Technicolor NTSC-8 User's Manual

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REVISION RECORD			
Revision	Date	Revision Editor	Revision Description
1	11/3/16	Angelo Peruch	Final Draft Approved
1.1	11/10/16	Angelo Peruch	Revised chassis table

1 Introduction

The NTSC-8 accepts encrypted video signals from a COM46 card via Ethernet, and modulates those eight signals as analog NTSC, standard definition, unencrypted RF channels. One NTSC-8 will modulate eight channels from one COM46 card.

Connecting multiple NTSC-8s to a COM360 chassis using a Gigabit Ethernet switch (not included)

The system offers all the advantages of a COM2000 system including remote management, and is expandable to high definition for cost effective upgrades in the future.

System requires one RU of rack space.

Ventilation fans are rear mounted. The front and rear areas of the NTSC-8 should be kept clear to ensure good airflow.

Included in the box is the NTSC-8 unit and power supply.

Note: Technicolor only supports NTSC-8 installations when interfaced to COM46 cards in a COM360 chassis.

2 Front Panel Connections

All connections to the NTSC-8 are on the front panel as shown in Figure one above.

Power Input Port   RF Connector

Ethernet Port   Status Lights
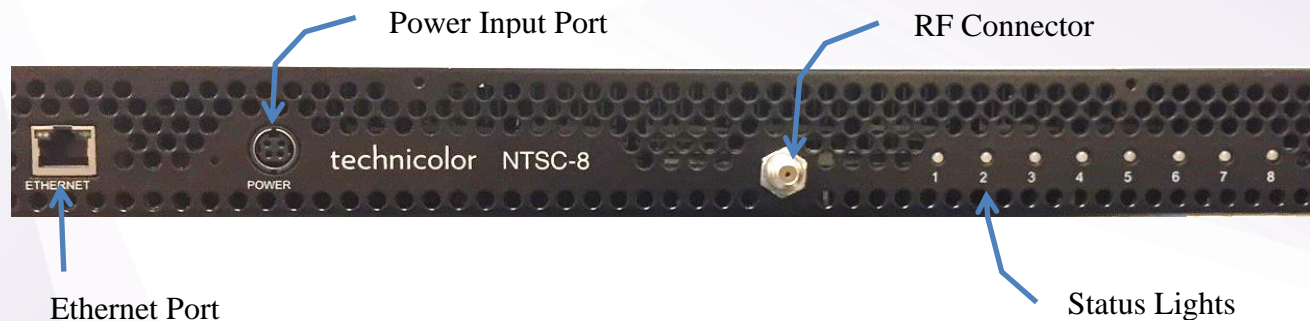
Figure 1 - NTSC-8 Front Panel

3   Power Supply

An external AC adaptor is included with the NTSC-8. The power adapter has a locking connector that clicks when properly seated as shown below in Figure 2.
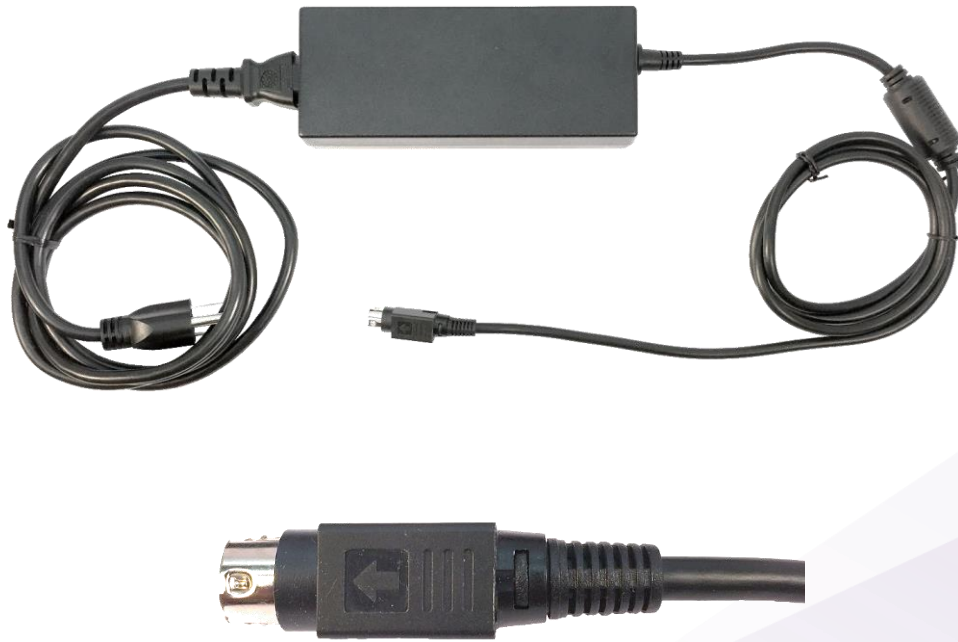
Figure 2 - Power Supply

4 Physical Connections

Figure 3 below details the connection of two NTSC-8 units connected to a COM2000 system. If more than one unit is to be connected, a gigabit Ethernet switch (not included) is required between a chassis GbE port and the NTSC-8s.
Connect remote management directly to an unused COM360 GbE port or to the GiGe switch.
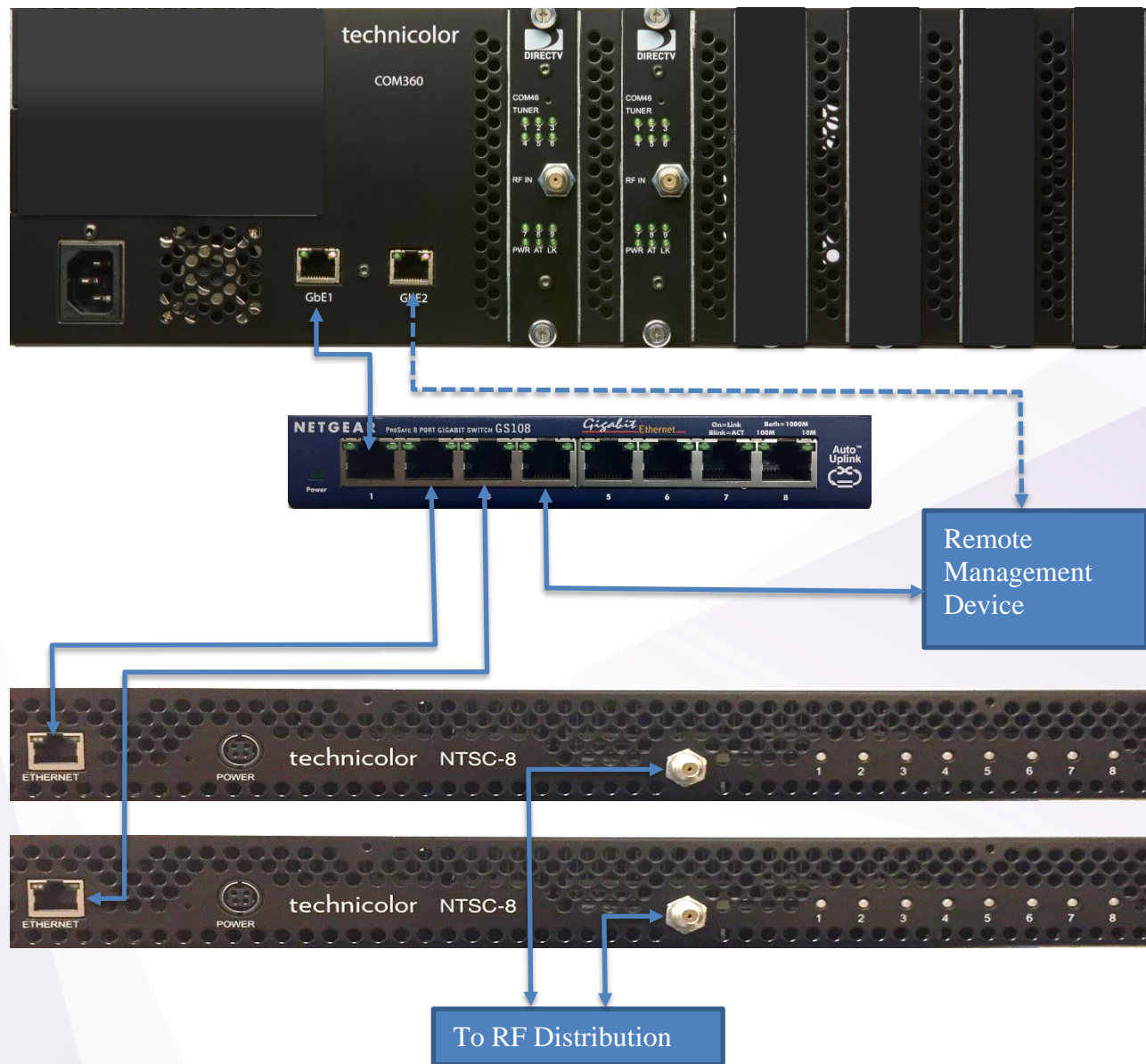
Figure 3 - Physical Connections

Connect the Power Cord

Carefully insert the power cord into the Power port on the NTSC-8 as shown in Figure 4. When properly seated in the power port the plug will snap into place with an audible click. To remove, firmly pull back on the cover and remove the plug from the power port.

Figure 4 - Power Supply Connections

5 COM46 Software Requirements and Setup

5.1 Software Requirements

COM46 cards need to be running software to version ST03.03.15 or later. You can verify software version from the COM46 Pairing information page as shown below in Figure 5.

Figure 5 - COM46 Pairing Info Page

See COM2000 integrators manual or consult with your distributor if you need assistance upgrading software.

5.2 COM46 Setup

Each COM46 card will stream eight channels to the NTSC-8. You will need to enter the IP address of the first NTSC-8 modulator in the COM46 advanced edit page as shown below in Figure 6. By default, the NTSC-8 IP addresses are set to 192.168.5.1 / 8.

Enter the IP address of the first modulator in the NTSC-8 in the NTSC8_IP field. Click Submit Repeat in each COM46 card that is associated with a NTSC-8 unit.

(See section 5.1 below for setting up the NTSC-8).

Figure 6 - COM46 User Config

Once you have all the NTSC-8s and COM46s set up retune the channels or restart the COM 46 cards.

6 NTSC-8 Setup

To access the NTSC user interface click on the *NTSC* tab as shown below in Figure 7 and Figure 8. Note the box to the right of each field in the Control section. Checking this box will apply that setting to all modulators in the NTSC-8.

DIRECTV COM2000

technicolor

Commands: Overview, Discover, PairingInfo, TuneAll, Help
Display, SysInfo, HealthInfo, EPG, Syslog, Lock, ATSC, NTSC, 401, QAM

Figure 7 - COM46 Main Interface Page

NTSC8 Modulator

Which NTSC8 (192.168.5.1+chassis*8+slot): 192.168.5.1
Submit

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.1	0	0	3	1.1.14	29001196	30	0	0	0.0.0.0	20	0	1
192.168.5.2	0	1	3	1.1.14	28998770	33	0	0	0.0.0.0	20	0	1
192.168.5.3	0	2	3	1.1.14	28997952	36	0	0	0.0.0.0	20	0	1
192.168.5.4	0	3	3	1.1.14	28999334	39	0	0	0.0.0.0	20	0	1
192.168.5.5	0	4	3	1.1.14	28998578	42	0	0	0.0.0.0	20	0	1
192.168.5.6	0	5	3	1.1.14	29000400	45	0	0	0.0.0.0	20	0	1
192.168.5.7	0	6	3	1.1.14	29000902	48	0	0	0.0.0.0	20	0	1
192.168.5.8	0	7	3	1.1.14	29002772	51	0	1	0.0.0.0	20	0	1

Control (check to change all 8 slots)

channel:	30	☐ //2-158
attenuation:	0	☐ //0-10dB
carrierOn:	0	☐ //0=off;1=on
reset:	0	☐
sharpness:	20	☐ //range=[1:26]
audioLevel:	0	☐ //range=[1:16], requires reset
aspectRatio:	1	☐ //0=4x3, 1=16x9 (recommended), requires reset
alternateIp:	0.0.0.0	☐
tftpIp:	192.168.3.18	☐
tftpFilename:		

Submit

Click box to apply setting to all modulators

Figure 8 - COM46 NTSC Tab

Each controllable option in the interface is covered in the following sections.

Control Feature Definitions	
channel	NTSC channel output
attenuation	Attenuates the RF output up to 10dBmV. Default value is 0
carrier on	Enter a 0 in this field to shut off the carrier
reset	Enter a 1 in this field to reset the device
sharpness	N/A
audio level	Adjusts the audio volume (a reset is required for this setting to take affect)
aspect ratio	0 = 4X3 1= 16X9 (a reset is required for this setting to take affect)
alternate Ip	Sets an alternate IP address for each modulator
tftpIP	For software upgrade enter the IP of the COM46 card being used at a TFTP server
tftpFilename	For software upgrade enter the software filename uploaded to the COM46

6.1 Setting up Multiple Chassis

Each channel or modulator within a NTSC-8 is assigned an IP address as shown below in Figure 9 .

By default modulator one in chassis zero is 192.168.5.1.

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.1	0	0	3	1.1.14	29001196	30	0	0	0.0.0.0	20	0	1
192.168.5.2	0	1	3	1.1.14	28998770	33	0	0	0.0.0.0	20	0	1
192.168.5.3	0	2	3	1.1.14	28997952	36	0	0	0.0.0.0	20	0	1
192.168.5.4	0	3	3	1.1.14	28999334	39	0	0	0.0.0.0	20	0	1
192.168.5.5	0	4	3	1.1.14	28998578	42	0	0	0.0.0.0	20	0	1
192.168.5.6	0	5	3	1.1.14	29000400	45	0	0	0.0.0.0	20	0	1
192.168.5.7	0	6	3	1.1.14	29000902	48	0	0	0.0.0.0	20	0	1
192.168.5.8	0	7	3	1.1.14	29002772	51	0	1	0.0.0.0	20	0	1

Figure 9 NTSC-8 Modulator IP

When multiple chassis are used, the default IP for each modulator needs to be set.

There are two options for setting the IP addresses.

Option One: (recommended) Set Alternate IP address in NTSC-8 User Interface

Since the IP address of the first modulator is set to 192.168.5.1 connecting two NTSC-8s in default configuration will result in an IP conflict.
To change the IP address connect only additional units, one at a time to the COM2000. For this example, we will continue with the 192.168.5.XXX IP scheme and assign 192.168.5.9/16 to the second NTSC-8.

In the Control section of the NTSC user interface, enter an IP address in the alternateIp field as shown in below in Figure 10.

Control (check to change all 8 slots)

channel:	30	☐	//2-158
attenuation:	0	☐	//0-10dB
carrierOn:	0	☐	//0=off;1=on
reset:	0	☐	
sharpness:	20	☐	//range=[1:26]
audioLevel:	0	☐	//range=[1:16], requires reset
aspectRatio:	1	☐	//0=4x3, 1=16x9 (recommended), requires reset
alternateIp:	192.168.5.9	☑	Enter IP and check box
tftpIp:	192.168.3.18	☐	
tftpFilename			

Submit   Submit

Figure 10 - Enter Alternate IP Address

Check the box to the right of the field to apply this setting to all modulators and click Submit.
You will see the new settings in the altIp column of the Status display as show in Figure 11 below.

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.1	0	0	3	1.1.14	2948789278	30	0	0	192.168.5.9	20	0	1
192.168.5.2	0	1	3	1.1.14	2948792166	33	0	0	192.168.5.10	20	0	1
192.168.5.3	0	2	3	1.1.14	2948791286	36	0	0	192.168.5.11	20	0	1
192.168.5.4	0	3	3	1.1.14	2948798044	39	0	0	192.168.5.12	New Alternate IPs		
192.168.5.5	0	4	3	1.1.14	2948802540	42	0	0	192.168.5.13	20	0	1
192.168.5.6	0	5	3	1.1.14	2948811020	45	0	0	192.168.5.14	20	0	1
192.168.5.7	0	6	3	1.1.14	2948811460	48	0	0	192.168.5.15	20	0	1
192.168.5.8	0	7	3	1.1.14	2948816018	51	0	1	192.168.5.16	20	0	1

Figure 11 - altIp

Label the NTSC-8 with the new IP address and repeat this procedure for each chassis. These settings are stored in non-volatile memory and is retained by the unit after powering off.

Option Two: Dipswitch Settings

Each NTSC-8 chassis can be set up using the internal dipswitches on the main board as shown below in Figure 12. To access the dipswitches, remove the top cover of the chassis. A #10 hex driver is required to remove the 11 chassis screws. Set the chassis number using the table in Figure 13.

Figure 12 – Chassis Dipswitch

Chassis ID	Switch 1	Switch 2	Switch 3	Switch 4	Default IP MOD 1
0	DOWN	DOWN	DOWN	DOWN	192.168.5.1/8
1	UP	DOWN	DOWN	DOWN	192.168.5.9/16
2	DOWN	UP	DOWN	DOWN	192.168.5.17/24
3	UP	UP	DOWN	DOWN	192.168.5.25/32
4	DOWN	DOWN	UP	DOWN	192.168.5.33/40
5	UP	DOWN	UP	DOWN	192.168.5.41/48
6	DOWN	UP	UP	DOWN	192.168.5.49/56
7	UP	UP	UP	DOWN	192.168.5.57/64
8	DOWN	DOWN	DOWN	UP	192.168.5.65/72
9	UP	DOWN	DOWN	UP	192.168.5.73/80
10	DOWN	UP	DOWN	UP	192.168.5.81/88
11	UP	UP	DOWN	UP	192.168.5.89/96
12	DOWN	DOWN	UP	UP	192.168.5.97/104
13	UP	DOWN	UP	UP	192.168.5.105/112
14	DOWN	UP	UP	UP	192.168.5.113/120

Figure 13 - Dipswitch Settings

Once you have set the NTCS-8 IP addresses, connect all units to the COM360 Chassis GbE Ethernet port via a Gigabit Ethernet switch. If installing only one NTSC-8 unit, it can be connected directly to one of the GbE ports on the COM360.

6.2 Setting the Modulator Output Channels

Set the RF output channel for the modulators using the channel field in the Control section. To set all channels in the NTSC-8 to contiguous channels you can enter the first channel in the field and check the box to the right as shown in Figure 14. In the example below, we will set channel outputs for as 2-9. Channels set in numerical order. NTSC-8 supports RF channels 2-107.

Figure 14 - Output Channel Settings

As shown below in Figure 15 the Status page now displays the output channels 2-9 in the channel column.

Figure 15 - Status Page Showing Set Channels

Change channels on individual modulators by entering the IP address of the modulator in the NTSC-8 Modulator field as shown in Figure 16 below. In this example, we will change the output channel of modulator 6 (slot 5) to channel 14, modulator 7 to 15 and modulator 8 to 16. Enter the IP address of modulator 6; it will now display at the top of the status table.

NTSC8 Modulator

Which NTSC8 (192.168.5.1+chassis*8+slot): 192.168.5.6   ← Enter modulator IP

Submit   ← Submit

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.6	0	5	3	1.1.14	1877155944	7		Modulator displayed		20	0	1
192.168.5.7	0	6	3	1.1.14	1877156384	8	0	0	192.168.5.15	20	0	1
192.168.5.8	0	7	3	1.1.14	1877155836	9	0	1	192.168.5.16	20	0	1
192.168.5.9	0	0	3	1.1.14	1877163956	2	0	0	192.168.5.9	20	0	1
192.168.5.10	0	1	3	1.1.14	1877161530	3	0	0	192.168.5.10	20	0	1
192.168.5.11	0	2	3	1.1.14	1877160712	4	0	0	192.168.5.11	20	0	1
192.168.5.12	0	3	3	1.1.14	1877162032	5	0	0	192.168.5.12	20	0	1
192.168.5.13	0	4	3	1.1.14	1877161276	6	0	0	192.168.5.13	20	0	1

Figure 16 - Changing Output Channel by Modulator

Enter the desired channel in the field. Do not check the box as you only want to change that modulator. Click submit

Control (check to change all 8 slots)

channel:	14	☐ //2-158 ← Enter desired output channel for modulator
attenuation:	0	☐ //0-10dB
carrierOn:	0	☐ //0=off;1=on
reset:	0	☐
sharpness:	20	☐ //range=[1:26]
audioLevel:	0	☐ //range=[1:16], requires reset
aspectRatio:	1	☐ //0=4x3, 1=16x9 (recommended), requires reset
alternateIp:	192.168.5.14	☐
tftpIp:	192.168.3.18	☐
tftpFilename:		

Submit   ← Submit

Repeat this process until RF outputs are set.

Figure 17 below shows we have change the output channels of modulators 6, 7, and 8 to 14, 15 and 16.

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.1	0	0	3	1.1.14	2659585232	2	0	0	192.168.5.9	20	0	1
192.168.5.2	0	1	3	1.1.14	2659582622	3	0	0	192.168.5.10	20	0	1
192.168.5.3	0	2	3	1.1.14	2659581680	4	0	0	192.168.5.11	20	0	1
192.168.5.4	0	3	3	1.1.14	2659583000	5	0	0	192.168.5.12	20	0	1
192.168.5.5	0	4	3	1.1.14	2659582244	6	0	0	192.168.5.13	20	0	1
192.168.5.6	0	5	3	1.1.14	2659584127	14	0	0	192.168.5.14	20	0	1
192.168.5.7	0	6	3	1.1.14	2659584629	15					0	1
192.168.5.8	0	7	3	1.1.14	2659583971	16	0	1	192.168.5.16	20	0	1

Output channels changed

Figure 17 - Channels Set in Status Table

6.3 Using Internal Attenuation

The NTSC-8 will output approximately 25dBmV from the internally combined eight modulators. Attenuation may be set in all, or individual modulators to adjust the output power as necessary. The default attenuation is set to 0. Maximum attenuation is 10dB.

To set attenuation for all modulators in a NTSC-8 enter the IP address of the first modulator in the NTSC-8 Modulator field and click Submit.
In this example, we will attenuate all modulators 5 db. Enter the attenuation value in the attenuation field and check the box as shown below in Figure 18. Click submit.

Control (check to change all 8 slots)

channel:	17	☐	//2-158
attenuation:	5	☑	//0-10dB Enter attenuation value and check the box
carrierOn:	0	☐	//0=off;1=on
reset:	0	☐	
sharpness:	20	☐	//range=[1:26]
audioLevel:	0	☐	//range=[1:16], requires reset
aspectRatio:	1	☐	//0=4x3, 1=16x9 (recommended), requires reset
alternateIp:	192.168.5.9	☐	
tftpIp:	192.168.3.18	☐	
tftpFilename:			
Submit			

Submit

Figure 18 - Set Attenuation in all Modulators

The status table will reflect the entry in the attenuation column.

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.1	0	0	3	1.1.14	298701987	17	5	0	192.168.5.9	20	0	1
192.168.5.2	0	1	3	1.1.14	298707503	18	5	0	192.168.5.10	20	0	1
192.168.5.3	0	2	3	1.1.14	298716031	19	5	0	192.168.5.11	20	0	1
192.168.5.4	0	3	3	1.1.14	298724133	20	5	0			0	1
192.168.5.5	0	4	3	1.1.14	298723439	21	5	0		Attenuation level	0	1
192.168.5.6	0	5	3	1.1.14	298734792	22	5	0	192.168.5.14	20	0	1
192.168.5.7	0	6	3	1.1.14	298743420	23	5	0	192.168.5.15	20	0	1
192.168.5.8	0	7	3	1.1.14	298751230	24	5	1	192.168.5.16	20	0	1

To change the attenuation level on a single modulator enter the IP address of the modulator in the NTSC-8 Modulator field and click Submit. Enter the attenuation value in the attenuation field (do not check the box) and click submit. In this example, we changed the attenuation value of modulator two (slot1) to 8 dB.
The attenuation value for modulator 2 has been set to 8dB as shown in Figure 19.

NTSC8 Modulator

Which NTSC8 (192.168.5.1+chassis*8+slot): `192.168.5.2`   ← Enter modulator IP address
Submit   ← Submit

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.2	0	1	3	1.1.19	370925	18	8	1		Attenuation level	0	1
192.168.5.3	0	2	3	1.1.19	370045	19	5	1	192.168.5.3	20	0	1
192.168.5.4	0	3	3	1.1.19	371805	20	5	1	192.168.5.4	20	0	1
192.168.5.5	0	4	3	1.1.19	371365	21	5	1	192.168.5.5	20	0	1
192.168.5.6	0	5	3	1.1.19	372245	22	5	1	192.168.5.6	20	0	1
192.168.5.7	0	6	3	1.1.19	372685	23	5	1	192.168.5.7	20	0	1
192.168.5.8	0	7	3	1.1.19	370485	24	5	1	192.168.5.8	20	0	1

Control (check to change all 8 slots)

channel:	18	☐ //2-158
attenuation:	8	☐ //0-10dB ← Enter attenuation level for modulator
carrierOn:	1	☐ //0=off;1=on Do not check box
reset:	0	☐
sharpness:	20	☐ //range=[1:26]
audioLevel:	0	☐ //range=[1:16], requires reset
aspectRatio:	1	☐ //0=4x3, 1=16x9 (recommended), requires reset
alternateIp:	192.168.5.2	☐
tftpIp:	192.168.3.18	☐
tftpFilename:		

Submit   ← Submit

Figure 19 Changing Attenuation on a Single Modulator

6.4 Carrier ON

The carrierOn field activates the RF output of each modulator. Entering a 0 in the field deactivates the modulator. Follow the same steps as above to turn all or individual carriers on or off. In the example shown in Figure 20 we have turned on all the carriers in the NTSC-8.

NTSC8 Modulator

Which NTSC8 (192.168.5.1+chassis*8+slot): 192.168.5.1
Submit

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.1	0	0	3	1.1.14	2712339526	17	5	1	192.168.5.1	20	0	1
192.168.5.2	0	1	3	1.1.14	2712357261	18	8	1	192.168.5.2	20	0	1
192.168.5.3	0	2	3	1.1.14	2712377762	19	5	1	192.168.5.3	20	0	1
192.168.5.4	0	3	3	1.1.14	2712405962	20	5	1	192.168.5.4	20	0	1
192.168.5.5	0	4	3	1.1.14	2712426710	21	5	1	192.168.5.5	20	0	1
192.168.5.6	0	5	3	1.1.14	2712456817	22	5	1	192.168.5.6	20	0	1
192.168.5.7	0	6	3	1.1.14	2712477479	23	5	1	192.168.5.7	20	0	1
192.168.5.8	0	7	3	1.1.14	2712498677	24	5	1	192.168.5.8	20	0	1

Control (check to change all 8 slots)

```
channel:        17              □  //2-158
attenuation:    5               □  //0-10dB
carrierOn:      1               ☑  //0=off;1=on
reset:          0               □
sharpness:      20              □  //range=[1:26]
audioLevel:     0               □  //range=[1:16], requires reset
aspectRatio:    1               □  //0=4x3, 1=16x9 (recommended), requires reset
alternateIp:    192.168.5.1     □
tftpIp:         192.168.3.18    □
tftpFilename:
Submit    Submit
```

Enter 1 to turn carrier on
Check box to apply to all modulators

Figure 20 - Carrier on/off

6.5 Sharpness

This control is not active

6.6 Reset

Entering a 1 in the reset field and clicking submit will restart the NTSC-8. Upon reset, the status table will disappear. Reset is complete in about 2 minutes.

6.7 Audio Level

The audio level allows adjustment of volume levels from channel to channel. Default is 0. Entering a value between 1-10 will reduce the volume on a selected modulator. Once a value is entered, a reset of the NTSC is required. (See section 5.6)

6.8 Aspect Ratio

The aspect ratio of the modulator is adjustable between 4x3 and 16x9 ratios. The default is 1 = 16x9. If 4x3 aspect ratio is required, enter a 0 in the field, check the box for all modulators and click submit. This adjustment requires a reset of the NTSC-8. (See section 5.6)

6.9 Verification of Streams

As shown in Figure 21 the bytesRecieved column will continually grow as the COM46 streams to the NTSC-8. The display is static so you will need to refresh the screen to see the value change. Refresh the screen by clicking on the Submit button in the NTSC8 Modulator section. Each time the screen refreshes you will see the bytesRecieved column change. If the value is not changing, the NTSC-8 is not receiving data from the COM46. Check your connections and verify you have entered the NTSC-8 IP address in the COM46 as described in section 4.2. Then retune the channels from the tune all screen or reboot the COM46.

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.1	0	0	3	1.1.14	1932766326	17	5	0	192.168.5.1	20	0	1
192.168.5.2	0	1	3	1.1.14	1932767871	18	8	0	192.168.5.2	20	0	1
192.168.5.3	0	2	3	1.1.14	1932766868	19	5	0	192.168.5.3	20	0	1
192.168.5.4	0	3	3	1.1.14	1932770876	20	5	0	192.168.5.4	20	0	1
192.168.5.5	0	4	3	1.1.14	1932774152	21	5	0	192.168.5.5	20	0	1
192.168.5.6	0	5	3	1.1.14	1932780067	22	5	0	192.168.5.6	20	0	1
192.168.5.7	0	6	3	1.1.14	1932780569	23	5	0	192.168.5.7	20	0	1
192.168.5.8	0	7	3	1.1.14	1932784290	24	5	1	192.168.5.8	20	0	1

Figure 21 - bytesRecieved

When the NTSC-8 is receiving streams, the status lights will illuminate solid green. For more status light information, refer to section 5.10.

7 Software Upgrade

If the NTSC-8 requires a software upgrade, the COM46 TFTP feature will facilitate the process. Upload the software to the COM46 Pairing Info page as described in the COM46 Integrators Manual. Copy the file name from the COM46 Software upgrade page as shown below in Figure 22.

```
Software Upgrade:
Usage:               2 = SW_Upgrade ▼
Server_IP_Address:   192.168.3.18
Filename:            NTSC8_ST01.01.19.bin       ◁ Upload software and copy filename
Mode:                0 = TFTP ▼
  Submit


Browser Upload

TFTP server at 192.168.3.18 current files:
 2609732  NTSC8_ST01.01.19.bin

Upload a file to the TFTP server at 192.168.3.18
 Choose File  No file chosen        Upload
```

Figure 22 - COM46 TFTP Feature on Pairing Info Page

Navigate to the NTSC tab. Paste the file name into the tftpFilename field in the control section and enter the IP address of the COM46 card as shown below in Figure 23. Click submit.

Control (check to change all 8 slots)

```
channel:        17              ☐  //2-158
attenuation:    5               ☐  //0-10dB
carrierOn:      1               ☐  //0=off;1=on
reset:          0               ☐
sharpness:      20              ☐  //range=[1:26]
audioLevel:     0               ☐  //range=[1:16], requires reset
aspectRatio:    1               ☐  //0=4x3, 1=16x9 (recommended), requires reset
alternateIp:    192.168.5.1     ☐
tftpIp:         192.168.3.18    ☑  ◁ Enter IP address of COM46 and check box to upgrade all modulators
tftpFilename:   NTSC8_ST01.01.19.bin   ◁ Paste  filename
  Submit        ◁ Submit
```

Figure 23 - NTSC-8 Software Update

The status lights will flash yellow during software load and red/green during software upgrade. Do not power off NTSC-8 during this process. Lights will resume to solid green when complete. New software version is displayed in the swVersion column of the NTSC-8 status table as shown below in Figure 24.

Status

ip	chassisId	slotId	hwVersion	swVersion	bytesReceived	channel	atten	carrierOn	altIp	sharpness	audioLevel	aspectRatio
192.168.5.1	0	0	3	1.1.19	1547360	17	5	1	192.168.5.1	20	0	1
192.168.5.2	0	1	3	1.1.19	1544939	18	8	1	192.168.5.2	20	0	1
192.168.5.3	0	2	3	1.1.19	1544121	19	5	1	192.168.5.3	20	0	1
192.168.5.4	0	3	3	1.1.19	Software version		1		192.168.5.4	20	0	1
192.168.5.5	0	4	3	1.1.19	1545565	21	5	1	192.168.5.5	20	0	1
192.168.5.6	0	5	3	1.1.19	1546507	22	5	1	192.168.5.6	20	0	1
192.168.5.7	0	6	3	1.1.19	1547009	23	5	1	192.168.5.7	20	0	1
192.168.5.8	0	7	3	1.1.19	1544871	24	5	1	192.168.5.8	20	0	1

Figure 24 - Software Version in Status Table

8   Status Lights

A set of eight lights on the front panel represents each modulator on the NTSC. Figure 25 below defines the status of the lights displayed.

LED State	Mode	Description
Solid Green	Normal	Normal Function
Flashing Yellow	Downloading	During tftp file download (usually for SW update), LED blinks yellow. 200ms on, 200 ms off
Flashing red/green	Software update	Do not restart unit, unit automatically restarts after SW update. LED will return to green after reboot.
Flashing Red	No Physical connections	No Ethernet link with COM2000 unit
Flashing Red/Yellow	10 MBPS link	No 100MBPS link established
Solid Red	Trouble	Undefined Problem

Figure 25 - LED Status Definitions