



### Talkback Amplifier Expander

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## 1. Intent & Scope

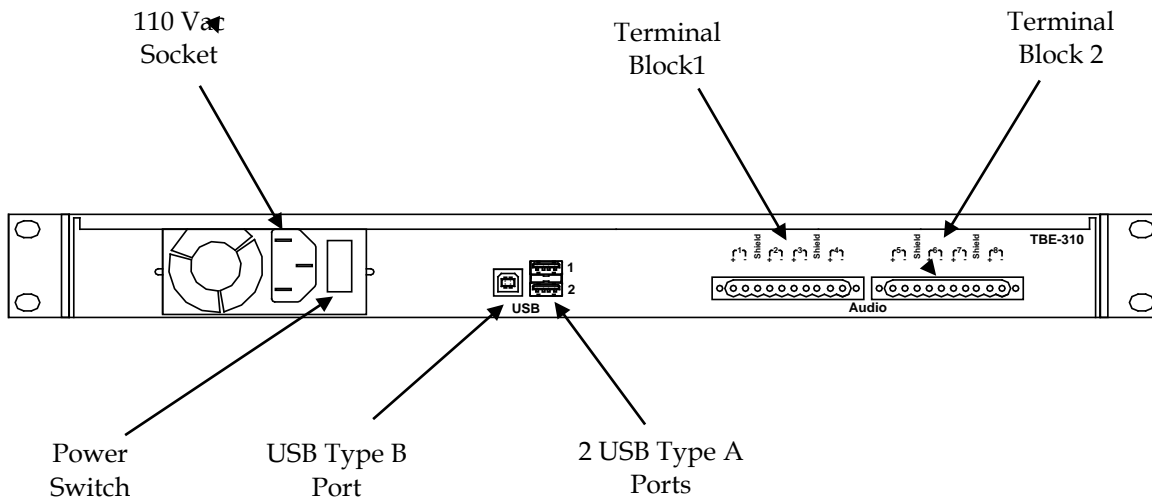
This document describes the installation procedures for the MicroComm DXL TBE-310 Talkback Amplifier Expander.

## 2. Description

The TBE-310 Talkback Amplifier Expander offers a flexible solution for driving paging speakers with talkback capability. The TBE-310 Talkback Amplifier Expander (TBE) has eight constant voltage output channels that are used to drive paging loudspeaker circuits. Each channel's output power is rated at 5 watts at 25/70 volts. Several channels on the TBE-310 can be connected in parallel to form a single output with higher output power (i.e. connecting three outputs together would provide a 15 (3 x 5) watt output). The AC socket outlet shall be installed near the equipment and shall be easily accessible. This equipment relies upon building installation overcurrent protection. Any group of sequential channels on a single TBE can be connected in parallel. When outputs are connected in parallel appropriate settings must be made in the Configuration specifying which outputs are to be connected.

Each loudspeaker connected to a Talkback Amplifier Expander circuit must be equipped with an appropriate 25/70 voltolt loudspeaker matching transformer. Loudspeaker matching transformer taps must be set so that the total audio power load on each circuit does not exceed the rated output.

The 1U 19" rack mount enclosure connects to a DXL exchange via a USB cable. The back view of the TBE-310 is shown below.



**Rear View of TBE-310**

Up to 4 TBE-310s can be connected to each DXL exchange; however the total number of TBE-310s and DCEs that can be connected to an exchange is limited to 4.

### 3. Power Requirements

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An earth ground AC power cord mates directly to the power supply inside the TBE-310. Each TBE can draw up to 6 amps at 115 Vac when operating at full output power.

### 4. USB Ports

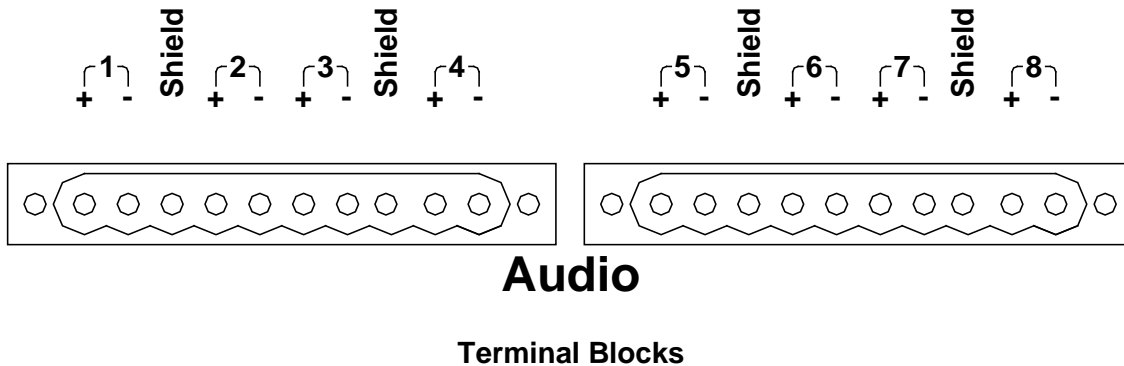
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A right angle stacked USB (Type A) connector allows an additional USB device (TBE, DCE, or PZE) to be connected to the TBE. Note that the maximum of two USB devices that carry audio (TBE and DCE) can be installed on each DCC's two USB 'A' ports (four in total).

### 5. Audio Output Terminals

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The terminal assignments for the two ten pin Combicon male terminal blocks are shown below.



The matching female plugs are supplied with a CBL-150-A cable. The audio output connections with a possible terminal block assignment are given in the following table.

## Talkback Amplifier Expander

Combicon Pin Number	Signal	PAB/TAB Cable Wire Colors	Terminal Block Pin Number
1-1	Audio 1+	Blue	1
1-2	Audio 1-	Black	2
1-3	Audio 1 & 2 Shield	BBI Shield	3
1-4	Audio 2+	Green	4
1-5	Audio 2-	Black	5
1-3	Audio 1 & 2 Shield	BR Shield	6
1-6	Audio 3+	White	7
1-7	Audio 3-	Black	8
1-8	Audio 3 & 4 Shield	BW Shield	9
1-9	Audio 4+	Red	10
1-10	Audio 4-	Black	11
1-8	Audio 3 & 4 Shield	BR Shield	12
2-1	Audio 5+	Blue	13
2-2	Audio 5-	Black	14
2-3	Audio 5 & 6 Shield	BBI Shield	15
2-4	Audio 6+	Green	16
2-5	Audio 6-	Black	17
2-3	Audio 5 & 6 Shield	BG Shield	18
2-6	Audio 7+	White	19
2-7	Audio 7-	Black	20
2-8	Audio 7 & 8 Shield	BW Shield	21
2-9	Audio 8+	Red	22
2-10	Audio 8-	Black	23
2-8	Audio 7 & 8 Shield	BR Shield	24

**Table 1 Audio Output Terminal Assignment**

### 6. Configuring a TBE-310 using the Administrator Software

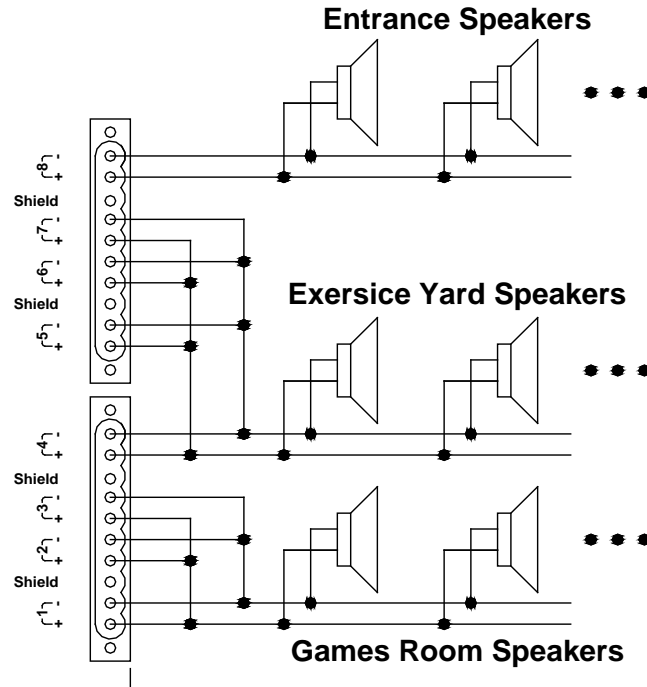
The following example uses a TBE to communicate with three areas. The example Housing Building 1 is divided into two identical units called Unit A and Unit B. The following example uses a TBE-310 to communicate with 3 separate areas in Unit A.

The three areas are to consist of,

- 1) An overhead bank of speakers in the games room that are used to make broadcasts or play background music in the room. The overhead speakers are configured to act as a single station with talkback capability. This station is named 'Games Room A', and the station is required to deliver 15 watts of audio power to drive the overhead speakers. The master station 'Unit A Control' or the 'Housing1Super' can make calls to this station.
- 2) A bank of pole mounted speakers is used to broadcast messages to the exercise yard. The bank of speakers is configured as a station named 'Exercise Yard A'. Twenty watts of audio power are required to drive the speakers. The master station 'Unit A Control' has permission to make calls to this station,
- 3) A station named 'Entrance A' requires 5 watts of audio power to drive the overhead speakers in the entrance area. The master station 'Unit A Control' or 'Housing1Super' can make calls to this station.

## Talkback Amplifier Expander

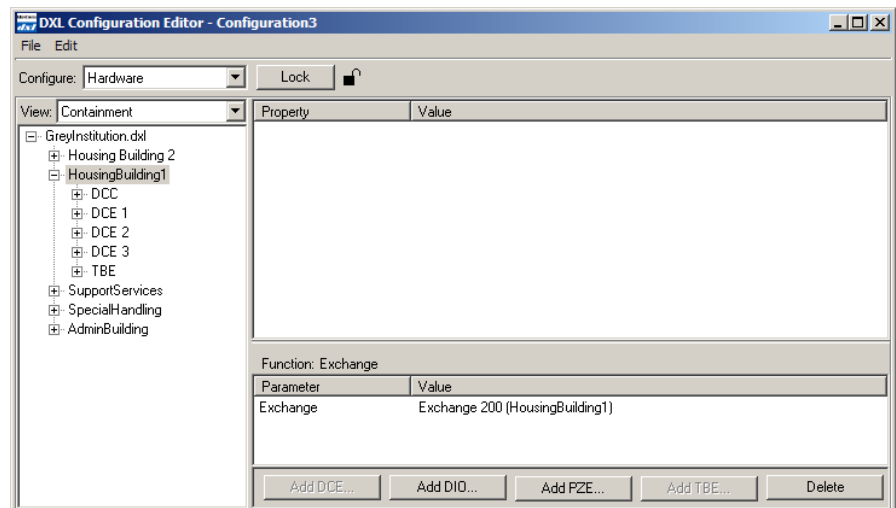
Since each output line can supply 5 watts of audio power 3 output lines must be paralleled to provide 15 watts of audio output power to the Games Room speakers. Similarly, 4 output lines must be paralleled to provide 20 watts of audio power for the Exercise Yard speakers, while a single output line is adequate to drive the speakers in the entrance area. The TBE will be wired as follows:



### 6.1 Adding a TBE to the configuration

A TBE-310 can be added to an exchange when the **Configure:** entry of the **DXL Configuration Editor** is set to **Hardware**. The window that appears after a DCC, two DCEs and a TBE have been added to an exchange (Housing Building 1) is shown in the following picture.

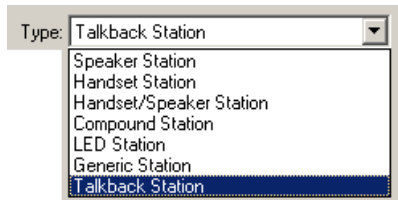
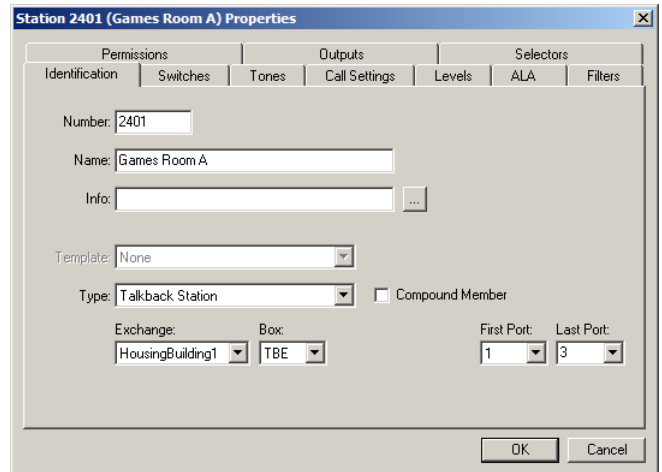
The buttons at the bottom of the **DXL Configuration Editor** window allows you to **Add DCE...**, **Add DIO...**, **Add PZE...**, **Add TBE...** or **Delete** a selected item. Once a fourth DCE and/or TBE has been added the DCE and TBE selection buttons will dim and can no longer be selected.



## 6.2 Defining the Talkback Stations in the Configuration

The TBE-310 outputs are configured as a special type of station. In our example we will configure the TBE as three separate stations, namely 'Games Room A', 'Exercise Yard A' and 'Entrance A'. Setting the **Configure**: entry in the **DXL Configuration Editor to Stations** allows us to **Add...** **Delete...** or select **Properties** for each station. When you click the **Add...** button the **Station Properties** dialog box appears:

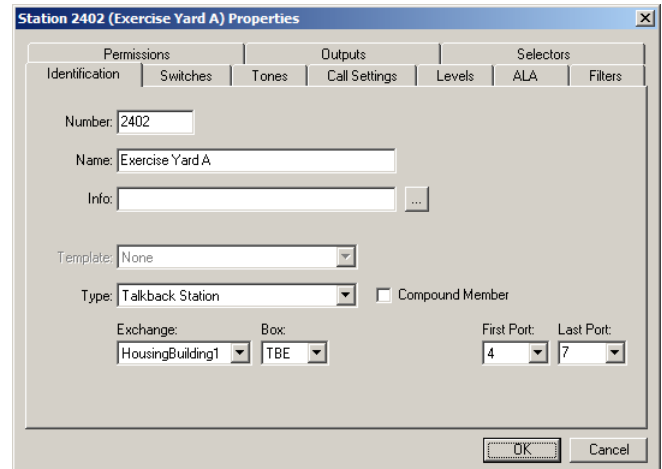
You need to identify the station with an ID **Number** and **Name**, and using the pull down menu assign **Talkback Station** as the **Type**: of station.



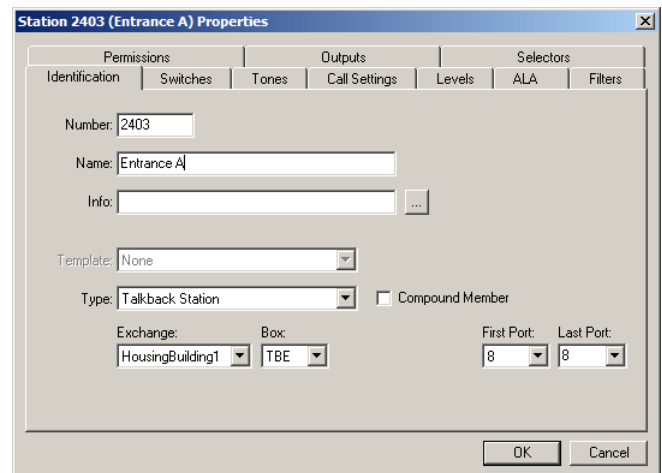
The entries for **First Port** and **Last Port** tell the configuration which ports are connected together in parallel for this station. In this picture 3 ports are

connected in parallel.

The station **Exercise Yard A** settings are shown on the right. The ports 4 to 7 of the TBE are connected in parallel to give an audio output of 20 watts.



The station **Entrance A** settings are shown on the right. Only port 8 is used for this audio output, which will supply 5 watts of audio power.

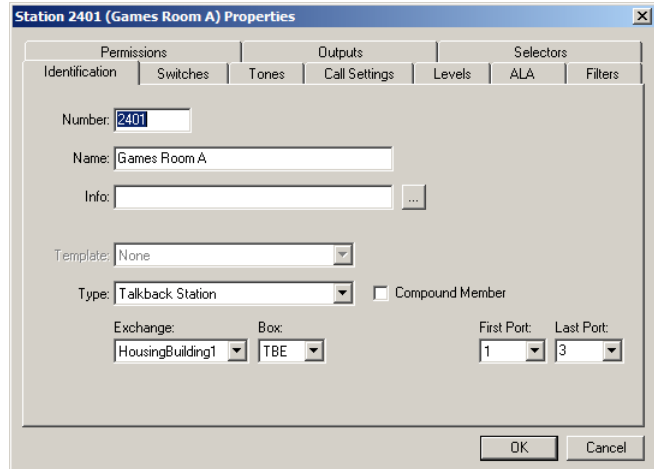


## 6.3 Talkback Station tabs

The Talkback **Station Properties** window has 10 tabs that are used to set parameters for the talkback stations. These will be described briefly in this section.

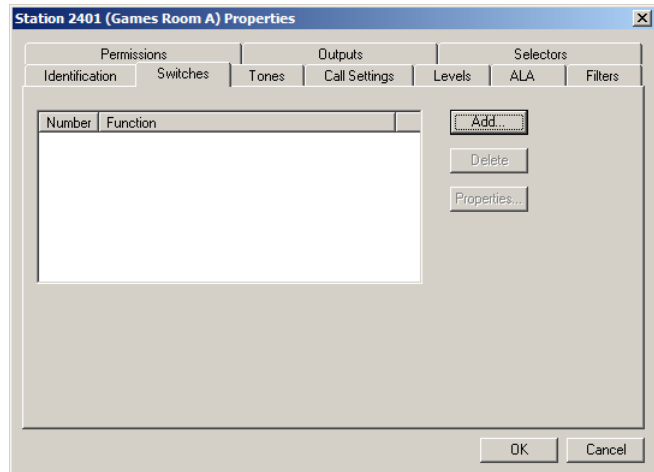
### 6.3.1 Talkback Station - Identification

The **Identification** tab is used to specify an **ID Number**, **Name**, and the ports that are connected in parallel. Once a **Talkback Station** is selected the **Template** entry is dimmed (i.e. you cannot use a template to describe a Talkback Station). If this station is to be used as a member of a compound station then the **Compound Member** check box needs to be checked.



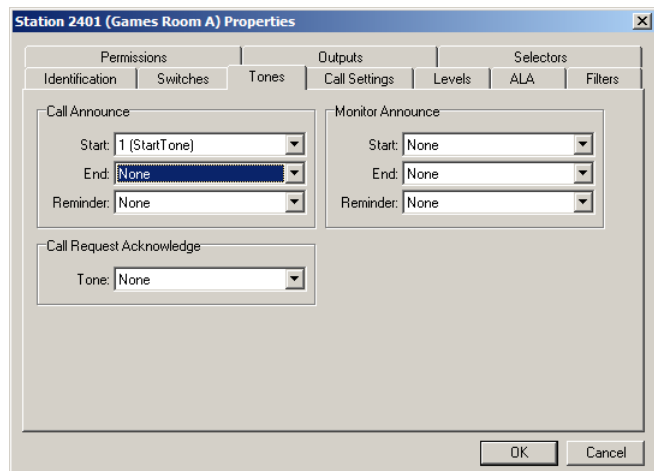
### 6.3.2 Talkback Station - Switches

The **Switches** tab can be used to **Add...** switch(es) to the talkback station. A talkback station has no predefined switches. Clicking the **Add...** button brings up a window with a tree structure of the hardware configuration. The tree structure can be expanded until it displays switch inputs, which can be wired to an external switch to perform the desired function.



### 6.3.3 Talkback Station - Tones

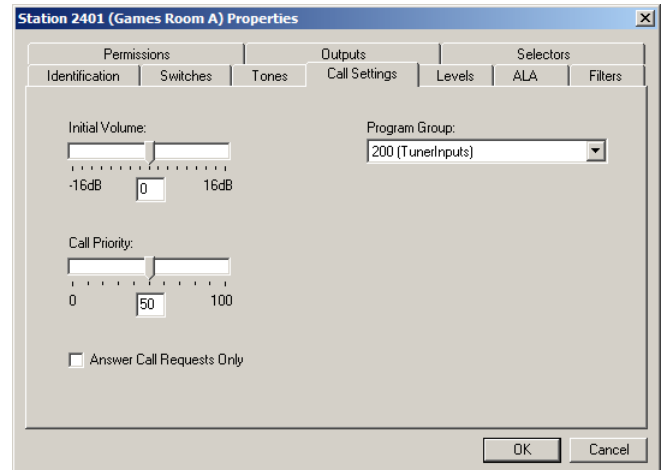
The **Tones** tab has entries for defining **Start**, **End**, and periodic **Reminder** tones when a call is being made to the talkback station. Similarly, when the talkback station is being monitored a **Start**, **Stop**, and periodic **Reminder** tone can be sent to the station. Tones are created using the **Tones** entry in the **Configure:** box of the **DXL Configuration Editor**. If the station has a call request switch, a call request acknowledge tone can be sent back to the station when a call request is queued at a master station.





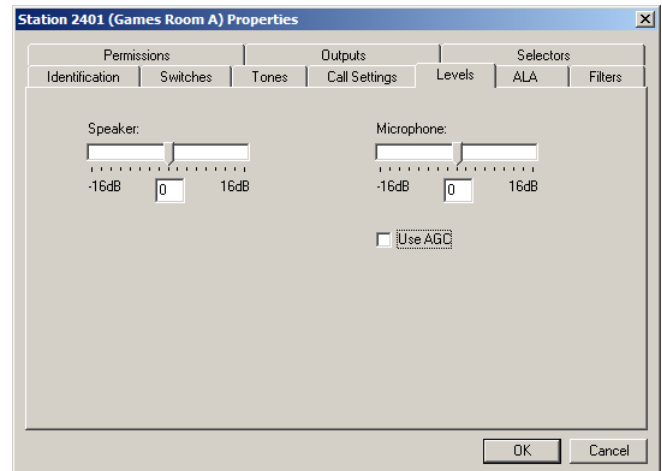
## 6.3.4 Talkback Station - Call Settings

The **Call Settings** tab has entries for **Volume**, **Call Priority**, and **Program Group**. **Program Group** is a set of music source that can be transmitted to this station. An operator at a master station with permission for program control can select one of the music sources in the selected program group when the DXL is running.



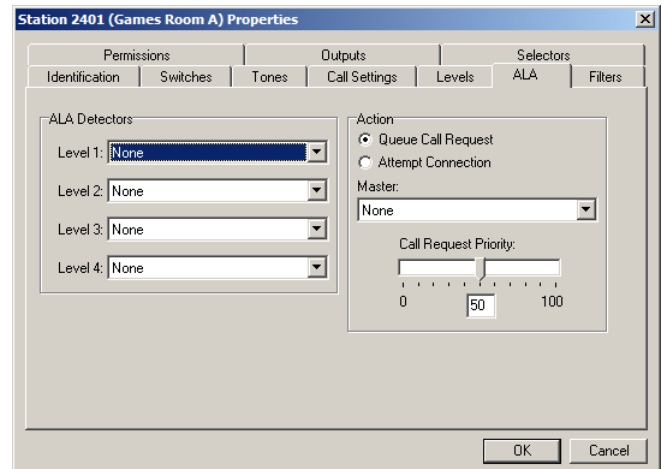
## 6.3.5 Talkback Station - Levels

The **Levels** tab can be used to increase or decrease the sound levels transmitted or received by the station.



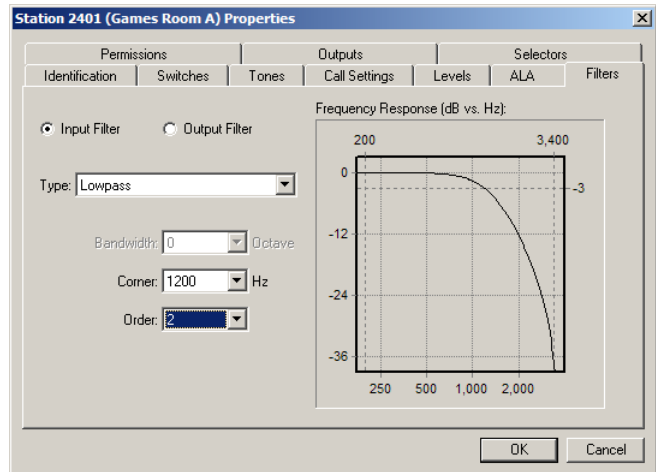
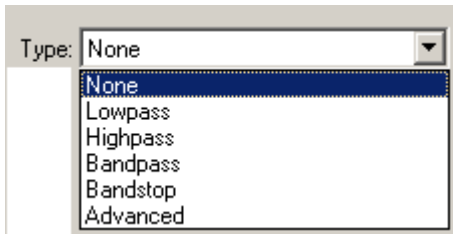
## 6.3.6 Talkback Station - ALA

The **ALA** (Audio Level Alarm) tab is used to configure automatic monitoring of the incoming audio from the station. If a loud audio signal is detected that exceeds a set threshold it can trigger an alarm. Four different sound level alarm thresholds can be set. An operator who has permission to turn on/off the monitoring, or an automatic schedule, can select the appropriate level.

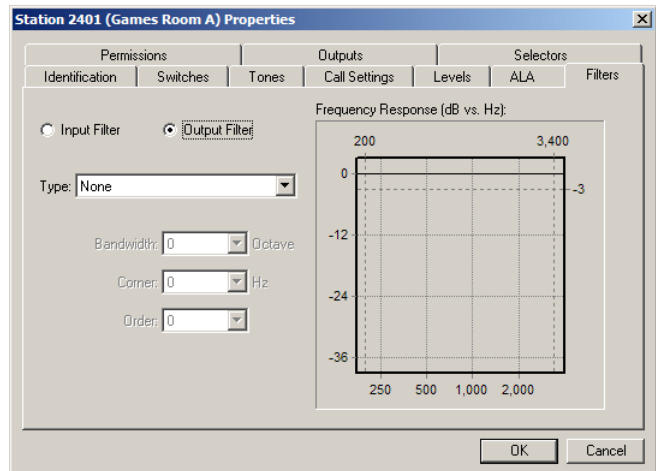


## 6.3.7 Talkback Station - Filter

The **Filter** tab can be used to include an audio filter for both the incoming audio from the station and the output audio transmitted to the station. The input and output filters can be one of five different types; highpass, lowpass, bandstop, bandpass, advanced. If **None** is selected no filter is used.

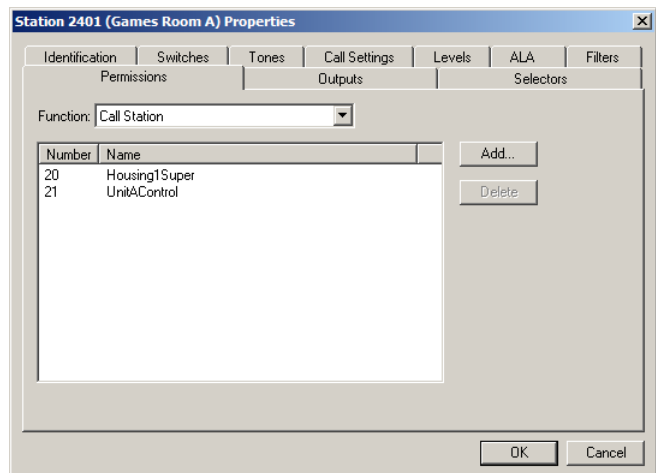
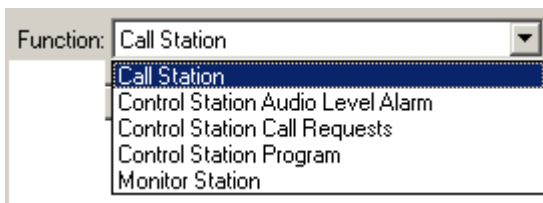


The filter parameters can be set using the pull down menus. Audio filters may be useful in rejecting background noise or compensating for different room acoustics.



## 6.3.8 Talkback Station - Permissions

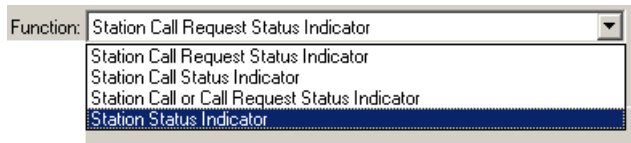
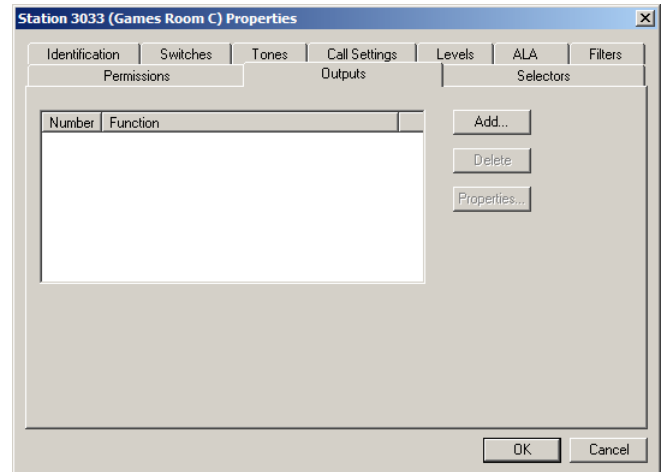
The **Permissions** tab is used to specify which master stations are allowed to call, monitor, or control this station. The pull down menu for **Function:** displays the various functions that can be performed.



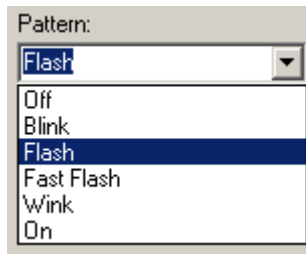
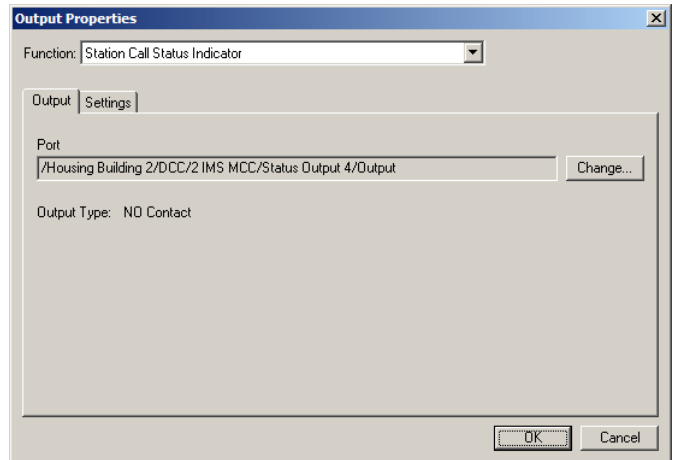
For a particular function the **ADD...** button will generate a popup menu that lists all the master stations in the configuration. From this list of master stations you can choose the master station(s) that are allowed to perform the selected function.

### 6.3.9 Talkback Station - Outputs

The **Outputs** tab allows you to activate an output when the station is in various operating states. When the **Add...** button is clicked a tree of the system hardware is displayed. The tree nodes can be expanded until the desired output port is displayed. If an output is already used it will be dimmed, if not it will be selectable. The function of the output can be selected from the **Function** drop down menu.



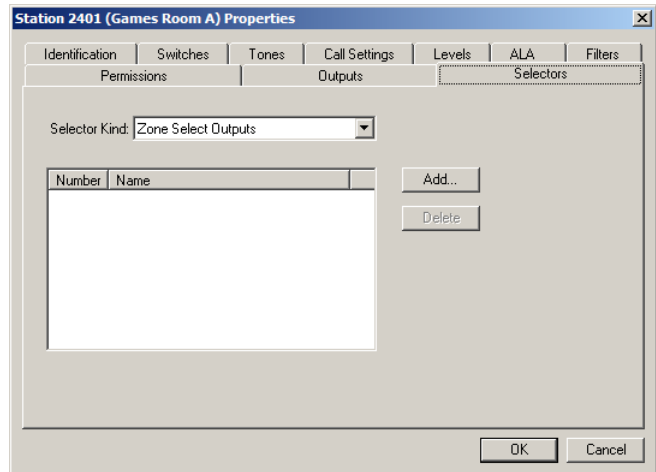
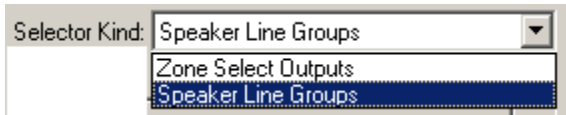
There are two tabs associated with the **Properties** display of an output. The **Setting** tab allows the output to be set to blink, flash, fast flash, wink or on. The selected pattern will be used to drive the selected output port when the station is in the state(s) identified by the function. This applies to all of the functions except the Station Status Indicator. The Station Status indication function is predefined to flash the output in the call request state, and to turn the output on in the call state.



## 6.3.10 Talkback Station - Selectors

When the TBE talkback output is used to drive the audio input of a speaker line group or a relay controlled by a zone selected status output, the **Selectors** tab is used to specify these **Speaker Line Groups** and **Zone Select Outputs**. These selectors may be activated when a page is made to the talkback station.

The **Selector Kind**: pull down menu offers the following choices.



The list on the selectors tab will display the selectors of the currently selected kind that are associated with the talkback station, and only selectors of that kind can be added to the station.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.