RTS™ TECHNICAL BULLETIN

RTS-TB-036   4-December-2017

Reduced Frequency Response on KP Series Panel with RVON

Issue Severity:	Product(s) Affected:
☐ **High:** URGENT – Immediate Action Required ☐ **Medium:** Bosch Security Systems, Inc. strongly recommends you take the action(s) described below. ☒ **Low:** Advisory	• KP Series panels using RVON audio connectivity [Not applicable to KP-3016A since this is Analog only panel with no RVON support]

Notification Applies To:	Access Restrictions:
☒ Technical Support (TSS) ☒ Repair (ASA) ☒ Sales (NSO / RSO)	☐ Internal Distribution **ONLY** ☒ **No** Restrictions (Internal & External Distribution)

1.0   Issue

Since the introduction of RVON support in the KP Series key panels, several customers have informed RTS that the audio using the RVON connectivity sounds less clear, 'muffled' or 'muddy' compared to when RVON is disabled and they use a non-RVON connection to the matrix. Effectively, customers are stating that the high frequency response using the RVON connections sounds reduced over expected audio frequency response.

Although this perception is subjective, it is not necessary for customer units to be returned to address this condition. The purpose of this bulletin is to reduce the possible premature return of panels due to this perceived audio quality issue. Note that this issue pertains only to reduced frequency response of the RVON audio. There is no noise or audio distortion present.

2.0 Resolution / Corrective Actions

The symptom of perceived degraded frequency response has been re-created at Bosch. In most customer situations where this degraded audio condition is perceived by the customer, the customer can correct the issue by changing some of the DSP filter settings on the panel. The root cause of the issue is that the KP Series panels ship with a Noise Reduction filter enabled on all Microphone Inputs. This combines both a High Pass Filter function (Rumble Reduction) and a Low Pass Filter function (Hiss Reduction) to create a bandpass filter on the Microphone input audio.

The issue is primarily caused by the Low Pass function of the Hiss Reduction filter which naturally attenuates high frequency content. The RVON codec utilized in the KP Series panels is a G.711 implementation. G.711 algorithms typically attenuate any frequency content above 3.44 kHz. When the reduced frequency response of the G.711 codec is combined with additional filtering from the Noise Reduction filter, it produces an audio response which may be perceived as 'muffled', 'muddy' and less clear / bright compared to normal audio.

To change these filter settings, the user must navigate to the DSP filter settings on the Microphone inputs. From the front panel of the key panel, navigate as follows:

[MENU] ➔ Audio Options ➔ Advanced ➔ Filters ➔ Equalization ➔ Inputs
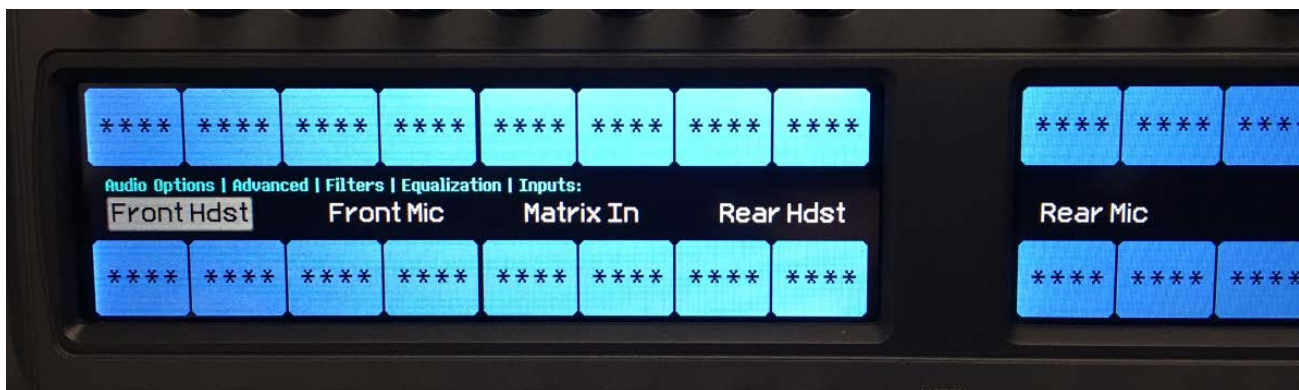
In the default configuration shipped from the factory, the Noise Reduction filter is enabled on all inputs shown in the above menu ***EXCEPT*** the "Matrix In" audio. To change the Noise Reduction filter setting, select the applicable INPUT which you want to change among the various headset and panel microphone options. Selection options will include:
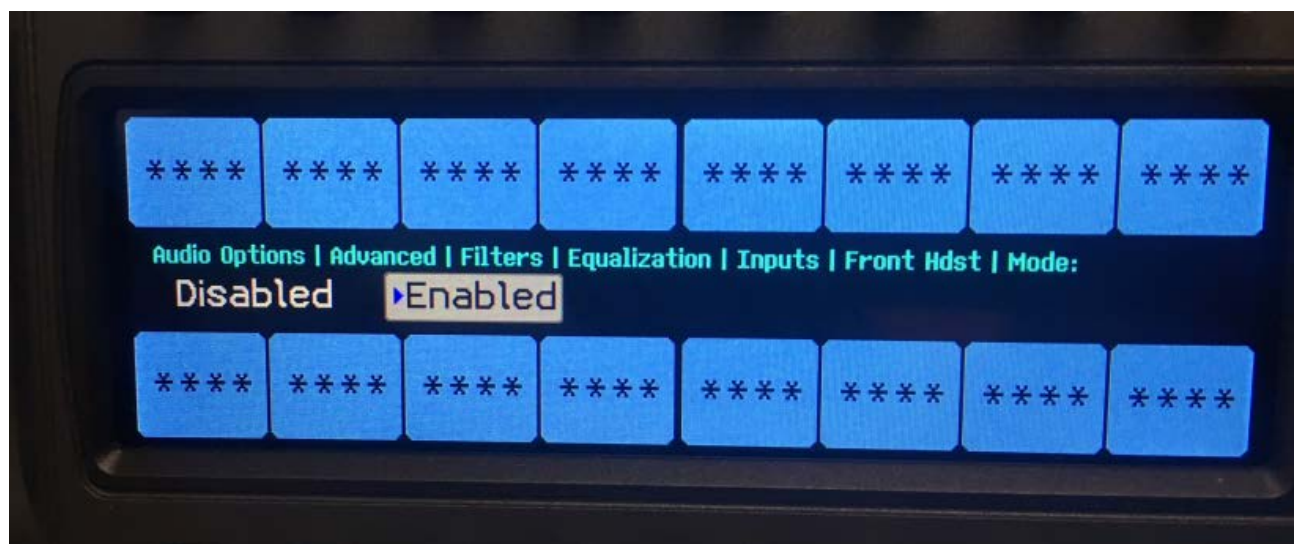
- **Front Hdst** (Front Headset Microphone)
- **Front Mic** (Front Panel Microphone)
- **Rear Hdst** (Rear Headset Microphone)
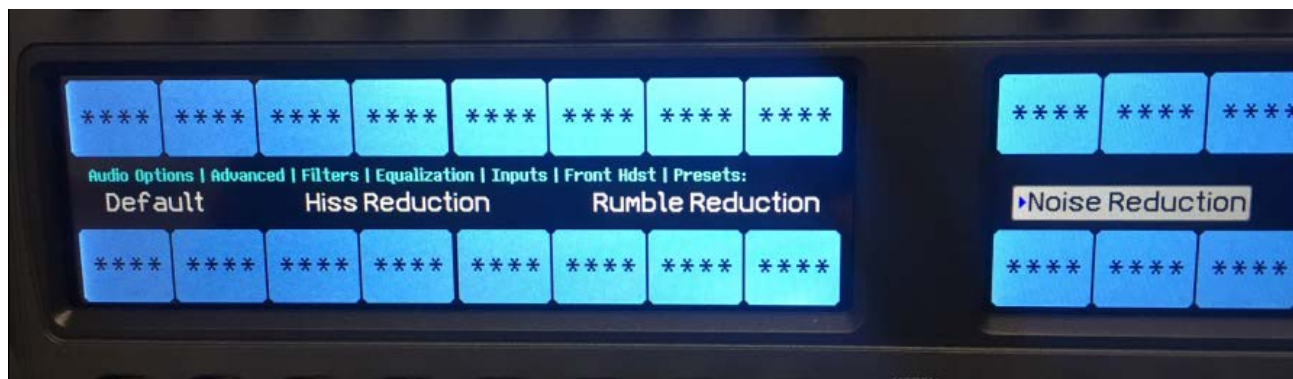- **Rear Mic** (Rear Panel Microphone)

Within each input selection, the user has a choice of MODE and PRESETS:
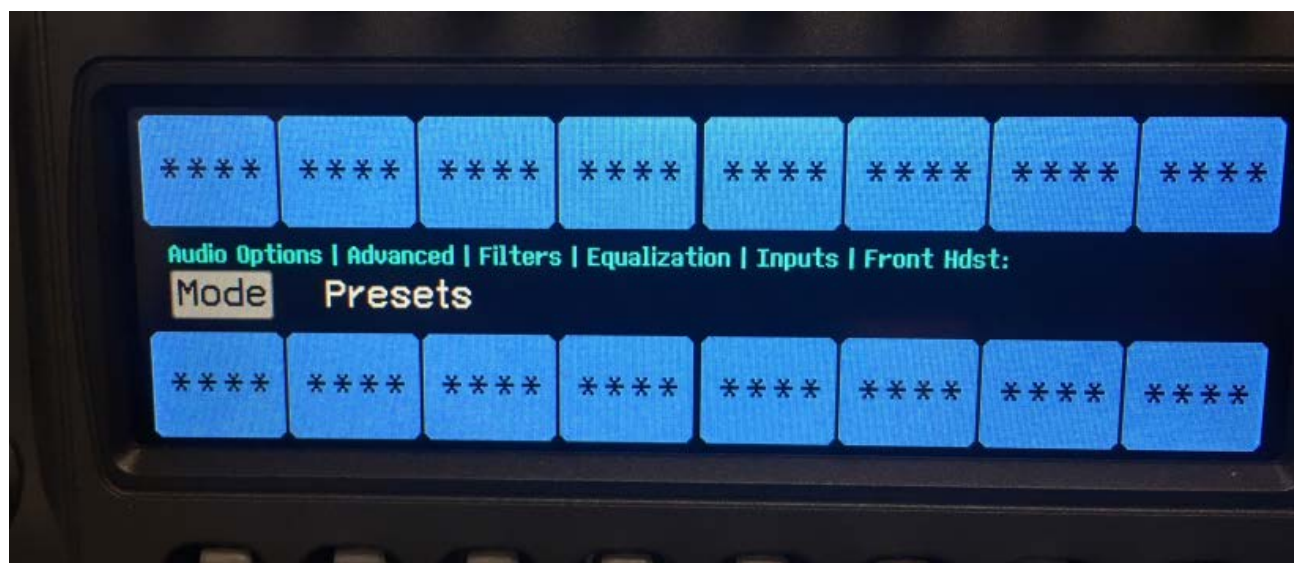
MODE will typically be set to Enabled. This enables the filter options:

PRESETS will likely be set to 'Noise Reduction':

To address this issue, RTS recommends setting the Presets to 'Rumble Reduction'. This eliminates the high frequency filtering and should improve the clarity and perceived 'brightness' of the RVON audio.

Another option is for the user to use the MODE sub-menu to change the Filter settings to 'Disabled'. This removes all filtering from the audio inputs.