TC3715

10/100Base-T Fiber Optic Switch with Rate Limit Feature (Rev A0.1)

User's Manual

MODEL:_____

S/N: _____

DATE:_____

Notice!

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TC COMMUNICATIONS
FIBER OPTIC CONNECTIVITY

TC Communications, Inc. 17881 Cartwright Road - Irvine, CA 92614

Tel: (949) 852-1972 Fax: (949) 852-1948 Web Site: www.tccomm.com Email: info@tccomm.com

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- **MDI/MDIX Auto Detection and Operation on Twisted Pair Ports**
- **10/100 Full/Half Duplex Auto-negotiation for RJ-45 Ports and 100 Full duplex for fiber ports**
- **Incoming and Outgoing Rate Limiting**
- **One Management Port for Advanced Configurations & Status Monitoring**
- **Can be Daisy Chained by Using Fiber Ports**
- **Multimode (1310nm) and Single Mode (1310nm/1550nm)**
- **Distances up to 80km**
- **Hardened Temperature (optional), -40ºC to 80ºC**
- **Standalone/Rackmount**
- **Alarm Relay**
- **Remote Configuration through Web, Telnet, or Serial Console**

Standards

IEEE 802.3, 802.3u, and 802.3x

Description

Featuring distances up to 80km, the TC3715 10/100Base-T Ethernet Fiber Optic Switch provides two 100Base-FX ports that combine Ethernet Switching and Fiber Optic technology to boost total network bandwidth.

The TC3715 provides a rate limiting feature that allows users to have control of the incoming and outgoing data rates on both fiber ports and RJ-45 ports. The incoming data rate on both fiber ports and RJ-45 ports can be limited to 128K, 256K, 512K, 1M, 2M, 4M, 8M, 16M, 32M, and 64M. The outgoing data rate on both fiber ports and RJ-45 ports can be limited to 128K, 256K, 512K, 1M, 2M, 4M, and 8M.

The TC3715 offers two multimode (1300nm) or single mode (1300/1550nm) optical ports and six Ethernet 10/100Base-T Auto-Sensing/Auto-Negotiation switched ports. Each of these ports supports either 10Base-T or 100Base-TX. There are two optional versions (Model TC3715T) for extreme temperature applications (-20C to 70C, -40C to 80C).

Because it functions like an Ethernet bridge (connects multiple Ethernet segments to prevent unnecessary network traffic), it creates an efficient sub-divided switched LAN that provides full and transparent bandwidth for each segment.

The TC3715's modern switching technology eliminates the congestion problem inherent to the contention-oriented Ethernet CSMA/CD protocol. This improves predictable response times under heavy network loads. Previously, expensive routing technology was used to alleviate congestion from heavy traffic loads. Standard power input is 12VDC, optional 24VDC, -48VDC, 125VDC, or 115/230VAC with an external power cube. Units are standalone or 19" rack mountable. Optical connectors can be SC, ST or FC.

Fiber Optic Specifications

Multimode Model

Transmitter:	LED; typical Launch Power:	-17.0 dBm* (1310nm, @62.5/125µm)
Receiver:	PIN Diode; typical Sensitivity: Optic saturation level:	-33.0 dBm* (1310nm, @62.5/125µm) -11.0 dBm*(1310nm, @62.5/125µm
Loss Budget:	1310nm Multimode @62.5/125µm:	15 dB
Distance:	1310nm Multimode, @62.5/125µm:	up to 4km distance*
Wavelength:	1310nm Multimode:	
Connector:	SC ST	

Single Mode 1310nm, 20km Model

Transmitter:	FP Laser; typical Launch Power:	-15 to -7 dBm* (1310nm, @9/125µm)
Receiver:	PIN Diode; typical Sensitivity: Optic saturation level:	-34.0 dBm* (1310nm, @9/125µm) -3 dBm*(1310nm, @9/125µm)
Loss Budget:	1310nm Single Mode, @9/125µm:	19 dB
Distance:	1310nm Single Mode, @9/125µm:	up to 20 km distance
Wavelength:	1310nm Single Mode(LASER):	
Connector:	ST FC SC	

Single Mode 1310nm, 75km Model

Transmitter:	FP Laser; typical Launch Power:	-3 to +2dBm* (1310nm, @9/125µm)
Receiver:	PIN Diode; typical Sensitivity: Optic saturation level:	-36.0 dBm* (1310nm, @9/125µm) -3 dBm* (1310nm, @9/125µm)
Loss Budget:	1310nm Single Mode, @9/125µm:	33dB
Distance:	1310nm Single Mode, @9/125µm:	up to 75km distance
Wavelength:	1310nm Single Mode (LASER)	
Connector:	ST FC SC	

Single Mode 1550nm, 75km Model

Transmitter:	DFB Laser; typical Launch Power:	-10 to -1dBm* (1550nm, @9/125µm)
Receiver:	PIN Diode; typical Sensitivity: Optic saturation level:	-34.0 dBm* (1550nm, @9/125µm) 0 dBm* (1550nm, @9/125µm)
Loss Budget:	1550nm Single Mode, @9/125µm:	24dB
Distance:	1550nm Single Mode, @9/125µm:	up to 75km distance
Wavelength:	1550nm Single Mode (LASER)	
Connector:	ST FC SC	

Single Fiber, 50km Model

Transmitter:	Typical Launch Power:	-8 to -3 dBm* (1310nm/1550nm, @9/125µm)
Receiver:	PIN Diode; typical Sensitivity: Optic saturation level:	-33.0 dBm* (1310nm/1550nm, @9/125µm) -3 dBm*
Loss Budget:	1310nm/1550nm Single Mode, @9/125µm:	29 dB
Distance:	1310nm/1550nm Single Mode, @9/125µm:	up to 50km distance
Wavelength:	1310nm/1550nm Single Mode:	
Connector:	SC Only	

Front Panel Connectors and LED Indicators

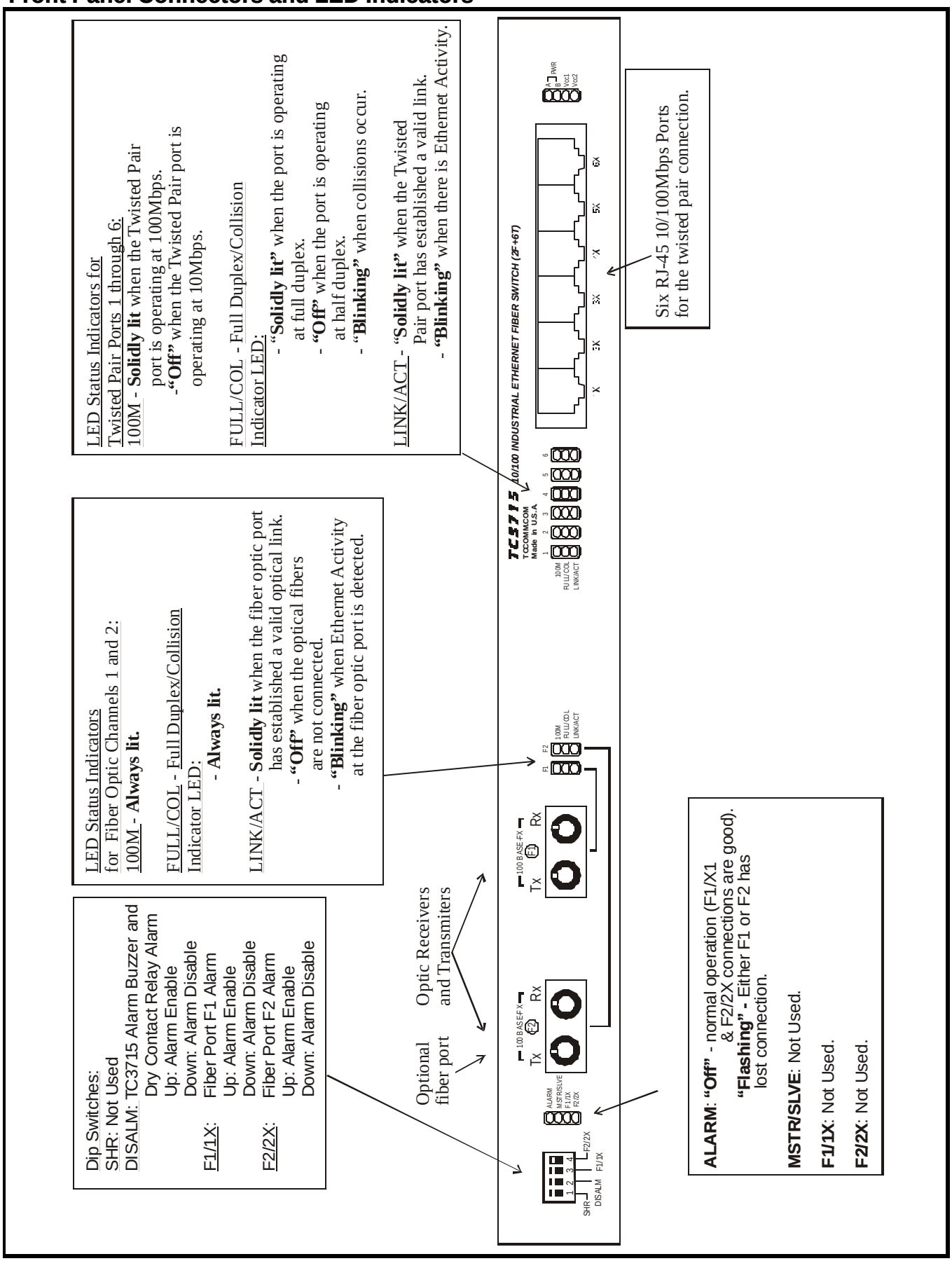


Figure 1. TC3715's Front View Panel

Rear Panel Connectors and LED Indicators

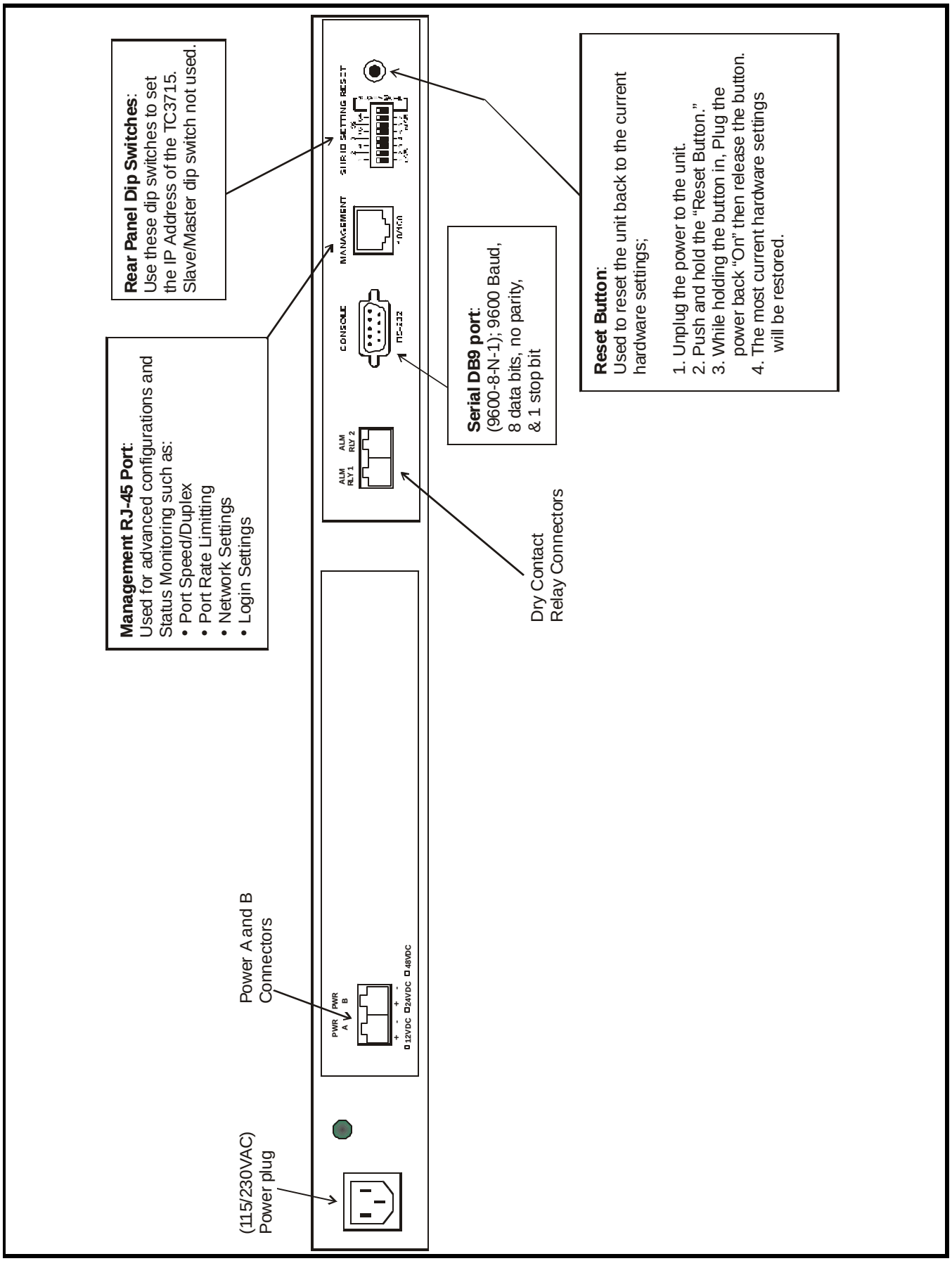


Figure 2. TC3715's Rear Panel View

Daisy-Chained Diagram

The TC3715 10/100Mbps Ethernet Switch is a low cost and flexible solution to extend a local area network to a remote site through fiber optic cables. Providing bandwidth solution to efficiently handle the traffic between the local and the remote workgroups of the network and reducing the need of expensive routers that usually cater to the network backbone.

The TC3715 10/100Mbps Ethernet Switch is shown in a daisy-chained configuration in the example below.

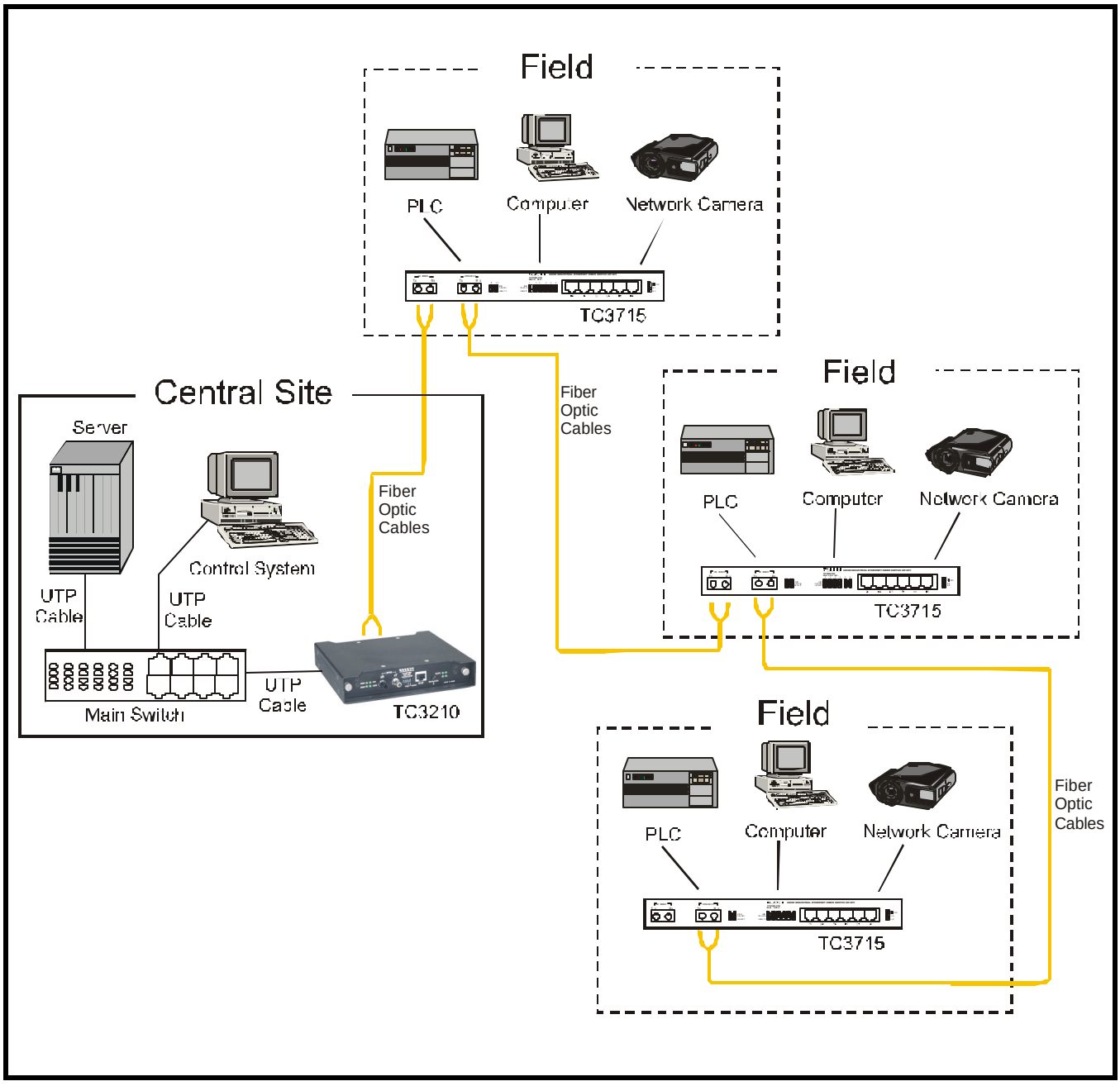


Figure 3. Daisy-Chain Diagram Using the TC3715's

Star Topology Diagram

You can use the TC3715's for a variety of network configurations. For example, connect up to six hubs or switches to develop workgroups with dedicated 10/100Mbps links. Connect your routers, printers, servers, and other network devices.

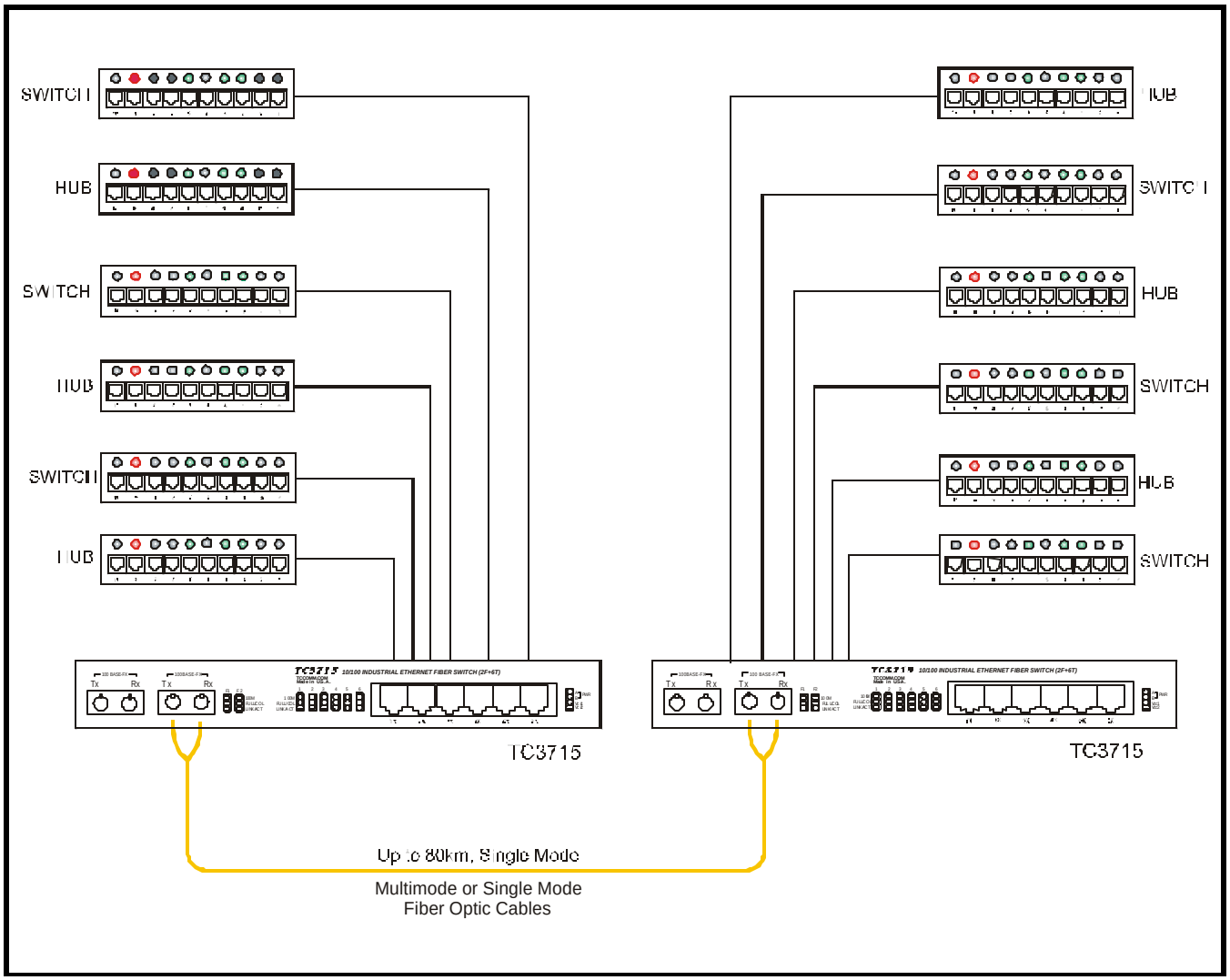


Figure 4. Backbone Using an Extended Star Topology with the TC3715's

Power Requirements

A. The TC3715's standard input voltage is 12V DC and current is 600mA.

B. The TC3715's power connectors are two terminal blocks located on the rear panel of the unit. Polarity is indicated on each connector block (see Figure 1).

C. Should an external power adapter need to be replaced, use one with the following specifications: 12V DC @600mA. You may order it directly from TC Communications.

D. The TC3715 can also be ordered with an optional 24 VDC, 48 VDC or power supply. Current consumption at 24VDC is 300mA, at 48VDC is 150mA, and at 125VDC is 60mA.

System Start Up

1. Apply the power by plugging the power plug into any power jack on the rear panel. The power source can be from a power adapter or from a power card (installed either on the left or right side of the rack).

2. The "PWR A" or "PWR B" LEDs on the front panel will light according to which power jack (A or B) is connected. Both LEDs will light when power redundancy is utilized.

3. The "Vcc1" and "Vcc2" LEDs should also light, indicating an adequate operating voltage is being derived from the power source.

4. Connect the twisted pair cables to the RJ-45 connectors on the front panel of the switches. If the twisted pair cables are providing an Ethernet signal, then the corresponding front LEDs for that particular channel will light as follows:

a). If the user's device is in auto-negotiation mode and 100Mbps full duplex is detected by the switch, the 100M & FULL/COL LEDs will be solidly lit and the LINK/ACT will blink as activity is detected.

b). If the user's device is in a dedicated mode and 100Mbps full duplex or half duplex is detected by the switch, the 100M LED will be solidly lit and the FULL/COL and LINK/ACT LEDs will blink as activity is detected.

c). If 10Mbps full or half duplex is detected by the switch, the 100M LED will be "Off" and the FULL/COL and LINK/ACT LEDs will be blinking.

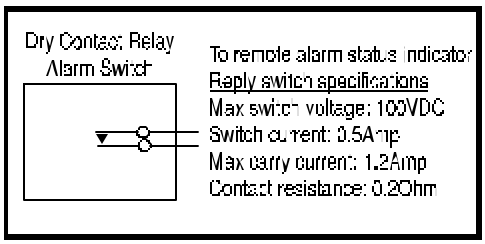
d). If half duplex and collisions are detected by the switch, the FULL/COL LED will be blinking.

5. Connect the optical fibers from the Tx connector of one unit to the Rx connector of the second unit, the LINK/ACT LED of the fiber port on the second unit will be solidly lit. Do the same for the second pair of Rx to Tx connectors and observed the LINK/ACT LED on the first unit will be lit.

7. When communication is established and traffic passes through the fiber between two TC3715's the LINK/ACT LED will blink.

Dry Contact Relay Alarm

Two terminal block connectors on the rear panel (labeled "ALARM RLY1," & "ALARM RLY2") provide for the dry contact relay alarm (see Figure 1). Normally in the OPEN position, any loss of optical signal will trigger an alarm condition and force the switch to the CLOSED position. This relay can be used in conjunction with an external device to monitor the condition of the fiber optic links.



Dry Contact Alarm Condition:

When the front panel LINK/ACT LED is lit and/or blinking, the TC3715 is working well and thus it is not in Alarm Condition. Otherwise, if the LINK/ACT LED is "Off" the TC3715 will be in Alarm Condition and the Dry Contact Relay will be activated.

SHR ID Setting (Default IP Setting)

The TC3715s can be connected with a maximum of 128 units. The IP address can be configured with either hardware or software (each unit must have a unique IP). Hardware configuration is limited to the default IP addresses. Therefore, it is generally used for bench testing.

Note: Software configurations will overwrite the hardware settings for IP Address. The reset button can be used to return the unit to the current hardware settings.

Hardware SHR ID Settings

Dip switches 1-7 on the rear panel of the unit are used to configure the TC3715 IP Address. They represent bit numbers, #1, least significant and #7, most significant. The values(1, 2, 4, 8, 16, 32, and 64) for setting the IP Address are represented by the bit number exponent of 2 (see table 1 and figure 3). Also refer to Appendix B.

Dip switch # (Bit #)	Values for setting the SHR ID's
1	$2^0 = 1$
2	$2^1 = 2$
3	$2^2 = 4$
4	$2^3 = 8$
5	$2^4 = 16$
6	$2^5 = 32$
7	$2^6 = 64$

Table 1. SHR ID Setting

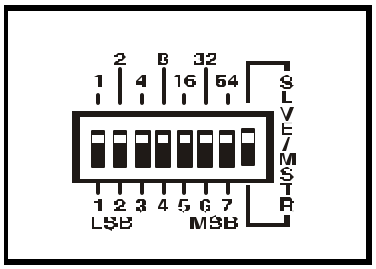


Figure 5. Rear Panel SHR ID Setting

Examples: To set the SHR ID (Default IP Address)

ID=1: Set dip switch 1 to the down position and the rest to the up position.

ID=2: Set dip switch 2 to the down position and the rest to the up position.

ID=3: Set dip switches 1 and 2 to the down position and the rest to the up position.

ID=4: Set dip switch 3 to down the position and the rest to the up position.

ID=5: Set dip switches 1 and 3 to the down position and the rest to the up position.

ID=6: Set dip switches 2 and 3 to the down position and the rest to the up position.

ID=7: Set dip switches 1, 2 and 3 to the down position and the rest to the up position.

ID=8: Set dip switch 4 to the down position and the rest to the up position.

ID=9 to 127: Please refer to the SHR ID Setting Tables on Appendix B.

Note: The SLVE/MSTR Dip switch is Not Used.

When using hardware configurations, the SHR ID = N will set the IP address to 192.168.254.[100+N].

For example, if the unit is set for SHR ID = 12, the IP address is 192.168.254.112.

Configuring the Alarm Dip Switches (Front Panel):

1. SHR Dip Switch: Not used. Always keep the SHR dip switch in the down "Off" position.

2. DISALM Dip Switch: This is the master alarm dip switch used to enable/disable the entire TC3715's Alarm Buzzer and Dry Contact Relay Alarm for the fiber ports. To enable the alarm, put the dip switch in the up "On" position. To disable the alarm, put the dip switch in the down "Off" position. The "DISALM" dip switch must be ***enabled*** for the F1/1X and F2/2X dip switches to function properly.

3. F1/1X Dip Switch: This dip switch enables/disables just Fiber Port F1's alarm. To enable F1's alarm, put the dip switch in the up "On" position. To disable F1's alarm, put the dip switch in the down "Off" position.

4. F2/2X Dip Switch: This dip switch enables/disables just Fiber Port F2's alarm. To enable F2's alarm, put the dip switch in the up "On" position. To disable F2's alarm, put the dip switch in the down "Off" position.

When either fiber port signal is disconnected, the TC3715 alarms will be triggered: the Alarm LED will flash, the alarm buzzer will sound, and the dry contact alarm will be forced to the close position. One example, assume all alarm dip switches are enabled. If the user only wants to use F1 Fiber of the TC3715, then the lack of a signal for F2 Fiber will cause the alarms to sound. In order to avoid this case, position the F2/2X dip switch to the down position to disable it. This will prevent F2 from triggering the alarm.

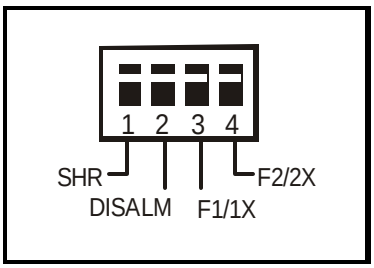


Figure 6. Front Panel Dip Switch

Chapter 3 - Web Configuration

Web-based Interface Connection:

1. Connect the computer and the TC3715 to the same Ethernet Switch.
2. Power up the unit.
3. Start your Web browser.
4. In the Address box, enter the IP address of the TC3715. For example, if the unit is set to factory default, enter: http://192.168.254.123
5. Once connected, you should see the following screen. (Please refer to the "Trouble shooting" section, if not connected)
6. Click the links on the left of the page to navigate to the desired section.

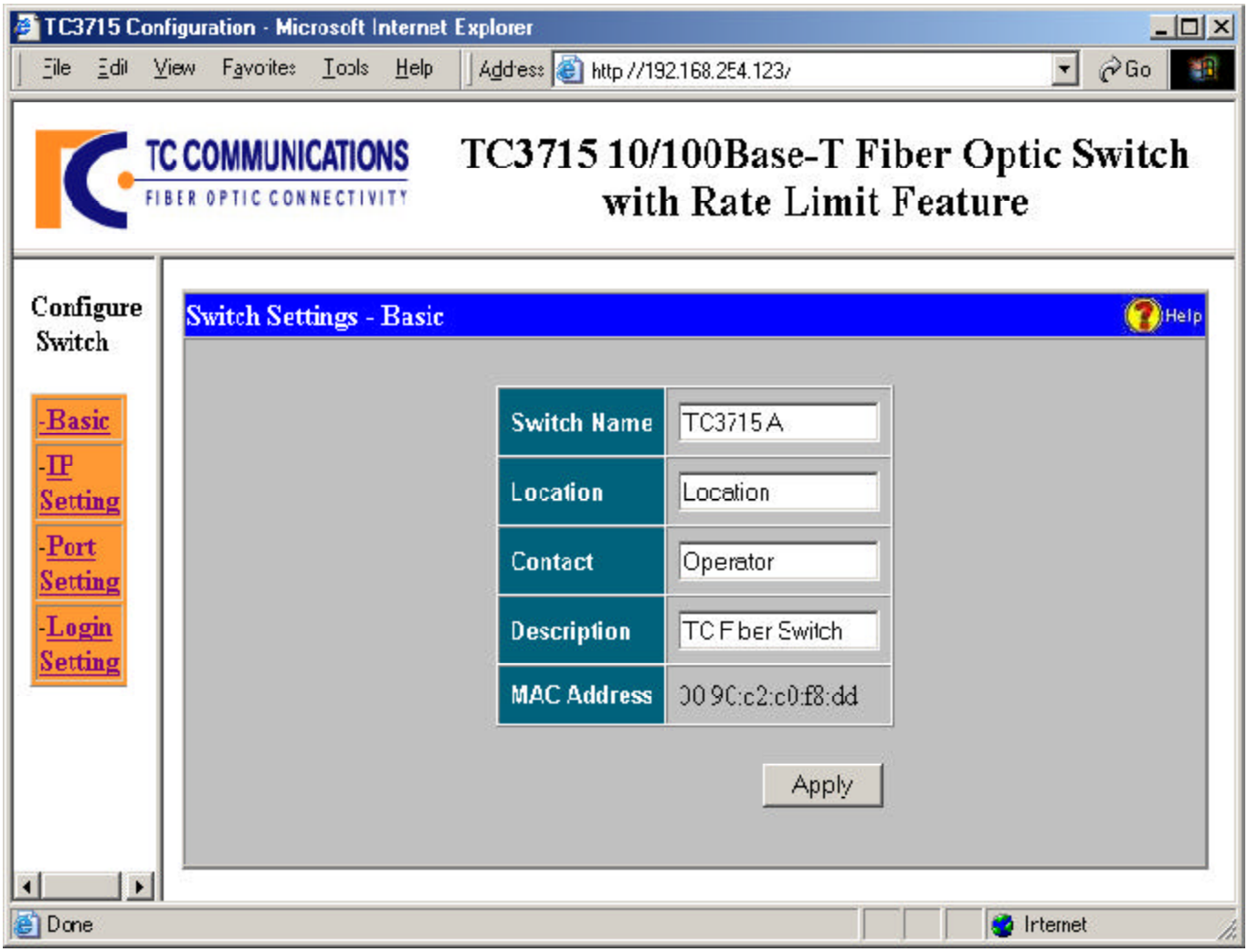


Figure 7. TC3715 Home Page

(Note: All fields are optional in this page.)

If you are being asked for a username and password on any of the page, use the following:

Default user name: **user**

Default password: **password**

Figure 8. TC3715 Password Dialog

Login Setting

You can change the user name and password by clicking on the link "Login Setting" at the home page.

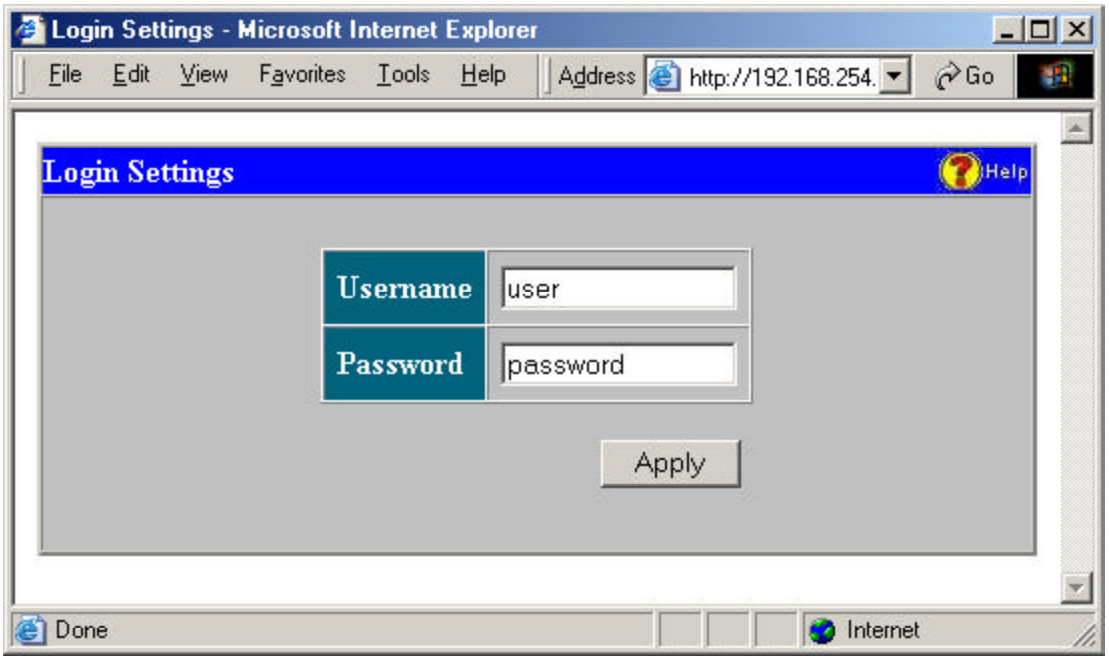


Figure 9. TC3715 Access Setting Page

Click the browser's "Back" button to cancel all the changes.

Click the "Apply" button to save the changes.

IP Setting

Click on the "IP Setting" Link at the home page and you should see the following screen.

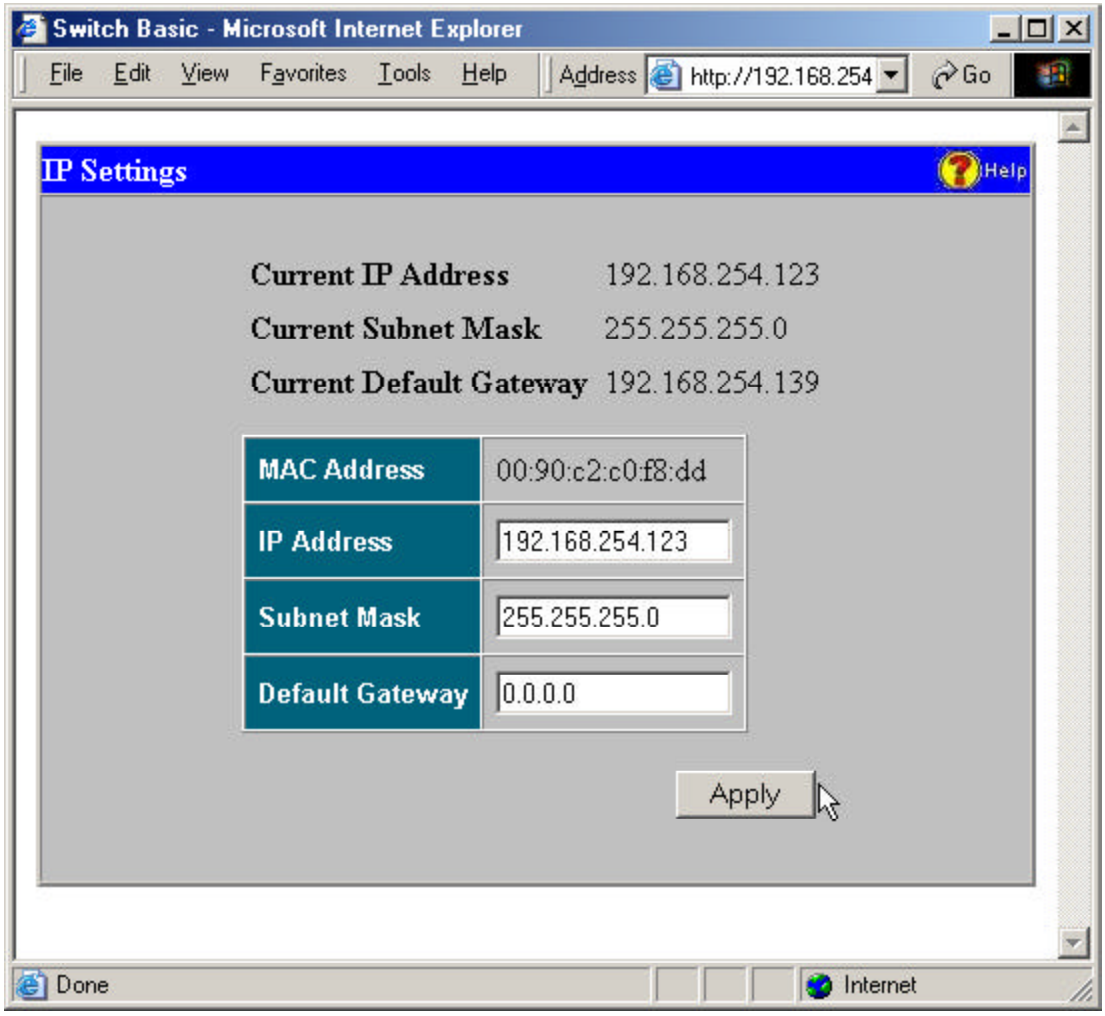


Figure 10. TC3715 IP Setting Page

(Note: Please contact your local network administrator for your network settings.)

IP Address: Unit's IP Address. The default IP Address is 192.168.254.123

If you change the IP Address, you must reconnect using the new IP Address.

Subnet Mask: This indicates the TCP/IP network class you are using.

The default Subnet Mask is 255.255.255.0.

Gateway IP Address: If your connection contains a router, enter the IP Address of the Router (LAN side.)

Default value is 0.0.0.0

Click the browser's "Back" button to cancel all the changes

Click the "Apply" button to save the changes, and you will see the following screen.

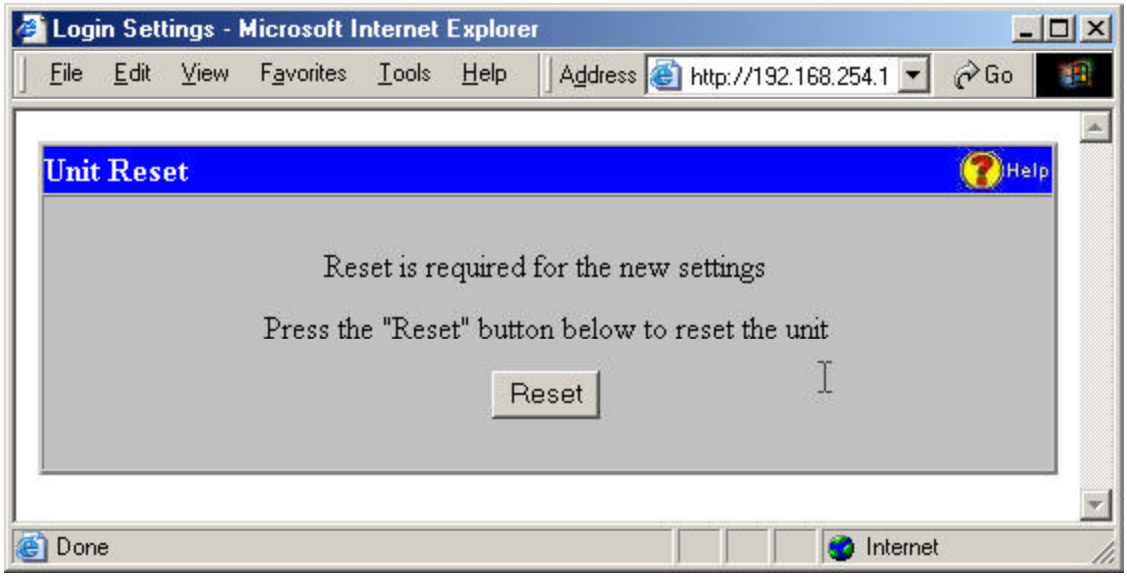


Figure 11. TC3715 Reset Page

You need to Reset the unit to apply the new settings.

1. By clicking the "Reset" button. Or,
2. By resetting the power of the unit.

Port Setting

Click on the "Port Setting" Link at the home page and you should see the following screen.

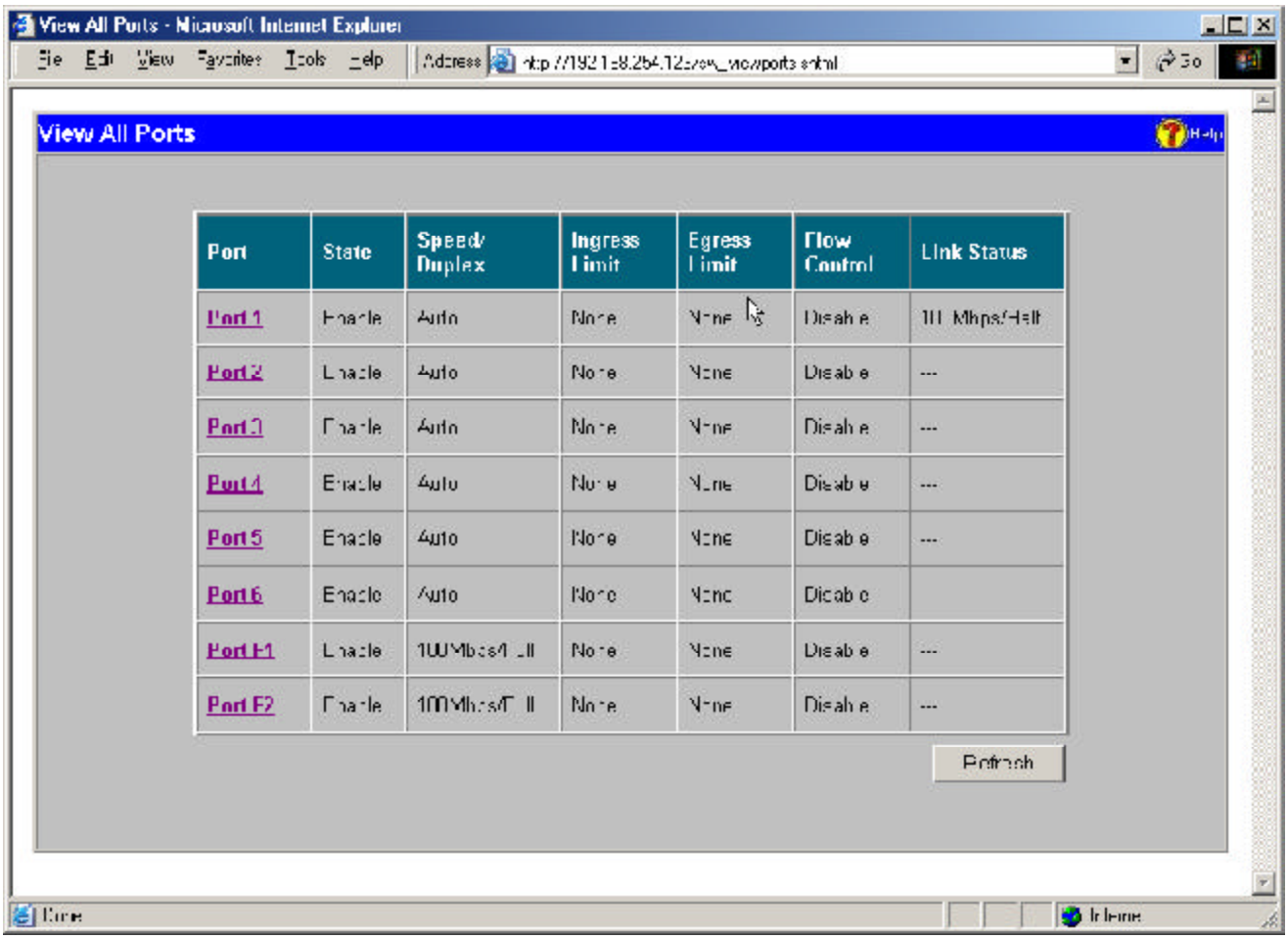


Figure 12. TC3715 Port Setting Page

Click the Port Link to configure individual port.

Click the "Refresh" button to update the link status.

Electrical Port Setting

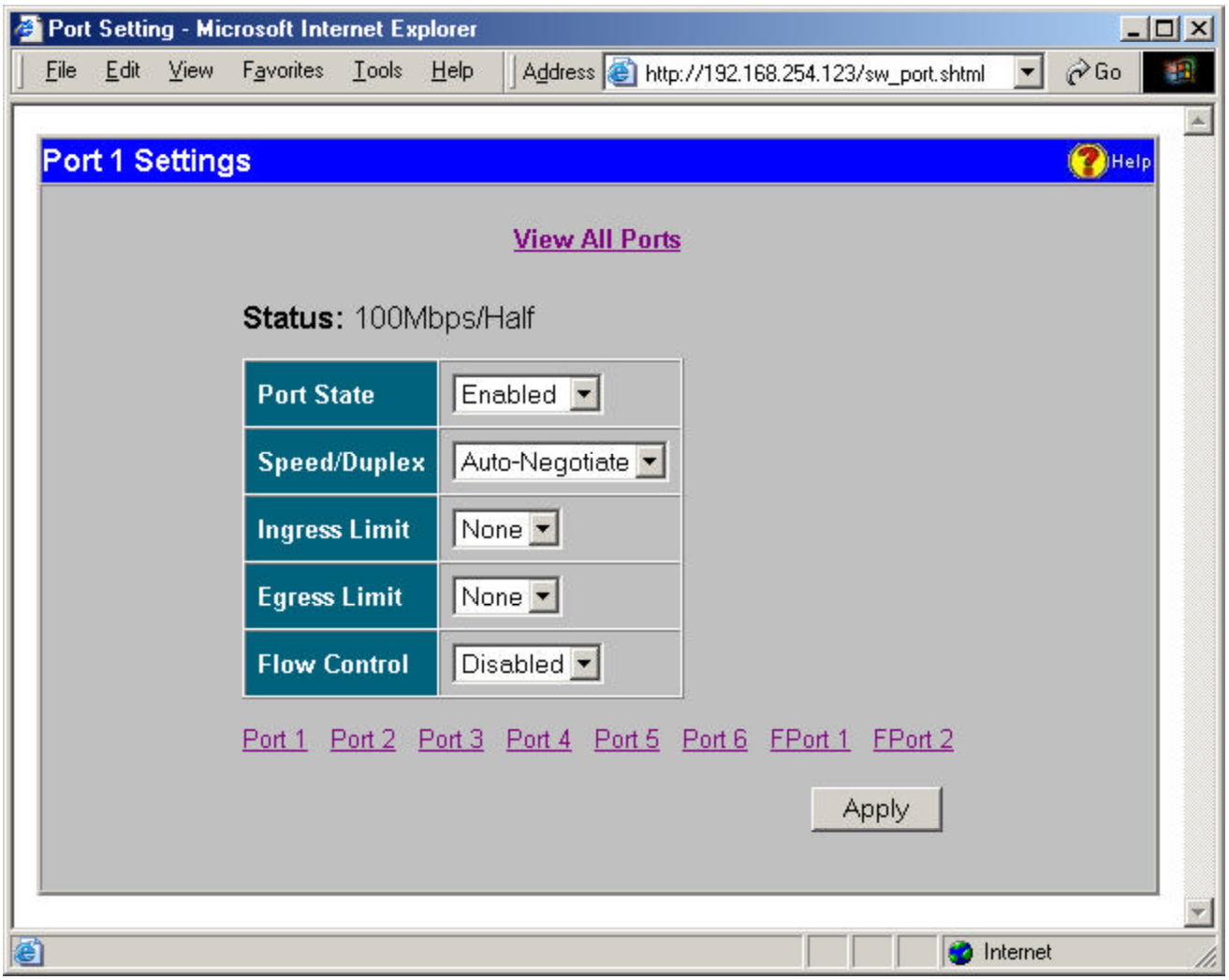


Figure 13. TC3715 Port Setting Page

Port State: Enable or disable the port.

Default: Enable

Speed/Duplex: Select the Speed and Duplex of the port

Auto-Negotiate, 100M/Full, 100M/Half, 10M/Full, and 10M/Half.

Default: Auto-Negotiate

Ingress Limit: Rate limit for data going into the TC3715 port.

None, 128K, 256K, 512K, 1M, 2M, 4M, 8M, 16M, 32M, and 64M. (bps)

Default: None

Web Configuration Continue

Egress Limit: Rate limit for data going out from the TC3715 port

None, 128K, 256K, 512K, 1M, 2M, 4M, and 8M. (bps)

Default: None

Flow Control: Enable or disable the flow control on this port

Default: Disable

Click Apply to apply the new settings.

Fiber Port Setting

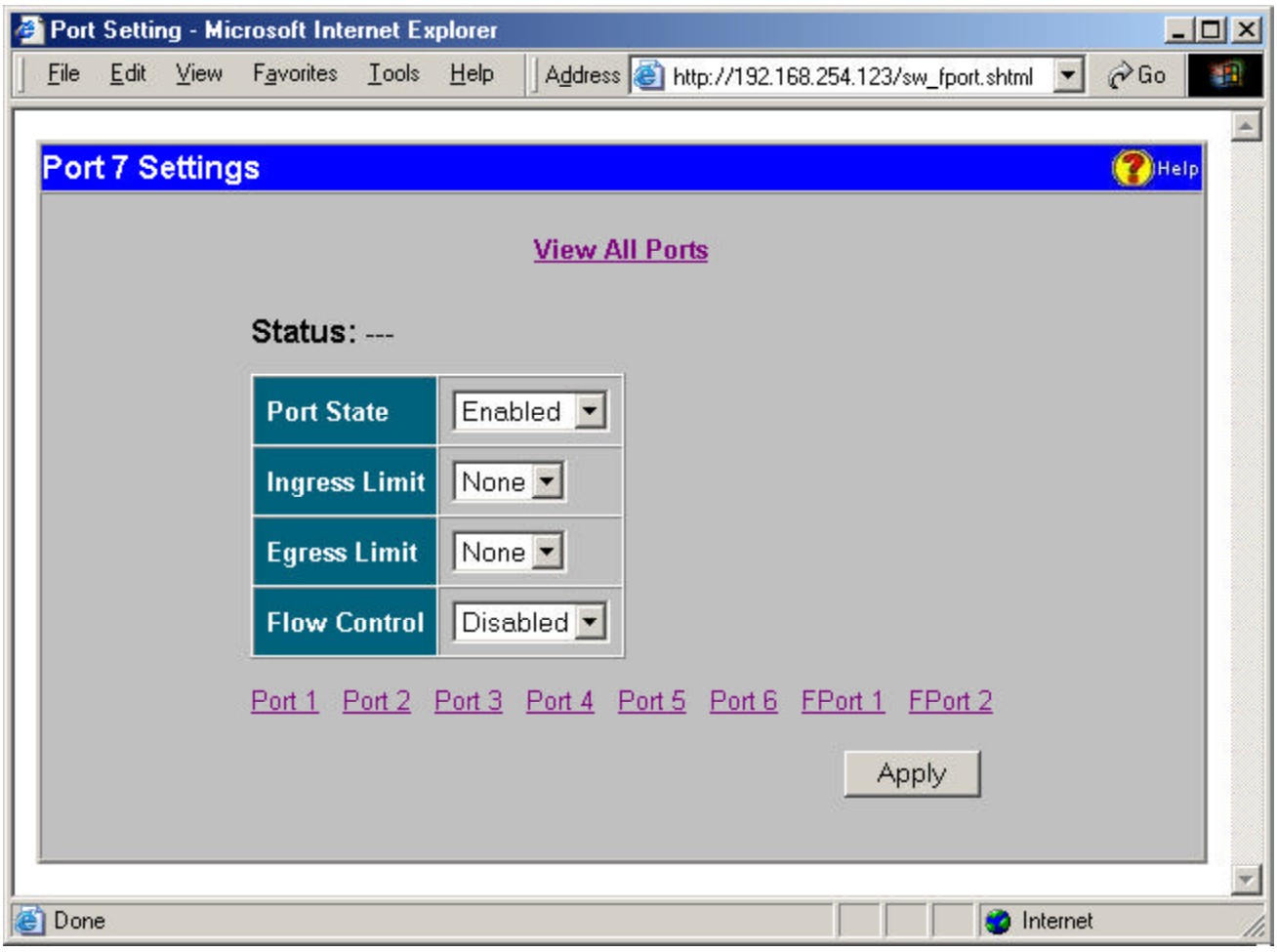


Figure 14. TC3715 Port Setting Page

Port State: Enable or disable the port.

Default: Enable

Ingress Limit: Rate limit for data going in to the TC3715 port.

None, 128K, 256K, 512K, 1M, 2M, 4M, 8M, 16M, 32M, and 64M. (bps)

Default: None

Egress Limit: Rate limit for data going out from the TC3715 port

None, 128K, 256K, 512K, 1M, 2M, 4M, and 8M. (bps)

Default: None

Flow Control: Enable or disable the flow control on this port

Default: Disable

Click Apply to apply the new settings.

Chapter 4 - Serial/Telnet Configuration

Serial Interface Connection:

1. Connect the computer COM port and the TC3715 DB9 connector using a serial cable
2. Start Hyper Terminal (included with Win98/ME).
3. Choose the COM port which the serial cable is connected. E.g. Com1
4. Port Settings: 38400bps; 8 data bit; no parity; 1 stop bit; no flow control
5. Power up the unit and you should see the login screen.

Figure 15. Hyper Terminal Connection Dialog

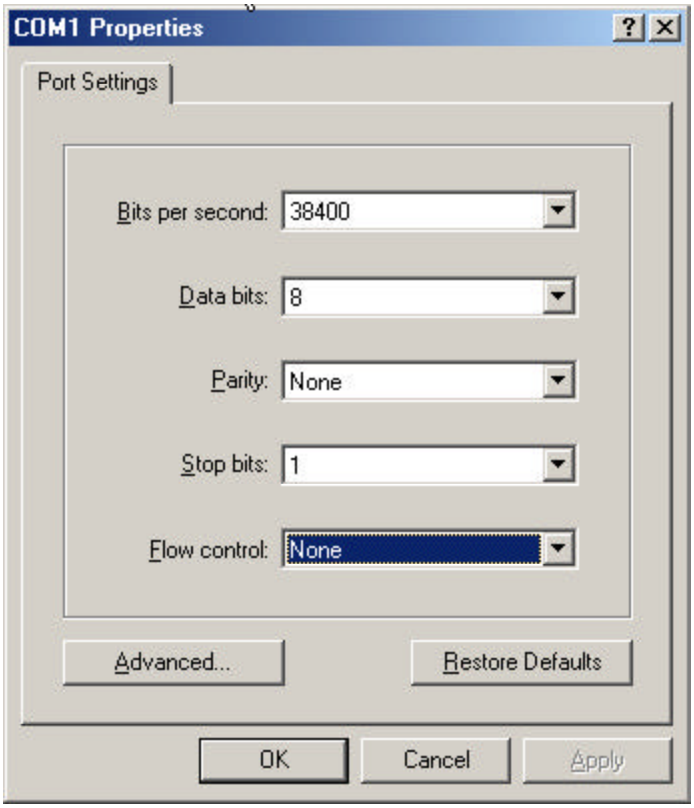


Figure 16. Port Settings Dialog

Serial/Telnet Configuration Continue

Telnet Interface Connection:

1. Connect the computer and the TC3715 to the same Ethernet Switch.
2. Power up the unit.
3. Start your telnet application and connect to the TC3715 IP address. E.g. 192.168.254.123
4. Set Port to "telnet" or "23", and set TermType to "vt100."
5. Once connected, you should see the following screen. (Please refer to the "Trouble shooting" section, if not connected)

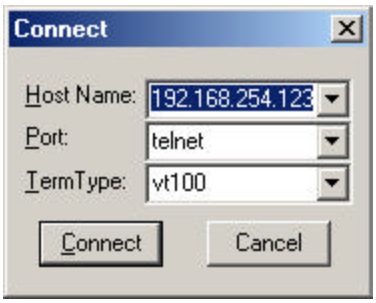


Figure 17. Telnet Connection Dialog

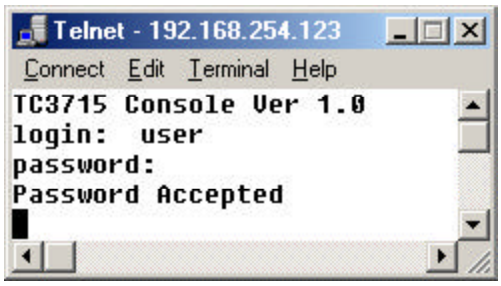


Figure 18. Console Login

Username and Password for Console login is the same as the Web login

Default Username: user
Default Password: password

(Note. Unit will logout automatically if more than two minutes of inactivity.)

Serial/Telnet Configuration Continue

Type "Help" for all the commands supported by TC3715

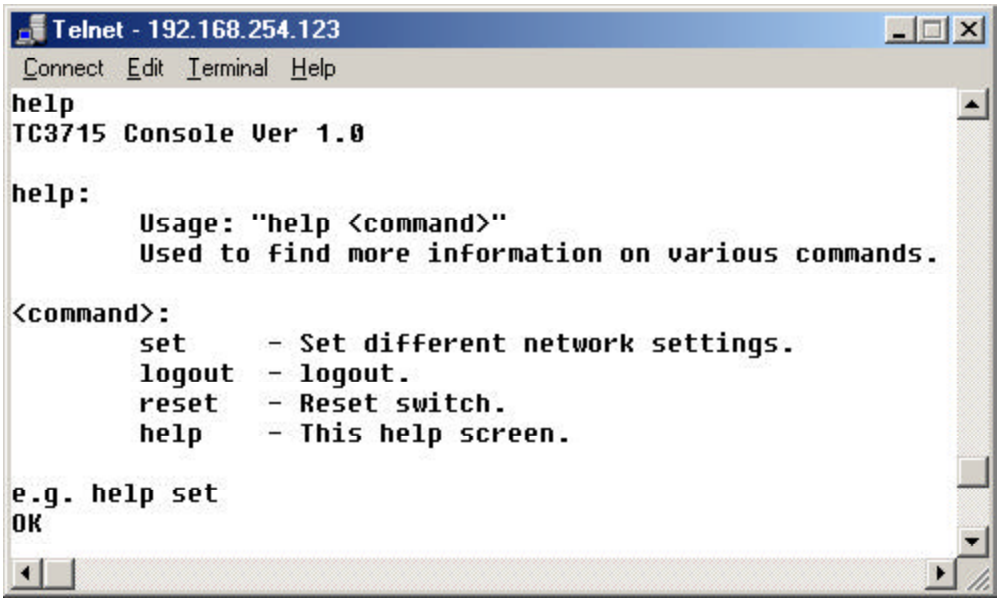


Figure 19. Console Help

Set: This command is used to configure the network settings.

Please see the next section for more details.

Logout: This command is used to logout from the serial console.

Reset: This command is used to reset the TC3715

Serial/Telnet Configuration Continue

Type "Help Set" for all the set commands supported by TC3715

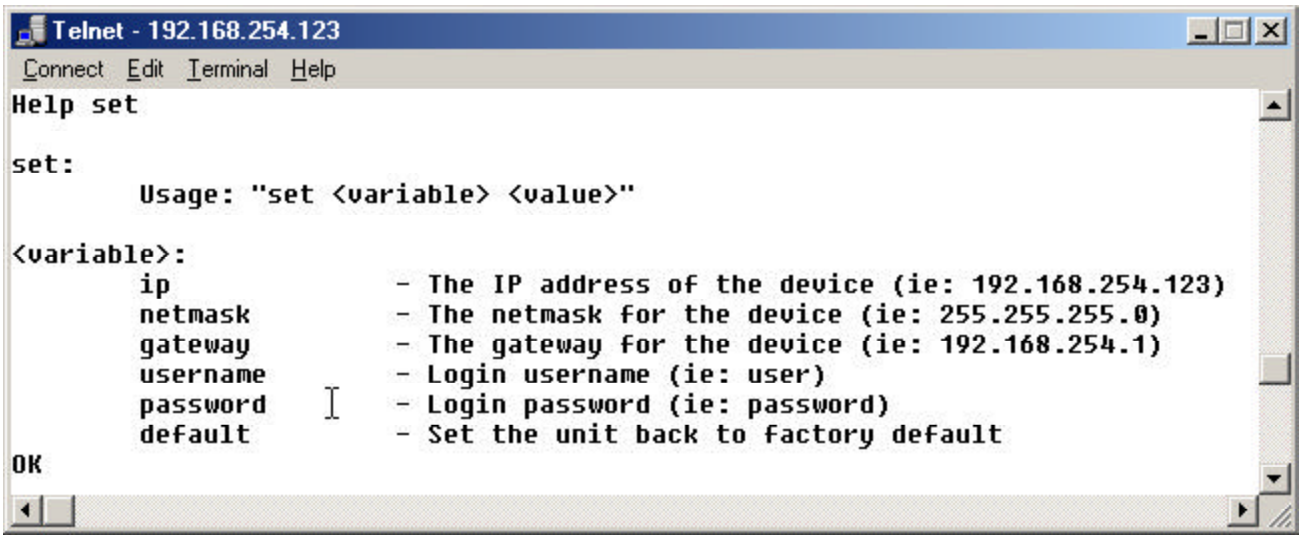


Figure 20. Console Set Help

Set ip:	Set Unit's IP Address.	E.g. Set ip 192.168.254.123
Set netmask:	Set Unit's Netmask.	E.g. Set netmask 255.255.255.0
Set gateway:	Set Unit's Gateway IP	E.g. Set gateway 192.168.254.1
Set username:	Set login username	E.g. Set username john123
Set password:	Set login password	E.g. Set password 123456
Set default:	Set unit back to factory default	E.g. Set default

IP:	192.168.254.123
Subnet Mask:	255.255.255.0
Gateway IP:	0.0.0.0
Username:	user
Password:	password

(Note. All set commands required reset to apply new settings)

Chapter 5 - Troubleshooting

PC Configuration:

In order to communicate with a TC3715 that is set to default, the user's PC IP address must be set within the range of 192.168.254.1 to 192.168.254.254, with a Network Mask of 255.255.255.0. To check your PC's IP Address and Network Mask. (Windows 98/ME)

1. Open "Control Panel"
2. Open "Network"
3. Click on the TCP/IP for the network card
4. Click "Properties"

If your PC has a compatible IP Address and Network Mask. Please go to the Web-based Interface section. (Attention: Please copy down the existing setting before making any changes. Contact your local network administrator if you are unsure about the settings. Improper settings may result in disruption of the current network.)

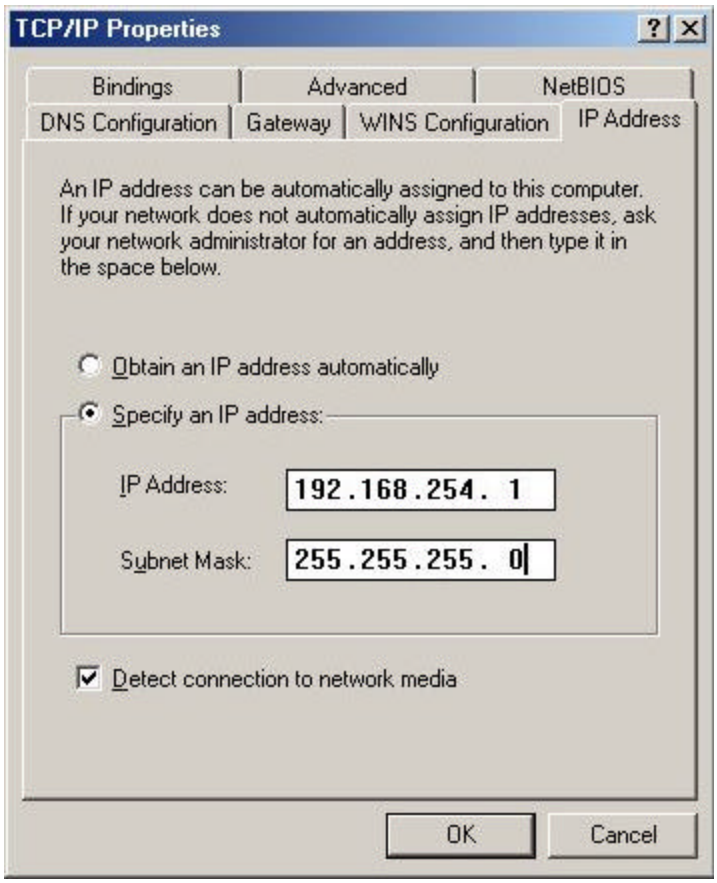


Figure 21. TCP/IP Properties

Under the TCP/IP Properties

Select the "Specify an IP address" option and type in the following

IP Address: 192.168.254.1 (Please make sure no other network device are using the same IP address.)

Subnet Mask: 255.255.255.0

Click OK and reboot the computer.

Troubleshooting Continue

Power Problem:

No LEDs are lit:

A. "PWRA" and/or "PWRB" LEDs should be on when power is connected. If both are "Off," then no DC power is reaching the unit. Check the power supply, source, and polarity.

B. If "PWRA" and/or "PWRB" LEDs are "On" but all other LEDs are "Off", and the Alarm switch is not closed, it indicates an internal problem with the unit. For assistance, please contact the Technical Support Department at TC Communications @ (949) 852-1973.

Electrical Problem:

If All LEDs, 100M, FULL/COL, and LINK/ACT, are OFF:

It means that there is no ethernet electrical signal detected by the TC3715. Check the twisted pair cables for good connectivity. Make sure that the units have adequate power.

Optical Problem:

If the 100M and FULL/COL LEDs are lit, and the LINK/ACT LED is OFF:

A. Check the physical fiber optic cable connection to make sure it is not loose or broken.

B. Optic "Tx" is connected wrongly to another TC3715's "Tx."

C. Optic cable type is incorrect. Typically, fiber optic cable with yellow-colored insulation is designated for Single Mode use @8.2µm or 9µm; orange or gray-colored cable is for Multimode use @50µm or 62µm. If the wrong cable type is used, the unit will not function properly.

Chapter 6 - Specifications

Electrical

Data Rates 10Mbps/100Mbps
Connectors .....RJ-45 Female, DB9 Serial Port

Optical

Refer to pages 4 and 5

Visual Indicators

System status .....PWR A/B, Vcc1, Vcc2, ALARM, MSTR/SLVE
Ethernet Signal Status ..... 100M, FULL/COL, LINK/ACT (each port)
Optical Signal Status ..... 100M, FULL/COL, LINK/ACT (each port)

Alarm

Dry Contact.....Normal Open

Power Source

Standard ..... 12VDC @600mA
Optional .....24VDC, -48VDC, 125VDC or
.....115/230VAC with an external power cube

Temperature

Operating .....0ºC to 50ºC
..... Hi-Temp (Optional) -20ºC to 70ºC
..... Hardened Temperature (Optional) -40ºC to 85ºC
Humidity .....95% non-condensing

Physical (Standalone/Wallmount unit)

Height ..... (4.445 cm) 1.75"
Width..... (48.26 cm) 19.0"
Depth ..... (13.33 cm) 5.25"
Weight ..... (712.1 gm) 1.57 Lbs

Appendix - A

Return Policy

To return a product, you must first obtain a Return Material Authorization number from the Customer Service Department. If the product's warranty has expired, you will need to provide a purchase order to authorize the repair. When returning a product for a suspected failure, please provide a description of the problem and any results of diagnostic tests that have been conducted.

Warranty

Damages by lightning or power surges are not covered under this warranty.

All products manufactured by TC Communications, Inc. come with a five year (beginning 1-1-02) warranty. TC Communications, Inc. warrants to the Buyer that all goods sold will perform in accordance with the applicable data sheets, drawings or written specifications. It also warrants that, at the time of sale, the goods will be free from defects in material or workmanship. This warranty shall apply for a period of five years from the date of shipment, unless goods have been subject to misuse, neglect, altered or destroyed serial number labels, accidents (damages caused in whole or in part to accident, lightning, power surge, floods, fires, earthquakes, natural disasters, or Acts of God.), improper installation or maintenance, or alteration or repair by anyone other than Seller or its authorized representative.

Buyer should notify TC Communications, Inc. promptly in writing of any claim based upon warranty, and TC Communications, Inc., at its option, may first inspect such goods at the premises of the Buyer, or may give written authorization to Buyer to return the goods to TC Communications, Inc., transportation charges prepaid, for examination by TC Communications, Inc. Buyer shall bear the risk of loss until all goods authorized to be returned are delivered to TC Communications, Inc. TC Communications, Inc. shall not be liable for any inspection, packing or labor costs in connection with the return of goods.

In the event that TC Communications, Inc. breaches its obligation of warranty, the sole and exclusive remedy of the Buyer is limited to replacement, repair or credit of the purchase price, at TC Communications, Inc.'s option.

To return a product, you must first obtain a Return Material Authorization (RMA) number and RMA form from the Customer Service Department. If the product's warranty has expired, you will need to provide a purchase order to authorize the repair. When returning a product for a suspected failure, please fill out RMA form provided with a description of the problem(s) and any results of diagnostic tests that have been conducted. The shipping expense to TC Communications should be prepaid. The product should be properly packaged and insured. After the product is repaired, TC Communications will ship the product back to the shipper at TC's cost to U.S. domestic destinations. (Foreign customers are responsible for all shipping costs, duties and taxes [both ways]. We will reject any packages with airway bill indicating TC communications is responsible for Duties and Taxes. To avoid Customs Duties and Taxes, please include proper documents indicating the product(s) are returned for repair/retest).

Appendix - B

Setting the SHR ID Default IP address on the TC3715's:

Using the rear panel DIP switches 1- 7, you can set the Default IP Address. DIP switch #8 is not used.

There are 127 settings for the Default IP Address on the TC3715's; each unit in the ring must have a different IP Address.

SHR ID Default IP Address (1)

Dipswitch / Value	1	2	3	4	5	6	7
	2^0=1	2^1=2	2^2=4	2^3=8	2^4=16	2^5=32	2^6=64
1	Down	Up	Up	Up	Up	Up	Up
2	Up	Down	Up	Up	Up	Up	Up
3	Down	Down	Up	Up	Up	Up	Up
4	Up	Up	Down	Up	Up	Up	Up
5	Down	Up	Down	Up	Up	Up	Up
6	Up	Down	Down	Up	Up	Up	Up
7	Down	Down	Down	Up	Up	Up	Up
8	Up	Up	Up	Down	Up	Up	Up
9	Down	Up	Up	Down	Up	Up	Up
10	Up	Down	Up	Down	Up	Up	Up
11	Down	Down	Up	Down	Up	Up	Up
12	Up	Up	Down	Down	Up	Up	Up
13	Down	Up	Down	Down	Up	Up	Up
14	Up	Down	Down	Down	Up	Up	Up
15	Down	Down	Down	Down	Up	Up	Up
16	Up	Up	Up	Up	Down	Up	Up
17	Down	Up	Up	Up	Down	Up	Up
18	Up	Down	Up	Up	Down	Up	Up
19	Down	Down	Up	Up	Down	Up	Up
20	Up	Up	Down	Up	Down	Up	Up
21	Down	Up	Down	Up	Down	Up	Up
22	Up	Down	Down	Up	Down	Up	Up
23	Down	Down	Down	Up	Down	Up	Up
24	Up	Up	Up	Down	Down	Up	Up
25	Down	Up	Up	Down	Down	Up	Up
26	Up	Down	Up	Down	Down	Up	Up
27	Down	Down	Up	Down	Down	Up	Up
28	Up	Up	Down	Down	Down	Up	Up
29	Down	Up	Down	Down	Down	Up	Up
30	Up	Down	Down	Down	Down	Up	Up
31	Down	Down	Down	Down	Down	Up	Up
32	Up	Up	Up	Up	Up	Down	Up
33	Down	Up	Up	Up	Up	Down	Up
34	Up	Down	Up	Up	Up	Down	Up
35	Down	Down	Up	Up	Up	Down	Up
36	Up	Up	Down	Up	Up	Down	Up
37	Down	Up	Down	Up	Up	Down	Up
38	Up	Down	Down	Up	Up	Down	Up
39	Down	Down	Down	Up	Up	Down	Up
40	Up	Up	Up	Down	Up	Down	Up

41	Down	Up	Up	Down	Up	Down	Up
42	Up	Down	Up	Down	Up	Down	Up
43	Down	Down	Up	Down	Up	Down	Up
44	Up	Up	Down	Down	Up	Down	Up
45	Down	Up	Down	Down	Up	Down	Up

SHR ID Default IP Address (2)

Dipswitch / Value	1	2	3	4	5	6	7
	2^0=1	2^1=2	2^2=4	2^3=8	2^4=16	2^5=32	2^6=64
46	Up	Down	Down	Down	Up	Down	Up
47	Down	Down	Down	Down	Up	Down	Up
48	Up	Up	Up	Up	Down	Down	Up
49	Down	Up	Up	Up	Down	Down	Up
50	Up	Down	Up	Up	Down	Down	Up
51	Down	Down	Up	Up	Down	Down	Up
52	Up	Up	Down	Up	Down	Down	Up
53	Down	Up	Down	Up	Down	Down	Up
54	Up	Down	Down	Up	Down	Down	Up
55	Down	Down	Down	Up	Down	Down	Up
56	Up	Up	Up	Down	Down	Down	Up
57	Down	Up	Up	Down	Down	Down	Up
58	Up	Down	Up	Down	Down	Down	Up
59	Down	Down	Up	Down	Down	Down	Up
60	Up	Up	Down	Down	Down	Down	Up
61	Down	Up	Down	Down	Down	Down	Up
62	Up	Down	Down	Down	Down	Down	Up
63	Down	Down	Down	Down	Down	Down	Up
64	Up	Up	Up	Up	Up	Up	Down
65	Down	Up	Up	Up	Up	Up	Down
66	Up	Down	Up	Up	Up	Up	Down
67	Down	Down	Up	Up	Up	Up	Down
68	Up	Up	Down	Up	Up	Up	Down
69	Down	Up	Down	Up	Up	Up	Down
70	Up	Down	Down	Up	Up	Up	Down
71	Down	Down	Down	Up	Up	Up	Down
72	Up	Up	Up	Down	Up	Up	Down
73	Down	Up	Up	Down	Up	Up	Down
74	Up	Down	Up	Down	Up	Up	Down
75	Down	Down	Up	Down	Up	Up	Down
76	Up	Up	Down	Down	Up	Up	Down
77	Down	Up	Down	Down	Up	Up	Down
78	Up	Down	Down	Down	Up	Up	Down
79	Down	Down	Down	Down	Up	Up	Down
80	Up	Up	Up	Up	Down	Up	Down
81	Down	Up	Up	Up	Down	Up	Down
82	Up	Down	Up	Up	Down	Up	Down
83	Down	Down	Up	Up	Down	Up	Down
84	Up	Up	Down	Up	Down	Up	Down
85	Down	Up	Down	Up	Down	Up	Down

86	Up	Down	Down	Up	Down	Up	Down
87	Down	Down	Down	Up	Down	Up	Down
88	Up	Up	Up	Down	Down	Up	Down
89	Down	Up	Up	Down	Down	Up	Down
90	Up	Down	Up	Down	Down	Up	Down
91	Down	Down	Up	Down	Down	Up	Down
92	Up	Up	Down	Down	Down	Up	Down

SHR ID Default IP Address (3)

Dipswitch / Value	1	2	3	4	5	6	7
	2^0=1	2^1=2	2^2=4	2^3=8	2^4=16	2^5=32	2^6=64
93	Down	Up	Down	Down	Down	Up	Down
94	Up	Down	Down	Down	Down	Up	Down
95	Down	Down	Down	Down	Down	Up	Down
96	Up	Up	Up	Up	Up	Down	Down
97	Down	Up	Up	Up	Up	Down	Down
98	Up	Down	Up	Up	Up	Down	Down
99	Down	Down	Up	Up	Up	Down	Down
100	Up	Up	Down	Up	Up	Down	Down
101	Down	Up	Down	Up	Up	Down	Down
102	Up	Down	Down	Up	Up	Down	Down
103	Down	Down	Down	Up	Up	Down	Down
104	Up	Up	Up	Down	Up	Down	Down
105	Down	Up	Up	Down	Up	Down	Down
106	Up	Down	Up	Down	Up	Down	Down
107	Down	Down	Up	Down	Up	Down	Down
108	Up	Up	Down	Down	Up	Down	Down
109	Down	Up	Down	Down	Up	Down	Down
110	Up	Down	Down	Down	Up	Down	Down
111	Down	Down	Down	Down	Up	Down	Down
112	Up	Up	Up	Up	Down	Down	Down
113	Down	Up	Up	Up	Down	Down	Down
114	Up	Down	Up	Up	Down	Down	Down
115	Down	Down	Up	Up	Down	Down	Down
116	Up	Up	Down	Up	Down	Down	Down
117	Down	Up	Down	Up	Down	Down	Down
118	Up	Down	Down	Up	Down	Down	Down
119	Down	Down	Down	Up	Down	Down	Down
120	Up	Up	Up	Down	Down	Down	Down
121	Down	Up	Up	Down	Down	Down	Down
122	Up	Down	Up	Down	Down	Down	Down
123	Down	Down	Up	Down	Down	Down	Down
124	Up	Up	Down	Down	Down	Down	Down
125	Down	Up	Down	Down	Down	Down	Down
126	Up	Down	Down	Down	Down	Down	Down
127	Down	Down	Down	Down	Down	Down	Down