BLACK BOX®

NETWORK SERVICES

Network Management Software

User Manual

Version 1.6

www.blackbox.com

FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to be cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numéirques de las classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedelstales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra or superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u ostros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    A: El cable de poder o el contacto ha sido dañado; u
    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o
    C: El aparato ha sido expuesto a la lluvia; o
    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    E: El aparto ha sido tirado o su cubierta ha sido dañada.

- Jabber - The number of packets received by a port with a length greater than 1522 bytes and have either a FCS or an alignment error.
- Alignment - The number of packets received by a port with a length between 64 and 1522 bytes, and have a bad FCS with a non-integral number of bytes.

Technical Support Contact Information

If you encounter problems in installing or operating this product, contact Black Box Technical Support. In order for Black Box Technical Support to best assist you, please make sure you have the following information when calling Black Box's Technical Support :

- *Management Software* version number.
- Version of software on the management card.
- Management station hardware specifications (RAM, operating system, and CPU).

Phone: (724) 746-5500

Fax: (724) 746-0746

Address: Black Box Network Services
        1000 Park Drive
        Lawrence, PA 15055-1018

Email: info@blackbox.com
URL: www.blackbox.com

Contents

- ✔ Received (Rx) Errored Packets

  - ▪ Error - The total number of Alignment Error, FCS Error, Fragments, Oversized and Jabber packets received by a port.

  - ▪ Dropped - The number of good packets dropped due to lack of resources during reception by a port.

  - ▪ FCS - The number of packets received by a port with a length between 64 and 1522 bytes that have a bad FCS with an integral number of bytes.

  - ▪ Pause - The number of PAUSE frames received by a port.

  - ▪ Symbol - The number a valid length packet was received by a port and at least one invalid data symbol was detected.

  - ▪ CRC Align - The total number of packets received by a port with CRC and alignment errors.

- ✔ Transmitted (Tx) Collisions

  - ▪ Total - The number of collisions experienced by a port during packet transmissions.

  - ▪ Single - The number of packets successfully transmitted by a port that experienced exactly one collision.

  - ▪ Multiple - The number of packets successfully transmitted by a port that experienced multiple collisions.

  - ▪ Late - The number of times that a collision is detected later than 512 bit-times into the transmission.

  - ▪ Excessive - The number of packets not transmitted by a port because the packet experienced 16 transmission attempts.

- ✔ Received (Rx) Size Errors

  - ▪ Undersized - The number of good packets received by a port with a length less than 64 bytes.

  - ▪ Oversized - The number of good packets received by a port with a length greater than 1522 bytes.

  - ▪ Fragments - The number of packets received by a port with a length less than 64 bytes and have either a FCS or an alignment error.

Appendix B

DFCS MIB Statistics Data Display

This section displays SNMP MIB data collected for the following statistics.

- ✔ Transmitted (Tx) Good Packet
  - Total Octets - The total number of good bytes of data transmitted by a port.
  - Good Packets - The total number of Unicast, Multicast and Broadcast packets transmitted by a port.
  - Unicast - The number of Unicast packets transmitted by a port.
  - Multicast - The number of Multicast packets transmitted by a port.
  - Broadcast - The number of Broadcast packets transmitted by a port.

- ✔ Received (Rx) Good Packets
  - Total Octets - The number of good bytes of data received by a port.
  - Good Packets - The total number of Unicast, Multicast and Broadcast packets received by a port.
  - Total Packets - The total number of Good and Error packets received by a port.
  - Unicast - The number of Unicast packets received by a port.
  - Multicast - The number of Multicast packets received by a port.
  - Broadcast - The number of Broadcast packets received by a port.

- ✔ Transmitted (Tx) Errored Packet
  - Error - The total number of Excessive Collision and Late Collision packets transmitted by a port.
  - Dropped - The number of packets dropped due to lack of resources during transmission by a port.
  - Bad Events - The total number of Dropped Transmitted and Dropped Received packets on a port.
  - Pause - The number of PAUSE frames transmitted by a port.
  - Deferred - The number of packets transmitted by a port for which the first transmission attempt was delayed because the medium was busy.

Management Software **Overview and Installation**

General Description

Black Box's *Management Software* is a general purpose SNMP-based graphical network management program. It was designed to operate stand-alone under Microsoft Windows 9X/ME/XP/NT/2K as well as under popular network management environments such as HP OpenView™.

The *Management Software* provides an efficient, user-friendly way to configure and manage devices installed on a single network or on a series of networks. It provides an intuitive graphical display of each managed device along with the device's real-time status information.

The *Management Software* is capable of monitoring device operation and parameters, setting programmable parameters, and monitoring and logging exceptional events via trap management and alarms.

This User Manual describes the *Management Software*'s management of the *DFCS* family of media converters.

The *DFCS* family of media converters is designed to convert between different media types such as copper to fiber, single-mode to multimode fiber, or between different protocols such as Ethernet (10 Mbps), Fast Ethernet (100 Mbps), and Gigabit Ethernet (1000 Mbps).

Management of the *DFCS* products is accomplished via a SNMP and Telnet Management Module (MGT) that interfaces to the networking hardware and is controlled by the *Management Software* (or other network management software) via the Simple Network Management Protocol (SNMP) or Telnet.

Connected through the backplane to the modules in the chassis, the MGT reports the status and configuration of individual boards. The network administrator can view this status and configuration and change the device configuration through the *Management Software*'s SNMP commands.

Dynamic Fiber Conversion System Overview

The *DFCS* family is an In-Band or Out-of-Band SNMP-managed media converter family. Supporting 10, 100, 10/100, Gigabit Ethernet, T1, E1, OC-3 and OC-12 technologies, the *DFCS* family is suitable for LAN and MAN networks where copper to fiber, multimode fiber to single-mode fiber, or dual fiber to single-fiber conversions are required.

All *DFCS* modules are hot-swappable and support four mounting options. They can be mounted in a 19-Module (2U, 3.5 inch high) or 5-Module (1U, 1.75 inch high) rack-mountable chassis (19-inch or 23-inch) with any combination of redundant AC and 48VDC power supplies. They can also be mounted in a 2-Module AC or 48VDC powered chassis or in a 1-Module AC powered chassis.

SNMP Management of the *DFCS*

Management is accomplished by using an optional SNMP and Telnet Management Module (MGT), which is capable of managing 16 chassis using a single IP address. The MGT can be accessed via Telnet or by using Black Box's SNMP-based *Management Software* or other SNMP-based software package.

The intuitive *Management Software* provides network administrators with real-time detailed port and module information as well as parameter configuration and event monitoring. The *Management Software* can be used as a stand-alone application under Windows 9X/ME/XP/NT/2K or integrated with applications such as HP OpenView.

Using *Management Software*, the user can configure switch-selectable static parameters. The configurable parameters on various *DFCS* modules include Link Propagate (Link Loss Carry Forward), Link Segment, Remote Fault Detection, and Symmetrical Fault Detection. By using the software management system, these parameters can be configured to override the module's physical switch settings.

Fixed module parameters that can be monitored include the module type and model, manufacturing information, hardware and software revisions and serial numbers. Dynamic real-time parameters that can be monitored include link and data receive/transmit transfer status as well as voltage, current and temperature for each power supply.

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 6
Change Traphost Address 1: 255.255.255.255
```

Backspace over the existing value, type the new value (in x.x.x.x format), and press <ENTER>.

To enter the IP addresses of additional trap-receiving management stations, repeat this process for Traphost Addresses 2-8.

To save the new values, press *0* to return to the Management Options menu, then press *6* to Save MGT Preference Changes.

MGT Agent Firmware Update

Updating the MGT Firmware allows administrators to upgrade the firmware within the management module and take advantage of new features.

To update the MGT Firmware, type *10* at the Management Options menu. The MGT will display the following:

```
Enter Choice, Help(h), Exit(x) > 10
UPDATE: Are you sure? [Y/N] > Y

Please Xmodem file now:
```

From your terminal program, use the Xmodem protocol to send the new **DFCS.xxx** file to the MGT (xxx represents the release level of the firmware).

Once the file transfer begins, the data will upload to the MGT. The process will take about four minutes over a serial connection.

When the upload is complete, the MGT will display:

```
File received correctly
Flash Server: Decoding Program File
Flash Server: Program Decoded
Flash Server: Checking Program Address Range
Flash Server: Program Range ok
Flash Server: Erasing Flash
Flash Server: Flash Erased
Flash Server: Programming Flash
Flash Server: Flash Programmed
Flash Server: Verifying Flash Program
Flash Server: Flash Program Verified
Flash Server: REBOOTING MGT TO LOAD NEW PROGRAM!!*
```

The MGT will then restart using the new agent software.

```
1:   sysName (also Chassis Name)        MGT
2:   sysContact                         Black Box (724) 746-5500
3:   sysLocation                        Lawrence, PA USA
4:   Read Community Name                public
5:   Write Community Name               public
6:   Traphost Address 1                 255.255.255.255
7:   Traphost Address 2                 255.255.255.255
8:   Traphost Address 3                 255.255.255.255
9:   Traphost Address 4                 255.255.255.255
10:  Traphost Address 5                 255.255.255.255
11:  Traphost Address 6                 255.255.255.255
12:  Traphost Address 7                 255.255.255.255
13:  Traphost Address 8                 255.255.255.255
14:  Restore SNMP Configuration Defaults

Enter Choice, Management Options Screen(0), Help(h), Exit(x) >
```

Setting the SNMP Read and Write Community Names

The SNMP Read Community Name is necessary for reading data from the MGT. The name can be any 1-31 character alphanumeric string.

To set the SNMP Read Community Name, type *4* at the SNMP Preferences Screen.

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 4
Change Read Community Name: public
```

Backspace over the existing value, type the new value, and press *<ENTER>*.

The SNMP Write Community Name is necessary for writing data to the MGT. The name can be any 1-31 character alphanumeric string.

To set the SNMP Write Community Name, type *5* at the SNMP Preferences Screen.

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 5
Change Write Community Name: public
```

Backspace over the existing value, type the new value, and press *<ENTER>*.

To save the new values, press *0* to return to the Management Options menu, then press *6* to Save MGT Preference Changes.

Setting the SNMP Trap IP Addresses

SNMP traps are used to report events that occur during the operation of a network that require the attention of the network administrator. The MGT is capable of sending SNMP traps to up to eight different SNMP management stations.

To enter the IP address of the first trap monitoring station, type *6* at the SNMP Preferences Screen.

By using SNMP, the *Management Software* is capable of monitoring and reporting events and alarms. Some of the events that can be monitored include module or chassis insertion/removal, link up/link down, power supply out of voltage or temperature range. All these events can selectively be enabled or disabled to cause SNMP traps and alert the network administrator.

Stand-Alone Windows 9X/ME/XP/NT/2K Installation
System Requirements

- IBM or compatible PC with 500MHz CPU or better
- Microsoft Windows 9X/ME/XP/NT/2K (workstation or server)
- CD-ROM
- Ethernet Network Interface Card
- 64MB RAM
- 30MB hard drive space
- SVGA monitor with 800x600 resolution (1280x1024 recommended)
- Windows compatible mouse

Windows 9X/ME Installation

1. Run the batch file **install9x.bat** on the CD-ROM to automatically copy the necessary files to c:\DFCS.

2. In the c:\DFCS\bin directory on your hard drive is a batch file called **DFCS.bat**. Create a shortcut to this file in a convenient location, such as the desktop.

Windows NT/2K/XP Installation

1. You must first install SNMP services for your operating system. Refer to your operating system documentation or search for "SNMP service" under Windows Help for additional information.

2. Run the batch file **installnt.bat** on the CD-ROM to automatically copy the necessary files to c:\DFCS.

3. If using HP OpenView, use the **DFCS.reg** file to register *Management Software* with HP OpenView.

4. In the c:\DFCS\bin directory on your hard drive is a batch file called **DFCS.bat**. Create a shortcut to this file in a convenient location, such as the desktop.

DFCS **Chassis Cascading**

The *DFCS* 2-Module, 5-Module and 19-Module Power Chassis have the ability to communicate directly with other *DFCS* 2-Module, 5-Module and 19-Module Power Chassis via the pair of multi-chassis management ports located on the front of the SNMP or Telnet Management Module (MGT). This gives administrators the ability to communicate with up to 16 chassis using a single IP address.

If desired, separate IP addresses may be assigned to each cascaded MGT, thus controlling the multiple chassis as a group and at the same time providing redundancy in case of failure of the main MGT or its connection to the managing workstation.

Cascading two or more 2-Module, 5-Module or 19-Module Power Chassis

1. Locate the Management Link Cable (model number LMC3001A). This cable will be used to link each pair of chassis by connecting their MGT modules together.

2. Plug one end of the management link cable into the MGT connector at the front of the unit.

3. Plug the other end of the management link cable into the connector at front of next MGT unit.

4. Repeat steps 1-3 until all of the MGT units have been cascaded together. Up to 16 chassis may be cascaded together using this method.

5. When using a multi-chassis configuration, each chassis must have a unique chassis number. Refer to Appendix A for instructions on assigning a unique chassis number to each Management Module.

To set the Chassis Name, or sysName, press *5* at the IP Address and Control Preferences screen:

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 5
Change Chassis Name: <1-31 character alphanumeric>
```

To save the new values, press *0* to return to the Management Options menu, then press *6* to Save MGT Preference Changes.

Setting MGT Passwords

The MGT is shipped from the factory with no password protection. It is highly recommended that the network administrator set a new password in order to prevent unauthorized access to the unit.

To set the password for telnet access, type *9* at the IP Address and Control Preferences screen:

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 9
Enter New Telnet Password > <password>
Please enter again to verify > <password>
```

To set the password for ftp access, type *10* at the IP Address and Control Preferences screen:

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 10
Enter New FTP Password > <password>
Please enter again to verify > <password>
```

To set the password for serial access, type *11* at the IP Address and Control Preferences screen:

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 11
Enter New Serial Password > <password>
Please enter again to verify > <password>
```

To save the new values, press *0* to return to the Management Options menu, then press *6* to Save MGT Preference Changes.

SNMP Preferences

Because the MGT uses SNMP-based management, the SNMP Preferences must be properly set for full functionality.

To set the MGT's SNMP preferences, press *4* from the Management Options menu. The following menu should appear:

```
SNMP Preferences Screen   DFCS, Serial Agent v1.6

Chassis Number = 1
```

Setting IP Parameters

To configure the IP address of the MGT, press *1* at the IP Address and Control Preferences screen:

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 1
Change IP: 192.168.1.220
```

Backspace over the existing value, type the new value (in x.x.x.x format), and press <ENTER>.

To configure the subnet mask of the MGT, press *2* at the IP Address and Control Preferences screen:

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 2
Change Subnet: 255.255.255.0
```

Backspace over the existing value, type the new value (in x.x.x.x format), and press <ENTER>.

To configure the gateway of the MGT, press *3* at the IP Address and Control Preferences screen:

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 3
Change Gateway: 192.168.1.1
```

Backspace over the existing value, type the new value (in x.x.x.x format), and press <ENTER>.

To save the new values, press *0* to return to the Management Options menu, then press *6* to Save MGT Preference Changes.

Figure 1. DFCS 19-Module Power Chassis in a cascaded configuration

Setting the Chassis Number and Name

In a multi-chassis configuration, each chassis must be assigned a unique number. In this configuration, multiple chassis are cascaded together and are monitored and controlled from a single MGT IP address. The numbers must be in the range 1 to 16, where 1 is the "master" MGT. In a single-chassis configuration, set this entry to 1.

The Chassis Name, or sysName, allows the network manager to identify the MGT by a common name. The name can be any 1-31 character alphanumeric string.

To set the Chassis Number, press *4* at the IP Address and Control Preferences screen:

```
Enter Choice, Management Options Screen(0), Help(h), Exit(x) > 4
Change Chassis Number: <1-16>
```
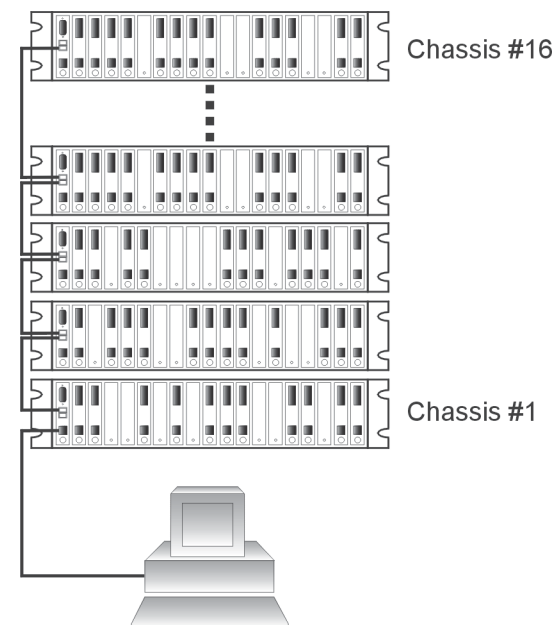
Running *Management Software*

Overview

When viewing, monitoring or controlling any managed unit under *Management Software*, the user will encounter the following screen types:

Introduction
IP Selection
Preferences
Chassis View
Cluster Parameters
Trap Log
Module Details

Introduction

The Introduction screen provides the version number and Black Box's technical support contact information.

IP Selection

The IP Selection window provides the means to select, add, modify, and/or delete IP addresses of the MGTs and their respective chassis and modules that are to be managed.

Preferences

The Preferences window allows users to set specific parameters for communication between *Management Software* and their *DFCS* chassis.

Chassis View

The Chassis View window provides a graphical view of the monitored chassis and converter modules. It shows a representation of the unit and displays the active LEDs on the unit. Sixteen buttons at the bottom of the screen provide chassis selection for cascaded chassis groups.

Clicking on one of the Module Selector buttons brings up the Module Details window for that individual Slide-in-Module.

Cluster Parameters

The Cluster Parameters window displays all the essential system parameters which are collected from the controlling the MGT. The parameters include Systems Name, Location, Description, Object ID and Up Time. Other

Type the password and hit *<ENTER>*. The MGT should respond with the Management Options menu. If there is no password, the MGT will skip the above message and go straight to the Management Options menu.

```
Management Options     DFCS, Serial Agent v1.6

Network Management
1:  Chassis and Module Management
2:  Set Module Name

MGT Preferences
3:  IP and Control Preferences
4:  SNMP Preferences
5:  Abandon MGT Preference Changes
6:  Save MGT Preference Changes
7:  Restore Factory Defaults
8:  Restart MGT
9:  Other Networking Features

MGT Maintenance
10: Firmware Update

IP Address     = 192.168.1.220
Chassis Number = 1

Enter Choice, Help(h), Exit(x) >
```

IP and Control Preferences

An IP address is required for the SNMP manager to address the MGT. Its initial factory setting is 192.168.1.220. To configure the IP address and control parameters, press *3* from the Management Options menu. The following menu should appear:

```
IP and Control Preferences Screen DFCS, Serial Agent v1.6

1:  Set MGT IP                        192.168.1.220
2:  Set MGT Subnet Mask               255.255.255.0
3:  Set Gateway                       192.168.1.1
4:  Chassis Number                    1
5:  Chassis Name (also sysName)       MGT

6:  Enable/Disable Telnet             Enabled
7:  Enable/Disable FTP                Enabled
8:  Enable/Disable Soft-switch Reload Disabled

9:  Telnet Password                   *
10: FTP Password                      *
11: Serial Password                   *

12: Restore MGT Configuration Defaults

Enter Choice, Management Options Screen(0), Help(h), Exit(x) >
```
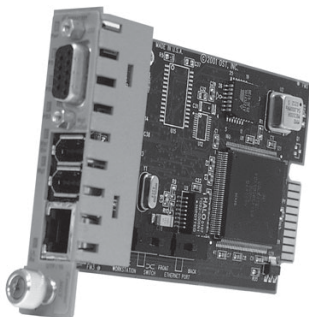
Appendix A

Configuring the *DFCS MGT*

When using the *DFCS* for the first time, initial configuration is required. To configure, attach the MGT to a serial RS-232 equipped PC with terminal emulation software such as HyperTerminal. To attach, use a straight through serial cable with a DB-9 male connector to connect to the MGT (Model 8081-3). Attach other end of the cable to the serial RS-232 port of the PC.

Set the PC's serial port to the following:

bits per second	57,600
stop bits	1
data bits	8
parity	NONE

Power the chassis containing the *DFCS* MGT and press *<ENTER>* to bring up a command line prompt at the attached PC. If a password has been set, the following information will be displayed:

```
OS Initialized and Running
Task Creation Complete - Beginning Discovery:
Black Box DFCS, Serial Agent v1.6
Copyright 2003 Black Box   Password Entry


_____
Black Box                  Technical Support:   (724) 746-5500
1000 Park Drive.           Sales/Products:      (877) 877-BBOX
Lawrence, PA 15055-1018    On the web at: www.blackbox.com
_____

IP Address  192.168.1.220
MAC         00:06:87:00:0A:2C

Please enter the password >
```

parameters include IP Address, IP Subnet Mask, MAC Address, Chassis Type and Support Contact Information.

Trap Log

The Trap Log window allows the user to enable SNMP traps to be invoked upon the occurrence of specific events. Traps can be configured to be ignored or monitored. They can also be configured to invoke a pop-up trap window upon the occurrence of a monitored event.

Module Details

The Module Details windows provide specific module manufacturing and status information as well as configuration buttons that allow the user to control and set parameters to override the individual hardware switch settings.

Changing (and applying) fields on the Details screen changes the configuration for the module.

Starting *Management Software* for Windows

To start using the *Management Software* client application under Windows follow the instructions below.

1. Click on the **DFCS.bat** short cut that was created earlier in the installation to start the *Management Software* application.

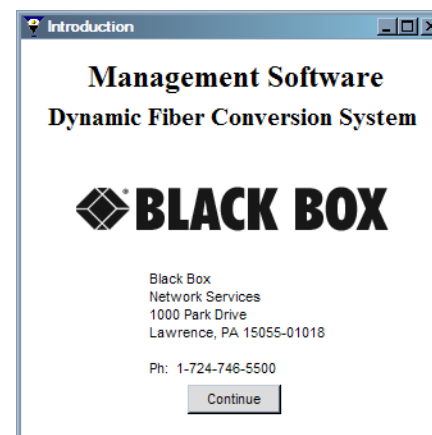2. In the Introduction Window, click on "Continue" to open the IP Selection window.

Figure 2. Management Software Introduction Screen

IP Selection Window

The IP Selection window allows the user to select a specific Management Module (MGT) to be managed by selecting its IP address (abbreviated to IP throughout this user manual) from the IP Selection window. The previous IP address is displayed as well.

The IP Table can be manipulated in the following ways:

1. Add a new IP to the list via the "Add" button
2. Insert a new IP to the list via the "Insert" button
3. Modify an existing IP via the "Edit" button
4. Delete an IP from the list via the "Delete Single" button
5. Clear the IP list via the "Clear All" button

Once an IP is ready to be used, highlight it by left-clicking on the IP and then use the "Select IP" button to redirect SNMP queries to the new IP address. A chassis view is then displayed.

Note: There are no default IP addresses defined in the program. A new IP address must be added before a chassis can be viewed.

This screen also contains buttons to exit *Management Software*, open the Chassis View window, view the Trap screen, and modify *Management Software* preferences.
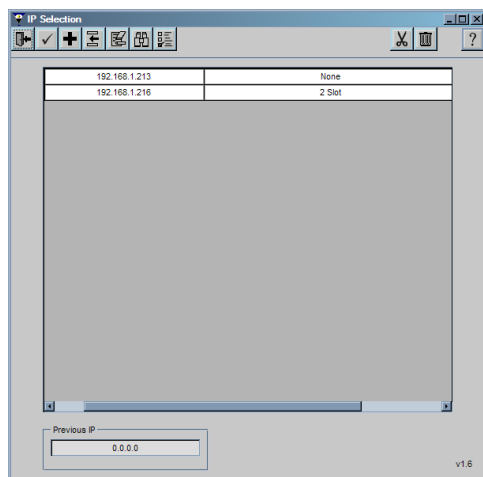

Figure 3. IP Selection Window
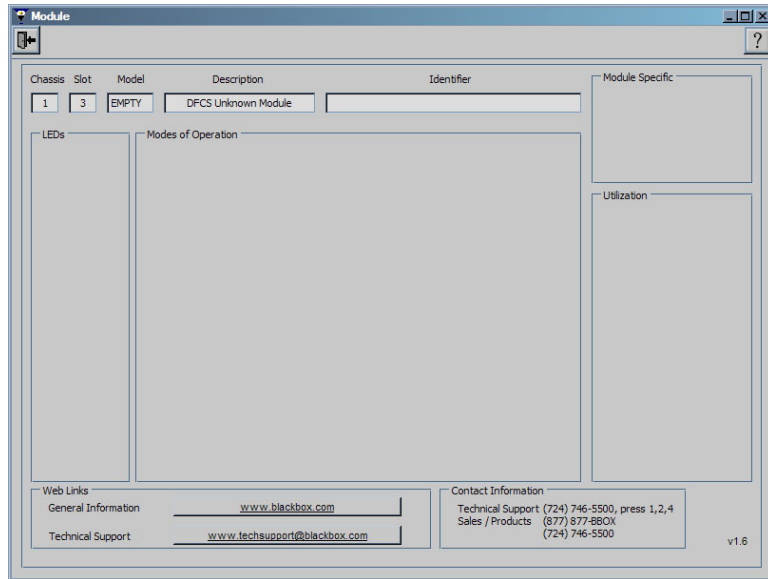
DFCS **Empty Slot**

Figure 23. Empty Slot Window

When a blank or unused slot is selected, this window will indicate that the slot is empty.

Preferences Window

The Preferences window allows users to set the following parameters for communications between *Management Software* and the *DFCS* chassis:

*   Polling interval – frequency at which *Management Software* retrieves SNMP data from a chassis
*   SNMP Timeout – maximum time allowed for a response from a chassis before initiating a retry
*   Number of Retries – maximum number of polling retry attempts following a SNMP Timeout before generating an error

Additionally, the Preference window allows a user to enter the SNMP Read Community Name and the SNMP Write Community Name. These should be respectively equivalent to the MGT SNMP Preferences for Read Community Name and Write Community Name as set from the MGT Management Options menu.
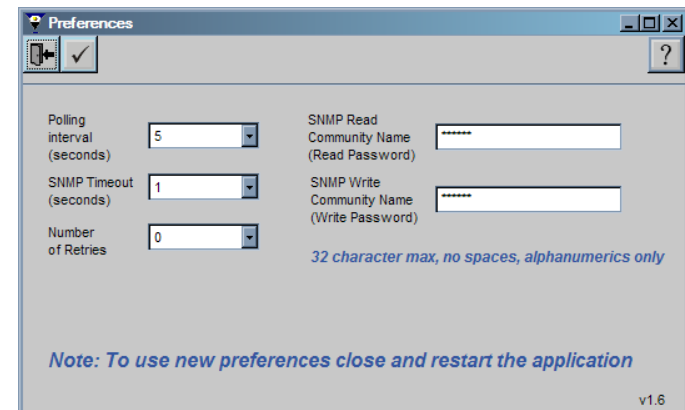

Figure 4. Preferences Window

Chassis Overview Window

The Chassis View window provides a graphic representation of the different chassis devices. For the *DFCS* product family, the 19-Module, 5-Module and 2-Module chassis views are available.

19-Module Chassis View

This Chassis view shows the following areas:

The *19-Module Chassis*. This section shows the plug-in modules with their real-time activities represented by LEDs. Any installed power supplies are represented symbolically by a status button. Viewing the details of any module or power supply is achieved by pointing and left-clicking on the module's numbered selection button located below the module or the power supply's selection button located next to the power supply.

The *Chassis Selection Section* shows and allows selection of any one of up to 16 cascaded chassis.

The *Action Buttons* are (left to right at top of window): exit the *Management Software* program, open the IP selection window, open the cluster parameters window, open the traps window, change the window size and refresh the screen.

The *Polling Status* at the bottom of the screen shows the polling status, selected IP, description, and chassis number.
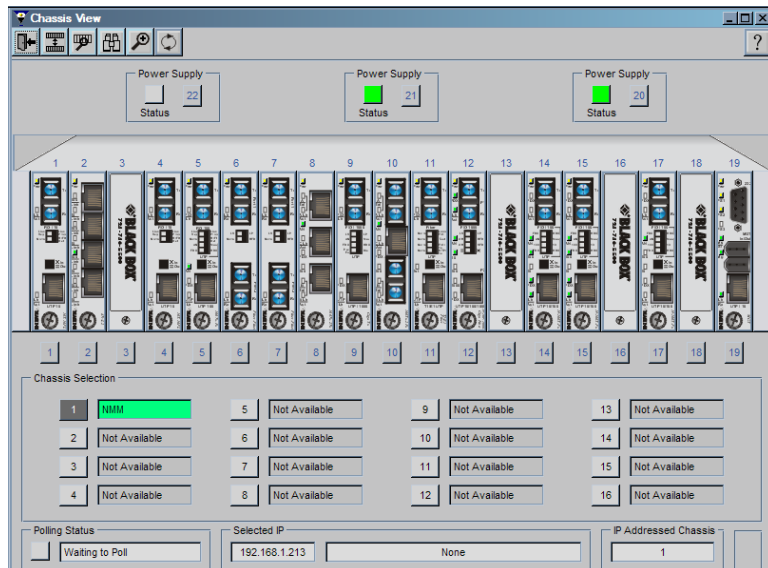

Figure 5. 19-Module Chassis Screen

- ✔ Identifier - Provided a user-defined description of the module

LED Section

- ✔ Power LED - Monitors the power status of the module
- ✔ Fiber Link - Monitors the Link of the Fiber port
- ✔ Test Mode - Indicates whether the module is in test mode or normal mode
- ✔ UTP Link - Monitors the Link of the UTP port

Modes of Operation

This section displays the different parameters of the module. Each parameter display includes three fields:

The field on the left depicts the hardware switch setting on the module itself. The pull-down menu field on the right allows overriding the hardware setting. The field in the center shows the actual parameter used by the module.

It should be noted that after changing a parameter using the pull-down menu field, the user MUST press the "Apply" button. This operation modifies the parameter used by the module.

The following parameters can be monitored and configured:

- ✔ Line Setting
- ✔ Loopback and Encoding
- ✔ Force Fiber all 1's
- ✔ Force UTP all 1's

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.
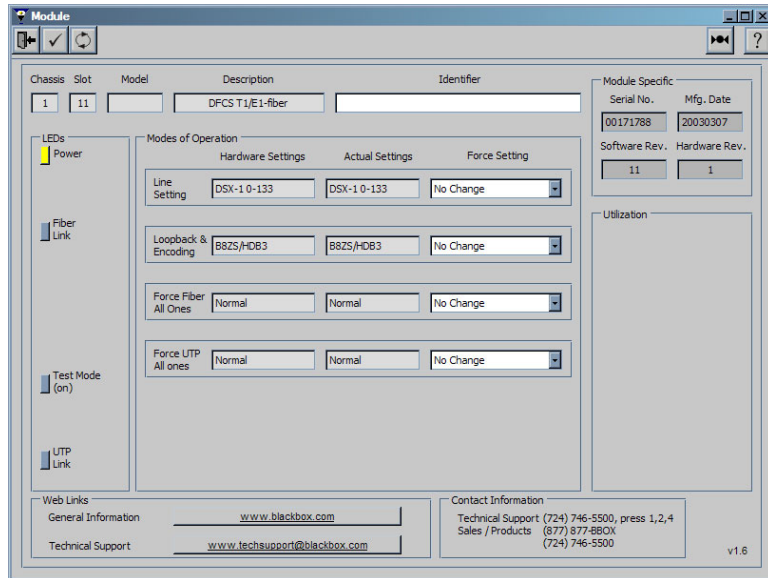
DFCS T1/E1 Module

Figure 22. DFCS T1/E1 Module Window

The *DFCS* T1/E1 module provides T1/E1 copper to fiber conversion.

The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* T1/E1 window includes the following sections:

General Information Section

This section provides general information about the module:

- ✔ Chassis Number- Reports the chassis location (number)
- ✔ Slot Number - Reports the slot location within a chassis
- ✔ Model Number - Reports the model number of the module
- ✔ Description - Provides a description of the module

5-Module Chassis View

This Chassis view shows the following areas:

The *5-Module Chassis* section shows the plug-in modules with their real-time activities represented by LEDs. Viewing the details of any module or power supply is achieved by pointing and left-clicking on the module's selection button located below the module, or the power supply's selection button located next to the power supply.

The *Chassis Selection section* shows and allows selection of any one of up to 16 cascaded chassis.

The *Action Buttons* are (left to right at top of window): exit the *Management Software* program, open the IP selection window, open the cluster parameters window, open the traps window, change the window size and refresh the screen..

The *Polling Status* at the bottom of the screen shows the polling status, selected IP, description, and chassis number.
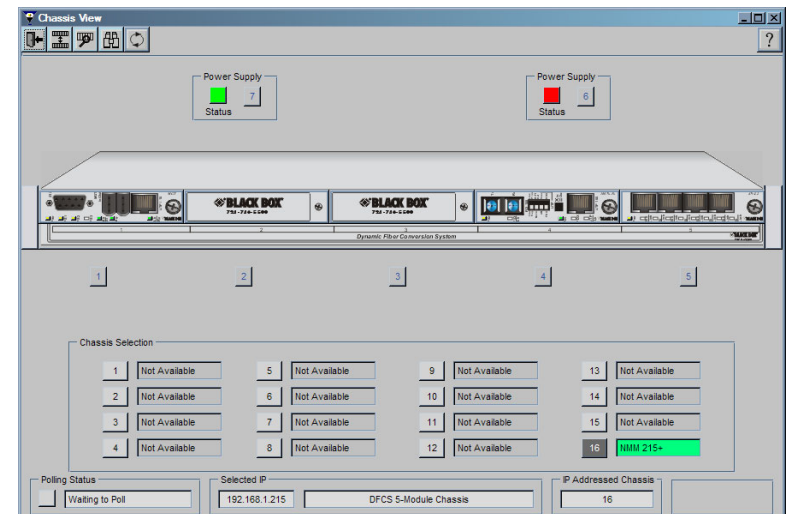

Figure 6. 5-Module Chassis Screen

2-Module Chassis View

This Chassis view shows the following areas:

The *2-Module Chassis* section shows the plug-in modules with their real-time activities represented by LEDs. Viewing the details of any module or power supply is achieved by pointing and left-clicking on the module's selection button located below the module, or the power supply's selection button located next to the power supply.

The *Chassis Selection section* shows and allows selection of any one of up to 16 cascaded chassis.

The *Action Buttons* are (left to right at top of window): exit the *Management Software* program, open the IP selection window, open the cluster parameters window, open the traps window, and refresh the screen.

The *Polling Status* at the bottom of the screen shows the polling status, selected IP, description, and chassis number.
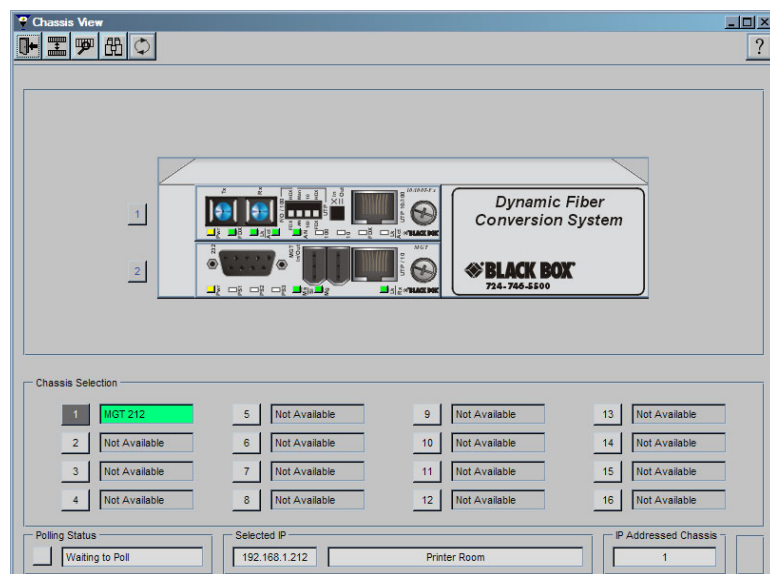

Figure 7. 2-Module Chassis Screen

LED Section

- ✔ Power LED - Monitors the power status of the module
- ✔ Fiber Link - Monitors the Link of the Fiber port 1
- ✔ Fiber Link - Monitors the Link of the Fiber port 2

Modes of Operation

This section displays the different parameters of the module. Each parameter display includes three fields:

The field on the left depicts the hardware switch setting on the module itself. The pull-down menu field on the right allows overriding the hardware setting. The field in the center shows the actual parameter used by the module.

It should be noted that after changing a parameter using the pull-down menu field, the user MUST press the "Apply" button. This operation modifies the parameter used by the module.

The following parameters can be monitored and configured:

- ✔ Link Propagate (LP) or Link Segment (LS)
- ✔ Remote Fault Detection (RFD)

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.
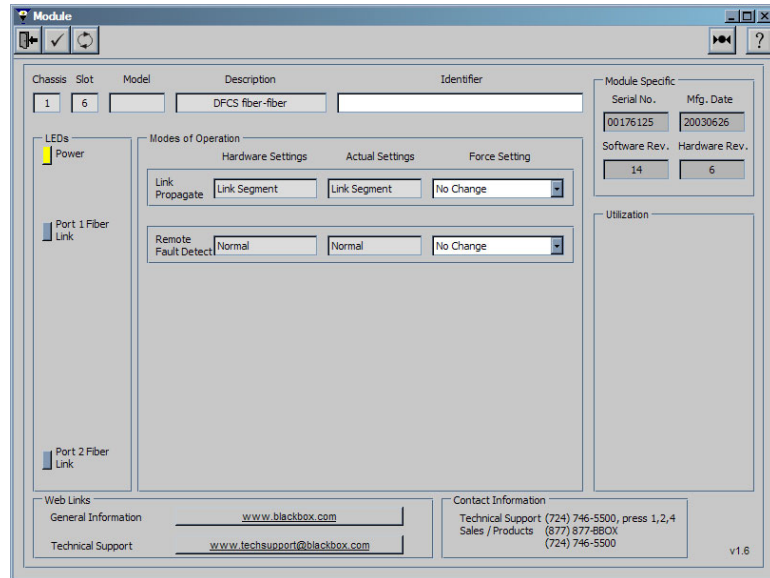
DFCS Fiber to Fiber Modules

Figure 21. DFCS Fiber to Fiber Module Window

The *DFCS* Fiber to Fiber products provide fiber to fiber conversion. They convert typically between multimode and single-mode fibers or between single-mode fibers requiring different wavelength or different optical power levels.

The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* Fiber to Fiber window includes the following sections:

General Information Section

This section provides general information about the module:

- ✔ Chassis Number- Reports the chassis location (number)
- ✔ Slot Number - Reports the slot location within a chassis
- ✔ Model Number - Reports the model number of the module
- ✔ Description - Provides a description of the module
- ✔ Identifier - Provided a user-defined description of the module

Cluster Parameters Window

The Cluster Parameters screen displays all of the essential system parameters which are collected from the controlling Management Module (MGT):

- • System Name
- • System Location
- • System Description
- • System Object ID
- • System Up time
- • IP Address
- • Subnet Mask
- • MAC Address
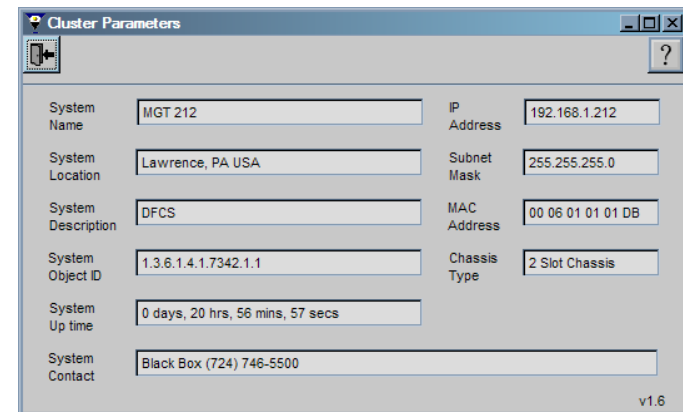- • Chassis Type
- • System Contact Information

Figure 8. Cluster Parameters Window
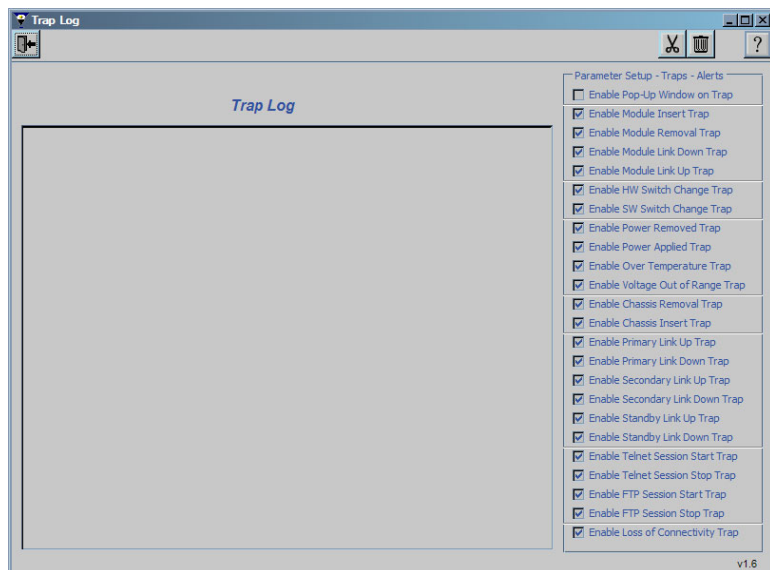
Trap Log Window

Figure 9. Trap Log Window

Traps are normal infrequent events that occur during the operation of a network that require special attention from the network administrator. *Management Software* can be configured to monitor and log the presence of various types of SNMP traps. This can be done by clicking in the box next to the desired type of trap. It can also be configured to cause a window to pop-up when a trap occurs.

Management Software and the *DFCS* media converters are capable of monitoring, logging and invoking trap conditions for specific user-selectable events.

The *Action Buttons* are (left to right at top of window): close the window, delete a highlighted trap from the window, clear the entire trap log.

Some of the possible events are:

> ✔ Module Insertion / Removal
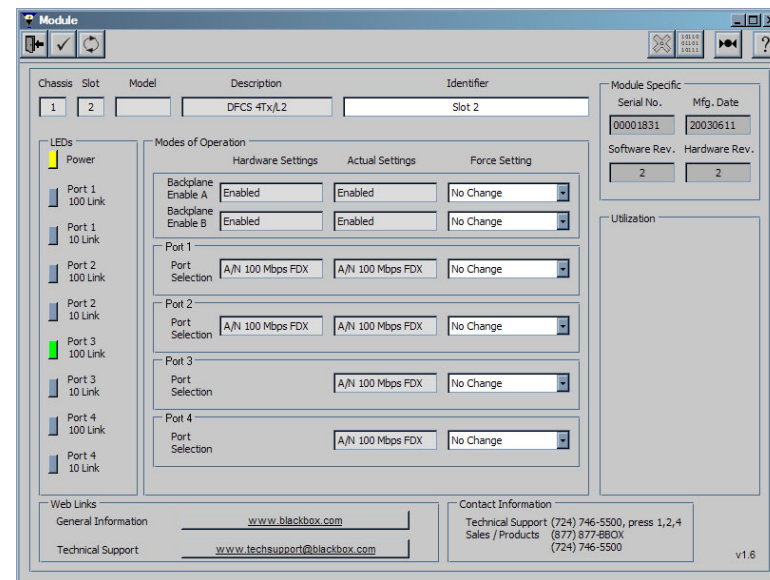
> ✔ Module Link up / down

Figure 20. DFCS 4-Port 10/100 Tx Ethernet Switch MIB Statistics Window

The *Action Buttons* are (left to right at top of window): close the window, refresh screen data, open main screen, open Port VLAN / Port Access Control Screen.

The MIB Statistics window includes the following sections:

General Information Section

This section provides general information about the module:

Port Polling Configuration

This section allows configuring of Port Polling parameters for MIB statistics collection and display. The following parameters can be set:

> ✔ Port Selection- Allows selection of port to collect statistics on

> ✔ Polling Rate - Allows selection of statistics poll and display rate in seconds

> ✔ View Values - Allows selection to view statistics either in cumulative mode or since last reset

See Appendix B for MIB Statistics Definitions.
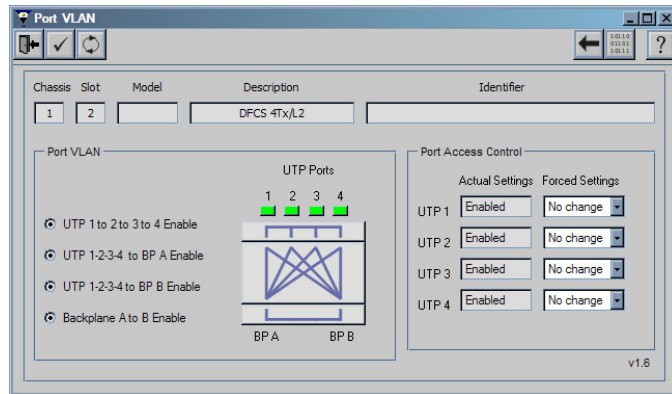
Figure 19. DFCS 4-Port 10/100 Tx Ethernet Switch
Port VLAN and Port Access Control Configuration Window

The *Action Buttons* are (left to right at top of window): close the window, apply mode changes, refresh screen data, open main screen, and open MIB statistics screen.

The *DFCS* 4Tx Port VLAN and Port Access Control configuration window includes the following sections:

General Information Section

This section provides the same information as in the main module window.

Port VLAN Section

This section allows enabling or disabling traffic flows between ports on the module. Factory default is all Port VLAN combinations set to enabled (traffic can flow between all ports). To change current settings, click on the appropriate Enable/Disable button(s), then use the Apply Mode Changes action button at the top of the window to apply the changes.

Port Access Control Section

This section allows disabling or enabling of all packet traffic flow on individual ports. Note that Port Access Control must be enabled for a port in order for other ports to connect to it according to the Port VLAN configuration settings. Factory default is all Port Access Control configurations set to enabled (traffic can flow across all ports). To change current settings choose the appropriate new Forced Setting selection(s) from the pull down menus, then use the Apply Mode Changes action button at the top of the window to apply the changes.

- ✔ Module switch change
- ✔ Software Configuration change
- ✔ Hardware Configuration change
- ✔ Power Application / Removal (of individual power supply)
- ✔ Power Supply Temperature or Voltage out-of-range
- ✔ Chassis Insertion / Removal
- ✔ Primary / Secondary Link up / down (when in Redundancy mode)
- ✔ Standby Link up / down (when in Redundancy mode)
- ✔ FTP Session start / stop
- ✔ Telnet Session start / stop

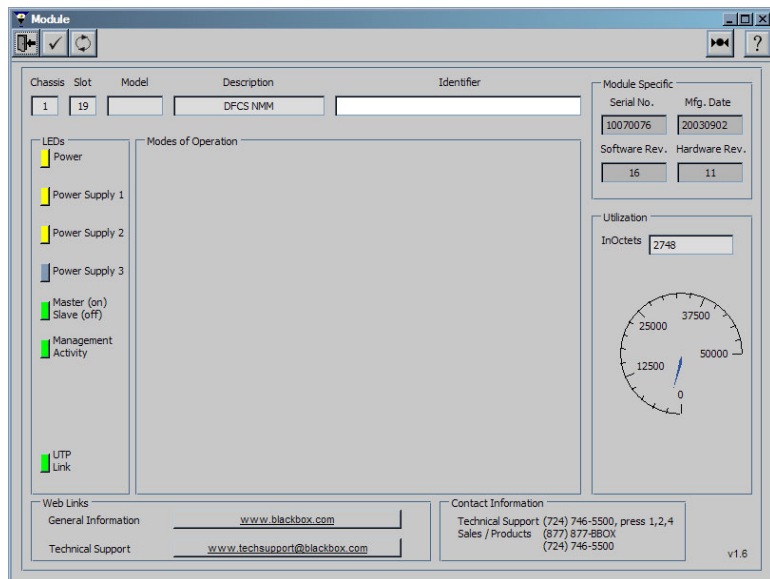## *DFCS MGT* - SNMP and Telnet Management Module

Figure 10. DFCS MGT Window

The *DFCS* MGT monitors, controls and manages up to 16 managed chassis and their individual modules. The MGT features a serial configuration port, front-plane or backplane Ethernet port and a pair of multi-chassis management ports. The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* MGT window includes the following sections:

General Information Section

This section provides general information about the module:

- Chassis Number- Reports the chassis location (number)
- Slot Number - Reports the slot location within a chassis
- Model Number - Reports the model number of the module
- Description - Provides a description of the module
- Identifier - Provided a user-defined description of the module

LED Section

- Power LED - Monitors the power status of the module
- Port 1 Link at 100Mbps
- Port 1 Link at 10Mbps
- Port 2 Link at 100Mbps
- Port 2 Link at 10Mbps
- Port 3 Link at 100Mbps
- Port 3 Link at 10Mbps
- Port 4 Link at 100Mbps
- Port 4 Link at 10Mbps

Modes of Operation

This section displays the different parameters of the module. Each parameter display includes three fields:

The field on the left depicts the hardware switch setting on the module itself. The pull-down menu field on the right allows overriding the hardware setting. The field in the center shows the actual parameter used by the module.

It should be noted that after changing a parameter using the pull-down menu field, the user MUST press the "Apply" button. This operation modifies the parameter used by the module.

The following parameters can be monitored and configured:

- Backplane A Enable/Disable Control
- Backplane B Enable/Disable Control
- Port 1 UTP Auto-Negotiation, 10/100, and Full/Half-Duplex Control
- Port 2 UTP Auto-Negotiation, 10/100, and Full/Half-Duplex Control
- Port 3 UTP Auto-Negotiation, 10/100, and Full/Half-Duplex Control
- Port 4 UTP Auto-Negotiation, 10/100, and Full/Half-Duplex Control

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.
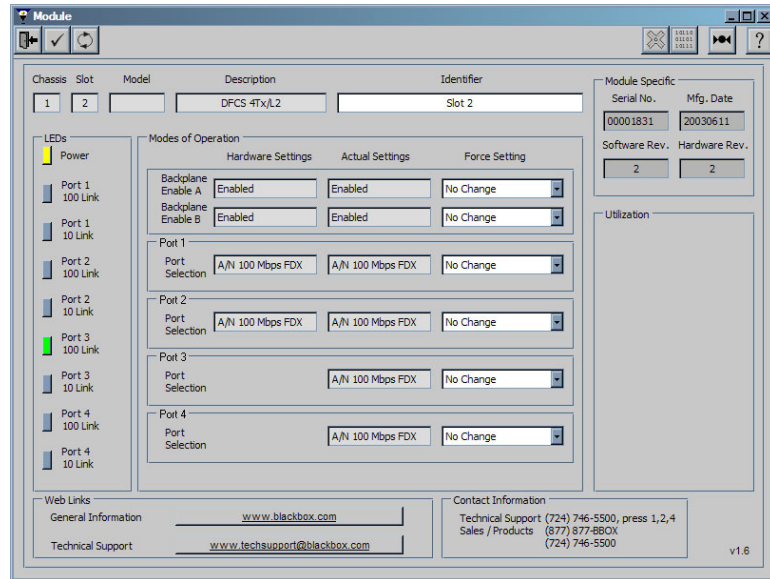
DFCS 4Tx/L2 Module

Figure 18. DFCS 4-Port 10/100 Tx Ethernet Switch Module Window

The *DFCS* 4Tx/L2 provides 10/100 Ethernet switching.

The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* 4Tx/L2 window includes the following sections:

General Information Section

This section provides general information about the module:

- ✔ Chassis Number- Reports the chassis location (number)
- ✔ Slot Number - Reports the slot location within a chassis
- ✔ Model Number - Reports the model number of the module
- ✔ Description - Provides a description of the module
- ✔ Identifier - Provided a user-defined description of the module

LED Section

- ✔ Power LED - Monitors the power status of the MGT
- ✔ Power Supply 1-3 LEDs (3 LEDs) - Monitors the status of up to three chassis-based power supplies. (Number of LEDs active dependent on number of internal power supplies supported by chassis being managed)
- ✔ Master / Slave - Displays the role of the MGT as a Master module or a Slave module in a multi-chassis configuration
- ✔ Management LED - Monitors the polling function of the MGT
- ✔ UTP Link - Monitors the Ethernet front-plane or backplane port connection

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Utilization Data

This scale displays the data traffic through the MGT in bytes per second.

DFCS 19-Module & 5-Module Chassis Power Supply Windows

Figure 11. DFCS Power Supply Window

The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* 19-Module & 5-Module Chassis Power Supply Module windows includes the following sections:

General Information Section

This section provides general information about the 19-Module Chassis:

- ✔ Chassis Number - Reports the chassis location (number)
- ✔ Slot Number - Reports the slot location within a chassis:

   For the 19-Module Chassis:

   - Slot 20 refers to the right power supply (as viewed from the front)

   - Slot 21 refers to the center power supply

   - Slot 22 refers to the left power supply (as viewed from the front)

   For the 5-Module Chassis:

   - Slot 6 refers to the right power supply (as viewed from the front)

LED Section

- ✔ Power LED - Monitors the power status of the module
- ✔ Fiber Link - Monitors the Link of the Fiber port
- ✔ UTP Link - Monitors the Link of the UTP port

Modes of Operation

This section displays the different parameters of the module. Each parameter display includes three fields:

The field on the left depicts the hardware switch setting on the module itself. The pull-down menu field on the right allows overriding the hardware setting. The field in the center shows the actual parameter used by the module.

It should be noted that after changing a parameter using the pull-down menu field, the user MUST press the "Apply" button. This operation modifies the parameter used by the module.

The following parameters can be monitored and configured:

- ✔ Link Control - Link Propagate (LP), Link Segment (LS) or Remote Fault Detection (RFD)

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.
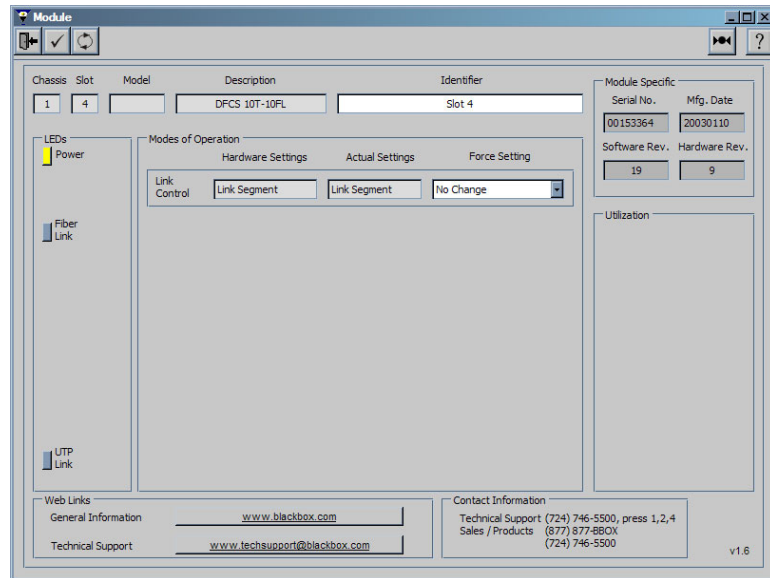
DFCS 10T-10FL Module

Figure 17. DFCS 10T-10FL UTP to Fiber Module Window

The *DFCS* 10T-10FL provides 10Base-T to 10Base-FL fiber conversion.

The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* 10T-10FL window includes the following sections:

General Information Section

This section provides general information about the module:

- ✔ Chassis Number- Reports the chassis location (number)
- ✔ Slot Number - Reports the slot location within a chassis
- ✔ Model Number - Reports the model number of the module
- ✔ Description - Provides a description of the module
- ✔ Identifier - Provided a user-defined description of the module

- Slot 7 refers to the left power supply (as viewed from the front)
- ✔ Module Type - A number describing the module type
- ✔ Model Number - Reports the model number of the module
- ✔ Description - Provides a description of the module
- ✔ Identifier - Provided a user-defined description of the module

Status Section

This section displays the status of the power supply unit:

- ✔ Input Voltage - Applied / Not applied
- ✔ Fan Status - Active / Not Active

Power Supply Output Voltage Status

Shows in a graphical and numerical form the output voltage of the power supply, where 3.0-3.6 Volts is the safe voltage range. When enabled, voltage outside of this range will cause a trap to be generated.

Power Supply Output Current Status

Shows in a graphical and numerical form the output current of the power supply, where 0-20 Amps is the safe current range. When enabled, current overload will cause a trap to be generated.

Power Supply Temperature Status

Shows in a graphical and numerical form the temperature of the power supply, where 0-50 degrees C is the safe range. When enabled, temperature outside this range will cause a trap to be generated.

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Fan Status

This scale displays speed of the fan.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.
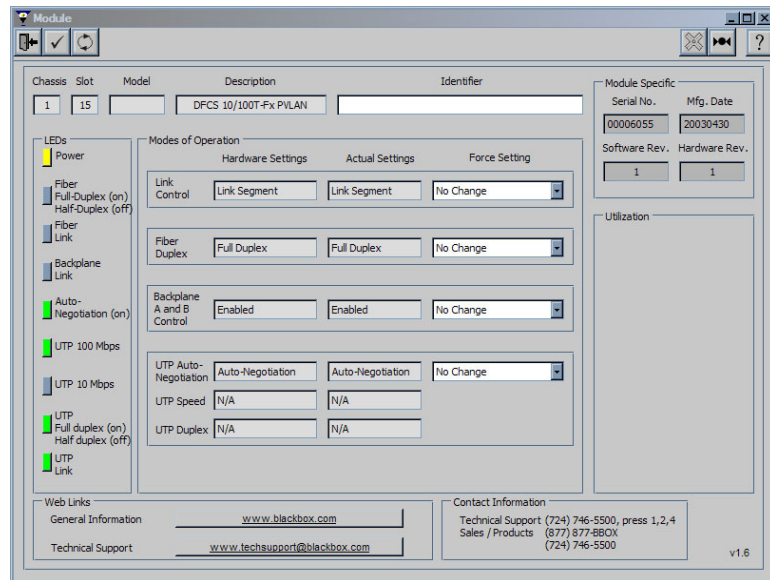
DFCS 10/100T-Fx Module

Figure 12. DFCS 10/100T-Fx UTP to Fiber Module Window

The *DFCS* 10/100T-Fx provides 10/100Base-Tx to 100Base-Fx fiber conversion.

The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* 10/100T-Fx window includes the following sections:

General Information Section

This section provides general information about the module:

- ✔ Chassis Number- Reports the chassis location (number)
- ✔ Slot Number - Reports the slot location within a chassis
- ✔ Model Number - Reports the model number of the module
- ✔ Description - Provides a description of the module
- ✔ Identifier - Provided a user-defined description of the module

LED Section

- ✔ Power LED - Monitors the power status of the module
- ✔ Port A Select - Green if Port A is currently active redundant port
- ✔ Port A Link - Monitors Port A link activity when active redundant port
- ✔ Auto-Negotiation - Monitors the UTP negotiation mode of Port C
- ✔ Port C Link - Monitors Port C UTP link activity
- ✔ Full Duplex - Monitors the UTP duplex mode of Port C
- ✔ 100Mbps/10Mbps - Monitors the UTP speed of Port C
- ✔ Port B Select - Green if Port B is currently active redundant port
- ✔ Port B Link - Monitors Port B link activity when active redundant port

Modes of Operation

This section displays the different parameters of the module. Each parameter display includes three fields:

The field on the left depicts the hardware switch setting on the module itself. The pull-down menu field on the right allows overriding the hardware setting. The field in the center shows the actual parameter used by the module.

It should be noted that after changing a parameter using the pull-down menu field, the user MUST press the "Apply" button. This operation modifies the parameter used by the module.

The following parameters can be monitored and configured:

- ✔ Link Control - Link Propagate (LP), Link Segment (LS), Remote Fault Detection (RFD), and Symmetrical Fault Detection (SFD)
- ✔ UTP Auto-Negotiation / Manual Control
- ✔ UTP Full/Half-Duplex Control
- ✔ Return to Port A Control

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.

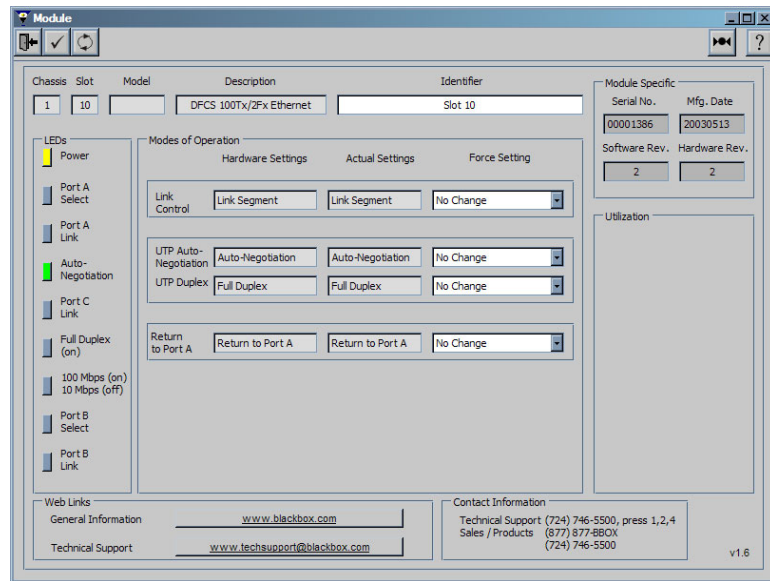## DFCS Tx-2Fx/Tx-2Tx Redundant Fast Ethernet Modules

Figure 16. DFCS Tx-2Fx/Tx-2Tx Redundant Fast Ethernet Module Window

The *DFCS* Tx-2Fx and Tx-2Tx Fast Ethernet Modules provide 100Base-Tx to Dual-redundant Port 100Base-Fx fiber conversion or Dual-redundant Port 100Base-Tx support.

The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* Redundant Ethernet window includes the following sections:

General Information Section

This section provides general information about the module:

- ✔ Chassis Number- Reports the chassis location (number)
- ✔ Slot Number - Reports the slot location within a chassis
- ✔ Model Number - Reports the model number of the module
- ✔ Description - Provides a description of the module
- ✔ Identifier - Provided a user-defined description of the module

LED Section

- ✔ Power LED - Monitors the power status of the module
- ✔ Fiber Full/Half-Duplex - Monitors the duplex mode of the Fiber port
- ✔ Fiber Link- Monitors the Link of the Fiber port
- ✔ Backplane Link - Monitors the Link of the backplane port
- ✔ Auto-Negotiation - Monitors the Negotiation mode of the UTP port
- ✔ UTP 100 Mbps - Monitors the data rate of the UTP port
- ✔ UTP 10 Mbps - Monitors the data rate of the UTP port
- ✔ UTP Full/Half-Duplex - Monitors the duplex mode of the UTP port
- ✔ UTP Link - Monitors the Link of the UTP port

Modes of Operation

This section displays the different parameters of the module. Each parameter display includes three fields:

The field on the left depicts the hardware switch setting on the module itself. The pull-down menu field on the right allows overriding the hardware setting. The field in the center shows the actual parameter used by the module.

It should be noted that after changing a parameter using the pull-down menu field, the user MUST press the "Apply" button. This operation modifies the parameter used by the module.

The following parameters can be monitored and configured:

- ✔ Link Control - Link Propagate (LP), Link Segment (LS), or Remote Fault Detection (RFD)
- ✔ Fiber Full/Half-Duplex Control
- ✔ Backplane Enable/Disable Control
- ✔ UTP Auto-Negotiation, 10/100, and Full/Half-Duplex Control

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.
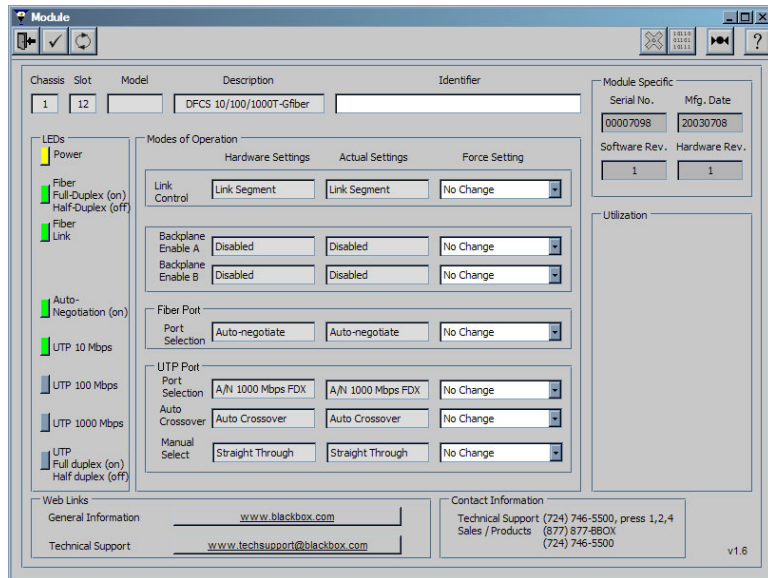
DFCS 10/100/1000T Module

Figure 13. DFCS Gigabit UTP to Fiber Module Window

The *DFCS* 10/100/1000T provides 10/100/1000T to 1000X fiber conversion.

The *Action Buttons* are (left to right at top of window): close the window, apply mode changes, refresh screen data, open main screen, open MIB statistics screen.

The *DFCS* 10/100/1000T window includes the following sections:

General Information Section

This section provides general information about the module:

- ✔ Chassis Number- Reports the chassis location (number)
- ✔ Slot Number - Reports the slot location within a chassis
- ✔ Model Number - Reports the model number of the module
- ✔ Description - Provides a description of the module
- ✔ Identifier - Provided a user-defined description of the module

LED Section

- ✔ Power LED - Monitors the power status of the module
- ✔ Fiber Link - Monitors the Link of the Fiber port
- ✔ Auto-Negotiation - Monitors the Negotiation mode of the UTP port
- ✔ UTP Full/Half-Duplex - Monitors the duplex mode of the UTP port
- ✔ UTP Link - Monitors the Link of the UTP port

Modes of Operation

This section displays the different parameters of the module. Each parameter display includes three fields:

The field on the left depicts the hardware switch setting on the module itself. The pull-down menu field on the right allows overriding the hardware setting. The field in the center shows the actual parameter used by the module.

It should be noted that after changing a parameter using the pull-down menu field, the user MUST press the "Apply" button. This operation modifies the parameter used by the module.

The following parameters can be monitored and configured:

- ✔ Link Control - Link Propagate (LP), Link Segment (LS), or Remote Fault Detection (RFD)
- ✔ UTP Auto-Negotiation or Manual Full/Half-Duplex Control

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.
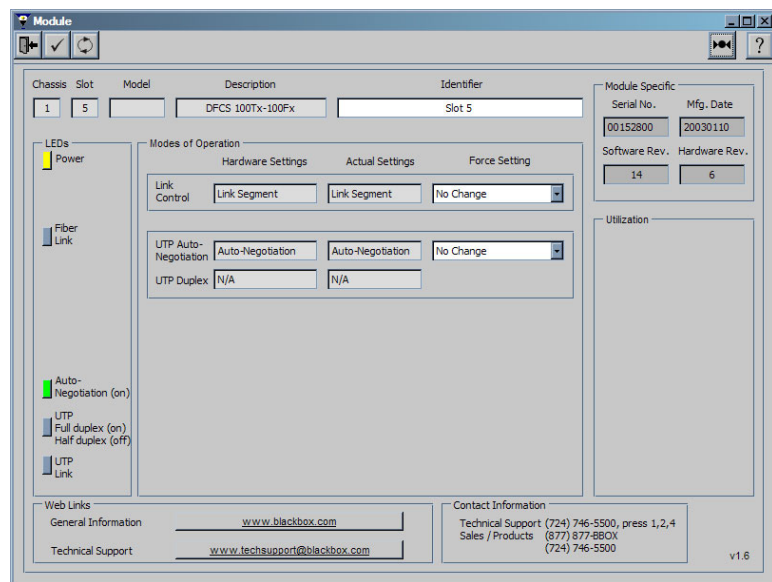
DFCS 100Tx-Fx **Module**

Figure 15. DFCS 100 UTP to Fiber Module Window

The *DFCS* 100Tx-Fx provides 100Base-Tx to 100Base-Fx fiber conversion.

The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* 100Tx-Fx window includes the following sections:

General Information Section

This section provides general information about the module:
- Chassis Number- Reports the chassis location (number)
- Slot Number - Reports the slot location within a chassis
- Model Number - Reports the model number of the module
- Description - Provides a description of the module
- Identifier - Provided a user-defined description of the module

LED Section
- Power LED - Monitors the power status of the module
- Fiber Full/Half-Duplex - Monitors the duplex mode of the Fiber port
- Fiber Link- Monitors the Link of the Fiber port
- Auto-Negotiation - Monitors the Negotiation mode of the UTP port
- UTP 10 Mbps - Monitors the data rate of the UTP port
- UTP 100 Mbps - Monitors the data rate of the UTP port
- UTP 1000 Mbps - Monitors the data rate of the UTP port
- UTP Full/Half-Duplex - Monitors the duplex mode of the UTP port

Modes of Operation

This section displays the different parameters of the module. Each parameter display includes three fields:

The field on the left depicts the hardware switch setting on the module itself. The pull-down menu field on the right allows overriding the hardware setting. The field in the center shows the actual parameter used by the module.

It should be noted that after changing a parameter using the pull-down menu field, the user MUST press the "Apply" button. This operation modifies the parameter used by the module.

The following parameters can be monitored and configured:
- Link Control - Link Propagate (LP), Link Segment (LS), Remote Fault Detection (RFD), or Symmetrical Fault Detection (SFD)
- Backplane Enable / Disable Control
- Fiber Port - Auto-Negotiation, Manual Select
- UTP Port - Port Selection, Auto-Negotiation and Full/Half-Duplex Control, Auto Crossover, Manual Select

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.
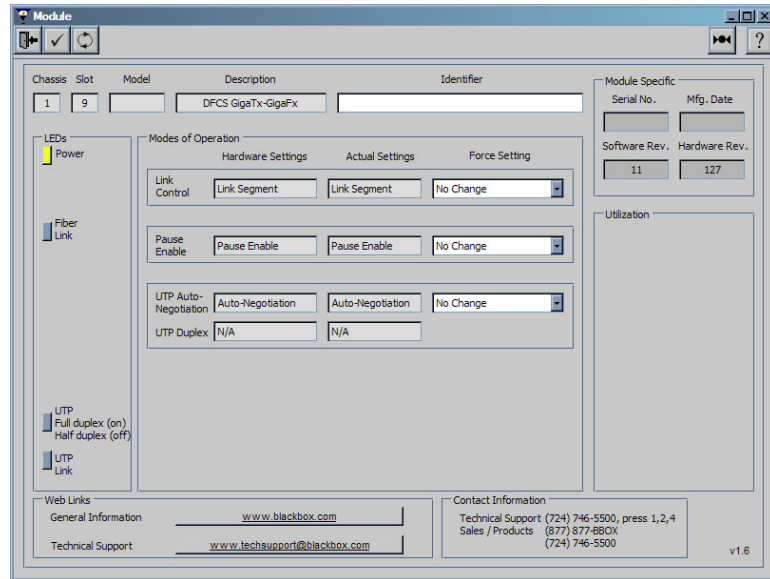
DFCS Giga-Tx **Module**

Figure 14. DFCS Gigabit UTP to Fiber Module Window

The *DFCS* Giga-Tx provides Gigabit 1000Base-T Unshielded Twisted Pair (UTP) to 1000Base-X fiber conversion.

The *Action Buttons* are (left to right at top of window): close the window, apply mode and identifier changes, refresh screen data, reset the module.

The *DFCS* Giga-Tx window includes the following sections:

General Information Section

This section provides general information about the module:

- Chassis Number- Reports the chassis location (number)
- Slot Number - Reports the slot location within a chassis
- Model Number - Reports the model number of the module
- Description - Provides a description of the module
- Identifier - Provided a user-defined description of the module

LED Section

- Power LED - Monitors the power status of the module.
- Fiber Link - Monitors the Link of the Fiber port
- UTP Full/Half-Duplex - Monitors the duplex mode of the converter
- UTP Link - Monitors the Link of the UTP port

Modes of Operation

This section displays the different parameters of the module. Each parameter display includes three fields:

The field on the left depicts the hardware switch setting on the module itself. The pull-down menu field on the right allows overriding the hardware setting. The field in the center shows the actual parameter used by the module.

It should be noted that after changing a parameter using the pull-down menu field, the user MUST press the "Apply" button. This operation modifies the parameter used by the module.

The following parameters can be monitored and configured:

- Link Control -Link Propagate (LP), Link Segment (LS), or Remote Fault Detection (RFD)
- Pause Enable / Disable
- UTP Auto-Negotiation and Full/Half-Duplex Control

Manufacturing Info Section

This section provides manufacturing information about the module including its serial number, manufacture date, hardware and software revisions.

Support Information

This section provides a URL link to the support pages on Black Box's web site. It also provides phone numbers for product and technical support.