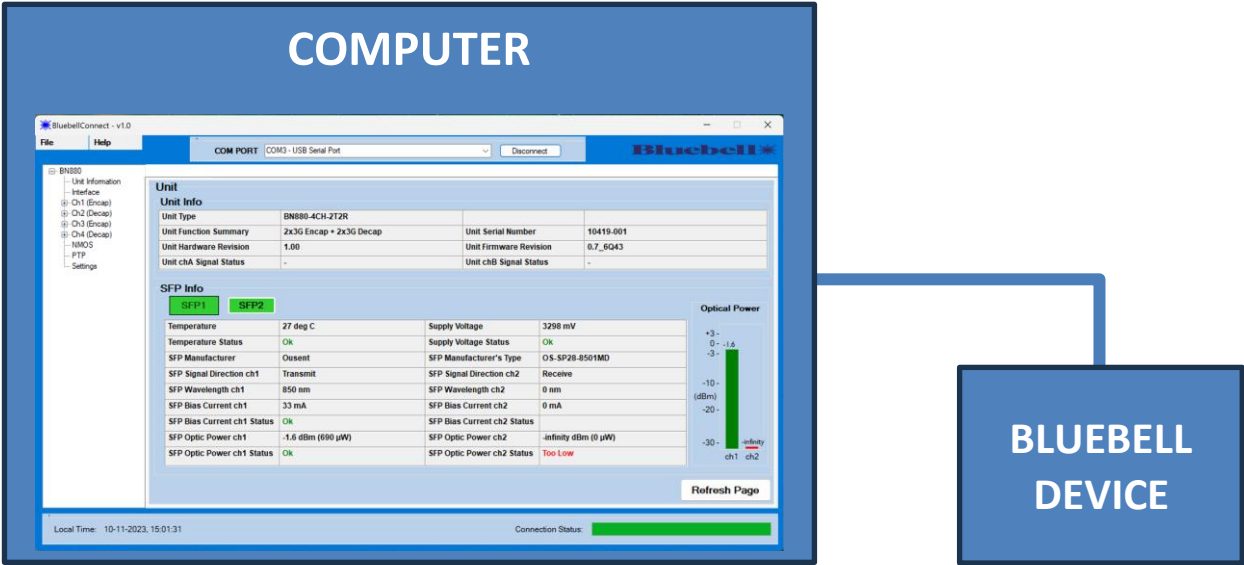


BluebellConnect



Thank you for your interest in Bluebell Opticom, a leading company in professional broadcast equipment. The BluebellConnect user interface is quick and simple to run on any Windows Platform. This User Guide should provide sufficient information to get you up and running in the vast majority of cases.

User Guide

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1. Overview:

Many of Bluebell Opticom's products are plug-and-play where no configuration is needed, however some units can be configuration beforehand to work with the user's system.

The intended use of BluebellConnect is not to configure the device during live production, but to help set-up and pre-configure the device before connecting to a network.

BluebellConnect is a user interface that runs on Windows which is used to monitor/configure the Bluebell products. The software runs by opening an executable (.exe) file and there is no need for any installation on the user's PC.

With some of our products being versatile in their use, users can configure them through BluebellConnect rather than changing parts of their system, such as network settings, to configure our products.

2. BluebellConnect Walkthrough

In this walkthrough, we will connect to a BN880 unit which is one of our ST2110 Encapsulator/Decapsulator solutions.

To connect a unit to BluebellConnect, simply:

1. Power the Unit
2. Connect a USB from the type-C connector at the rear of the unit to a PC.
3. Open BluebellConnect.exe
4. Once the Bx880's LEDs have stopped toggling green/red, it is ready for a connection.
5. Select the correct COM port for your device, and click "Connect"

2.1. Hardware connection:

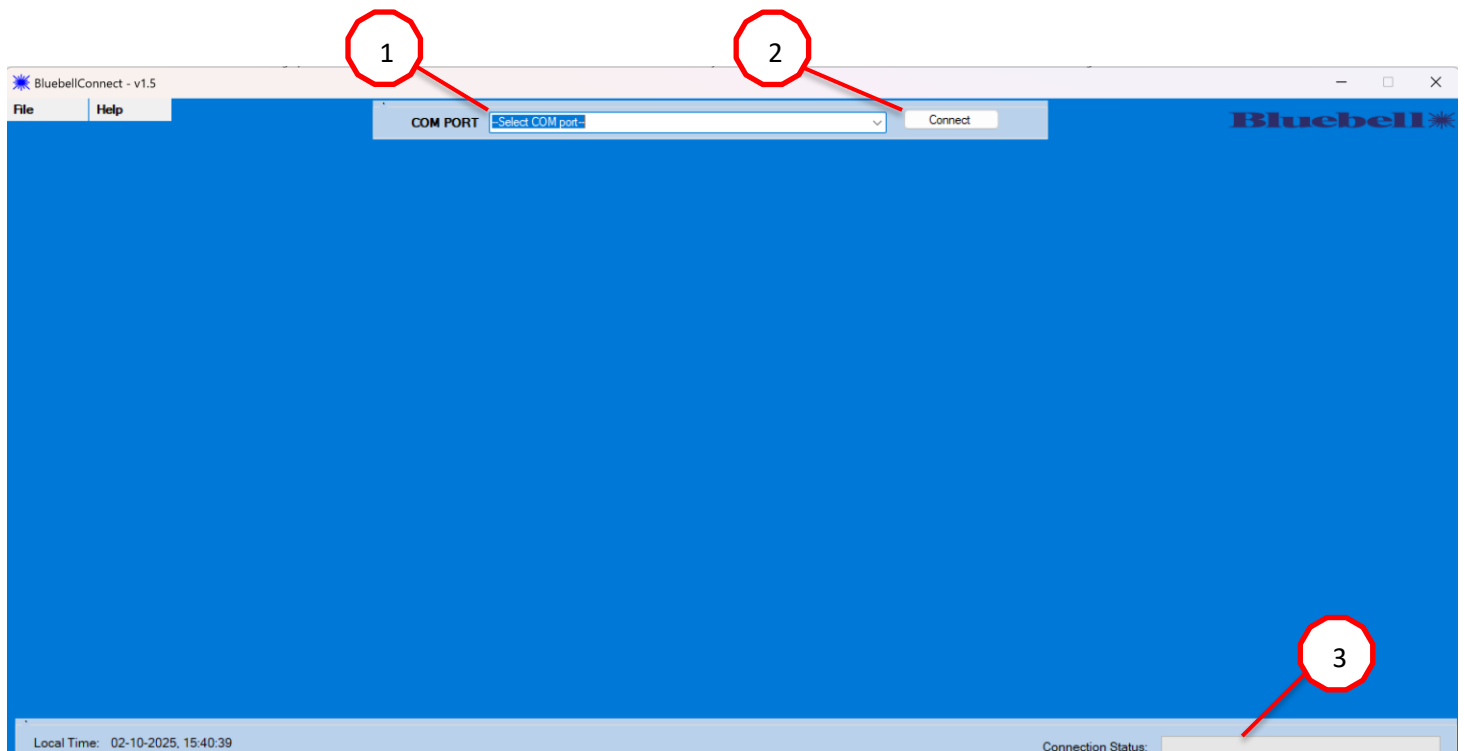
Power up the unit, connect the unit's USB port to the PC's COM port. The COM number does not need to be known, as BluebellConnect scans through all the active COM ports on the PC and will display them for selection.



The unit's LEDs may flash to indicate it is not ready for serial communication. Once the flashing has stopped and is stable, you can connect to the device on BluebellConnect.

2.2. Opening BluebellConnect

Run BluebellConnect.exe to open user interface.

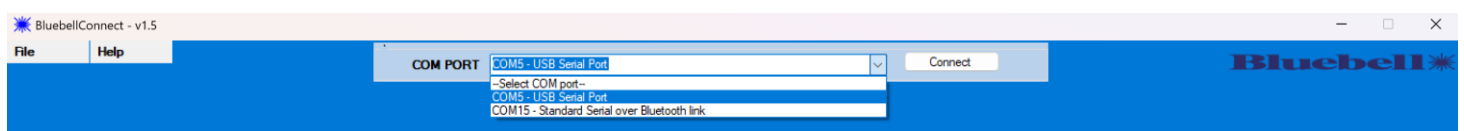


1. Detected COM Ports (auto refreshes at dropdown)
2. Connect/disconnect button
3. Connection status bar

2.3. Connecting to a device

Ensure the LED on the unit has stopped toggling green-red.

Click on the dropdown menu to view the COM ports currently occupied on the PC.



Select the device, in this case it is COM3 – USB Serial Port and click “Connect”.

2.4. Unit Information Page

Unit Information page is the first page to open once a valid connection is established.

BluebellConnect - v1.5

File Help

COM PORT COM5 - USB Serial Port Disconnect

Bluebell

BN880

- Unit Information
- Interface
- Ch1 (Encap)
- Ch2 (Decap)
- Ch3 (Encap)
- Ch4 (Decap)
- NMOS
- PTP
- Settings

Unit

Unit Info

Unit Type	BN880-4CH-2T2R	Unit Serial Number	EVAL_880
Unit Function Summary	2x3G Encap + 2x3G Decap	Unit Firmware Revision	1.4_6Q43
Unit Hardware Revision	2.00	Unit chA Signal Status	-
Unit chB Signal Status	-		

SFP Info

SFP1 SFP2

Temperature	40 deg C	Supply Voltage	3250 mV
Temperature Status	Ok	Supply Voltage Status	Ok
SFP Manufacturer	HG GENUINE	SFP Manufacturer's Type	MTRA-3E31A
SFP Signal Direction ch1	Transmit	SFP Signal Direction ch2	Receive
SFP Wavelength ch1	1310 nm	SFP Wavelength ch2	0 nm
SFP Bias Current ch1	196 mA	SFP Bias Current ch2	0 mA
SFP Bias Current ch1 Status	Ok	SFP Bias Current ch2 Status	
SFP Optic Power ch1	-0.5 dBm (895 µW)	SFP Optic Power ch2	-infinity dBm (0 µW)
SFP Optic Power ch1 Status	Ok	SFP Optic Power ch2 Status	Too Low

Optical Power

+3 -0.5 -3 -10 -20 -30 -infinity (dBm)

ch1 ch2

Refresh Page

The first table (Unit Info) has the basic information of the device such as type, serial number, hardware, and firmware revisions.

The second table (SFP Info) shows the diagnostic parameters of the SFP. If a device has no SFP slot, this section will not show. If a device has SFP slots but no SFPs are present, the SFP# button will be red.

The optical power bar graph represents the optical light level emitted/detected by the SFP and is displayed in dBm.

Note: The parameters are static and only updated once the “Refresh Page” button (bottom right) or “Unit Information” node on the tree (left) is pressed.

2.5. BN880 Example

The following section is an example of one of our BN880 units. Other units may have different parameters to control. Please refer to the user guides for each unit for further information.

2.5.1. Interface Page

BluebellConnect - v1.5

File Help

COM PORT COM5 - USB Serial Port Disconnect

BN880

- Unit Information
- Interface
- Ch1 (Encap)
- Ch2 (Decap)
- Ch3 (Encap)
- Ch4 (Decap)
- NMOS
- PTP
- Settings

Interface (25G)

Host Name: **BN880-a2-0f-36** Protocol: NMOS

Primary Interface - 40:A3:6B:A2:0F:36

IP Address: **192.168.39.227** DHCP: ☒ Disable ☐ Enable Link Status: **Link Down**

Subnet Mask: **255.255.255.0** FEC Scheme: ☒ None ☐ Enable (RS) Rx Bandwidth: 0.00 kB/s

Gateway: **192.168.39.1** VLAN: ☒ Disable ☐ Enable Tx Bandwidth: 0.00 kB/s

NOTE: Changes will issue a reset and can take up to 30 seconds to re-connect **Save**

Secondary Interface - 40:A3:6B:A2:0F:37

IP Address: **172.162.15.55** DHCP: ☒ Disable ☐ Enable Link Status: **Link Down**

Subnet Mask: **255.0.0.0** FEC Scheme: ☒ None ☐ Enable (RS) Rx Bandwidth: 0.00 kB/s

Gateway: **172.160.1.2** VLAN: ☒ Disable ☐ Enable Tx Bandwidth: 0.00 kB/s

NOTE: Changes will issue a reset and can take up to 30 seconds to re-connect **Save**

Out of Band Interface - 40:A3:6B:A2:0F:38

IP Address: **11.162.15.54** DHCP: ☒ Disable ☐ Enable Link Status: **Link Down**

Subnet Mask: **255.0.0.0** VLAN: ☒ Disable ☐ Enable Rx Bandwidth: 0.00 kB/s

Gateway: **11.160.1.2** Tx Bandwidth: 0.00 kB/s

NOTE: Changes will issue a reset and can take up to 30 seconds to re-connect **Save**

Unit Info

Current Temperature: +42 degC
Max Recorded Temp.: +48 degC
Unit Run Time: 2d 1h 9m **Reset**

Licenses:

- UHD License
- Frame Sync License
- Clean Switch License
- Black Burst License
- Out of Band Control License

Black Burst

Black Burst Enabled: ☐
V-offset:
H-offset: **Update**

Refresh Page

The interface page can be used to change the network settings on the BN880. This is helpful to configure the network settings before connecting the units to the network. The primary, secondary and Out of Band (if licensed) interfaces have separate “Save” buttons and causes the units to reset, it can take up to 15 seconds to reboot.

Note: The parameters are static and only updated once the “Refresh Page” button (bottom right) or “Interface” node on the tree (left) is pressed.

2.5.2. ENCAP Settings

2.5.2.1. Video Page:

BluebellConnect - v1.5

File Help

COM PORT COM5 - USB Serial Port Disconnect

BN880

- Unit Information
- Interface
- Ch1 (Encap)
- Video
- Audio 1
- Audio 2
- Audio 3
- Audio 4
- Audio Mapping
- Ancillary
- Ch2 (Decap)
- Ch3 (Encap)
- Ch4 (Decap)
- NMOS
- PTP
- Settings

Channel 1

Primary Interface Secondary Interface

Primary Video Flow

Flow Enabled: ☒ Tx Packet Count: 0

Flow Name: **F: 0-0-0**

Dest. MAC: **01:00:5E:00:01:02**

Source IP: **192.168.0.1** **10000**

Destination IP: **239.0.1.2** **20000**

SDI Status (Invalid)

Bit Rate: 3G

Scan Mode: **Progressive** Bit Depth: **10 bits**

Video Format: **1920x1080 (ST 274)** Colorimetry: **BT709**

Frame Rate: **59.94** Dynamic Range: **SDR**

Sampling Format: **422 YCbCr** ICIp: **Inactive**

Unit Frame Rate: ☒ Fractional ☐ Integer ☐ Auto

NOTE: Unit Rate Type must match the selected Frame Rate for compatibility. The Unit Frame Rate is copied to all the SDI channels.

Set Parameters **Refresh Page**

For encoding a video flow, the SDI video settings are automatically detected by the unit and displayed.

The SDI status parameters is only updated once a valid signal is detected. If an invalid signal is detected, the last valid SDI parameters will be displayed instead.

2.5.2.2. Audio Page:

2.5.2.3. Audio Mapping

2.5.2.4. Ancillary Page:

Channel 1

Primary Ancillary Flow

Flow Enabled: ☐

Flow Name: F: 0-5-0

Dest. MAC: 01:00:5E:00:01:14

Source IP: 192.168.0.1 10000

Destination IP: 239.0.1.20 20000

Secondary Ancillary Flow

Flow Enabled: ☐

Flow Name: F: 0-5-1

Dest. MAC: 01:00:5E:00:01:15

Source IP: 192.168.0.1 10000

Destination IP: 239.0.1.21 20000

Set Parameters Refresh Page

By default, all flows are disabled. To enable a video/audio/ancillary flow, go to the correct page and tick the **Flow Enabled** button and Set Parameters.

2.5.3. DECAP Settings

2.5.3.1. Video Page:

Channel 2

Primary Interface Secondary Interface

Primary Video Flow

Flow Enabled: ☒ Rx Packet Count: 0

Flow Name: F: 1-0-0

Dest. MAC: 01:00:5E:00:01:02

Source IP: 10.161.243.88 10000

Destination IP: 239.0.1.2 20002

SDI Status (Invalid)

Bit Rate: 3G Composite Disposition: Single Flow

Scan Mode: Progressive Bit Depth: 10 bits

Video Format: 1920x1080 (ST 274) Colorimetry: BT709

Frame Rate: 59.94 Dynamic Range: SDR

Sampling Format: 422 YCbCr ICtCp: Inactive

Packet Filtering

☒ Source IP ☐ Source UDP Port

☒ Destination IP ☐ Destination UDP Port

☐ Destination MAC ☐ VLAN

SDI Output Features

Loss of Input: ☒ Freeze ☐ Black ☐ Blue ☐ Colour Bar ☐ No Signal

Unit Frame Rate: ☒ Fractional ☐ Integer ☐ Auto

NOTE: Unit Rate Type must match the selected Frame Rate for compatibility. The Unit Frame Rate is copied to all the SDI channels.

Set Parameters Refresh Page

For decoding a video flow, the settings must be manually set to match the encoded video's settings.

2.5.3.1.1. Colour Bar Generator

The decap channel has the capability to generate a colour bar at any of the following video formats:

- 4096x2160
- 3840x2160
- 1920x1080 (ST 274)

Any frame rate can be selected. Video flow must be enabled. The Loss of Input must either be put to either *Freeze*, *Black* or *Blue* and the *Colour Bar* must have *Enable* selected.

SDI Status (Invalid)

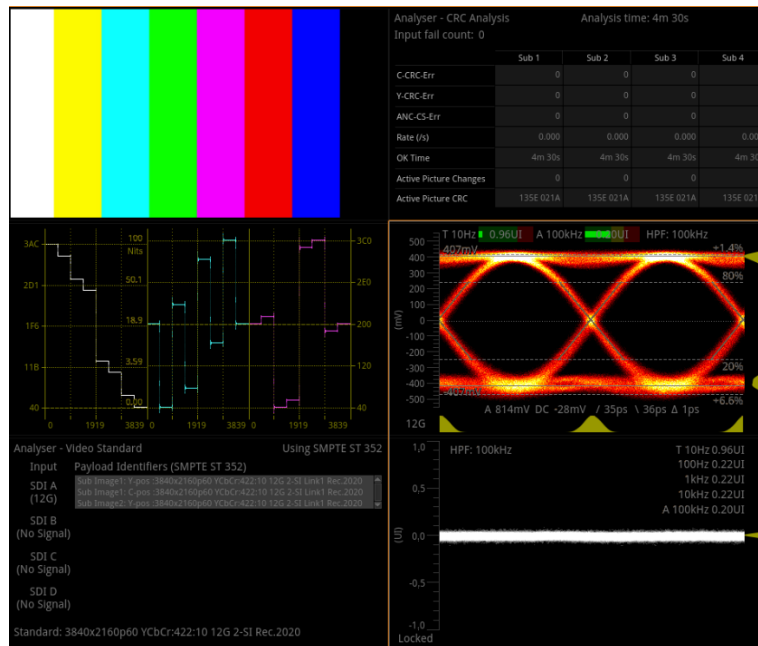
Bit Rate:	12G	Composite Disposition:	Single Flow
Scan Mode:	Progressive	Bit Depth:	10 bits
Video Format:	3840x2160	Colorimetry:	BT2020
Frame Rate:	59.94	Dynamic Range:	SDR
Sampling Format:	422 YCbCr	ICtCp:	Inactive

Unit Frame Rate: ☒ Fractional
☐ Integer
☐ Auto

NOTE: Unit Rate Type must match the selected Frame Rate for compatibility. The Unit Frame Rate is copied to all the SDI channels.

SDI Output Features

Loss of Input: ☐ Freeze
☐ Black
☐ Blue
☒ Colour Bar
☐ No Signal



2.5.3.2. Audio Page:

BN880

- Unit Information
- Interface
 - Ch1 (Encap)
 - Video
 - Audio 1
 - Audio 2
 - Audio 3
 - Audio 4
 - Ancillary
 - Ch2 (Decap)
 - Video
 - Audio 1**
 - Audio 2
 - Audio 3
 - Audio 4
 - Ancillary
 - Ch3 (Encap)
 - NMOS
 - PTP
 - Settings

Channel 2 - Audio 1

Primary Audio Flow

Flow Enabled: ☐

Flow Name: F: 1- 1- 0

Dest. MAC: 01:00:5E:01:01:04

Source IP: 192.168.1.1 10000

Destination IP: 239.1.1.4 20000

Audio Settings

Sampling Rate: 48000

RTP Payload: 0

Format: Uncompressed

Packet Time: 1 ms

Packet Filtering

☐ Source IP

☐ Source UDP Port

☒ Destination IP

☐ Destination UDP Port

☐ Destination MAC

☐ VLAN

Secondary Audio Flow

Flow Enabled: ☐

Flow Name: F: 1- 1- 1

Dest. MAC: 01:00:5E:01:01:05

Source IP: 192.168.1.1 10000

Destination IP: 239.1.1.5 20000

Audio Settings

Sampling Rate: 48000

RTP Payload: 0

Format: Uncompressed

Packet Time: 1 ms

Packet Filtering

☐ Source IP

☐ Source UDP Port

☒ Destination IP

☐ Destination UDP Port

☐ Destination MAC

☐ VLAN

Set Parameters **Refresh Page**

2.5.3.3. Audio Mapping

Channel 2 Audio Mapping (Decap)

Channel Selection

Audio IP Flow:

Nbr. of Audio Channels:

Audio Channel:

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

Select SDI Audio Channel:

ch1	ch2	ch3	ch4	ch5	ch6	ch7	ch8
ch9	ch10	ch11	ch12	ch13	ch14	ch15	ch16

Note: Green = Audio Channel is Active
Red = Audio Channel is Mute

Steps to map audio channel:

1. Select The Audio IP Flow (1-4)
2. Select the number of audio channels to de-embed in flow (chN)
3. Select the SDI out audio channel to map (ch1-chN)
4. Select the audio channel (1-16) from IP flow to map to channel
5. Optional: mute/unmute channel
6. Confirm in Overview section

Overview

Active/Unmute?

- ☒ ch1 --> flow 1 - 1
- ☒ ch2 --> flow 1 - 2
- ☒ ch3 --> flow 1 - 3
- ☒ ch4 --> flow 1 - 4
- ☒ ch5 --> flow 1 - 5
- ☒ ch6 --> flow 1 - 6
- ☒ ch7 --> flow 1 - 7
- ☒ ch8 --> flow 1 - 8
- ☐ ch9 --> Not assigned
- ☐ ch10 --> Not assigned
- ☐ ch11 --> Not assigned
- ☐ ch12 --> Not assigned
- ☐ ch13 --> Not assigned
- ☐ ch14 --> Not assigned
- ☐ ch15 --> Not assigned
- ☐ ch16 --> Not assigned

2.5.3.4. Ancillary Page:

Channel 2 Primary Ancillary Flow

Flow Enabled: ☐

Flow Name:

Dest. MAC:

Source IP:

Destination IP:

Secondary Ancillary Flow

Flow Enabled: ☐

Flow Name:

Dest. MAC:

Source IP:

Destination IP:

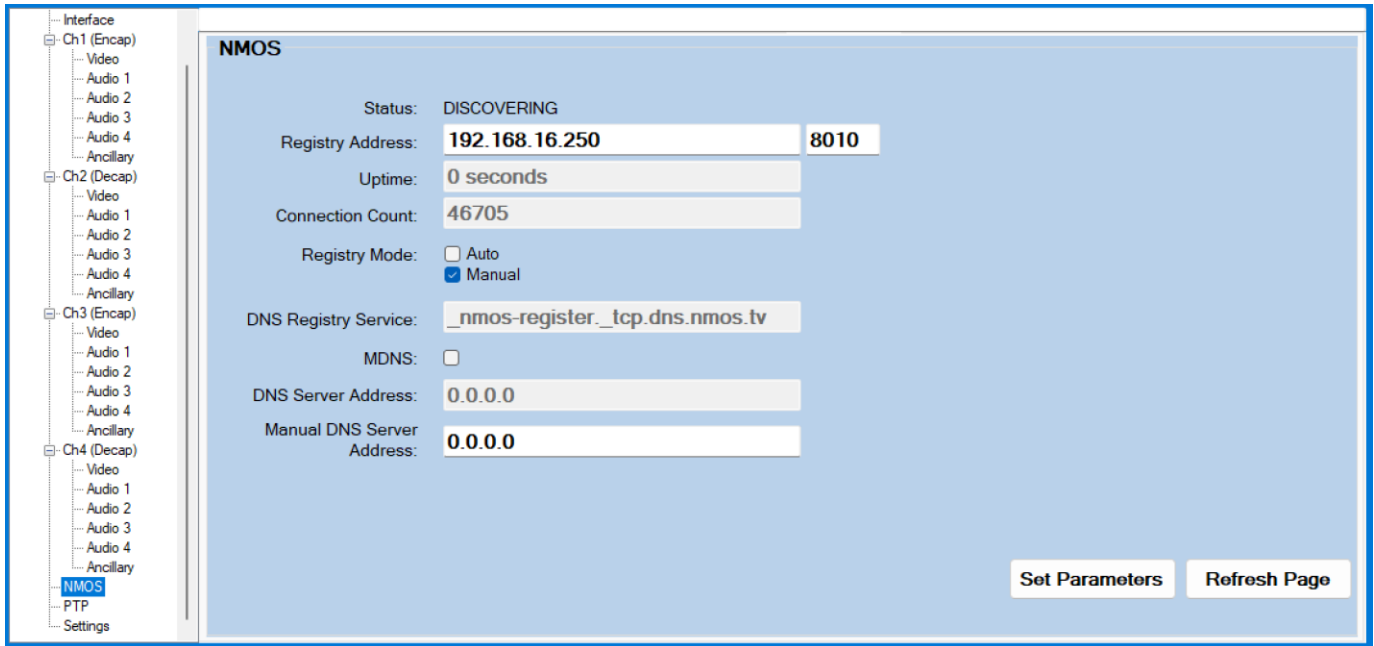
Packet Filtering

- ☐ Source IP
- ☐ Source UDP Port
- ☒ Destination IP
- ☐ Destination UDP Port
- ☐ Destination MAC
- ☐ VLAN

Set Parameters **Refresh Page**

By default, all flows are disabled. To enable a video/audio/ancillary flow, go to the correct page and tick the **Flow Enabled** button and Set Parameters.

2.5.4. NMOS Page



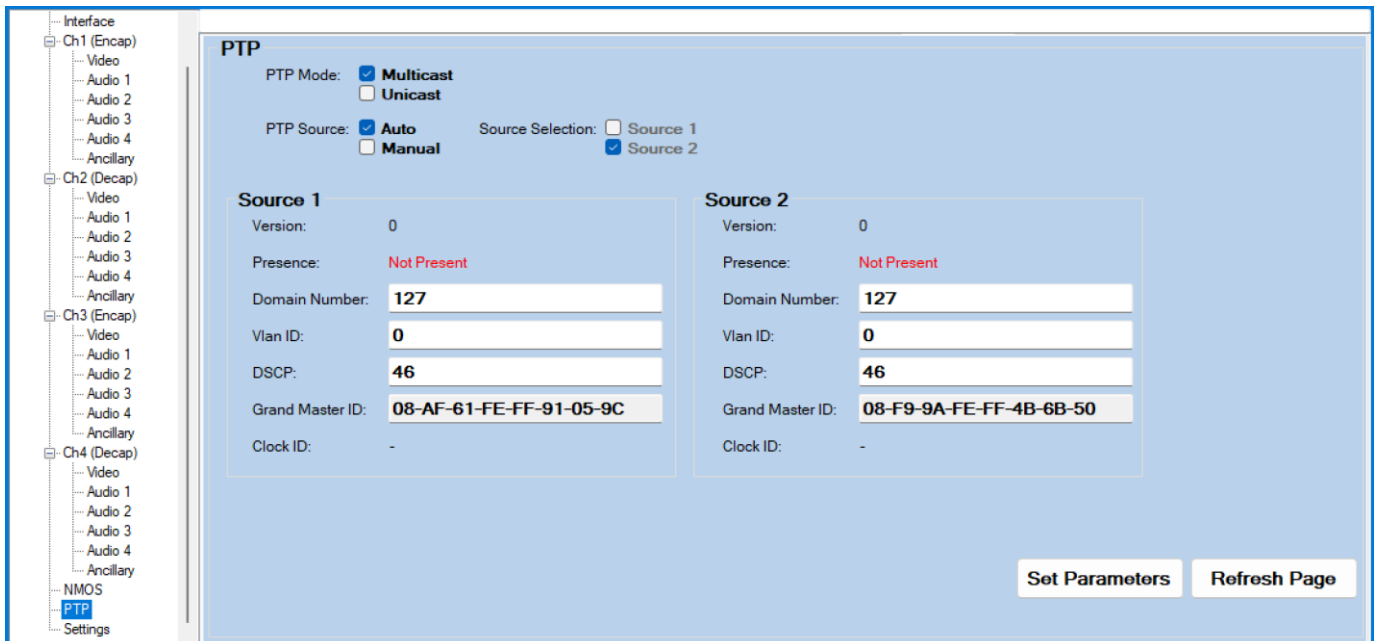
The screenshot shows the NMOS configuration page. On the left is a sidebar with a tree view containing: Interface, Ch1 (Encap) [Video, Audio 1, Audio 2, Audio 3, Audio 4, Ancillary], Ch2 (Decap) [Video, Audio 1, Audio 2, Audio 3, Audio 4, Ancillary], Ch3 (Encap) [Video, Audio 1, Audio 2, Audio 3, Audio 4, Ancillary], Ch4 (Decap) [Video, Audio 1, Audio 2, Audio 3, Audio 4, Ancillary], **NMOS**, PTP, and Settings. The main content area is titled "NMOS" and contains the following fields:

- Status: DISCOVERING
- Registry Address: 192.168.16.250 8010
- Uptime: 0 seconds
- Connection Count: 46705
- Registry Mode: ☐ Auto, ☒ Manual
- DNS Registry Service: _nmos-register._tcp.dns.nmos.tv
- MDNS: ☐
- DNS Server Address: 0.0.0.0
- Manual DNS Server Address: 0.0.0.0

At the bottom right of the main area are two buttons: "Set Parameters" and "Refresh Page".

NOTE: When changing the MDNS settings, the unit will reboot itself and it can take up to 15 seconds to show the correct parameters.

2.5.5. PTP Page



The screenshot shows the PTP configuration page. The sidebar is identical to the NMOS page. The main content area is titled "PTP" and contains the following fields:

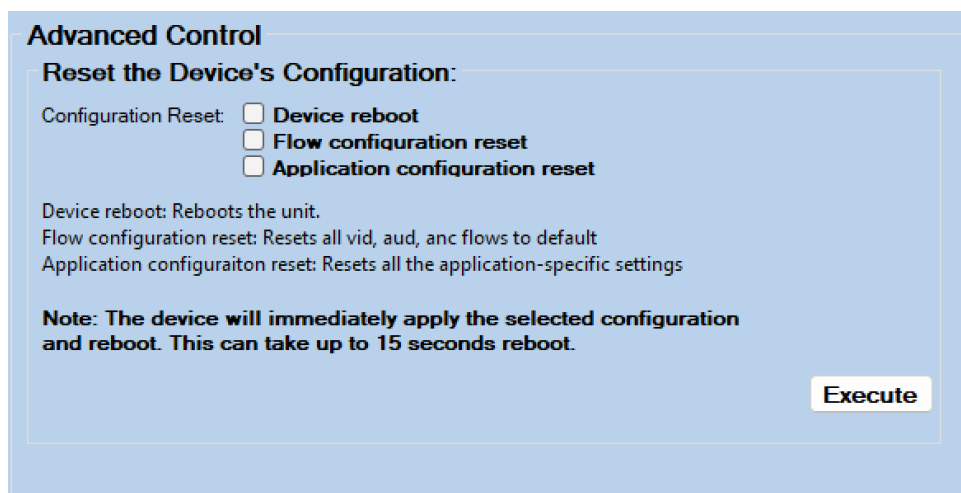
- PTP Mode: ☒ Multicast, ☐ Unicast
- PTP Source: ☒ Auto, ☐ Manual
- Source Selection: ☐ Source 1, ☒ Source 2

Below these are two columns for Source 1 and Source 2 configurations:

Source 1	Source 2
Version: 0	Version: 0
Presence: Not Present	Presence: Not Present
Domain Number: 127	Domain Number: 127
Vlan ID: 0	Vlan ID: 0
DSCP: 46	DSCP: 46
Grand Master ID: 08-AF-61-FE-FF-91-05-9C	Grand Master ID: 08-F9-9A-FE-FF-4B-6B-50
Clock ID: -	Clock ID: -

At the bottom right of the main area are two buttons: "Set Parameters" and "Refresh Page".

2.5.6. Settings Page



Advanced Control

Reset the Device's Configuration:

Configuration Reset: ☐ **Device reboot**
☐ **Flow configuration reset**
☐ **Application configuration reset**

Device reboot: Reboots the unit.
Flow configuration reset: Resets all vid, aud, and flows to default
Application configuraiton reset: Resets all the application-specific settings

Note: The device will immediately apply the selected configuration and reboot. This can take up to 15 seconds reboot.

Execute

NOTE: When resetting any of the device configuration, it will initiate a device reboot can take up to 20 seconds for the unit to be fully functional again.

NOTE: For any technical issues not covered in this User Guide, please contact Bluebell Opticom.

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE

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