APPLICATION NOTES

DYNAMIC MUSIC DISTRIBUTION DESIGN GUIDE

INTRODUCTION

Dynamic Music Distribution offers System Integrators the ability to scale inputs and zones conveniently and efficiently with dynamic routing capabilities embedded in its amplifier platforms. This makes it simpler to share music between different zones independently from the source location, and to carry control signals in an automated fashion without the need of a centralized DSP. This document aims to give the system designer some guidelines to navigate through designing a Powersoft system for Dynamic Music Distribution deployment.

Zoning Capabilities

Dynamic Music Distribution enables the system to differentiate zones assigned to one or more amplifiers without needing a central DSP or zone mixer. Do take note that the number of zones that an amplifier can have does not always correspond to the number of outputs available on the amplifier.

Here is a list of the various amplifiers and their zoning capability.

AMPLIFIER SERIES	MAXIMUM ZONES AVAILABLE
Unica 8M	8 Zones
Unica 4L	4 Zones
X8	4 Zones
X4	2 Zones
T Series 4 Channels	2 Zones
T Series 2 Channels	1 Zone
Mezzo A/AD 2 Channels	2 Zones
Mezzo A/AD 4 Channels	4 Zones
Ottocanali DSP+D	4 Zones
Quattrocanali DSP+D	2 Zones
Duecanali DSP+D	1 Zone

Table 1 – Maximum zones available on Powersoft amplifiers.

Notes:
A rule of thumb, except for Unica and Mezzo series, all other amplifiers have ½ the number of zoning capabilities compared to their outputs.
Dynamic Music Distribution does not support speaker linked in *"Spit Mode"* to amplifiers, so they cannot be assigned to any zone.

DANTE Input and Output Capabilities

The Dynamic Music Distribution capability of the system also enables dynamic routing. Dynamic routing enables the user to easily share their analogue or AES3 signal with other amplifiers on the network through DANTE receivers. This is made possible with the use of DANTE transmitters available on select Powersoft amplifiers.

Some considerations need to be kept in mind on the number of simultaneous DANTE sources that one amplifier can convert vs. the number of simultaneous DANTE sources that one amplifier can receive. This is due to the Dante flows available related to the DANTE chip used within the amplifier.

The table below shows the type of DANTE chip being deployed in each Powersoft amplifier and number of DANTE inputs/outputs and DANTE flows available.

AMPLIFIER SERIES	DANTE CARD	DANTE Input	DANTE Output	DANTE Flows TX	DANTE Flows RX
Unica 8M	DEP (Dante Embedded Platform	8	8	8	8
Unica 4L	DEP (Dante Embedded Platform	4	4	4	4
X Series	Brooklyn II	16	8	32	32
T Series	Ultimo XT	4	4	2	2
Mezzo AD	Ultimo XT	4	4	2	2
Ottocanali DSP+D	Brooklyn II	16	8	32	32
Quattrocanali DSP+D	Ultimo XT	4	-	-	2
Duecanali DSP+D	Ultimo XT	2	-	-	2

Table 2 – List of Dante-enabled Powersoft amplifiers.

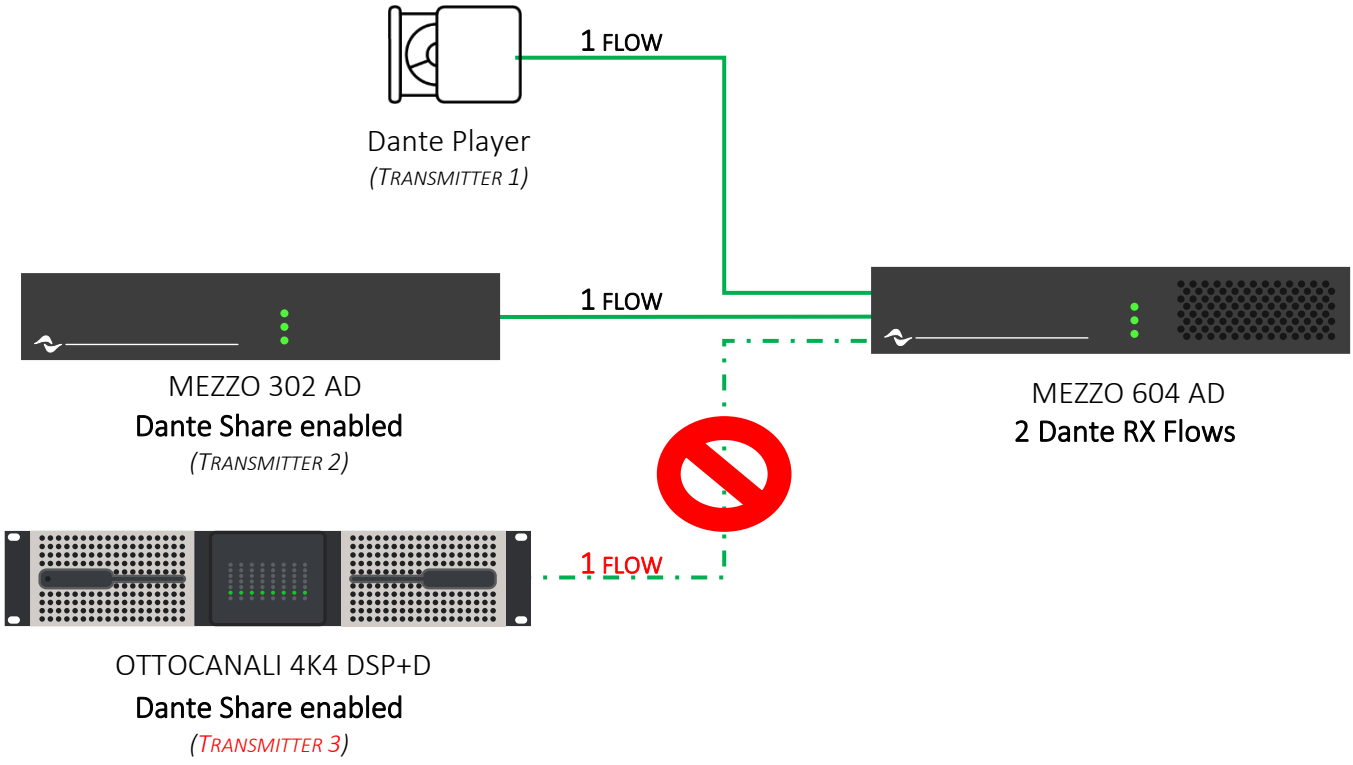
Notes:
One Unicast Dante flow (configuration by default) can contain up to 4 audio channels while One Multicast Dante flow can contain up to 8 audio channels.

Dante "transmit" flows are used when sending audio out from a Dante device and a "receive" flow is used to accept audio in from another Dante device.

DANTE Inputs on 4 Channels Mezzo AD

The 4-channel Mezzo AD models use the same DANTE chip as the 2-channel version. Both will have a maximum of 2 DANTE flows. When a 4 channel Mezzo AD is being used to drive more than 2 zones and 3 or more unique DANTE transmitters are linked to the zones, a warning will appear to the user alarming them to the risk of “overflow”.

This is due to the capability of the DANTE chip being used in the Mezzo which can handle a maximum of 2 unique DANTE Flows simultaneously. This is in no way a limitation of the amplifier to process the sources.



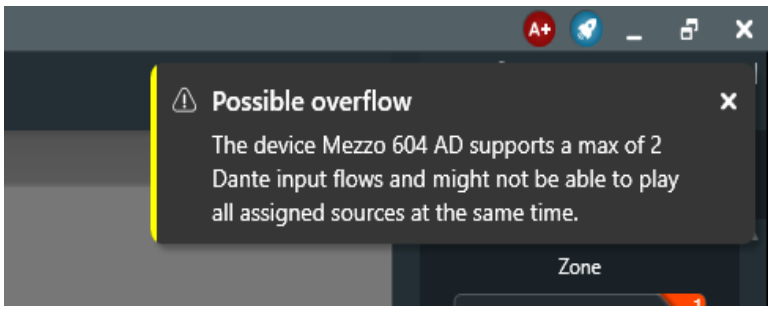


Figure 1 – Overflow Example scheme and ArmoniaPlus Warning

Multicast DANTE Outputs

By default, patching DANTE outputs of the amplifiers to other devices creates unicast flows. In the event where more DANTE devices need to subscribe to the DANTE outputs, (2 DANTE transmitter flows for Mezzo AD and T Series and 32 DANTE transmitter flows for Ottocanali) users will find themselves running out of flows for a unicast subscription or find themselves running into a “fan out” error. Upon finishing “Running” the project, the “Summary” page on ArmoníaPlus will also indicate that a multicast DANTE flow subscription needs to be created. To create a multicast flow, the user will need to use DANTE Controller.

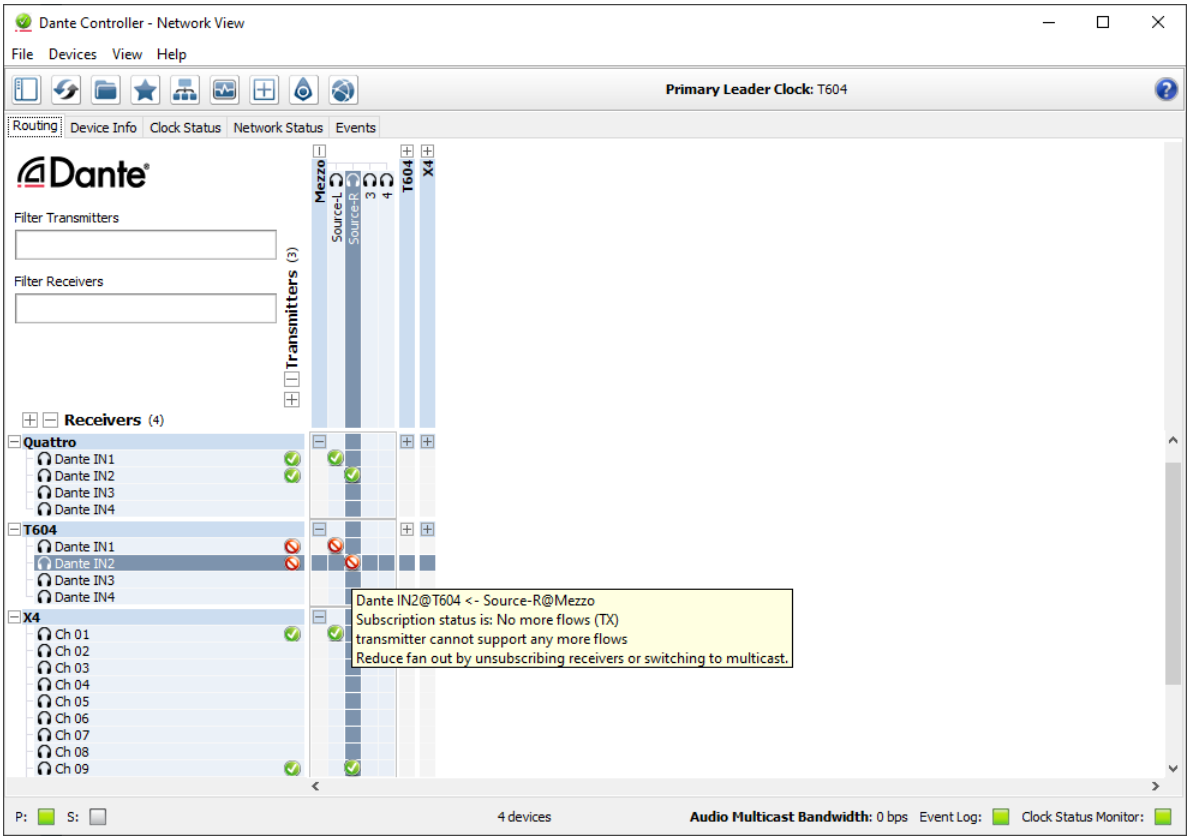


Figure 2 – Dante Controller “No More Flows” Error

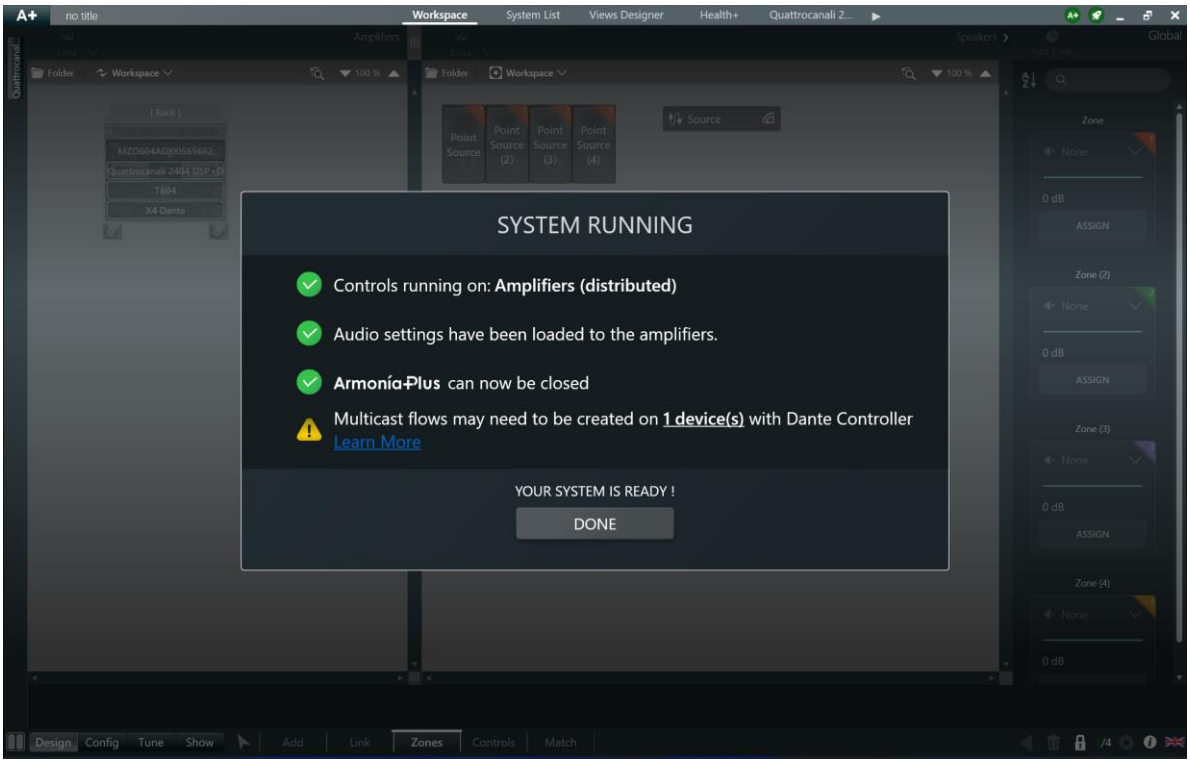


Figure 3 – ArmoníaPlus Summary Page Multicast Flows Warning

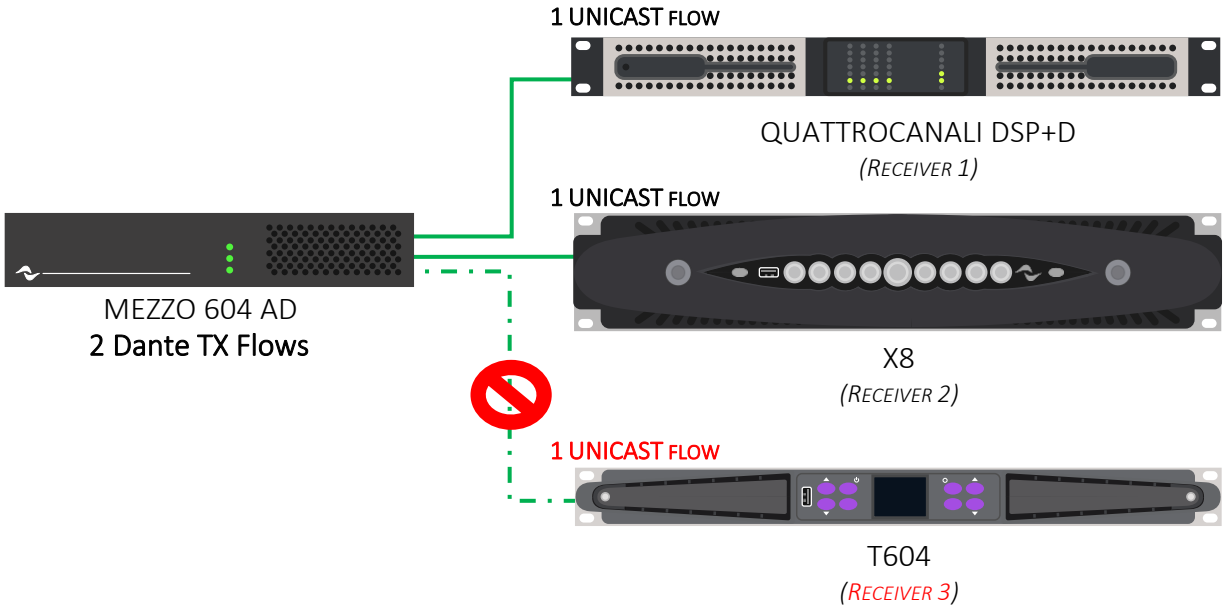


Figure 4 – Dante FANOUT Example scheme

Creating Multicast DANTE Output

DANTE multicast flow subscriptions need to be created from DANTE Controller. To do this, the device needs to be online. The multicast flow needs to be created on the transmitter end of the Dante device. To do that, double click on the transmitter and click on “Create a multicast flow” option.
For further information you can always refer to Audinate’s official documentation.

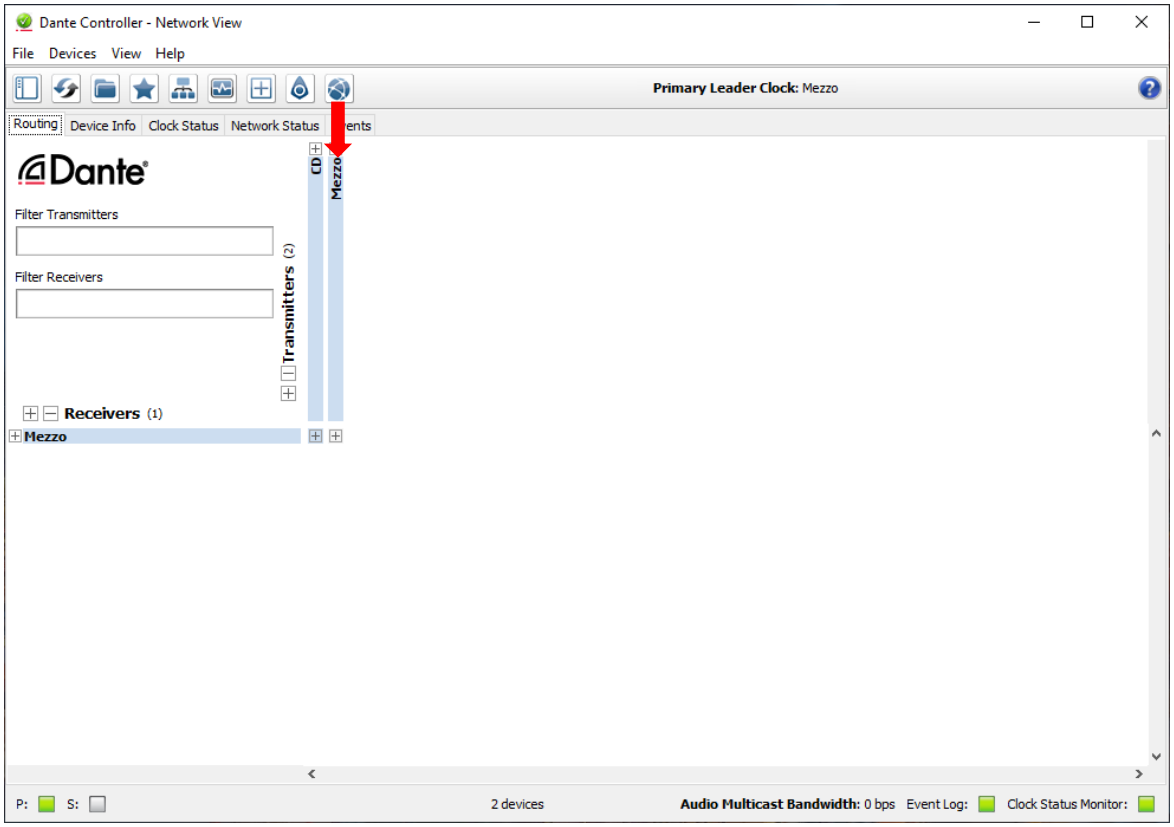


Figure 5 – Selecting a Dante Transmitter

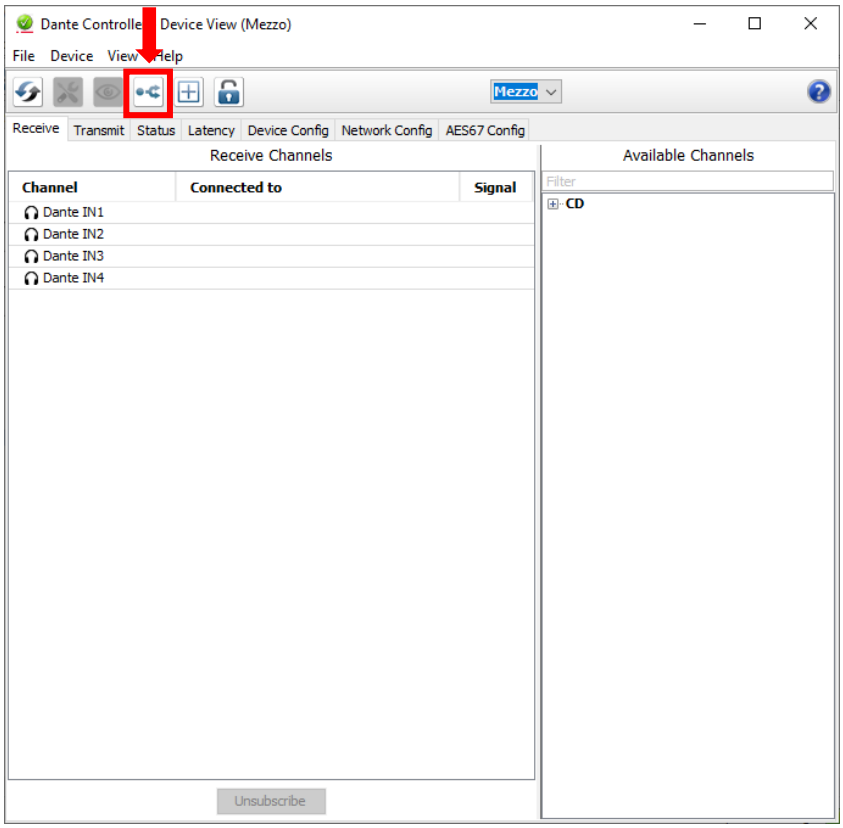


Figure 6 – Create a Multicast Flow Option

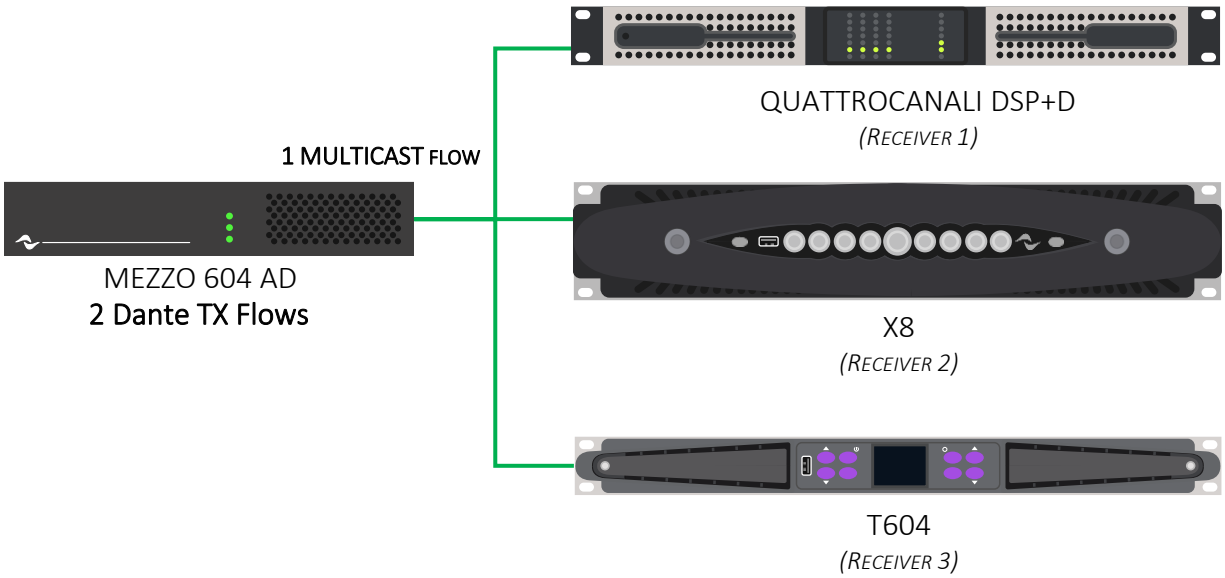


Figure 7 – DANTE Multicast Flow Example scheme

GPI Capabilities

Apart from controlling the system using the WM Touch, users can also configure the system to be controlled using the WM Passive wall controllers. The WM Passive wall controllers need to be connected to the "GPI" inputs of an amplifier. Do take note that not all the amplifiers come with "GPI."

The table below shows the amplifier models and their available "GPI" inputs.

AMPLIFIER SERIES	GPI AVAILABLE
Unica Series	6
X Series	NONE
T Series	NONE
Mezzo A / Mezzo AD	4
Ottocanali DSP+D	NONE
Quattrocanali DSP+D	4
Duecanali DSP+D	2

Table 3 – List of GPI on Powersoft amplifiers

Notes:
The "GPI" signal from one amplifier can be shared over the network with another amplifier. This will enable the user to have WM Passive wall controllers controlling other amplifiers on the network.

Unica Series amplifiers are equipped with six General Purpose Input/Output (GPIO) pins which can be configured for a range of pre-defined uses, via ArmoníaPlus software

While some the non-DSP+D amplifiers like the Quattrocanali feature "GPI" inputs, these are used for VCA control. For zone, source and scene control, a DSP+D enabled amplifier is required.

For Mezzo both A and AD models can have zone, source, and scene control on the "GPI" inputs.

Locating the GPI port

The diagrams below show the location of the “GPI” port of each amplifier.

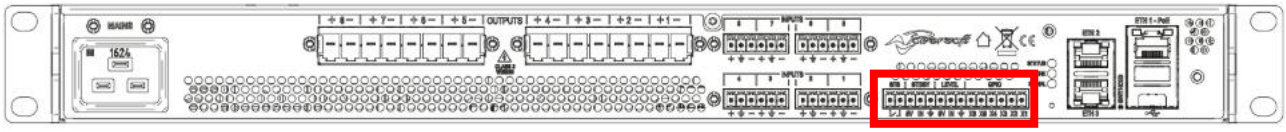


Figure 8 – Unica 8M GPI port location

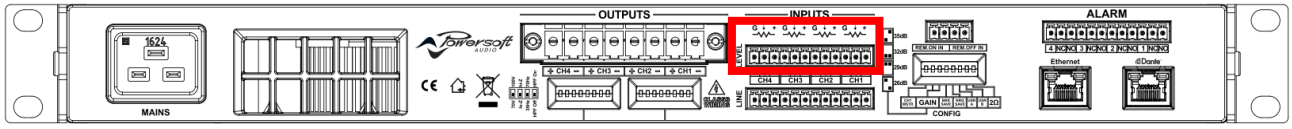


Figure 9 – Quattrocanali DSP+D GPI port location

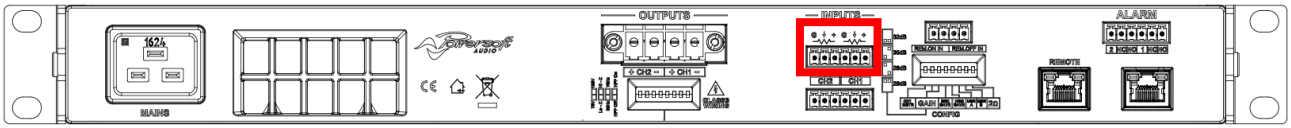


Figure 10 – Duecanali DSP+D GPI port location

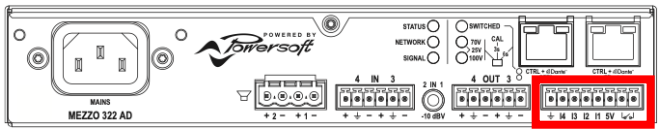


Figure 11 – Mezzo GPI port location

Notes:

Please refer to the Application Notes on how to set up GPI control at www.powersoft.com or check out our YouTube channel for a tutorial video.

Deploying the project

To have zone, source, and scene control on your project, the project needs to “Run” or deployed first. If the project is not “Run,” the WM Touch will not have the control interface loaded and the WM Passive will only act as a VCA volume control for your amplifiers.

To “Run” the project, you would need to make sure that your project is set up properly. If the project was not set up properly, an error will pop up when you try to run the project. To “Run” the project, click on the “Rocket” icon and then click “Run.”

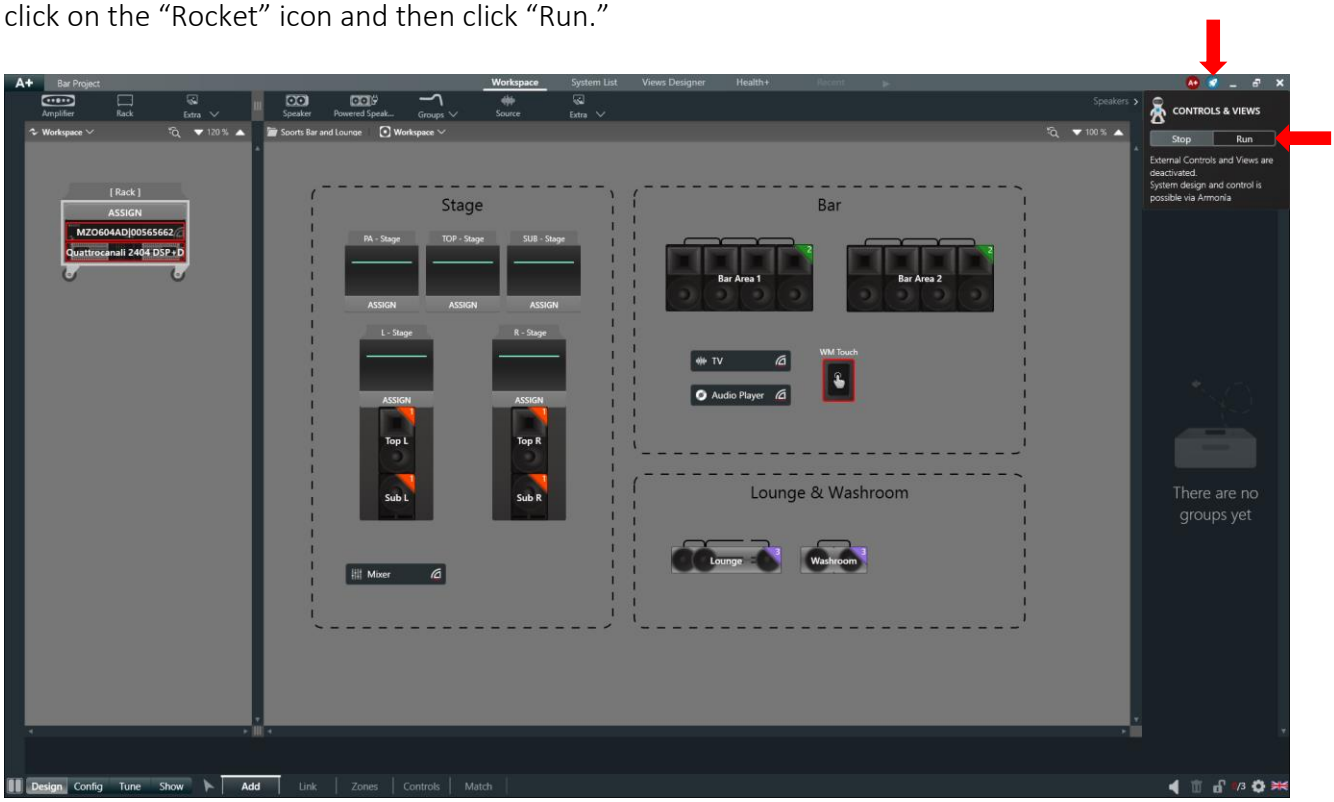


Figure 12 – Running controls & views

Notes:

When using Scenes, the recall of them, will temporarily mute then un-mute the system, for preventing damage to loudspeaker due to parameters changes. The duration of this operation may vary depending on the system complexity and how many parameters are being changed.

Design Guide Chart

The chart below shows some key points needed to be considered while designing the system for Dynamic Music Distribution.

AMPLIFIER SERIES	MAXIMUM ZONES AVAILABLE	GPI AVAILABLE	DANTE CARD	DANTE Input	DANTE Output	DANTE TX Flows	DANTE RX Flows
Unica 8M	8 Zones	6	DEP	8	8	8	8
Unica 4L	4 Zones	6	DEP	4	4	4	4
X8	4 Zones	-	Brooklyn II	16	8	32	32
X4	2 Zones	-	Brooklyn II	16	8	32	32
T Series (4 Ch)	2 Zones	-	Ultimo XT	4	4	2	2
T Series (2 Ch)	1 Zone	-	Ultimo XT	4	4	2	2
Mezzo AD (2 Ch)	2 Zones	4	Ultimo XT	4	4	2	2
Mezzo AD (4 Ch)	4 Zones	4	Ultimo XT	4	4	2	2
Ottocanali DSP+D	4 Zones	-	Brooklyn II	16	8	32	32
Quattrocanali DSP+D	2 Zones	4	Ultimo XT	4	-	-	2
Duecanali DSP+D	1 Zone	2	Ultimo XT	2	-	-	2

Table 4 – Summary of Powersoft amplifier capabilities

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