MX Series – MX36

Connection and Operation Methods

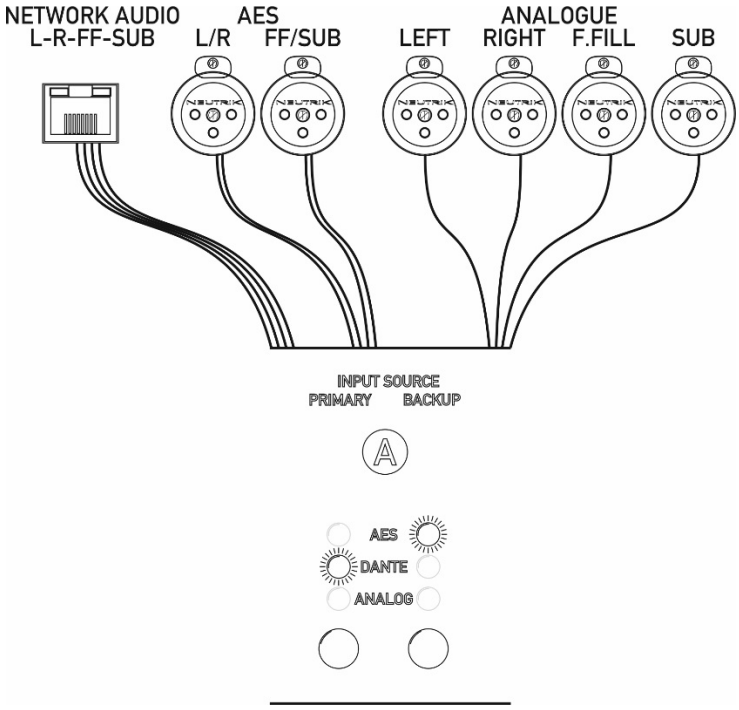
Introduction

The MX36 is capable of operating with up to 3 levels of redundancy on any of the three main quad channel input sets. There are therefore 36 channels available (3 x source type x 4 channels x 3 sets = 36).

Working with Failover and Redundancy

The priority of the input sources is chosen for each set using the Input Source / Backup keys for each of banks A, B & C. Analogue is always the lowest priority - your "if all else fails" option. If a Dante subscription is removed or the network is lost, the MX36 will switch to the backup (normally AES). If AES is lost then the MX36 will switch to the Analogue (on a 4 channel basis to maintain latency timings).

Working in this full redundancy/failover mode, the MX36 will handle three x four channels (typically Left, Right, Front Fill, Sub).



Not all consoles will provide all three source types, so the Input Source Priority should be set accordingly – if only Analogue and AES is available then the typical setting would be Primary = AES and Backup = Analogue.

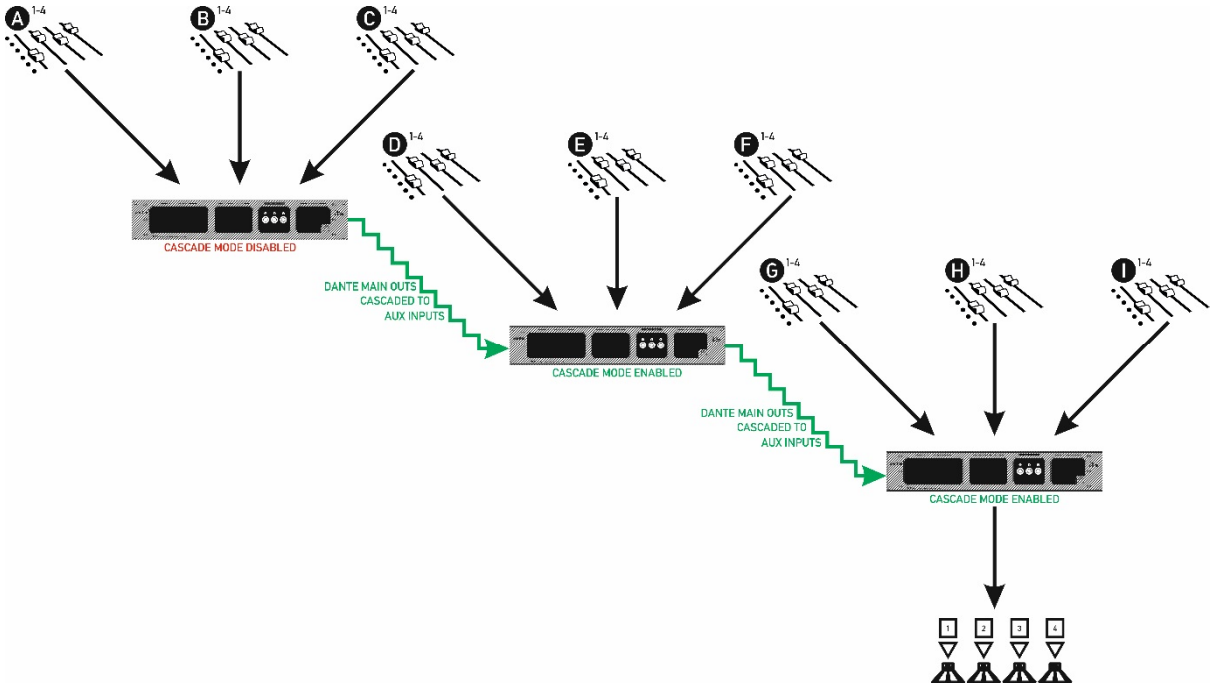
If only a single source type is available then redundancy can simply be switched off – for example, if only AES is available then Primary = AES and Backup = OFF.

Increase Console Capacity with Cascade Mode

If it is necessary to manage more than three consoles that require redundant failover support, units can be connected in cascade. This requires an audio network connection from all units (even if Dante is not being used as a source type by any of the consoles).

The Dante (audio network) connection is required as the Dante outputs from one unit must be connected to the auxiliary (Aux) Dante inputs of the next unit so that the final unit in the cascade can provide a single set of four outputs from all consoles connected to any unit.

The control network connection is required to send switching information (locking, solo etc.) between units.



The Console Select switches and failover source selection remain independent on each units but the use of the Dante Aux bus means that all consoles' audio is output from the unit designated as the master. The set-up of the Aux bus to provide this routing is simply achieved through Dante Controller.

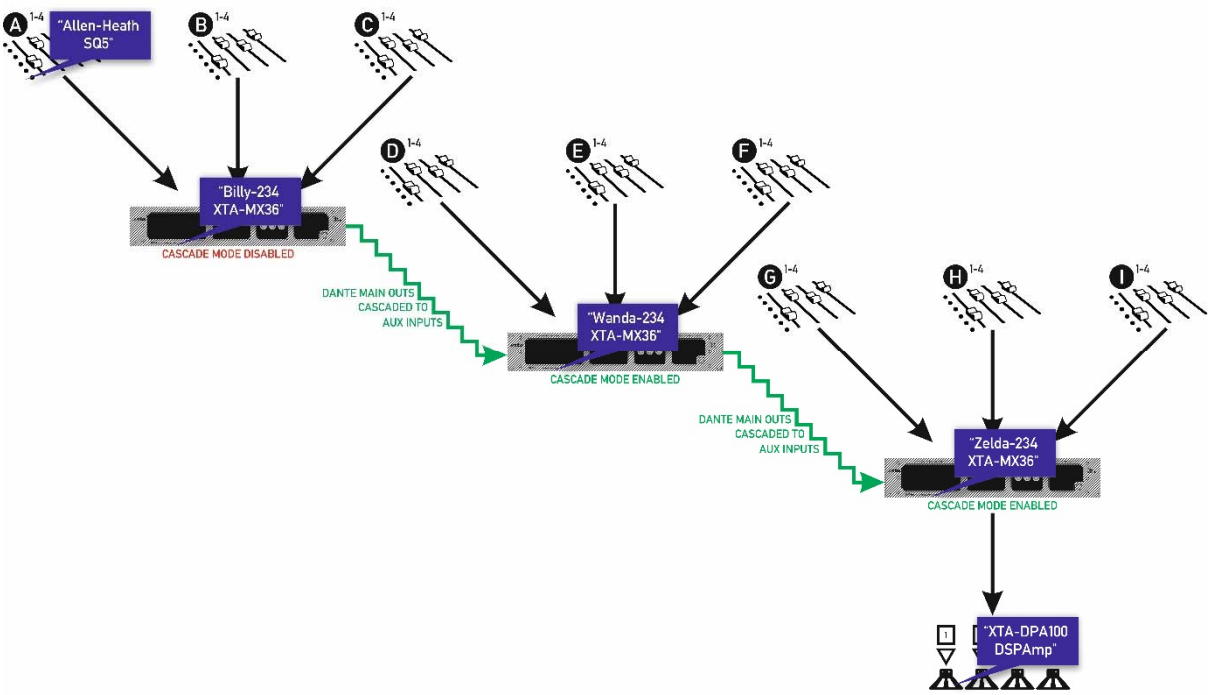
As the stereo line input and mic channels are only ever routed direct to the main outputs, these will also cascade across all *upstream* units.

By default, units are not enabled for cascading – the Dante Aux bus is muted in DSP for safety to prevent any accidental connections through Dante Controller direct to the outputs that would bypass the Console Select function.

Monitoring remains independent on each unit, but the monitor bus is available independently over Dante.

Operating Your MX36: Configuring Cascade Mode within Dante Controller

In this example three units are cascaded to give allow up to nine consoles to be connected to a single set of outputs, all with full redundancy if required.



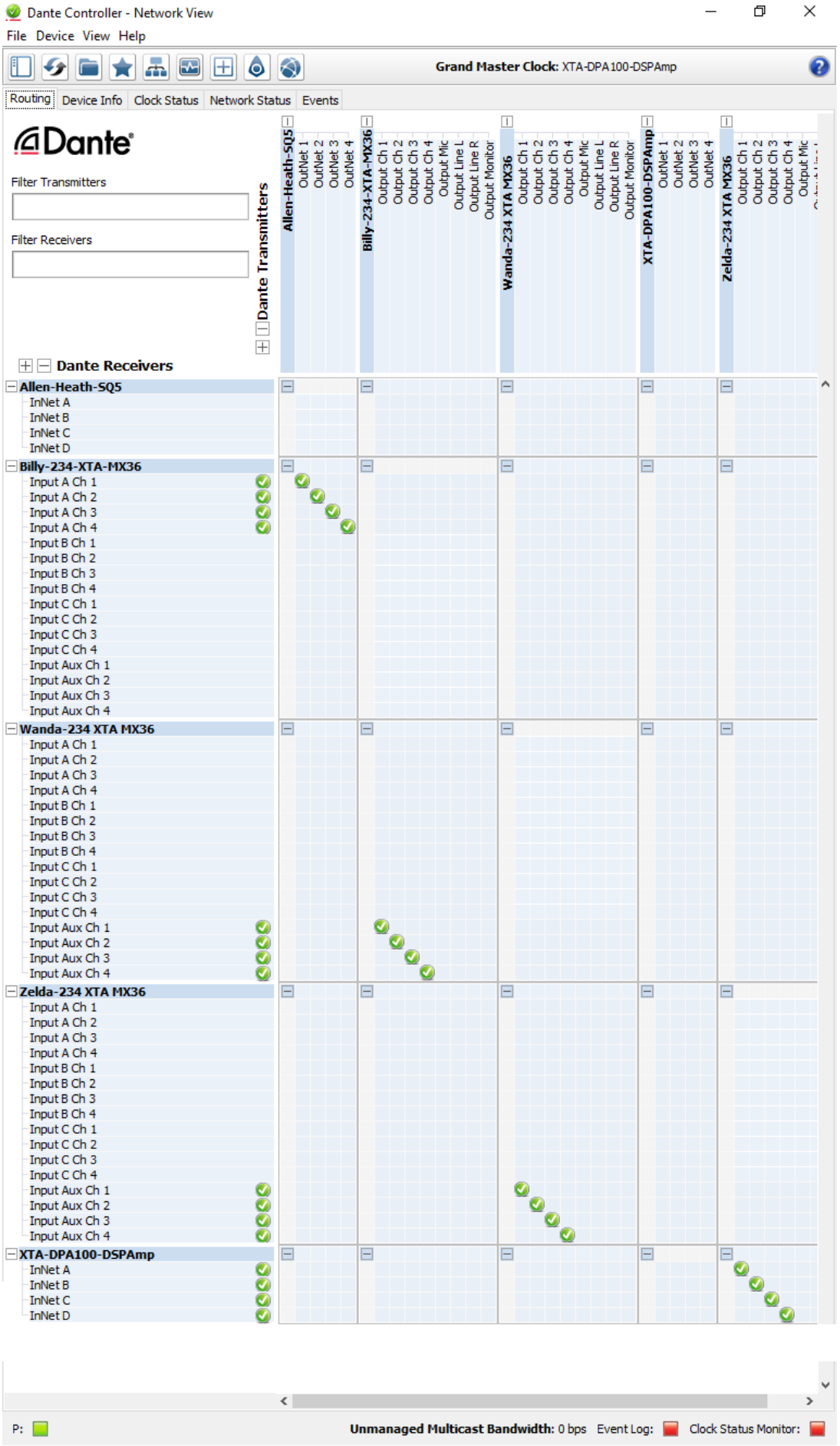
To help illustrate the cascaded method of connection, as it is virtual, not physical, a single mixing console is connected to the system as a four channel input source, and a single DSP amplifier is connected as a four channel output source.

- The Allen and Heath SQ5 is connected to Input A's Dante source connection on Billy. The main outputs of Billy are connected to the Aux bus of Wanda. Now, any desks plugged into Billy and selected via the Console Selects will be summed to the main outputs of Wanda, along with anything selected on Wanda's Console Selects.

- The main outputs of Wanda are connected to the Aux bus of Zelda. Now, any of the desks connected to either Billy or Wanda will be summed with Console Selects on Zelda, and all fed to the main outputs on Zelda.

- Zelda, the last MX36 in the cascade is then connected via the main outputs to the upstream processor or in this example, a DSP Amp – the XTA DPA100.

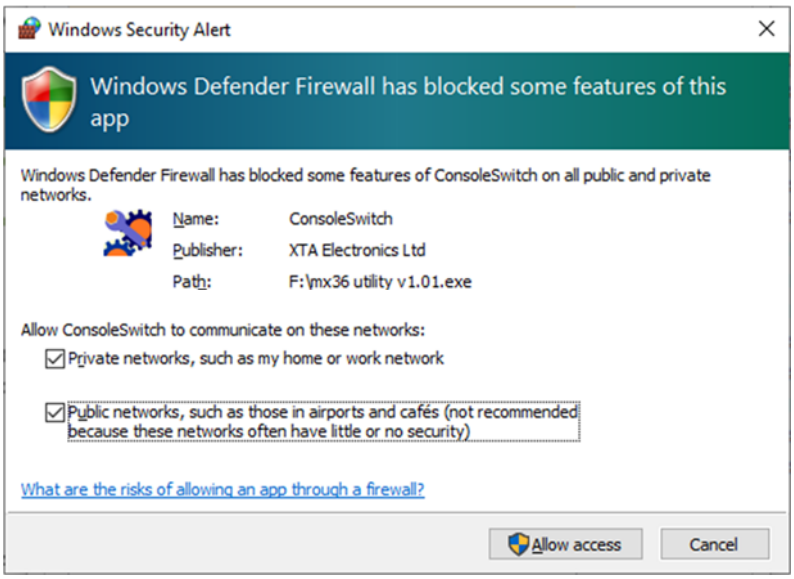
Setting this up does not mean physical Dante connections *directly between* the devices, they all just have to be connected to the same network, and all the configuration is performed in Dante Controller, as shown overleaf.


Dante Controller - Network View
File Device View Help
Grand Master Clock: XTA-DPA100-DSPAmp
Routing
Device Info
Clock Status
Network Status
Events
Dante
Filter Transmitters
Filter Receivers
Dante Transmitters
Dante Receivers
Allen-Heath-SQ5
OutNet 1
OutNet 2
OutNet 3
OutNet 4
Billy-234-XTA-MX36
Output Ch 1
Output Ch 2
Output Ch 3
Output Ch 4
Output Mic
Output Line L
Output Line R
Output Monitor
Wanda-234 XTA MX36
XTA-DPA100-DSPAmp
Zelda-234 XTA MX36
InNet A
InNet B
InNet C
InNet D
Input A Ch 1
Input A Ch 2
Input A Ch 3
Input A Ch 4
Input B Ch 1
Input B Ch 2
Input B Ch 3
Input B Ch 4
Input C Ch 1
Input C Ch 2
Input C Ch 3
Input C Ch 4
Input Aux Ch 1
Input Aux Ch 2
Input Aux Ch 3
Input Aux Ch 4
P:
Unmanaged Multicast Bandwidth: 0 bps
Event Log:
Clock Status Monitor:

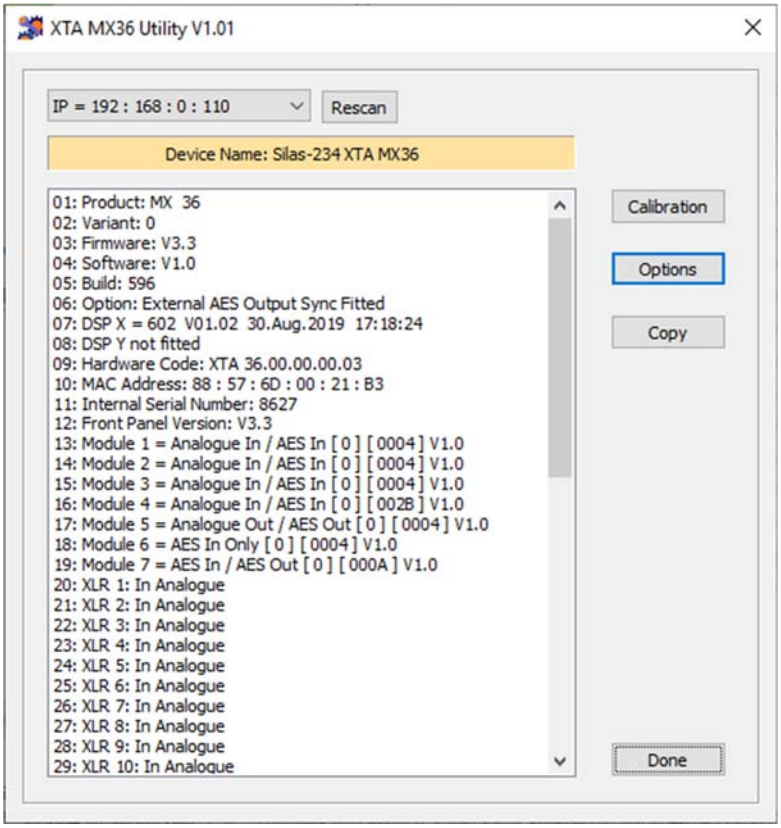
Don't forget that ALL the units upstream of the first unit need to have Cascade Mode enabled, and this is performed using the MX36 Utility app.

This mode unmutes the Aux bus to allow it to feed the main outputs of the unit. Note that in Dante controller, the Aux output bus is always displayed, even if it is muted.

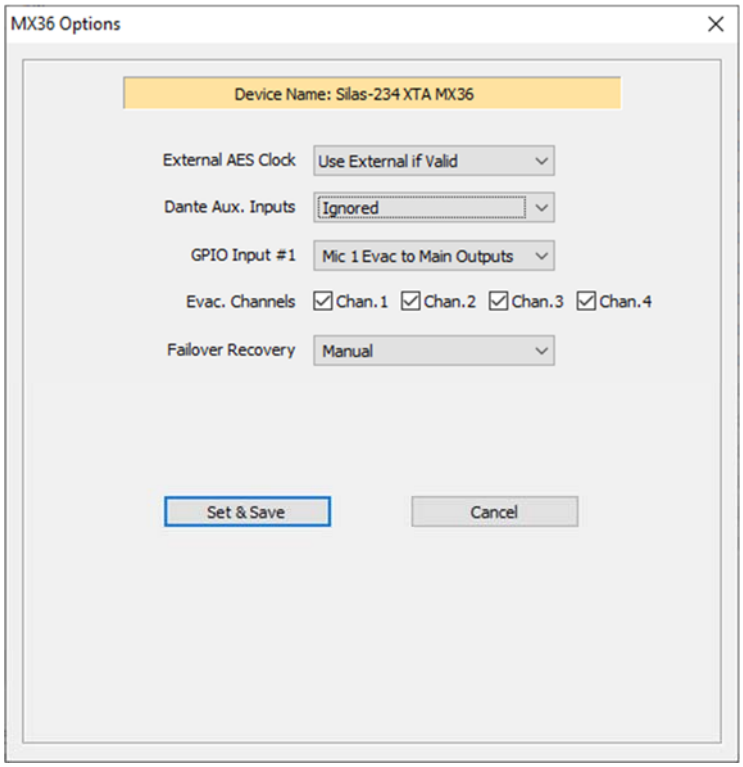
Connect the MX36 to the network via its CONTROL Ethernet port, and ensure that it's the only MX36 on the network. Run the utility app – if it's the first time it has run, Windows will ask about allowing it through the firewall – be sure to tick **all** options before pressing "Allow Access".



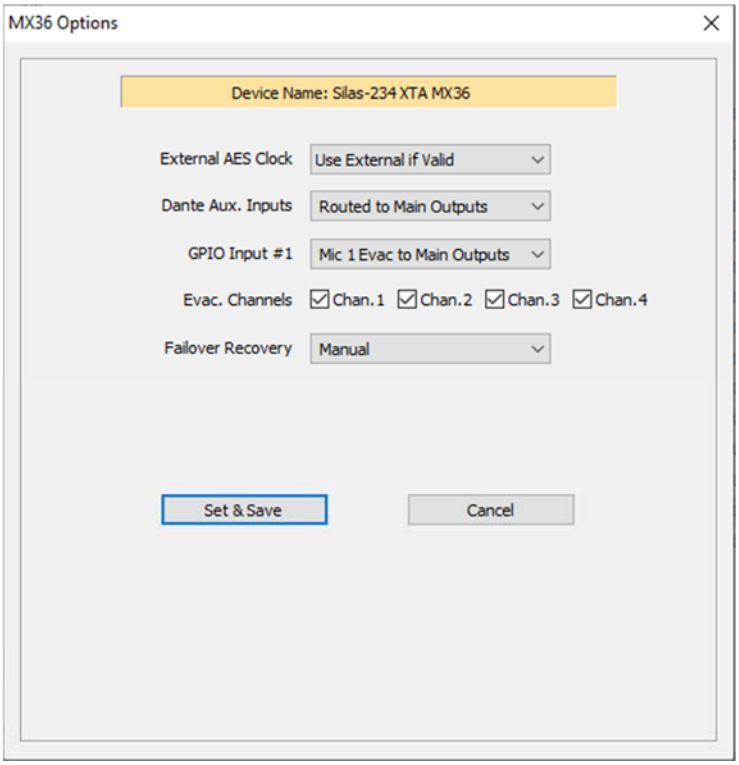
Your MX36 should then be located on your network:



Press the "Options" button to access some configuration choices as shown here:



By default the Dante Aux. Inputs will be ignored as above. Change this drop-down list to "Routed to Main Outputs" as below:

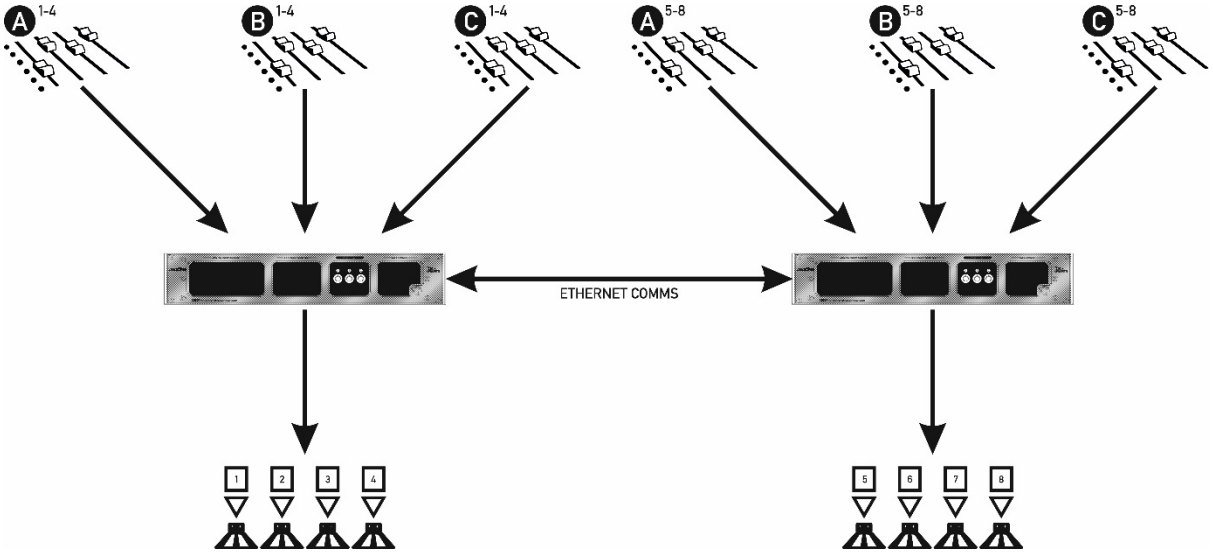


Press "Set & Save" and then close the application. Now, anything routed via Dante controller to the Receiver Aux inputs on the unit will immediately be passed through to the main outputs, bypassing the CONSOLE SELECT buttons.

Increasing Channel Capacity Using Parallel Connections

If it is necessary to manage more than four outputs per console and maintain redundant failover support, units can be connected in parallel. This requires a control network connection from all units. Dante connections are not required unless Dante is being used for normal IO connections.

The control network connection is required to send switching information (locking, solo etc.) between both units, as well as Console Select, which is automatically synchronised.



Any redundancy and failover set up on the system will be synchronised across all outputs.

Please note that in this initial firmware release (V1.00), parallel mode is disabled. Parallel mode will be activated in the next feature release of firmware.

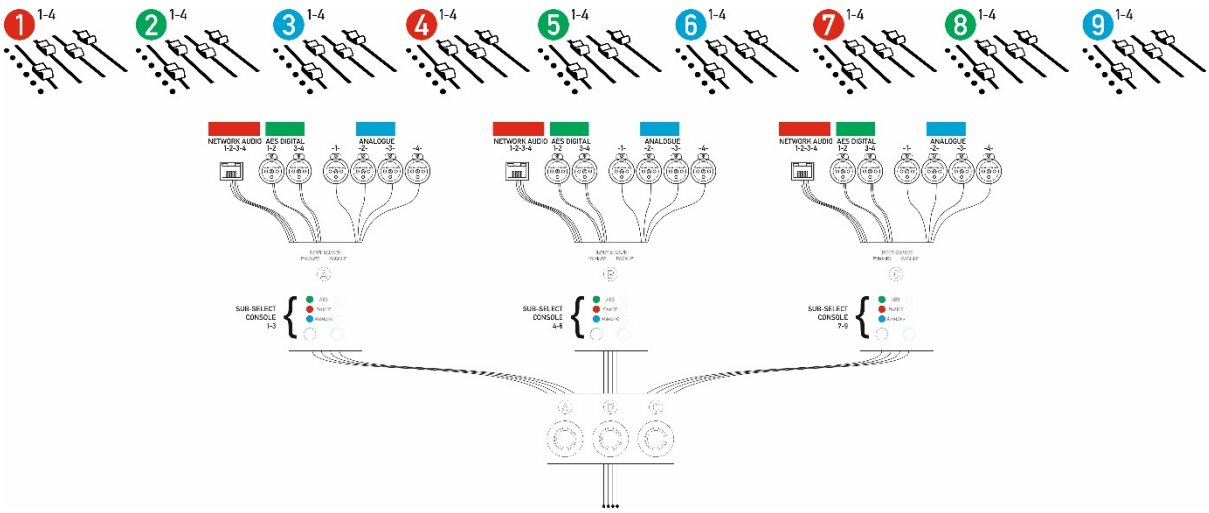
Parallel mode can still be set up and used, but the settings of the Console Select and Redundancy sections will have to be manually applied, and failover operation will operate in isolation on each unit.

Increasing Console Switching Capability Using a Single MX36

Each of the three main sets of inputs on an MX36 are capable of accepting Dante, AES and Analogue audio simultaneously on A, B and C. It's likely that full three level redundancy may not be required on all three sets (or may not be possible due to the source not providing all three signal types).

If failover is not required, the MX36 is capable of switching between 9 consoles, with the proviso that three will be Dante, three will provide AES and three will be Analogue only.

Backup sources are disabled (via the front panel – Backup = Off) and the Primary source switching is used to cycle between the three signal types to select one of three consoles.



Three of the nine can be mixed using the A-B-C console select switches, one from each sub-set as chosen using the Primary source selection.

All consoles outputs can still be monitored using the Line Monitor and the stereo line input can even be used for an emergency 10th console!

Increasing Console Switching Capacity and Using Redundancy

It is entirely possible to use a combination of redundancy on some channels and not others and so mix the capabilities of the MX36 to best suit your requirements.

For example, the "headline act" may have a modern digital console, capable of outputting analogue, multiple AES streams, and have a Dante card so can be set up with full "belt and braces" for three level redundancy. Consider this on Set "A".

The next level down might just have a console with AES and analogue only. If the AES is only available for the main outputs, then the analogue must be considered as the "Primary" source, and the AES backup would be manually switched in (as analogue sources cannot be monitored for failure modes unless HF pilot tones are used).

Finally, analogue/AES/Dante sources can be used in isolation with no failover in place, and selected as the required Primary source with failover disabled.