

NBB-0202 / NBB-04R / NBB-04T / NBB-0404 Networked Audio Receiver / Transmitter



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Overview:

The NBB Series products are professional audio receiver and/or transmitter to send and/or receive audio data stream to/from the Dante network. The NBB Series products come with the following variation,

| Model | Description | Sample Rate |
|-----------------------------------|--|----------------|
| NBB-0202 Audio Transceiver | audio receiver of 2CH and audio transmitter of 2CH | 48KHz or 96KHz |
| NBB-04R Audio Receiver | audio receiver of 4CH | 48KHz or 96KHz |
| NBB-04T Audio Transmitter | audio transmitter of 4CH | 48KHz or 96KHz |
| NBB-0404 Audio Transceiver | audio receiver of 4CH and audio transmitter of 4CH | 48KHz only |

The audio receiver receives a couple of channels of analog audio and converts them into Dante networked stream which in turn can be received by other Dante-enabled devices; While the audio transmitter, in contrast, transmits a couple of channels of analog audio converted from Dante networked stream which is distributed by other Dante-enabled devices. The audio receiver can accept signal in a wide range from MIC level to LINE level while the output capability of the audio transmitter meets the industrial standard up to 24dBu.

All the NBB Series products are equipped with two RJ-45 Ethernet ports so that it is feasible to cascade several NBB Series products , i.e. in daisy-chaining, in the same network link to extend the geographic coverage of your audio deployment. Also, all the NBB Series products can be powered by either PoE from Ethernet switches or 48V from external power adapters.

Features:

- Audio Receiver and/or Transmitter to Dante Network
- Streaming audio in robust standard Ethernet cable (a.k.a., Digital Snake)
- Easily organize and expand network topology with Ethernet switches
- Uncompressed 32-bit or 24-bit PCM coding with sample rate up to 96KHz (excluding NBB-0404)
- Two RJ-45 ports make Daisy-chain cascading feasible
- Powered by either PoE or 48V adapter
- Gain or Attenuate control for each channel
- Phantom power engagement control per input channel
- Signal clip indicator for input
- XLR Combo sockets for both XLR and TRS phone plugging
- Routing and other configuration are set with Dante Controller software
- Support both Dante Domain Manager (DDM) and Dante Director
- Rackmount kit included

Description:

The NBB Series Products adopt Audinate Dante networking technology for audio transceiving, and are very network friendly with unlimited flexibility in topology of deployment. The NBB Series Products support up to Layer 3 of IEEE 802.3 network standard, enabling you to organize your audio network with the on-the-shelf Ethernet switches or to immediately transport streaming audio by taking advantage of your existing installed network facility with no hassle. Even better, every NBB Series Products comes with two Ethernet ports which allow you to physically cascade several NBB Series Products in the same network link. Accompanied by Ethernet switches, this capability helps NBB Series Products gaining flexibility and expanding territory in device deployment in audio networking.



Audio routing among each NBB Series Products and all the other Dante-enabled devices is configured via computer with dedicated Dante Controller software which is available free from Audinate website. With Dante Virtual Soundcard software, you are even able to have your DAW software direct record/play stereo streaming audio from/to NBB Series Products.

The audio input/output interfaces of NBB Series Products fully meet the requirements of the professional audio industry. Audio is encoded/decoded with the latest and uncompressed 24-bit PCM encoder/decoder with sample rate in 44.1KHz, 48KHz, or 96KHz. The NBB Series Products outputs are peculiarly buffered with amplifiers of high-rail-voltage which can drive the lines up to 24dBu. Besides the high-level of drive capability, the output of NBB Series Products can also be attenuated to meet the narrower reception range of inputs of some semi-professional devices. All inputs of NBB Series Products accept signal in a wide range from MIC level to LINE level with individual gain and phantom power control. The NBB Series Products with Audio Receivers are also equipped with one or two clip indicator for inputs to warn audio technician any signal overload on inputs.

The NBB Series Products are assembled in a sturdy metal chassis with elegant style of front panel. A set of rackmount kit is included in the package so that you can mount the NBB Series Products in standard 19" rack.

Getting Started Guide:

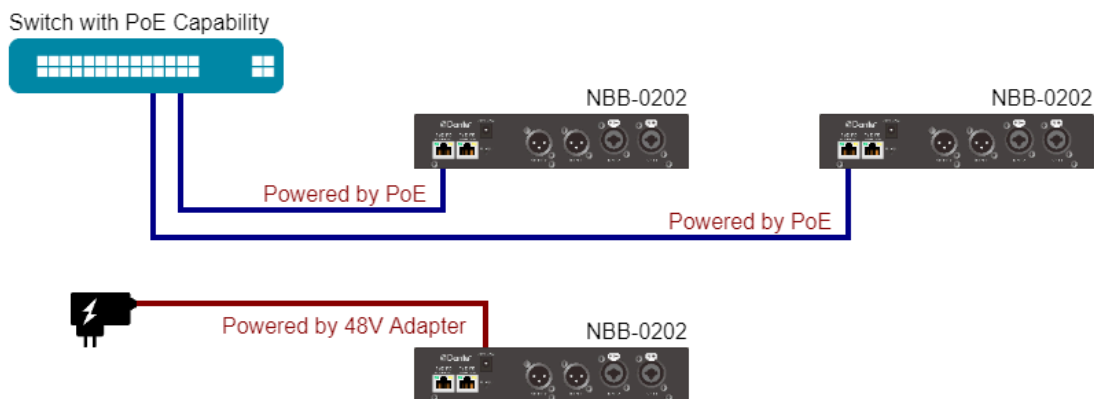
The functionality and operation principle of all the buttons, knobs, sockets, and indicators among of all the NBB Series Products are exactly the same, but in slightly different layout arrangement. Here the example of NBB-0202 are took for the operation description.

Powering

The NBB Series Products can be powered by either,

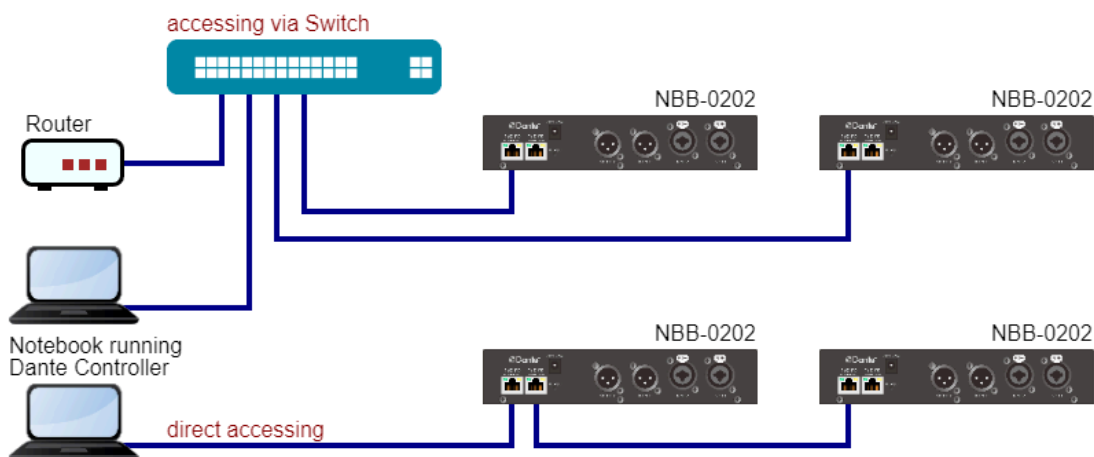
- PoE from Ethernet switch with PoE PSE capability, or
- 48V power adapter which should be included in your device package.

It is O.K. for you to power your NBB Series Products with both PoE and 48V adapter connected simultaneously. However, since the operating voltage of PoE is usually higher than 48V, very likely your NBB Series Products will sink power only from PoE if you do so.



Setting

Once your NBB Series Products are powered, you can configure your NBB Series Products by direct connecting it to your computer or via the Ethernet switch. That is to say that the NBB Series Products can direct talk to your computer or via switch. See picture below for an illustration.



The network interfaces of the NBB Series products are by default configured to work in auto-IP mode. If your network does not has a DHCP server or router involved, you may have to configure the IP of your computer in the range of 169.254.xxx.xxx to have your computer talk to NBB Series products.

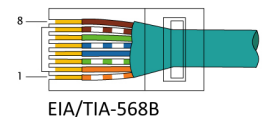
All the routing assignments and device configuration are set via Dante Controller software which is available free from the following Dante webpage,

www.getdante.com/products/software-essentials/dante-controller

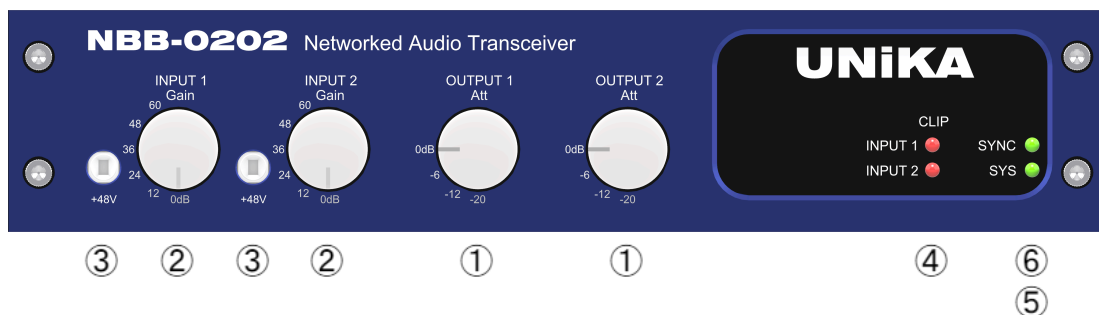
Besides the routing assignments, mostly, **you should set the operating sample rate of your NBB Series Products to align with the sample rate of your whole Dante network.** Basically, all the devices in the same Dante network should be synced to the same sample rate. You do not need to worry about the bit-depth of coding of your audio stream in the network. Although the NBB Series Products encode/decode audio in 24-bit PCM stream, they automatically do bit-depth converting when they stream audio to/from other Dante-enabled devices manipulating audio data in different bit-depth.

By default, the NBB Series Products transmit one or a couple of channels of audio in flow to each remote device respectively. NBB Series Products support merely 2 audio flows simultaneously. When you need the audio from NBB Series Products to be transmitted to more than 2 devices, you can assign the channels needed to be transmitted to more than 2 remote devices in a multicast flow by clicking the multicast button in the device view window in Dante Controller. A multicast flow is virtually distributed as broadcasting in Dante Audio Network so that more than 2 devices can receive the audio flow.

Usually, UTP (Unshielded Twisted Pair) Cat.5e cable should be good enough for all the network installation. However, STP (Shielded Twisted Pair) Cat.5e cable is strongly recommended if you plan to route the cable through noisy environment. The foil or braided screens in STP cable can provide great noise immunity from electromagnetic interference around. Also, make sure the EIA/TIA-568B standard is fully followed for the wiring of RJ-45 plug.



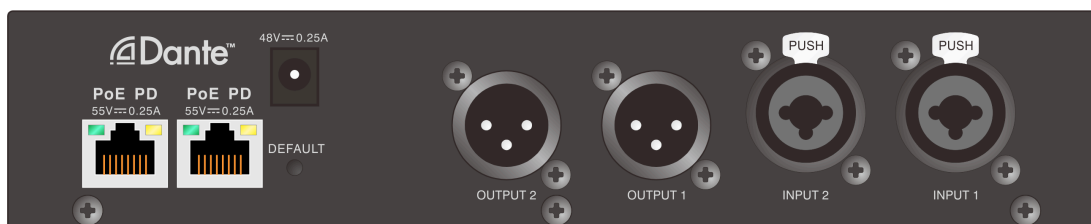
Front Panel



To accommodate all the variety of field installation, the front panel of NBB Series Products is equipped with rich control facilities as follows,

1. The Att control knobs can be used to attenuate output down to -20dB from nominal maximum.
2. The Gain control knobs can accommodate itself to accept all kind of sources with level from mic to line.
3. The +48V button to control whether to deliver phantom power to power audio source device or not.
4. The clip indicator flashes to warn audio technicians if input is overloaded.
5. The SYS LED indicates system activity,
 - o Red: system booting
 - o Green: system ready
6. The SYNC LED indicates the PTP clocking status,
 - o Green: PTP is synced
 - o Amber: PTP is syncing
 - o Red: PTP error
 - o Green & flashing: the device is elevated to PTP clock master.

Rear Panel



There are two Ethernet ports for Dante networking and control setting. The two Ethernet ports actually belongs to the two physical ports in the internal mini switch in NBB Series Products. This network switch capability allows several NBB Series Products to be cascaded in the same Ethernet link for network expanding. You can also take advantage of the cascading feature to forward transfer Dante audio to other Dante-enabled devices such our NBB-1616.

The NBB Series Products can be powered by either of these two ports, provided the the Ethernet cable on it is from a Ethernet switch with PoE PSE capability. Please be informed that NBB Series Products do not have the PoE PSE capability to power the next cascaded PoE PD device, although itself can be powered by PoE.

Besides powered by the Ethernet switch with PoE PSE capability, the NBB Series Products can also be powered by a 48V power adapter. We ship NBB Series Products with a 48V adapter in the package in case you don't have Ethernet switch with PoE PSE capability.

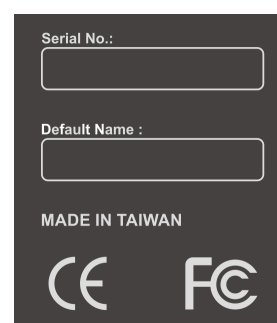
A default button under the 48V jack is used to restore the setting of NBB Series Products to factory default. Press and hold the button when you power up the device will restore the device to default state. Once you see both SYS and SYNC LEDs red, you can then re-power the device for the default setting to take effect. The cap of the default button is sunk to panel to avoid your accidentally triggering the action of default restoring.

The 0dB level is nominal to 24dBu in both input and output. That means that the NBB Series Products can accept input level up to 24dBu from the balanced XLR or TRS phone plug; while it can also drive the output up to 24dBu via the balanced XLR. To get flat frequency response, please be informed that the balanced XLR outputs are all direct and transformerless coupling. **Please do not short either pin 2 or pin 3 of any output XLR to pin 1 of itself** if the output is destined at unbalanced input. You can, however, simply float pin 3 and drive the unbalanced input with pin 2 and pin 1 merely.

Bottom Panel

This is where you can find the serial number and the factory assigned Dante default name of your NBB Series Products. The Dante name of your device can be changed to whatever you like by using Dante Controller software.

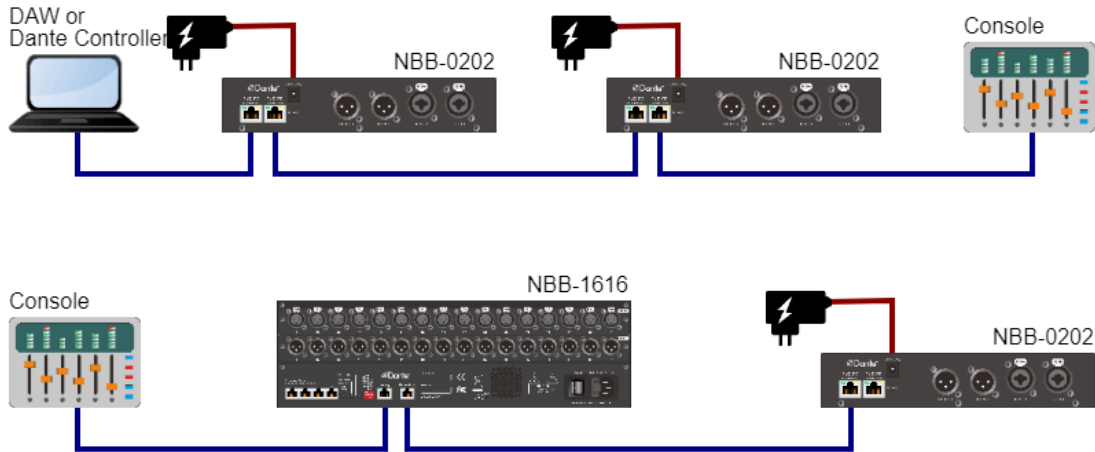
The series number and Dante name is instead tagged on the rear panel for NBB-0404.



Applications:

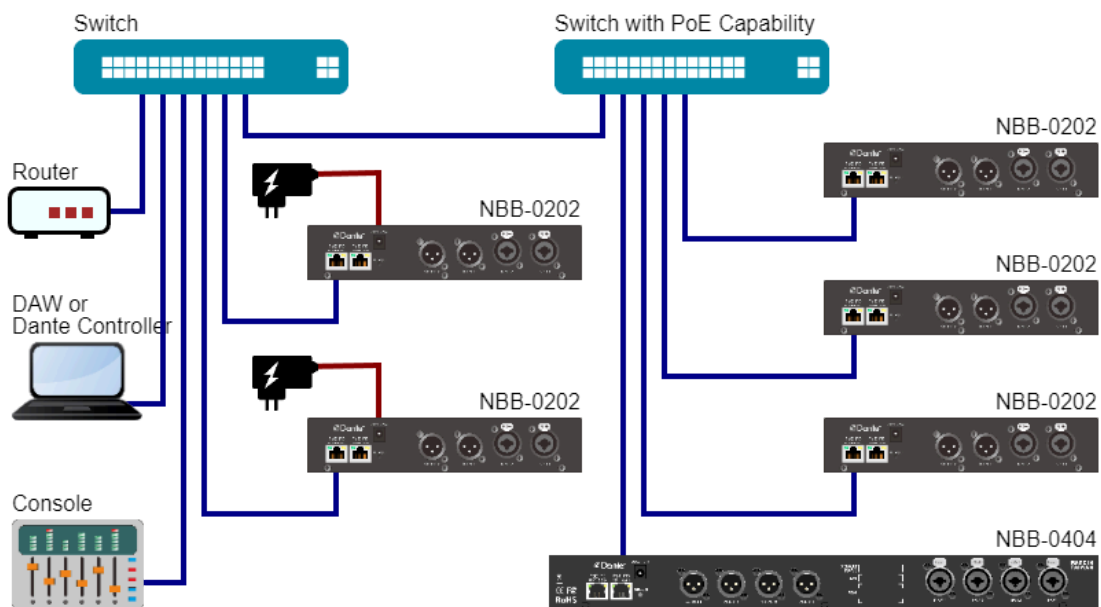
Direct Connecting to Notebook or Console

One of the beauty of Dante is that you do not need a DHCP server or router in between to establish all kind of communication among different Dante-enabled devices. You can even connect your UNiKA Dante-enabled devices to your computer or digital console without any Ethernet switch in between. Since all UNiKA Dante-enabled devices actually have a mini switch built-in, you are also able to cascade several of your devices in the same link by taking advantage of the two RJ-45 ports on your UNiKA Dante-enabled devices.

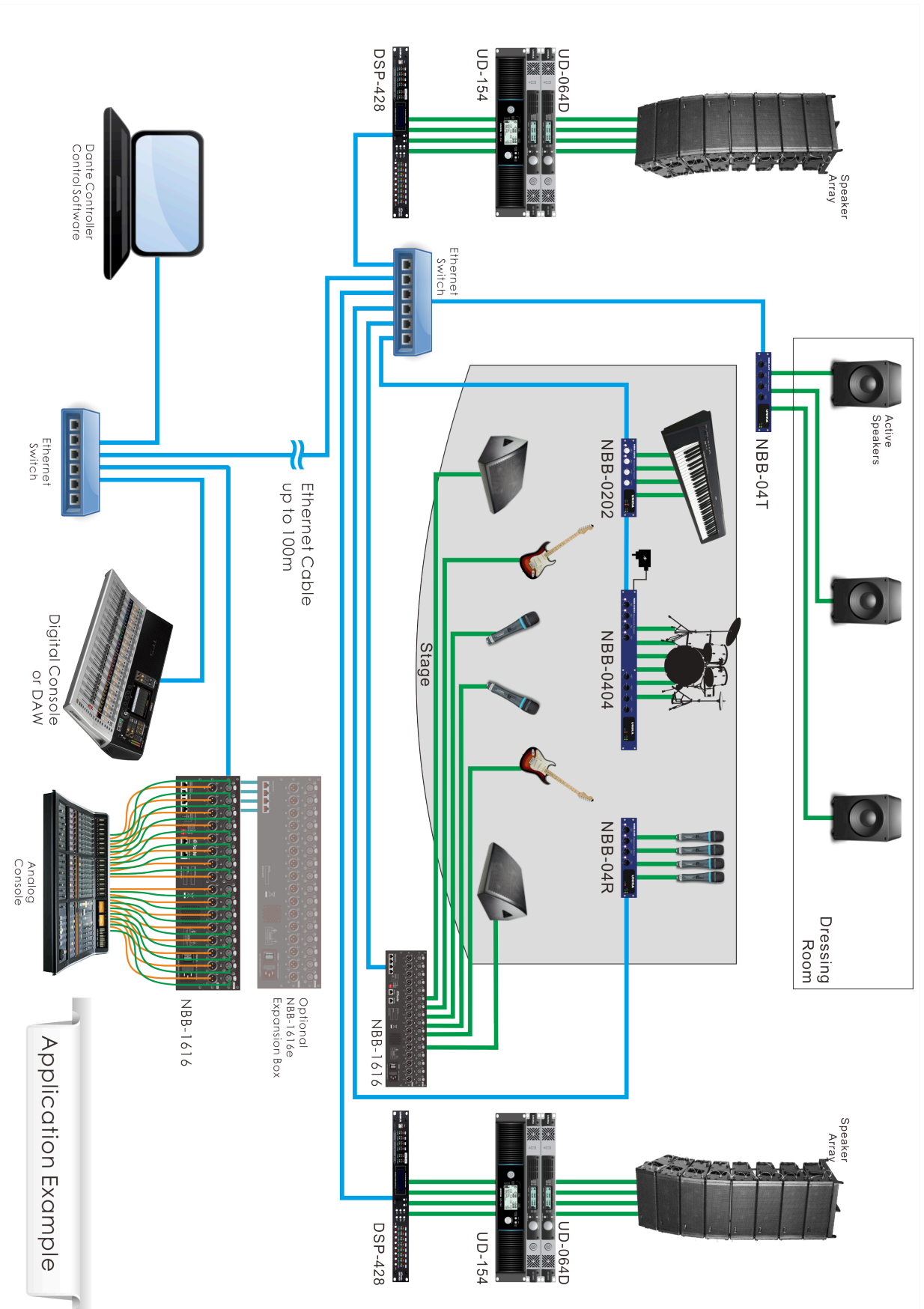


Connecting via Ethernet Switch

Once your audio network grows up and turns complex, you may want to add Ethernet switches in your audio network so that you can better manage the cabling among all your Dante-enabled devices. Furthermore, the NBB Series Products support to be powered by Ethernet PoE, so that you don't even need a 48V wall adapter if your NBB devices direct connect to the Ethernet switch with PoE PSE capability. For a large-scale system, you may even have many Ethernet switches in your audio network. The switches, including the mini switch in UNiKA Dante-enabled devices, do cause propagation delay but fortunately every one of them only contributes delay in several tens of microseconds.



Putting a router somewhere in the Dante network is very helpful for simplifying IP management.



Application Example

Specifications:

| Model | | NBB-0202 | NBB-04R | NBB-04T | NBB-0404 |
|------------------------------|---------|---|-----------------------------------|--------------|-------------------|
| Channel Capacity (Analog) | Input: | 2x | 4x | | 4x |
| | Output: | 2x | | 4x | 4x |
| Audio Connectors (Analog) | Input: | XLR/TRS Combo | XLR/TRS Combo | | XLR/TRS Combo |
| | Output: | XLR | | XLR | XLR |
| Level (Analog) | | 24dBu max. | | | |
| Clip Indicator | | 2x for each Input | 1x for all Inputs | | 1x for all Inputs |
| Gain Control (Inputs) | | 60dB Rotary | 60dB Rotary | | 60dB Rotary |
| Volume Control (Outputs) | | -20dB Rotary | | -20dB Rotary | -20dB Rotary |
| +48V Phantom Power per Input | | ON/OFF | ON/OFF | | ON/OFF |
| Encoding | | 24-bit PCM only | Uncompressed 32-bit or 24-bit PCM | | |
| Sample Rate | | 44.1KHz / 48KHz / 96KHz | | | 44.1KHz / 48KHz |
| Digitized Scaling | | 0dBFS @24dBu | | | |
| Ethernet | | x2 Gigabit RJ45 Ports | | | |
| Networking Mode | | Switch Mode (a.k.a. Daisy-chain Mode) | | | |
| Audio Latency | | < 2ms typical | | | |
| Flows (unicast + multicast) | | 2x | 2x | | 2x |
| Node to Node Distance | | 100m with Cat.5e Cable | | | |
| Frequency Response | | 20Hz ~ 20KHz ±0.5dB | | | |
| S/N Ratio @0dBFS | | > 105dB | | | |
| THD+N @-10dBFS | | < 0.002% | | | |
| Dynamic Range | | > 105dB | | | |
| Crosstalk @10KHz | | < -105dB | | | |
| Powered by Adapter (rated) | | 48VDC, 0.15A | | | 48VDC, 0.20A |
| Powered by PoE (rated) | | 55VDC, 0.15A | | | 55VDC, 0.20A |
| Power Consumption | | < 7.2Watts | | | < 9.6Watts |
| Operation Temperature | | 0 ~ 45°C | | | |
| Operation Rel. Humidity | | 0 ~ 90% | | | |
| Construction | | Metal Chassis with Aluminum Front Panel | | | |
| Dimensions (HxWxD) | | 44mm x 220mm x 130mm | | | 44 x 480 x 130 |
| Net Weight | | 845g | 870g | 820g | 1570g |

All the above test result are measured with no signal weighting.

The above information is subject to change without notice.

Cautions and Important Safety Instructions

- minimum distances around the apparatus for sufficient ventilation;
- the ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, table-cloths, curtains, etc.;
- no naked flame sources, such as lighted candles, should be placed on the apparatus;
- attention should be drawn to the environmental aspects of battery disposal;
- the use of apparatus in the tropical and/or moderate climates.

UNiKA products are designed and manufactured in Taiwan to the highest quality standard. However, if something does go wrong with a product, UNiKA Electronic Co., Ltd. will repair or replace such product in accordance with this warranty policy in any country served by an authorized UNiKA distributor. This warranty complements any national or regional law obligations of dealers, partner or national distributors and does not affect your statutory rights as a consumer. This warranty will only apply to products purchased from a legal UNiKA distributor or dealer, partner etc. This warranty will be effective from the serial number and initial date of purchase and will be valid for the warranty periods detailed as distributor's sales and service document. No claim under this warranty will be valid unless accompanied by proof of purchase of the product to which the warranty claim relates. This warranty is transferable from owner to owner and will apply and remain with the product to which it relates from the initial date of purchase for the specified term in the distributor's Area, as long as it's supported with the original proof of purchase.



UNiKA Service and Warranty Form

| | | | |
|-------------------------------|--|---------------|--|
| Model | <input type="checkbox"/> NBB-0202 <input type="checkbox"/> NBB-04R <input type="checkbox"/> NBB-0404 <input type="checkbox"/> NBB-04T | Date | |
| User/Buyer information | | | |
| Company | | Contact | |
| Tel | | Fax | |
| Website | | eMail | |
| Distributor/Dealer | | | |
| Contact | | Remark | |
| Warranty valid date | | | |
| Signature and Stamp | | | |