IMPULSE®•G+ Mini, IMPULSE®•P3 Series 2, OmniPulse DDC Variable Frequency Drives (VFD), OmniPulse DSD DC Drive, and/or the MagnePulse™ Digital Magnet Control.
2. DO NOT connect or disconnect wiring, or perform signal checks while the electrical power is turned ON.
3. Improper programming of a drive through the use of this software can lead to unexpected, undesirable, or unsafe operation or performance of the drive.

*Failure to observe these and other precautions indicated in this manual will expose the user to high voltages, resulting in serious injury or death. Damage to equipment may also occur.*

## CAUTION

### NOTICE

No patent liability is assumed with respect to the use of the information contained herein. Moreover, Magnetek is constantly improving its high quality product; therefore, the information contained in this manual is subject to change without notice. Every precaution has been taken in the preparation of this document. Nevertheless, Magnetek assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained in this publication.

# Chapter 1 - Introduction

## Overview

IMPULSE•LINK 4.1 Basic is a user friendly, Windows® based, interactive drive communication software. It is designed for communication from your PC to the following Magnetek's drives:

- IMPULSE®•G+/VG+ Series 4
- IMPULSE®•G+/VG+ Series 3
- IMPULSE®•G+/VG+ Series 2
- IMPULSE®•G+ Mini
- IMPULSE®•P3 Series 2
- OmniPulse DDC
- OmniPulse DSD
- MagnePulse™ Digital Magnet Control (DMC)

The IMPULSE•LINK 4.1 Basic Kit (Part# 157-10028) contains the following components:

1. CD containing IMPULSE•LINK Basic Software.
2. Cable for IMPULSE•G+/VG+ Series 2 Drives.
3. Cable for IMPULSE•G+/VG+ Series 4, Series 3, and G+ Mini Drives.
4. Cable for OMNIPULSE•DDC and DSD Drives.
5. USB-to-Serial converter.

## System Requirements

### Supported Drives

IMPULSE•LINK 4.1 Basic supports the following Magnetek drives:

- IMPULSE®•G+/VG+ Series 4
- IMPULSE®•G+/VG+ Series 3
- IMPULSE®•G+/VG+ Series 2
- IMPULSE®•G+ Mini
- IMPULSE®•P3 Series 2
- OmniPulse DDC
- OmniPulse DSD
- MagnePulse™ Digital Magnet Control (DMC)

### PC Requirements

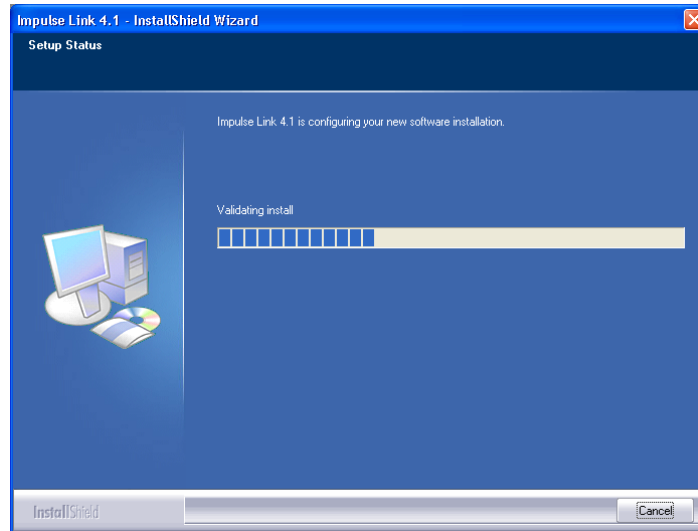
1. Pentium class or equivalent 500MHz processor or better
2. 256 MB RAM or better
3. Minimum of 100 MB free hard-disk space available
4. Windows 98 SE, 2000, XP, Vista, Windows 7, or Windows 8 operating system.
5. Available USB or RS232 port.

# Chapter 2 - Installation

## Software Installation

The IMPULSE•LINK 4.1 Basic CD contains: the IMPULSE•LINK 4.1 Basic Software and the communication profiles for the IMPULSE Drives used in your specific application.

- To run the IMPULSE•LINK 4.1 Basic Setup, put the IMPULSE•LINK 4.1 Basic CD into your CD drive. (Run setup.exe from the CD if it does not start automatically)
- Select the default choices during installation.



## Software Updates

Additional features and bug fixes may be available from time to time. These may be downloaded from the Magnetek Material Handling website at [www.magnetekmh.com/downloads.htm](http://www.magnetekmh.com/downloads.htm).

## Software Removal

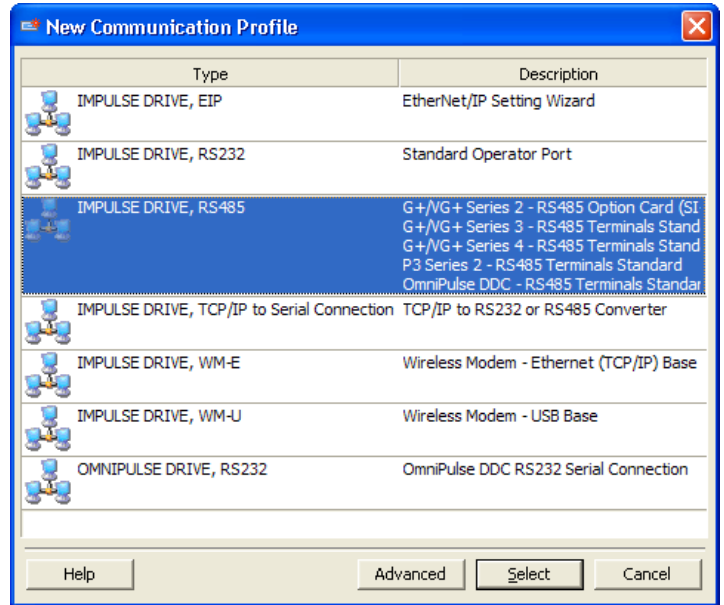
To remove the IMPULSE•LINK 4.1 Basic Drive Interface Software, open the Control Panel's Add/Remove Programs dialog box, double-click the IMPULSE•LINK 4.1 Basic entry and choose Remove All from the IMPULSE•LINK 4.1 Basic Setup dialog box.

## Creating Communication Profiles using the Wizard

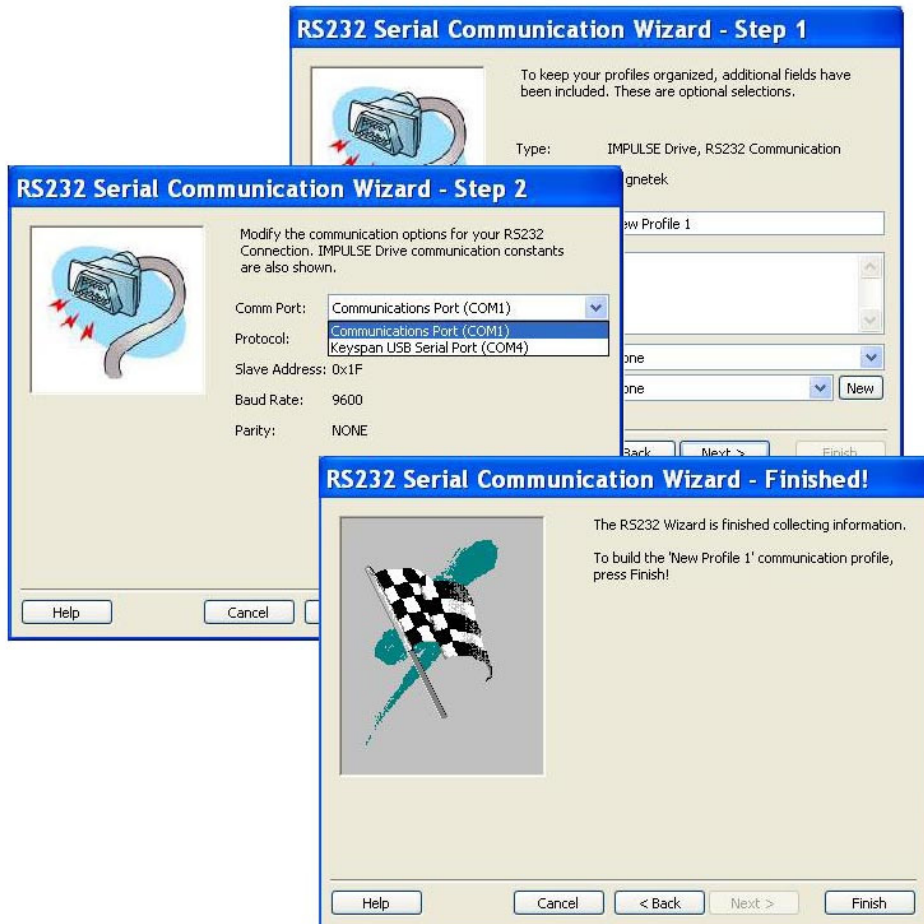
If you need to create a communication profile, there is a wizard to assist you. In the Settings Menu, click “Communication”, and then Right-click on the folder “Communications Profile” and choose “Add Crane Profile”.



Highlight the IMPULSE DRIVE, RS232 for the standard Serial connection, and then click “Select”. The wizard will then take you through the following three steps to set up a new communication profile.



- Step 1: Name, Description, Crane and Motion
- Step 2: Common Port, Protocol, Slave Address, Baud Rate, Parity
- Step 3: Finish



## Chapter 3 - Navigation

The IMPULSE•LINK 4.1 Basic Software is a Windows-based software with easy to use menus and drop-down functions. The user is able to access utilities for uploading/downloading parameters, comparing parameters, saving parameters to a file and more from the easy to navigate toolbar. The main screen allows the user to access more commonly used features at click from the main screen.

**New** – Displays the controller properties dialog to create a new factory default parameter set, based on the drive type, software number, model, and kVA.

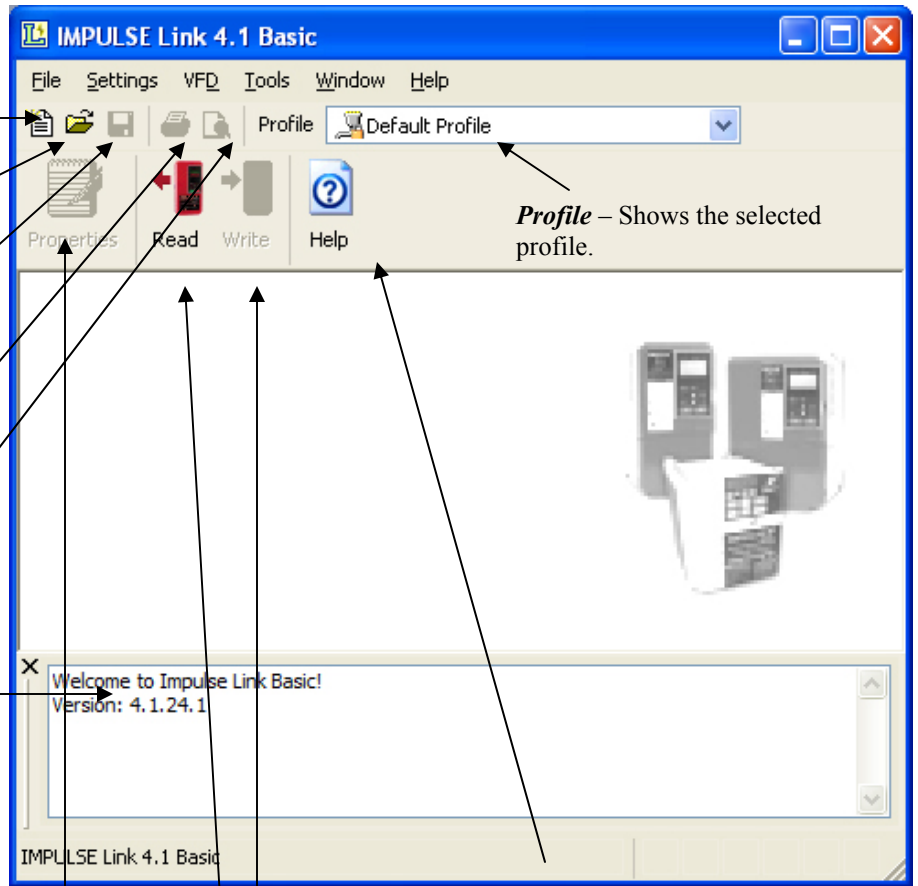
**Open** – Opens or finds a file containing a parameter set for a specific drive type and software number.

**Save** – Saves the active file with its current file name and location.

**Print** – Prints the active parameter set. Select Print options, in the Print window/dialog box.

**Print Preview** – Shows how a file will look when you print it.

**Show Error Log** – shows the status of IMPULSE•LINK 4.1 WDS.



**Profile** – Shows the selected profile.

**IMPULSE LINK Help** – Provides information on communication profile settings and troubleshooting.

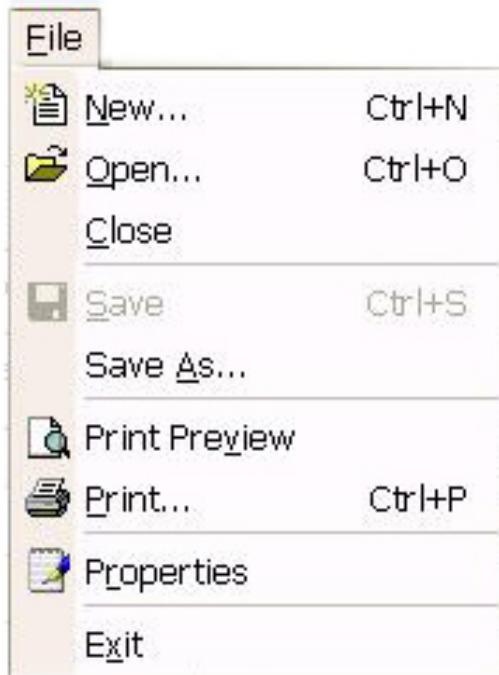
**Write to VFD** - Saves all parameter values from memory to the VFD.

**Read from VFD** - Loads all parameter values from the VFD to memory.

**Properties** – Displays the properties box to view the properties of the active file.



The following gives a brief summary each of the functions that can be accessed from the navigation toolbar.



**New** – Displays the controller properties dialog to create a new factory default parameter set, based on the drive type, software number, model, and kVA.

**Open** – Opens or finds a file containing a parameter set for a specific drive type and software number.

**Save** – Saves the active file with its current file name and location.

**Save As** – Saves the active file with a different file name or location.

**Print Preview** – Shows how a file will look when you print it.

**Print** – Prints the active parameter set. Select Print options, in the Print window/dialog box.

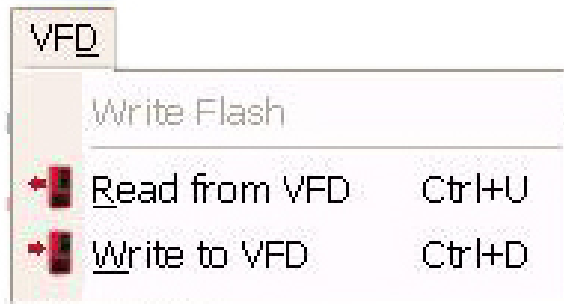
**Properties** – Displays the properties box to view the properties of the active file.

**Exit** – Closes this program after prompting you to save any unsaved files.



**Communication** – Allows communication profiles to be added, removed, edited, copied, imported and exported.

**Preferences** – IMPULSE•LINK 4.1 settings for access level.



**Write Flash** - Allows a binary file to be written to VFD flash memory. (FACTORY USE ONLY)

**Read from VFD** - Loads all parameter values from the VFD to memory.

**Write to VFD** - Saves all parameter values from memory to the VFD.



**Convert** – Allows for parameter files to be converted from one software/Flash ID to another (must be within the same drive serie).

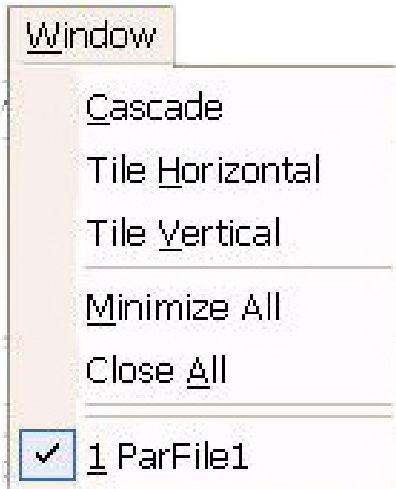
**Compare Parameters** - Allows for comparison of sets of parameter files.

**Communication Test** – performs a communication test with the VFD.

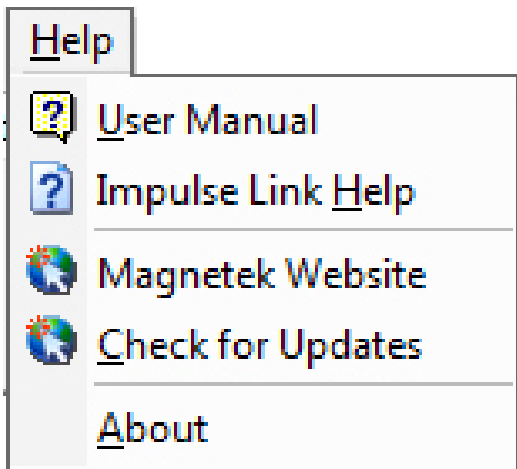
**Monitor** – Displays a select number of monitor parameters (U-parameters), updated continuously.

**Keypad Simulator** – Emulates the keypad and allows for navigating the keypad menu remotely (this is not available unless hardwired to the keypad port).

**Show Error Log** – shows the status of IMPULSE•LINK 4.1.



**Window** - Allows for easy parameter window recall and organization. All open files are enumerated at the bottom of this menu for switching between files more easily.



**Users Manual** – Displays the User Manual. (A .pdf reader, such as Adobe Acrobat Reader, must be installed)

**IMPULSE LINK Help** – Provides information on communication profile settings and troubleshooting, complete Index of VFD fault codes, and a Search function.

**Magnetek Website** – provides a link to the Magnetek Material Handling website.

**Check for Updates** – provides a link to the download software page of the website that offers updates.

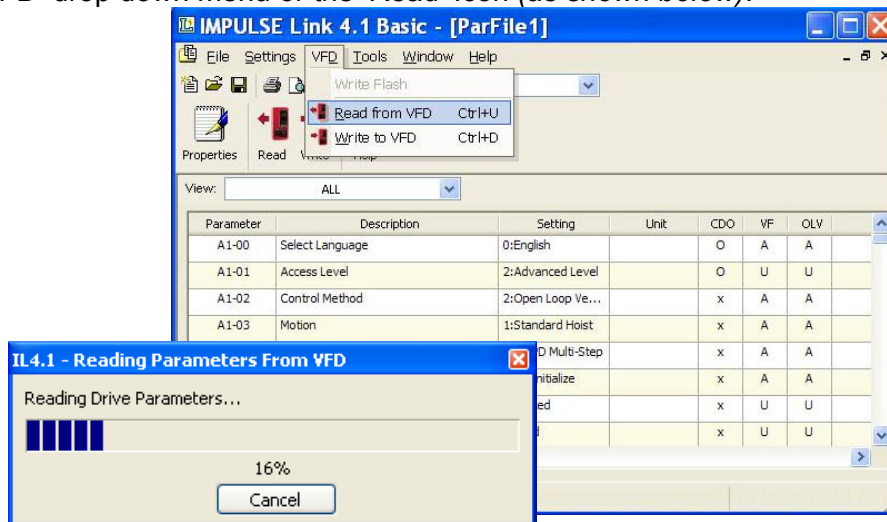
**About** - Displays the version number of this Magnetek product, copyright and legal notices.

# Chapter 4 - Parameter Maintenance

IMPULSE•LINK 4.1 Basic software provides flexibility in programming, uploading, downloading, and saving parameters. With full parameter descriptions and visual programming, modifying parameters from your computer has never been easier.

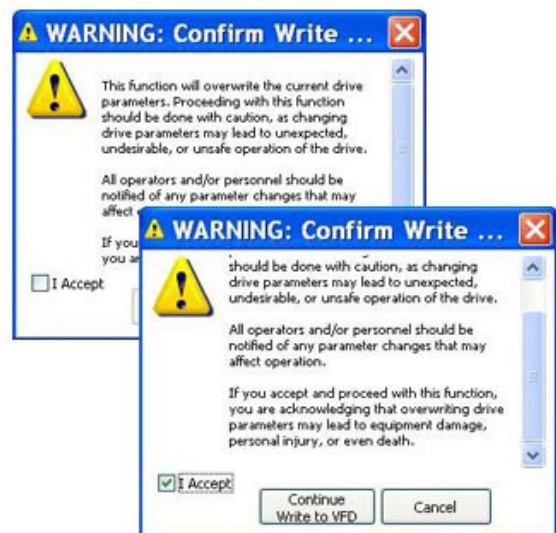
## Read From VFD

This function allows you to load the parameter values from the drive's memory. This can be accomplished through the 'VFD' drop down menu or the 'Read' Icon (as shown below).



## Write to VFD

This function saves all parameter values from memory to the VFD. This can be accomplished via the drop down on the 'VFD' menu or using the 'Write' Icon as shown here. Writing to the VFD may result in undesirable operation of your crane, causing **danger, personal injury or death!** To proceed with the write to VFD function you will need to accept that you acknowledge the warning message as shown here. Once you have checked the *I Accept* button, the *Continue Write to VFD* button will be available.



# Parameter File Display

## Parameter Value Text Color

### Modified Constant

A parameter with **blue** text implies that its value is different than its default setting.

- This list should match the modified constants list in the drive, with the exception of A1 parameters.

### Read-Only

A **grayed-out**, highlighted parameter implies that it cannot be modified.

- The Access Level of the current parameter set is lower than what is needed for this specific parameter (i.e. Changing this parameter from the drive keypad would not be allowed with the current access level.)

### Over Maximum

A parameter with **red** text implies that its value is greater than its maximum. An invalid value in the PAR file could result in this error.

### Under Minimum

A parameter with **green** text implies that its value is less than its minimum. An invalid value in the PAR file could result in this error.

## Modifying Parameters

1. Begin modifying a parameter by double-clicking on the row of the parameter.
2. A drop-down list or edit box will appear in the *Setting* column.
3. Press Enter to accept the change or Escape to cancel.

Parameter	Description	Setting	CD
F5-04	DO Ch4 Select	F:Not Used	x
F5-05	DO Ch5 Select	F:Not Used	x
F5-06	DO Ch6 Select	10:Minor Fault	x
F5-07	DO Ch7 Select	11:Reset Cmd ...	x
F5-08	DO Ch8 Select	12:Timer Output	x
F5-09	DO-08 Selection	13:Fref/Fout A...	x
F6-01	Comm Bus Flt Sel	14:Fref/Set Ag...	x
		15:Freq Detect 3	x
		16:Freq Detect 4	x
		17:Trq Det 1 N.C.	x

### Drop-down List Example.

This is displayed for drive parameters with a finite list of options.

Parameter	Description	Setting	CDO
E1-01	Input Voltage	230	x
E1-03	V/F Selection	1:60 Hz Saturation	x
E1-04	Max Frequency	50.0	x
E1-05	Max Voltage	230.0	x

### Edit Box Example

This is displayed for drive parameters with a numeric range.

### Notes:

1. If a change is made, ENTER is not pressed to accept it, and the user clicks on another row or column, the value will revert back to what it was before the change.
2. If a parameter is changed to an invalid value, under the minimum value or over the maximum value, a warning message will be displayed and the value being edited will revert back to what it was before the change.

## Visual Programming

An additional editing option targeted towards more complicated parameters or parameters with extended settings that require using a table to calculate the value.

Parameters with a Visual Programming option display an icon.

*To Edit:*

1. Left-click once on the Visual Programming icon
2. Click on the appropriate selections.
3. Choose OK to accept the change or Cancel to abort.

Parameter	Description	Setting
H1-01	Terminal S3 Sel	0:Multi-Step Ref 2
H1-02	Terminal S4 Sel	1:Multi-Step Ref 3
H1-03	Terminal S5 Sel	25:External Fault
H1-04	Terminal S6 Sel	FX:Not Used
H1-05	Terminal S7 Sel	FX:Not Used

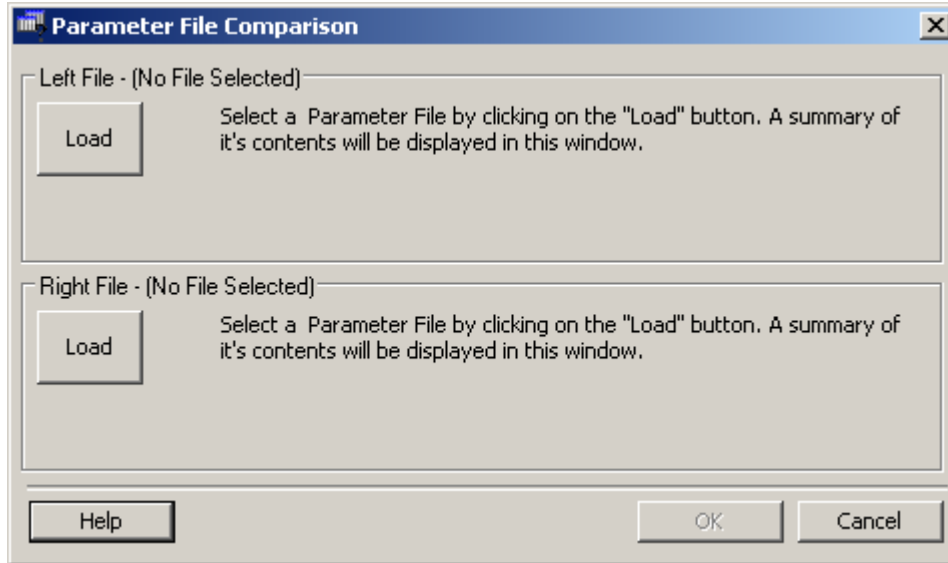
**External Fault Response Selection**

External Fault Selection								Setting Result
Input Level Selection		Detection Method		External Fault Action				
N.O.	N.C.	Always	During Run	Ramp to Stop	Coast to Stop	Fast-Stop*	Alarm Only	
	X	X			X			25

OK Cancel

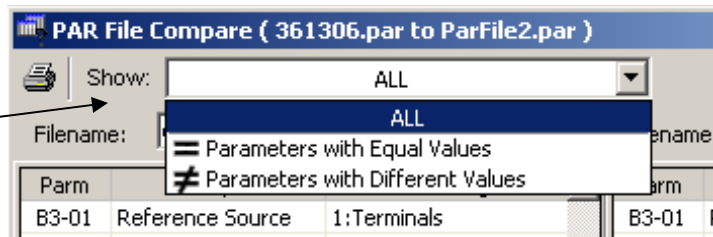
## Parameter File Comparison

The Parameter File Comparison function found in the Tools drop-down menu allows for comparison of two sets of parameter files. Use the Load button to select the file you want to view on the left and right side.



Once the parameter files are loaded, you can use the "Show" drop-down to compare:

- all parameters of each file,
- only parameters with equal values.
- or only parameters with different values,



Parm	Description	Setting	Parm	Description	Setting
B3-01	Reference Source	1:Terminals	B3-01	Reference Source	1:Terminals
B3-02	Run Source	1:Terminals	B3-02	Run Source	1:Terminals
B3-03	Stopping Method	6:No Load Brake	B3-03	Stopping Method	0:Decel to Stop
B3-04	Change Rotation	0:Normal Rotation	B3-04	Change Rotation	0:Normal Rotation
B3-05	Zero-Speed Oper	0:RUN at Freq Ref	B3-05	Zero-Speed Oper	0:RUN at Freq Ref
B3-06	Cntl Input Scans	1:5mS - 2 Scans	B3-06	Cntl Input Scans	1:5mS - 2 Scans
B3-07	LOC/REM RUN Sel	0:Cycle Extrn RUN	B3-07	LOC/REM RUN Sel	0:Cycle Extrn RUN
B3-08	RUN CMD at PRG	0:Disabled	B3-08	RUN CMD at PRG	0:Disabled
B3-09	L/R Select@Drive	0:Disabled	B3-09	L/R Select@Drive	0:Disabled
B3-10	AllowRun@Powerup	0:Disabled	B3-10	AllowRun@Powerup	0:Disabled
B4-01	MOP Ref Memory	0:Disabled	B4-01	MOP Ref Memory	0:Disabled
B4-02	Trim Control Lvl	10	B4-02	Trim Control Lvl	10
B5-01	Accel Time 1	5.0	B5-01	Accel Time 1	10.0
B5-02	Decel Time 1	10.0	B5-02	Decel Time 1	10.0
B5-03	Accel Time 2	2.0	B5-03	Accel Time 2	2.0
B5-04	Decel Time 2	2.0	B5-04	Decel Time 2	2.0
B5-05	Acc Time N Chg	2.0	B5-05	Acc Time N Chg	2.0
B5-06	Dec Time N Chg	2.0	B5-06	Dec Time N Chg	2.0
B5-08	Fast Stop Time	0.5	B5-08	Fast Stop Time	0.5
B5-09	Acc/Dec Units	1:0.1 Seconds	B5-09	Acc/Dec Units	1:0.1 Seconds

Parameters shown in **Red** are parameters with different values.

## Security / Password Protection

The 'Preferences' drop-down menu in IMPULSE•LINK 4.1 Basic software allows you to set the access level, username and password.

By logging out of the *Advanced* mode, you will be in the User mode. While in the User mode, the drives can only be monitored. Write to VFD and Reset functions are NOT available.

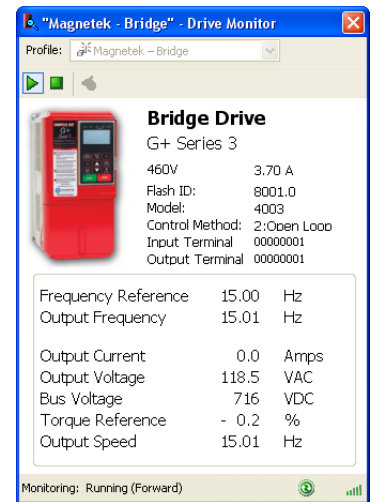
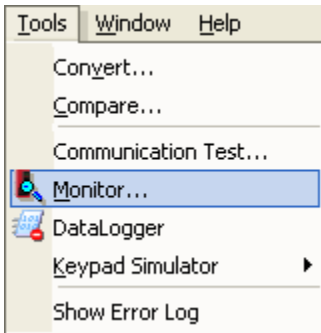
The screenshot shows a window titled "Preferences" for "Impulse Link 4.1 Access Level". The window is divided into two main sections. The top section is labeled "ADVANCED" and contains two buttons: "Log In" and "Log Out". The bottom section is titled "Advanced Level Setup (Password Enabled)" and contains four input fields: "Username:" (empty), "Password:" (with the placeholder text "(Enter Current Password)"), "New Username:" (with the placeholder text "(Choose a New Username)"), and "New Password:" (with the placeholder text "(Choose a New Password)"). To the right of these fields is a "Save" button. At the bottom right of the window is an "OK" button.



# Chapter 5 - Monitor Function

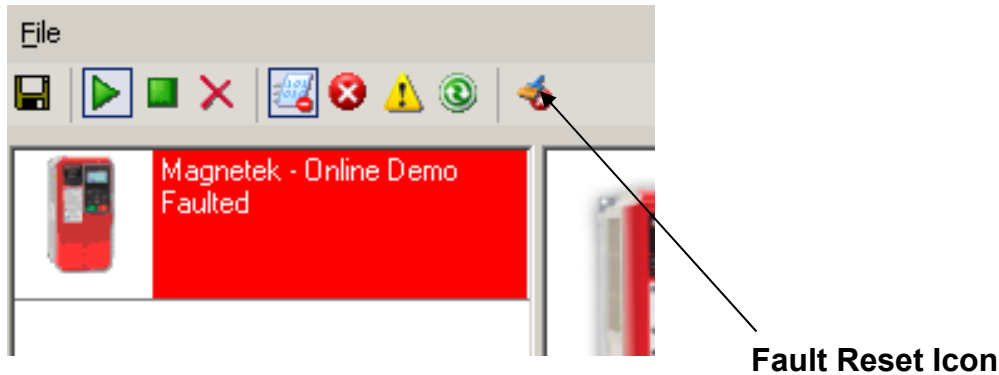
## Monitor

There is a 'Monitor' function in the 'Tools' drop-down, which displays a select number of monitor parameters (U-parameters) that are continually updated.

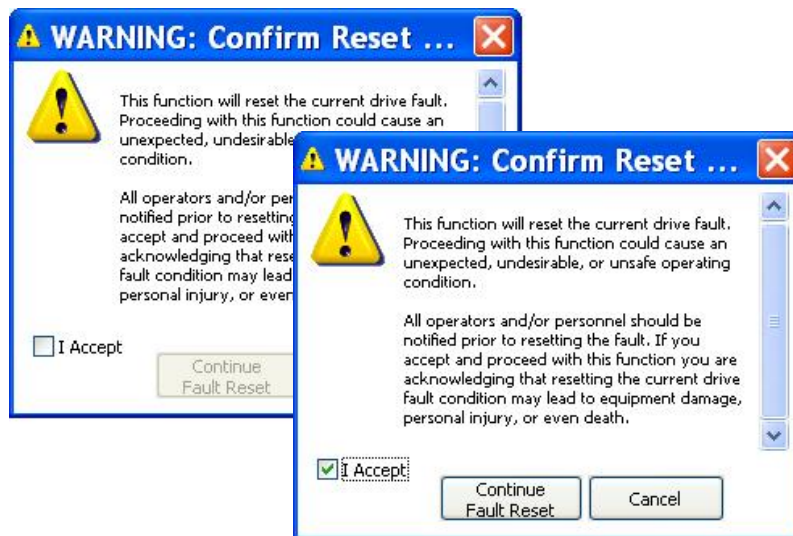


## Fault Reset

In the event of a fault condition, you will see the fault icon on either the DataLogger window or the Monitor window as indicated below.



*NOTE: You can reset a fault in the Monitor window as long as the drive doesn't have a Run command and the fault condition no longer exists. Once you click on the fault reset icon (as shown above), a warning message will prompt you to accept that you acknowledge the warning. When resetting a drive remotely, you need to be sure that all personnel and/or operators are notified. Once you have checked the "I accept" box, the "Continue Fault Reset" button will be available.*

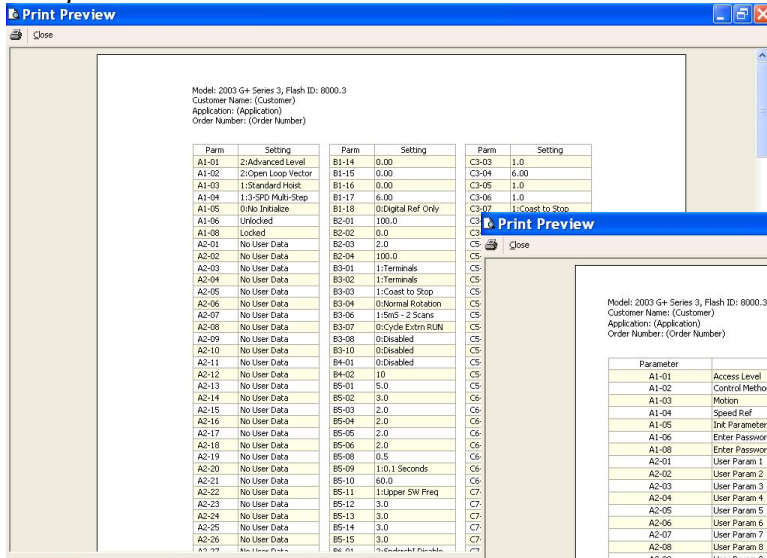


# Chapter 6 - Additional Menu Features

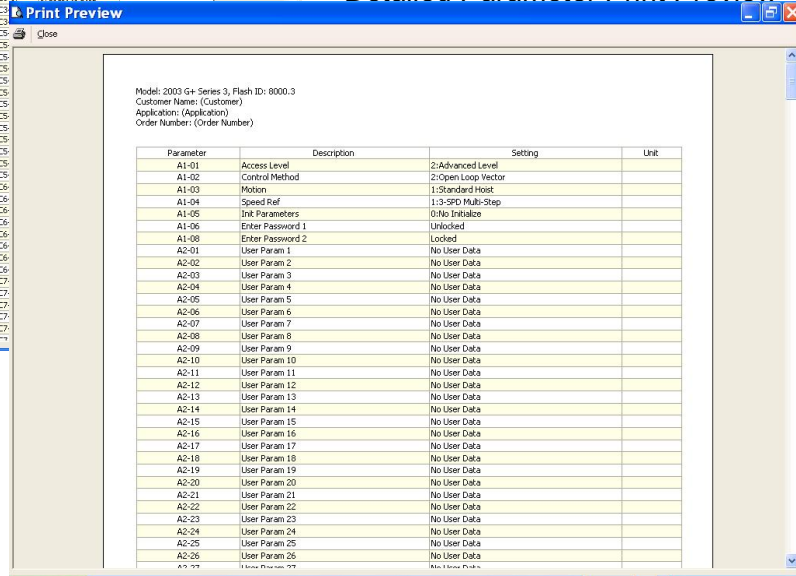
## Print Preview

IMPULSE•LINK 4.1 Basic provides a compact printing mode that displays all drive parameters in only 1-2 pages. It also prints a more detailed mode that lists descriptions as well as units for each parameter.

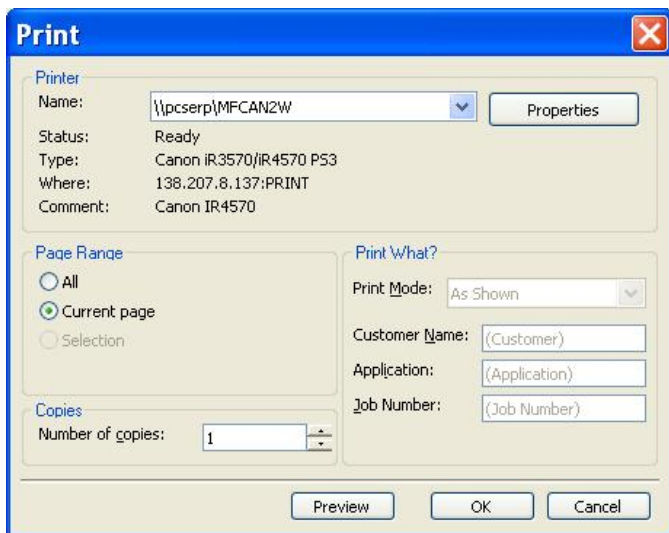
### Compact Parameter Print Preview



### Detailed Parameter Print Preview



## Print



**Printer Name** – Allows the user to select from any printer installed on his/her system. The user's default printer is initially selected.

- Print Mode** - Allows the user to choose the printing style.
- o **Compact** mode (1-2 pages) provides parameter name and setting value.
  - o **Detailed** mode provides parameters, descriptions, setting, values and units as well as 'modified' information.
  - o **As shown** prints all of the information as shown on the screen.

**OK Button** – Prints the active parameter set to the selected printer in the chosen format.

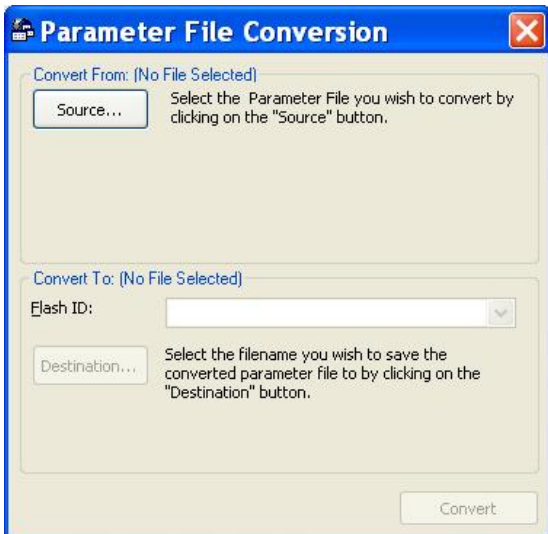
**Cancel** – Closes this dialog box without printing. Changes to Customer Name, Application and Job Number are **not** saved.

*Text placed in the Customer Name, Application and Job Number fields appear on the printout.*

**NOTE:** Only parameters that are viewable in the Parameters Window will be printed.

## Parameter File Conversion

'Convert' under the 'Tools' menu allows for parameter files to be converted from one software/Flash ID version to another (within the same drive series).



**Source** – Specifies the file to be converted.

**Flash ID** – Specifies the software type that the file will be converted to.

**Destination Filename** – Specifies the Destination filename.

**Convert** - Converts the parameter file specified in "Source" to the format specified in the software version in the Flash ID. The converted file is saved to the filename and path specified in "Destination Filename".



**Keypad Emulator** – The keypad emulator communicates with an IMPULSE drive exactly as the physical keypad does. This allows for remote keypad menu navigation.

**Note:** This function is only available when IMPULSE•LINK 4.1 WDS is connected via the drive's keypad 1CN connector (instead of the standard RS485 connection) – primarily for training purposes.

If you attempt to run the keypad simulator while connected via the standard RS485 connection a CF00 Comm Error will occur.



### Digital Operator Emulator NOTES:

1. To activate, select the correct drive profile from the dropdown and click the ► button.
2. The Keypad will automatically close if any communication function, such as Upload and Download, or a new offline parameter set is created from the Controller Properties window.
3. The RUN command has been disabled for safety reasons.
4. If the drive is put into "Program Mode" and not returned to "Run Mode", the user will be unable to run the drive.

## Viewing Parameters

The 'View' drop-down box allows filtering of parameters based on parameter group organization and the parameter value (modified from factory defaults or from custom defaults).



## Copying to the Clipboard

Impulse Link 4.1 provides the ability to copy displayed parameter information to a preferred word processor or spreadsheet.

To do this, select one or more rows and either press Ctrl-C or right-click to display the context menu, shown to the right. The copied information is available to be pasted in either HTML format or Ascii text.

**Tip:** Change from full row selection mode to single cell selection mode by doing the following.

1. Click and hold the left mouse button over any row.
2. Drag the mouse down while the left-mouse button is still being held. An icon will replace your mouse pointer
3. While still holding the left mouse button, click the right mouse button. The icon will become skinnier and you will no longer be restricted to selecting the whole row.



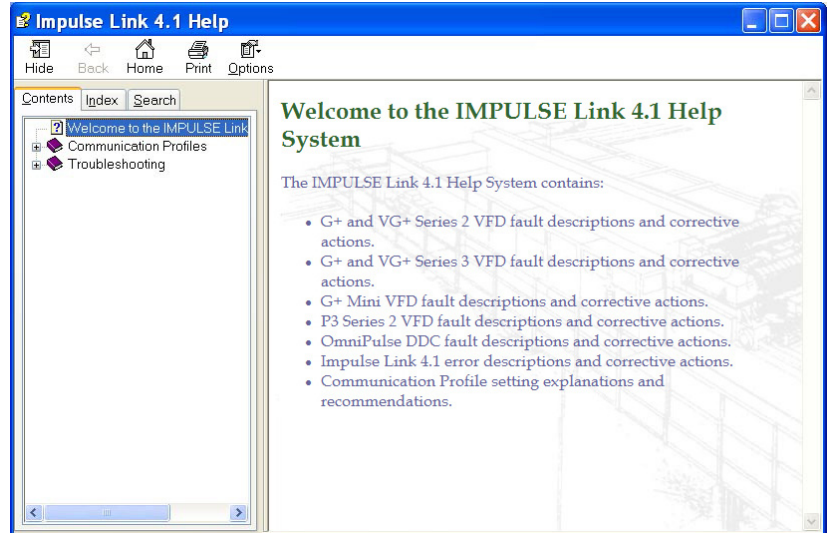
Repeat to return to full row mode.



# Chapter 7 - Troubleshooting

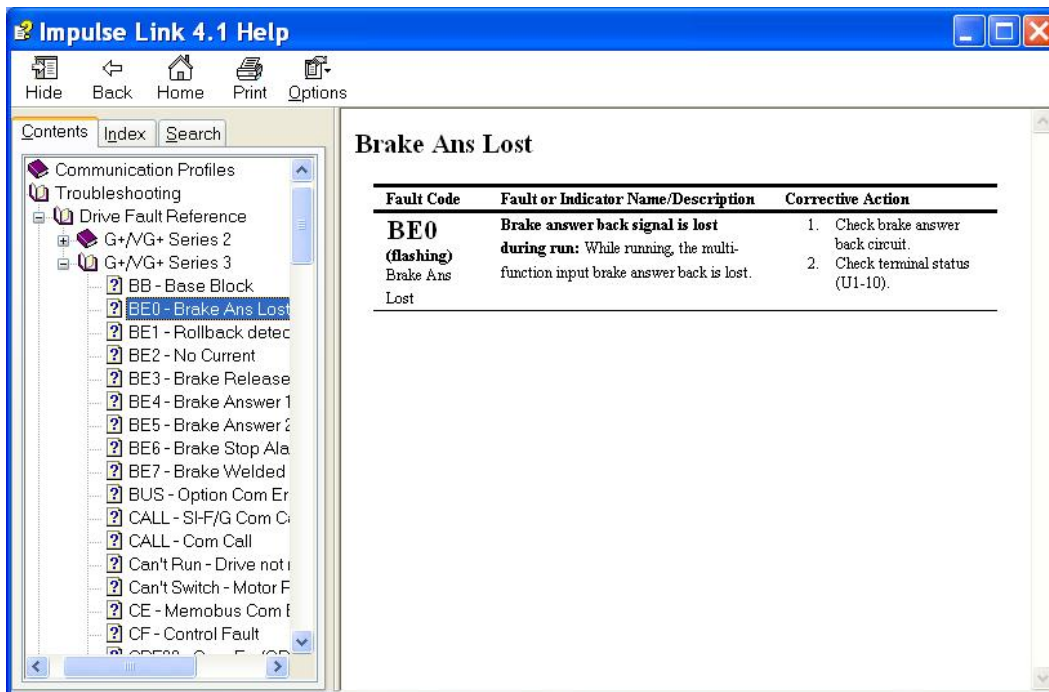
The IMPULSE•LINK 4.1 Basic Help section provides the following:

- Reference to Drive faults and corrective actions.
- Reference to Impulse Link error codes and corrective actions.
- Communication profile settings overview.



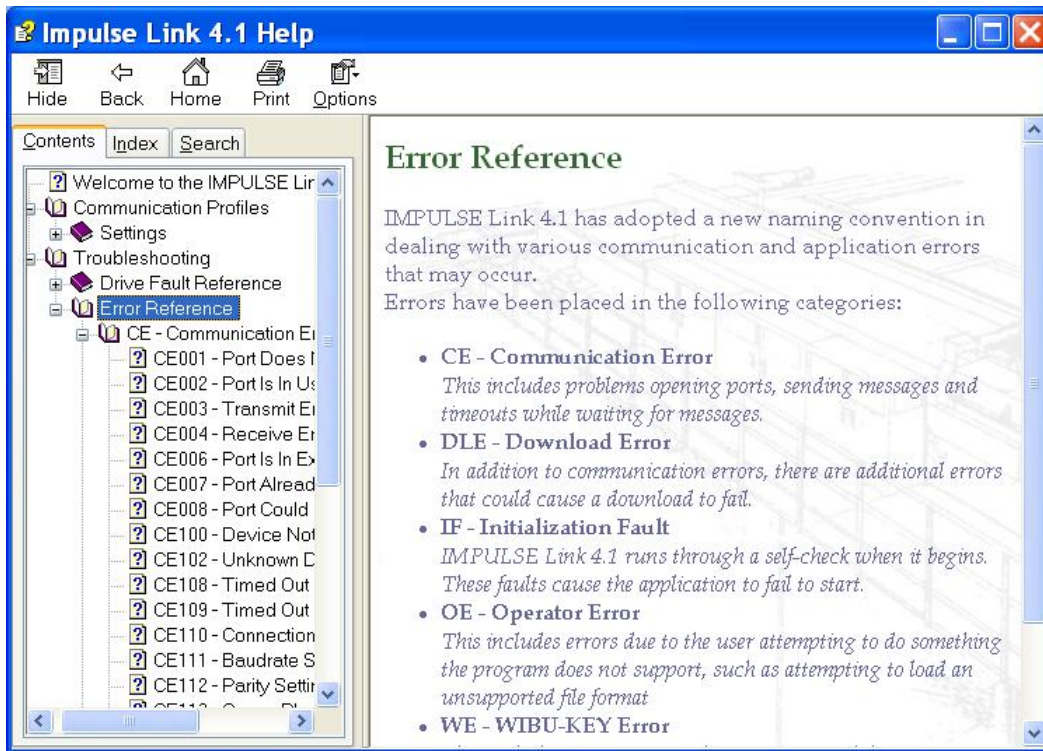
## Drive Faults References

IMPULSE•LINK 4.1 Basic offers built-in Help screens for the drive faults and/or alarms. The Help screens provide advanced diagnostics allowing you to troubleshoot your drive from your PC. Click the Help Icon and go to the Drive Fault References for a complete list of drive faults, as shown below:

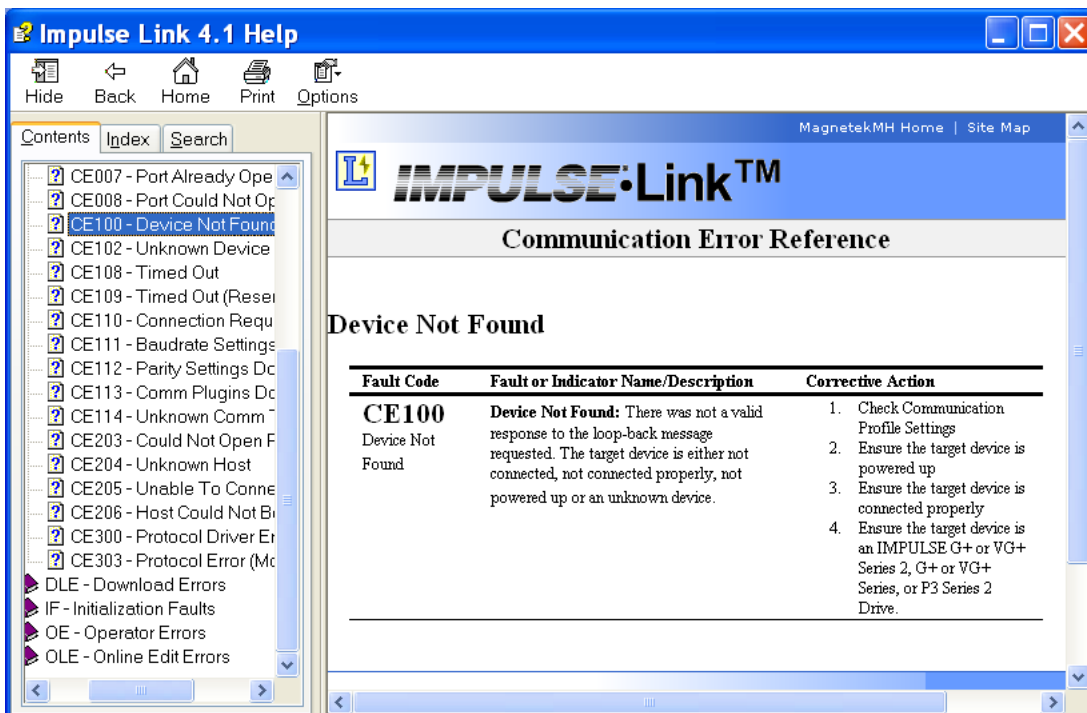


## Communication Error References

The Help function provides an overview of the possible errors that could occur while running IMPULSE• LINK 4.1 Basic, as shown here:



By clicking on the type of error, you will be provided the fault code with description and correction action.

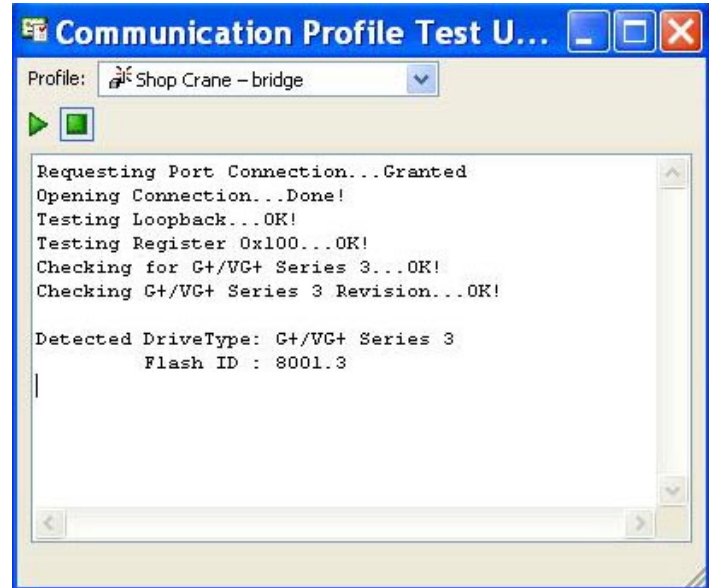


## Communication Profile Test

The Communication Profile Test Utility is a tool to assist in troubleshooting communication difficulties. It performs the following sequence:

1. Opens the communication port with the selected settings. If the port opens successfully, the port exists and Impulse Link has access to it.
2. Sends a loop-back test message to establish whether a valid device exists with the settings in the profile. If the loop-back fails, the device may not be powered, present or supported.
3. Identifies the drive model and version. If the discovered type is unknown, Impulse Link does not support it.

**Note:** If any of the above steps fail, an error message is prompted to the user with an error code (i.e. CE100). For further troubleshooting reference the error code in the help section.



## Show Error Log

This function also found in the Tools drop-down menu, brings up an additional window showing various status details of IMPULSE•LINK 4.1 Basic.

