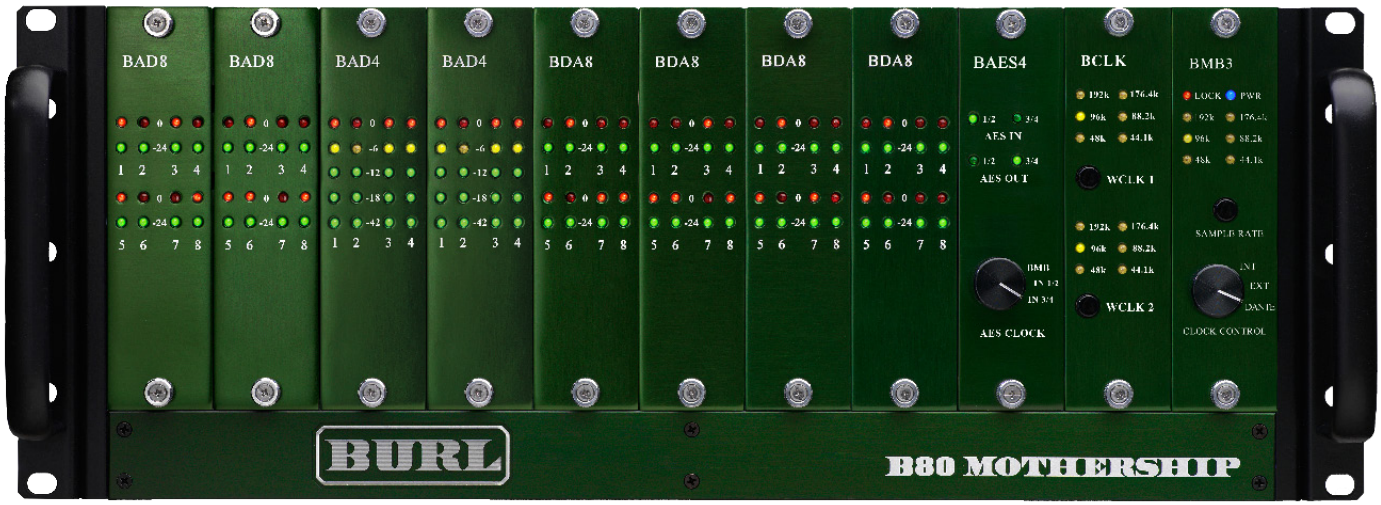
B80-BMB3 MOTHERSHIP

BMB3 Rev C Rom 1



Quick Start Guide

Section 1: Getting Started
Section 2: Dante Quick Start
Section 3: Dante Clocking

Revision 1.6 March 29, 2018

1. GETTING STARTED

1.1 Register

Please register all serial numbers for your B80 MOTHERSHIP chassis, all Daughter Cards, and BP-300.

You *must* register to activate your warranty! Please visit: **www.burlaudio.com/register.**

1.2 Check Jumper Settings On BMB3

The B80 MOTHERSHIP is fully modular, accommodating a wide variety of I/O needs. Jumper settings on the BMB3 Motherboard allow for different I/O routing possibilities.

1. Find H8 on the BMB3 Motherboard, as shown in **Image 1** below.
2. Use Examples A through D (on pages 2 and 3) to determine which setting to use based on your configuration.
3. See Channel Mapping for Jumper Settings charts on page 4.
4. Jumper positions 1 and 2 determine the INPUT channel mapping, this allows you to set the configuration for each card slot in the MOTHERSHIP.
   (Configurations possible: 4 Ch. per slot / 8 Ch. per slot / 8 and 4 Ch. per slot).
5. Jumper positions 3 and 4 determine the OUTPUT channel mapping, this makes it so you can set where our OUTPUTS start in the MOTHERSHIP chassis.
   (Output can start in slots 3, 5 & 7)
6. Jumper positions 5, 6 and 7 have no function.
   (Jumpers can be kept here for safekeeping when not in use)
7. Jumper 8 is for use with the B16 MOTHERSHIP chassis, and should *not* be used with the B80 MOTHERSHIP chassis.

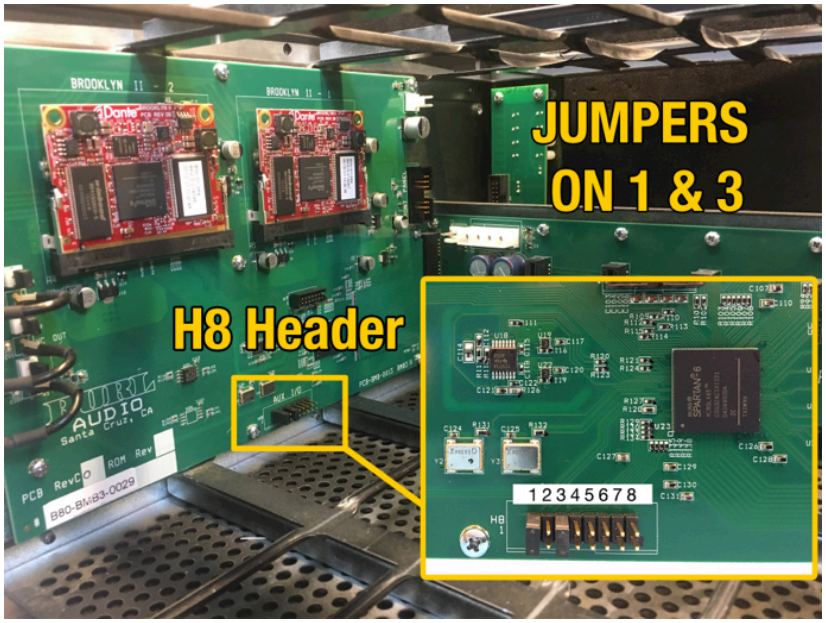


Image 1: Locating the H8 Header on BMB3 Motherboard: From the rear of the chassis, BMB3 is on the far left. The H8 Header is highlighted. In this example, jumpers are on 1 and 3.

EXAMPLE A: JUMPERS ON 1 AND 3 (FACTORY SETTING)

BMB3 jumper settings for a 40 in x 40 out system using BAD8 and BDA8 Daughter Cards

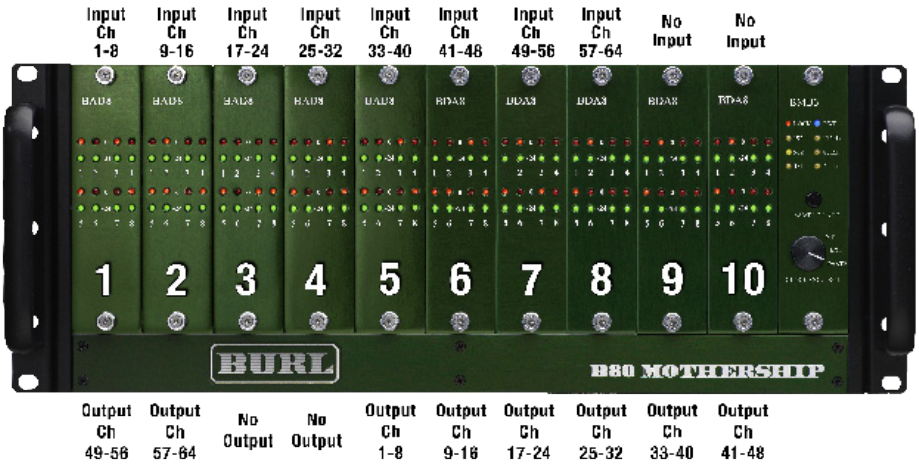


Image 2: This is an example of a 40 in x 40 out MOTHERSHIP with BAD8 and BDA8 Daughter Cards.

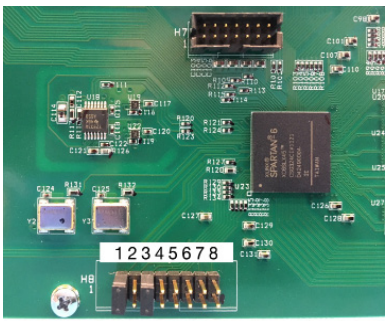


Image 3: Jumpers on 1 and 3 for use with BAD8 and BDA8. Jumper 1 enables 8 channels per slot for inputs. Jumper 3 assigns output Ch. 1 to slot 5.

EXAMPLE B: NO JUMPERS ON 1 - 4 (STORED ON 6 AND 7)

BMB3 jumper settings for a 24 in X 32 out system using BAD4 and BDA8 Daughter Cards

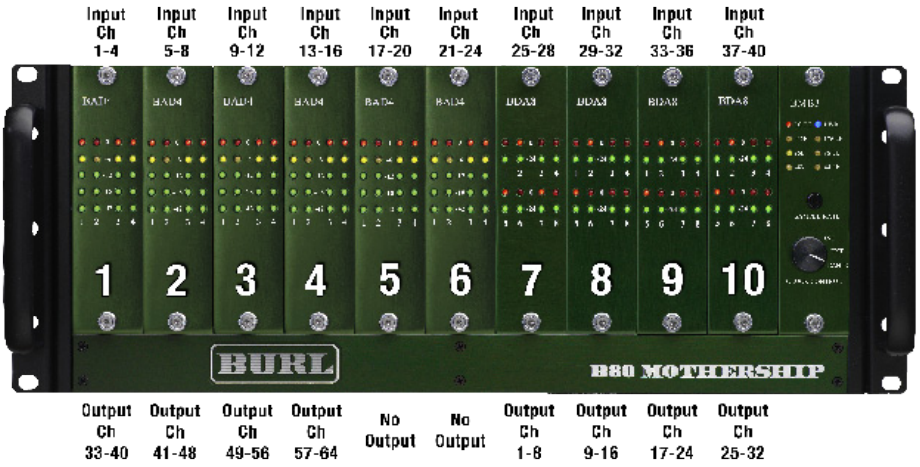


Image 4: This is an example of a 24 in x 32 out MOTHERSHIP with BAD4's and BDA8's. In this example, inputs 1-4 are found in slot 1, outputs 1-8 are found in slot 7.

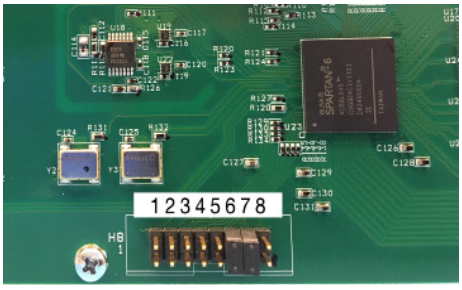


Image 5: Jumpers on 6 and 7 for use with BAD4 and BDA8. Jumper positions 6 & 7 have no function. Jumpers may be kept here for safe keeping when not in use. In this example, there are 4 inputs per slot and output Ch.1 starts in slot 7.

EXAMPLE C: JUMPERS ON 2 AND 3

BMB3 jumper settings for a 32 in x 32 out system using BAD8, BDA8, BAES4 and BCLK Daughter Cards

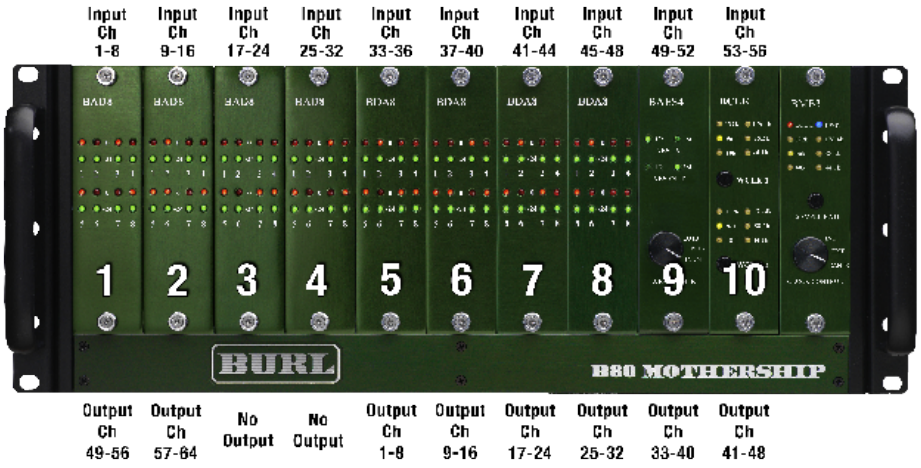


Image 6: This is an example of a 32 in x 32 out MOTHERSHIP with BAD8's, BDA8's, BAES4, and BCLK Daughter Cards.

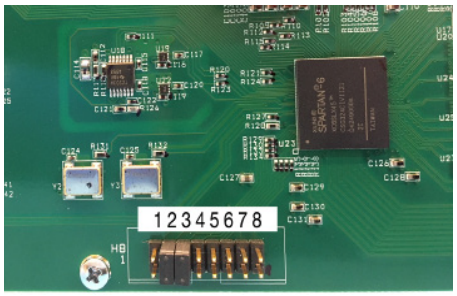


Image 7: Jumpers on 2 and 3 for use with for BAD8's, BAES4, and BDA8's. Jumper 2 enables 8 Ch. per slot for inputs for slots 1-4. and 4 Ch. per slot for slots 5-10. Jumper 3 assigns output Ch. 1 to slot 5.

EXAMPLE D: JUMPERS ON 1 AND 4

BMB3 jumper settings for a 16 in X 64 out system using BAD8 and BDA8 Daughter Cards

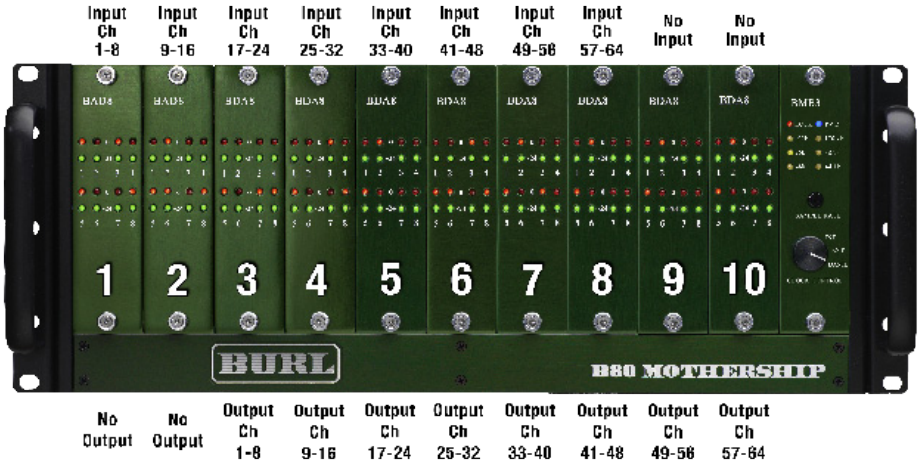


Image 8: This is an example of a 16 in x 64 out MOTHERSHIP with BAD8 and BDA8 Daughter Cards.

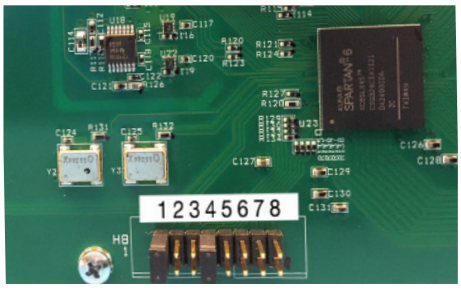


Image 9: Jumpers on 1 and 4 for use with BAD8 and BDA8. Jumper 1 enables 8 Ch. per slot for inputs. Jumper 4 assigns output Ch. 1 to slot 3.

CHANNEL MAPPING FOR JUMPER SETTINGS

JUMPERS 1 AND 2: INPUTS

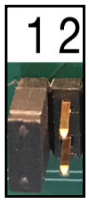
	Jumper Positions: 1	2	Inputs Per Slot:	B80 Mothership Inputs Per Slot Number 1	2	3	4	5	6	7	8	9	10
i.	no	no	4 in	1..4	5..8	9..12	13..16	17..20	21..24	25..28	29..32	33..36	37..40
ii.	yes	no	8 in	1..8	9..16	17..24	25..32	33..40	41..48	49..56	57..64	none	none
iii.	no	yes	8 in /4in	1..8	9..16	17..24	25..32	33..36	37..40	41..44	45..48	49..52	53..56

CHANNEL MAPPING FOR JUMPER SETTINGS

JUMPERS 3 AND 4: OUTPUTS

	Jumper Positions: 3	4	Ouputs Start In:	B80 Mothership Outputs Per Slot Number 1	2	3	4	5	6	7	8	9	10
iv.	no	no	ch1 slot 7	33..40	41..48	49..56	57..64	none	none	1..8	9..16	17..24	25..32
v.	yes	no	ch1 slot 5	49..56	57..64	none	none	1..8	9..16	17..24	25..32	33..40	41..48
vi.	no	yes	ch1 slot 3	none	none	1..8	9..16	17..24	25..32	33..40	41..48	49..56	57..64

i.

ii. 

iii.

iv.

v.

vi.

1.3 Install Daughter Cards

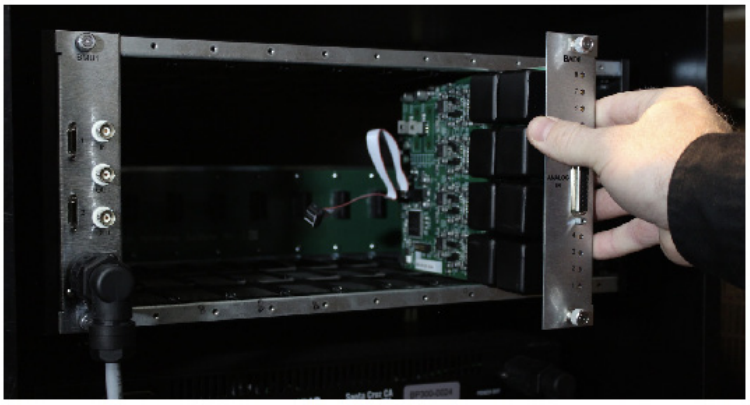


Image 10:
Inserting Daughter Card into the card guides.

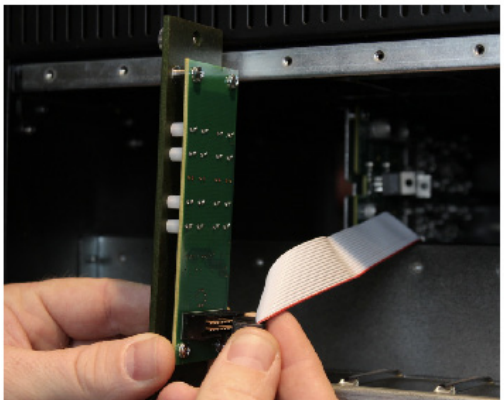


Image 11:
Attaching ribbon cable to front panel.

Note: To purchase blanks for empty MOTHERSHIP slots, contact your BURL dealer!

For more information on installing Daughter Cards, please go to
www.burlaudio.com/b80-quick-start-video

1.4 Install Vents

Image 12: B80 MOTHERSHIP with 1U vents above and below for proper airflow.

Install the 1U vents above and below the B80 chassis. The MOTHERSHIP *MUST* run with proper ventilation.

Failure to properly vent the MOTHERSHIP chassis above and below may cause failure, and will void the warranty.

CONTINUE TO:

SECTION 2
DANTE QUICK START (page 6)

SECTION 3
DANTE CLOCKING (page 12)

2. DANTE QUICK START

YOU WILL NEED:

- B80 Mothership with BMB3 Motherboard
- Dante PCIe Card - **OR** - Dante Virtual Sound Card (DVS)
- Gigabit Ethernet Switch
- Cat6 Ethernet Cables
- *Optional: Additional BKII-BMB3 card will double the channel count*
- Dante Controller

2.1 Install PCIe Card In CPU Or Download And Install Dante Virtual Soundcard (DVS)

For optimal performance, the B80-BMB3 Dante MOTHERSHIP should be used with a Dante PCIe Card.

Focusrite Rednet PCIe, Rednet PCIer, or Yamaha Dante Accelerator PCIe Cards are recommended.

When latency is not an issue, (live recording, archiving, etc) Dante Virtual Sound Card (DVS) may be used in place of a PCIe Card. DVS will add 4ms of latency in and out, for a total round trip of 8ms. Total latency of the system will include the latency of the converter chips and the DAW. We recommend a PCIe Card for *all* applications.

To download DVS: **https://www.audinate.com/products/software/dante-virtual-soundcard**

2.2 Download And Install Dante Controller

To download controller: **https://www.audinate.com/products/software/dante-controller**

2.3 Disconnect All Other Devices From Gigabit Switch

For best results, start by removing all other connections to the switch. Dante should be on its own network. Use different network ports on your computer for other networks (such as internet).

2.4 Connect BMB3 Ethernet Port 1 to Gigabit Ethernet Switch

Each BMB3 port requires its own BKII-B80. An additional BKII Dante Card may be purchased and installed into BMB3 Motherboard to maximize channel count.

Each Ethernet port can handle:

- 64 ch. at 44.1 kHz or 48 kHz
- 32 ch. at 88.2 kHz or 96 kHz
- 16 ch. at 176.4 kHz or 192 kHz

2.5 Set BMB3 Front Panel to INT, EXT, or DANTE

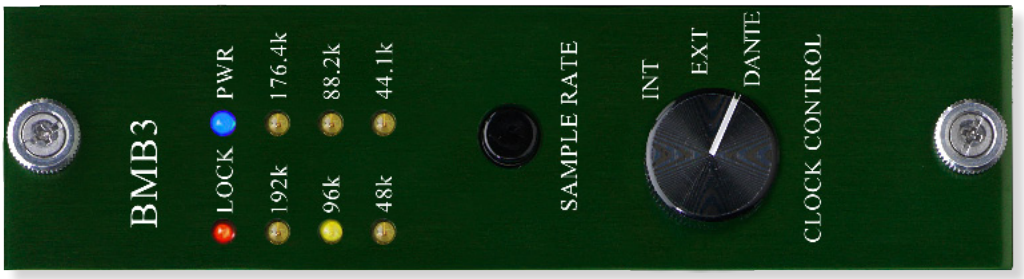


Image 9: BMB3 Front panel. Set Clock Control to INT, EXT, or DANTE

- When using the B80 on internal clock, set to INT.
- If using external word clock, set to EXT.
- When clocking off Dante network, set to DANTE.

For a complete guide to Dante Clocking, see page 12.

2.6 Connect The Computer's Native Ethernet Port To Gigabit Ethernet Switch

Even when using a Dante PCIe Card, Dante Controller requires a native Ethernet port and will *not* work via the PCIe Card.

2.7 If Using A PCIe Card, Connect Primary Port Of PCIe Card To Gigabit Ethernet Switch

When using a Dante PCIe Card, audio is transmitted via the PCIe card.

2.8 For INT, Set BMB3 To Desired Sample Rate

Push the "Sample Rate" button on BMB3 faceplate to toggle through sample rates. When set to INT, BMB3 must *always* be manually set to the desired sample rate. When using EXT or DANTE clock, the MOTHERSHIP will *not* need to be manually set via the front panel.

2.9 For Dante Virtual Soundcard (DVS), Open And Run DVS

2.10 Open "Dante Controller"

2.11 Click On “Routing” Tab

(See **Image 10**)

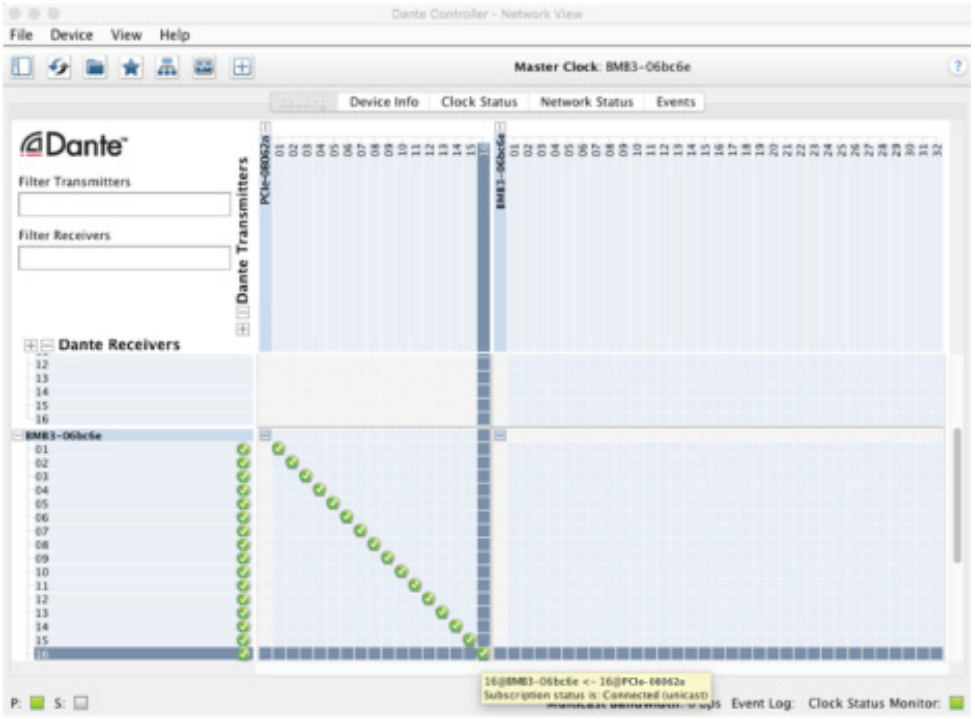


Image 10: Shows routing BMB3 receiver ch. 1-16 to PCIe Card channel 1-16.

2.12 Maximize The Routing View

Click on the “+” next to “Dante Receivers” and “Dante Transmitters (See **Image 11**).

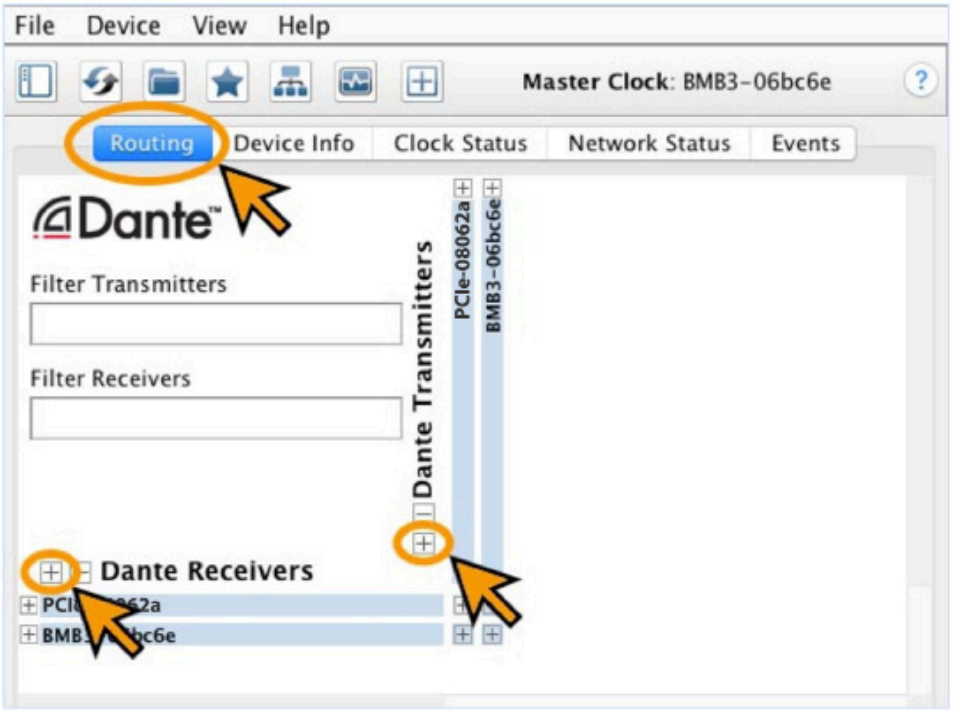


Image 11: Shows “Routing” tab and “+” to maximize routing view to see all Receiver and Transmitter channels.

Note: “Transmitter” refers to the signal from MOTHERSHIP input card sent to the BKII Dante Card on the BMB3 Motherboard, and then to the PCIe Card (or CPU when using DVS). “Receiver” refers to the PCIe Card sending signal to the BKII Card on the BMB3 Motherboard, which then feeds the MOTHERSHIP output card.

2.13 Input Assignment

Route BMB3 ***Transmitter*** channel 1 to PCIe (or CPU if using DVS) ***Receiver*** card channel 1. This routes B80 input ch.1 to PCIe (or DVS) card ch. 1 (See **Image 12**).

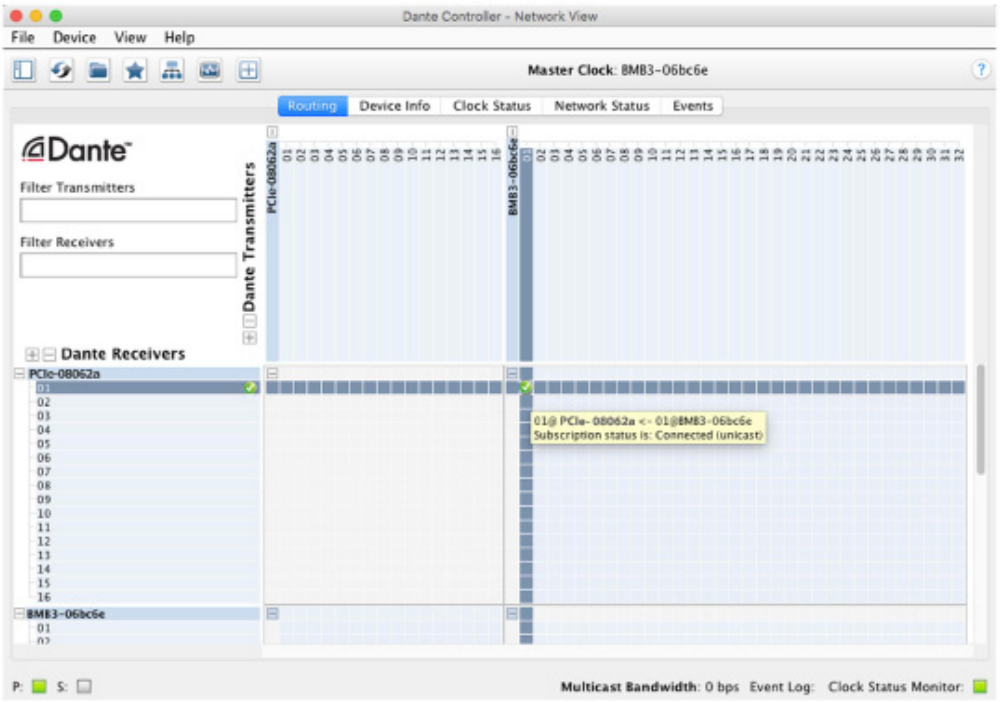


Image 12: Shows routing BMB3 transmitter channel 1 to PCIe Card channel 1.

Continue with input assignments for your MOTHERSHIP configuration (See **Image 16**, pg 11).

2.14 Output Assignment

Route BMB3 ***Receiver*** channel 1 to PCIe (or CPU if using DVS) ***Transmitter*** channel 1. This routes PCIe ch. 1 to B80 output ch. 1 (See **Image 13**).

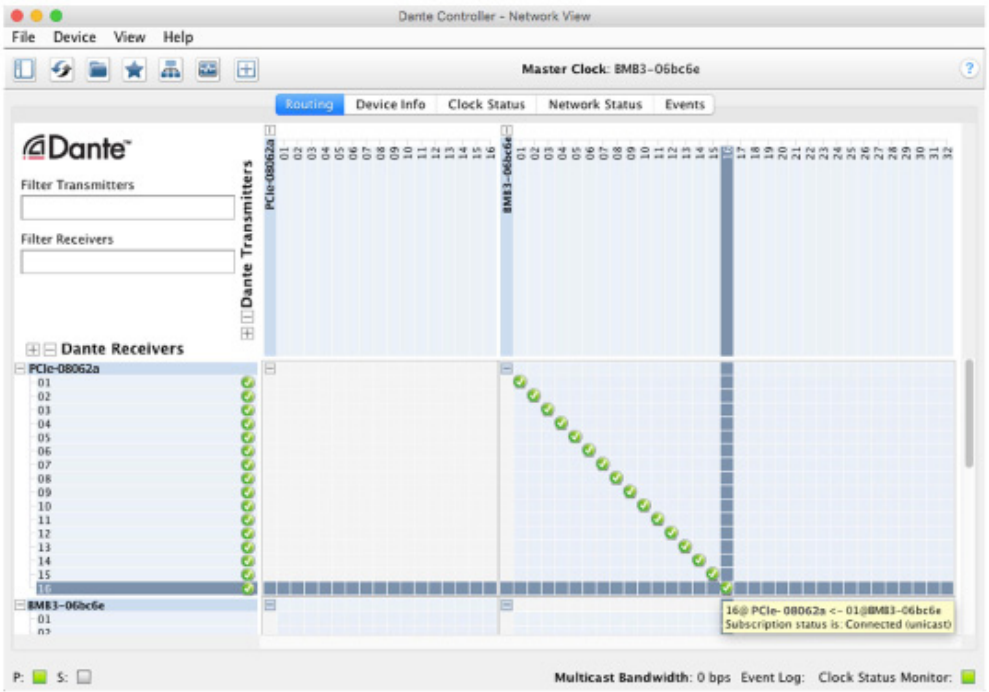


Image 13: Shows routing BMB3 transmitter channel 1-16 to PCIe Card channel 1-16.

(2.14 Output Assignment Continued)

Continue with output assignments for your MOTHERSHIP configuration.

See **Image 14** for an example of routing B80 MOTHERSHIP outputs to the PCIe Card.

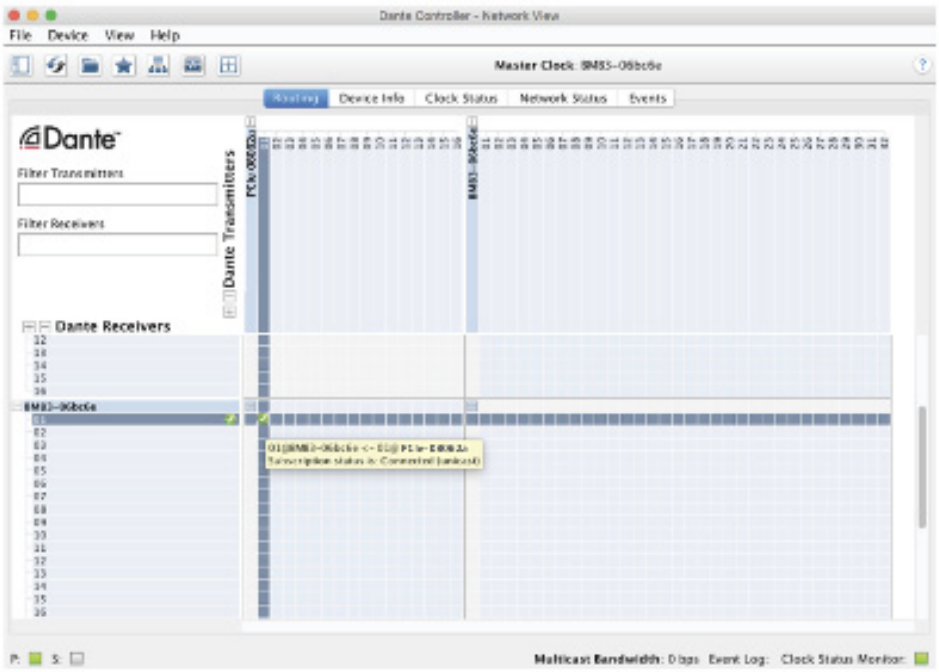


Image 14:
Shows routing BMB3 receiver ch. 1 to PCIe Card channel 1.

2.15 Click On "Device Info"

Then double click on BMB3 to open "Device View" window (See **Image 15**).

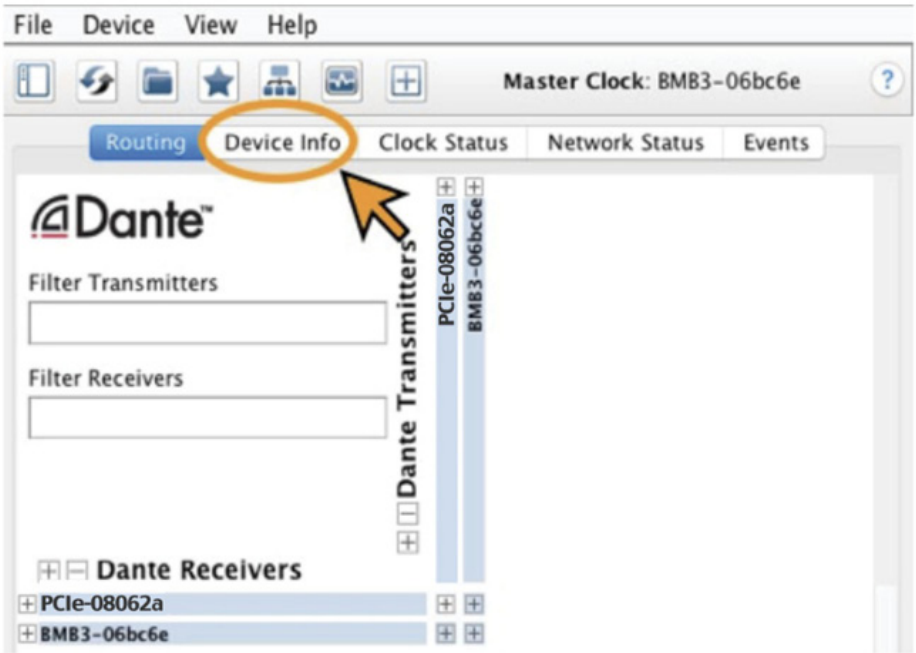


Image 15:
Device Info tab.

2.16 Click On “Device Config”

Select the sample rate and select preferred latency (See **Image 16**).

Note: Actual latency used between two endpoints is the larger of the two endpoint settings. If using the Dante Virtual Soundcard (DVS), anything to or from DVS will have a 4ms latency in and out. Using a PCIe Card is recommended to get down to 150µs.

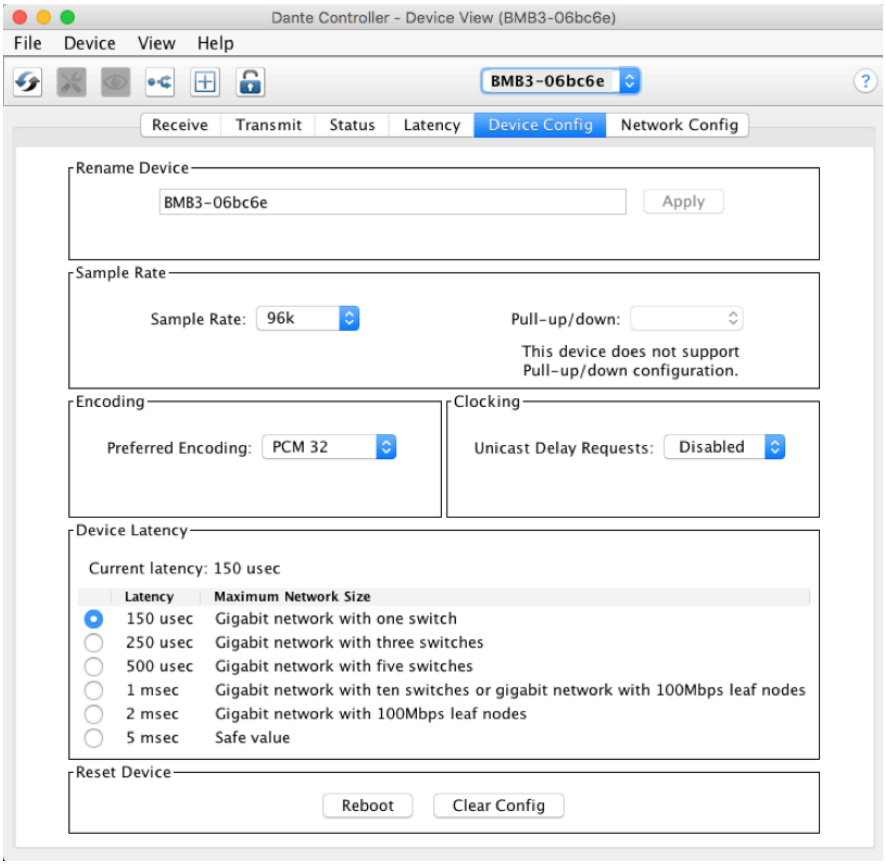


Image 16:
Shows
device configuration
for BMB3.

2.17 Click On The Dropdown Menu

Select DEVICE CONFIG. for each Dante device including the PCIe Card.

Make sure the sample rate is matching on each device!

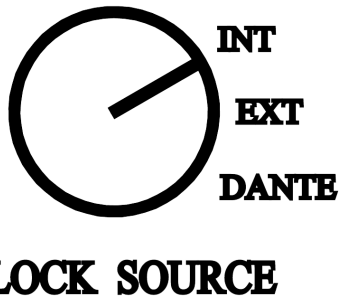
Note: Sample rate *MUST* be set for each unit, including the PCIe Card.

For more information on Dante, visit: **https://www.audinate.com/solutions/dante-overview**

3. DANTE CLOCKING

There are 3 ways to clock the B80 MOTHERSHIP:

1. BMB3 set to Internal. Brooklyn II (BKII) Card set to External.
2. BMB3 set to External Clock, BKII Card set to External.
3. BMB3 set to Dante, BKII Card set to Internal.



3.1 Clocking BMB3 To Internal Word Clock

1. Set BMB3 front panel to INT.
2. Open Dante Controller, select DEVICE INFO.
3. Double Click on device “BMB3-xxxxxx”.
4. Click on CLOCK STATUS (**Image 17**).
5. Set BMB3 to “Preferred Master”, and “Enable to sync to Internal”.
6. Make sure each device including host PCIe Card is set to correct sample rate in Device Config *(see **2.16** and **2.17**)*.

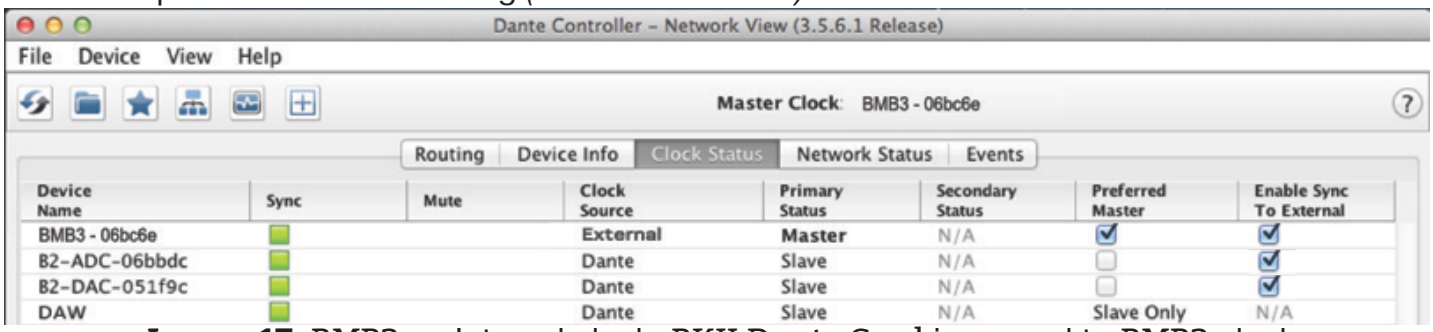
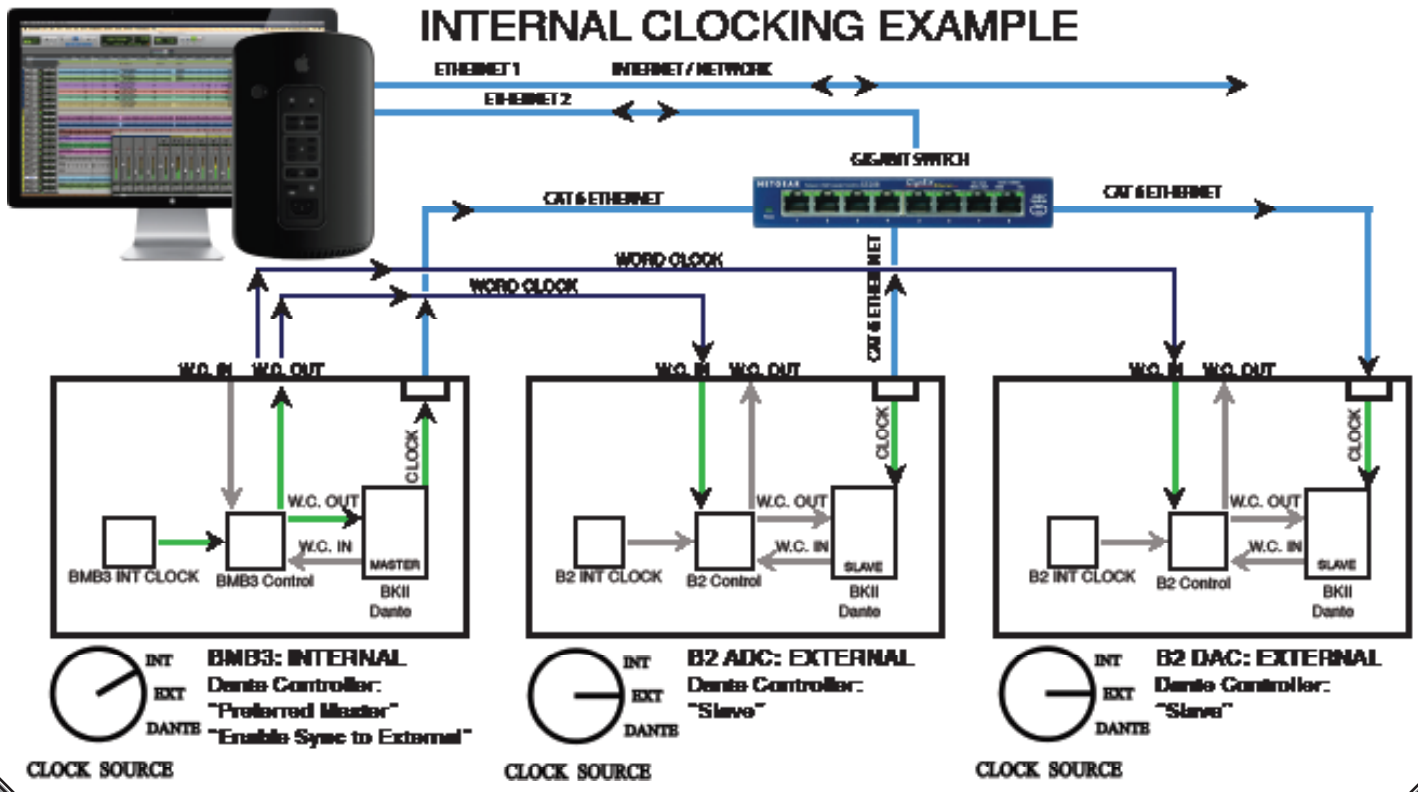
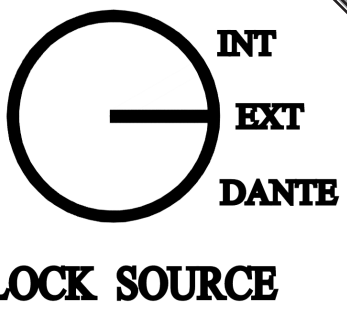


Image 17: BMB3 on Internal clock. BKII Dante Card is synced to BMB3 clock.

NOTE: “Preferred Master” refers to Dante Network, not BMB3 front panel!



3.2 Clocking BMB3 To External Word Clock



1. Set BMB3 front panel to EXT.
2. Open Dante Controller, select DEVICE INFO.
3. Double Click on device “BMB3-xxxxxx”.
4. Click on CLOCK STATUS. (**Image 18**).
5. Set BMB3 to “Preferred Master”, and “Enable to sync to External”.
6. Make sure each device including host PCIe Card is set to correct sample rate in Device Config *(see **2.16** and **2.17**).*

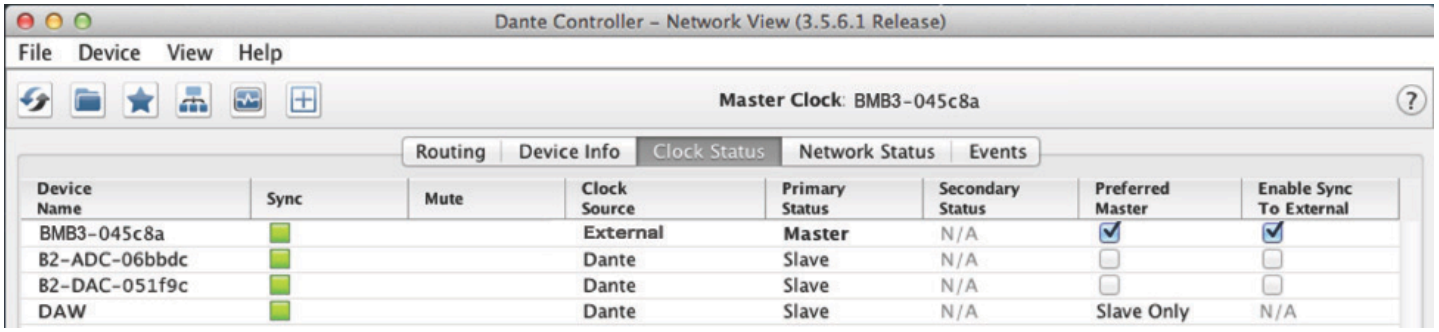
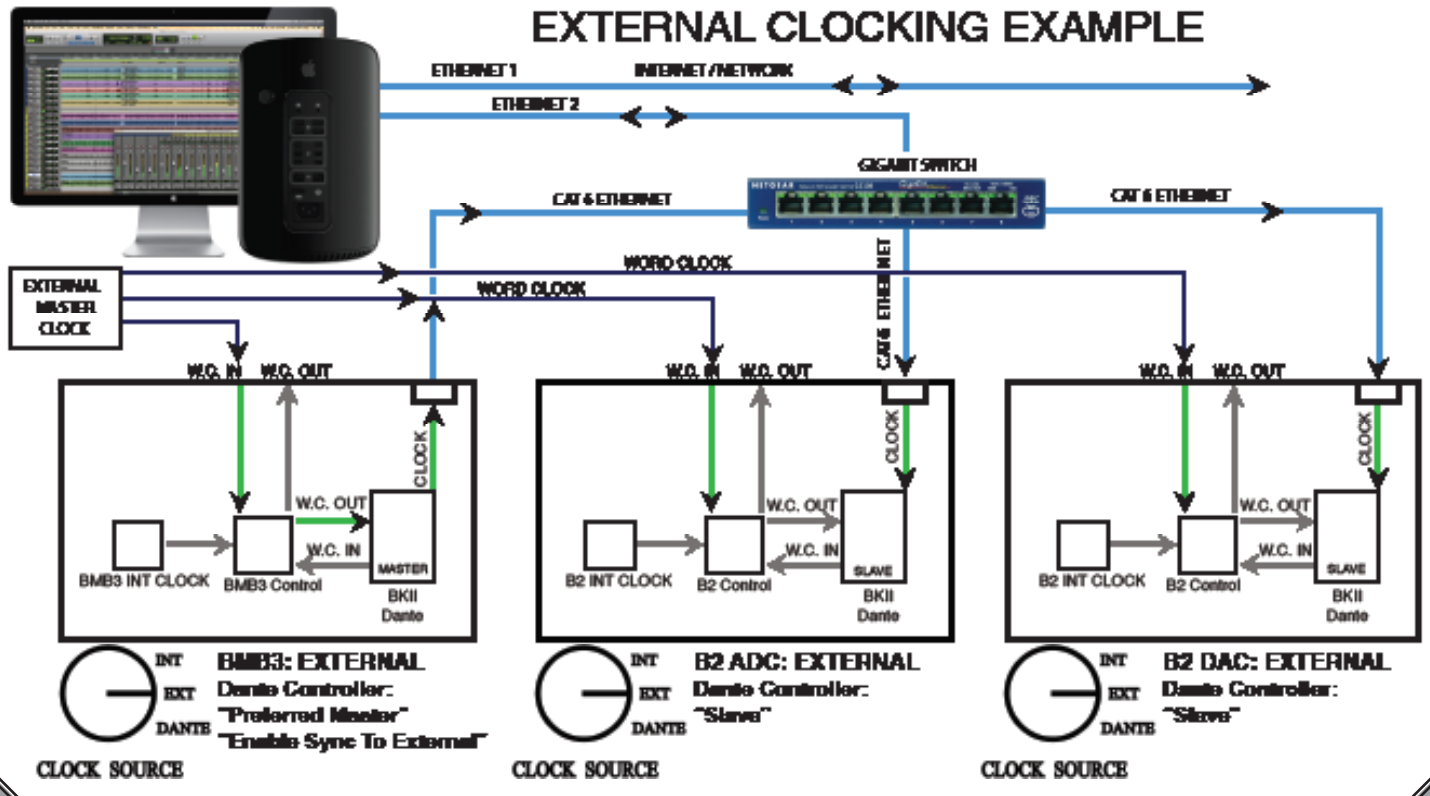
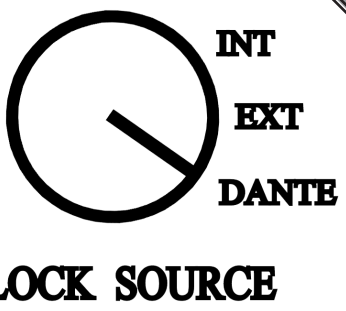


Image 18: BMB3 on External Clock. BKII Dante Card is also synced to External clock.



3.3 Clocking BMB3 To Dante



1. Set BMB3 front panel to DANTE.
2. Open Dante Controller, select DEVICE INFO.
3. Double Click on device “BMB3-xxxxxx”.
4. Click on CLOCK STATUS. (**Image 19**).
5. Set BMB3 to “Preferred Master”, and *deselect* “Enable to sync to External”.
6. Make sure each device including host PCIe Card is set to correct sample rate in Device Config *(see **2.18**).*

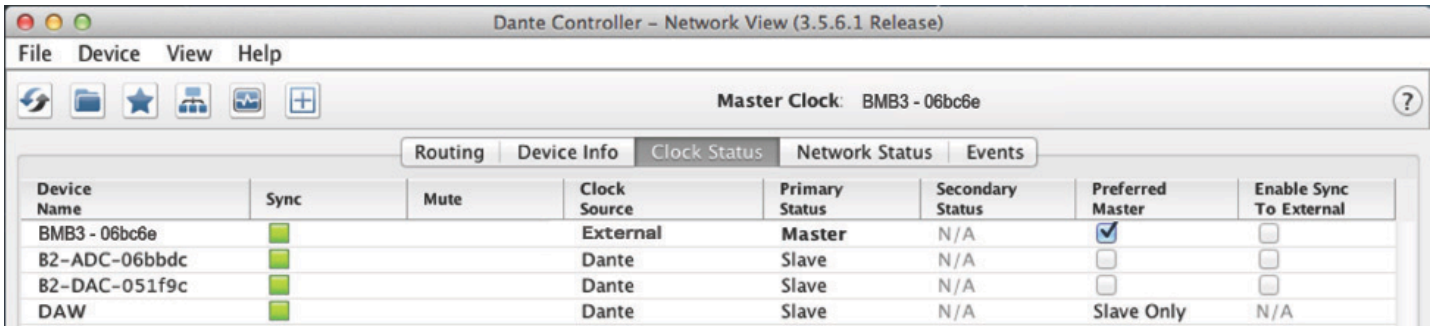
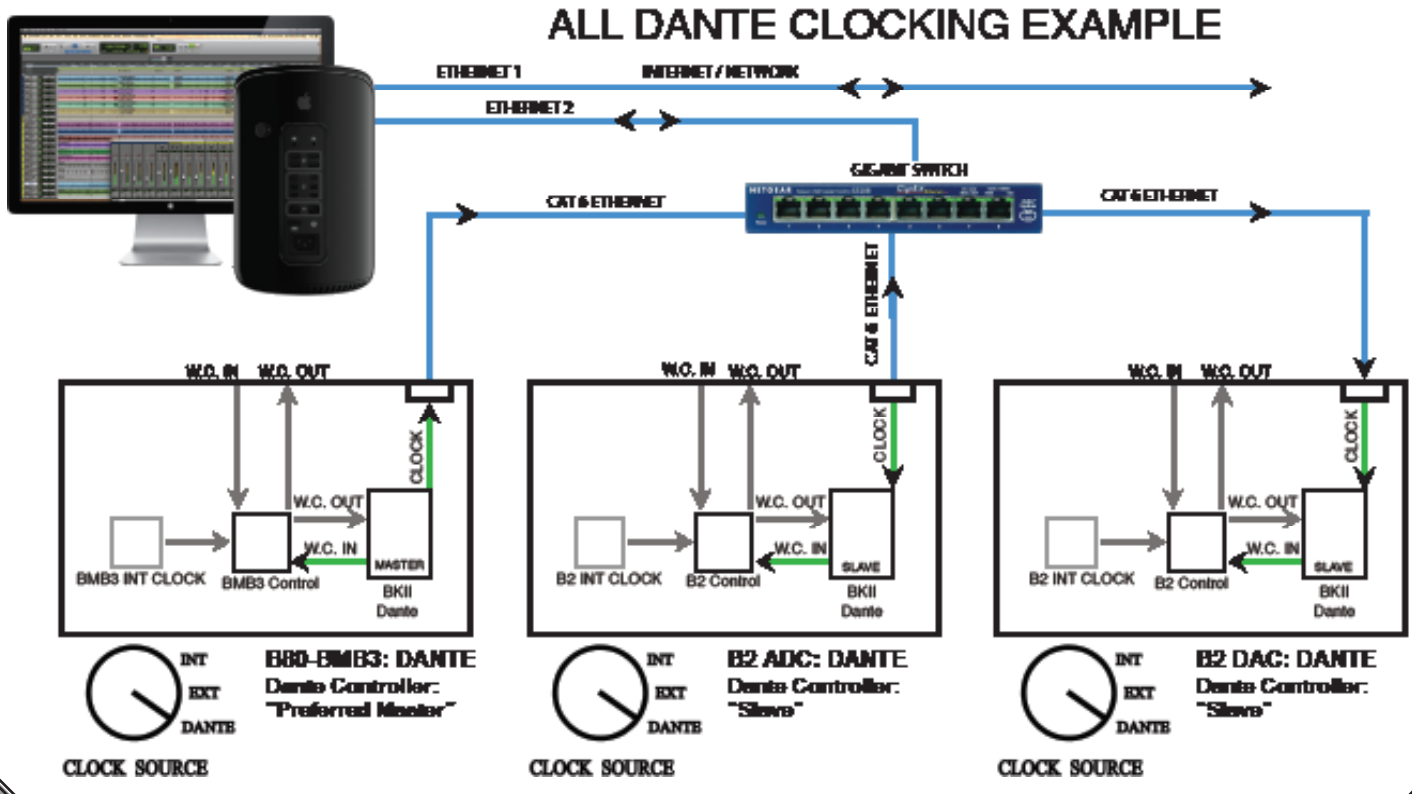



Image 19: BMB3 on Dante Clock. BKII Dante Card is also synced to Dante clock.